Department of Veterans Affairs

St. Cloud, MN

Expand Primary & Specialty Care Clinics / Reconfigure Support Space

Hazardous Abatement Project Manual

Volume 3 of 3

December 9, 2011

VA Project No. 656-321
HDR Project No. 133959

ASBESTOS REMOVAL
PROJECT DESIGN SPECIFICATIONS

VA MEDICAL CENTER – EXPAND PRIMARY AND SPECIALTY CARE / RECONFIGURE SUPPORT SPACE

4801 Veteran's Drive
St. Cloud, MN 56303
EMR Project No. 9345.002

Prepared for:

HDR Architecture, Inc.
USB Plaza
444 Cedar Street, Suite 1900
St. Paul, MN 55101

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December 9th, 2011

SPECIFICATIONS SECTION

FIGURES/APPENDICES

SECTION 01010 – SCHEDULE OF WORK

PART 1-GENERAL

The VA Medical Center (VAMC) is conducting a project to add a new building and renovate a portion of Building 4. The areas beyond the work area control barriers may be occupied during the proposed asbestos removal project. The building is located at 4801 Veterans Drive, St. Cloud, MN 56303. Restrict access to the area as required. Coordinate and cooperate with the owner and their staff to keep disruptions to a minimum. Schedule work activity to complete the projects as soon as possible. It is essential that asbestos removal projects be completed within the scheduled time period. The Owner's Representative and Project Manager are:

EMR, Inc. (EMR)
Mr. Michael Muff, Project Manager
5301 E. River Road, Suite 114
Minneapolis, MN 55421
☎ (763) 277-5200
(763) 277-5201

All project correspondence shall be forwarded through the above address. The project is being performed for the Veterans Administration.

The VA Medical Center Project manager is:

Jon Copeland
Contracting Officer's Representative
Department of Veterans Affairs Medical Center
4801 Veterans Drive St. Cloud MN. 56303-2099
☎ 320-255-6346
Peter.Schei@va.gov

The project will be performed under a Work Order Authorization to the Master Services Agreement between the successful bidder and The United States Department of Veterans Affairs.

The site address is:

VA Medical Center
4801 Veterans Drive
St. Cloud, MN 56303

Coordinate daily activities and building operations with the site contacts.

The VAMC, Building 4 may have personnel working in areas beyond the project perimeter during the course of this project. It is essential that the contractor coordinate daily activities with VAMC site personnel. The contractor shall provide all state and federal notifications required of the building owner and others as required.

PART 2--SCOPE

The project specifications are based on surveys conducted in 1993, 2004 and 2010. The most recent survey and database update was conducted by Trio Environmental Consulting, Inc. (TEC) of West Fargo, North Dakota. This survey work was conducted in April of 2010 with a report dated April 9, 2010. All of the quantities presented in Part 2—Scope are based on the all surveys conducted on Building 4.

Additional pipe insulation may be found concealed inside plaster walls or pipe chases. Quantities listed are based on April 2010 asbestos survey by TEC.

1. The following asbestos-containing materials are known to be present at the work site and are included in the scope of this project. If any other materials are found which are suspected of containing asbestos, notify immediately the Owner's Representative. All of the identified asbestos-containing materials and debris are to be removed.

St. Cloud, MN –VAMC, Building 8

Basement:

- Glovebag removal any loose asbestos containing debris found on removed ceiling tiles for the installation of new fire department connection piping shown in Sheet Vol. 1 FA-00. Replace ceiling tiles as needed.

St. Cloud, MN –VAMC, Building New Kitchen Building (NKB)

Existing Tunnels:

- Glovebag removal of approximately 1,200 L.F. of pipe insulation from the tunnels as shown in Sheet Vol. 1 MH-40.
  Sample #48 (40% Chrysotile-4 inch pipe insulation; 1993)

- Removal of approximately 340 C.F. of soil containing asbestos from the tunnels as shown in Sheet Vol. 1 AS-08.

St. Cloud, MN –VAMC, Building 4

First (1st) Floor:

- Remove approximately 75 S.F. of ACM 12-inch floor tile and mastic under carpeting from Office 126A, Storage 125, and Office 124 (Sheet Vol. 2 AS-09).
  Sample #11 (Yellow with Aqua 12-inch floor tile-5% Chysotile; sampled in 1993)
  Sample #12 (Mastic under 12-inch Floor tile-10% Chrysotile; sampled in 1993)

- Glovebag removal of approximately 30 L.F. of vertical pipe insulation from 124 as shown in Sheet Vol. 2 AS-09.
  Sample #48 (40% Chrysotile-4 inch pipe insulation; 1993)

- Remove approximately one (1) fire door from Entry 123A as shown in Sheet Vol. 2 AS-09.
  Sample #61 (10-30% Chrysotile; 2004)

Second (2st) Floor:

- Remove approximately 32 S.F. of ACM 12-inch floor tile and mastic under carpeting from Closet 223A, (Sheet Vol. 2 AS-08).
  Sample #11 (Yellow with Aqua 12-inch floor tile-5% Chysotile; sampled in 1993)
  Sample #12 (Mastic under 12-inch Floor tile-10% Chrysotile; sampled in 1993)

Attic:

- Remove 2 exterior windows with ACM window caulking from attic as shown in Sheet Vol. 2 AS-08.
  Sample #58 (5% Chrysotile)

Non-Friable Removal Procedures: (ACM 12-inch floor tile with underlying ACM mastic, non-ACM 12-inch floor tile with underlying ACM mastic, ACM 9-inch floor tile with underlying ACM mastic; and remnant ACM

flooring mastic under carpeting)

- *Set up Critical Barriers (6 mil poly over all doorways, windows, vents and other openings) including any critical barrier walls.*
- *Construct a 2-Stage Decontamination Unit (Clean Room and Equipment Room) and on opposite side of negative air machine so that there is a continuous negative air flow across the entire removal area.*
- *Pre-Clean Surfaces*
- *Cover any Fixed Objects*
- *Establish Negative Air Pressure*
- *Remove 12-inch Floor Tile using Manual Removal Procedures**
    - *Manual Scraping with Hand Tools*
    - *Continue Wet Methods while Double-bagging Floor Tile Material in 6-mil Poly Disposal Bags*
    - *Lay down 1' wide piece of 6 mil poly sheeting at the base of the floor for a splash guard.*
    - *Apply low odor, chemical mastic remover to residual mastic on concrete. Post MSDS sheets of chemical mastic remover used.*
    - *Remove mastic remover and mastic using clean cotton rags and/or sponges.*

**Ensure that floor tile is removed relatively intact and not pulverized to allow non-friable removal procedures in the State of MN. Note that mastics under carpeting are floor tile or remnant floor tile mastics. Assume that carpeting may go out as general construction debris, unless the carpeting pulls up floor tile based on any localized deteriorated condition of floor tile.*

Friable Removal Procedures: (glove bag procedures):

- *Construct Full Negative Enclosure Containment in each functional space.*
- *Construct a 5-Stage Decontamination Unit (Clean Room, Air Lock, Shower, Air Lock, and Equipment Room)and on opposite side of negative air machine so that there is a continuous negative air flow across the entire removal area. Suggested area is outside Office Door to Exterior of building.*
- *Remove the asbestos materials listed above by the methods approved by the OSHA. The thermal system insulation material shall be considered asbestos-containing material using glove bag procedures, removal shall be completed with the use of wire brushes and/or amended water as necessary to insure that all asbestos is removed from the metal surface of the pipes and equipment, cleanup visible debris as necessary.*
- *Equipment: glove bag, cutting tools, scrubbing tools, HEPA vacuum, Danger signs, Air monitoring equipment,6 mil polyethylene sheeting, waste disposal bags or containers, smoke tubes and smoke testing bulb, duct tape,water sprayer, amended water, and damp cloths for wet wiping.*
- *Any loose dust on the pipe is wet wiped and or HEPA-vacuumed.*
- *Floor area below the area to be glove bagged is wet wiped and/or HEPA vacuumed.*
- *Duct tape is placed around the insulation at the sites where it is anticipated the glove bag will be attached. The glove bag sides are slit using the cutting tool.*
- *A small piece of duct tape is attached directly below the end of these cuts to prevent the cuts from running as the weight of water and insulation is placed in the bottom of the bag.*
- *Tools are placed in the glove bag's tool pouch and the two sides of each of the side cuts are brought up around the pipe.*
- *The glove bag is then sealed around the pipe with duct tape.*
- *The water sprayer is now attached in the glove bag by inserting the wand and sealing with duct tape.*
- *Next, insert the HEPA vacuum nozzle and seal with duct tape.*
- *Not necessary to smoke test if in critical barrier/negative pressure area.*
- *Thoroughly soak the insulation using a water sprayer containing amended water.*
- *Cut the insulation for removal.*
- *The pipe is washed down with water and the scrubbing tool used to remove any remaining small pieces of material.*
- *A damp cloth is now used to remove any remaining dust.*
- *A bridging encapsulant is now applied to the exposed ends of the remaining insulation (if applicable).*
- *The tools are removed from the bag.*
- *The HEPA vacuum is inserted into the bag (if not done previously) and turned on.*
- *The glove bag is twisted in the middle, the bag is removed and placed in a waste disposal bag.*
- *The HEPA vacuum is inserted into the waste disposal bag and air is evacuated from the disposal bag. The*

top of the bag is twisted and turned down in 'goose-neck' fashion and sealed with duct tape after removal of the HEPA vacuum.

- *The HEPA vacuum nozzle is sealed with duct tape after removal from the bag.*
- *Decontamination or disposal of equipment, respirator and protective clothing is performed on the polyethyelene drop cloth.*
- *Remove disposal bag from the work area and load into a locking transportation vehicle for transport and disposal at the approved landfill site. Apply a tinted sealing compound to the surfaces in the work area.*

Friable Removal Procedures (Window Caulking):

- *Set up warning signs and caution tape perimeter around work area.*
- *Lay down 6-mil poly drop sheet under windows.*
- *Wet caulking/putty.*
- *Remove putty using scraping tools and wire brushes; or remove windows intact and double-wrap.*
- *Continuously double-bag debris on drop sheet into 6-mil poly disposal bags.*
- *Final detailing with HEPA vacuum, wire brushes and wet wiping with clean cotton rags or sponges.*
- *Spray penetrating encapsulant lockdown on piping using a Hudson-type Sprayer.*
- *Roll-up drop sheet and place in 6-mil poly disposal bag.*
- *Dismantle warning signs and caution tape perimeter.*

Project-Specific Notes:

- Power and water are available.
- All work must be closely coordinated with the site contacts.
- All work will be conducted during daylight hours, M-F, weekend work is not anticipated.
- All communications regarding abatement activity must go through Owner's Representatives, EMR, Inc.
- Glovebag procedures on pipe insulation and mudded fittings removal. Abatement contractor is expected to replace removed pipe insulation with fiberglass pipe insulation on vertical risers and horizontal runs and hard shell plastic fittings for removed mudded fittings.
- Sequence of abatement assumes building is vacant. Abatement will occur by floor starting with Basement and moving up, finishing with the 1st floor.
- Per the State of Minnesota Department of Health regulations, 2000 liters of air must be drawn through for clearance air samples. Five clearance air samples will be collected for each removal area.

2. Contractor shall comply with all federal, state, and local notification requirements.

3. The quantity of material to be removed is to be verified by the contractor.

4. All pre-cleaning shall be conducted prior to setting up containment barriers. Pre-cleaning shall consist of HEPA vacuuming and wet wiping all surfaces.

5. Contractor shall conduct removal procedures in a "state-of-the-art manner." All asbestos containing materials and asbestos-contaminated debris as listed above shall be removed from the work areas and properly disposed of as asbestos-containing material.

6. Owner Representative will be on-site to oversee project to insure compliance with specification and regulations during removal activity.

7. Air monitoring is required for this project and will be provided by the owner's representative. No work shall be conducted without the owner's representative present on-site. Air monitoring will consist of area, clearance and contractor personal samples. The contractor will give the owner's representative personal

samples that will be read on a daily basis using the NIOSH 7400 method. Per the State of Minnesota Department of Health regulations, 2000 liters of air must be drawn through for clearance air samples. Five clearance air samples will be collected for each removal area.

8. Make sure all signs and project barriers are maintained throughout the duration of the project.

9. Contractor shall only proceed in work areas as scheduled and/or authorized by Owner and Owner's Representative. Changes in the work schedule shall be made by written communication.

10. The contractor will be responsible for covering and/or removing equipment required to conduct removal activity. The contractor shall work closely with the building owner's representative to minimize work disruptions.

Remove all asbestos materials by the methods listed above following the state-of-the-art procedures of the asbestos industry (see Sections 01013, 01560, 01561, 01526, 01527). All asbestos-containing and/or contaminated materials shall be properly removed and disposed of as asbestos waste.

PART 3 – SCHEDULES

There will be two phases for this project, at the bringing of all phases in this project.

PART 4—DISPOSAL

Disposal of all asbestos containing material shall be disposed at a regulated asbestos landfill designated as a licensed asbestos disposal site for all asbestos containing material removed under these specifications. All asbestos waste must be manifested to the licensed asbestos landfill and waste disposal records shall be a part of final reports submitted to EMR, Inc.

PART 5 – PROJECT MONITORING AND AIR MONITORING HOURS

The Owner Representative will provide third-party air monitoring services. Coordinate project activities with the Owner's Representative to facilitate air monitoring services. Air monitoring for this project shall include air sampling and monitoring of pre-work activities, work areas during project execution, and work area final air clearance testing. The owner's representative will provide for air monitoring of project personnel and provide results to the contractor on a daily basis. No abatement work activity shall be allowed without air monitoring being conducted. The Owner's Representative will conduct the air sampling and monitoring during all hours that the Contractor's personnel are on the project site, during pre-abatement setup, abatement activities, final clearance and tear down. The daily project air sampling will be the responsibility of the air monitoring technician on a per shift basis.

The Owner's Representative has authority over daily scheduling and progression of work through completion of project. The Contractor's work crew shall work shifts as necessary on the project site to complete the project on the prescribed time schedule. The Contractor shall provide the Owner's Representative with advance notice of anticipated work schedule.

PCM sampling and on-site analysis will be utilized for the air monitoring of this project, unless otherwise directed by the state regulatory agency. Per the State of Minnesota Department of Health regulations, 2000 liters of air must be drawn through for clearance air samples. Five clearance air samples will be collected for each removal area.

END OF SECTION 01010

SECTION 01013 – SUMMARY OF WORK — Asbestos ABATEMENT

PART 1 – GENERAL

Related documents:

Drawings, general provisions of the Contract, including Supplementary Conditions, and other Division-1 Specification sections, apply to work of this section.

Project/work identification:

General: Project name is Asbestos Removal Project, VA Medical Center, Building 4, St. Cloud, Minnesota, Project # 9345.001, asbestos floor tile and mastic, pipe insulation, window/window caulking, and fire door abatement as shown on Contract Documents prepared by Owner's asbestos abatement design representative, EMR, Inc., Minneapolis, Minnesota Project Specifications.

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

Applicable codes and regulations
Minnesota Control Program Regulations
Notices and permits
Existing site conditions and restrictions on the use of the site
Work performed prior to work under this Contract
Work to be performed subsequent to work under this Contract
EMR, Inc. — Asbestos Abatement — General Specifications

The work includes removal of all listed ACM and disposal of all asbestos materials according to the following specifications in the sequence indicated.

General and Administrative Requirements: are set forth in the following specification sections:

01010 — Schedule of Work
01013 — Summary of Work
01043 — Project Coordination
01091 — Definitions and Standards
01340 — Shop drawings, Product data and Samples
01313 — Schedules and Reports
01632 — Products Substitutions
01701 — Project Closeout

Abatement Work: requirements are set forth in the following sections, listed here according to the sequence of the work:

Applicable Codes, Asbestos Abatement: sets forth governmental regulations if more stringent and industry standards which are included and incorporated herein by reference and made a part of the specification. This section also sets forth those notices that either must be applied for and received, or which must be given to governmental agencies before start of work.

SPECIAL NOTE: Federal and State asbestos regulations supersede any requirements of these specifications. The contractor's certified supervisor shall be required to have a copy of State regulations and project notice at the project site, as required.

01410 — Test Laboratory Services: describes air monitoring by owner so that the building beyond the work area will remain uncontaminated. Air Monitoring to determine required respiratory protection is the responsibility of the Contractor.

01503 — Temporary Facilities: sets forth the support facilities needed such as electrical and plumbing connections for the decontamination unit.

01513 — Negative Pressure System: A local exhaust system, utilizing HEPA filtration capable of maintaining a negative

pressure inside the work area and a constant air flow from adjacent areas into the work area and exhausting that air outside the work area sets forth the procedures to set up the negative air machines and ventilation of the work area.

01526 — Temporary Enclosures: describes sequence of work for building of an enclosure, control access, and extension of work area.

01527 — Local Area Protection: Preparing a work area for removal using glovebags, mini-enclosure, non-friable removal, and controlled access work environment.

01560 — Worker Protection: This section describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.

01561 — Worker Protection, Repair & Maintenance: Describes the equipment and procedures for protecting workers against asbestos contamination and other workplace hazards in repair, maintenance, glovebag and non-friable asbestos material activities.

01562 — Respiratory Protection: Instruct and train each worker involved in asbestos abatement or maintenance and repair of friable asbestos-containing materials in proper respiratory use and require that each worker always wear a respirator, properly fitted on the face.

01563 — Decontamination Units: explains the setup and operation of the personnel and material decontamination units.

Asbestos Removal Work Procedures: are described in the following specification sections:

02081 — Removal of Asbestos-containing Materials
02084 — Disposal of Asbestos-containing Materials

Decontamination of the Work Area: after completion of abatement work is described in the following sections:

01701 — Project Closeout: details the closeout procedures to end the project once abatement work is complete including final paperwork requirements.

01711 — Project Decontamination: describes the sequence of cleaning and decontamination procedures to be followed during removal of the sheet plastic barriers isolating a work area. Provides for certificates of visual inspection documentation.

01712 — Cleaning and Decontamination Procedures: sets forth procedures to be used on contaminated objects and rooms which are not part of an abatement work area.

01714 — Work Area Clearance: describes the analytical methods used to determine if the work area has been successfully cleaned of contamination.

A. Personnel Submittal

1. The contractor and all workers must be trained and AHERA certified as evidenced by participation and successful completion of a training course, offered by and EPA or State endorsed educational institution. (Submittal of Copies of Certifications — Required — State Government issued Asbestos certifications will satisfy requirements of this section).
2. Submit certification to the Owner's Representative indicating that each employee has had instruction on the hazards of asbestos exposure, the use and fitting of respirators, protective dress, use of showers, entry and exit from all work areas, and on all aspects of work procedures and protective measures as specified herein and that each employee understands this information. Use the "Certificate of Worker's Acknowledgment" located at the end of this section.
3. Submit evidence of required physical examinations.

B. Respiratory Protection Systems

1. The Contractor will provide all his personnel, including workers, supervisors, and management personnel respiratory protection equipment. The equipment provided shall be approved by NIOSH and accepted by OSHA for the use in atmospheres containing asbestos fibers. The contractor shall only allow those individuals that are licensed by the State and carrying an active state approved certification card and properly suited in protective clothing and respiratory protection as approved by the contractor to enter the project area.

2. Quantitative or qualitative fit tests and training is a requirement for the use of on site respiratory equipment.

3. The table RS-PF-I shall be utilized to determine the level of respiratory protection that shall be utilized during this project. At any time the maximum airborne fiber concentration outside the respirator is exceeded the next level of protection shall be required to be utilized immediately.

Required Minimum Respirator Selection for This Project

TABLE RS - PF - I

Respirator Selection	Protection Factor	Airborne fiber concentration outside respirator
High-efficiency cartridge filter type (half face)	**10**	**0.01 to 0.1 fiber/cc**
High-efficiency cartridge filter type (full face)	50	0.1 to 0.5 fibers/cc
Powered-air purifying (PAPR) (tight fit half or full face)	1,000	0.5 to 5.0 fiber/cc
Type C continuous flow supplied air (half mask)	50	0.01 to 0.1 fiber/cc
Type C continuous flow supplied air (full face)	1,000	0.5 to 5.0 fiber/cc
Pressure-demand Type C supplied air (full face respirator)	1,000	0.5 to 10.0 fiber/cc
Pressure-demand Type C supplied air with SCBA	10,000	0.5 to 10.0 fibers/cc

4. The type of respiratory protection utilized each day of work on this project shall be so noted on the daily logs.

5. Maintain an average airborne fiber count in the work area of less that 0.5 fiber/cc. If the fiber counts rise above this figure for any sample taken, revise work procedures to lower fiber counts.

   At any time airborne fiber counts exceed 1.0 fiber/cc for any period of time, *cease all work.* Notify the Owner's Representative immediately. Do not recommence work until authorized by the Owner's Representative of changes in work procedures to lower fiber counts.

6. All personnel will be assigned individual face pieces and corresponding units with unique identification numbers.

7. Individuals will be thoroughly trained in maintenance, repair and decontamination of respirators utilized on this project.

8. All respirators used on this project shall comply with the requirements of Section 01562.

C. Personnel Protection

1. Provide workers with personally issued and marked respiratory equipment approved by NIOSH and accepted by OSHA. All work on this project shall be performed in compliance with the Table RS - PF - I in B - 3 this section.

2. Provide workers with sufficient sets of protective full body clothing (such as headgear, full body coveralls, footwear, etc.). Provide hard hats as required by applicable safety regulations. Reusable type protective clothing and footwear intended for reuse shall be left in the contaminated equipment room until the end of the asbestos abatement work, at which time such items shall be decontaminated and placed in sealed bags for transfer to the next work site. Disposable type protective clothing shall not be allowed to accumulate and shall be bagged and disposed of as asbestos contaminated waste. See Paragraph D-9.

3. Provide authorized visitors with suitable protective clothing, headgear, and footwear as described in Paragraph C-2, whenever they are required to enter the work area.

D. Material and Equipment

1. Deliver all materials in the original package, container, or bundles bearing the name of the manufacturer and the brand names.

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

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

4. Submit manufacture's certification that vacuums, negative air pressure equipment and other local exhaust ventilation equipment conforms to ANSI Z9.2-79 as applicable to this project. Non-certified and/or modified equipment is not acceptable. An automatic shutdown system must be incorporated in the event of leakage of rupture of the HEPA filter or blockage of air due to excess material on the filters.

5. POLYETHYLENE: A minimum 6 mil sheet polyethylene.

   NOTE: Use fire retardant sheeting, if a fire hazard exists and in fire egress areas.

6. TAPE: Capable of sealing joints of adjacent sheets of polyethylene and for attachment of polyethylene sheet to finished or unfinished surfaces and capable of adhering under both dry and wet conditions, including the use of amended water.

7. SURFACTANT: Shall consist of 50% polyethylene ether and 50% of polyoxyethylene Ester, or equivalent, and shall be mixed with water to provide a concentration of one ounce surfactant to 5 gallons water.

8. ENCAPSULANT: For post-removal lock-down treatment, to bind residual fibers on the abated surface and on the polyethylene sheeting of the containment area.

9. DISPOSAL CONTAINERS:

9.1 Impermeable Containers: Suitable to receive and retain asbestos-containing or contaminated materials until disposal at an approved site. The containers shall be labeled in accordance with NIOSH and OSHA regulations. See paragraph D-10. Containers must be both air and water tight and must be resistant to damage and rupture. The containers shall be of two parts: (1) 6 mil polyethylene bags of a size to fit within the drum listed hereafter and capable of being sealed; (2) fiberglass containers with tight fitting lids, and/or heavy walled fiber containers with tight fitting lids. Impermeable containers shall be shipped to the dump site in a fully enclosed locking vehicle.

   NOTE: Asbestos Waste Containers shall have the generator's name and facility location clearly marked on the outside of each container.

9.2 Disposal Bags: Suitable to receive and retain any asbestos-containing or contaminated materials until disposal at an approved site. The bags must be air tight and water tight made of 6 mil polyethylene and/or asbestos materials may be wrapped in two separate layers of 6 mil polyethylene sheeting. Two disposal bags are required for disposal with asbestos waste material placed in one disposal bag and then placed into a second bag. Both bags must remain air and water tight. Disposal bags shall be labeled in accordance with OSHA and NIOSH regulations and transported to an approved dump site in a fully enclosed locking vehicle.

   NOTE: Asbestos Waste Containers shall have the generator's name and facility location clearly marked on the outside of each container.

10. WARNING LABELS and SIGNS: Signs as required by OSHA regulations to demarcate a work area should read as follows:

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

Recommended label for waste containers:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST

9

RQ WASTE ASBESTOS
9-NA2212-111

CANCER AND LUNG DISEASE HAZARD

NOTE: Labels shall be printed in large bold letters on a contrasting background

Recommended label for transportation vehicle:

DANGER
ASBESTOS DUST HAZARD
CANCER AND LUNG DISEASE HAZARD

ASBESTOS, NA2212, RQ

11. Other Materials: Provide all other materials such as lumber, nails, and hardware which may be required to construct and dismantle the contamination area and the barriers that isolate the work area.

E. Commencement of Work

Asbestos abatement work shall not commence until:

1. Arrangements have been made for proper disposal of all asbestos wastes at an EPA/State approved disposal site. Arrangements must comply with Federal, State and local regulations, transportation arrangements of wastes shall be in compliance with 40 CFR Part 61. The contractor shall notify the State regulatory agency regarding the removal project and the transportation of asbestos waste materials to the approved landfill site.

2. General security and management of the asbestos project has been completed, to include decontamination containment systems in place and parts of the building required to remain in use are effectively segregated and the temporary enclosure in place. Demarcate the asbestos project perimeter by roping off work area perimeter and the placement of appropriate warning signs. Isolation of the buildings ventilation and electrical systems, using appropriate methods.

3. Tools, equipment, material and asbestos waste containers are on hand.

4. Arrangements have been made for building security.

5. All other preparatory steps have been taken and applicable notices posted and permits are obtained.

6. Owner's Consultant and/or Testing Laboratory have been notified and are on the project site.

7. Contractor has assigned a certified project supervisor, to manage the asbestos project, comply with work safety requirements, control access and who is on project site. The Project Supervisor shall have daily logs responsibility at the work site, and the project supervisor shall have his current certification posted at the project site.

8. All pre-work submittal have been approved by the Owner's Representative.

9. A project work site safety plan has been prepared by the contractor and approved by the Owner's Representative and is available at the work site, including all MSDS sheets of any chemicals to be used at the work site.

10. Perform any other pre-work activity that may be required by federal, state and/or local agencies to prepare site for an asbestos project. Comply with Work Practices for General Security and Management of Asbestos Projects as a state-of-the-art removal project.

11. Conduct asbestos abatement following the state-of-the-art asbestos removal procedures.

F. Preparation of Work Area and Pre-Work Area Cleaning

The work area will be prepared and cleaned using the following procedures:

a-1) Pre-clean INTERIOR work areas as follows:

1. Remove all personnel from the area not directly involved in the cleaning operations; insure that all the proceeding steps of section E this section have been completed.
2. Wear an approved respirator and disposable suits for pre-cleaning operation, use dry decontamination methods, until decontamination chambers are completed.
3. Pre-clean the work area using HEPA vacuum device, disposable mops, wipes and/or cloths by wet cleaning method. A combination of wet cleaning and vacuuming shall be used to clean all surfaces within the work area. All irregular surfaces shall be cleaned using the HEPA vacuum.
4. All items that are moveable and subject to contamination during the removal, shall be cleaned and removed from the work area. (If storage of movable items is in an area with Friable ACM, re-clean items prior to returning to the cleaned work area.)
5. Dispose of all debris, mop heads, cloths, filters and disposable clothing as asbestos waste material, in accordance with asbestos disposal procedures.
6. Copies of Transportation Manifest and Disposal Receipts from the certified landfill are required to be turned into the Owner's Representative.

a-2) Pre-Clean EXTERIOR work areas as follows:

1. Remove all personnel from the area not directly involved in the cleaning operations; insure that all the preceding steps of section E this section have been completed.

2. Wear an approved respirator and disposable suits for pre-cleaning operation; use dry decontamination methods, until decontamination chambers are completed.

3. Pre-clean the work area by picking up any loose debris on ground prior to laying down poly drop sheets.

4. Dispose of all debris, filters and disposable clothing as asbestos waste material, in accordance with asbestos disposal procedures.

5. Copies of Transportation Manifest and Disposal Receipts from the certified landfill are required to be turned into the Owner's Representative.

b-1) Isolate the INTERIOR work area as follows:

1. Shut down and lock out heating and ventilation system serving the work area and insure that airborne contamination from the work area cannot enter the ventilation systems.
2. Shut down and lock out electrical systems serving the work areas and implement measures to minimize electrical hazards such as use of ground fault interrupters. Critically seal all electrical outlets in the work area. If there are no sources of electrical power outside of the work area (i.e. one-room buildings), then the contractor must provide adequate generator power to operate all abatement equipment and the Owner's Representative's air monitoring pumps as necessary.
3. Install critical barriers seals at all doorways, windows, ventilation system openings and other openings using 6 mil thick polyethylene sheeting or reinforced sheeting if high pressure water jets are used. Seal all seams, conduit and duct work passing through the work area.
4. Install a control curtain in the doorway between the work area and the decontamination facility.
5. Restrict access by establishing a temporary work area perimeter in the asbestos removal area in the building to asbestos project personnel during the course of this project.

b-2) Isolate the EXTERIOR work area as follows:

1. For open-air abatement, place warning tape around the perimeter of the abatement work area.
2. Restrict access to the work area by authorized personnel and wearing of all of the required personal protective equipment, including HEPA respirators.
3. Install critical barriers seals at all doorways, windows, ventilation system openings and other openings using 6 mil thick polyethylene sheeting as needed.
4. If friable ACM is specified for removal, erect a tent-like poly sheeting enclosure on the outside of the structure and follow

isolation procedures outlined in "b-1" above.

5. Shut down and lock out electrical systems serving the work areas, and implement measures to minimize electrical hazards such as use of ground fault interrupters. Critically seal all electrical outlets in the work area. If there are no sources of electrical power outside of the work area, the contractor must provide adequate generator power to operate all abatement equipment and the Owner's Representative's air monitoring pumps, as necessary.

c-1) Prepare a work area enclosure as follows (Full Negative Pressure Enclosure):

1. Complete all pre-cleaning and isolation procedures. Cover all non moveable furnishings, equipment and fixtures remaining in the work area, after pre-cleaning procedure, with one or more layers of 6 mil thick polyethylene sheeting.
2. Refer to drawing (see drawings at back of specifications) for building asbestos locations and building layout set up of minimum 3-stage Decontamination Unit (clean room, shower and equipment room; more chambers may be required per specific state regulations), entrance hallway, critical barrier seals, load out area and negative air set-up.
3. Walls, ceiling and floors will be covered with a minimum of two layers of 6 mil thick polyethylene sheeting, unless concrete is to be cleaned and encapsulated in cleaning procedures, to form an air tight seal. Securely affix sheeting to ensure that it will remain in position throughout the length of the project. Floor sheeting shall extend up the wall at least 12 inches. Place wall sheeting to the interior of the work area, so that moisture is shed to the interior of the work area, and extends to the floor. An additional 6 mil thick layer of sheeting shall be placed on the floor area to be used as a drop cloth during the removal phase. Repair any tears or leaks noted in the protective sheeting immediately.
4. Install or construct the personnel and equipment decontamination facility at the entry area to the work area. Form an air tight seal between the decontamination facility and the work area. If a separate load out facility is required, build it in the same manner required for the decontamination facility leaving out the shower room.
5. Install only HEPA filter equipped ventilation fans in the work area for discharge of filtered air outside the work area. Pass the negative air exhaust piping through the critical barrier seals and form an air tight seal around the duct penetrating the critical barrier. Insure that the fans will replenish the entire volume of the work area every 15 minutes. Discharge the exhausted air outside the building in an area remote from the air intake, and not in an occupied area.
6. Start the negative air equipment. A negative pressure shall be maintained continuously (24 hours/day) in the area from the start of work until the area has been decontaminated and certified clean by on site testing personnel and the filtration fans have run for a 24 hour period following final clean up procedures or as required by state regulations. Ensure –0.02-inches of water pressure is maintained inside containment using a manometer. Smoke test the containment prior to each work day to visibly confirm air flow moves from outside into the containment and toward the negative air machines.

c-2) Prepare a work area enclosure as follows (Glovebag Removal):

1. Complete all pre-cleaning and isolation procedures. Cover all non-moveable furnishings, equipment and fixtures remaining in the work area, after pre-cleaning procedure, with one or more layers of 6 mil thick polyethylene sheeting.
2. Refer to drawing (see drawings at back of specifications) for building asbestos locations and building layout set up of 3-stage decontamination unit, entrance hallway, critical barrier seals, load out area and negative air set-up.
3. Floors underneath the work area will be covered with a minimum of one layer of 6 mil thick polyethylene drop sheeting, unless concrete to be cleaned and encapsulated in cleaning procedures, to form an air tight seal. Securely affix sheeting to ensure that it will remain in position throughout the length of the project. Repair any tears or leaks noted in the protective sheeting immediately.
4. Install or construct the personnel and equipment decontamination facility at the entry area to the work area. Form an air tight seal between the decontamination facility and the work area. If a separate load out facility is required, built it in the same manner required for the decontamination facility leaving out the shower room.
5. Install only HEPA filter equipped ventilation fans in the work area for discharge of filtered air outside the work area. Pass the negative air exhaust piping through the critical barrier seals and form an air tight seal around the duct penetrating the critical barrier. Insure that the fans will replenish the entire volume of the work area every 15 minutes. Discharge the exhausted air outside the building in an area remote from the air intake, and not in an occupied area.
6. Start the negative air equipment. A negative pressure shall be maintained continuously (24 hours/day) from the start of work in the area until the area has been decontaminated and certified clean by on site testing personnel and the filtration fans have run for a 24 hour period following final clean up procedures or as required by state regulations . Smoke test the containment prior to each work day to visibly confirm air flow moves from outside into the containment and toward the negative air machines.

c-3) Prepare a work area enclosure as follows (Critical Seals only-Interior Non-Friable ACM):

1. Complete all pre-cleaning and isolation procedures. Cover all non-moveable furnishings, equipment and fixtures remaining in the work area, after pre-cleaning procedure, with one or more layers of 6 mil thick polyethylene sheeting.
2. Refer to drawing (see drawings at back of specifications) for building asbestos locations and building layout set up of a

minimum 2-Stage Decontamination Unit (clean room and equipment room) , entrance hallway, critical barrier seals, load out area and negative air set-up.

3. Install or construct the personnel and equipment decontamination facility at the entry area to the work area. Form an air tight seal between the decontamination facility and the work area. If a separate load out facility is required, build it in the same manner required for the decontamination facility leaving out the shower room.
4. Install only HEPA filter equipped ventilation fans in the work area for discharge of filtered air outside the work area. Pass the negative air exhaust piping through the critical barrier seals and form an air tight seal around the duct penetrating the critical barrier. Ensure that the fans will replenish the entire volume of the work area every 15 minutes. Discharge the exhausted air outside the building in an area remote from the air intake, and not in an occupied area.
5. Start the negative air equipment. A negative pressure shall be maintained continuously (24 hours/day) in the area from the start of work until the area has been decontaminated and certified clean by on site testing personnel and the filtration fans have run for a 24 hour period following final clean up procedures or as required by state regulations.

c-4) Prepare a work area enclosure as follows (Mini-containment):

1. Complete all pre-cleaning and isolation procedures. Cover all non-moveable furnishings, equipment and fixtures remaining in the work area, after pre-cleaning procedure, with one or more layers of 6 mil thick polyethylene sheeting.
2. Refer to drawing (see drawings at back of specifications) for building asbestos locations and set up of minimum 4 feet x 4 feet mini-containment. Mini-containment must be constructed of rigid framework (wood, steel or PVC) and may be duct-taped to the floor or constructed with a flexible rubber base to allow mobile operations (such as removal of floor tile from continuously operated 24 hour/day, 7 days/week areas)
3. Construct a remote personnel and equipment decontamination facility near the entry area to the work area. Install double-flaps on one side of the mini-containment for access.
4. Install only HEPA filter-equipped ventilation fans in the work area for discharge of filtered air outside the work area. Utilize a small negative air machine with HEPA-filtration or a HEPA-vacuum for ventilation. Pass the negative air exhaust piping through the critical barrier seals and form an air tight seal around the duct penetrating the critical barrier. Discharge the exhausted air outside the building in an area remote from the air intake, and not in an occupied area.
5. Start the negative air equipment. A negative pressure shall be maintained continuously (24 hours/day) from the start of work in the area until the area has been decontaminated and certified clean by on site testing personnel and the filtration fans have run for a 24 hour period following final clean up procedures or as required by state regulations. Smoke test the mini-containment prior to each work day to visibly confirm air flow moves from outside into the containment and toward the negative air machines.

c-5) Prepare a work area enclosure as follows (Exterior Areas):

1. Refer to drawings for building asbestos locations. If materials specified for removal are non-friable, no work area enclosure is required. If friable materials are being removed, erect a tent-like enclosure on the exterior of the building to enclose the friable materials.
2. Construct a remote 2-stage decontamination unit (clean and equipment rooms) for personnel and equipment decontamination near the entry area to the work area.
3. If conducting removal of non-friable materials, no HEPA-filter equipped ventilation is required. On exterior removals of friable materials within a tent-like enclosure, install only HEPA filter-equipped ventilation fans in the work area for discharge of filtered air outside the work area. Utilize a small negative air machine with HEPA-filtration or a HEPA-vacuum for ventilation. Pass the negative air exhaust piping through the critical barrier seals and form an air tight seal around the duct penetrating the critical barrier.
4. Start the negative air equipment. A negative pressure shall be maintained continuously (24 hours/day) in the area from the start of work until the area has been decontaminated and certified clean by on site testing personnel and the filtration fans have run for a 24 hour period following final clean up procedures or as required by state regulations. Smoke test the tent-like enclosure prior to each work day to visibly confirm air flow moves from outside into the containment and toward the negative air machines.

G. Project Notes and Material-Specific Procedures

VA Medical Center
Building 4
St. Cloud, Minnesota
August/September 2010

1. The following asbestos-containing materials are known to be present at the work site and are included in the scope of this project. If any other materials are found which are suspected of containing asbestos, notify immediately the Owner's Representative. All of the identified asbestos-containing materials and debris are to be removed.

St. Cloud, MN –VAMC, Building 8

Basement:

- Glovebag removal any loose asbestos containing debris found on removed ceiling tiles for the installation of new fire department connection piping shown in Sheet Vol. 1 FA-00. Replace ceiling tiles as needed.

St. Cloud, MN –VAMC, Building New Kitchen Building (NKB)

Existing Tunnels:

- Glovebag removal of approximately 1,200 L.F. of pipe insulation from the tunnels as shown in Sheet Vol. 1 MH-40.
  Sample #48 (40% Chrysotile-4 inch pipe insulation; 1993)

- Removal of approximately 340 C.F. of soil containing asbestos from the tunnels as shown in Sheet Vol. 1 AS-08.

St. Cloud, MN –VAMC, Building 4

First (1st) Floor:

- Remove approximately 75 S.F. of ACM 12-inch floor tile and mastic under carpeting from Office 126A, Storage 125, and Office 124 (Sheet Vol. 2 AS-09).
  Sample #11 (Yellow with Aqua 12-inch floor tile-5% Chysotile; sampled in 1993)
  Sample #12 (Mastic under 12-inch Floor tile-10% Chrysotile; sampled in 1993)

- Glovebag removal of approximately 30 L.F. of vertical pipe insulation from 124 as shown in Sheet Vol. 2 AS-09.
  Sample #48 (40% Chrysotile-4 inch pipe insulation; 1993)

- Remove approximately one (1) fire door from Entry 123A as shown in Sheet Vol. 2 AS-09.
  Sample #61 (10-30% Chrysotile; 2004)

Second (2st) Floor:

- Remove approximately 32 S.F. of ACM 12-inch floor tile and mastic under carpeting from Closet 223A, (Sheet Vol. 2 AS-08).
  Sample #11 (Yellow with Aqua 12-inch floor tile-5% Chysotile; sampled in 1993)
  Sample #12 (Mastic under 12-inch Floor tile-10% Chrysotile; sampled in 1993)

Attic:

- Remove 2 exterior windows with ACM window caulking from attic as shown in Sheet Vol. 2 AS-08.
  Sample #58 (5% Chrysotile)

Non-Friable Removal Procedures: (ACM 12-inch floor tile with underlying ACM mastic, non-ACM 12-inch floor tile with underlying ACM mastic, ACM 9-inch floor tile with underlying ACM mastic; and remnant ACM flooring mastic under carpeting)

- *Set up Critical Barriers (6 mil poly over all doorways, windows, vents and other openings) including any critical barrier walls.*
- *Construct a 2-Stage Decontamination Unit (Clean Room and Equipment Room) and on opposite side of negative air machine so that there is a continuous negative air flow across the entire removal area.*
- *Pre-Clean Surfaces*
- *Cover any Fixed Objects*
- *Establish Negative Air Pressure*
- *Remove 12-inch Floor Tile using Manual Removal Procedures**
  - *Manual Scraping with Hand Tools*
  - *Continue Wet Methods while Double-bagging Floor Tile Material in 6-mil Poly Disposal Bags*
  - *Lay down 1' wide piece of 6 mil poly sheeting at the base of the floor for a splash guard.*
  - *Apply low odor, chemical mastic remover to residual mastic on concrete. Post MSDS sheets of chemical mastic remover used.*
  - *Remove mastic remover and mastic using clean cotton rags and/or sponges.*

**Ensure that floor tile is removed relatively intact and not pulverized to allow non-friable removal procedures in the State of MN.*

Note that mastics under carpeting are floor tile or remnant floor tile mastics. Assume that carpeting may go out as general construction debris, unless the carpeting pulls up floor tile based on any localized deteriorated condition of floor tile.

Friable Removal Procedures: (glove bag procedures):

- *Construct Full Negative Enclosure Containment in each functional space.*
- *Construct a 5-Stage Decontamination Unit (Clean Room, Air Lock, Shower, Air Lock, and Equipment Room)and on opposite side of negative air machine so that there is a continuous negative air flow across the entire removal area. Suggested area is outside Office Door to Exterior of building.*
- *Remove the asbestos materials listed above by the methods approved by the OSHA. The thermal system insulation material shall be considered asbestos-containing material using glove bag procedures, removal shall be completed with the use of wire brushes and/or amended water as necessary to insure that all asbestos is removed from the metal surface of the pipes and equipment, cleanup visible debris as necessary.*
- *Equipment: glove bag, cutting tools, scrubbing tools, HEPA vacuum, Danger signs, Air monitoring equipment,6 mil polyethylene sheeting, waste disposal bags or containers, smoke tubes and smoke testing bulb, duct tape,water sprayer, amended water, and damp cloths for wet wiping.*
- *Any loose dust on the pipe is wet wiped and or HEPA-vacuumed.*
- *Floor area below the area to be glove bagged is wet wiped and/or HEPA vacuumed.*
- *Duct tape is placed around the insulation at the sites where it is anticipated the glove bag will be attached. The glove bag sides are slit using the cutting tool.*
- *A small piece of duct tape is attached directly below the end of these cuts to prevent the cuts from running as the weight of water and insulation is placed in the bottom of the bag.*
- *Tools are placed in the glove bag's tool pouch and the two sides of each of the side cuts are brought up around the pipe.*
- *The glove bag is then sealed around the pipe with duct tape.*
- *The water sprayer is now attached in the glove bag by inserting the wand and sealing with duct tape.*
- *Next, insert the HEPA vacuum nozzle and seal with duct tape.*
- *Not necessary to smoke test if in critical barrier/negative pressure area.*
- *Thoroughly soak the insulation using a water sprayer containing amended water.*
- *Cut the insulation for removal.*
- *The pipe is washed down with water and the scrubbing tool used to remove any remaining small pieces of material.*
- *A damp cloth is now used to remove any remaining dust.*
- *A bridging encapsulant is now applied to the exposed ends of the remaining insulation (if applicable).*
- *The tools are removed from the bag.*
- *The HEPA vacuum is inserted into the bag (if not done previously) and turned on.*
- *The glove bag is twisted in the middle, the bag is removed and placed in a waste disposal bag.*
- *The HEPA vacuum is inserted into the waste disposal bag and air is evacuated from the disposal bag. The top of the bag is twisted and turned down in 'goose-neck' fashion and sealed with duct tape after removal of the HEPA vacuum.*
- *The HEPA vacuum nozzle is sealed with duct tape after removal from the bag.*
- *Decontamination or disposal of equipment, respirator and protective clothing is performed on the polyethyelene drop cloth.*
- *Remove disposal bag from the work area and load into a locking transportation vehicle for transport and disposal at the approved landfill site. Apply a tinted sealing compound to the surfaces in the work area.*

Friable Removal Procedures (Window Caulking):

- *Set up warning signs and caution tape perimeter around work area.*
- *Lay down 6-mil poly drop sheet under windows.*
- *Wet caulking/putty.*
- *Remove putty using scraping tools and wire brushes; or remove windows intact and double-wrap.*
- *Continuously double-bag debris on drop sheet into 6-mil poly disposal bags.*
- *Final detailing with HEPA vacuum, wire brushes and wet wiping with clean cotton rags or sponges.*
- *Spray penetrating encapsulant lockdown on piping using a Hudson-type Sprayer.*
- *Roll-up drop sheet and place in 6-mil poly disposal bag.*
- *Dismantle warning signs and caution tape perimeter.*

Project-Specific Notes:

- Power and water are available.
- All work must be closely coordinated with the site contacts.
- All work will be conducted during daylight hours, M-F, weekend work is not anticipated.
- All communications regarding abatement activity must go through Owner's Representatives, EMR, Inc.
- Glovebag procedures on pipe insulation and mudded fittings removal. Abatement contractor is expected to replace removed pipe insulation with fiberglass pipe insulation on vertical risers and horizontal runs and hard shell plastic fittings for removed mudded fittings.
- Sequence of abatement assumes building is vacant. Abatement will occur by floor starting with Basement

and moving up, finishing with the 1st floor.
- Per the State of Minnesota Department of Health regulations, 2000 liters of air must be drawn through for clearance air samples. Five clearance air samples will be collected for each removal area.

2. Contractor shall comply with all federal, state, and local notification requirements.

3. The quantity of material to be removed is to be verified by the contractor.

4. All pre-cleaning shall be conducted prior to setting up containment barriers. Pre-cleaning shall consist of HEPA vacuuming and wet wiping all surfaces.

5. Contractor shall conduct removal procedures in a "state-of-the-art manner." All asbestos containing materials and asbestos-contaminated debris as listed above shall be removed from the work areas and properly disposed of as asbestos-containing material.

6. Owner Representative will be on-site to oversee project to insure compliance with specification and regulations during removal activity.

7. Air monitoring is required for this project and will be provided by the owner's representative. No work shall be conducted without the owner's representative present on-site. Air monitoring will consist of area, clearance and contractor personal samples. The contractor will give the owner's representative personal samples that will be read on a daily basis using the NIOSH 7400 method. Per the State of Minnesota Department of Health regulations, 2000 liters of air must be drawn through for clearance air samples. Five clearance air samples will be collected for each removal area.

8. Make sure all signs and project barriers are maintained throughout the duration of the project.

9. Contractor shall only proceed in work areas as scheduled and/or authorized by Owner and Owner's Representative. Changes in the work schedule shall be made by written communication.

10. The contractor will be responsible for covering and/or removing equipment required to conduct removal activity. The contractor shall work closely with the building owner's representative to minimize work disruptions.

Remove all asbestos materials by the methods listed above following the state-of-the-art procedures of the asbestos industry (see Sections 01013, 01560, 01561, 01526, 01527). All asbestos-containing and/or contaminated materials shall be properly removed and disposed of as asbestos waste.

H. Clean-up and Final Air Clearance

Final project cleaning and Air Clearance will be performed as follows:

1. After the work area is visibly clean and dry, begin the final work area cleaning. Remove the polyethylene sheeting from everything and insure that all surfaces are clean and free of any visible debris.
2. Clean all previously covered surfaces of debris.
3. Treat all removed plastic sheeting, waste and debris as ACM and dispose of accordingly.
4. It shall be the contractor's responsibility to replace or repair to the Owner's satisfaction, prior to close out of this project, all items identified as missing or damaged by the Contractor and not proven otherwise
5. Air clearance Per the State of Minnesota Department of Health regulations, 2000 liters of air must be drawn through for clearance air samples. Five clearance air samples will be collected for each removal area.

I. References and Regulations

Compliance with all applicable Federal, State and Local regulations and use of the best available technology, procedures and methods for preparation, execution, clean-up, disposal and safety are absolutely required. This compliance is the sole responsibility of the removal Contractor.

The intent of the specifications is to accurately describe the work that is to be performed under this contract. The Owner and Owner's Representative assume no responsibility for the proper and safe execution of the work.

J. Disposal

Disposal of all asbestos containing material shall be disposed at a regulated asbestos landfill designated as a licensed asbestos disposal site for all asbestos containing material removed under these specifications. All asbestos waste must be manifested to the licensed asbestos landfill and waste disposal records shall be a part of final reports submitted to EMR.

K. Air Monitoring and Testing

The owner representative will conduct all work area monitoring and air sampling, laboratory analysis and reading of the contractor's personnel air monitoring equipment samples, along with final air clean-up testing for Clearance Certificate. A complete record, certified by the testing laboratory, of all air monitoring tests and results will be furnished to the Owner and the Contractor.

Determination of the fiber levels will be made using the NIOSH 7400 (PCM) method, unless additional requirements are directed by the State. Per the State of Minnesota Department of Health regulations, 2000 liters of air must be drawn through for clearance air samples. Five clearance air samples will be collected for each removal area.

END OF SECTION 01013

Certification of Visual Inspection

Description of Work Area:

Contractor Certificate of Visual Inspection:

In accordance with Section 01711 "Project Decontamination" the contractor hereby certifies that he has visually inspected the above work area (all surfaces including pipes, beams, ledges, walls, ceiling, and floor, decontamination unit, sheet plastic, etc.) and has found no dust, debris or residue.

By (Signature): _____ Company: _____

(Print Name): _____ Date: _____

(Print Title): _____

Project Site Manager Certification:

The Project Site Manager and/or Air Monitoring Service Representative hereby certifies that he has accompanied the contractor on his visual inspection of the described work area and verifies that his inspection has been thorough and to the best of his/her knowledge and belief, the contractor's certification above is true and honest.

By (Signature):_____ Company: _____

(Print Name): _____ Date: _____

(Print Title): _____

END OF SECTION 01013

Section 01014 – Submittals: Asbestos Abatement

Part I — General

Related Documents:

Drawings, general provisions of Contract, including General and Supplementary Conditions and other Division-1 specifications sections, apply to work of this section.

Description of Requirements:

General: This section sets forth the required minimum project submittals referred to in other Division-1 sections and other documents. Such submittals include, but are not limited to the following:

Permits
Insurance Certificates
Inspection and Test Reports
Shop Drawings
Product Data
Samples
Other — Miscellaneous Work — Related Requirements

The submittals are required to amplify, expand and coordinate the information contained in the contract document.

Submittal Procedure:

General: Refer to other Division-1 sections and other contact documents for specific procedural requirements of all submittals.

Coordination: Coordinate the preparation and processing of submittals with the performance of the work. Prepare and transmit each submittal to the Owner's Representative sufficiently in advance of the scheduled performance of related work so that processing will not be delayed by the Owner's Representative's need to review submittals. Pre-work submittals will be required for approval to begin work and final work submittals will be required to release final payment.

Listing: At the end of this section is a listing of the principal submittals required for the work. This listing is not necessarily complete, nor does the listing reflect the significance of each submittal requirement. The listing is included only for the convenience of users of the contract documents.

Submittals: Except as indicated in the individual sections of these specifications or contract documents, submit 3 copies of each required submittal to the Owner's Representative. This includes the Pre-Work Submittals (pp. 27-30), Submittals During Abatement (pp. 30-31), and Submittals at Completion of Abatement (p. 31).

END OF SECTION 01014

Section 01043 — Project coordination

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

Description of work:

Minimum administrative and supervisory requirements necessary for coordination of work on the project site include but are not limited to the following:

Administrative and supervisory personnel.
Special reports.
Notifications to other entities at job site.

Administrative and supervisory personnel:

General Superintendent: provide a full-time General Superintendent who is experienced in administration and supervision of asbestos abatement projects including work practices, protective measures for building and personnel, disposal procedures, etc. This person is the Competent Person as required by OSHA in 29 CFR 1926 for the Contractor and is the Contractor's representative responsible for compliance with all applicable federal, state, and local regulations, particularly those relating to asbestos-containing materials. This person must have completed a course at an EPA Training Center of equivalent certificate course in asbestos abatement procedures, have had a minimum of two (2) years on-the-job training and meet any additional requirements set forth in 29 CFR 1926 for a Competent Person.

All personnel shall also meet the minimum experience and qualifications listed above under “evidence of qualifications” (p. 29) and “information on personnel” (pp. 29-30) above.

Special reports:

General: Except as otherwise indicated, submit special reports directly to Owner within one day of occurrence requiring special report, with copy to Owner’s Representative and others affected by occurrence.

Reporting Unusual Events: When an event of unusual and significant nature occurs at site (examples: failure of negative pressure system, rupture of temporary enclosures), prepare and submit a special report listing chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. When such events are known or predictable in advance, advise owner in advance at earliest possible date.

Reporting Accidents: Prepare and submit reports of significant accidents, at site and anywhere else work is in progress. Record and document data and actions; comply with industry standards. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury.

Submittals:

Before the Start of Work: Submit all of the requirements of Section 01014 and an emergency contingency plan to the Owner's Representative for review. No work shall begin until these submittal are returned with Owner's Representative's action stamp indicating that the submittal is returned for unrestricted use or final-but-restricted use.

Contingency Plan: Prepare a contingency plan for emergencies including fire, accident, power failure, negative air system failure, supplied air system failure, or any other event that may require modification or abridgement of decontamination or work area isolation procedures. Include in plan specific procedures for decontamination or work area isolation. Note that nothing in this specification should impede safe exiting or providing of adequate medical attention in the event of an emergency.

Post: In clean room of personnel decontamination unit telephone numbers and locations of emergency services including but not limited to fire, ambulance, doctor, hospital, police, power company, and telephone company.

Notifications:

Notify the Owner's Representative's designee and building owner's staff at the job site of the nature of the asbestos abatement activities, location of asbestos-containing materials, requirements relative to asbestos set forth in these specifications and applicable regulations. Provide the building owner's staff representative a copy of the emergency contingency plan.

END OF SECTION 01043

Section 01046 — Cutting and patching: asbestos abatement

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

Part 2 — Products

Provide local exhaust ventilation systems that comply with ANSI 29.2-1971.

Part 3 — Execution

Before beginning work of this section, comply with:

Section 01527 — Local Area Protection
Section 01560 — Worker Protection
Section 01562 — Respiratory Protection

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

Provide adequate local exhaust to capture fibers produced by cutting, drilling, or abrading by means of an approved High Efficiency Particulate Air (HEPA) filter vacuum. Use specialized equipment such as drills or saws having integral ventilation hoods that are connected to a HEPA vacuum with a flexible hose. Handle and dispose of HEPA filters as contaminated material (See section 02084).

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

Seal edges of asbestos-containing material exposed by cutting, drilling, or abrading, etc. with two (2) coats of an approved penetrating encapsulant applied in accordance with manufacturers' printed instruction for use of the encapsulant as an asbestos coating.

END OF SECTION 01046

Section 01091 — Definitions and standards

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

Definitions:

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

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

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

Directed, Requested, etc.: Where not otherwise explained, terms such as "directed, "requested", "authorized", "selected", "approved", "required," "accepted," and "permitted" mean "directed by Owner’s Representative," "requested by Owner’s Representative," and similar phrases. However, no such implied meaning will be interpreted to extend Owner’s Representative's responsibility into Contractor's responsibility for construction supervision.

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

Project Site: The term "project site" is defined as the space available to Contractor for performance of the work, either exclusively or in conjunction with others performing other work as part of the project. The extent of project site is shown on the drawings, and may or may not be identical with the description of land upon which the project is to be built.

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

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

Provide: Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.

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

Testing Laboratory: The term "testing laboratory" is defined as an independent entity engaged to perform specific inspections or tests of the work, either at project site or elsewhere; and to report and (if required) interpret results of those inspections or tests.

Owner's Representative: All references to Engineer in the contract documents shall in all cases refer to the Owner's Representative. The Owner's Representative will represent the Owner during construction and until final payment is due. The Owner's Representative will advise and consult with the Owner. The Owner's instructions to the Contractor shall be forwarded through the Owner's Representative.

General Superintendent: is the Contractor's representative at the work site. This person will generally be the Competent person required by OSHA in 29 CFR 1926.

Definitions relative to asbestos abatement:

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

Air Cell: Insulation normally used on pipes and ductwork that is comprised of corrugated cardboard which is frequently comprised of asbestos combined with cellulose or refractory binders.

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

Amended Water: Water to which a surfactant has been added.

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

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

Asbestos-containing Waste Material: Any material that is or is suspected of being or any material contaminated with an asbestos-containing material, which is to be removed from a work area for disposal.

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

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

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

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

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

Demolition: The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operations.

Disposal Bag: 6 mil thick leak-tight plastic bags used for transporting asbestos waste from work and to disposal site. Each is labeled as follows:

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

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

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

Encapsulation: Treatment of asbestos-containing materials, with an encapsulant.

Enclosure: The construction of an airtight, impermeable, permanent barrier around asbestos-containing material to control the release of asbestos fibers into the air.

Filter: A media component used in respirators to remove solid or liquid particles from the inspired air.

Friable asbestos-containing material: Material that contains more than 1.0% asbestos by weight, and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.

Glovebag: A sack (typically constructed of 6 mil transparent polyethylene or polyvinyl chloride plastic) with two inward projecting long sleeve gloves, which are designed to enclose an object from which an asbestos-containing material is to be removed.

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

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

High Efficiency Filter: A filter which removes from air 99.97% or more of mono-disperse dioctylphthalate (DOP) particles having a mean particle diameter of 0.3 microns.

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

Negative Pressure Ventilation System: A local exhaust system, utilizing HEPA filtration capable of maintaining a negative pressure inside the work area and a constant air flow from adjacent areas into the work area and exhausting that air outside the work area.

Negative Pressure: Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (work area).

Personal Monitoring: Sampling of the asbestos fiber concentrations within the breathing zone of an employee.

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

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

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

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

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

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 amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.

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

Format and specification explanations:

Specification Production: None of the following explanations shall be interpreted so as to modify the substance of the contract requirements. Portions of these specifications have been produced by Owner's Representative's standard method of editing master specifications, and may contain minor deviations from traditional writing formats. Such deviations are a natural result of this production technique, and no other meaning will be implied or permitted.

Format Explanation: The format of principal portions of these specifications can be described as in the following paragraphs. Although some portions of these specifications may not be in complete compliance with this format, no particular significance will be attached to such compliance or non-compliance.

Sections and Divisions: For convenience, basic unit of text is a "section." Each section is identified by a descriptive title (name) and number. Individual sections are grouped together with other sections of similar or related work groupings known as "'divisions". Divisions are recognized as the present industry consensus on uniform specification organization and sequence. The section title is not intended to limit meaning or content of a section, nor to be fully descriptive of the requirements specified therein, nor to be an integral part of text.

Each section of specifications has been subdivided into 3 "parts" for uniformity and convenience (Part 1 — General, Part 2 — Products, and Part 3 — Execution); some sections may not require all of the three parts. These titles do not limit the meaning of and are not an integral part of text, which specifies requirements.

Subordination of Text: Portions of specifications text are subordinated to other portions in the following manner (lowest level to highest):

Intended (from left margin) paragraphs and lines of text are subordinate to preceding text which is not indented, or which indented by a lesser amount.

Paragraphs and lines of text are subordinate to sub-article titles, which are printed in upper/lower-case lettering.

Sub-articles are subordinate to article titles, which are printed in upper-case lettering.

Sub-ordination (if any) of certain sections (or portions of sections) to other sections is described within those sections.

Boldface is used strictly to assist the reader of specification text in scanning text for key words (for quick recall). No emphasis on or relative importance of text is intended where boldface is used.

Imperative language is used generally in specifications. Except as otherwise indicated, requirements expressed imperatively are to be performed by Contractor. For clarity of reading at certain locations, contrasting subjective language is used to describe responsibilities, which must be fulfilled indirectly by Contractor, or when so noted, by others.

Section numbering is used to facilitate cross-reference in the contract documents. Sections are placed in Project Manual in numeric sequence; however numbering sequence is not complete, and listing of sections at beginning of Project Manual must be consulted to determine numbers and names of specification sections in contract documents.

Project Identification: Project name of contract documents (either complete or abbreviated) is recorded at top of each page of specifications to minimize possible misuse of specifications, or confusion with other project specifications.

Specification Content: Because of methods by which this project specifications has been produced, certain general characteristics of content, and conventions in use of language are explained as follows:

Specifying Methods: The techniques or methods of specifying to record requirements varies throughout text, and may include "prescriptive," "open generic-descriptive," "compliance with standards," "performance," "proprietary," or a combination of these. The method used for specifying one unit of work has no bearing on requirements for another unit of work.

Overlapping and Conflicting Requirements: Where compliance with two or more industry standards or sets of requirements is specified, and overlapping of those different standards or requirements establishes different

or conflicting minimums or levels of quality, the most stringent requirement is intended and will be enforced, unless specifically detailed language written into contract documents clearly indicates that a less stringent requirement is to be fulfilled. Refer apparently-equal-but-different requirements, and uncertainties as to which level of quality is more stringent, to Owner's Representative for a decision before proceeding.

Contractor's Options: Except for overlapping or conflicting requirements, where more than one set of requirements are specified for a particular unit of work, option is intended to be Contractor's regardless of whether or not it is specifically indicated as such.

Minimum Quality/Quantity: In every instance, quality level or quantity shown or specified is intended to be the minimum for the work to be performed. Except as otherwise specifically indicated, actual work may either comply exactly with that minimum (within specified tolerances), or exceed that minimum within reasonable limits. In complying with requirements, indicated numeric values are either minimums or maximums as noted or as appropriate for context of the requirements. Refer instances of uncertainty to Owner's Representative for decision before proceeding.

Specialists, Assignments: In certain instances, specification text requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work.' Such assignments shall be recognized as special requirements over which the Contractor has no choice or option. These requirements should not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the work; they are also not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of entire set of contract requirements remains with the Contractor.

Trades: Except as otherwise indicated, the use of titles such as "carpentry" in specification text implies neither that the work must be performed by an accredited or unionized trades person of corresponding generic name (such as "carpenter"), nor that specified requirements apply exclusively to work by trades persons of that corresponding generic name.

Abbreviations: The language of specifications and other contract documents is of the abbreviated type in certain instances, and implies words and meanings, which will be appropriately interpreted. Actual word abbreviations of a self-explanatory nature have been included in the texts. Specific abbreviations have been established, principally for lengthy technical terminology and primarily in conjunction with coordination of specification requirements with notations on drawings and in schedules. These are frequently defined in section at first instance of use. Trade association names and titles of general standards are frequently abbreviated. Singular words will be interpreted as plural and plural words will be interpreted as singular where applicable and where full context of the contract documents so indicates.

Drawing symbols:

General: Except as otherwise indicated, graphic symbols used on drawings are those symbols recognized in the construction industry for purposes indicated. Where not otherwise noted, symbols are defined by "Architectural Graphic Standards," published by John Wiley & Sons, Inc., seventh edition.

Mechanical/Electrical Drawings: Graphic symbols used on mechanical and electrical drawings are generally aligned with symbols recommended by ASHRAE. Where appropriate, these symbols are supplemented by more specific symbols as recommended by other recognized technical associations including ASME, ASPE, IEEE and similar organizations. Refer instances of uncertainty to the Owner's Representative for clarification before proceeding.

Industry standards:

General Applicability of Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, applicable standards of the construction industry have the same force and effect (and are made a part of contract documents by reference) as if copied directly into contract documents, or as if published copies were bound herewith. Refer to the other contract documents for resolution of overlapping and conflicting requirements, which result from the application of several different industry standards to the same unit of work. Refer to individual unit of work sections for indications of which specialized codes and standard the Contractor must keep at the project site, available for reference.

Referenced standards (referenced directly in contract documents or by governing regulations) have precedence over non-referenced standards, which are recognized in industry for applicability to work.

Non-referenced standards are hereby defined to have no particular applicability to the work, except as general requirements of whether the work complies with standards recognized in the construction industry.

Publication dates: Except as otherwise indicated, where compliance with an industry standard is required, comply with standard in effect as of date of contract documents.

Updated standards: At the request of the Owner's Representative, submit a change order proposal where an applicable industry code or standard has been revised and reissued after the date of the contract documents and before the performance of the work affected. The Owner's Representative will decide whether to issue the change order to proceed with the updated standard.

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

Where copies of standards are needed for proper performance of the work, the Contractor is required to obtain such copies directly from the publication source.

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

Abbreviations: Where acronyms or abbreviations are used but not identified in specifications or other contract documents they are defined to mean the industry recognized name of trade association, standards generating organization, governing authority or other entity applicable to context of text provision. Refer to "Encyclopedia of Associations,"' published by Gale Research Co., available in large libraries.

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

AIA American Institute of Architects
1735 New York Ave. NW;
Washington, DC 20006
Phone: 202/626-7474

ANSI American National Standards Institute
1430 Broadway; New York, NY 10018
Phone: 212/354-3300

ASHRAE American Society for Heating, Refrigerating, and air Conditioning Engineers
1791 Tullie Circle NE; Atlanta, GA 30329
Phone: 404/636-8400

ASTM ASTM (formerly: American Society for Testing and Materials)
1916 Race St.
Philadelphia, PA 19103
Phone: 215/299-5400

CFR Code of Federal Regulations Available from Government Printing Office
Washington, DC 20402
(usually first published in Federal Register)

CGA Compressed Gas Association
1235 Jefferson Davis Highway;
Arlington, VA 22202
703/979-0900

CS Commercial Standard of NBS (U.S. Dept. of Commerce)
Government Printing Office
Washington, DC 20402

EPA Environmental Protection Agency
401 M St. SW
Washington, DC 20460
Phone: 202/382-3949

FS Federal Specification
(General Services Admin.)
Obtain from your Regional GSA Office, or purchase from GSA Specifications Unit (WFSIS);
7th and D Streets, SW, Washington, DC 20406

GA Gypsum Association
1603 Orrington Ave.; Evanston, IL 60201
Phone: 312/491-1744

GSA General Services Administration
F St. and 18th St. NW;
Washington, DC 20405
Phone: 202/655-4000

MIL Military Standardization Documents (U.S. Dept. of Defense)
Naval Publications and Forms Center
5801 Tabor Ave.
Philadelphia, PA 19120

NBS National Bureau of Standard (U.S. Dept. of Commerce)

Gaithersburg, MD 20234
Phone: 301/921-1000

NEC National Electrical Code (by NFPA)

NFPA National Fire Protection Association
Batterymarch Park
Quincy, MA 02269
Phone: 617/770-3000

OSHA Occupational Safety & Health Administration
(U.S. Dept. of Labor)
Government Printing Office;
Washington, DC 20402

PS Product Standard of NBS
(U.S. Dept. of Commerce)
Government Printing Office;
Washington, DC 20402

UL Underwriters Laboratories
333 Pfingsten Rd.
Northbrook, IL 60062
Phone: 312/272-8800

Submittals:

Permits, Licenses and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

END OF SECTION 01091

Section 01092 — Codes and regulations: asbestos abatement

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

Description of the work:

This section sets forth governmental regulations and industry standards which are included and incorporated herein by reference and made a part of the specification. This section also sets forth those notices and permits which are known to the Owner and which either must be applied for and received, or which must be given to governmental agencies before start of work.

Codes and regulations:

General Applicability of Codes, Regulations, and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.

Contractor Responsibility: The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable Federal, State, and local regulations. The Contractor shall hold the Owner and Owner's Representative harmless for failure to comply with any applicable work, hauling, disposal, safety, health, or other regulation on the part of himself, his employees, or his subcontractors.

Federal Requirements: which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

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

Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules Title 29, Part 1910, Section 1001 and Part 1926, Section 58 of the Code of Federal Regulations

Respiratory Protection Title 29, Part 1910, Section 134 of the Code of Federal Regulations

Construction Industry Title 29, Part 1926, of the Code of Federal Regulations and new revisions.

Access to Employee Exposure and Medical Records Title 29, Part 1910, Section 2 of the Code of Federal Regulations

Hazard Communication Title 29, Part 1910, Section 1200 of the Code of Federal Regulations

Specifications for Accident Prevention Signs and Tags Title 29, Part 1910, Section 145 of the Code of Federal Regulations

U.S. Environmental Protection Agency (EPA) including but not limited to:

Procurement Under Assistance Agreements 40 CFR Part 33, FRL 2210-3 Federal Register, Vol. 48 No. 60; March 28, 1983, P12922-12938

Asbestos Abatement Projects Rule 40 CFR Part 762; CPTS 62044, FRL 2843-9 Federal Register, Vol. 50; No. 134, July 12, 1985 P28530-28540

Regulation for Asbestos Title 40, Part 61, Sub-part A of the Code of Federal Regulations

National Emission Standard for Asbestos Title 40, Part 61, Sub-part M (Revised Sub-part B) of the Code of Federal Regulations

Asbestos-Containing Materials in Schools; Final Rule and Notice 40 CFR Part 763, Federal Register, Vol. 52, No. 210, December 14, 1987, P41826-41905

State Requirements: which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

Minnesota Department of Health Asbestos Rules (4620.3000 – 4620.3724)

Local Requirements: Abide by all local requirements which govern asbestos abatement work or hauling and disposal of asbestos waste materials.

Standards: which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

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

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

Practices for Respiratory Protection Publication Z288.2-80

ASTM
1916 Race Street
Philadelphia, PA 19103
Phone: 215/299-5400

Specification for Encapsulants for Friable Asbestos-containing Building Materials Proposal P-189

Safety and Health Requirements Relating to Occupational Exposure to Asbestos E 849-82

AFL-CIO

1926-58: Asbestos standard for construction — building and construction trades department. AFL/CIO

AIA Service Corporation
Guide Specification — 02080 Asbestos Removal AIA
Service Corporation
1735 New York Avenue NW
Washington, DC

AWCI
Guide specifications for the abatement of asbestos release from spray or trowel applied materials in buildings and other structural designs.

GAO/GSA
Asbestos control program
NBSIR 87-2688
Guidelines for assessment and abatement of asbestos-containing material in buildings
May 1983

U.S. Department of Commerce National Bureau of Standards National Engineering Lab Center for Building Technology
U.S. NAVY — NAVFAC

Section 02081 — Removal of Asbestos Containing Materials
Section 02084 — Disposal of Asbestos Containing Materials

Veterans Administration
Section 01569 — Asbestos abatement specification

U.S. Postal Service
Technical specifications for term construction contract asbestos abatement

EPA Guidance documents:

EPA Guidance Documents: which discuss asbestos abatement work or hauling and disposal of asbestos waste materials are listed below for the contractor's information only. These documents do not describe the work and are not a part of the work of this contract. EPA maintains an information number (800) 334-8571, publications can be ordered from (800) 424-9065 (554-1404 in Washington, DC):

Asbestos-Containing Materials in School Buildings — A Guidance Document. Part 1 & 2. (Orange Books) EPA C00090 (out of print)

Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book) EPA 560/5-85-024

Friable Asbestos-Containing Materials in Schools:

Identification and Notification Rule (40CFR Part 763)

Evaluation of the EPA Asbestos-in-Schools Identification and Notification Rule. EPA 560/5-84-005.

Asbestos in Buildings: National Survey of Asbestos-Containing Friable Materials. EPA 560/5-84-006

Asbestos in Buildings: Guidance for Service and Maintenance Personnel. EPA 560/5-85-018

Asbestos Waste Management Guidance. EPA 530-SW-85-007.

Asbestos Fact Book. EPA Office of Public Affairs.

Asbestos in Buildings. Simplified Sampling Scheme for Friable Surfacing materials.

Commercial Laboratories with Polarized Light Microscopy Capabilities for bulk asbestos identification.

A Guide to Respiratory Protection for the Asbestos Abatement Industry. EPA-560-OPTS-86-001.

Notices:

U.S. Environmental Protection Agency

Send Written Notification as required by USEPA National Emission Standards for Hazardous Air Pollutants (NESHAPS) Asbestos Regulations (40CFR 61, Sub-part M) to the regional Asbestos NESHAPS Contact at least 10 days prior to beginning any work on asbestos-containing materials.

Notification: Include the following information in the notification sent to the NESHAPS Contact:

Name and address of owner or operator.

Description of the facility being demolished or renovated, including the size, age, and prior use of the facility.

Estimate of the approximate amount of friable asbestos material present in the facility in terms of linear feet of pipe, and surface area on other facility components. For facilities in which the amount of friable asbestos materials less than 80 linear meters (260 linear feet) on pipes and less than 15 square meters (160 square feet) on other facility components, explain techniques of estimation.

Location of the facility being demolished or renovated.

Schedule starting and completion dates of demolition or renovation.

Nature of planned demolition or renovation and method(s) to be used.

Procedure to be used to comply with the requirements of USEPA National Emission Standards for Hazardous Air Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61 Sub-part M).

Name and location of the waste disposal site where the friable asbestos waste material will be deposited.

For facilities being demolished under an order of a State or local governmental agency, issued because the facility is structurally unsound and in danger of imminent collapse, the name, title, and authority of the State or local governmental representative who has ordered the demolition.

State and local agencies:

Send written Notification (NESHAPS) to the following individuals as required by state and local

regulations prior to beginning any work on asbestos-containing materials:

State NESHAP Agency

Permits:

No Building Permit is required.

Licenses:

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

Posting and Filing of Regulations: Maintain two (2) copies of applicable federal, state and local regulations above. Post one copy of each at the job site. Keep on file in contractor's office one copy of each.

Submittals:

Before Start of Work: Submit the following items see section 01014 — SUBMITTALS to the Owner's Representative for review. No work shall begin until these submittals are returned with Owner's Representatives action stamp indicating that the submittal is returned for unrestricted use or final-but-restricted use.

Notices: Submit notices required by federal, state and local regulations together with proof of timely transmittal to agency requiring the notice.

Permits: Submit copies of current valid permits required by state and local regulations.

Licenses: Submit copies of all state and local licenses and permits necessary to carry out the work of this contract.

END OF SECTION 01092

Section 01313 — Schedules, reports, payments

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

Coordination:

Coordinate both the listing and timing of reports and activities required by provisions of this section and other sections, so as to provide consistency and logical coordination between the reports. Maintain coordination and correlation between separate reports by updating at monthly or shorter time intervals. Make appropriate distribution of each report and updated report to all parties involved in the work including the Owner's Representative and Owner. In particular provide close coordination of the progress schedule, schedule of values, listing of subcontracts, schedule of submittals, progress reports, and payment requests.

Progress schedule:

Schedules:

Provide proposed detailed schedule including work area sketches, work dates, work shift time, number of employees, dates of start and completion including dates of preparation work, removals and final inspection dates. Provide three copies of the proposed schedule to the Owner's Representative for review prior to commencement of work.

Reporting:

Daily Log: Maintain within the decontamination unit a daily log documenting the dates and time of but not limited to, the following items:

- Meetings; purpose, attendees, and discussion (brief)
- Visitations; authorized and unauthorized
- Personnel, by name, entering and leaving the area
- Special or unusual events, i.e. Barrier breaching, equipment failures
- Air monitoring tests and test results
- Documentation with confirmation signature of Owner's Project Administrator of the following:
- Inspection of work area preparation prior to start of removal and daily thereafter.
- Removal of any polyethylene barriers
- Contractors inspections prior to encapsulation
- Removal of waste materials from work area
- Decontamination of equipment (list items) Contractors final inspection/final air test analysis.

Provide three (3) copies of this log at final closeout of project for use by the Owner.

Project sign in & sign out log:

Maintain at the entrance to the project decontamination unit a log of authorized and unauthorized entering to the project work area. The log shall document at a minimum the following items:

- Name and Date (including Visitors) & Signature
- Time in — Time out
- Respiratory Equipment Utilized
- Personal Protective Clothing
- Reason for Entrance

Provide three (3) copies of this log at final closeout project for use by the Owner.

END OF SECTION 01313

Section 01340 — Shop drawings, product data and samples

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-I Specification sections, apply to work of this section.

Description of requirements:

General: This section specifies procedural requirements for non-administrative submittals including shop drawings, product data, samples and other miscellaneous work-related submittals. Shop drawings, product data, samples and other work-related submittals are required to amplify, expand and coordinate the information contained in the Contract Documents.

Refer to other Division-1 sections and other contract documents for specifications on administrative, non-work-related submittals. Such submittals include, but are not limited to the following items:

- Permits
- Payment applications
- Insurance certificates
- Inspection and test reports

Product data includes standard printed information on manufactured products that has not been specially prepared for this project, including but not limited to the following items:

Manufacturer's product specifications and installation instructions.

Submittal procedures:

General: Refer to the General Conditions for basic procedures for submittal handling:

Coordination: Coordinate the preparation and processing of submittals with the performance of the work. Coordinate each separate submittal with other submittals and related activities such as testing, purchasing, fabrication, delivery and similar activities that require sequential activity.

Listing: At the end of this section is a listing of the principal submittals required for the work. This listing is not necessarily complete, nor does the listing reflect the significance of each submittal requirement. The listing is included only for the convenience of users of the Contract Documents.

Coordination of Submittal Times: Prepare and transmit each submittal to the Owner’s Representative sufficiently in advance of the scheduled performance of related work and other applicable activities. Refer to specific submittal schedules listed above. Transmit different kinds of submittals for the same unit of work so that processing will not be delayed by the Owner’s Representative's need to review submittals concurrently for coordination.

Review Time: Allow sufficient time so that the installation will not be delayed as a result of the time required to properly process submittals, including time for re-submittal, if necessary. Advise the Owner's Representative on each submittal, as to whether processing time is critical to the progress of the work, and if the work would be expedited if processing time could be shortened.

Allow one week for the Owner's Representative's initial processing of each submittal. Allow a longer time period where processing must be delayed for coordination with subsequent submittals. The Owner's Representative will advise the Contractor promptly when it is determined that a submittal being processed must be delayed for coordination.

Allow one week for reprocessing each submittal.

No extension of time will be authorized because of the Contractor's failure to transmit submittals to the Owner's Representative sufficiently in advance of the work.

Submittal Preparation: Mark each submittal with a permanent label for identification. Provide the following information on the label for proper processing and recording of action taken.

- Project name
- Date
- Name and address of Owner's Representative
- Name and address of Contractor
- Name of manufacturer
- Number and title of appropriate specification section
- Similar definitive information as necessary
- Provide a space on the label for the Contractor review and approval markings, and a space for the Owner's Representative's "Action" marking

Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Owner's Representative, and to other destinations as indicated, by use of a transmittal form. Submittals received from sources other than the Contractor will be returned to the sender "without action".

Specific submittal requirements:

General: Specific submittal requirements for individual units of work are specified in the applicable specification section. Except as otherwise indicated in the individual specification sections, comply with the requirements specified herein for each type of submittal.

Product Data: General information required specifically as product data includes manufacturer's standard printed recommendations for application and use, compliance with recognized standards of trade associations and testing agencies, and the application of their labels and seals (if any), special notation of dimensions which have been verified by way of field measurement, and special coordination requirements for interfacing the material, product or system with other work.

Whereas manufacturer, fabricator or similar entity shown on the product data submittal is a firm listed on the Owner's preferred vendor listing, mark the Owner's Representative's copies with "Owner's List" notation.

Preparation: Collect required product data into a single submittal for each units of work or system. Mark each copy to show which choices and options are applicable to the project. Where project data has been printed to include information on several similar products, some of which are not required for use on the project, or are

not included on this submittal, mark the copies to show dearly that such information is not applicable. Where product data must be specially prepared for required products, materials or systems, because standard printed data is not suitable for use, submit data as "shop drawings" and not as "product data."

Submittals: Product data submittal is required for information and record and to determine that the products, materials and systems comply with the provisions of the contract documents. Therefore, the initial submittal is also the final submittal, except where the Owner's Representative observes that there is non-compliance with the provisions of the contract documents and returns the submittal promptly to the Contractor marked with the appropriate "Action."

Provide a preliminary single-copy submittal where required, for selection of options by the Owner's Representative.

Initial Submittal: Except as otherwise indicated in individual sections of these specifications, submit 2 copies of each required product data submittal. The Owner's Representative will retain one copy, and will return the other marked with "Action" and corrections or modifications as required.

Do not submit product data or allow its use on the project, until compliance with the requirements of the contract documents has been confirmed by the Contractor.

Final Distribution: Furnish copies of product data to subcontractors, suppliers, fabricators, manufacturers, installers, governing authorities and others as required for proper performance of the work. Show distribution on transmittal form.

Installation Copy: Do not proceed with installation of materials, products and systems until a copy of product data applicable to the installation is in the possession of the installer. Do not permit the use of unmarked copies of product data in connection with the performance of the work.

Record Documents: Furnish set of original documents as maintained on the project site. Along with original marked-up record drawings provide 2 photographic copies of marked-up drawings, which, at the Contractor's option, may be reduced to not less than half size.

Owner's Representative's action:

General: Except for submittals for the record and similar purposes, where action and return on submittals is required or requested, the Owner's Representative will review each submittal, mark with appropriate "Action", and where possible return within a reasonable time of receipt. Where the submittal must be held for coordination the Owner's Representative will so advise the Contractor without delay.

Action Stamp: The Owner's Representative will stamp each submittal to be returned with a uniform, self-explanatory action stamp, appropriately marked and executed to indicate whether the submittal returned is for unrestricted use, final-but-restricted use (as marked), must be revised and resubmitted (use not permitted) or without action (as explained on the transmittal form).

END OF SECTION 01340

Section 01410 — Air monitoring: test laboratory services

Part 1 — General

Description of the work:

This section describes air monitoring carried out by the owner to verify that the building beyond the work area and the outside environment remain uncontaminated. This section also sets forth airborne fiber levels both inside and outside the work area as action levels, and describes the action required by the Contractor if an action level is met or exceeded.

Air monitoring required by OSHA is the responsibility of the Contractor and is not covered in this section.

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

Air monitoring:

Work Area Isolation: The purpose of the Owner's air monitoring is to document proper containment and function of the work area and its components, as well as to confirm completion of the project. Effective air monitoring serves to avoid:

Contamination of the building outside of the work area with airborne asbestos fibers.

Failure of the filtration system, or rupture in containment structure.

Contamination of the exterior of the building with airborne asbestos fibers.

Should any of the above occur, the contractor shall immediately cease asbestos abatement activities until the fault is corrected. Work shall not recommence until it is authorized by the Owner’s Representative.

Work Area Airborne Fiber Count: The Owner will monitor airborne fiber counts in the work area. The purpose of this air monitoring will be to detect airborne fiber counts which may significantly challenge the ability of the work area isolation procedures to protect the building beyond the work area and outside environment from contamination by airborne fibers.

Work area Clearance: Confirm that the elevated airborne fiber levels generated during abatement operations have been reduced to acceptable levels. Work area clearance is described in Section 01714 — Work Area Clearance.

Airborne Fiber Counts:

Inside Work Area: Maintain an average airborne count in the work area of less than 0.5 fibers per cubic centimeter— If the fiber counts rise above this figure for any sample taken, revise work procedures to lower fiber counts if the airborne fiber count exceeds 1.0 f/cc, stop all work, leave negative air system in operation and notify Owner’s Representative. Do not recommence work until authorized in writing by Owner’s Representative.

Outside Work Area: If any air sample taken outside of the Work Area exceeds .01 f/cc or the alternative indoor air standard established through background sampling for the containment, immediately and automatically stop all work except corrective action. The Owner's Representative will determine the source of the high reading and so notify the Contractor in writing.

If the high reading was the result of a failure of Work Area isolation measures initiate the following actions:

Immediately erect new critical barriers as set forth in Section 01526 Temporary Enclosures to isolate the affected area from the balance of the building. Erect Critical Barriers at the next existing structural isolation of the involved space (e.g. wall, ceiling, floor).

Decontaminate the affected area in accordance with Section 01712 Cleaning & Decontamination Procedures.

Require that respiratory protection as set forth in Section 01562 Respiratory Protection be worn in affected area until area is cleared for re-occupancy in accordance with Section 01714 Work Area Clearance.

Leave Critical Barriers in place until completion of work and insure that the operation of the pressure differential system in the Work Area results in a flow of air from the balance of the building into the affected area.

If the exit from the clean room of the personnel decontamination unit enters the affected area, establish a decontamination facility consisting of a Shower Room and Changing Room as set forth in Section 01563 Decontamination Units at entry point to affected area.

After Certification of Visual Inspection in the Work Area remove critical barriers separating the work area from the affected area. Final air samples will be taken within the entire area as set forth in Section 01714 Work Area Clearance.

If the high reading was the result of other causes initiate corrective action allowable by MDH Asbestos Abatement Rules as determined by the Owner's Representative.

Analytical methods:

The following methods will be used by the Owner to analyze filters used to collect air samples.

PCM air samples will be analyzed using NIOSH 7400A Rules or equivalent method. The number of fields read per sample will be consistent with requirements set forth in MDH Asbestos Abatement Rules. This analysis will be carried out at the job site or at a laboratory located off the job site.

TEM air samples will be collected consistent with Federal AHERA protocol and MDH Asbestos Abatement Rules. All samples will be submitted to an accredited laboratory for analysis the same day for no longer than a 24-hour turnaround.

Sample volumes:

General: The number and volume of air samples taken by the Owner will be in accordance with the following schedule. Sample volumes given may vary depending upon the condition of the air being sampled. In no case, however, will either PCM or TEM adjacent or clearance samples be collected that have drawn under 1200 liters of air.

Schedule of air samples:

Before Start of Work:

The Owner will secure at minimum five background samples per containment area for a total of twenty (20) samples to establish a base line before start of ANY work unless otherwise directed by the Owner's Representative. If any of the samples is analyzed at greater than .01 f/cc, calculate the alternative indoor air standard as per MDH Asbestos Abatement Rules.

Daily During Project:

From start of work of Section 01526 Temporary Enclosures through the work of project decontamination, the VA's Representative will take a minimum of the following samples on a daily basis unless otherwise directed by the Owner's Representative:

Adjacent: Two (2) per five hours work takes place per containment, consisting of one (1) within ten feet of the decontamination unit and one (1) within ten feet of the critical barrier separating the containment from the occupied area of the building.

Clearance: Five (5) PCM samples or 13 TEM samples per containment as directed for each containment by these specifications.

Work Area: One (1) per day per containment.

HEPA Exhaust: Sampling should be unnecessary since all HEPA exhaust should be external.

Personal Samples: All samples submitted by the abatement contractor. The contractor will be responsible for submitting the proper number of samples per containment on a daily basis.

Additional Samples Any additional air sampling deemed prudent by the VA's Representative.

If airborne fiber counts exceed allowed limits, additional samples will be taken as necessary to monitor fiber levels at no expense to the VA.

Laboratory testing:

The services of a testing laboratory will be employed by the Owner to perform laboratory analysis of the air samples. A technician will be at the job site, to analyze air samples on-site, or samples will be sent daily to the laboratory. In either case, verbal reports on air samples must be obtained within 24 hours. A complete record,

certified by the testing laboratory, of all air monitoring tests and results will be furnished to the Owner's Representative, the Owner and the Contractor.

Written Reports: Results of air monitoring tests will be posted at the job site on a daily basis.

Additional testing:

The Contractor may conduct his own air monitoring and laboratory testing. If he elects to do so, the cost of such air monitoring and laboratory testing shall be included in the Contract Sum.

Personnel monitoring:

Performance of air monitoring as required to meet OSHA Requirements for workers using respiratory protection will not be a responsibility of the Owner, unless identified in section 01010.

END OF SECTION 01410

Section 01503 — Temporary facilities

Part 1 — General

Related documents:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

Description of requirements:

General: Provide temporary connection to existing building utilities or provide temporary facilities as required herein or as necessary to carry out the work.

Part 2 — Products

Materials and equipment:

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

Scaffolding:

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

Equip rungs of all metal ladders, etc. with an abrasive non-slip surface.

Provide a non-skid surface on all scaffold surfaces subject to foot traffic.

Water service:

Temporary Water Service Connection: All connections to the Owner's water system shall include backflow protection. Valves shall be temperature and pressure rated for operation of the pressures encountered. After completion of use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment. Leaking or dripping valves shall be piped to the nearest drain or located over an existing sink or grade where water will not damage existing finishes or equipment.

Water Hoses: Employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each work area and to each Decontamination Unit. Provide fittings as required to allow for connection to existing wall hydrants or spouts, as well as temporary water heating equipment, branch piping, showers, shut-off nozzles and equipment.

Hot Water: may be secured from the building hot water system, provided backflow protection is installed at point of connection as described in this section under Temporary Water Service connection, and if authorized in writing by the Owner's Representative.

Electrical service:

General: May use existing electrical outlets and service.

Electrical Power Cords: Use only (GFCI) grounded extension cords; use "hard service" cords where exposed to abrasion and traffic. Use single lengths or use waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas of work.

Lamps and Light Fixtures: Provide general service incandescent lamps of wattage indicated or required for adequate illumination. Protect lamps with guard cages or tempered glass enclosures, where fixtures are exposed to breakage by construction operations. Provide exterior fixtures where fixtures are exposed to the weather or moisture.

First aid:

First Aid Supplies: Comply with governing regulations and recognized recommendations within the construction industry.

Part 3 — Execution

Scaffolding: During the erection and/or moving of scaffolding, care must be exercised so that the polyethylene floor covering is not damage. A layer of corrugated cardboard should be inserted between the two primary floor barriers for further protection.

Clean as necessary debris from non-slip surfaces.

At the completion of abatement work clean all construction aids within the work area, wrap in one layer of 6-mil polyethylene sheet and seal before removal from the work area.

Installation, general:

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

Relocate, modify and extend services and facilities as required during the course of work so as to accommodate the entire work of the project.

Water service:

General: Water connection (without charge) to owner's existing potable water system is limited to one 3/4" pipe-size connection and a maximum flow of 10 g.p.m. each to hot and cold water supply. Hot water shall be supplied at a minimum temperature of 100 F.

Maintain hose connections and outlet valves in leak proof condition. Where finish work below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize the possibility of water damage. Drain water promptly from pans as it accumulates.

Electrical service:

General: Use existing service.

Sanitary facilities:

Toilets: Use of the Owner's existing toilet facilities will not be permitted. Please provide day-use portable toilets for the duration of the abatement project.

END OF SECTION 01503

Section 01513 — Negative pressure system

Part 1 — General

Related documents:

Drawings and general provisions of contract, including General and Supplementary Conditions and other Division-1 specification sections, apply to work of this section.

Submittals:

Before start of work:

Review VA specifications for negative air machines and manometers, many of which exceed MDH requirements. Submit documentation that these specifications have been met for each machine to be placed in use as well as additional HEPAs to be placed in an area adjacent to each containment as a backup. The number of HEPA negative air machines specified for each for each containment is calculated to meet the VA's required eight air exchanges at a minimum, assuming each is rated at 2000 cfm.

Review the specified number and locations of HEPA negative air machines required for each containment. If any of the machines has a rated capacity of less than 2000 cfm, submit proposed additional HEPA machines and locations required to achieve eight (8) air exchanges based upon an eleven (11) foot room height in all locations. If any of the specified HEPA negative air machine locations proves unable to exhaust externally, also propose alternate locations for these machines for review. Do not begin work until this submittal is returned with the Owner's Representatives action stamp indicating that the submittal is returned for unrestricted use. Include in the submittal at a minimum:

- Number of negative air machines required to achieve eight (8) air exchanges based on the above assumptions along with calculations.
- Calculation of the actual air exchanges per containment based on the above assumptions.
- Description of projected airflow within work area and methods required to provide adequate airflow in all portions of the work area.
- Pressure differential across work area enclosures anticipated.
- Description of methods of testing for correct airflow and pressure differentials.
- Manufacturer's product data on the machines to be used.
- Location of the machines in the work space if any variance from the specifications is required.
- Method of supplying adequate power to the machines and designation of building electrical panel(s) which will be supplying the power.
- Description of work practices to insure that airborne fibers travel downstream form workers.
- Manufacturer's product data on equipment used to monitor pressure differential between inside and outside of work area.

Quality assurance:

Monitor pressure differential across Decontamination Unit with a differential pressure meter equipped with a strip chart recorder. Meter shall be equipped with a warning buzzer which will sound if pressure differential drops below 0.02" of water. In this event, all work inside containment will halt until, engineering controls including additional HEPA machines if necessary are established or connected such that -.02 inches of water is re-established. Exceptions allowed by MDH Asbestos Abatement Rules based on the number of air exchanges will NOT be allowed under this specification.

Part 2 — Products

Negative air machines:

General: Supply the required number of asbestos air filtration units to the site in accordance with these specifications. Each unit shall include the following:

Design and Layout:

A. Before start of work submit the design and layout of the regulated area and the negative air machines. The submittal shall indicate the number of, location of and size of negative air machines. The point(s) of exhaust, air flow within the regulated area, anticipated negative pressure differential, and supporting calculations for sizing shall be provided. In addition, submit the following:
   1. Method of supplying power to the units and designation/location of the panels.
   2. Description of testing method(s) for correct air volume and pressure differential.
   3. If auxiliary power supply is to be provided for the negative air machines, provide a schematic diagram of the power supply and manufacturer's data on the generator and switch.

Cabinet:

Negative Air Machine Cabinet: The cabinet shall be constructed of steel or other durable material capable of withstanding potential damage from rough handling and transportation. The width of the cabinet shall be less than 30" in order to fit in standard doorways. The cabinet must be factory sealed to prevent asbestos fibers from being released during use, transport, or maintenance. Any access to and replacement of filters shall be from the inlet end. The unit must be on casters or wheels.

Fans:

The rating capacity of the fan must indicate the CFM under actual operating conditions. Manufacturer's typically use "free-air" (no resistance) conditions when rating fans. The fan must be a centrifugal type fan.

HEPA Filters:

The final filter shall be a HEPA filter. The filter media must be completely sealed on all edges within a structurally rigid frame. The filter shall align with a continuous flexible gasket material in the negative air machine housing to form an air tight seal. Each HEPA filter shall be certified by the manufacturer to have an efficiency of not less than 99.97% when challenged with 0.3 □m dioctylphthalate (DOP) particles. Testing shall have been done in accordance with Military Standard MIL-STD-282 and Army Instruction Manual 136-300-175A. Each filter must bear a UL586 label to indicate ability to perform under specified conditions. Each filter shall be marked with the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of test air flow.

Pre-filters:

The pre-filters, which protect the final HEPA filter by removing larger particles, are required to prolong the operating life of the HEPA filter. Two stages of pre-filtration are required. A first stage pre-filter shall be a low efficiency type for particles 10 □m or larger. A second stage pre-filter shall have a medium efficiency effective for particles down to 5 □m or larger. Pre-filters shall be installed either on or in the intake opening of the NAM and the second stage filter must be held in place with a special housing or clamps.

Instrumentation:

Each unit must be equipped with a gauge to measure the pressure drop across the filters and to indicate when filters have become loaded and need to be changed. A table indicating the cfm for various pressure readings on the gauge shall be affixed near the gauge for reference or the reading shall indicate at what point the filters shall be changed, noting cfm delivery. The unit must have an elapsed time meter to show total hours of operation.

Safety and Warning Devices:

Each unit must come equipped with:

A. A pressure gauge to measure the pressure drop across the filter.
B. An electrical/ mechanical lockout must be provided to prevent the fan from being operated without a HEPA filter.
C. Units must be equipped with an automatic shutdown device to stop the fan in the event of a rupture in the HEPA filter, blockage in the discharge of the fan, when the pressure differential exceeds a preset pressure, or the HEPA filter is not present or positioned correctly.
D. Warning lights are required to indicate normal operation; too high a pressure drop across filters; or too low of a pressure drop across filters.

Electrical components:

All electrical components shall be approved by the National Electrical Manufacturer's Association (NEMA) and Underwriter's Laboratories (UL). Each unit must be provided with overload protection and the motor, fan, fan housing, and cabinet must be grounded.

Auxiliary Generator:

The pressure differential shall be continuously monitored and recorded between the regulated area and the area outside the regulated area with a monitoring device that incorporates a strip chart recorder. The strip chart recorder shall become part of the project log and shall indicate at least -0.02" water column gauge for the duration of the project.

Supplemental Make-Up Air Inlets:

Provide, as needed for proper air flow in the regulated area, in a location approved by the VA, openings in the plastic sheeting to allow outside air to flow into the regulated area. Auxiliary makeup air inlets must be located as far from the negative air machines as possible, off the floor near the ceiling, and away from the barriers that separate the regulated area from the occupied clean areas. Cover the inlets with weighted flaps which will seal in the event of failure of the negative pressure system.

Demonstration of the Negative Air System:

The demonstration of the operation of the negative pressure system to the VA shall include, but not be limited to, the following:

A. Plastic barriers and sheeting move lightly in toward the regulated area.
B. Curtains of the decontamination units move in toward regulated area.
C. There is a noticeable movement of air through the decontamination units. Use the smoke tube to demonstrate air movement from the clean room to the shower room to the equipment room to the regulated area.
D. Use smoke tubes to demonstrate air is moving across all areas in which work is to be done. Use a differential pressure gauge to indicate a negative pressure of at least -0.02" across every barrier separating the regulated area from the rest of the building. Modify the system as necessary to meet the above requirements.

Use of System During Abatement Operations:

A. Start units before beginning any disturbance of ACM occurs. After work begins, the units shall run continuously, maintaining 8 actual air changes per hour at a negative pressure differential of -0.02" water column gauge, for the duration of the work until a final visual clearance and final air clearance has been completed. The negative air machines shall not be shut down for the duration of the project unless authorized by the VA, in writing.
B. Abatement work shall begin at a location farthest from the units and proceed towards them. If an electric failure occurs, the Competent Person shall stop all abatement work and immediately begin wetting all exposed asbestos materials for the duration of the power outage. Abatement work shall not resume until power is restored and all units are operating properly again.
C. The negative air machines shall continue to run after all work is completed and until a final visual clearance and a final air clearance has been completed for that regulated area.

Dismantling the System:

After completion of the final visual and final air clearance has been obtained by the VPIH/CIH, the units may be shut down. The units shall have been **completely decontaminated**, all pre-filters removed and disposed of as asbestos waste, asbestos labels attached and the units inlet/outlet sealed with 2 layers of 6 mil poly.

Manufacturers:

Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

Aerospace America, Inc. 900 Truman Parkway P.O. Box 189 Bay City, Michigan 48707	"Aero-Clean 2000"
Asbestos Control Technology, Inc. P.O. Box 183 Maple Shade, NJ 08052	"Micro-Trap"
Control Resource Systems, Inc.	"Hog" 2000

670 Mariner Drive
Michigan City, Indiana 46360

Global Consumer Services, Inc. "Red Baron"
1721 N. Highland Avenue
Los Angeles, CA 90028

Tri-Dim Filter Corporation "ACCU-2M"
1431 West Lake Street
Chicago, Illinois 60607

Part 3 — Execution

Pressure Differential:

The fully operational negative air system within the regulated area shall continuously maintain a pressure differential of -0.02" water column gauge. Before any disturbance of any asbestos material, this shall be demonstrated to the VA by use of a pressure differential meter/manometer as required by OSHA 29 CFR 1926.1101(e)(5)(i). The Competent Person shall be responsible for providing, maintaining, and documenting the negative pressure and air changes as required by OSHA and this specification.

Monitoring:

The pressure differential shall be continuously monitored and recorded between the regulated area and the area outside the regulated area with a monitoring device that incorporates a strip chart recorder. The strip chart recorder shall become part of the project log and shall indicate at least -0.02" water column gauge for the duration of the project.

Preparation of the work area:

Determining the Ventilation Requirements: Provide fully operational negative pressure systems supplying a minimum of one air change every 7.5 minutes. Determine the volume in cubic feet of the work area by multiplying floor area by ceiling height. Determine total ventilation requirement in cubic feet per minute (cfm) for the work area by dividing this volume by the air change rate.

Ventilation Required (CFM) = Volume of work area (cu. ft.)/7.5 min.

Determine Number of Units needed to achieve 7.5-minute change rate by dividing the ventilation requirement (CFM) above by capacity of exhaust unit(s) used. Capacity of a unit for purposes of this section is the capacity in cubic feet per minute with fully loaded filters (pressure differential which causes loaded filter warning light to come on) in the machines labeled operating characteristics.

$$\text{Number of Units Needed} = \frac{\text{Ventilation Requirement (CFM)}}{\text{Capacity of Unit with Loaded Filters (CFM)}}$$

Add one (1) additional unit as a backup per containment, located in an adjacent area in case of equipment failure or machine shutdown for filter changing.

Location of exhaust units: Locate exhaust unit(s) so that makeup air enters work area primarily through decontamination facilities and traverses work area as much as possible. This may be accomplished by positioning the exhaust unit(s) at a maximum distance from the worker access opening or other makeup air sources.

Place end of unit or its exhaust duct through an opening in the plastic barrier or wall covering. The plastic around the unit or duct shall then be sealed with tape.

Vent to outside of Building, unless authorized in writing by the VA's Representative.

Use of the negative pressure system:

General: Each unit shall be serviced by a dedicated minimum 115V-20A circuit with overload device tied into an existing building electrical panel which has sufficient spare capacity to accommodate the load of all negative pressure units connected. Dedication of an existing circuit may be accomplished by shutting down existing loads on the circuit.

Testing the System: The negative pressure system must be tested before any ACM is disturbed in any way. After the regulated area has been completely prepared, the decontamination units set up, and the negative air machines installed, start the units up one at a time. Demonstrate and document the operation and testing of the negative pressure system to the VA using smoke tubes and a negative pressure gauge. Testing must also be done at the start of each work shift.

Demonstrate Operation of the negative pressure system to the Owner's Representative will include, but not be limited to, the following:

- Plastic barriers and sheeting move lightly in toward work area.
- Curtain of decontamination units move lightly in toward work area.
    - There is a noticeable movement of air through the decontamination unit. Use smoke tube to demonstrate air movement from Clean Room to Shower Room, from Shower Room to Equipment Room, and from Equipment Room to Work Area.
    - Use smoke tubes to demonstrate a positive motion of air across all area in which work is to be performed.

- Use a differential pressure meter or manometer to demonstrate a pressure difference of at least 0.02 inches of water across every barrier separating the Work Area from the balance of the building or outside.

Modify the negative pressure system as necessary to successfully demonstrate the above.

END OF SECTION 01513

Section 01526 — Temporary enclosures

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

Part 2 — Products

Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 4.0 or 6.0 mils thick as indicated, clear, frosted, or black as indicated.

Spray Plastic: Provide spray plastic in aerosol cans or premixed for spray application which is formulated to adhere gently to surfaces and remove cleanly by peeling off at the completion of the work.

Duct Tape: Provide duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to aggressively stick to sheet polyethylene.

Spray Cement: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

Part 3 — Execution

Sequence of work:

Carry out work of this section sequentially. Complete each activity before proceeding to the next.

General:

Work Area: Is the location where asbestos abatement work occurs. It is a variable of the extent of work of the contract. It may be a portion of a room, a single room, or a complex of rooms. A "work area" is considered contaminated during the work, and must be isolated from the balance of the building, and decontaminated at the completion of the asbestos-control work.

Completely Isolate the work area from other parts of the building so as to prevent asbestos-containing dust or debris from passing beyond the isolated area. Should the area beyond the work area(s) become contaminated with asbestos-containing dust or debris as a consequence of the work, clean those areas in accordance with the procedures indicated in Section 01711. Perform all such required cleaning or decontamination at no additional cost to owner.

Place all tools, scaffolding, staging, etc. necessary for the work in the area to be isolated prior to erection of plastic sheeting temporary enclosure.

Remove all uncontaminated movable objects such as furniture, equipment, and/or supplies from the work area before commencing work. Decontaminate or dispose of as asbestos-containing material any other contaminated moveable objects within the containment area as per MDH Asbestos Abatement Rules. For immovable objects in the containment area decontaminate if necessary and completely cover with two (2) layers of polyethylene sheeting, at least 6 mil in thickness, securely taped in place with duct tape. Such objects shall be considered outside the work area unless covering plastic or seal is broached.

Disable Ventilating Systems or any other system bringing air into or out of the work area. Disable system by disconnecting wires, removing circuit breakers, by lockable switch or other positive means that will prevent accidental premature restarting of equipment.

Lockout power to work Area by switching off all breakers serving power or lighting circuits in work area. Label breakers with tape over breaker with notation "DANGER circuit being worked on." Lock panel and have all keys under control of Contractor's Superintendent of Owner's designated Representative.

Lockout power to circuits running through work area wherever possible by switching off all breakers or removing fuses serving these circuits. Label breakers with tape over breaker with notation "DANGER circuit being worked on". Lock panel and have all keys under control of contractor's superintendent or owner's designated representative. If circuits cannot be shut down for any reason, label at intervals 4'-0" on center with tags reading, "DANGER live electric circuit. Electrocution hazard." Label circuits in hidden locations but which may be affected by the work in a similar manner.

Inspection Windows Install inspection windows in locations shown on the plans or as directed by the Owner's Representative. Each inspection window is to have a 24" x 24" viewing area fabricated from 1/4" acrylic or polycarbonate sheet. Install window with top at 6'-6" above floor height in a manner that provides unobstructed vision from outside to inside of the Work Area. Protect window from damage from scratching, dirt or any coatings used during the work. A sufficient number of windows are to be installed to provide observation of all portions of the Work Area that can be made visible from adjacent areas. Inspection windows that open into uncontrolled area are to be covered with a removable plywood hatch secured by lock and key. Provide keys to Owner's Representative for all such locks.

EMERGENCY EXITS:

Provide emergency exits and emergency lighting as set forth below:

Emergency Exits At each existing exit door from the Work Area provide the following means for emergency exiting:

Arrange exit door so that it is secure from outside the Work Area but permits exiting from the Work Area.

Mark outline of door on Primary and Critical Barriers with luminescent paint at least 1" wide. Hang a razor knife on a string beside outline. Arrange Critical and Primary barriers so that they can be easily cut with one pass of razor knife. Paint words "EMERGENCY EXIT" inside outline with luminescent paint in letters at least one foot high and 2" thick.

Provide lighted EXIT sign at each exit.

Provide battery-operated emergency lighting that switches on automatically in the event of a power failure.

Control access:

Permit Access to the work area only through the Decontamination Unit. All other means of access shall be closed off and sealed and warning signs displayed on the clean side of the sealed access.

Visual Barrier: Where the work area is immediately adjacent to or within view of occupied areas, provide a visual barrier of opaque polyethylene sheeting at least 4 mil in thickness so that the work procedures are not visible to building occupants. Where this visual barrier would block natural light, substitute frosted sheet plastic in locations approved by the Owner's Representative.

Physical Barrier: Where the area adjacent to the work area is accessible to the public, construct a solid barrier on the public side of the sheeting to protect the sheeting. Construct barrier with nominal 2" x 4" wood or metal studs 16" on center, securely anchored to prevent movement, covered with minimum ½" Plywood or approved equal.

Provide warning signs at each visual and physical barriers reading as follows in both English and Spanish:

Legend	(Notation)
KEEP OUT	(3" BLOCK LETTERING)
BEYOND THIS POINT	
ASBESTOS ABATEMENT WORK	
IN PROGRESS	(1" BLOCK LETTERING)
BREATHING ASBESTOS DUST MAY	
BE HAZARDOUS TO YOUR HEALTH	(1" BLOCK LETTERING)

Alternate methods of enclosure:

Alternate methods of containing the work area may be submitted to the Owner's Representative for approval in accordance with procedures set forth in section 01632. Do not proceed with any such method(s) without prior written approval of the Owner's Representative.

Respiratory and worker protection:

Before proceeding beyond this point in providing Temporary Enclosures:

Provide Respiratory Protection per Section 01562
Provide Worker Protection per Section 01560

Critical barriers:

Completely Separate the work area from other portions of the building, and the outside by sheet plastic barriers at least 6 mil in thickness, or by sealing with duct tape.

Individually seal All ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, convectors and speakers, and other openings into the work area with duct tape alone or with polyethylene sheeting at least 6-mil in thickness, taped securely in place with duct tape. Maintain seal until all work including Project Decontamination is completed. Take care in sealing off lighting fixtures to avoid melting or burning of sheeting.

Provide Sheet Plastic barriers at least 6 mil in thickness as required to completely seal openings from the work area into adjacent areas. Seal the perimeter of all sheet plastic barriers with duct tape or spray cement.

Mechanically Support sheet plastic independently of duct tape or spray cement seals so that seals do not support the weight of the plastic. Following are acceptable methods of supporting sheet plastic barriers. Alternative support methods may be used if approved in writing by the Owner's Representative.

Provide Decontamination Units per Section 01563
Provide Negative Pressure System per Section 01513

Primary barrier:

Pre-Clean All Surfaces In Work Area with a HEPA filtered vacuum or by wet wiping and pass the pre-cleaning inspection by the VA's representative prior to the installation of any sheet plastic.

Enclose Work Areas with three (3) layers of plastic sheeting on floor and two (2) layers on walls, or as otherwise directed in the contract drawings or in writing by the Owner's Representative.

Cover Floor of work area with 3 individual layers of clear polyethylene sheeting, each at least 6 mil in thickness, turned up walls at least 12 inches. Form a sharp right angle bend at junction of floor and wall so that there is no radius which could be stepped on causing the wall attachment to be pulled loose. Both spray-glue and duct tape all seams in floor covering. Locate seams in top layer six feet (61) from, or at right angles to, seams in bottom layer. Install sheeting so that top layer can be removed independently of bottom layer.

Remove all electrical and mechanical items, such as lighting fixtures, clocks, registers, escutcheon plates, etc., which cover any part of the surface to be worked on with the work.

Extension of work area:

Extension of Work Area: If the enclosure barrier is breeched in any manner that could allow the passage of asbestos debris or airborne fibers, then add affected area to the work area, enclose it as required by this Section of the specification and decontaminate it as described in Section 01711.

Secondary barrier:

Secondary layer of plastic as a drop cloth to protect the primary layer from debris generated by the asbestos abatement work is specified in this section, Section 02081 and VA specifications.

END OF SECTION 01526

Section 01527 — Regulated areas

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

Related work specified elsewhere:

Worker Protection — Repair and Maintenance: is specified in Section 01560.
Respiratory Protection: is specified in Section 01562.

Description of work:

Work of this section consists of preparing a work area for work of the following Glove Bag Procedure, Mini-Enclosure, and Controlled Work Environment (See Section 01013). Do not use procedures set forth in this section in connection with any other work.

Part 2 — Equipment

HEPA Filter Vacuum Cleaners:

Negative Pressure Ventilation Unit with HEPA Filters

Plastic Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6.0 mils thick as indicated, clear, frosted, or black as indicated.

Part 3 — Execution

Securing work area:

Secure work area from access by occupants, staff or users of the building. Accomplish this where possible, by locking doors, windows, or other means of access to the area, or by constructing temporary wood stud and plywood barriers. Post warning signs that carry the following legend:

First sign (3" Block lettering): **KEEP OUT**

Second sign (3" Block lettering):

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

Where the work area is in a large area such as on part of a boiler room or open office area, delineate area with 3-inch wide polyethylene ribbon with the printed warning, "CAUTION ASBESTOS REMOVAL". Install this ribbon at between 3 and 4 feet above the floor.

Scheduling:

Work may be carried out during normal working hours in those areas which can be completely secured by lockable doors from access by building occupants and staff. Otherwise, work is to be carried out after building occupants and cleaning staff have left.

General procedures:

The following precautions and procedures have application to work of this section. Workers must exercise caution to avoid excessive release of asbestos fibers into the air:

- Before start of work, comply with requirement for worker protection in section 01560.
- Shut down any air handling equipment bringing air into or out of the work area.
- Clean any existing dust or debris from the floor and walls, and other surface in the immediate location of the work prior to commencing work by damp mopping or by use of a High Efficiency Particulate Air (HEPA) filtered vacuum.
- Cover floor in vicinity of work area and six (6) feet beyond, with 6-mil polyethylene drop sheet. Where work is adjacent to wall, extend drop sheet up wall and secure at ceiling with duct tape.
- Seal all openings, supply and exhaust vents, and convectors within ten (10) feet of the work area with 6-mil polyethylene sheeting secured and completely sealed with duct tape.
- Perform the work per the appropriate specification section while on plastic drop sheet.
- Immediately remove any asbestos-containing debris which collects on the drop sheet either by using a HEPA vacuum or by spraying with amended water or removal encapsulant, collecting with wet paper towels, placing in a disposal bag while still wet, and cleaning surface of plastic sheet with wet paper towels.

Complete the following at completion of work in an area before stepping off drop sheet.

- While standing on plastic sheet thoroughly HEPA vacuum ladder and any tools used and pass to worker standing off sheet.
- Worker standing off the sheet, HEPA vacuum thoroughly the worker standing on the sheet.
- Worker on the sheet thoroughly HEPA vacuum all surfaces of the plastic sheet, bags, and any other items on the sheet including his own feet.

If moving to the next work area in the same secured area: Worker on the drop sheet don clean foot covers, placing each foot, in turn, off the sheet as the foot cover is put on. Remove clean foot covers at the next work area while standing on the sheet. Dispose of the used foot covers along with the plastic sheet at completion of work in that area. Do not reuse foot covers to move off the sheet.

If workday is complete or if next work area is in another secured area: All workers remove paper suits turning them inside out while doing so. The person on the sheet steps with each foot off the sheet as the foot covers are removed.

Fold sheet and all its contents toward the center.

Place the sheet in a properly labeled 6-mil polyethylene disposal bag.

Neck down the bag and collapse it with the HEPA vacuum.

Twist the bag shut, bend over and seal with duct tape by wrapping around bag neck at least 3 times.

Clean all surfaces of the work area by use of a HEPA filter vacuum until no visible residue remains.

At completion of work decontaminate workers in accordance with Section 01560 Worker Protection — Repair & Maintenance.

Remove respirators using the procedure in Section 01561 Worker Protection — Repair & Maintenance.

END OF SECTION 01527

Section 01560 — Worker protection

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-I Specification sections, apply to work of this section.

Description of work:

This section describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.

Related work specified elsewhere:

Respiratory Protection: is specified in Section 01562.

Worker training:

Train, in accordance with 29 CFR 1926, all workers in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. Include but do not limit the topics covered in the course to the following.

- Methods of recognizing asbestos.
- Health effects associated with asbestos.
- Relationship between smoking and asbestos in producing lung cancer.
- Nature of operations that could result in exposure to asbestos.
- Importance of and instruction in the use of necessary protective controls, practices and procedures to minimize exposure including:
- Engineering controls
- Work practices
- Respirators
- Housekeeping procedures Hygiene facilities
- Protective clothing
- Decontamination procedures
- Emergency procedures
- Waste disposal procedures
- Purpose, proper use, fitting, instructions, and limitations of respirators as required by 29 CFR 1910-134
- Appropriate work practices for the work
- Requirements of medical surveillance program
- Review of 29 CFR 1926
- Negative air systems
- Work practices including hands on or on-job training
- Personal decontamination procedures
- Air monitoring, personal and area

Medical examinations:

Provide medical examinations for all workers who may encounter an airborne fiber level of 0.1 f/cc or greater for an 8-hour time weighted average. In the absence of specific airborne fiber data provide medical examination for all workers who will enter the work area for any reason. Examination shall, as a minimum, meet OSHA requirements as set forth in 29 CFR 1926. In addition, provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.

Submittals:

Before Start of Work: Submit the following to the Owner's Representative for review. Do not start work until these submittals are returned with Owner's Representative's action stamp indicating that the submittal is returned for unrestricted use.

Certificate Worker Acknowledgment: Submit an original signed copy of the Certificate of Worker's Acknowledgment found at the end of this section, for each worker who is to be at the job site or enter the work area.

Training Program: Submit a course outline of the worker training course. Include date and time course was given, name and title of teacher, attendance sheet listing all attendees of the course. Submittal shall be in the form of a letter signed and dated by the course teacher.

Report from Medical Examination: Conducted within last 12 months as part of compliance with OSHA medical surveillance requirements for each worker who is to enter the work area. Submit, at a minimum, for each worker the following:

- Name and Social Security Number
- Physicians Written Opinion from examining physician including at a minimum the following:
- Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
- Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.
- Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.
- Copy of information that was provided to physician in compliance with 29 CFR 1926.
- Statement that worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat stress in the worker.

Notarized Certifications: Submit certification signed by an officer of the abatement contracting firm and notarized those exposure measurements, medical surveillance and worker training records are being kept in conformance with 29 CFR 1926.

Part 2 — Equipment

Protective clothing:

Coveralls: Provide disposable full-body coveralls and disposable head covers, and require that they be worn by all workers in the work area. Provide a sufficient number for all required changes, for all workers in the work area.

Boots: Provide work boots with non-skid soles, and where required by OSHA, foot protection, for all workers. Provide boots at no cost to workers. Paint uppers of all boots red with waterproof enamel. Do not allow boots to be removed from the work area for any reason, after being contaminated with asbestos-containing material. Dispose of boots as asbestos contaminated waste at the end of the work.

Hard Hats: Provide head protection (hard hats) as required by OSHA for all workers, and provide 4 spares for use by Owner's Representative, Project Administrator, and Owner. Label hats with same warning labels as used on disposal bags. Require hard hats to be worn at all times that work is in progress that may potentially cause head injury. Provide hard hats of type with plastic strap type suspension. Require hats to remain in the work area throughout the work. Thoroughly clean, decontaminate and bag hats before removing them from work area at the end of the work.

Goggles: Provide eye protection (goggles) as required by OSHA for all workers involved in scraping, spraying, or any other activity which may potentially cause eye injury.

Gloves: Provide work gloves to all workers and require that they be worn at all times in the work area. Do not remove gloves from work area and dispose of as asbestos contaminated waste at the end of the work.

Additional protective equipment:

Respirators, disposable coveralls, head covers, and footwear covers shall be provided by the contractor for the Owner, Owner's Representative, Project Administrator, and other authorized representatives who may inspect the job site. Provide two (2) respirators and six (6) complete coveralls and, where applicable, six (6) respirator filter changes per day.

Part 3 — Execution

General:

Provide worker protection as required by the most stringent OSHA and/or EPA standards applicable to the work. The following procedures are minimums to be adhered to regardless of fiber count in the work area.

Each time work area is entered removal all street clothes in the Changing Room of the Personnel Decontamination Facility and put on new disposable coveralls, new head cover, and a clean respirator. Proceed through shower room to equipment/dirty room and put on work boots.

Decontamination procedures:

Require all workers to adhere to the following personal decontamination procedures whenever they leave the work area:

Type C Supplied Air or Powered Air-Purifying Respirators: Require that all workers use the following decontamination procedure as a minimum requirement whenever leaving the work area:

> When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room.
>
> Still wearing respirators, proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator to avoid asbestos fibers while showering. The following procedure is required as a minimum:

Thoroughly wet body including hair and face. If using a Powered Air-Purifying Respirator (PAPR), hold blower unit above head to keep canisters dry.

With respirator still in place thoroughly wash body, hair, respirator face piece, and all parts of the respirator except the blower unit and battery pack on a PAPR. Pay particular attention to seal between face and respirator and under straps.

Take a deep breath, hold it and/or exhale slowly, completely wet hair, face, and respirator. While still holding breath, remove respirator and hold it away from face before starting to breath.

Carefully wash face piece of respirator inside and out.

If using PAPR: shut down in the following sequence, first cap inlets to filter cartridges, then turn off lower unit (this sequence will help keep debris which has collected on the inlet side of filter from dislodging and contaminating the outside of the unit). Thoroughly wash blower unit and hoses. Carefully wash battery pack with wet rag. Be extremely cautious of getting water in battery pack as this will short out and destroy battery.

Shower completely with soap and water.

Rinse thoroughly.

Rinse shower room walls and floor prior to exit.

Proceed from shower to Changing Room and change into street clothes or into new disposable work items.

Air Purifying-Negative Pressure Respirators:

Require that all workers use the following decontamination procedure as a minimum requirement whenever leaving the work area with a half- or full-face cartridge type respirator:

When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room.

Still wearing respirators, proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator and filters to avoid asbestos fibers while showering. The following procedure is required as a minimum:

Thoroughly wet body from neck down.

Wet hair as thoroughly as possible without wetting the respirator filter if using an air purifying type respirator.

Take a deep breath, hold it and/or exhale slowly, complete wetting of hair, thoroughly wetting face, respirator and filter (air purifying respirator).

While still holding breath, remove respirator and hold it away from face before starting to breath.

Dispose of wet filters from air purifying respirator.

Carefully wash face piece of respirator inside and out.

Shower completely with soap and water.

Rinse thoroughly.

Rinse shower room walls and floor prior to exit.

Proceed from shower to Changing Room and change into street clothes or into new disposable work items.

Within work area:

Workers shall not eat, drink, smoke, chew gum or tobacco in the work area. To eat, chew, drink or smoke, workers shall follow the procedure described above; then dress in street clothes before entering the non-work areas of the building.

Certificate of worker's acknowledgment:

Following the section 01013 is a Certificate of Worker Training. After each worker has been included in the Contractor's Respiratory Protection Program: completed the training program and medical examination; secure a fully executed copy of this form.

END OF SECTION 01560

Section 01562 — Respiratory protection

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

Description of work:

Instruct and train each worker involved in asbestos abatement or maintenance and repair of friable asbestos-containing materials in proper respiratory use. Require that each worker always wear a respirator, properly fitted on the face in the work area from the start of any operation which may cause airborne asbestos fibers until the work area is completely decontaminated. Use respiratory protection appropriate for the fiber level encountered in the work place or as required for other toxic or oxygen deficient situations encountered.

Standards:

Except to the extent that more stringent requirements are written directly into the Contract Documents, the following regulations and standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies were bound herewith. Where there is a conflict in requirements set forth in these regulations and standards, meet the more stringent requirement.

OSHA U.S. Department of Labor Occupational Safety and Health Administration, Safety and Health Standards 29 CFR 1910, Section 1001 and Section 1910.134. 29 CFR 1926.58.

CGA Compressed Gas Association, Inc., New York, Pamphlet G-7, "Compressed Air for Human Respiration", and Specification G7.1 "Commodity Specification for Air".

CSA Canadian Standard Association, Rexdal, Ontario, Standard Z180.1-1978, "Compressed Breathing Air".

ANSI American National Standard Practices for Respiratory Protection, ANSI Z88.2-1980.

NIOSH National Institute for Occupational Safety and Health

MSHA Mine Safety and Health Administration

Submittals:

Before Start of Work submit the following to the Owner’s Representative for review. Do not begin work until these submittals are returned with the Owner’s Representative's action stamp indicating that the submittal is returned for unrestricted use.

Product Data: Submit manufacturer's product information for each component used, including NIOSH and MSHA Certifications for each component in an assembly and/or for entire assembly.

System Diagram: When a Type "C" supplied air respiratory system is required by the work, submit drawing showing assembly of components into a complete supplied air respiratory system. Include diagram showing location of compressor, filter banks, backup air supply tanks, hose line connections in work area(s), routing of air lines to work area(s) from compressor.

Operating Instruction: Submit complete operating and maintenance instructions for all components and systems as a whole. Submittal is to be in bound manual form suitable for field use.

Respiratory Protection Program: Submit level of respiratory protection intended for each operation required by the project. Submit this information on the "Respiratory Protection Program" form at the end of this section.

Air quality for supplied air respiratory systems:

Provide air used for breathing in Type "C" supplied air respiratory systems that meets or exceeds standards set for C.G.A. type 1 (Gaseous Air) Grade D.

Allowable contaminants:

The following table sets forth the quantity of any given contaminant allowed according to the referenced standards:

Contaminant	CGA Type 1 (Gaseous Air)			CSA Z 180.1
	Grade D	Grade E	Grade H	
Carbon Monoxide, PPM/v	20	10	5	5
Carbon Dioxide, PPM/v	1000	500	500	500
Condensed Hydrocarbons, mg/m³	5	5		1
Gaseous Hydrocarbons as methane, PPM/v			10	25
Water Vapor, PPM/v Dewpoint	(1) -50 F	(1) -50 F	(1) -50 F	27 -63 F
Objectionable odors	None	None	None	None
Nitrogen Dioxide, PPM/v	‡	‡	0.5	0.2
Nitrous Oxide, PPM/v	‡	‡	‡	5
Halogenated solvents, PPM/v	‡	‡	1	‡
Other gaseous contaminants	‡	‡	‡	(2)
Inorganic particulates, mg./m³	‡	‡	‡	1

‡ Indicates that the standard shows no limiting characteristics.

(1) The CGA standards do not call for a specific moisture limit when the ambient temperature is above freezing. However, since a moisture content no greater than a -50 F dewpoint (66 PPM/V) is necessary for carbon monoxide elimination, the CO limits could not be met unless the air were dried to a -50 F dewpoint or better.

(2) Maximum allowable content or tricholotrifluorethane, dichlorodifluoromethane, and chlorodifluoromethane is 2 PPM/v for each. Unlisted contaminants shall not exceed one-tenth of the Threshold Limit Values (TLV's) for Chemical Substances in Workroom air adopted by the American Conference of Governmental Industrial Hygienists (ACGIH).

Delivery:

Deliver replacement parts, etc., not otherwise labeled by NIOSH or MSHA to job site in manufacturer's containers.

Part 2 — Equipment

Air purifying respirators:

Respirator Bodies: Provide half face or full-face type respirators. Equip full face respirators with a nose cup or other anti-fogging device as would be appropriate for use in air temperatures less than 32 degrees Fahrenheit.

Filter Cartridges: Provide, at a minimum, HEPA type filters labeled with NIOSH and MSHA Certification for "Radio nuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color coded in accordance with ANSI Z228.2 (1980). In addition ' a chemical cartridge section may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH/MSHA Certification.

Non-permitted respirators: Do not use single use, disposable or quarter-face respirators.

Type "C" supplied air respirator with a SCBA emergency backup:

Provide equipment capable of producing air of the quality and volume required by the above-referenced standards applied to the job site conditions and crew size. Comply with provisions of this specification if more stringent than the governing standard.

Face Piece and Hose: Provide full-face piece and hose by same manufacturer that has been certified by NIOSH/MSHA as an approved Type "C" respirator assembly operating in pressure demand mode with a positive pressure face piece.

Escape air supply: In atmospheres which are oxygen deficient (less than 19.5% oxygen) provide a pressure-demand full-face piece supplied air respirator incorporating an auxiliary self-contained breathing apparatus (SCBA) which automatically maintains an uninterrupted air supply in pressure demand mode with a positive pressure face piece.

Backup air supply: Provide a reservoir of compressed air located outside the work area which will automatically maintain a continuous uninterruptible source of air automatically available to each connected face piece and hose assembly in the event of compressor shut-down, contamination of air delivered by compressor, power loss or other failure. Provide sufficient capacity in the back-up air supply to allow a minimum escape time of one-half hour times the number of connections available to the work area. Air requirement at each connection is the air requirement of the respirators in use plus the air requirement of an average sized adult male engaged in moderately strenuous activity.

Warning device: Provide a warning device that will operate independently of the building's power supply. Locate so that alarm is clearly audible above the noise level produced by equipment and work procedures in use, in all parts of the work area and at the compressor. Connect alarm to warn of:

Compressor shut down or other fault requiring use of backup air supply
Carbon Monoxide (CO) levels in excess of 5 PPM/v.

Carbon Monoxide (CO) Monitor: Continuously monitor and record on a strip chart recorder Carbon Monoxide (CO) levels. Place monitors in the air line between compressor and back-up air supply and between back-up air supply and workers. Connect monitors so that they also sound an alarm as specified under "Warning Devices".

Compressor Shut Down: Interconnect monitors, alarms and compressor so that compressor is automatically shut down and the alarms sounded if any of the following occur:

Carbon Monoxide (CO) concentrations exceed 5 PPM/v in the air line between the filter bank and back-up air supply.

Compressor temperature exceeds normal operating range.

Compressor Motor: Provide a compressor driven by an electric motor. Do not use a gas or diesel engine to drive compressor. Insure that electrical supply available at the work site is adequate to energize motor.

Compressor Location: Locate compressor outside of building in location that it will not impede access to the building, and that will not cause a nuisance by virtue of noise or fumes to occupied portions of the building.

Air Intake: Locate air intake remotely from any source of automobile exhaust or any exhaust from motors, or buildings.

After Cooler: Provide an after cooler at entry to filter system which is capable of reducing temperatures to outside ambient air temperatures.

Self-Contained Breathing Apparatus (SCBA): Configure system to permit the recharging of ½ hour 2260-PSI SCBA cylinders.

Part 3 — Execution

General:

Respiratory Protection Program: Comply with ANSI Z, 88.2 - 1980 "Practices for Respiratory Protection" and OSHA 29 CFR 12910 and 1926.

Require that respiratory protection be used at all times that there is any possibility of asbestos-containing materials being disturbed intentionally or accidentally.

Require that a respirator be worn by anyone in a work area at all times, regardless of activity, during a period that starts with any operation which could cause airborne fibers until the area has been cleared for re-occupancy in accordance with Section 01714.

Regardless of Airborne Fiber Levels: Require that the minimum level of respiratory protection used be half-face air-purifying respirators with high efficiency filters.

Do not allow the use of single-use, disposable, or quarter-face respirators for any purpose.

Fit testing:

Initial Fitting: Provide initial fitting of respiratory protection during a respiratory protection course of training set up and administered by a certified industrial hygienist. Fit types of respirator to be actually worn by each individual. Allow an individual to use only those respirators for which he has been trained and fit.

On a Weekly Basis, check the fit of each Worker's respirator by having irritant smoke blown onto the respirator from a smoke tube.

Upon Each Wearing: Require that each time an air-purifying respirator is put on, it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions or ANSI Z88.2 (1980).

Type of respiratory protection required:

Provide Respiratory Protection as indicated in paragraph below. Where paragraph below does not apply, determine the proper level of protection by dividing the expected or actual airborne fiber count in the work area by the "protection factors" given below. The level of respiratory protection which supplies an airborne fiber level inside the respirator, at the breathing zone of the wearer, at or below the permissible exposure limit (PER) is the minimum level of protection allowed.

Type "C" Supplied-air respirators: full face piece pressure demand supplied air respirators are to be used by all workers engaged in the removal, or demolition of pipes, structures, or equipment covered or insulated with asbestos, or in the removal or demolition of asbestos insulation or coverings, or any other activity which results in or may result in airborne asbestos fibers.

Permissible Exposure Level (PEL):

8-Hour Time Weighted Average (TWA) of asbestos fibers to which any worker may be exposed shall not exceed the following.

Fibers: For purposes of this section fibers are defined as all fibers regardless of composition as counted in the OSHA Reference Method (ORM), NIOSH or 7400 procedure, or asbestos fibers of any size as counted using either a scanning or transmission electron microscope.

Time Weighted Average (TWA) — 0.1 fibers/cubic centimeter

Respiratory protection factor:

Respirator Type	Protection Factor
Air purifying: Negative pressure respirator High efficiency filter Half face piece	10
Air purifying: Negative pressure respirator High efficiency filter	50

Full-face piece

Powered-air purifying (PAPR): 1000
Positive pressure respirator
High efficiency filter
Full face piece

Type "C" supplied air: 1000
Positive pressure respirator
continuous-flow
Full face piece

Type "C" supplied air: 1,000
Positive pressure respirator
pressure demand
Full-face piece

Type C supplied air: 1,000
Positive pressure respirator
pressure demand
Full-face piece
Equipped with an
auxiliary positive pressure
Self-contained breathing
apparatus (SCBA)

Self-contained breathing 10,000
apparatus (SCBA):
Positive pressure respirator
pressure demand
Full-face piece

Air purifying respirators:

Negative pressure-half or full-face mask: Supply a sufficient quantity of respirator filters approved for asbestos, so that workers can change filters during the workday. Require that respirators be wet-rinsed, and filters discarded, each time a worker leaves the work area. Require that new filters be installed each time a worker re-enters the work area. Store respirators and filters at the job site in the changing room and protect totally from exposure to asbestos prior to their use.

Powered air purifying-half or full face mask: Supply a sufficient quantity of high efficiency respirator filters approved for asbestos so that workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement. Require that regardless of flow, filter cartridges be replaced after 40 hours of use. Require that HEPA elements in filter cartridges be protected from wetting during showering. Require entire exterior housing of respirator including blower unit, filter cartridges, hoses, battery pack, facemask, belt, and cords to be washed each time a worker leaves the work area. Caution should be used to avoid shorting battery pack during washing. Provide an extra battery pack for each respirator so that one can be charging while one is in use.

Type "C" respirator:

Air Systems Monitor: Continuously monitor the air system operation including compressor operation, filter system operation, backup air capacity and all warning and monitoring devices at all times that system is in operation. Assign an individual trained by manufacturer of the equipment in use or by a Certified Industrial Hygienist, in the operation and maintenance of the system to provide this monitoring. Assign no other duties to this individual which will take him away from monitoring the air system.

Respiratory protection program:

Submit completed form "Respiratory Protection Program", found at end of this section, indicating type of respiratory protection proposed for each portion of the work.

END OF SECTION 01562

Section 01563 — Decontamination units

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-I Specification sections, apply to work of this section.

Description of work:

Provide separate personnel and waste\equipment decontamination facilities. Require that the Personnel Decontamination Facility (PDF) be the only means of ingress and egress for the work area. Require that all materials exit the Work Area through the Waste\Equipment Decontamination Facility (EDF).

Related work specified elsewhere:

Refer to Section 01503 Temporary Facilities — Asbestos Abatement for electrical requirements and requirements relative to connection of decontamination facilities to building systems such as water, sewer, and electrical. Also refer to general VA specifications for PDFs and EDFs in Section 02 82 11.

Part 2 — Products

Polyethylene Sheet: A single 6-mil fire retardant, opaque polyethylene film in the largest sheet size possible to minimize seams.

Duct Tape: Provide duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to aggressively stick to sheet polyethylene.

Shower Pan: Provide one-piece waterproof shower pan 4' x 4' minimum by 6" deep. Fabricate from seamless fiberglass minimum 1/16" thick reinforced with wood, 18 gallon stainless steel with welded seams, or a seamless liner or minimum 60 mil thick rubber roofing.

Shower Walls: Provide approximately 3’ long by 7' high walls fabricated from rigid, impervious, waterproof material, either metal, corrugated fiberglass roofing or equivalent. Structurally support as necessary for stability.

Shower Filtration: Waste water will be pumped to a drain after being filtered through a minimum of a 100 micron sock in the shower drain; a 20 micron filter; and a final 5 micron filter. Filters will be changed a minimum of daily or more often as needed. Filter changes must be done in the shower to prevent loss of contaminated water. Hose down all shower surfaces after each shift and clean any debris from the shower pan. Residue is to be disposed of as asbestos waste.

Shower Head and Controls: Provide a factory made showerhead producing a spray of water which can be adjusted for spray size and intensity. Feed shower with water mixed from hot and cold supply lines. Arrange so that control of water temperature, flow rate, and shut off is from inside shower without outside aid.

Hose Bib: Provide heavy bronze angle type with wheel handle, vacuum breaker, and ¾" National Standard male hose outlet.

Shower Stall: For Wash Down Station, provide leak tight shower enclosure with integrated drain pan fabricated from fiberglass or other durable waterproof material, approximately 3' x 3' square with minimum 6' high sides and back. Structurally support as necessary for stability. Equip with hose bib, as specified in this section, mounted at approximately 4'0" above drain pan. Connect drain to a reservoir, pump water from reservoir through filters to a drain or store and use for amended water. Mount filters inside shower stall on back wall beneath hose bib. The shower shall be equipped with a shower head and controls, hot and cold water, drainage, soap dish and continuous supply of soap, and shall be maintained in a sanitary condition throughout its use. The controls shall be arranged so an individual can shower without assistance.

Rubber Roofing: Provide uniform flat sheets of flexible sheet roofing material fabricated from EPDM (ethylene propylene diene monomers) or Neoprene (polychloroprene), in a nominal thickness of 45 mils.

Lumber: Provide kiln dried lumber of any grade or species.

Sump Pump: Provide totally submersible waterproof sump pump with integral float switch. Provide unit sized to pump 2 times the flow capacity of all showers or hoses supplying water to the sump, through the filters specified herein when they are loaded to the extent that replacement is required. Provide unit capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump. Adjust float switch so that a minimum of 3" remains between top of liquid and top of sump pan.

Part 3 — Execution

General:

Personnel Decontamination Facility:

Provide a Personnel Decontamination Facility (PDF) consisting of a Change Room connected to adjoining 5-stage decontamination units with a common entry for sign-in/sign out, each compliant with MDH Asbestos Abatement Rules and VA specifications. Require all persons without exception to pass through this common entry point to the PDF for entry into and exiting from the Work Area for any purpose. Do not allow parallel routes for entry or exit. Do not remove equipment or materials through Personnel Decontamination Unit. Provide temporary lighting within decontamination units as necessary to reach a lighting level of 100-foot candles.

The number of adjoining 5-stage decontamination units required for each containment will be based on the number of persons in containment. One 5-stage decontamination unit shall be required for every five persons in containment. Under all circumstances, each 5-stage decontamination unit will be compliant with all MDH specifications and consist of a clean room, air lock, shower unit, airlock, and dirty room. Additional specifications will also be required below.

Changing Area: Provide a Changing Area that is physically and visually separated from the rest of the building for the purpose of changing into protective Clothing. Construct using polyethylene sheeting, at least 6-mil in thickness, to provide an airtight seal between the Changing Area and the rest of the building. Locate so that access to Work Area from Changing Room is through the PDF. Separate Changing Room from the building by a sheet polyethylene flapped doorway.

Require workers to remove all street clothes in this room, dress in clean disposable coveralls, and don respiratory protection equipment. Do not allow asbestos contaminated items to enter this room. Require workers to enter this room either from outside the structure dressed in street clothes, or naked from the showers.

An existing room may be utilized as the Changing Room if it is suitably located and of a configuration whereby workmen may enter the Changing Room directly from the PDF. Protect all surfaces of room with sheet plastic as set forth in Section 01526 Temporary enclosures. Authorization for this must be obtained from the Owner's Representative in writing prior to start of construction. Submit written request in accordance with Section 01632 Products and Substitutions detailing layout and protective measures proposed.

Females required to enter the regulated area shall be ensured of their privacy throughout the entry/exit process by posting guards at both entry points to the PDF so no male can enter or exit the PDF during her stay in the PDF.

Maintain floor of changing room dry and clean at all times. Do not allow overflow water from shower to wet floor in changing room. Damp wipe all surfaces twice after each shift change with a disinfectant solution. Provide a continuously adequate supply of disposable bath towels. Provide posted information for all emergency phone numbers and procedures. Provide one storage locker per person. A portable fire extinguisher, Type ABC, shall be provided in accordance with OSHA and NFPA Standard 10.

Clean Rooms: The clean room of each of the 5-stage decontamination units shall be constructed of at least 3 layers of 6 mil opaque fire retardant poly to provide an air tight room. Provide a minimum of 2 - 900 mm (3 foot) wide 6 mil poly opaque fire retardant doorways. One doorway shall be the entry from the change area and the second doorway shall be to airlock chamber leading to the shower room of the individual 5-stage decontamination units. Each doorway shall consist of two overlapping sheets of 6-mil poly. The floor of the clean room shall be maintained in a clean, dry condition. Shower overflow shall not be allowed into the clean room.

Airlock Chambers: Each of the adjoining 5-stage decontamination units shall be equipped with two airlock chambers, with one chamber separating the shower unit from the clean room and one separating the shower unit from the dirty room. The walls and floors of each airlock chamber will consist of at least 3 layers of 6 mil opaque fire retardant poly to provide an airtight room. Provide a minimum of 2 - 900 mm (3 foot) wide 6 mil poly opaque fire retardant doorways. Each doorway shall consist of two overlapping sheets of 6-mil poly. The floor of each airlock chamber shall be maintained in a clean, dry condition.

Shower Rooms: Each of the adjoining 5-stage decontamination units shall include a shower room. The Competent Person shall assure that it is a completely water tight compartment to be used for the movement of all personnel from the clean room to the equipment room and for the showering of all personnel going from the equipment room to the clean room. Each shower shall be constructed so water runs down the walls of the shower and into a drip pan. Install a freely draining smooth floor on top of the shower pan. The shower room shall be separated from airlock chambers leading to the clean room and equipment room using air tight walls made from at least 3 layers of 6 mil opaque fire retardant poly. Each doorway shall consist of two overlapping sheets of 6-mil poly

The shower shall be equipped with a shower head and controls, hot and cold water, drainage, soap dish and continuous supply of soap, and shall be maintained in a sanitary condition throughout its use. The controls shall be arranged so an individual can shower without assistance. Provide a flexible hose shower head, hose bibs and all other items shown on Shower Schematic. Waste water will be pumped to a drain after being filtered through a minimum of a 100 micron sock in the shower drain; a 20 micron filter; and a final 5 micron filter. Filters will

be changed a minimum of daily or more often as needed. Filter changes must be done in the shower to prevent loss of contaminated water. Hose down all shower surfaces after each shift and clean any debris from the shower pan. Residue is to be disposed of as asbestos waste.

Dirty Rooms: Each shall provide an equipment room which shall be an air tight compartment for the storage of work equipment/tools, reusable personal protective equipment, except for a respirator and for use as a gross decontamination area for personnel exiting the regulated area. The walls and floor of the dirty rooms shall consist of 3 layers of 6 mil fire retardant opaque poly. The dirty room shall be separated from the regulated area as well as the airlock chamber leading to the shower unit by a minimum 3 foot wide door made with 2 layers of overlapping 6 mil opaque fire retardant poly. Damp wipe all surfaces of the equipment room after each shift change. Provide an additional loose layer of 6 mil fire retardant poly per shift change and remove this layer after each shift. If needed, provide a temporary electrical sub-panel equipped with GFCI in the equipment room to accommodate any equipment required in the regulated area.

If any decontamination unit is located within an area containing friable asbestos on overhead ceilings, ducts, piping, etc., provide the area with a minimum 1/4 inch hardboard or 1/2 inch plywood "ceiling" with polyethylene sheeting, at least 4 mil in thickness covering the top of the "ceiling".

Visual Barrier: Where the decontamination area is immediately adjacent to and within view of occupied areas, provide a visual barrier of opaque polyethylene sheeting at least 4-mil in thickness so that worker privacy is maintained and work procedures are not visible to building occupants. Where the area adjacent to the decontamination area is accessible to the public, construct a solid barrier on the public side of the sheeting to protect the sheeting. Construct barrier with wood or metal studs covered with minimum 1/4 inch thick hardboard or 1/2 inch plywood. Where the solid barrier is provided, sheeting need not be opaque.

Alternate methods of providing decontamination facilities may be submitted to the Owner’s Representative for approval. Do not proceed with any such method(s) without written authorization of the Owner’s Representative.

Electrical: Provide subpanel at Changing Room to accommodate all removal equipment. Power subpanel directly from a building electrical panel. Connect all electrical branch circuits in decontamination unit and particularly any pumps in shower room to a ground-fault circuit protection device.

Decontamination sequence:

Entering Work Area:

Worker enters Changing Area, removes street clothing, puts on clean disposable overalls and respirator, proceeds to the common entry point for the 5-stage decontamination units, signs the sign-in sheet, and passes through the Clean Room, Airlock Chamber, Shower Room, and Airlock Chamber to the Dirty Room.

Any additional clothing and equipment left in the Dirty Room needed by the worker are put on in the Dirty Room.

Worker proceeds to Work Area.

Exiting Work Area:

Before leaving the work area, require the worker to remove all gross contamination and debris from overalls and feet. The worker then proceeds to the Equipment Room and removes all clothing except respiratory protection equipment. Extra work clothing may be stored in contaminated end of the

Equipment Room. Disposable coveralls are placed in a bag for disposal with other material. Decontamination procedures found in Section 01560 shall be followed by all individuals leaving the work area.

After showering, the worker moves to the Changing Area and dresses in either new coveralls for another entry or street clothes if leaving.

Waste/Equipment Decontamination Facilities (EDFs):

The EDF shall consist of a Wash Room, Holding Room, and Clean Room for removal of waste, equipment and contaminated material from the regulated area. Personnel shall not enter or exit the W/EDF except in the event of an emergency. Clean debris and residue in the W/EDF daily. All surfaces in the W/EDF shall be wiped/hosed down after each shift and all debris shall be cleaned from the shower pan. The W/EDF shall consist of the following:

1. Wash Down Station: Provide an enclosed shower unit in the regulated area just outside the Wash Room as an equipment bag and container cleaning station.
2. Wash Room: Provide a wash room for cleaning of bagged or containerized asbestos containing waste materials passed from the regulated area. Construct the wash room using 50 x 100 mm (2" x 4") wood framing and 3 layers of 6 mil fire retardant poly. Locate the wash room so that packaged materials, after being wiped clean, can be passed to the Holding Room. Doorways in the wash room shall be constructed of 2 layers of overlapping 6 mil fire retardant poly.
3. Holding Room: Provide a holding room as a drop location for bagged materials passed from the wash room. Construct the holding room using 50 x 100 mm (2" x 4") wood framing and 3 layers of 6 mil fire retardant poly. The holding room shall be located so that bagged material cannot be passed from the wash room to the clean room unless it goes through the holding room. Doorways in the holding room shall be constructed of 2 layers of overlapping 6 mil fire retardant poly.
4. Clean Room: Provide a clean room to isolate the holding room from the exterior of the regulated area. Construct the clean room using 2 x 4 wood framing and 2 layers of 6 mil fire retardant poly. The clean room shall be located so as to provide access to the holding room from the building exterior. Doorways to the clean room shall be constructed of 2 layers of 6 mil fire retardant poly. When a negative pressure differential system is used, a rigid enclosure separation between the W/EDF clean room and the adjacent areas shall be provided.
5. The W/EDF shall be provided as follows: Wash Room leading to a Holding Room followed by a Clean Room leading to outside the regulated area.

WASTE/EQUIPMENT DECONTAMINATION PROCEDURES

At washdown station in the regulated area, thoroughly wet clean contaminated equipment and/or sealed polyethylene bags and pass into Wash Room after visual inspection. All 6-mil poly bags shall be double-sealed and goosenecked before passing into the Holding Room. When passing anything into the Wash Room, close all doorways of the W/EDF, other than the doorway between the washdown station and the Wash Room. Keep all outside personnel clear of the W/EDF. Once inside the Wash Room, wet clean the equipment and/or bags. After cleaning and inspection, pass items into the Holding Room. Close all doorways except the doorway between the Holding Room and the Clean Room.

Workers from the Clean Room/Exterior shall enter the Holding Room and re-inspect the decontaminated/cleaned equipment/bags before removal and disposal. Any containers found to still be contaminated shall be left in the Holding Room to be brought back to the Wash Room for re-cleaning. These personnel will not be required to wear PPE. At no time shall personnel from the clean side be allowed to enter the Wash Room. All waste containers should have all required EPA, OSHA, and DOT labels attached before leaving the Clean Room of the EDF.

Cleaning of decontamination unit's:

Clean debris and residue from inside of Decontamination Units on a daily basis or as otherwise indicated on contract drawings. Damp wipe or hose down all surfaces after each shift change. Clean debris from shower pans on a daily basis.

Signs:

Post an approximately 20 inch by 14 inch manufactured caution sign at each entrance to the Work Area displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926:

Legend

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

Provide spacing between respective lines at least equal to the height of the respective upper line.

Post an approximately 10 inch by 14 inch manufactured sign at each entrance to each work area displaying the following legend with letter sizes and styles of a visibility at least equal to the following:

LEGEND	NOTATION
No food, Beverages or Tobacco Permitted	¾" Block Lettering
All Persons Shall Don Protective Clothing (Coverings) Before Entering the Work Area	¾" Block Lettering
All Persons Shall Shower immediately After Leaving Work Area and Before Entering the Changing Area	¾" Block Lettering

END OF SECTION 01563

Section 01632 — Products and substitutions

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

Description of requirements:

Definitions: Definitions used in this paragraph are not intended to negate the meaning of other terms used in the contract documents, including such terms as, "specialties", "systems", "structure", "finishes", "accessories", "furnishings", "special construction" and similar terms. Such terms are self-explanatory and have recognized meanings in the construction industry.

"Products" are items purchased for incorporation in the Work, regardless of whether they were specifically purchased for the project or taken from the Contractor's previously purchased stock. The term "product" as used herein includes the terms "material", "equipment", "system" and other terms of similar intent.

"Named Products" are products identified by use of the manufacturer's name for a product, including such items as a make or model designation, as recorded in manufacturer's published product literature, of the latest issue as of the date of the contract documents.

"Materials" are products that must be substantially cut, shaped, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form units of work.

"Equipment" is defined as a product with operational parts, regardless of whether motorized or manually operated, and in particular, a product that requires service connections such as wiring or piping.

Procedures:

Substitutions: The Contractor's requests for changes in the products, materials, equipment and methods of construction required by the contract documents are considered requests for "substitutions", and are subject to the requirements specified herein. The following are not considered as substitutions:

- Revisions to the contract documents, where requested by the Owner, or Owner’s Representative are considered as "changes" not substitutions.
- Substitutions requested during the bidding period, which have been accepted prior to the Contract Date, are included in the contract documents and are not subject to the requirements for substitutions as herein specified.
- Specified Contractor options on products and construction methods included in the contract documents are choices available to the Contractor and are not subject to the requirements for substitutions as herein specified.
- Except as otherwise provided in the contract documents, the Contractor's determination of and compliance with governing regulations and orders as issued by governing authorities do not constitute "substitutions" and do not constitute a basis for change orders.

Standards: Refer to Division-1 section "Definitions and Standards" for the applicability of industry standards to the products specified for the project, and for the acronyms used in the text of the specification sections.

Quality Assurance:

Source Limitations: To the fullest extent possible, provide products of the same generic kind, from a single source, for each unit of work.

Compatibility of Options: Compatibility of products is a basic requirement of product selection. When the Contractor is given the option of selecting between two or more products for use on the project, the product selected must be compatible with other products previously selected, even if the products previously selected were also Contractor options. The complete compatibility between the various choices available to the Contractor is not assured by the various requirements of the Contract documents, but must be provided by the Contractor.

Submittals:

Substitution Request Submittal:

> **Requests for Substitutions.** Submit 3 copies of each request for substitution. In each request identify the product or fabrication or installation method to be replaced by the substitution; include related specification section and drawing numbers, and complete documentation showing compliance with the requirements for substitutions. Include the following information, as appropriate, with each request.
>
> Provide complete product data, drawings and descriptions of products, and fabrication and installation procedures.
>
> Provide samples where applicable or requested.
>
> Provide a detailed comparison of the significant qualities of the proposed substitution with those of the work originally specified. Significant qualities include elements such as size, weight, durability, performance and visual effect where applicable.
>
> Provide complete coordination information. Include all changes required in other elements of the work to accommodate the substitution, including work performed by the Owner and separate Contractors.
>
> Provide a statement indicating the effect the substitution will have on the work schedule in comparison to the schedule without approval of the proposed substitution. Include information regarding the effect of the proposed substitution on the Contract Time.
>
> Provide complete cost information, including a proposal of the net change, if any in the Contract Sum.
>
> Provide certification by the Contractor to the effect that, in the Contractor's opinion, after thorough evaluation, the proposed substitution will result in work that in every significant respect is equal-to or better than the work required by the Contract documents, and that it will perform adequately in the application indicated.

Include in this certification, the Contractor's waiver of rights to additional payment or time, which may subsequently be necessary because of the failure of the substitution to perform adequately.

Change Order Form: Submit requests for substitutions in the form and in accordance with procedures required for change order proposals.

Owner's Representative Action: Within one week of receipt of the Contractor's request for substitution, the Owner's Representative will request additional information or documentation as may be needed for evaluation of the request. Within 2 weeks of receipt of the request, or within one week of receipt of the requested additional information or documentation, whichever is later, the Owner's Representative will notify the Contractor of either the acceptance or rejection of the proposed substitution.

Acceptance will be in the form of a change order.

Rejection will include a statement giving reasons for the rejection.

Product delivery, storage, and handling:

General: Deliver, store, and handle products in accordance with manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft. Control to prevent overcrowding of construction spaces. In particular, coordinate delivery and installation Lo ensure minimum holding or storage times for items known or recognized to be flammable. hazardous, easily damaged, or sensitive to deterioration, theft and other sources of loss.

Part 2 — Products

General product compliance:

General: Requirements for individual products are indicated in the contract documents; compliance with these requirements is in itself a contract requirement.

Procedures for Selecting Products: The Contractor's options in selecting products are limited by requirements of the contract documents and governing regulations. They are not controlled by industry traditions or procedures experienced by the Contractor on previous construction projects. Required procedures include but are not limited to the following for the various indicated methods of specifying:

Non-Proprietary Specification Requirements: Where the specifications name products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to the use of these products only, the Contractor may, at his option, use any available product that complies with contract requirements.

Or equal: Where a particular product or device is specified by brand name or manufacturer, it is to be considered a standard. If approved equal, items of other manufacturer than those mentioned may be used, unless specifically noted otherwise for purposes of standardization. Any substitution must receive the written approval of the Owner's Representative. In the specifications, many times are preceded or followed by the phrase "or approved equal" and many others are not. The absence of that phrase is not to be interpreted as in derogation of the provisions of the paragraph. Comply with the contract document provisions concerning "substitutions" for obtaining Owner's Representative's approval.

Compliance with Standards, Codes, and Regulations: Where the specifications require only compliance with -an imposed standard, code or regulation, the Contractor has the option of selecting a product that complies with specification requirements, including standards, codes, and regulations.

Substitutions:

Conditions: The Contractor's request for a substitution will be received and considered when extensive revisions to the contract documents are not required, when the proposed changes are in keeping with the general intent of the contract documents, when the requests are timely, fully documented and properly submitted, and when one or more of the following conditions is satisfied, all as judged by the Owner's Representative. Otherwise, the requests will be returned without action except to record non-compliance with these requirements.

The Owner's Representative will consider a request for substitution where the request is directly related to an "or equal" clause or similar language in the contract documents.

The Owner's Representative will consider a request for substitution where the specified product or method cannot be provided within the Contract Time. However, the request will not be considered if the product or method cannot be provided as a result of the Contractor's failure to pursue the work promptly or to coordinate the various activities properly.

The Owner's Representative will consider a request for substitution where the specified product or method cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

The Owner's Representative will consider a request for a substitution where a substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting of offsetting responsibilities the Owner may be required to bear. These additional responsibilities may include such considerations as additional compensation to the Owner's Representative for redesign and evaluation services, the increased cost of other work by the Owner or separate contractors, and similar considerations.

The Owner's Representative will consider a request for substitution when the specified product or method cannot be provided in a manner which is compatible with other materials of the work, and where the Contractor certifies that the substitution will overcome the incompatibility.

The Owner's Representative will consider a request for substitution when the specified product or method cannot be properly coordinated with other materials in the work, and where the Contractor certifies that the proposed substitution can be properly coordinated.

The Owner's Representative will consider a request for substitution when the specified product or method cannot receive a warranty as required by the contract documents and where the contractor certifies that the proposed substitution includes the required warranty.

Work-Related Submittals: The Contractor's submittal of and the Owner's Representative's acceptance of shop drawings, product data or samples which relate to work not complying with requirements of the contract documents, does not constitute an acceptable or valid request for a substitution, nor approval thereof.

General product requirements:

General: Provide products that comply with the requirements of the contract documents that are undamaged and, unless otherwise indicated, unused at the time of installation. Provide products that are complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

Part 3 — Execution

Installation of products:

General: Except as otherwise indicated in individual sections of these specifications, comply with the manufacturer's instructions and recommendations for installation of the products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other work. Clean exposed surfaces and protect surfaces as necessary to ensure freedom from damage and deterioration at time of acceptance.

END OF SECTION – 01632

Section 01701 — Project closeout: asbestos abatement

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

Description of requirements:

Definitions: Project closeout is the term used to describe certain collective project requirements, indicating completion of the Work, that are to be fulfilled near the end of the Contract time in preparation for final acceptance and occupancy of the Work by the Owner, as well as final payment to the Contractor and the normal termination of the Contract.

Specific requirements for individual units of work are included in the appropriate sections in Division 2 through 16.

Time of closeout is directly related to "Substantial Completion"; therefore, the time of closeout may be either a single time period for the entire Work or a series of time periods for individual elements of the Work that have been certified as substantially complete at different dates. This time variation, if any, shall be applicable to the other provisions of this section.

Prerequisites to substantial completion:

General: Complete the following before requesting the Owner's Representative to inspect for certification of substantial completion, either for the entire Work or for portions of the Work. Include list of known exceptions.

Complete final cleaning up requirements, including touch-up painting of marred surfaces.

Touch-up and otherwise repair and restore marred exposed finishes.

Inspection Procedures: Upon receipt of Contractor's request for inspection, the Owner's Representative will either proceed with inspection or advise Contractor of unfulfilled prerequisites.

Following initial inspection, Owner's Representative will either prepare the certificate of substantial completion, or will advise Contractor of work which must be performed before the certificate will be issued. The Owner's Representative will repeat the inspection when requested and when assured that the Work has been substantially completed.

Results of the completed inspection will form the initial "punch-list" for final acceptance.

Prerequisites to final acceptance:

General: Complete the following before requesting the Owner's Representative's final inspection for certification of final acceptance, and final payment as required by the General Conditions. List known exceptions, if any, in request:

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

Re-inspection Procedure: The Owner’s Representative will re-inspect the work upon receipt of the Contractor's notice that the work, including punch list items resulting from earlier inspections, has been completed, except for these items whose completion has been delayed because of circumstances that are acceptable to the Owner’s Representative.

Upon completion of re-inspection, the Owner’s Representative will either prepare a certificate of final acceptance, or will advise the Contractor of work that is incomplete or of obligations that have not been fulfilled, but are required for final acceptance.

If necessary, the re-inspection procedure will be repeated.

Part 2 — Products (Not Applicable)

Part 3 — Execution

Final cleaning:

General: Special cleaning requirements for specific units of Work are included in the appropriate sections of Divisions 2 through 16. General cleaning during the regular progress of the Work is required by the General Conditions and is included under section "Temporary Facilities".

Cleaning: Provide final cleaning of the Work at the time indicated. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of work to the condition expected from a normal, commercial building cleaning and maintenance program. Comply with the manufacturer's instructions for operations.

Complete the following cleaning operations before requesting the Owner’s Representative inspection for certification of substantial completion.

Remove exposed labels in finished spaces that are not required as permanent labels on materials supplied as part of the work, except for "Asbestos", "Asbestos Free", or Thermal Insulation Labels specified elsewhere.

Clean transparent materials, affected by the work including mirrors and window/door glass, to a polished condition, removing substances which are noticeably vision-obscuring materials. Replace broken glass and damaged transparent materials.

Clean exposed hard-surfaced finishes affected by the work, to a dirt free condition, free of dust, stains, films and similar distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.

Vacuum clean with HEPA vacuum carpeted surfaces and similar soft surfaces and/or professional clean to remove staining caused by work of this contract.

Clean plumbing fixtures affected by the work to a sanitary condition, free of stains including those resulting from water exposure.

Clean light fixtures and lamps which have been affected by the work so as to function with full efficiency. Replace lamps where inoperable.

Clean project site (yard and grounds), including landscaped areas, of litter and foreign substances left during the course of the work. Sweep paved areas which have been affected by the work to a broom-clean condition.

Removal of Protection: Except as otherwise indicated or requested by the Owner's Representative's, remove temporary protection devices and facilities which were installed during the course of the work to protect previously completed work during the remainder of the construction period.

Compliance: Comply with safety standards and governing regulations for cleaning operations. Do not bum waste materials at the site. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile or other harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

END OF SECTION 01701

Section 01711 — Project decontamination

Part I — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

Description of requirements:

General: Decontamination of the Work Area following asbestos abatement.

> If the asbestos abatement work is on damaged or friable materials, then the building space is deemed contaminated before start of the work and in need of decontamination. In this case the work is a four step Procedure with two cleanings of the primary barrier plastic prior to its removal and two cleanings of the room surfaces to remove any new or existing contamination.

Related work specified elsewhere:

Removal of Gross Debris is integral with the performance of abatement work and as such is specified in the appropriate work section(s) of these specifications:

> Section 02081 Removal of Asbestos-containing Materials

Work Area Clearance: Air testing and other requirements which must be met before release of Contractor and re-occupancy of the work area are specified in Section 01714.

Part 2 — Products (not applicable)

Part 3 — Execution

General:

Work of This Section: includes the decontamination of air in the Work Area which has been, or may have been contaminated by the elevated airborne asbestos fiber levels generated during abatement activities, or which may previously have had elevated fiber levels due to friable asbestos-containing materials in the space.

Work of This Section: includes the cleaning, decontamination, and removal of temporary facilities installed prior to abatement work, including:

> Primary and Critical barriers erected by work of Section 01526
> Decontamination Unit erected by work of section 01563
> Negative Pressure System installed by work of section 01513

Work of This Section: includes the cleaning, and decontamination of all surfaces (ceiling, walls, floor) of the Work Area, and all furniture or equipment in the Work Area.

Start of work:

Previous Work: During completion of the asbestos abatement work specified in other sections, the Secondary Barrier of polyethylene sheeting will have been removed and disposed of along with any gross debris generated by the asbestos abatement work.

Start of Work: Work of this section begins with the cleaning of the Primary Barrier. At start of work the following will be in place:

Primary Barrier: Two layers of polyethylene sheeting on floor and one layer on walls.
Critical Barrier which forms the sole barrier between the work area and other portions of the building or the outside.
Critical Barrier Sheeting over lighting fixtures and clocks, ventilation openings, doorways, convectors, speakers and other openings.
Decontamination Units: for personnel and equipment in operating condition.
Negative Pressure System: in operation.

Final Cleaning: Carry out a first cleaning of all surfaces of the work area including items of remaining sheeting, tools, scaffolding and/or staging by use of damp-cleaning and mopping, and/or a High Efficiency Particulate Absolute (HEPA) filtered vacuum. (Note: A HEPA vacuum will fail if used with wet material.) Do not perform dry dusting or dry sweeping. Use each surface of a cleaning cloth one time only and then dispose of as contaminated waste. Continue this cleaning until there is no visible debris from removed materials or residue on plastic sheeting or other surfaces.

Removal All Filters in Air-handling System(s) and dispose of as asbestos-containing waste in accordance with requirements of Section 02084.

Visual inspection:

Perform a Complete Visual Inspection of the entire work area including: decontamination unit, all plastic sheeting, seals over ventilation openings, doorways, windows, and other openings; look for debris from any sources, residue on surfaces, dust or other matter. If any such debris, residue, dust or other matter is found, repeat final cleaning and continue decontamination procedure from that point. When the area is visually clean, complete the certification at the end of this section. Visual inspection is not complete until confirmed in writing, on the certification, by Project Administrator.

Final air sampling:

After the work area is found to be visually clean, air samples will be taken and analyzed in accordance with the procedure for phase contrast microscopy (PCM) or Transmission Electron Microscopy (TEM) protocol consistent with MDH Asbestos Abatement Rules. No PCM or TEM clearance samples shall be collected that draws under 1200 liters of air.

.

Completion of abatement work:

Seal negative air machines with 6-mil polyethylene sheet and duct tape to form a tight seal at intake end before being moved from work area.

Asbestos Abatement Work is Complete upon meeting the work area clearance criteria and fulfilling the following:

Remove all equipment, materials, and debris from the work site.
Dispose of all asbestos-containing waste material as specified in section 02084.
Repair or replace all interior finishes damaged during the course of asbestos abatement work.
Fulfill Project Closeout Requirements of Section 01701.

Certificate of visual inspection:

Following this section is a "Certificate of Visual Inspection". This certification is to be completed by the Contractor and certified by the Project Air Monitoring Service. Submit completed certificate with application for final payment. Final payment will not be made until this certification is executed.

In accordance with Section 01711 "Project Decontamination" the contractor hereby certifies that he has visually inspected the work area (all surfaces including pipes, beams, ledges, walls, ceiling and floor, Decontamination Unit, sheet plastic, etc.) and has found no dust, debris or residue.

Protect administrator certification:

The Project Administrator and/or Air Monitoring Representative shall certify that he has accompanied the contractor on his visual inspection and verifies that his inspection has been thorough and to the best of his knowledge and belief, the contractor's certification above is a true and honest one.

END OF SECTION 01711

Section 01712 — Cleaning and decontamination procedures

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-I Specification sections, apply to work of this section.

Description of the work:

The work includes decontamination of the areas indicated in the "Schedule of Decontamination Work," found at the end of this section.

Related work specified elsewhere:

Work Area Clearance: Specified in Section 01714

Part 2 — Products (not applicable)

Part 3 — Execution

General:

Complete the following before start of work of this section:

01562 Respiratory protection

Wet cleaning:

Accomplish wet cleaning during decontamination with paper towels or disposable rags:

Immerse paper towel or rag in bucket of water with surfactant, or diluted removal encapsulant.

Wring out,

Fold into quarters,

Wipe surface once and refold to a fresh face of cloth. Proceed in this manner until all available faces of paper towel or rag have been used.

Dispose of paper towel or rag,

Do not place rag back in bucket to rinse out or for any other purpose. If a used towel or rag comes in contact with water, empty bucket and refill.

Material adhered to a surface with removal encapsulant may require the application of additional removal encapsulant to facilitate cleaning.

Removal of asbestos-containing debris:

Work of this section is limited to the cleanup of a small quantity of amassed debris which has fallen from an architectural finish, fire proofing, or thermal insulation on pipes boilers and other thermal equipment.

Remove asbestos-containing debris and decontaminate the area involved using the following sequence:

Shut down all ventilation into room.

Pick up such pieces and place in the bottom of a 6 mil polyethylene disposal bag conforming to the requirements of section 02084 of these specifications. Place pieces in the bag without dropping and avoiding unnecessary disturbance and release of material.

Remove all remaining visible debris with HEPA vacuum.

HEPA vacuum an area 3 feet beyond the location in which any visible debris was found in two directions each at right angles to the other.

HEPA vacuum the site from which material fell removing all loose material which can be removed by the vacuum's suction.

Repair or remove remaining material.

HEPA vacuum ladder and/or any tools used and pass out of the work area.

Cleaning and decontaminating objects:

Perform all work of decontaminating objects wherever possible on a plastic drop sheet.

HEPA vacuum all surfaces of object and immediate area before moving the object.

Pick-up object, if possible, and HEPA vacuum all surfaces.

Hand to off-sheet worker who will wet-clean object, if possible, and place in storage location.

Decontaminate area where object was located by HEPA vacuuming twice, in two perpendicular directions. Wet clean if necessary to remove any debris.

Return object to its original location.

END OF SECTION 01712

Section 01714 — Work area clearance

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

Contractor release criteria:

The work is complete when the work area is visually clean and airborne fiber levels have been reduced to the level specified below.

Air monitoring:

To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to the specified level, the Owner will secure samples and analyze them according to the following procedures.

Fibers/Structures Counted: "Fibers" referred to in this section shall be either all fibers regardless of composition as counted in the NIOSH Method 7400A, or asbestos “structures” of any size as counted using established EPA transmission electron microscopy protocol.

Aggressive sampling:

All Air Samples from friable removal areas will be taken using aggressive sampling techniques as follows:

> There are no standards available for flow rate of leaf blowers or large fans. However this information is not critical to the success of the procedure.
>
> Before sampling pumps are started, the exhaust from forced air equipment (leaf blower with at least 1 horsepower electric motor) will be swept against all walls, ceilings, floors, ledges and other surfaces in the room. This procedure will be continued for 5 minutes per 10,000 cubic feet of room volume.
>
> One 20" diameter fan per 10,000 cubic feet of room volume will be mounted in a central location. This fan will be directed toward the ceiling and operated at high speed for the entire period of sample collection.
>
> Air samples will be collected in areas subject to normal air circulation away from room corners, obstructed locations, and sites near windows, doors or vents.

Schedule of air samples:

General: The number and volume of air samples taken and analytical methods used by the owner will be in accordance with the following schedule. Sample volumes given may vary depending upon the analytical instruments used.

Phase contrast microscopy:

For each containment designated for PCM clearance, following signage of the passing post-abatement visual inspections by the VA's representative before and after poly walls and floors have been pulled, and a minimum of 30 minutes has passed following encapsulation with no wet surfaces visible, five (5) PCM samples will be collected at random locations. A minimum of 1200 liters will be collected at each sample location.

Analysis: Fibers on each filter will be measured using NIOSH 7400 Rule A procedure.

Release Criteria: Decontamination of the work site is complete when each of the five samples is equal to or less than .01 f/cc or the alternative indoor air standard if one is established.

Transmission electron microscopy:

For each containment designated for TEM Clearance, following signage of the passing post-abatement visual inspections by the VA's representative before and after poly walls and floors have been pulled, and a minimum of 30 minutes has passed following encapsulation with no wet surfaces visible, thirteen (13) TEM samples will be collected. This includes five (5) samples inside the containment at random locations, five (5) samples outside containment representative of air entering the containment, a blank sample from inside the containment, a blank sample from outside the containment, and a laboratory blank sample. A minimum of 1200 liters will be collected at each sample location.

Analysis: Asbestos fibers on each filter will be measured using the Level 1 analysis per EPA Provisional Method and Update (USEPA 1977, Yamate 1984).

Direct Transfer: Method of sample preparation will be used if possible.

Release Criteria: Decontamination of the work site is complete if EPA clearance criteria are met. If these criteria are not met, then the decontamination is incomplete and the cleaning procedures of Section 01710 shall be repeated, followed by additional TEM clearance testing, at no additional cost to the VA.

Laboratory testing:

Phase contrast microscopy: The VA's representative will perform laboratory analysis of the air samples at the job site, so that verbal reports on air samples can be obtained immediately. A written record of all air monitoring tests and results will be furnished to the VA's Representative, and the Contractor on a daily basis.

Transmission electron microscopy: Samples will be delivered directly or sent by overnight courier for analysis by transmission electron microscopy. Verbal results will be available within 24 hours after receipt of samples by the laboratory, unless otherwise specified in section 01010. The laboratory is capable of analyzing a minimum of 13 such samples from this project at any one time. A complete record, certified by the testing laboratory, of all transmission electron microscopy results will be furnished to the VA's Representative and the Contractor.

If the first five TEM samples do not pass according to 40 CRF Part 763, October 10, 1987 guidelines for interpretation of TEM'S, the contractor will be assessed the costs of analyzing the final TEM clearance requirements of this project. This amount will be deducted from the contract amount.

The additional time, expenses and materials for re-sampling will be assessed against the contractor until clearance is obtained. All these charges will be deducted from the contract amount.

Part 2 — Products (not applicable)

Part 3 — Execution (not applicable)

END OF SECTION 01714

Section 02081 — Removal of asbestos-containing materials

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

Related work specified elsewhere:

Installation of critical and primary barriers, and work area isolation procedures are set forth in Section 01526.

Project decontamination procedures after removal of the secondary barrier are specified in Section 01711.

Disposal of asbestos-containing waste is specified in Section 02084.

Submittals:

Before Start of Work: Submit the following to the Owner's Representative for review. Do not start work until these submittals are returned with Owner's Representative's action stamp indicating that the submittal is returned for unrestricted use.

Surfactant: Submit product data, use instructions and recommendations from manufacturer of surfactant intended for use. Include data substantiating that material complies with requirements.

Removal Encapsulant: Submit product data, use instructions and recommendations from manufacturer of removal encapsulant intended for use. Include data substantiating that material complies with requirements.

NESHAP Certification: Submit certification from manufacturer of surfactant or removal encapsulant that, to the extent required by this specification, the material, if used in accordance with manufacturer's instructions, will wet asbestos-containing materials to which it is applied as required by the National Emission Standard for Hazardous Pollutants (NESHAP) Asbestos Regulations (40 CFR 61, Subpart M).

Material Safety Data Sheet: Submit the Material Safety Data Sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CR 1910.1200) for each surfactant and encapsulating material proposed for use on the work. Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated.

Part 2 — Products

The following four types of encapsulants, if used, must comply with comply with VA performance requirements in Section 02 82 11

1. Removal encapsulant - used as a wetting agent to remove ACM.
2. Bridging encapsulant - provides a tough, durable coating on ACM.
3. Penetrating encapsulant - penetrates/encapsulates ACM at least 13 mm (1/2").
4. Lockdown encapsulant - seals microscopic fibers on surfaces after ACM removal.

All wetting materials or encapsulants should be pre-approved by the VA prior to use.

Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 4.0 or 6.0 mils thick as indicated, clear, frosted, or black as indicated.

Duct Tape: Provide duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to aggressively stick to sheet polyethylene.

Spray Cement: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

Disposal Bags: Provide 6 mil thick leak-tight polyethylene bags labeled with text as follows in accordance with 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard:

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

BREATHING AIRBORNE ASBESTOS, TREMOLITE, ANTHOPHYLLITE,
OR ACTINOLITE FIBERS IS HAZARDOUS TO YOUR HEALTH

RQ HAZARDOUS SUBSTANCE
SOLID, N.O.S. (ASBESTOS)
ORM-E, NA-1988

Each disposal bag to be disposed of shall have a label in accordance with NESHAP regulations to identify the generator — source of asbestos material.

Part 3 — Execution

Secondary barrier:

Secondary Barrier: Over the Primary Barriers, install as a drop cloth a clear 6-mil sheet plastic in all areas where asbestos removal work is to be carried out. Completely cover floor with sheet plastic— Where the work is within 10'0" of a wall extend the Secondary Barrier up wall to ceiling. Support sheet plastic on wall with duct tape, seal top of Secondary plastic to Primary Barrier with duct tape so that debris is unable to get behind it. Provide cross strips of duct tape at wall support as necessary to support sheet plastic and prevent it’s falling during removal operations.

Install Secondary Barrier at the beginning of each work shift. Install only sufficient plastic for work of that shift.

Remove Secondary Barrier at end of each work shift or as work in an area is completed. Fold plastic toward center of sheet and pack in disposal bags. Keep material on sheet continuously wet until bagged.

Install Walkways of black 6 mil plastic between active removal areas and decontamination units to protect Primary Layer from tracked material. Install walkways at the beginning of, and remove at the end of each work shift.

Worker protection:

Before beginning work with any material for which a Material Safety Data Sheet has been submitted provide workers with the required protective equipment. Require that appropriate protective equipment be used at all times.

Wet removal:

Thoroughly wet to satisfaction of Owner's Representative asbestos-containing materials to be removed prior to stripping and/or tooling to reduce fiber dispersal into the air. Accomplish wetting by a fine spray (mist) of amended water or removal encapsulant. Saturate material sufficiently to wet to the substrate without causing excess dripping. Allow time for water or removal encapsulant to penetrate material thoroughly. If amended water is used, spray material repeatedly during the work process to maintain a continuously wet condition. If a removal encapsulant is used, apply in strict accordance with manufacturer's written instructions. Perforate outer covering of any installation which has been painted and/or jacketed in order to allow penetration of amended water or removal encapsulant, or where necessary, carefully strip away while simultaneously spraying amended water or removal encapsulant on the installation to minimize dispersal of asbestos fibers into the air.

Mist work area continuously with amended water whenever necessary to reduce airborne fiber levels.

Remove saturated asbestos-containing material in small sections from all areas. Do not allow material to dry out. As it is removed, simultaneously pack material while still wet into disposal bags. Twist neck of bags, bend over and seal with minimum three wraps of duct tape. Clean outside and move to washdown station adjacent to material decontamination unit.

Pipe Insulation (when applicable): Spray with a mist of amended water or removal encapsulant. Allow amended water or removal encapsulant to saturate material to substrate. If a removal encapsulant is used, use in strict accordance with manufacturer's instructions. Cut bands holding preformed pipe insulation, slit jackets at seams, remove and hand-place in a disposal bag. Remove job molded fitting insulation in chunks and hand place in a disposal bag. Do not drop to floor. Remove any residue on pipe or fitting with stiff bristle nylon hand brush. In locations where pipe fitting insulation is removed from pipe with straight runs insulated with fibrous glass or other non-asbestos-containing fibrous material, remove fibrous material 6" from the point where it contacts the asbestos-containing insulation.

END OF SECTION 02081

Section 02084 — Disposal of asbestos-containing waste material

Part 1 — General

Related documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

Disposal:

Friable asbestos-containing waste material and debris which is packaged in accordance with the provision of this Specification may be disposed of at designated sanitary landfills when certain precautions are taken.

> Notice to Appropriate Environmental Protection Agency regional office.
> Notice and Permit from Appropriate State and/or Local Agencies
> See Section 01092 for Agency Locations and Codes

Dispose of non-friable asbestos-containing material in accordance with applicable regulations.

Submittals:

Submit copies of all manifests and landfill receipts to Owner's Representative on a weekly basis.

Part 2 — Products (not applicable)

Part 3 — Execution

General:

Carefully load containerized waste on sealed trucks or other appropriate vehicles for transport. Exercise care before and during transport, to insure that no unauthorized persons have access to the material.

Do not store disposal bagged material outside of the work area. Take bags from the work area directly to a sealed truck or dumpster.

Any containers used for storage of asbestos on the owner's property must be lined (6-ml. poly), properly labeled and locked during the duration of the project.

Do not transport disposal bagged materials on open trucks. Double bagged material may be transported on open trucks if they are first loaded in sealed drums. Label drums with same

warning labels as bags. Uncontaminated drums may be reused. Treat drums that have been contaminated as asbestos-containing waste and dispose of in accordance with this specification.

Advise the sanitary landfill operator, at least twenty-four hours in advance of transport, of the quantity of material to be delivered.

At the burial site, sealed plastic bags may be carefully dumped from the truck. If bags are broken or damaged, leave in the truck and clean entire truck and contents using procedures set forth in section 01711 Project Decontamination.

Retain receipts from landfill for materials disposed of. Turn receipts over to the Owner's Representative.

END OF SECTION 02084

APPENDIX A

VA SPECIFICATIONS - SECTION 02 82 11
TRADITIONAL ASBESTOS ABATEMENT

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SECTION 02 82 11
TRADITIONAL ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 SUMMARY OF THE WORK

1.1.1 CONTRACT DOCUMENTS AND RELATED REQUIREMENTS

Drawings, general provisions of the contract, including general and supplementary conditions and other Division 01 specifications, shall apply to the work of this section. The contract documents show the work to be done under the contract and related requirements and conditions impacting the project. Related requirements and conditions include applicable codes and regulations, notices and permits, existing site conditions and restrictions on use of the site, requirements for partial owner occupancy during the work, coordination with other work and the phasing of the work. In the event the Asbestos Abatement Contractor discovers a conflict in the contract documents and/or requirements or codes, the conflict must be brought to the immediate attention of the Contracting Officer for resolution. Whenever there is a conflict or overlap in the requirements, the most stringent shall apply. Any actions taken by the Contractor without obtaining guidance from the Contracting Officer shall become the sole risk and responsibility of the Asbestos Abatement Contractor. All costs incurred due to such action are also the responsibility of the Asbestos Abatement Contractor.

1.1.2 EXTENT OF WORK

A. Below is a brief description of the estimated quantities of asbestos containing materials to be abated. These quantities are for informational purposes only and are based on the best information available at the time of the specification preparation. The Contractor shall satisfy himself as the actual quantities to be abated. Nothing in this section may be interpreted as limiting the extent of work otherwise required by this contract and related documents.

//B. Removal, clean-up and disposal of asbestos containing materials (ACM) and asbestos/waste contaminated elements in an appropriate regulated area for the following approximate quantities;

( ) linear meters (feet) of <50 mm (2") diameter pipe insulation

( ) linear meters (feet) of 50 - 150 mm (2" - 6") diameter pipe insulation

( ) linear meters (feet) of >150 mm (6") diameter pipe insulation

( ) fittings 50 - 150 mm (2" - 6") in diameter

( ) square meters (feet) of plaster ceiling/wall
( ) square meters (feet) of sprayed-on insulation

( ) cubic meters (feet) of contaminated soil/materials
( ) number of lighting fixtures
( ) other // specify //

//D. Encapsulation of ACM in the following quantities://
//E. Enclosure of ACM in the following quantities://

1.1.3 RELATED WORK

A. Section 07 84 00, FIRESTOPPING.
B. Section 02 41 00, DEMOLITION.
C. Division 09, FINISHES
D. Division 22, PLUMBING.
E. Section 21 05 11, COMMON WORK RESULTS FOR FIRE SUPPRESSION / Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING / Section 23 05 11, COMMON WORK RESULTS FOR HVAC AND STEAM GENERATION.
F. Section 21 05 11, COMMON WORK RESULTS FOR FIRE SUPPRESSION / Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING / Section 23 05 11, COMMON WORK RESULTS FOR HVAC AND STEAM GENERATION
G. Section 23 07 11, HVAC, PLUMBING, AND BOILER PLANT INSULATION.
H. Section 22 05 19, METERS AND GAGES FOR PLUMBING PIPING / Section 22 05 23, GENERAL-DUTY VALVES FOR PLUMBING PIPING / Section 22 05 33, HEAT TRACING FOR PLUMBING PIPING / Section 22 11 00, FACILITY WATER DISTRIBUTION / Section 22 13 00, FACILITY SANITARY SEWERAGE / Section 22 13 23, SANITARY WASTE INTERCEPTORS / Section 22 14 00, FACILITY STORM DRAINAGE / Section 22 66 00, CHEMICAL-WASTE SYSTEMS FOR LABORATORY AND HEALTHCARE FACILITIES / Section 23 11 23, FACILITY NATURAL-GAS PIPING.
I. Section 23 21 13, HYDRONIC PIPING / Section 23 22 13, STEAM AND CONDENSATE HEATING PIPING.
J. Section 23 31 00, HVAC DUCTS AND CASINGS / Section 23 37 00, AIR OUTLETS AND INLETS.

1.1.4 TASKS

The work tasks are summarized briefly as follows:

A. Pre-abatement activities including pre-abatement meeting(s), inspection(s), notifications, permits, submittal approvals, regulated area preparations, emergency procedures arrangements, and standard operating procedures for asbestos abatement work.

B. Abatement activities including // removal //, // encapsulation //, // enclosure //, clean-up and disposal of ACM waste, recordkeeping, security, monitoring, and inspections.

C. Cleaning and decontamination activities including final visual inspection, air monitoring and certification of decontamination.

1.1.5 CONTRACTORS USE OF PREMISES

A. The Contractor and Contractor's personnel shall cooperate fully with the VA representative/consultant to facilitate efficient use of buildings and areas within buildings. The Contractor shall perform the work in accordance with the VA specifications, drawings, phasing plan and in compliance with any/all applicable Federal, State and Local regulations and requirements.

B. The Contractor shall use the existing facilities in the building strictly within the limits indicated in contract documents as well as the approved pre-abatement work plan. Asbestos abatement drawings of partially occupied buildings will show the limits of regulated areas; the placement of decontamination facilities; the temporary location of bagged waste ACM; the path of transport to outside the building; and the temporary waste storage area for each building/regulated area. Any variation from the arrangements shown on drawings shall be secured in writing from the VA representative through the pre-abatement plan of action. The following limitations of use shall apply to existing facilities shown on drawings:

1.2 VARIATIONS IN QUANTITY

The quantities and locations of ACM as indicated on the drawings and the extent of work included in this section are estimated which are limited by the physical constraints imposed by occupancy of the buildings. Accordingly, minor variations (+/- 5%) in quantities of ACM within the regulated area are considered as having no impact on contract price and time requirements of this contract. Where additional work is required beyond the above variation, the contractor shall provide unit prices for newly discovered materials and those prices shall be used for additional work required under the contractor.

1.3 STOP ASBESTOS REMOVAL

If the Contracting Officer; their field representative; or the VPIH/CIH presents a written **Stop Asbestos Removal Order**, the Contractor/Personnel shall immediately stop all asbestos removal and maintain HEPA filtered air flow and adequately wet any exposed ACM. The Contractor shall not resume any asbestos removal activity until authorized to do so by the VA. A stop asbestos removal order may be issued at any time the VA determines abatement conditions/activities are not within specification requirements. Work stoppage will continue until conditions have been corrected to the satisfaction of the VA. Standby time and costs for corrective actions will be borne by the Contractor, including the industrial hygienist's time. The occurrence of any of the following events shall be reported immediately by the Contractor's competent person in writing to the VA representative and shall require the Contractor to immediately stop asbestos removal/disturbance activities and initiate fiber reduction activities:

A. =/> 0.01 f/cc outside a regulated area or >0.05 f/cc inside a regulated area;
B. breach/break in regulated area barrier(s);
C. less than –0.02" WCG pressure in the regulated area;
D. serious injury/death at the site;
E. fire/safety emergency at the site;
F. respiratory protection system failure;
G. power failure or loss of wetting agent; or
H. any visible emissions observed outside the regulated area.

1.4 DEFINITIONS

1.4.1 GENERAL

Definitions and explanations here are neither complete nor exclusive of all terms used in the contract documents, but are general for the work to the extent they are not stated more explicitly in another element of the contract documents. Drawings must be recognized as diagrammatic in nature and not completely descriptive of the requirements indicated therein.

1.4.2 GLOSSARY

Abatement - Procedures to control fiber release from asbestos-containing materials, typically during removal. Includes removal, encapsulation, enclosure, demolition and renovation activities related to asbestos.

ACE - Asbestos contaminated elements.
ACM - Asbestos containing material.
Aerosol - Solid or liquid particulate suspended in air.
Adequately wet - Sufficiently mixed or penetrated with liquid to prevent the release of particulates. If visible emissions are observed coming from the ACM, then that material has not been adequately wetted.
Aggressive method - Removal or disturbance of building material by sanding, abrading, grinding, or other method that breaks, crumbles, or disintegrates intact ACM.
Aggressive sampling - EPA AHERA defined clearance sampling method using air moving equipment such as fans and leaf blowers to aggressively disturb and maintain in the air residual fibers after abatement.
AHERA - Asbestos Hazard Emergency Response Act. Asbestos regulations for schools issued in 1987.
Aircell - Pipe or duct insulation made of corrugated cardboard which contains asbestos.
Air monitoring - The process of measuring the fiber content of a known volume of air collected over a specified period of time. The NIOSH 7400 Method, Issue 2 is used to determine the fiber levels in air.
Air sample filter - The filter used to collect fibers which are then counted. The filter is made of mixed cellulose ester membrane for PCM (Phase Contrast Microscopy) and polycarbonate for TEM (Transmission Electron Microscopy)
Amended water - Water to which a surfactant (wetting agent) has been added to increase the penetrating ability of the liquid.
Asbestos - Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated or altered. Asbestos also includes PACM, as defined below.
Asbestos-containing material (ACM) - Any material containing more than one percent of asbestos.
Asbestos contaminated elements (ACE) - Building elements such as ceilings, walls, lights, or ductwork that are contaminated with asbestos.
Asbestos-containing waste material - Asbestos-containing material or asbestos contaminated objects requiring disposal.
Asbestos waste decontamination facility - A system consisting of drum/bag washing facilities and a temporary storage area for cleaned containers of

asbestos waste. Used as the exit for waste and equipment leaving the regulated area. In an emergency, it may be used to evacuate personnel.

Authorized person - Any person authorized by the VA, the Contractor, or government agency and required by work duties to be present in regulated areas.

Authorized visitor - Any person approved by the VA; the contractor; or any government agency having jurisdiction over the regulated area.

Barrier - Any surface the isolates the regulated area and inhibits fiber migration from the regulated area.

Containment Barrier - An airtight barrier consisting of walls, floors, and/or ceilings of sealed plastic sheeting which surrounds and seals the outer perimeter of the regulated area.

Critical Barrier - The barrier responsible for isolating the regulated area from adjacent spaces, typically constructed of plastic sheeting secured in place at openings such as doors, windows, or any other opening into the regulated area.

Primary Barrier - Barriers placed over critical barriers and exposed directly to abatement work.

Secondary Barrier - Any additional sheeting used to isolate and provide protection from debris during abatement work.

Breathing zone - The hemisphere forward of the shoulders with a radius of about 150 - 225 mm (6 - 9 inches) from the worker's nose.

Bridging encapsulant - An encapsulant that forms a layer on the surface of the ACM.

Building/facility owner - The legal entity, including a lessee, which exercises control over management and recordkeeping functions relating to a building and/or facility in which asbestos activities take place.

Bulk testing - The collection and analysis of suspect asbestos containing materials.

Certified Industrial Hygienist (CIH) - One certified in practice of industrial hygiene by the American Board of Industrial Hygiene. An industrial hygienist Certified in Comprehensive Practice by the American Board of Industrial Hygiene.

Class I asbestos work - Activities involving the removal of Thermal System Insulation (TSI) and surfacing ACM and Presumed Asbestos Containing Material (PACM).

Class II asbestos work - Activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes,

but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic.

Clean room/Changing room - An uncontaminated room having facilities for the storage of employee's street clothing and uncontaminated materials and equipment.

Clearance sample - The final air sample taken after all asbestos work has been done and visually inspected. Performed by the VA's industrial hygiene consultant (VPIH/CIH.

Closely resemble - The major workplace conditions which have contributed to the levels of historic asbestos exposure, are no more protective than conditions of the current workplace.

Competent person - In addition to the definition in 29 CFR 1926.32(f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f); in addition, for Class I and II work who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for supervisor.

Contractor's Professional Industrial Hygienist (CPIH) - The asbestos abatement contractor's industrial hygienist. The industrial hygienist must meet the qualification requirements of the PIH.

Count - Refers to the fiber count or the average number of fibers greater than five microns in length per cubic centimeter of air.

Decontamination area/unit - An enclosed area adjacent to and connected to the regulated area and consisting of an equipment room, shower room, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.

Demolition - The wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.

Disposal bag - Typically 6 mil thick siftproof, dustproof, leaktight container used to package and transport asbestos waste from regulated areas to the approved landfill. Each bag/container must be labeled/marked in accordance with EPA, OSHA and DOT requirements.

Disturbance - Activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM

or PACM. Disturbance includes cutting away small amounts of ACM or PACM, no greater than the amount that can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or disposal bag which shall not exceed 60 inches in length or width.

Drum - A rigid, impermeable container made of cardboard fiber, plastic, or metal which can be sealed in order to be siftproof, dustproof, and leaktight.

Employee exposure - The exposure to airborne asbestos that would occur if the employee were not wearing respiratory protection equipment.

Encapsulant - A material that surrounds or embeds asbestos fibers in an adhesive matrix and prevents the release of fibers.

Encapsulation - Treating ACM with an encapsulant.

Enclosure - The construction of an air tight, impermeable, permanent barrier around ACM to control the release of asbestos fibers from the material and also eliminate access to the material.

Equipment room - A contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

Fiber - A particulate form of asbestos, 5 microns or longer, with a length to width ratio of at least 3 to 1.

Fibers per cubic centimeter (f/cc) - Abbreviation for fibers per cubic centimeter, used to describe the level of asbestos fibers in air.

Filter - Media used in respirators, vacuums, or other machines to remove particulate from air.

Firestopping - Material used to close the open parts of a structure in order to prevent a fire from spreading.

Friable asbestos containing material - Any material containing more than 1 percent asbestos as determined using the method specified in appendix A, Subpart F, 40 CFR 763, section 1, Polarized Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

Glovebag - Not more than a 60 x 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which materials and tools may be handled.

High efficiency particulate air (HEPA) filter - A filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 microns or greater in diameter.

HEPA vacuum - Vacuum collection equipment equipped with a HEPA filter system capable of collecting and retaining asbestos fibers.

Homogeneous area - An area of surfacing, thermal system insulation or miscellaneous ACM that is uniform in color, texture and date of application.

HVAC - Heating, Ventilation and Air Conditioning

Industrial hygienist - A professional qualified by education, training, and experience to anticipate, recognize, evaluate and develop controls for occupational health hazards. Meets definition requirements of the American Industrial Hygiene Association (AIHA).

Industrial hygienist technician - A person working under the direction of an IH or CIH who has special training, experience, certifications and licenses required for the industrial hygiene work assigned.

Intact - The ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.

Lockdown - Applying encapsulant, after a final visual inspection, on all abated surfaces at the conclusion of ACM removal prior to removal of critical barriers.

National Emission Standards for Hazardous Air Pollutants (NESHAP's) - EPA's rule to control emissions of asbestos to the environment.

Negative initial exposure assessment - A demonstration by the employer which complies with the criteria in 29 CFR 1926.1101 (f)(2)(iii), that employee exposure during an operation is expected to be consistently below the PEL's.

Negative pressure - Air pressure which is lower than the surrounding area, created by exhausting air from a sealed regulated area through HEPA equipped filtration units. OSHA requires maintaining -0.02" water column gauge inside the negative pressure enclosure.

Negative pressure respirator - A respirator in which the air pressure inside the facepiece is negative during inhalation relative to the air outside the respirator.

Non-friable ACM - Material that contains more than 1 percent asbestos but cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Organic vapor cartridge - The type of cartridge used on air purifying respirators for organic vapor exposures.
Outside air - The air outside buildings and structures, including, but not limited to, the air under a bridge or in an open ferry dock.
Owner/operator - Any person who owns, leases, operates, controls, or supervises the facility being demolished or renovated or any person who owns, leases, operates, controls, or supervises the demolition or renovation operation, or both.
Penetrating encapsulant - Encapsulant that is absorbed into the ACM matrix without leaving a surface layer.
Personal sampling/monitoring - Representative air samples obtained in the breathing zone of the person using a cassette and battery operated pump to determine asbestos exposure.
Permissible exposure limit (PEL) - The level of exposure OSHA allows for an 8 hour time weighted average. For asbestos fibers, the PEL is 0.1 fibers per cc.
Polarized light microscopy (PLM) - Light microscopy using dispersion staining techniques and refractive indices to identify and quantify the type(s) of asbestos present in a bulk sample.
Polyethylene sheeting - Strong plastic barrier material 4 to 6 mils thick, semi-transparent, sometimes flame retardant in compliance with NFPA 241.
Positive/negative fit check - A method of verifying the fit of a respirator by closing off the filters and breathing in or closing off the exhalation valve and breathing out while detecting leakage of the respirator.
Presumed ACM (PACM) - Thermal system insulation, surfacing, and flooring material installed in buildings prior to 1981. If the building owner has actual knowledge, or should have known through the exercise of due diligence that other materials are ACM, they too must be treated as PACM. The designation of PACM may be rebutted pursuant to 29 CFR 1926.1101 (k)(5).
Professional IH - An IH who meets the definition requirements of AIHA; meets the definition requirements of OSHA as a "Competent Person" at 29 CFR 1926.1101 (b); has completed two specialized EPA approved courses on management and supervision of asbestos abatement projects; has formal training in respiratory protection and waste disposal; and has a

minimum of four projects of similar complexity with this project of which at least three projects serving as the supervisory IH.

Project designer - A person who has successfully completed the training requirements for an asbestos abatement project designer as required by 40 CFR 763 Appendix C, Part I; (B)(5).

Protection factor - A value assigned by OSHA/NIOSH to indicate the assigned protection a respirator should provide if worn properly. The number indicates the reduction of exposure level from outside to inside the respirator.

Qualitative fit test (QLFT) - A fit test using a challenge material that can be sensed by the wearer if leakage in the respirator occurs.

Quantitative fit test (QNFT) - A fit test using a challenge material which is quantified outside and inside the respirator thus allowing the determination of the actual fit factor.

Regulated area - An area established by the employer to demarcate where Class I, II, III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work may accumulate; and a work area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed the PEL.

Regulated ACM (RACM) - Friable ACM; Category I nonfriable ACM that has become friable; Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading or; Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of the demolition or renovation operation.

Removal - All operations where ACM, PACM and/or RACM is taken out or stripped from structures or substrates, including demolition operations.

Renovation - Altering a facility or one or more facility components in any way, including the stripping or removal of asbestos from a facility component which does not involve demolition activity.

Repair - Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.

Shower room - The portion of the PDF where personnel shower before leaving the regulated area. Also used for bag/drum decontamination in the EDF.

Standard operating procedures (SOP's) - Asbestos work procedures required to be submitted by the contractor before work begins.

Supplied air respirator (SAR) - A respirator that utilizes an air supply separate from the air in the regulated area.

Surfacing ACM - A material containing more than 1 percent asbestos that is sprayed, troweled on or otherwise applied to surfaces for acoustical, fireproofing and other purposes.

Surfactant - A chemical added to water to decrease water's surface tension thus making it more penetrating into ACM.

Thermal system ACM - A material containing more than 1 percent asbestos applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain.

Transmission electron microscopy (TEM) - A microscopy method that can identify and count asbestos fibers.

VA Industrial Hygienist (VPIH) - Department of Veterans Affairs Professional Industrial Hygienist.

VA Certified Industrial Hygienist (VPCIH) – Department of Veteran’s Affairs Professional Certified Industrial Hygienist.

VA Representative - The VA official responsible for on-going project work.

Visible emissions - Any emissions, which are visually detectable without the aid of instruments, coming from ACM/PACM/RACM or ACM waste material.

Waste/Equipment decontamination facility (W/EDF) – The area in which equipment is decontaminated before removal from the regulated area.

Waste generator - Any owner or operator whose act or process produces asbestos-containing waste material.

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

Wet cleaning - The process of thoroughly eliminating, by wet methods, any asbestos contamination from surfaces or objects.

1.4.3 REFERENCED STANDARDS ORGANIZATIONS

The following acronyms or abbreviations as referenced in contract/specification documents are defined to mean the associated names. Names and addresses may be subject to change.

A. VA Department of Veterans Affairs
   810 Vermont Avenue, NW
   Washington, DC 20420
B. AIHA American Industrial Hygiene Association
   2700 Prosperity Avenue, Suite 250
   Fairfax, VA 22031
   703-849-8888
C. ANSI American National Standards Institute
   1430 Broadway
   New York, NY 10018
   212-354-3300
D. ASTM American Society for Testing and Materials
   1916 Race St.
   Philadelphia, PA 19103
   215-299-5400
E. CFR Code of Federal Regulations
   Government Printing Office
   Washington, DC 20420
F. CGA Compressed Gas Association
   1235 Jefferson Davis Highway
   Arlington, VA 22202
   703-979-0900
G. CS Commercial Standard of the National Institute of Standards and Technology (NIST)
   U. S. Department of Commerce
   Government Printing Office
   Washington, DC 20420
H. EPA Environmental Protection Agency
   401 M St., SW
   Washington, DC 20460
   202-382-3949
I. MIL-STD Military Standards/Standardization Division
   Office of the Assistant Secretary of Defense
   Washington, DC 20420
J. MSHA Mine Safety and Health Administration
   Respiratory Protection Division
   Ballston Tower #3
   Department of Labor

Arlington, VA 22203
703-235-1452

K. NIST National Institute for Standards and Technology
U. S. Department of Commerce
Gaithersburg, MD 20234
301-921-1000

L. NEC National Electrical Code (by NFPA)

M. NEMA National Electrical Manufacturer's Association
2101 L Street, N.W.
Washington, DC 20037

N. NFPA National Fire Protection Association
1 Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
800-344-3555

O. NIOSH National Institutes for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226
513-533-8236

P. OSHA Occupational Safety and Health Administration
U.S. Department of Labor
Government Printing Office
Washington, DC 20402

Q. UL Underwriters Laboratory
333 Pfingsten Rd.
Northbrook, IL 60062
312-272-8800

R. USA United States Army
Army Chemical Corps
Department of Defense
Washington, DC 20420

1.5 APPLICABLE CODES AND REGULATIONS

1.5.1 GENERAL APPLICABILITY OF CODES, REGULATIONS, AND STANDARDS

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

standards are adopted into this specification and will have the same force and effect as this specification.

B. The most recent edition of any relevant regulation, standard, document or code shall be in effect. Where conflict among the requirements or with these specification exists, the most stringent requirement(s) shall be utilized.

C. Copies of all standards, regulations, codes and other applicable documents, including this specification and those listed in Section 1.5 shall be available at the worksite in the clean change area of the worker decontamination system.

1.5.2 ASBESTOS ABATEMENT CONTRACTOR RESPONSIBILITY

The Asbestos Abatement Contractor (Contractor) shall assume full responsibility and liability for compliance with all applicable Federal, State and Local regulations related to any and all aspects of the abatement project. The Contractor is responsible for providing and maintaining training, accreditations, medical exams, medical records, personal protective equipment as required by applicable Federal, State and Local regulations. The Contractor shall hold the VA and VPIH/CIH consultants harmless for any Contractor's failure to comply with any applicable work, packaging, transporting, disposal, safety, health, or environmental requirement on the part of himself, his employees, or his subcontractors. The Contractor will incur all costs of the CPIH, including all sampling/analytical costs to assure compliance with OSHA/EPA/State requirements related to failure to comply with the regulations applicable to the work.

1.5.3 FEDERAL REQUIREMENTS

Federal requirements which govern of asbestos abatement include, but are not limited to, the following regulations.

A. Occupational Safety and Health Administration **(OSHA)**

1. Title 29 CFR 1926.1101 - Construction Standard for Asbestos
2. Title 29 CFR 1910.132 - Personal Protective Equipment
3. Title 29 CFR 1910.134 - Respiratory Protection
4. Title 29 CFR 1926 - Construction Industry Standards
5. Title 29 CFR 1910.20 - Access to Employee Exposure and Medical Records
6. Title 29 CFR 1910.1200 - Hazard Communication
7. Title 29 CFR 1910.151 - Medical and First Aid

B. Environmental Protection Agency **(EPA):**

1. 40 CFR 61 Subpart A and M (Revised Subpart B) - National Emission Standard for Hazardous Air Pollutants - Asbestos.
2. 40 CFR 763.80 - Asbestos Hazard Emergency Response Act (AHERA)

C. Department of Transportation **(DOT)**

Title 49 CFR 100 - 185 - Transportation

//1.5.4 STATE REQUIREMENTS

State requirements that apply to the asbestos abatement work, disposal, clearance, etc., include, but are not limited to, the following://

//1.5.5 LOCAL REQUIREMENTS

If local requirements are more stringent than federal or state standards, the local standards are to be followed.//

1.5.6 STANDARDS

A. Standards which govern asbestos abatement activities include, but are not limited to, the following:

1. American National Standards Institute (ANSI) Z9.2-79 - Fundamentals Governing the Design and Operation of Local Exhaust Systems Z88.2 - Practices for Respiratory Protection.
2. Underwriters Laboratories (UL) 586-90 - UL Standard for Safety of HEPA Filter Units, 7th Edition.

B. Standards which govern encapsulation work include, but are not limited to the following:

1. American Society for Testing and Materials (ASTM)

C. Standards which govern the fire and safety concerns in abatement work include, but are not limited to, the following:

1. National Fire Protection Association (NFPA) 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.
2. NFPA 701 - Standard Methods for Fire Tests for Flame Resistant Textiles and Film.
3. NFPA 101 - Life Safety Code

1.5.7 EPA GUIDANCE DOCUMENTS

A. EPA guidance documents which discuss asbestos abatement work activities are listed below. These documents are made part of this section by reference. EPA publications can be ordered from (800) 424-9065.

B. Guidance for Controlling ACM in Buildings (Purple Book) EPA 560/5-85-024

C. Asbestos Waste Management Guidance EPA 530-SW-85-007

D. A Guide to Respiratory Protection for the Asbestos Abatement Industry EPA-560-OPTS-86-001

E. Guide to Managing Asbestos in Place (Green Book) TS 799 20T July 1990

1.5.8 NOTICES

A. State and Local agencies: Send written notification as required by state and local regulations including the local fire department prior to beginning any work on ACM as follows:

B. Copies of notifications shall be submitted to the VA for the facility's records in the same time frame notification is given to EPA, State, and Local authorities.

1.5.9 PERMITS/LICENSES

A. The contractor shall apply for and have all required permits and licenses to perform asbestos abatement work as required by Federal, State, and Local regulations.

1.5.10 POSTING AND FILING OF REGULATIONS

A. Maintain two (2) copies of applicable federal, state, and local regulations. Post one copy of each in the clean room at the regulated area where workers will have daily access to the regulations and keep another copy in the Contractor's office.

1.5.11 VA RESPONSIBILITIES

Prior to commencement of work:

A. Notify occupants adjacent to regulated areas of project dates and requirements for relocation, if needed. Arrangements must be made prior to starting work for relocation of desks, files, equipment and personal possessions to avoid unauthorized access into the regulated area. **Note: Notification of adjacent personnel is required by OSHA in 29 CFR 1926.1101 (k) to prevent unnecessary or unauthorized access to the regulated area.**

B. Submit to the Contractor results of background air sampling; including location of samples, person who collected the samples, equipment utilized and method of analysis. During abatement, submit to the Contractor, results of bulk material analysis and air sampling data collected during the course of the abatement. This information shall not release the Contractor from any responsibility for OSHA compliance.

1.5.12 SITE SECURITY

A. Regulated area access is to be restricted only to authorized, trained/accredited and protected personnel. These may include the Contractor's employees, employees of Subcontractors, VA employees and

representatives, State and local inspectors, and any other designated individuals. A list of authorized personnel shall be established prior to commencing the project and be posted in the clean room of the decontamination unit.

B. Entry into the regulated area by unauthorized individuals shall be reported immediately to the Competent Person by anyone observing the entry. The Competent Person shall immediately notify the VA.

C. A log book shall be maintained in the clean room of the decontamination unit. Anyone who enters the regulated area must record their name, affiliation, time in, and time out for each entry.

D. Access to the regulated area shall be through a single decontamination unit. All other access (doors, windows, hallways, etc.) shall be sealed or locked to prevent entry to or exit from the regulated area. The only exceptions for this requirement are the waste/equipment load-out area which shall be sealed except during the removal of containerized asbestos waste from the regulated area, and emergency exits. Emergency exits shall not be locked from the inside, however, they shall be sealed with poly sheeting and taped until needed.

E. The Contractor's Competent Person shall control site security during abatement operations in order to isolate work in progress and protect adjacent personnel. A 24 hour security system shall be provided at the entrance to the regulated area to assure that all entrants are logged in/out and that only authorized personnel are allowed entrance.

F. The Contractor will have the VA's assistance in notifying adjacent personnel of the presence, location and quantity of ACM in the regulated area and enforcement of restricted access by the VA's employees.

G. The regulated area shall be locked during non-working hours and secured by VA security/police guards.

1.5.13 EMERGENCY ACTION PLAN AND ARRANGEMENTS

A. An Emergency Action Plan shall be developed by prior to commencing abatement activities and shall be agreed to by the Contractor and the VA. The Plan shall meet the requirements of 29 CFR 1910.38 (a);(b).

B. Emergency procedures shall be in written form and prominently posted in the clean room and equipment room of the decontamination unit. Everyone, prior to entering the regulated area, must read and sign these procedures to acknowledge understanding of the regulated area layout, location of emergency exits and emergency procedures.

C. Emergency planning shall include written notification of police, fire, and emergency medical personnel of planned abatement activities; work schedule; layout of regulated area; and access to the regulated area, particularly barriers that may affect response capabilities.

D. Emergency planning shall include consideration of fire, explosion, hazardous atmospheres, electrical hazards, slips/trips and falls, confined spaces, and heat stress illness. Written procedures for response to emergency situations shall be developed and employee training in procedures shall be provided.

E. Employees shall be trained in regulated area/site evacuation procedures in the event of workplace emergencies.

1. For non life-threatening situations - employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers, if necessary, before exiting the regulated area to obtain proper medical treatment.
2. For life-threatening injury or illness, worker decontamination shall take least priority after measures to stabilize the injured worker, remove them from the regulated area, and secure proper medical treatment.

F. Telephone numbers of any/all emergency response personnel shall be prominently posted in the clean room, along with the location of the nearest telephone.

G. The Contractor shall provide verification of first aid/CPR training for personnel responsible for providing first aid/CPR. OSHA requires medical assistance within 3-4 minutes of a life-threatening injury/illness. Bloodborne Pathogen training shall also be verified for those personnel required to provide first aid/CPR.

H. The Emergency Action Plan shall provide for a Contingency Plan in the event that an incident occurs that may require the modification of the standard operating procedures during abatement. Such incidents include, but are not limited to, fire; accident; power failure; negative pressure failure; and supplied air system failure. The Contractor shall detail procedures to be followed in the event of an incident assuring that asbestos abatement work is stopped and wetting is continued until correction of the problem.

1.5.14 PRE-CONSTRUCTION MEETING

Prior to commencing the work, the Contractor shall meet with the VA Certified Industrial Hygienist (VPCIH) to present and review, as

appropriate, the items following this paragraph. The Contractor's Competent Person(s) who will be on-site shall participate in the pre-start meeting. The pre-start meeting is to discuss and determine procedures to be used during the project. At this meeting, the Contractor shall provide:

A. Proof of Contractor licensing.

B. Proof the Competent Person(s) is trained and accredited and approved for working in this State. Verification of the experience of the Competent Person(s) shall also be presented.

C. A list of all workers who will participate in the project, including experience and verification of training and accreditation.

D. A list of and verification of training for all personnel who have current first-aid/CPR training. A minimum of one person per shift must have adequate training.

E. Current medical written opinions for all personnel working on-site meeting the requirements of 29 CFR 1926.1101 (m).

F. Current fit-tests for all personnel wearing respirators on-site meeting the requirements of 29 CFR 1926.1101 (h) and Appendix C.

G. A copy of the Contractor's Standard Operating Procedures for Asbestos Abatement. In these procedures, the following information must be detailed, specific for this project.

1. Regulated area preparation procedures;
2. Notification requirements procedure of Contractor as required in 29 CFR 1926.1101 (d);
3. Decontamination area set-up/layout and decontamination procedures for employees;
4. Abatement methods/procedures and equipment to be used;
5. Personal protective equipment to be used;

H. At this meeting the Contractor shall provide all submittals as required.

I. Procedures for handling, packaging and disposal of asbestos waste.

J. Emergency Action Plan and Contingency Plan Procedures.

1.6 PROJECT COORDINATION

The following are the minimum administrative and supervisory personnel necessary for coordination of the work.

1.6.1 PERSONNEL

A. Administrative and supervisory personnel shall consist of a qualified Competent Person(s) as defined by OSHA in the Construction Standards

and the Asbestos Construction Standard; Contractor Professional Industrial Hygienist and Industrial Hygiene Technicians. These employees are the Contractor's representatives responsible for compliance with these specifications and all other applicable requirements.

B. Non-supervisory personnel shall consist of an adequate number of qualified personnel to meet the schedule requirements of the project. Personnel shall meet required qualifications. Personnel utilized on-site shall be pre-approved by the VA representative. A request for approval shall be submitted for any person to be employed during the project giving the person's name; social security number; qualifications; accreditation card with color picture; Certificate of Worker's Acknowledgment; and Affidavit of Medical Surveillance and Respiratory Protection and current Respirator Fit Test.

C. Minimum qualifications for Contractor and assigned personnel are:

1. The Contractor has conducted within the last three (3) years, three (3) projects of similar complexity and dollar value as this project; has not been cited and penalized for serious violations of asbestos regulations in the past three (3) years; has adequate liability/occurrence insurance for asbestos work; is licensed in applicable states; has adequate and qualified personnel available to complete the work; has comprehensive standard operating procedures for asbestos work; has adequate materials, equipment and supplies to perform the work.
2. The Competent Person has four (4) years of abatement experience of which two (2) years were as the Competent Person on the project; meets the OSHA definition of a Competent Person; has been the Competent Person on two (2) projects of similar size and complexity as this project; has completed EPA AHERA/OSHA/State/Local training requirements/accreditation(s) and refreshers; and has all required OSHA documentation related to medical and respiratory protection.
3. The Contractor Professional Industrial Hygienist (CPIH) shall have five (5) years of monitoring experience and supervision of asbestos abatement projects; has participated as senior IH on five (5) abatement projects, three (3) of which are similar in size and complexity as this project; has developed at least one complete standard operating procedure for asbestos abatement; has trained abatement personnel for three (3) years; has specialized EPA

AHERA/OSHA training in asbestos abatement management, respiratory protection, waste disposal and asbestos inspection; has completed the NIOSH 582 Course, Contractor/Supervisor course; and has appropriate medical/respiratory protection records/documentation.

4. The Abatement Personnel shall have completed the EPA AHERA/OSHA abatement worker course; have training on the standard operating procedures of the Contractor; has one year of asbestos abatement experience; has applicable medical and respiratory protection documentation; has certificate of training/current refresher and State accreditation/license.

1.7 RESPIRATORY PROTECTION

1.7.1 GENERAL - RESPIRATORY PROTECTION PROGRAM

The Contractor shall develop and implement a Respiratory Protection Program (RPP) which is in compliance with the January 8, 1998 OSHA requirements found at 29 CFR 1926.1101 and 29 CFR 1910.132;134. ANSI Standard Z88.2-1992 provides excellent guidance for developing a respiratory protection program. All respirators used must be NIOSH approved for asbestos abatement activities. The written respiratory protection shall, at a minimum, contain the basic requirements found at 29 CFR 1910.134 (c)(1)(i - ix) - Respiratory Protection Program.

1.7.2 RESPIRATORY PROTECTION PROGRAM COORDINATOR

The Respiratory Protection Program Coordinator (RPPC) must be identified and shall have two (2) years experience coordinating the program. The RPPC must submit a signed statement attesting to the fact that the program meets the above requirements.

1.7.3 SELECTION AND USE OF RESPIRATORS

The procedure for the selection and use of respirators must be submitted to the VA as part of the Contractor's qualification. The procedure must written clearly enough for workers to understand. A copy of the Respiratory Protection Program must be available in the clean room of the decontamination unit for reference by employees or authorized visitors.

1.7.4 MINIMUM RESPIRATORY PROTECTION

Minimum respiratory protection shall be a full face powered air purifying respirator when fiber levels are maintained consistently at or below 0.5 f/cc. A higher level of respiratory protection may be provided or required, depending on fiber levels. Respirator selection shall meet the requirements of 29 CFR 1926.1101 (h); Table 1, except as

indicated in this paragraph. Abatement personnel must have a respirator for their exclusive use.

1.7.5 MEDICAL WRITTEN OPINION

No employee shall be allowed to wear a respirator unless a physician has determined they are capable of doing so and has issued a current written opinion for that person.

1.7.6 RESPIRATOR FIT TEST

All personnel wearing respirators shall have a current qualitative/quantitative fit test which was conducted in accordance with 29 CFR 1910.134 (f) and Appendix A. Quantitative fit tests shall be done for PAPR's which have been put into a failure mode.

1.7.7 RESPIRATOR FIT CHECK

The Competent Person shall assure that the positive/negative fit check is done each time the respirator is donned by an employee. Headcoverings must cover respirator headstraps. Any situation that prevents an effective facepiece to face seal as evidenced by failure of a fit check shall preclude that person from wearing a respirator until resolution of the problem.

1.7.8 MAINTENANCE AND CARE OF RESPIRATORS

The Respiratory Protection Program Coordinator shall submit evidence and documentation showing compliance with 29 CFR 1910.134 (h) Maintenance and care of respirators.

1.7.9 SUPPLIED AIR SYSTEMS

If a supplied air system is used, the system shall meet all requirements of 29 CFR 1910.134 and the ANSI/Compressed Gas Association (CGA) Commodity Specification for Air current requirements for Type 1 - Grade D breathing air. Low pressure systems are not allowed to be used on asbestos abatement projects. Supplied Air respirator use shall be in accordance with EPA/NIOSH publication EPA-560-OPTS-86-001 "A Guide to Respiratory Protection for the Asbestos Abatement Industry".

1.8 WORKER PROTECTION

1.8.1 TRAINING OF ABATEMENT PERSONNEL

Prior to beginning any abatement activity, all personnel shall be trained in accordance with OSHA 29 CFR 1926.1101 (k)(9) and any additional State/Local requirements. Training must include, at a minimum, the elements listed at 29 CFR 1926.1101 (k)(9)(viii). Training shall have been conducted by a third party, EPA/State approved trainer meeting the requirements of EPA 40 CFR 763 Appendix C (AHERA MAP).

Initial training certificates and current refresher and accreditation proof must be submitted for each person working at the site.

1.8.2 MEDICAL EXAMINATIONS

Medical examinations meeting the requirements of 29 CFR 1926.1101 (m) shall be provided for all personnel working in the regulated area, regardless of exposure levels. A current physician's written opinion as required by 29 CFR 1926.1101 (m)(4) shall be provided for each person and shall include in the opinion the person has been evaluated for working in a heat stress environment while wearing personal protective equipment and is able to perform the work.

1.8.3 PERSONAL PROTECTIVE EQUIPMENT

Provide whole body clothing, head coverings, gloves and foot coverings and any other personal protective equipment as determined by conducting the hazard assessment required by OSHA at 29 CFR 1910.132 (d). The Competent Person shall ensure the integrity of personal protective equipment worn for the duration of the project. Duct tape shall be used to secure all suit sleeves to wrists and to secure foot coverings at the ankle.

1.8.4 REGULATED AREA ENTRY PROCEDURE

The Competent Person shall ensure that each time workers enter the regulated area, they remove ALL street clothes in the clean room of the decontamination unit and put on new disposable coveralls, head coverings, a clean respirator, and then proceed through the shower room to the equipment room where they put on non-disposable required personal protective equipment.

1.8.5 DECONTAMINATION PROCEDURE - PAPR

The Competent Person shall require all personnel to adhere to following decontamination procedures whenever they leave the regulated area.

A. When exiting the regulated area, remove disposable coveralls, and ALL other clothes, disposable head coverings, and foot coverings or boots in the equipment room.

B. Still wearing the respirator and completely naked, proceed to the shower. Showering is MANDATORY. Care must be taken to follow reasonable procedures in removing the respirator to avoid asbestos fibers wile showering. The following procedure is required as a minimum:

1. Thoroughly wet body including hair and face. If using a PAPR hold blower above head to keep filters dry.

2. With respirator still in place, thoroughly decontaminate body, hair, respirator face piece, and all other parts of the respirator except the blower and battery pack on a PAPR. Pay particular attention to cleaning the seal between the face and respirator facepiece and under the respirator straps.
3. Take a deep breath, hold it and/or exhale slowly, completely wetting hair, face, and respirator. While still holding breath, remove the respirator and hold it away from the face before starting to breathe.

C. Carefully decontaminate the facepiece of the respirator inside and out. If using a PAPR, shut down using the following sequence: a) first cap inlets to filters; b) turn blower off to keep debris collected on the inlet side of the filter from dislodging and contaminating the outside of the unit; c) thoroughly decontaminate blower and hoses; d) carefully decontaminate battery pack with a wet rag being cautious of getting water in the battery pack thus preventing destruction. **(THIS PROCEDURE IS NOT A SUBSTITUTE FOR RESPIRATOR CLEANING!).**

D. Shower and wash body completely with soap and water. Rinse thoroughly.

E. Rinse shower room walls and floor to drain prior to exiting.

F. Proceed from shower to clean room; dry off and change into street clothes or into new disposable work clothing.

1.8.6 REGULATED AREA REQUIREMENTS

The Competent Person shall meet all requirements of 29 CFR 1926.1101 (o) and assure that all requirements for regulated areas at 29 CFR 1926.1101 (e) are met. All personnel in the regulated area shall not be allowed to eat, drink, smoke, chew tobacco or gum, apply cosmetics, or in any way interfere with the fit of their respirator.

1.9 DECONTAMINATION FACILITIES

1.9.1 DESCRIPTION

Provide each regulated area with separate personnel (PDF) and waste/equipment decontamination facilities (W/EDF). Ensure that the PDF are the only means of ingress and egress to the regulated area and that all equipment, bagged waste, and other material exit the regulated area only through the W/EDF.

1.9.2 GENERAL REQUIREMENTS

All personnel entering or exiting a regulated area must go through the PDF and shall follow the requirements at 29 CFR 1926.1101 (j)(1) and these specifications. All waste, equipment and contaminated materials

must exit the regulated area through the W/EDF and be decontaminated in accordance with these specifications. Walls and ceilings of the PDF and W/EDF must be constructed of a minimum of 3 layers of 6 mil opaque fire retardant polyethylene sheeting and be securely attached to existing building components and/or an adequate temporary framework. A minimum of 3 layers of 6 mil poly shall also be used to cover the floor under the PDF and W/EDF units. Construct doors so that they overlap and secure to adjacent surfaces. Weight inner doorway sheets with layers of duct tape so that they close quickly after release. Put arrows on sheets so they show direction of travel and overlap. If the building adjacent area is occupied, construct a solid barrier on the occupied side(s) to protect the sheeting and reduce potential for non-authorized personnel entering the regulated area.

1.9.3 TEMPORARY FACILITIES TO THE PDF AND W/EDF

The Competent Person shall provide temporary water service connections to the PDF and W/EDF. Backflow prevention must be provided at the point of connection to the VA system. Water supply must be of adequate pressure and meet requirements of 29 CFR 1910.141(d)(3). Provide adequate temporary overhead electric power with ground fault circuit interruption (GFCI) protection. Provide a sub-panel for all temporary power in the clean room. Provide adequate lighting to provide a minimum of 50 foot candles in the PDF and W/EDF. Provide temporary heat, if needed, to maintain 70^{o}F throughout the PDF and W/EDF.

1.9.4 PERSONNEL DECONTAMINATION FACILITY (PDF)

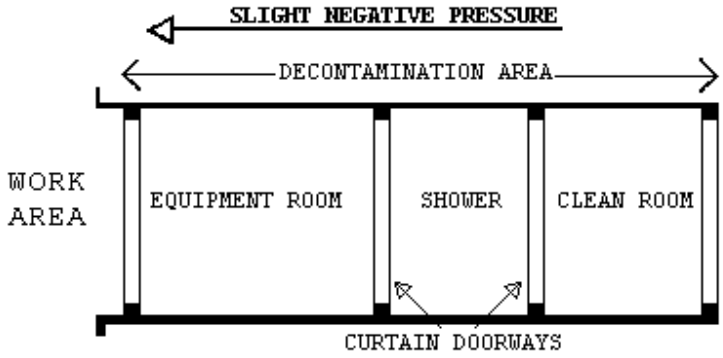
The Competent Person shall provide a PDF consisting of shower room which is contiguous to a clean room and equipment room which is connected to the regulated area. The PDF must be sized to accommodate the number of personnel scheduled for the project. The shower room, located in the center of the PDF, shall be fitted with as many portable showers as necessary to insure all employees can complete the entire decontamination procedure within 15 minutes. The PDF shall be constructed of opaque poly for privacy. The PDF shall be constructed to eliminate any parallel routes of egress without showering.

1. Clean Room: The clean room must be physically and visually separated from the rest of the building to protect the privacy of personnel changing clothes. The clean room shall be constructed of at least 3 layers of 6 mil opaque fire retardant poly to provide an air tight room. Provide a minimum of 2 - 900 mm (3 foot) wide 6 mil poly

opaque fire retardant doorways. One doorway shall be the entry from outside the PDF and the second doorway shall be to the shower room of the PDF. The floor of the clean room shall be maintained in a clean, dry condition. Shower overflow shall not be allowed into the clean room. Provide 1 storage locker per person. A portable fire extinguisher, Type ABC, shall be provided in accordance with OSHA and NFPA Standard 10. All persons entering the regulated area shall remove all street clothing in the clean room and dress in disposable protective clothing and respiratory protection. Any person entering the clean room does so either from the outside with street clothing on or is coming from the shower room completely naked and thoroughly washed. Females required to enter the regulated area shall be ensured of their privacy throughout the entry/exit process by posting guards at both entry points to the PDF so no male can enter or exit the PDF during her stay in the PDF.

2. Shower Room: The Competent Person shall assure that the shower room is a completely water tight compartment to be used for the movement of all personnel from the clean room to the equipment room and for the showering of all personnel going from the equipment room to the clean room. Each shower shall be constructed so water runs down the walls of the shower and into a drip pan. Install a freely draining smooth floor on top of the shower pan. The shower room shall be separated from the rest of the building and from the clean room and equipment room using air tight walls made from at least 3 layers of 6 mil opaque fire retardant poly. The shower shall be equipped with a shower head and controls, hot and cold water, drainage, soap dish and continuous supply of soap, and shall be maintained in a sanitary condition throughout its use. The controls shall be arranged so an individual can shower without assistance. Provide a flexible hose shower head, hose bibs and all other items shown on Shower Schematic. Waste water will be pumped to a drain after being filtered through a minimum of a 100 micron sock in the shower drain; a 20 micron filter; and a final 5 micron filter. Filters will be changed a minimum of daily or more often as needed. Filter changes must be done in the shower to prevent loss of contaminated water. Hose down all shower surfaces after each shift and clean any debris from the shower pan. Residue is to be disposed of as asbestos waste.

3. Equipment Room: The Competent Person shall provide an equipment room which shall be an air tight compartment for the storage of work equipment/tools, reusable personal protective equipment, except for a respirator and for use as a gross decontamination area for personnel exiting the regulated area. The equipment room shall be separated from the regulated area by a minimum 3 foot wide door made with 2 layers of 6 mil opaque fire retardant poly. The equipment room shall be separated from the regulated area, the shower room and the rest of the building by air tight walls and ceiling constructed of a minimum of 3 layers of 6 mil opaque fire retardant poly. Damp wipe all surfaces of the equipment room after each shift change. Provide an additional loose layer of 6 mil fire retardant poly per shift change and remove this layer after each shift. If needed, provide a temporary electrical sub-panel equipped with GFCI in the equipment room to accommodate any equipment required in the regulated area.
4. The PDF shall look like as follows: Clean room at the entrance followed by a shower room followed by an equipment room leading to the regulated area. Each doorway in the PDF is minimum of 2 layers of 6 mil opaque fire retardant poly.

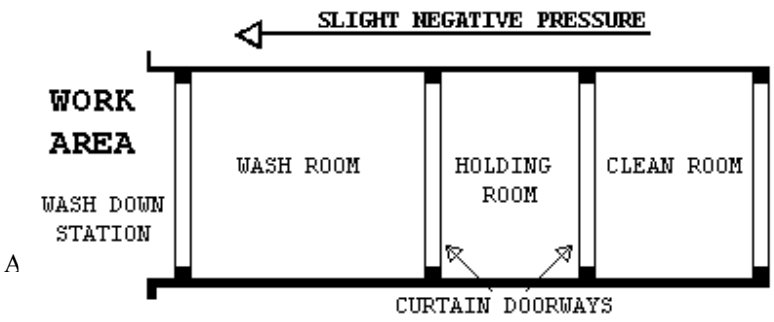


1.9.5 WASTE/EQUIPMENT DECONTAMINATION FACILITY (W/EDF)

The Competent Person shall provide an W/EDF consisting of a wash room, holding room, and clean room for removal of waste, equipment and contaminated material from the regulated area. Personnel shall not enter or exit the W/EDF except in the event of an emergency. Clean debris and residue in the W/EDF daily. All surfaces in the W/EDF shall

be wiped/hosed down after each shift and all debris shall be cleaned from the shower pan. The W/EDF shall consist of the following:

1. Wash Down Station: Provide an enclosed shower unit in the regulated area just outside the Wash Room as an equipment bag and container cleaning station.
2. Wash Room: Provide a wash room for cleaning of bagged or containerized asbestos containing waste materials passed from the regulated area. Construct the wash room using 50 x 100 mm (2" x 4") wood framing and 3 layers of 6 mil fire retardant poly. Locate the wash room so that packaged materials, after being wiped clean, can be passed to the Holding Room. Doorways in the wash room shall be constructed of 2 layers of 6 mil fire retardant poly.
3. Holding Room: Provide a holding room as a drop location for bagged materials passed from the wash room. Construct the holding room using 50 x 100 mm (2" x 4") wood framing and 3 layers of 6 mil fire retardant poly. The holding room shall be located so that bagged material cannot be passed from the wash room to the clean room unless it goes through the holding room. Doorways in the holding room shall be constructed of 2 layers of 6 mil fire retardant poly.
4. Clean Room: Provide a clean room to isolate the holding room from the exterior of the regulated area. Construct the clean room using 2 x 4 wood framing and 2 layers of 6 mil fire retardant poly. The clean room shall be located so as to provide access to the holding room from the building exterior. Doorways to the clean room shall be constructed of 2 layers of 6 mil fire retardant poly. When a negative pressure differential system is used, a rigid enclosure separation between the W/EDF clean room and the adjacent areas shall be provided.
5. The W/EDF shall be provided as follows: Wash Room leading to a Holding Room followed by a Clean Room leading to outside the regulated area. See diagram.



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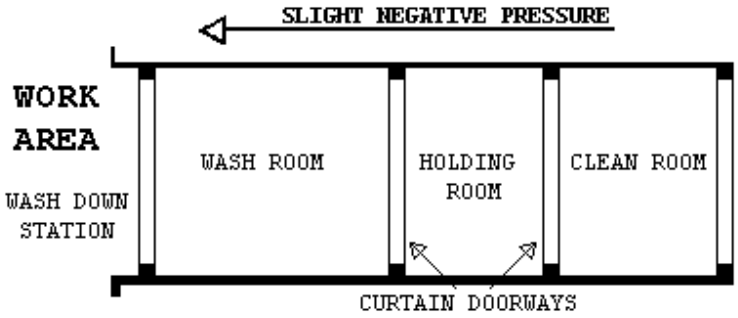


1.9.6 WASTE/EQUIPMENT DECONTAMINATION PROCEDURES

At washdown station in the regulated area, thoroughly wet clean contaminated equipment and/or sealed polyethylene bags and pass into Wash Room after visual inspection. When passing anything into the Wash Room, close all doorways of the W/EDF, other than the doorway between the washdown station and the Wash Room. Keep all outside personnel clear of the W/EDF. Once inside the Wash Room, wet clean the equipment and/or bags. After cleaning and inspection, pass items into the Holding Room. Close all doorways except the doorway between the Holding Room and the Clean Room. Workers from the Clean Room/Exterior shall enter the Holding Room and remove the decontaminated/cleaned equipment/bags for removal and disposal. These personnel will not be required to wear PPE. At no time shall personnel from the clean side be allowed to enter the Wash Room.

PART 2 - PRODUCTS, MATERIALS AND EQUIPMENT

2.1 MATERIALS AND EQUIPMENT

2.1.1 GENERAL REQUIREMENTS

Prior to the start of work, the contractor shall provide and maintain a sufficient quantity of materials and equipment to assure continuous and efficient work throughout the duration of the project. Work shall not start unless the following items have been delivered to the site and the CPIH has submitted verification to the VA's representative.

A. All materials shall be delivered in their original package, container or bundle bearing the name of the manufacturer and the brand name (where applicable).

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

contamination. Flammable materials cannot be stored inside buildings. Replacement materials shall be stored outside of the regulated area until abatement is completed.

C. The Contractor shall not block or hinder use of buildings by patients, staff, and visitors to the VA in partially occupied buildings by placing materials/equipment in any unauthorized place.
D. The Competent Person shall inspect for damaged, deteriorating or previously used materials. Such materials shall not be used and shall be removed from the worksite and disposed of properly.
E. Polyethylene sheeting for walls in the regulated area shall be a minimum of 4-mils. For floors and all other uses, sheeting of at least 6-mils shall be used in widths selected to minimize the frequency of joints. Fire retardant poly shall be used throughout.
F. The method of attaching polyethylene sheeting shall be agreed upon in advance by the Contractor and the VA and selected to minimize damage to equipment and surfaces. Method of attachment may include any combination of moisture resistant duct tape furring strips, spray glue, staples, nails, screws, lumber and plywood for enclosures or other effective procedures capable of sealing polyethylene to dissimilar finished or unfinished surfaces under both wet and dry conditions.
G. Polyethylene sheeting utilized for the PDF shall be opaque white or black in color, 6 mil fire retardant poly.
H. Installation and plumbing hardware, showers, hoses, drain pans, sump pumps and waste water filtration system shall be provided by the Contractor.
I. An adequate number of HEPA vacuums, scrapers, sprayers, nylon brushes, brooms, disposable mops, rags, sponges, staple guns, shovels, ladders and scaffolding of suitable height and length as well as meeting OSHA requirements, fall protection devices, water hose to reach all areas in the regulated area, airless spray equipment, and any other tools, materials or equipment required to conduct the abatement project. All electrically operated hand tools, equipment, electric cords shall be connected to GFCI protection.
J. Special protection for objects in the regulated area shall be detailed (e.g., plywood over carpeting or hardwood floors to prevent damage from scaffolds, water and falling material).

K. Disposal bags – 2 layers of 6 mil, for asbestos waste shall be pre-printed with labels, markings and address as required by OSHA, EPA and DOT regulations.

L. The VA shall be provided a copy of the MSDS as required for all hazardous chemicals under OSHA 29 CFR 1910.1200 - Hazard Communication. Chlorinated compounds shall not be used with any spray adhesive or other product. Appropriate encapsulant(s) shall be provided.

M. OSHA DANGER demarcation signs, as many and as required by OSHA 29 CFR 1926.1101(k)(7) shall be provided and placed by the Competent Person. All other posters and notices required by Federal and State regulations shall be posted in the Clean Room.

N. Adequate and appropriate PPE for the project and number of personnel/shifts shall be provided. All personal protective equipment issued must be based on a hazard assessment conducted under 29 CFR 1910.132(d).

2.1.2 NEGATIVE PRESSURE FILTRATION SYSTEM

The Contractor shall provide enough HEPA negative air machines to completely exchange the regulated area air volume 4 times per hour. The Competent Person shall determine the number of units needed for the regulated area by dividing the cubic feet in the regulated area by 15 and then dividing that result by the cubic feet per minute (CFM) for each unit to determine the number of units needed to effect 4 air changes per hour. Provide a standby unit in the event of machine failure and/or emergency in an adjacent area.

2.1.3 DESIGN AND LAYOUT

A. Before start of work submit the design and layout of the regulated area and the negative air machines. The submittal shall indicate the number of, location of and size of negative air machines. The point(s) of exhaust, air flow within the regulated area, anticipated negative pressure differential, and supporting calculations for sizing shall be provided. In addition, submit the following:

1. Method of supplying power to the units and designation/location of the panels.
2. Description of testing method(s) for correct air volume and pressure differential.
3. If auxiliary power supply is to be provided for the negative air machines, provide a schematic diagram of the power supply and manufacturer's data on the generator and switch.

2.1.4 NEGATIVE AIR MACHINES (HEPA UNITS)

A. Negative Air Machine Cabinet: The cabinet shall be constructed of steel or other durable material capable of withstanding potential damage from rough handling and transportation. The width of the cabinet shall be less than 30" in order to fit in standard doorways. The cabinet must be factory sealed to prevent asbestos fibers from being released during use, transport, or maintenance. Any access to and replacement of filters shall be from the inlet end. The unit must be on casters or wheels.

B. Negative Air Machine Fan: The rating capacity of the fan must indicate the CFM under actual operating conditions. Manufacturer's typically use "free-air" (no resistance) conditions when rating fans. The fan must be a centrifugal type fan.

C. Negative Air Machine Final Filter: The final filter shall be a HEPA filter. The filter media must be completely sealed on all edges within a structurally rigid frame. The filter shall align with a continuous flexible gasket material in the negative air machine housing to form an air tight seal. Each HEPA filter shall be certified by the manufacturer to have an efficiency of not less than 99.97% when challenged with 0.3 μm dioctylphthalate (DOP) particles. Testing shall have been done in accordance with Military Standard MIL-STD-282 and Army Instruction Manual 136-300-175A. Each filter must bear a UL586 label to indicate ability to perform under specified conditions. Each filter shall be marked with the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of test air flow.

D. Negative Air Machine Pre-filters: The pre-filters, which protect the final HEPA filter by removing larger particles, are required to prolong the operating life of the HEPA filter. Two stages of pre-filtration are required. A first stage pre-filter shall be a low efficiency type for particles 10 μm or larger. A second stage pre-filter shall have a medium efficiency effective for particles down to 5 μm or larger. Pre-filters shall be installed either on or in the intake opening of the NAM and the second stage filter must be held in place with a special housing or clamps.

E. Negative Air Machine Instrumentation: Each unit must be equipped with a gauge to measure the pressure drop across the filters and to indicate when filters have become loaded and need to be changed. A table indicating the cfm for various pressure readings on the gauge shall be

affixed near the gauge for reference or the reading shall indicate at what point the filters shall be changed, noting cfm delivery. The unit must have an elapsed time meter to show total hours of operation.

F. Negative Air Machine Safety and Warning Devices: An electrical/ mechanical lockout must be provide to prevent the fan from being operated without a HEPA filter. Units must be equipped with an automatic shutdown device to stop the fan in the event of a rupture in the HEPA filter or blockage in the discharge of the fan. Warning lights are required to indicate normal operation; too high a pressure drop across filters; or too low of a pressure drop across filters.

G. Negative Air Machine Electrical: All electrical components shall be approved by the National Electrical Manufacturer's Association (NEMA) and Underwriter's Laboratories (UL). Each unit must be provided with overload protection and the motor, fan, fan housing, and cabinet must be grounded.

2.1.5 PRESSURE DIFFERENTIAL

The fully operational negative air system within the regulated area shall continuously maintain a pressure differential of -0.02" water column gauge. Before any disturbance of any asbestos material, this shall be demonstrated to the VA by use of a pressure differential meter/manometer as required by OSHA 29 CFR 1926.1101(e)(5)(i). The Competent Person shall be responsible for providing, maintaining, and documenting the negative pressure and air changes as required by OSHA and this specification.

2.1.6 MONITORING

The pressure differential shall be continuously monitored and recorded between the regulated area and the area outside the regulated area with a monitoring device that incorporates a strip chart recorder. The strip chart recorder shall become part of the project log and shall indicate at least -0.02" water column gauge for the duration of the project.

2.1.7 AUXILIARY GENERATOR

If the building is occupied during abatement, provide an auxiliary gasoline/diesel generator located outside the building in an area protected from the weather. In the event of a power failure, the generator must automatically start and supply power to a minimum of 50% of the negative air machines in operation.

2.1.8 SUPPLEMENTAL MAKE-UP AIR INLETS

Provide, as needed for proper air flow in the regulated area, in a location approved by the VA, openings in the plastic sheeting to allow outside air to flow into the regulated area. Auxiliary makeup air inlets must be located as far from the negative air machines as possible, off the floor near the ceiling, and away from the barriers that separate the regulated area from the occupied clean areas. Cover the inlets with weighted flaps which will seal in the event of failure of the negative pressure system.

2.1.9 TESTING THE SYSTEM

The negative pressure system must be tested before any ACM is disturbed in any way. After the regulated area has been completely prepared, the decontamination units set up, and the negative air machines installed, start the units up one at a time. Demonstrate and document the operation and testing of the negative pressure system to the VA using smoke tubes and a negative pressure gauge. Testing must also be done at the start of each work shift.

2.1.10 DEMONSTRATION OF THE NEGATIVE AIR PRESSURE SYSTEM

The demonstration of the operation of the negative pressure system to the VA shall include, but not be limited to, the following:

A. Plastic barriers and sheeting move lightly in toward the regulated area.
B. Curtains of the decontamination units move in toward regulated area.
C. There is a noticeable movement of air through the decontamination units. Use the smoke tube to demonstrate air movement from the clean room to the shower room to the equipment room to the regulated area.
D. Use smoke tubes to demonstrate air is moving across all areas in which work is to be done. Use a differential pressure gauge to indicate a negative pressure of at least -0.02" across every barrier separating the regulated area from the rest of the building. Modify the system as necessary to meet the above requirements.

2.1.11 USE OF SYSTEM DURING ABATEMENT OPERATIONS

A. Start units before beginning any disturbance of ACM occurs. After work begins, the units shall run continuously, maintaining 4 actual air changes per hour at a negative pressure differential of -0.02" water column gauge, for the duration of the work until a final visual clearance and final air clearance has been completed.

The negative air machines shall not be shut down for the duration of the project unless authorized by the VA, in writing.

B. Abatement work shall begin at a location farthest from the units and proceed towards them. If an electric failure occurs, the Competent Person shall stop all abatement work and immediately begin wetting all exposed asbestos materials for the duration of the power outage. Abatement work shall not resume until power is restored and all units are operating properly again.

C. The negative air machines shall continue to run after all work is completed and until a final visual clearance and a final air clearance has been completed for that regulated area.

2.1.12 DISMANTLING THE SYSTEM

After completion of the final visual and final air clearance has been obtained by the VPIH/CIH, the units may be shut down. The units shall have been **completely decontaminated**, all pre-filters removed and disposed of as asbestos waste, asbestos labels attached and the units inlet/outlet sealed with 2 layers of 6 mil poly.

2.2 CONTAINMENT BARRIERS AND COVERINGS IN THE REGULATED AREA

2.2.1 GENERAL

Seal off the perimeter to the regulated area to completely isolate the regulated area from adjacent spaces. All surfaces in the regulated area must be covered to prevent contamination and to facilitate clean-up. Should adjacent areas become contaminated as a result of the work, shall immediately stop work and clean up the contamination at no additional cost to the VA. Provide firestopping and identify all fire barrier penetrations due to abatement work as specified in Section 2.2.8; FIRESTOPPING.

2.2.2 PREPARATION PRIOR TO SEALING THE REGULATED AREA

Place all tools, scaffolding, materials and equipment needed for working in the regulated area prior to erecting any plastic sheeting. All uncontaminated removable furniture, equipment and/or supplies shall be removed by the VA from the regulated area before commencing work. Any objects remaining in the regulated area shall be completely covered with 2 layers of 6-mil fire retardant poly sheeting and secured with duct tape. Lock out and tag out any HVAC/electrical systems in the regulated area.

2.2.3 CONTROLLING ACCESS TO THE REGULATED AREA

Access to the regulated area is allowed only through the personnel decontamination facility (PDF). All other means of access shall be eliminated and OSHA DANGER demarcation signs posted as required by OSHA. If the regulated area is adjacent to or within view of an occupied area, provide a visual barrier of 6 mil opaque fire retardant poly to prevent building occupant observation. If the adjacent area is accessible to the public, the barrier must be solid and capable of withstanding the negative pressure.

2.2.4 CRITICAL BARRIERS

Completely separate any operations in the regulated area from adjacent areas using 2 layers of 6 mil fire retardant poly and duct tape. Individually seal with 2 layers of 6 mil poly and duct tape all HVAC openings into the regulated area. Individually seal all lighting fixtures, clocks, doors, windows, convectors, speakers, or any other objects/openings in the regulated area. Heat must be shut off any objects covered with poly.

2.2.5 PRIMARY BARRIERS

A. Cover the regulated area with two layers of 6 mil fire retardant poly on the floors and two layers of 4 mil fire retardant poly on the walls, unless otherwise directed in writing by the VA representative. Floor layers must form a right angle with the wall and turn up the wall at least 300 mm (12"). Seams must overlap at least 1800 mm (6') and must be spray glued and taped. Install sheeting so that layers can be removed independently from each other. Carpeting shall be covered with three layers of 6 mil poly. Corrugated cardboard sheets must be placed between the bottom and middle layers of poly. Mechanically support and seal with duct tape and glue all wall layers.

B. If stairs and ramps are covered with 6 mil plastic, two layers must be used. Provide 19 mm (3/4") exterior grade plywood treads held in place with duct tape/glue on the plastic. Do not cover rungs or rails with any isolation materials.

2.2.6 SECONDARY BARRIERS

A loose layer of 6 mil shall be used as a drop cloth to protect the primary layers from debris generated during the abatement. This layer shall be replaced as needed during the work minimally once per work day.

2.2.7 EXTENSION OF THE REGULATED AREA

If the enclosure of the regulated area is breached in any way that could allow contamination to occur, the affected area shall be included in the regulated area and constructed as per this section. Decontamination measures must be started immediately and continue until air monitoring indicates background levels are met.

2.2.8 FIRESTOPPING

A. Through penetrations caused by cables, cable trays, pipes, sleeves must be firestopped with a fire-rated firestop system providing an air tight seal.

B. Firestop materials that are not equal to the wall or ceiling penetrated shall be brought to the attention of the VA Representative. The contractor shall list all areas of penetration, the type of sealant used, and whether or not the location is fire rated. Any discovery of penetrations during abatement shall be brought to the attention of the VA representative immediately. All walls, floors and ceilings are considered fire rated unless otherwise determined by the VA Representative or Fire Marshall.

C. Any visible openings whether or not caused by a penetration shall be reported by the Contractor to the VA Representative for a sealant system determination. Firestops shall meet ASTM E814 and UL 1479 requirements for the opening size, penetrant, and fire rating needed.

2.3 MONITORING, INSPECTION AND TESTING

2.3.1 GENERAL

A. Perform throughout abatement work monitoring, inspection and testing inside and around the regulated area in accordance with the OSHA requirements and these specifications. The CPIH shall is responsible for and shall inspect and oversee the performance of the Contractor IH Technician. The IH Technician shall continuously inspect and monitor conditions inside the regulated area to ensure compliance with these specifications. In addition, the CPIH shall personally manage air sample collection, analysis, and evaluation for personnel, regulated area, and adjacent area samples to satisfy OSHA requirements. Additional inspection and testing requirements are also indicated in other parts of this specification.

B. The VA will employ an independent industrial hygienist (VPIH/CIH) consultant and/or use its own IH to perform various services on behalf of the VA. The VPIH/CIH will perform the necessary monitoring,

inspection, testing, and other support services to ensure that VA patients, employees, and visitors will not be adversely affected by the abatement work, and that the abatement work proceeds in accordance with these specifications, that the abated areas or abated buildings have been successfully decontaminated. The work of the VPIH/CIH consultant in no way relieves the Contractor from their responsibility to perform the work in accordance with contract/specification requirements, to perform continuous inspection, monitoring and testing for the safety of their employees, and to perform other such services as specified. The cost of the VPIH/CIH and their services will be borne by the VA except for any repeat of final inspection and testing that may be required due to unsatisfactory initial results. Any repeated final inspections and/or testing, if required, will be paid for by the Contractor.

C. If fibers counted by the VPIH/CIH during abatement work, either inside or outside the regulated area, utilizing the NIOSH 7400 air monitoring method, exceed the specified respective limits, the Contractor shall stop work. The Contractor may request confirmation of the results by analysis of the samples by TEM. Request must be in writing and submitted to the VA's representative. Cost for the confirmation of results will be borne by the Contractor for both the collection and analysis of samples and for the time delay that may/does result for this confirmation. Confirmation sampling and analysis will be the responsibility of the CPIH with review and approval of the VPIH/CIH. An agreement between the CPIH and the VPIH/CIH shall be reached on the exact details of the confirmation effort, in writing, including such things as the number of samples, location, collection, quality control on-site, analytical laboratory, interpretation of results and any follow-up actions. This written agreement shall be co-signed by the IH's and delivered to the VA's representative.

2.3.2 SCOPE OF SERVICES OF THE VPIH/CIH CONSULTANT

A. The purpose of the work of the VPIH/CIH is to: assure quality; adherence to the specification; resolve problems; prevent the spread of contamination beyond the regulated area; and assure clearance at the end of the project. In addition, their work includes performing the final inspection and testing to determine whether the regulated area or building has been adequately decontaminated. All air monitoring is to be done utilizing PCM/TEM. The VPIH/CIH will perform the following tasks:

1. Task 1: Establish background levels before abatement begins by collecting background samples. Retain samples for possible TEM analysis.
2. Task 2: Perform continuous air monitoring, inspection, and testing outside the regulated area during actual abatement work to detect any faults in the regulated area isolation and any adverse impact on the surroundings from regulated area activities.
3. Task 3: Perform unannounced visits to spot check overall compliance of work with contract/specifications. These visits may include any inspection, monitoring, and testing inside and outside the regulated area and all aspects of the operation except personnel monitoring.
4. Task 4: Provide support to the VA representative such as evaluation of submittals from the Contractor, resolution of conflicts, interpret data, etc.
5. Task 5: Perform, in the presence of the VA representative, final inspection and testing of a decontaminated regulated area at the conclusion of the abatement to certify compliance with all regulations and VA requirements/specifications.
6. Task 6: Issue certificate of decontamination for each regulated area and project report.

B. All documentation, inspection results and testing results generated by the VPIH/CIH will be available to the Contractor for information and consideration. The Contractor shall cooperate with and support the VPIH/CIH for efficient and smooth performance of their work.

C. The monitoring and inspection results of the VPIH/CIH will be used by the VA to issue any Stop Removal orders to the Contractor during abatement work and to accept or reject a regulated area or building as decontaminated.

2.3.3 MONITORING, INSPECTION AND TESTING BY CONTRACTOR CPIH

The Contractor’s CPIH is responsible for managing all monitoring, inspections, and testing required by these specifications, as well as any and all regulatory requirements adopted by these specifications. The CPIH is responsible for the continuous monitoring of all subsystems and procedures which could affect the health and safety of the Contractor's personnel. Safety and health conditions and the provision of those conditions inside the regulated area for all persons entering the regulated area is the exclusive responsibility of the Contractor/Competent Person. The person performing the personnel and

area air monitoring inside the regulated area shall be an IH Technician, who shall be trained and shall have specialized field experience in air sampling and analysis. The IH Technician shall have a NIOSH 582 Course or equivalent and show proof. The IH Technician shall participate in the AIHA Asbestos Analysis Registry or participate in the Proficiency Analytic Testing program of AIHA for fiber counting quality control assurance. The IH Technician shall also be an accredited EPA/State Contractor/Supervisor and Building Inspector. The IH Technician shall have participated in five abatement projects collecting personal and area samples as well as responsibility for documentation. The analytic laboratory used by the Contractor to analyze the samples shall be AIHA accredited for asbestos PAT. A daily log documenting all OSHA requirements for air monitoring for asbestos in 29 CFR 1926.1101(f), (g) and Appendix A. This log shall be made available to the VA representative and the VPIH/CIH. The log will contain, at a minimum, information on personnel or area sampled, other persons represented by the sample, the date of sample collection, start and stop times for sampling, sample volume, flow rate, and fibers/cc. The CPIH shall collect and analyze samples for each representative job being done in the regulated area, i.e., removal, wetting, clean-up, and load-out. No fewer than two personal samples per shift shall be collected and one area sample per 1,000 square feet of regulated area where abatement is taking place and one sample per shift in the clean room area shall be collected. In addition to the continuous monitoring required, the CPIH will perform inspection and testing at the final stages of abatement for each regulated area as specified in the CPIH responsibilities.

2.4 STANDARD OPERATING PROCEDURES

The Contractor shall have established Standard Operating Procedures (SOP's) in printed form and loose leaf folder consisting of simplified text, diagrams, sketches, and pictures that establish and explain clearly the procedures to be followed during all phases of the work by the Contractor's personnel. The SOP's must be modified as needed to address specific requirements of this project and the specifications. The SOP's shall be submitted for review and approval prior to the start of any abatement work. The minimum topics and areas to be covered by the SOP's are:

A. Minimum Personnel Qualifications

B. Emergency Action Plan/Contingency Plans and Arrangements
C. Security and Safety Procedures
D. Respiratory Protection/Personal Protective Equipment Program and Training
E. Medical Surveillance Program and Recordkeeping
F. Regulated Area Requirements - Containment Barriers/Isolation of Regulated Area
G. Decontamination Facilities and Entry/Exit Procedures (PDF and W/EDF)
H. Negative Pressure Systems Requirements
I. Monitoring, Inspections, and Testing
J. Removal Procedures for ACM
K. Removal of Contaminated Soil (if applicable)
L. Encapsulation Procedures for ACM
M. Disposal of ACM waste/equipment
N. Regulated Area Decontamination/Clean-up
O. Regulated Area Visual and Air Clearance
P. Project Completion/Closeout

2.5 SUBMITTALS

2.5.1 PRE-START MEETING SUBMITTALS

Submit to the VA a minimum of 14 days prior to the pre-start meeting the following for review and approval. Meeting this requirement is a prerequisite for the pre-start meeting for this project:

A. Submit a detailed work schedule for the entire project reflecting contract documents and the phasing/schedule requirements from the CPM chart.
B. Submit a staff organization chart showing all personnel who will be working on the project and their capacity/function. Provide their qualifications, training, accreditations, and licenses, as appropriate. Provide a copy of the "Certificate of Worker's Acknowledgment" and the "Affidavit of Medical Surveillance and Respiratory Protection" for each person.
C. Submit Standard Operating Procedures developed specifically for this project, incorporating the requirements of the specifications, prepared, signed and dated by the CPIH.
D. Submit the specifics of the materials and equipment to be used for this project with brand names, model numbers, performance characteristics, pictures/diagrams, and number available for the following:

1. Supplied air system, if used, negative air machines, HEPA vacuums, air monitoring pumps, calibration devices, pressure differential monitoring device and emergency power generating system.
2. Waste water filtration system, shower system, containment barriers.
3. Encapsulants, surfactants, hand held sprayers, airless sprayers, glovebags, fire extinguishers.
4. Respirators, protective clothing, personal protective equipment.
5. Fire safety equipment to be used in the regulated area.

E. Submit the name, location, and phone number of the approved landfill; proof/verification the landfill is approved for ACM disposal; the landfill's requirements for ACM waste; the type of vehicle to be used for transportation; and name, address, and phone number of subcontractor, if used. Proof of asbestos training for transportation personnel shall be provided.

F. Submit required notifications and arrangements made with regulatory agencies having regulatory jurisdiction and the specific contingency/emergency arrangements made with local health, fire, ambulance, hospital authorities and any other notifications/arrangements.

G. Submit the name, location and verification of the laboratory and/or personnel to be used for analysis of air and/or bulk samples. Air monitoring must be done in accordance with OSHA 29 CFR 1926.1101(f) and Appendix A.

H. Submit qualifications verification: Submit the following evidence of qualifications. Make sure that all references are current and verifiable by providing current phone numbers and documentation.
1. Asbestos Abatement Company: Project experience within the past 3 years; listing projects first most similar to this project: Project Name; Type of Abatement; Duration; Cost; Reference Name/Phone Number; Final Clearance; Completion Date
2. List of project(s) halted by owner, A/E, IH, regulatory agency in the last 3 years: Project Name; Reason; Date; Reference Name/Number; Resolution
3. List asbestos regulatory citations, penalties, damages paid and legal actions taken against the company in the last 3 years. Provide copies and all information needed for verification.

I. Submit information on personnel: Provide a resume; address each item completely; copies of certificates, accreditations, and licenses.

Submit an affidavit signed by the CPIH stating that all personnel submitted below have medical records in accordance with OSHA 29 CFR 1926.1101(m) and 29 CFR 1910.20 and that the company has implemented a medical surveillance program and maintains recordkeeping in accordance with the above regulations. Submit the phone number and doctor/clinic/hospital used for medical evaluations.

1. CPIH: Name; years of abatement experience; list of projects similar to this one; certificates, licenses, accreditations for proof of AHERA/OSHA specialized asbestos training; professional affiliations; number of workers trained; samples of training materials; samples of SOP's developed; medical opinion; current respirator fit test.
2. Competent Person(s)/Supervisor(s): Number; names; social security numbers; years of abatement experience as Competent Person/Supervisor; list of similar projects as Competent Person/Supervisor; as a worker; certificates, licenses, accreditations; proof of AHERA/OSHA specialized asbestos training; maximum number of personnel supervised on a project; medical opinion; current respirator fit test.
3. Workers: Numbers; names; social security numbers; years of abatement experience; certificates, licenses, accreditations; training courses in asbestos abatement and respiratory protection; medical opinion; current respirator fit test.

J. Submit copies of State license for asbestos abatement; copy of insurance policy, including exclusions with a letter from agent stating in plain English the coverage provided and the fact that asbestos abatement activities are covered by the policy; copy of SOP's incorporating the requirements of this specification; information on who provides your training, how often; who provides medical surveillance, how often; who does and how is air monitoring conducted; a list of references of independent laboratories/IH's familiar with your air monitoring and standard operating procedures; copies of monitoring results of the five referenced projects listed and analytical method(s) used.

K. Rented equipment must be decontaminated prior to returning to the rental agency.

L. Submit, before the start of work, the manufacturer's technical data for all types of encapsulants and the MSDS. Provide application instructions also.

2.5.2 SUBMITTALS DURING ABATEMENT

A. The Competent Person shall maintain and submit a daily log at the regulated area documenting the dates and times of the following: purpose, attendees and summary of meetings; all personnel entering/exiting the regulated area; document and discuss the resolution of unusual events such as barrier breeching, equipment failures, emergencies, and any cause for stopping work; representative air monitoring and results/TWA's/EL's. Submit this information daily to the VPIH/CIH.

B. The CPIH shall document and maintain the inspection and approval of the regulated area preparation prior to start of work and daily during work.

1. Removal of any poly barriers.
2. Visual inspection/testing by the CPIH prior to application of lockdown.
3. Packaging and removal of ACM waste from regulated area.
4. Disposal of ACM waste materials; copies of Waste Shipment Records/landfill receipts to the VA's representative on a weekly basis.

2.5.3 SUBMITTALS AT COMPLETION OF ABATEMENT

The CPIH shall submit a project report consisting of the daily log book requirements and documentation of events during the abatement project including Waste Shipment Records signed by the landfill's agent. The report shall include a certificate of completion, signed and dated by the CPIH, in accordance with Attachment #1. All clearance and perimeter samples must be submitted. The VA Representative will retain the abatement report after completion of the project.

2.6 ENCAPSULANTS

2.6.1 TYPES OF ENCAPSULANTS

A. The following four types of encapsulants, if used, must comply with comply with performance requirements as stated in paragraph 2.6.2:

1. Removal encapsulant - used as a wetting agent to remove ACM.
2. Bridging encapsulant - provides a tough, durable coating on ACM.
3. Penetrating encapsulant - penetrates/encapsulates ACM at least 13 mm (1/2").
4. Lockdown encapsulant - seals microscopic fibers on surfaces after ACM removal.

2.6.2 PERFORMANCE REQUIREMENTS

Encapsulants shall meet the latest requirements of EPA; shall not contain toxic or hazardous substances; or solvents; and shall comply with the following performance requirements:

A. General Requirements for all Encapsulants:
   1. ASTM E84: Flame spread of 25; smoke emission of 50.
   2. University of Pittsburgh Protocol: Combustion Toxicity; zero mortality.
   3. ASTM C732: Accelerated Aging Test; Life Expectancy - 20 years.
   4. ASTM E96: Permeability - minimum of 0.4 perms.

B. Bridging/Penetrating Encapsulants:
   1. ASTM E736: Cohesion/Adhesion Test - 24 kPa (50 lbs/ft^2).
   2. ASTM E119: Fire Resistance - 3 hours (Classified by UL for use on fibrous/cementitious fireproofing).
   3. ASTM D2794: Gardner Impact Test; Impact Resistance - minimum 11.5 kg-mm (43 in/lb).
   4. ASTM D522: Mandrel Bend Test; Flexibility - no rupture or cracking.

C. Lockdown Encapsulants:
   1. ASTM E119: Fire resistance - 3 hours (tested with fireproofing over encapsulant applied directly to steel member).
   2. ASTM E736: Bond Strength - 48 kPa (100 lbs/ft^2) (test compatibility with cementitious and fibrous fireproofing).
   3. In certain situations, encapsulants may have to be applied to hot pipes/equipment. The encapsulant must be able to withstand high temperatures without cracking or off-gassing any noxious vapors during application.

2.6.3 CERTIFICATES OF COMPLIANCE

The Contractor shall submit to the VA representative certification from the manufacturer indicating compliance with performance requirements for encapsulants when applied according to manufacturer recommendations.

PART 3 - EXECUTION

3.1 PRE-ABATEMENT ACTIVITIES

3.1.1 PRE-ABATEMENT MEETING

The VA representative, upon receipt, review, and substantial approval of all pre-abatement submittals and verification by the CPIH that all materials and equipment required for the project are on the site, will arrange for a pre-abatement meeting between the Contractor, the CPIH,

Competent Person(s), the VA representative(s), and the VPIH/CIH. The purpose of the meeting is to discuss any aspect of the submittals needing clarification or amplification and to discuss any aspect of the project execution and the sequence of the operation. The Contractor shall be prepared to provide any supplemental information/documentation to the VA's representative regarding any submittals, documentation, materials or equipment. Upon satisfactory resolution of any outstanding issues, the VA's representative will issue a written order to proceed to the Contractor. No abatement work of any kind described in the following provisions shall be initiated prior to the VA written order to proceed.

3.1.2 PRE-ABATEMENT INSPECTIONS AND PREPARATIONS

Before any work begins on the construction of the regulated area, the Contractor will:

A. Conduct a space-by-space inspection with an authorized VA representative and prepare a written inventory of all existing damage in those spaces where asbestos abatement will occur. Still or video photography may be used to supplement the written damage inventory. Document will be signed and certified as accurate by both parties.

B. The VA Representative, the Contractor, and the VPIH/CIH must be aware of 10/95 A/E Quality Alert indicating the failure to identify asbestos in the areas listed. Make sure these areas are looked at/reviewed on the project: Lay-in ceilings concealing ACM; ACM behind walls/windows from previous renovations; inside chases/walls; transite piping/ductwork/sheets; behind radiators; roofing materials; below window sills; water/sewer lines; electrical conduit coverings; crawl spaces(previous abatement contamination); flooring/mastic covered by carpeting/new flooring; exterior insulated wall panels; on underground fuel tanks; steam line trench coverings.

C. Ensure that all furniture, machinery, equipment, curtains, drapes, blinds, and other movable objects required to be removed from the regulated area have been cleaned and removed or properly protected from contamination.

D. If present and required, remove and dispose of carpeting from floors in the regulated area.

E. Inspect existing firestopping in the regulated area. Correct as needed.

3.1.3 PRE-ABATEMENT CONSTRUCTION AND OPERATIONS

A. Perform all preparatory work for the first regulated area in accordance with the approved work schedule and with this specification.

B. Upon completion of all preparatory work, the CPIH will inspect the work and systems and will notify the VA's representative when the work is completed in accordance with this specification. The VA's representative may inspect the regulated area and the systems with the VPIH/CIH and may require that upon satisfactory inspection, the Contractor's employees perform all major aspects of the approved SOP's, especially worker protection, respiratory systems, contingency plans, decontamination procedures, and monitoring to demonstrate satisfactory operation. The operational systems for respiratory protection and the negative pressure system shall be demonstrated for proper performance.

C. The CPIH shall document the pre-abatement activities described above and deliver a copy to the VA's representative.

D. Upon satisfactory inspection of the installation of and operation of systems the VA's representative will notify the Contractor in writing to proceed with the asbestos abatement work in accordance with this specification and all applicable regulations.

3.2 REGULATED AREA PREPARATIONS

A. Post OSHA DANGER signs meeting the specifications of OSHA 29 CFR 1926.1101 at any location and approaches to the regulated area where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted at a distance sufficiently far enough away from the regulated area to permit any personnel to read the sign and take the necessary measures to avoid exposure. Additional signs will be posted following construction of the regulated area enclosure.

B. Shut down and lock out electric power to the regulated area. Provide temporary power and lighting. Insure safe installation including GFCI of temporary power sources and equipment by compliance with all applicable electrical code requirements and OSHA requirements for temporary electrical systems. Electricity shall be provided by the VA.

C. Shut down and lock out heating, cooling, and air conditioning system (HVAC) components that are in, supply or pass through the regulated area. Investigate the regulated area and agree on pre-abatement condition with the VA's representative. Seal all intake and exhaust vents in the regulated area with duct tape and 2 layers of 6-mil poly. Also, seal any seams in system components that pass through the regulated area. Remove

all contaminated HVAC system filters and place in labeled 6-mil polyethylene disposal bags for staging and eventual disposal as asbestos waste.

D. The Contractor shall provide sanitary facilities for abatement personnel and maintain them in a clean and sanitary condition throughout the abatement project.

E. The VA will provide water for abatement purposes. The Contractor shall connect to the existing VA system. The service to the shower(s) shall be supplied with backflow prevention.

F. Pre-clean all movable objects within the regulated area using a HEPA filtered vacuum and/or wet cleaning methods as appropriate. After cleaning, these objects shall be removed from the regulated area and carefully stored in an uncontaminated location. Drapes, clothing, upholstered furniture and other fabric items should be disposed of as asbestos contaminated waste. Cleaning these asbestos contaminated items utilizing HEPA vacuum techniques and off-premises steam cleaning is very difficult and cannot guarantee decontamination. Since adequate cleaning of contaminated fabrics is difficult, the VA will determine whether this option is an appropriate one. Carpeting will be disposed of prior to abatement if in the regulated area.

G. Pre-clean all fixed objects in the regulated 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 may be significant. Also, pay particular attention to wall, floor and ceiling penetration behind fixed items. After precleaning, enclose fixed objects with 2 layers of 6-mil poly and seal securely in place with duct tape. Objects (e.g., permanent fixtures, shelves, electronic equipment, laboratory tables, sprinklers, alarm systems, closed circuit TV equipment and computer cables) which must remain in the regulated area and that require special ventilation or enclosure requirements should be designated here along with specified means of protection. Contact the manufacturer for special protection requirements.

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

3.3 CONTAINMENT BARRIERS AND COVERINGS FOR THE REGULATED AREA GENERAL:

Follow requirements of Section 2.2 – Containment Barriers and Coverings.

3.4 REMOVAL OF ACM

3.4.1 WETTING ACM

A. Use amended water for the wetting of ACM prior to removal. The Competent Person shall assure the wetting of ACM meets the definition of "adequately wet" in the EPA NESHAP's regulation and OSHA's "wet methods" for the duration of the project. A removal encapsulant may be used instead of amended water with written approval of the VA's representative.

B. Amended Water: Provide water to which a surfactant has been added shall be used to wet the ACM and reduce the potential for fiber release during disturbance of ACM. The mixture must be equal to or greater than the wetting provided by water amended by a surfactant consisting one ounce of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with 5 gallons (19L) of water.

C. Removal Encapsulant: Provide a penetrating encapsulant designed specifically for the removal of ACM. The material must, when used, result in adequate wetting of the ACM and retard fiber release during removal.

3.4.2 SECONDARY BARRIER AND WALKWAYS

A. Install as a drop cloth a 6 mil poly sheet at the beginning of each work shift where removal is to be done during that shift. Completely cover floors and any walls within 10 feet (3M) of the area where work is to done. Secure the secondary barrier with duct tape to prevent debris from getting behind it. Remove the secondary barrier at the end of the shift or as work in the area is completed. Keep residue on the secondary barrier wetted. When removing, fold inward to prevent spillage and place in a disposal bag.

B. Install walkways using 6 mil black poly between the regulated area and the decontamination facilities (PDF and W/EDF) to protect the primary layers from contamination and damage. Install the walkways at the beginning of each shift and remove at the end of each shift.

3.4.3 WET REMOVAL OF ACM

A. Adequately and thoroughly wet the ACM to be removed prior to removal to reduce/prevent fiber release to the air. Adequate time must be allowed for the amended water to saturate the ACM. Abatement personnel must not

disturb dry ACM. Use a fine spray of amended water or removal encapsulant. Saturate the material sufficiently to wet to the substrate without causing excessive dripping. The material must be sprayed repeatedly/continuously during the removal process in order to maintain adequately wet conditions. Removal encapsulants must be applied in accordance with the manufacturer's written instructions. Perforate or carefully separate, using wet methods, an outer covering that is painted or jacketed in order to allow penetration and wetting of the material. Where necessary, carefully remove covering while wetting to minimize fiber release. **In no event shall dry removal occur except in the case of electrical hazards or a greater safety issue is possible!**

B. If ACM does not wet well with amended water due to coating or jacketing, remove as follows:
   1. Mist work area continuously with amended water whenever necessary to reduce airborne fiber levels.
   2. Remove saturated ACM in small sections. Do not allow material to dry out. As material is removed, bag material while still wet into disposal bags. Twist tightly the bag neck, bend over (gooseneck) and seal with a minimum of three tight wraps of duct tape. Clean /decontaminate the outside of any residue and move to washdown station adjacent to W/EDF.
   3. Fireproofing or Architectural Finish on Scratch Coat: Spray with a fine mist of amended water or removal encapsulant. Allow time for saturation to the substrate. Do not oversaturate causing excess dripping. Scrape material from substrate. Remove material in manageable quantities and control falling to staging or floor. If the falling distance is over 20 feet (6M), use a drop chute to contain material through descent. Remove residue remaining on the scratch coat after scraping is done using a stiff bristle hand brush. If a removal encapsulant is used, remove residue completely before the encapsulant dries. Re-wet the substrate as needed to prevent drying before the residue is removed.
   4. Fireproofing or Architectural Finish on Wire Lath: Spray with a fine mist of amended water or removal encapsulant. Allow time to completely saturate the material. Do not oversaturate causing excess dripping. If the surface has been painted or otherwise coated, cut small holes as needed and apply amended water or removal encapsulant from above. Cut saturated wire lath into 2' x 6' (50mm x 150mm)

sections and cut hanger wires. Roll up complete with ACM, cover in burlap and hand place in disposal bag. Do not drop to floor. After removal of lath/ACM, remove any overspray on decking and structure using stiff bristle nylon brushes. Depending on hardness of overspray, scrapers may be needed for removal.

5. Pipe/Tank/Vessel/Boiler Insulation: Remove the outer layer of wrap while spraying with amended water in order to saturate the ACM. Spray ACM with a fine mist of amended water or removal encapsulant. Allow time to saturate the material to the substrate. Cut bands holding pre-formed pipe insulation sections. Slit jacketing at the seams, remove and hand place in a disposal bag. Do not allow dropping to the floor. Remove molded fitting insulation/mud in large pieces and hand place in a disposal bag. Remove any residue on pipe or fitting with a stiff bristle nylon brush. In locations where pipe fitting insulation is removed from fibrous glass or other non-asbestos insulated straight runs of pipe, remove fibrous material at least 6" from the point it contacts the ACM.

3.4.4 WET REMOVAL OF AMOSITE

A. The following areas shown on drawings indicate locations of amosite ACM which will require local exhaust ventilation and collection as described below, in addition to wet removal. Provide specific description /locations/ drawings.

B. Provide local exhaust ventilation and collection systems to assure collection of amosite fibers at the point of generation. A 300 mm (12") flexible rigid non-collapsing duct shall be shall be located no more than 600 mm (2') from any scraping/brushing activity. Primary filters must be replaced every 30 minutes on the negative air machines. Each scraping/brushing activity must have a negative air machine devoted to it. For pre-molded pipe insulation or cutting wire lathe attach a 1200 mm (4') square flared end piece on the intake of the duct. Support the duct horizontally at a point 600 mm (2') below the work to effect capture. One person in the crew shall be assigned to operate the duct collection system on a continual basis.

C. Amosite does not wet well with amended water. Submit full information/documentation on the wetting agent proposed prior to start for review and approval by the VA Representative. Insure that the material is worked on in small sections and is thoroughly and

continuously wetted. Package as soon as possible while wet. Remove as required.

3.4.5 REMOVAL OF ACM/DIRT FLOORS AND OTHER SPECIAL PROCEDURES

A. MAJOR ABATEMENT ON DIRT FLOORS:

When working on dirt floors, pick up all chunks of visible asbestos debris using wet methods if possible after set-up of PDF, W/EDF, negative air systems as required. Perform work and decontaminate/clean-up; perform lockdown as needed and complete work as required in these specifications. The asbestos contaminated soil (ACS) shall be removed and/or enclosed.

1. Remove ACS as shown on drawings to a minimum depth of 2”. After wetting to minimize dust, shovel dirt into disposal bags. The CPIH shall closely monitor work conditions and take appropriate action to protect workers from exposure to asbestos and heat stress. The minimum number of air changes per hour shall be six using negative air machines. Use special vacuum truck equipped with HEPA filtration to remove soil
2. Enclosure of ACS using a concrete layer of 4” over the entire surface may also be done. Thoroughly dampen soil first before pouring concrete. Personnel shall be proficient in concrete finishing as well as asbestos trained.

3.5 LOCKDOWN ENCAPSULATION

3.5.1 GENERAL

Lockdown encapsulation is an integral part of the ACM removal. At the conclusion of ACM removal and before removal of the primary barriers, all surfaces shall be encapsulated with a bridging encapsulant.

3.5.2 DELIVERY AND STORAGE

Deliver materials to the job site in original, new and unopened containers bearing the manufacturer's name and label as well as the following information: name of material, manufacturer's stock number, date of manufacture, thinning instructions, application instructions and the MSDS for the material.

3.5.3 WORKER PROTECTION

Before beginning work with any material for which an MSDS has been submitted, provide workers with any required personal protective equipment. The required personal protective equipment shall be used whenever exposure to the material might occur. In addition to OSHA/specification requirements for respiratory protection, a paint

pre-filter and an organic vapor cartridge, at a minimum, shall used in addition to the HEPA filter when a solvent based encapsulant is used. The CPIH shall be responsible for provision of adequate respiratory protection.

3.5.4 ENCAPSULATION OF SCRATCH COAT PLASTER OR PIPING

A. Apply two coats of encapsulant to the scratch coat plaster or piping after all ACM has been removed. Apply in strict accordance with the manufacturer's instructions. Any deviation from the instructions must be approved by the VA's representative in writing prior to commencing the work.

B. Apply the encapsulant with an airless sprayer at a pressure and using a nozzle orifice as recommended by the manufacturer. Apply the first coat while the while the scratch coat is still damp from the asbestos removal process, after passing the visual inspection. If the surface has been allowed to dry, wet wipe or HEPA vacuum prior to spraying with encapsulant. Apply a second coat over the first coat in strict conformance with the manufacturer's instructions. Color the encapsulant and contrast the color in the second coat so that visual confirmation of completeness and uniform coverage of each coat is possible. Adhere to the manufacturer's instructions for coloring. At the completion of the encapsulation, the surface must be a uniform third color produced by the mixture.

3.5.5 SEALING EXPOSED EDGES

Seal edges of ACM exposed by removal work which is inaccessible, such as a sleeve, wall penetration, etc., with two coats of encapsulant. Prior to sealing, permit the exposed edges to dry completely to permit penetration of the encapsulant. Apply in accordance with 3.5.4 (B).

3.6 DISPOSAL OF ACM WASTE MATERIALS

3.6.1 GENERAL

Dispose of waste ACM and debris which is packaged in accordance with these specifications, OSHA, EPA and DOT. The landfill requirements for packaging must also be met. Disposal shall be done at an approved landfill. Disposal of non-friable ACM shall be done in accordance with applicable regulations.

3.6.2 PROCEDURES

A. Asbestos waste shall be packaged and moved through the W/EDF into a covered transport container in accordance with procedures is this specification. Waste shall be double-bagged prior to disposal. Wetted

waste can be very heavy. Bags shall not be overfilled. Bags shall securely sealed to prevent accidental opening and/or leakage. The top shall be tightly twisted and goosenecked prior to tightly sealing with at least three wraps of duct tape. Ensure that unauthorized persons do not have access to the waste material once it is outside the regulated area. All transport containers must be covered at all times when not in use. NESHAP's signs must be on containers during loading and unloading. Material shall not be transported in open vehicles. If drums are used for packaging, the drums shall be labeled properly and shall not be re-used.

B. Waste Load Out: Waste load out shall be done in accordance with the procedures in W/EDF Decontamination Procedures. Bags shall be decontaminated on exterior surfaces by wet cleaning and/or HEPA vacuuming before being placed in the second bag.

C. Asbestos waste with sharp edged components, i.e., nails, screws, lath, strapping, tin sheeting, jacketing, metal mesh, etc., which might tear poly bags shall be wrapped securely in burlap before packaging and, if needed, use a poly lined fiber drum as the second container, prior to disposal.

3.7 PROJECT DECONTAMINATION

3.7.1 GENERAL

A. The entire work related to project decontamination shall be performed under the close supervision and monitoring of the CPIH.

B. If the asbestos abatement work is in an area which was contaminated prior to the start of abatement, the decontamination will be done by cleaning the primary barrier poly prior to its removal and cleanings of the surfaces of the regulated area after the primary barrier removal.

C. If the asbestos abatement work is in an area which was uncontaminated prior to the start of abatement, the decontamination will be done by cleaning the primary barrier poly prior to its removal, thus preventing contamination of the building when the regulated area critical barriers are removed.

3.7.2 REGULATED AREA CLEARANCE

Air testing and other requirements which must be met before release of the Contractor and re-occupancy of the regulated area space are specified in Final Testing Procedures.

3.7.3 WORK DESCRIPTION

Decontamination includes the clearance of the air in the regulated area and the decontamination and removal of the enclosures/facilities installed prior to the abatement work including primary/critical barriers, PDF and W/EDF facilities, and negative pressure systems.

3.7.4 PRE-DECONTAMINATION CONDITIONS

A. Before decontamination starts, all ACM waste from the regulated area shall be removed, all waste collected and removed, and the loose 6 mil layer of poly removed and disposed of along with any gross debris generated by the work.

B. At the start of decontamination, the following shall be in place:

1. Primary barriers consisting of 2 layers of 6 mil poly on the floor and 4 mil poly on the walls.
2. Critical barriers consisting of 2 layers of 6 mil poly which is the sole barrier between the regulated area and openings to the rest of the building or outside.
4. Decontamination facilities for personnel and equipment in operating condition and the negative pressure system in operation.

3.7.5 FIRST CLEANING

Carry out a first cleaning of all surfaces of the regulated area including items of remaining poly sheeting, tools, scaffolding, ladders/staging by wet methods and/or HEPA vacuuming. Do not use dry dusting/sweeping methods. Use each surface of a cleaning cloth one time only and then dispose of as contaminated waste. Continue this cleaning until there is no visible residue from abated surfaces or poly or other surfaces. Remove all filters in the air handling system and dispose of as ACM waste in accordance with these specifications. The negative pressure system shall remain in operation during this time. If determined by the CPIH/VPIH/CIH additional cleaning(s) may be needed.

3.7.6 PRE-CLEARANCE INSPECTION AND TESTING

The CPIH and VPIH/CIH will perform a thorough and detailed visual inspection at the end of the cleaning to determine whether there is any visible residue in the regulated area. If the visual inspection is acceptable, the CPIH will perform pre-clearance sampling using aggressive clearance as detailed in 40 CFR 763 Subpart E (AHERA) Appendix A (III)(B)(7)(d). If the sampling results show values below 0.01 f/cc, then the Contractor shall notify the VA's representative of the results with a brief report from the CPIH documenting the

inspection and sampling results and a statement verifying that the regulated area is ready for lockdown encapsulation. The VA reserves the right to utilize their own VPIH/CIH to perform a pre-clearance inspection and testing for verification.

3.7.7 LOCKDOWN ENCAPSULATION OF ABATED SURFACES

With the express written permission of the VA's representative, perform lockdown encapsulation of all surfaces from which asbestos was abated in accordance with the procedures in this specification. Negative pressure shall be maintained in the regulated area during the lockdown application.

3.8 FINAL VISUAL INSPECTION AND AIR CLEARANCE TESTING

3.8.1 GENERAL

Notify the VA representative 24 hours in advance for the performance of the final visual inspection and testing. The final visual inspection and testing will be performed by the VPIH/CIH starting after the final cleaning.

3.8.2 FINAL VISUAL INSPECTION

Final visual inspection will include the entire regulated area, the PDF, all poly sheeting, seals over HVAC openings, doorways, windows, and any other openings. If any debris, residue, dust or any other suspect material is detected, the final cleaning shall be repeated at no cost to the VA. Dust/material samples may be collected and analyzed at no cost to the VA at the discretion of the VPIH/CIH to confirm visual findings. When the regulated area is visually clean the final testing can be done.

3.8.3 FINAL AIR CLEARANCE TESTING

A. After an acceptable final visual inspection by the VPIH/CIH and VA Representative AE Project Engineer, the VPIH/CIH will perform the final testing. Air samples will be collected and analyzed in accordance with procedures for AHERA in this specification. If work is less than 260 1f/160 sf, 5 PCM samples may be collected for clearance. If work is equal to or more than 260 1f/160 sf, TEM sampling shall be done for clearance. TEM analysis shall be done in accordance with procedures in this specification. If the release criteria are not met, the Contractor shall repeat the final cleaning and continue decontamination procedures until clearance is achieved. All **Additional inspection and testing costs will be borne by the Contractor**.

B. If release criteria are met, proceed to perform the abatement closeout and to issue the certificate of completion in accordance with these specifications.

3.8.4 FINAL AIR CLEARANCE PROCEDURES

A. Contractor's Release Criteria: Work in a regulated area is complete when the regulated area is visually clean and airborne fiber levels have been reduced to or below 0.01 f/cc as measured with PCM/TEM methods

B. Air Monitoring and Final Clearance Sampling: To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to the specified level, the VPIH/CIH will secure samples and analyze them according to the following procedures:

1. Fibers Counted: “Fibers” referred to in this section shall be either all fibers regardless of composition as counted in the NIOSH 7400 PCM method or asbestos fibers counted using the AHERA TEM method.
2. Aggressive Sampling: All final air testing samples shall be collected using aggressive sampling techniques except where soil is not encapsulated or enclosed. Samples will be collected on 0.8µ MCE filters for PCM analysis and 0.45µ Polycarbonate filters for TEM. A minimum of 1200 Liters of air shall be collected for clearance samples. Before pumps are started, initiate aggressive sampling as detailed in 40 CFR 763 Subpart E (AHERA) Appendix A (III)(B)(7)(d). Air samples will be collected in areas subject to normal air circulation away from corners, obstructed locations, and locations near windows, doors, or vents. After air sampling pumps have been shut off, circulating fans shall be shut off. The negative pressure system shall continue to operate.

3.8.5 CLEARANCE SAMPLING USING PCM – LESS THAN 260LF/160SF:

A. The VPIH/CIH will perform clearance samples as indicated by the specification.

B. The NIOSH 7400 PCM method will be used for clearance sampling with a minimum collection volume of 1200 Liters of air. A minimum of 5 PCM clearance samples shall be collected. All samples must be equal to or less than 0.01 f/cc to clear the regulated area.

3.8.6 CLEARANCE SAMPLING USING TEM – EQUAL TO OR MORE THAN 260LF/160SF: TEM

Clearance requires 13 samples be collected; 5 inside the regulated area; 5 outside the regulated area; and 3 field blanks.

3.8.7 LABORATORY TESTING OF PCM CLEARANCE SAMPLES

The services of an AIHA accredited laboratory will be employed by the VA to perform analysis for the air samples. Samples will be sent daily by the VPIH/CIH so that verbal/faxed reports can be received within 24 hours. A complete record, certified by the laboratory, of all air monitoring tests and results will be furnished to the VA's representative and the Contractor.

3.8.8 LABORATORY TESTING OF TEM SAMPLES

Samples shall be sent by the VPIH/CIH to an accredited laboratory for analysis by TEM. Verbal/faxed results from the laboratory shall be available within 24 hours after receipt of the samples. A complete record, certified by the laboratory, of all TEM results shall be furnished to the VA's representative and the Contractor.

3.9 ABATEMENT CLOSEOUT AND CERTIFICATE OF COMPLIANCE

3.9.1 COMPLETION OF ABATEMENT WORK

After thorough decontamination, seal negative air machines with 2 layers of 6 mil poly and duct tape to form a tight seal at the intake/outlet ends before removal from the regulated area. Complete asbestos abatement work upon meeting the regulated area visual and air clearance criteria and fulfilling the following:

A. Remove all equipment and materials from the project area.
B. Dispose of all packaged ACM waste as required.
C. Repair or replace all interior finishes damaged during the abatement work, as required.
D. Fulfill other project closeout requirements as required in this specification.

3.9.2 CERTIFICATE OF COMPLETION BY CONTRACTOR

The CPIH shall complete and sign the "Certificate of Completion" in accordance with Attachment 1 at the completion of the abatement and decontamination of the regulated area.

3.9.3 WORK SHIFTS

All work shall be done during administrative hours (8:00 AM to 4:30 PM) Monday -Friday excluding Federal Holidays. Any change in the work schedule must be approved in writing by the VA Representative.

3.9.4 RE-INSULATION

If required as part of the contract, replace all asbestos containing insulation/fire-proofing with suitable non-asbestos material. Provide MSDS’s for all replacement materials. Refer to Section 23 07 11, HVAC, PLUMBING, AND BOILER PLANT INSULATION.

APPENDIX B

VA SPECIFICATIONS - SECTION 02 82 13.19
ASBESTOS FLOOR TILE & MASTIC ABATEMENT

SECTION 02 82 13.19
ASBESTOS FLOOR TILE AND MASTIC ABATEMENT

PART 1 - GENERAL

1.1 CONTRACT DOCUMENTS AND RELATED REQUIREMENTS

Drawings, general provisions of the contract, including general and supplementary conditions and other Division 01 specifications, shall apply to the work of this section. The contract documents show the work to be done under the contract and related requirements and conditions impacting the project. Related requirements and conditions include applicable codes and regulations, notices and permits, existing site conditions and restrictions on use of the site, requirements for partial owner occupancy during the work, coordination with other work and the phasing of the work. In the event the Asbestos Abatement Contractor (Contractor) discovers a conflict in the contract documents and/or requirements or codes, the conflict must be brought to the immediate attention of the Contracting Officer for resolution. Whenever there is a conflict or overlap in the requirements, the most stringent shall apply. Any actions taken by the Contractor without obtaining guidance from the Contracting Officer shall become the sole risk and responsibility of the Contractor. All cost incurred due to such action are also the responsibility of the Contractor.

1.2 EXTENT OF WORK

A. Below is a brief description of the estimated quantities of asbestos flooring materials to be abated. These quantities are for informational purposes only and are based on the best information available at the time of the specification preparation. The Contractor shall satisfy himself as the actual quantities to be abated. Nothing in this section may be interpreted as limiting the extent of work otherwise required by this contract and related documents.

B. Removal, clean-up and disposal of ACM flooring in an appropriate regulated area in the following approximate quantities;

( ) square feet of flooring and mastic

( ) square feet of flooring

( ) square feet of mastic

1.3 RELATED WORK

A. Section 07 84 00, FIRESTOPPING.

B. Section 02 41 00, DEMOLITION.

C. Division 09; FINISHES.

1.4 TASKS

The work tasks are summarized briefly as follows:

A. Pre-abatement activities including pre-abatement meeting(s), inspection(s), notifications, permits, submittal approvals, work-site preparations, emergency procedures arrangements, and standard operating procedures for Class II asbestos abatement work.

B. Abatement activities including removal, clean-up and disposal of ACM waste, recordkeeping, security, monitoring, and inspections.

C. Cleaning and decontamination activities including final visual inspection, air monitoring and certification of decontamination.

1.5 ABATEMENT CONTRACTOR USE OF PREMISES

A. The Contractor and Contractor's personnel shall cooperate fully with the VA representative/consultant to facilitate efficient use of buildings and areas within buildings. The Contractor shall perform the work in accordance with the VA specifications, drawings, phasing plan and in compliance with any/all applicable Federal, State and Local regulations and requirements.

B. The Contractor shall use the existing facilities in the building strictly within the limits indicated in contract documents as well as the approved pre-abatement work plan. Asbestos abatement drawings of partially occupied buildings will show the limits of regulated areas; the placement of decontamination facilities; the temporary location of bagged waste ACM; the path of transport to outside the building; and the temporary waste storage area for each building/regulated area. Any variation from the arrangements shown on drawings shall be secured in writing from the VA representative through the pre-abatement plan of action. The following limitations of use shall apply to existing facilities shown on drawings:

1.6 VARIATIONS IN QUANTITY

The quantities and locations of ACM as indicated on the drawings and the extent of work included in this section are estimates which are limited by the physical constraints imposed by occupancy of the buildings. Accordingly, minor variations (+/- 5%) in quantities of ACM within the regulated area are considered as having no impact on

contract price and time requirements of this contract. Where additional work is required beyond the above variation, the Contractor shall provide unit prices for additional work that is newly discovered materials and those prices will be used for additional work under the contract.

1.7 STOP ASBESTOS REMOVAL

If the Contracting Officer or their field representative presents a written **Stop Asbestos Removal Order**, the Contractor/Personnel shall immediately stop all asbestos removal and adequately wet any exposed ACM. The Contractor shall not resume any asbestos removal activity until authorized to do so by the VA. A stop asbestos removal order may be issued at any time the VA determines abatement conditions/ activities are not within specification requirements. Work stoppage will continue until conditions have been corrected to the satisfaction of the VA. Standby time and costs for corrective actions will be borne by the Contractor, including the industrial hygienist's time. The occurrence of any of the following events shall be reported immediately by the Contractor in writing to the VA representative and shall require the Contractor to immediately stop asbestos removal activities and initiate fiber reduction activities:

A. =/> 0.01 f/cc outside a regulated area or >0.05 f/cc inside a regulated area;
B. breach/break in regulated area critical barrier(s)/floor;
C. serious injury/death at the site;
D. fire/safety emergency at the site;
E. respiratory protection system failure;
F. power failure loss of wetting agent; or
G. any visible emissions observed outside the regulated area.

1.8 GENERAL

Definitions and explanations here are neither complete nor exclusive of all terms used in the contract documents, but are general for the work to the extent they are not stated more explicitly in another element of the contract documents. Drawings must be recognized as diagrammatic in nature and not completely descriptive of the requirements indicated therein.

1.9 GLOSSARY

Abatement - Procedures to control fiber release from asbestos-containing materials, typically during removal. Includes removal,

encapsulation, enclosure, demolition and renovation activities related to asbestos.

ACE - Asbestos contaminated elements.

ACM - Asbestos containing material.

Aerosol - Solid or liquid particulate suspended in air.

Adequately wet - Sufficiently mixed or penetrated with liquid to prevent the release of particulates. If visible emissions are observed coming from the ACM, then that material has not been adequately wetted.

Aggressive method - Removal or disturbance of building material by sanding, abrading, grinding, or other method that breaks, crumbles, or disintegrates intact ACM.

Aggressive sampling - EPA AHERA defined clearance sampling method using air moving equipment such as fans and leaf blowers to aggressively disturb and maintain in the air residual fibers after abatement.

AHERA - Asbestos Hazard Emergency Response Act. Asbestos regulations for schools issued in 1987.

Aircell - Pipe or duct insulation made of corrugated cardboard which contains asbestos.

Air monitoring - The process of measuring the fiber content of a known volume of air collected over a specified period of time. The NIOSH 7400 Method, Issue 2 is used to determine the fiber levels in air.

Air sample filter - The filter used to collect fibers which are then counted. The filter is made of mixed cellulose ester membrane for PCM (Phase Contrast Microscopy) and polycarbonate for TEM (Transmission Electron Microscopy)

Amended water - Water to which a surfactant (wetting agent) has been added to increase the penetrating ability of the liquid.

Asbestos - Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated or altered. Asbestos also includes PACM, as defined below.

Asbestos-containing material (ACM) - Any material containing more than one percent asbestos.

Asbestos contaminated elements (ACE) - Building elements such as ceilings, walls, lights, or ductwork that are contaminated with asbestos.

Asbestos-containing waste material - Asbestos-containing material or asbestos contaminated objects requiring disposal.

Asbestos waste decontamination facility - A system consisting of drum/bag washing facilities and a temporary storage area for cleaned containers of asbestos waste. Used as the exit for waste and equipment leaving the regulated area. In an emergency, it may be used to evacuate personnel.

Authorized person - Any person authorized by the VA, the Contractor, or government agency and required by work duties to be present in regulated areas.

Authorized visitor - Any person approved by the VA; the contractor; or any government agency having jurisdiction over the regulated area.

Barrier - Any surface the isolates the regulated area and inhibits fiber migration from the regulated area.

Containment Barrier - An airtight barrier consisting of walls, floors, and/or ceilings of sealed plastic sheeting which surrounds and seals the outer perimeter of the regulated area.

Critical Barrier - The barrier responsible for isolating the regulated area from adjacent spaces, typically constructed of plastic sheeting secured in place at openings such as doors, windows, or any other opening into the regulated area.

Primary Barrier - Barriers placed over critical barriers and exposed directly to abatement work.

Secondary Barrier - Any additional sheeting used to isolate and provide protection from debris during abatement work.

Breathing zone - The hemisphere forward of the shoulders with a radius of about 150 - 225 mm (6 - 9 inches) from the worker's nose.

Bridging encapsulant - An encapsulant that forms a layer on the surface of the ACM.

Building/facility owner - The legal entity, including a lessee, which exercises control over management and recordkeeping functions relating to a building and/or facility in which asbestos activities take place.

Bulk testing - The collection and analysis of suspect asbestos containing materials.

Certified Industrial Hygienist (CIH) - One certified in practice of industrial hygiene by the American Board of Industrial Hygiene. An industrial hygienist Certified in Comprehensive Practice by the American Board of Industrial Hygiene.

Class I asbestos work - Activities involving the removal of Thermal System Insulation (TSI) and surfacing ACM and Presumed Asbestos Containing Material (PACM).

Class II asbestos work - Activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic.

Clean room/Changing room - An uncontaminated room having facilities for the storage of employee's street clothing and uncontaminated materials and equipment.

Clearance sample - The final air sample taken after all asbestos work has been done and visually inspected.
Performed by the VA's industrial hygiene consultant (VPIH).

Closely resemble - The major workplace conditions which have contributed to the levels of historic asbestos exposure, are no more protective than conditions of the current workplace.

Competent person - In addition to the definition in 29 CFR 1926.32(f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f); in addition, for Class I and II work who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for supervisor.

Contractor's Professional Industrial Hygienist (CPIH) - The Contractor's industrial hygienist. The industrial hygienist must meet the qualification requirements of the PIH.

Count - Refers to the fiber count or the average number of fibers greater than five microns in length per cubic centimeter of air.

Decontamination area/unit - An enclosed area adjacent to and connected to the regulated area and consisting of an equipment room, shower room, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.

Demolition - The wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.

Disposal bag - Typically 6 mil thick siftproof, dustproof, leaktight container used to package and transport asbestos waste from regulated areas to the approved landfill. Each bag/container must be labeled/marked in accordance with EPA, OSHA and DOT requirements.

Disturbance - Activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. Disturbance includes cutting away small amounts of ACM or PACM, no greater than the amount that can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or disposal bag which shall not exceed 60 inches in length or width.

Drum - A rigid, impermeable container made of cardboard fiber, plastic, or metal which can be sealed in order to be siftproof, dustproof, and leaktight.

Employee exposure - The exposure to airborne asbestos that would occur if the employee were not wearing respiratory protection equipment.

Encapsulant - A material that surrounds or embeds asbestos fibers in an adhesive matrix and prevents the release of fibers.

Encapsulation - Treating ACM with an encapsulant.

Enclosure - The construction of an air tight, impermeable, permanent barrier around ACM to control the release of asbestos fibers from the material and also eliminate access to the material.

Equipment room - A contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

Fiber - A particulate form of asbestos, 5 microns or longer, with a length to width ratio of at least 3 to 1.

Fibers per cubic centimeter (f/cc) - Abbreviation for fibers per cubic centimeter, used to describe the level of asbestos fibers in air.

Filter - Media used in respirators, vacuums, or other machines to remove particulate from air.

Firestopping - Material used to close the open parts of a structure in order to prevent a fire from spreading.

Friable asbestos containing material - Any material containing more than 1 percent asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR 763, Section 1, Polarized Light Microscopy, that,

when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

Glovebag - Not more than a 60 x 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which materials and tools may be handled.

High efficiency particulate air (HEPA) filter - A filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 microns or greater in diameter.

HEPA vacuum - Vacuum collection equipment equipped with a HEPA filter system capable of collecting and retaining asbestos fibers.

Homogeneous area - An area of surfacing, thermal system insulation or miscellaneous ACM that is uniform in color, texture and date of application.

HVAC - Heating, Ventilation and Air Conditioning

Industrial hygienist - A professional qualified by education, training, and experience to anticipate, recognize, evaluate and develop controls for occupational health hazards. Meets definition requirements of the American Industrial Hygiene Association (AIHA).

Industrial hygienist technician - A person working under the direction of an IH or CIH who has special training, experience, certifications and licenses required for the industrial hygiene work assigned.

Intact - The ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.

Lockdown - Applying encapsulant, after a final visual inspection, on all abated surfaces at the conclusion of ACM removal prior to removal of critical barriers.

National Emission Standards for Hazardous Air Pollutants (NESHAP's) - EPA's rule to control emissions of asbestos to the environment.

Negative initial exposure assessment - A demonstration by the employer which complies with the criteria in 29 CFR 1926.1101 (f)(2)(iii), that employee exposure during an operation is expected to be consistently below the PEL's.

Negative pressure - Air pressure which is lower than the surrounding area, created by exhausting air from a sealed regulated area through HEPA equipped filtration units. OSHA requires maintaining -0.02" water gauge inside the negative pressure enclosure.

Negative pressure respirator - A respirator in which the air pressure inside the facepiece is negative during inhalation relative to the air outside the respirator.

Non-friable ACM - Material that contains more than 1 percent asbestos but cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Organic vapor cartridge - The type of cartridge used on air purifying respirators for organic vapor exposures.

Outside air - The air outside buildings and structures, including, but not limited to, the air under a bridge or in an open ferry dock.

Owner/operator - Any person who owns, leases, operates, controls, or supervises the facility being demolished or renovated or any person who owns, leases, operates, controls, or supervises the demolition or renovation operation, or both.

Penetrating encapsulant - Encapsulant that is absorbed into the ACM matrix without leaving a surface layer.

Personal sampling/monitoring - Representative air samples obtained in the breathing zone of the person using a cassette and battery operated pump to determine asbestos exposure.

Permissible exposure limit (PEL) - The level of exposure OSHA allows for an 8 hour time weighted average. For asbestos fibers, the PEL is 0.1 fibers per cc.

Polarized light microscopy (PLM) - Light microscopy using dispersion staining techniques and refractive indices to identify and quantify the type(s) of asbestos present in a bulk sample.

Polyethylene sheeting - Strong plastic barrier material 4 to 6 mils thick, semi-transparent, sometimes flame retardant in compliance with NFPA 241.

Positive/negative fit check - A method of verifying the fit of a respirator by closing off the filters and breathing in or closing off the exhalation valve and breathing out while detecting leakage of the respirator.

Presumed ACM (PACM) - Thermal system insulation, surfacing, and flooring material installed in buildings prior to 1981. If the building owner has actual knowledge, or should have known through the exercise of due diligence that other materials are ACM, they too must be treated as PACM. The designation of PACM may be rebutted pursuant to 29 CFR 1926.1101 (k)(5).

Professional IH - An IH who meets the definition requirements of AIHA; meets the definition requirements of OSHA as a "Competent Person" at 29 CFR 1926.1101 (b); has completed two specialized EPA approved courses on management and supervision of asbestos abatement projects; has formal training in respiratory protection and waste disposal; and has a minimum of four projects of similar complexity with this project of which at least three projects serving as the supervisory IH.

Project designer - A person who has successfully completed the training requirements for an asbestos abatement project designer as required by 40 CFR 763 Appendix C, Part I; (B)(5).

Protection factor - A value assigned by OSHA/NIOSH to indicate the assigned protection a respirator should provide if worn properly. The number indicates the reduction of exposure level from outside to inside the respirator.

Qualitative fit test (QLFT) - A fit test using a challenge material that can be sensed by the wearer if leakage in the respirator occurs.

Quantitative fit test (QNFT) - A fit test using a challenge material which is quantified outside and inside the respirator thus allowing the determination of the actual fit factor.

Regulated area - An area established by the employer to demarcate where Class I, II, III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work may accumulate; and a work area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed the PEL.

Regulated ACM (RACM) - Friable ACM; Category I nonfriable ACM that has become friable; Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading or; Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of the demolition or renovation operation.

Removal - All operations where ACM, PACM and/or RACM is taken out or stripped from structures or substrates, including demolition operations.

Renovation - Altering a facility or one or more facility components in any way, including the stripping or removal of asbestos from a facility component which does not involve demolition activity.

Repair - Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.

Shower room - The portion of the PDF where personnel shower before leaving the regulated area. Also used for bag/drum decontamination in the EDF.

Standard operating procedures (SOP's) - Asbestos work procedures required to be submitted by the contractor before work begins.

Supplied air respirator (SAR) - A respirator that utilizes an air supply separate from the air in the regulated area.

Surfacing ACM - A material containing more than 1 percent asbestos that is sprayed, troweled on or otherwise applied to surfaces for acoustical, fireproofing and other purposes.

Surfactant - A chemical added to water to decrease water's surface tension thus making it more penetrating into ACM.

Thermal system ACM - A material containing more than 1 percent asbestos applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain.

Transmission electron microscopy (TEM) - A microscopy method that can identify and count asbestos fibers.

VA Industrial Hygienist (VPIH/CIH) - Department of Veterans Affairs Professional Industrial Hygienist.

VA Representative - The VA official responsible for on-going project work.

Visible emissions - Any emissions, which are visually detectable without the aid of instruments, coming from ACM/PACM/RACM or ACM waste material.

Waste/Equipment decontamination area (W/EDA) – The area in which waste is packaged and equipment is decontaminated before removal from the regulated area.

Waste generator - Any owner or operator whose act or process produces asbestos-containing waste material.

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

Wet cleaning - The process of thoroughly eliminating, by wet methods, any asbestos contamination from surfaces or objects.

1.10 REFERENCED STANDARDS ORGANIZATIONS

The following acronyms or abbreviations as referenced in contract/ specification documents are defined to mean the associated names. Names and addresses may be subject to change.

A. VA Department of Veterans Affairs
   810 Vermont Avenue, NW
   Washington, DC 20420
B. AIHA American Industrial Hygiene Association
   2700 Prosperity Avenue, Suite 250
   Fairfax, VA 22031
   703-849-8888
C. ANSI American National Standards Institute
   1430 Broadway
   New York, NY 10018
   212-354-3300
D. ASTM American Society for Testing and Materials
   1916 Race St.
   Philadelphia, PA 19103
   215-299-5400
E. CFR Code of Federal Regulations
   Government Printing Office
   Washington, DC 20420
F. CGA Compressed Gas Association
   1235 Jefferson Davis Highway
   Arlington, VA 22202
   703-979-0900
G. CS Commercial Standard of the National Institute of Standards and
   Technology (NIST)
   U. S. Department of Commerce
   Government Printing Office
   Washington, DC 20420
H. EPA Environmental Protection Agency
   401 M St., SW
   Washington, DC 20460
   202-382-3949
I. MIL-STD Military Standards/Standardization Division
   Office of the Assistant Secretary of Defense
   Washington, DC 20420
J. MSHA Mine Safety and Health Administration
   Respiratory Protection Division
   Ballston Tower #3
   Department of Labor

Arlington, VA 22203
703-235-1452

K. NIST National Institute for Standards and Technology
U. S. Department of Commerce
Gaithersburg, MD 20234
301-921-1000

L. NEC National Electrical Code (by NFPA)

M. NEMA National Electrical Manufacturer's Association
2101 L Street, NW
Washington, DC 20037

N. NFPA National Fire Protection Association
1 Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
800-344-3555

O. NIOSH National Institutes for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226
513-533-8236

P. OSHA Occupational Safety and Health Administration
U.S. Department of Labor
Government Printing Office
Washington, DC 20402

Q. UL Underwriters Laboratory
333 Pfingsten Rd.
Northbrook, IL 60062
312-272-8800

R. USA United States Army
Army Chemical Corps
Department of Defense
Washington, DC 20420

1.11 GENERAL APPLICABILITY OF CODES, REGULATIONS, AND STANDARDS

A. All work under this contract shall be done in strict accordance with all applicable Federal, State, and local regulations, standards and codes governing asbestos abatement, and any other trade work done in conjunction with the abatement. All applicable codes, regulations and standards are adopted into this specification and will have the same force and effect as this specification.

B. The most recent edition of any relevant regulation, standard, document or code shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirement(s) shall be utilized.

C. Copies of all standards, regulations, codes and other applicable documents, including this specification and those listed in Section 1.5 shall be available at the worksite in the clean change area of the worker decontamination system.

1.12 CONTRACTOR RESPONSIBILITY

The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State and Local regulations related to any and all aspects of the abatement project. The Contractor is responsible for providing and maintaining training, accreditations, medical exams, medical records, personal protective equipment as required by applicable Federal, State and Local regulations. The contractor shall hold the VA and VPIH/CIH consultants harmless for any failure to comply with any applicable work, packaging, transporting, disposal, safety, health, or environmental requirement on the part of himself, his employees, or his subcontractors. The contractor will incur all costs of the CPIH, including all sampling/analytical costs to assure compliance with OSHA/EPA/State requirements.

1.13 FEDERAL REQUIREMENTS

Federal requirements which govern some aspect of asbestos abatement include, but are not limited to, the following regulations.

A. Occupational Safety and Health Administration **(OSHA)**

1. Title 29 CFR 1926.1101 - Construction Standard for Asbestos
2. Title 29 CFR 1910.132 - Personal Protective Equipment
3. Title 29 CFR 1910.134 - Respiratory Protection
4. Title 29 CFR 1926 - Construction Industry Standards
5. Title 29 CFR 1910.20 - Access to Employee Exposure and Medical Records
6. Title 29 CFR 1910.1200 - Hazard Communication
7. Title 29 CFR 1910.151 - Medical and First Aid

B. Environmental Protection Agency (EPA)

1. 40 CFR 61 Subpart A and M (Revised Subpart B) - National Emission Standard for Hazardous Air Pollutants - Asbestos.
2. 40 CFR 763.80 - Asbestos Hazard Emergency Response Act (AHERA)

C. Department of Transportation (DOT)

Title 49 CFR 100 - 185 - Transportation

//1.14 STATE REQUIREMENTS

State requirements that apply to the asbestos abatement work, disposal, clearance, etc., include, but are not limited to, the following://

//1.15 LOCAL REQUIREMENTS

If local requirements are more stringent than federal or state standards, the local standards are to be followed.//

1.16 STANDARDS

A. Standards which govern asbestos abatement activities include, but are not limited to, the following:
   1. American National Standards Institute (ANSI) Z9.2-79 - Fundamentals Governing the Design and Operation of Local Exhaust Systems Z88.2 - Practices for Respiratory Protection.
   2. Underwriters Laboratories (UL)586-90 - UL Standard for Safety of HEPA filter Units, 7th Edition.

B. Standards which govern encapsulation work include, but are not limited to, the following:
   1. American Society for Testing and Materials (ASTM)

C. Standards which govern the fire and safety concerns in abatement work include, but are not limited to, the following:
   1. National Fire Protection Association (NFPA) 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.
   2. NFPA 701 - Standard Methods for Fire Tests for Flame Resistant Textiles and Film.
   3. NFPA 101 - Life Safety Code

D. Resilient Floor Covering Institute (RFCI):
   Recommended work practices for Removal of Resilient Floor Coverings.

1.17 EPA GUIDANCE DOCUMENTS

A. EPA guidance documents which discuss asbestos abatement work activities are listed below. These documents are made part of this section by reference. EPA publications can be ordered from (800) 424-9065.

B. Guidance for Controlling ACM in Buildings (Purple Book) EPA 560/5-85-024

C. Asbestos Waste Management Guidance EPA 530-SW-85-007

D. A Guide to Respiratory Protection for the Asbestos Abatement Industry EPA-560-OPTS-86-001

E. Guide to Managing Asbestos in Place (Green Book) TS 799 20T July 1990

//1.18 NOTICES

A. State and Local agencies: Send written notification as required by state and local regulations including the local fire department prior to beginning any work on ACM as follows:

B. Copies of notifications shall be submitted to the VA for the facility's records in the same time frame notification is given to EPA, State, and Local authorities.

1.19 PERMITS/LICENSES

A. The contractor shall apply for and have all required permits and licenses to perform asbestos abatement work as required by Federal, State, and Local regulations.

1.20 POSTING AND FILING OF REGULATIONS

A. Maintain two (2) copies of applicable federal, state, and local regulations. Post one copy of each at the regulated area where workers will have daily access to the regulations and keep another copy in the Contractor's office.

1.21 VA RESPONSIBILITIES

Prior to commencement of work:

A. Notify occupants adjacent to regulated areas of project dates and requirements for relocation, if needed. Arrangements must be made prior to starting work for relocation of desks, files, equipment and personal possessions to avoid unauthorized access into the regulated area. **Note: Notification of adjacent personnel is required by OSHA in 29 CFR 1926.1101 (k) to prevent unnecessary or unauthorized access to the regulated area.**

B. Submit to the Contractor results of background air sampling; including location of samples, person who collected the samples, equipment utilized and method of analysis. During abatement, submit to the Contractor, results of bulk material analysis and air sampling data collected during the course of the abatement. This information shall not release the Contractor from any responsibility for OSHA compliance.

1.22 SITE SECURITY

A. Regulated area access is to be restricted only to authorized, trained/accredited and protected personnel. These may include the Contractor's employees, employees of Subcontractors, VA employees and representatives, State and local inspectors, and any other designated individuals. A list of authorized personnel shall be established prior

to commencing the project and be posted in the clean room of the decontamination unit.

B. Entry into the regulated area by unauthorized individuals shall be reported immediately to the Competent Person by anyone observing the entry. The Competent person shall immediately notify the VA.

C. A log book shall be maintained in the clean room of the decontamination unit. Anyone who enters the regulated area must record their name, affiliation, time in, and time out for each entry.

D. Access to the regulated area shall be through of a critical barrier doorway. All other access (doors, windows, hallways, etc.) shall be sealed or locked to prevent entry to or exit from the regulated area. The only exceptions for this requirement are the waste/equipment load-out area which shall be sealed except during the removal of containerized asbestos waste from the regulated area, and emergency exits. Emergency exits shall not be locked from the inside, however, they shall be sealed with poly sheeting and taped until needed.

E. The Contractor's Competent Person shall control site security during abatement operations in order to isolate work in progress and protect adjacent personnel. A 24 hour security system shall be provided at the entrance to the regulated area to assure that all entrants are logged in/out and that only authorized personnel are allowed entrance.

F. The Contractor will have the VA's assistance in notifying adjacent personnel of the presence, location and quantity of ACM in the regulated area and enforcement of restricted access by the VA's employees.

G. The regulated area shall be locked during non-working hours and secured by VA security guards.

1.23 EMERGENCY ACTION PLAN AND ARRANGEMENTS

A. An Emergency Action Plan shall be developed by the Contractor prior to commencing abatement activities and shall be agreed to by the Contractor and the VA. The Plan shall meet the requirements of 29 CFR 1910.38 (a);(b).

B. Emergency procedures shall be in written form and prominently posted and available in the regulated area. Everyone, prior to entering the regulated area, must read and sign these procedures to acknowledge understanding of the regulated area layout, location of emergency exits and emergency procedures.

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

D. Emergency planning shall include consideration of fire, explosion, hazardous atmospheres, electrical hazards, slips/trips and falls, confined spaces, and heat stress illness. Written procedures for response to emergency situations shall be developed and employee training in procedures shall be provided.

E. Employees shall be trained in regulated area/site evacuation procedures in the event of workplace emergencies.

1. For non life-threatening situations - employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers, if necessary, before exiting the regulated area to obtain proper medical treatment.
2. For life-threatening injury or illness, worker decontamination shall take least priority after measures to stabilize the injured worker, remove them from the regulated area, and secure proper medical treatment.

F. Telephone numbers of all emergency response personnel shall be prominently posted in the clean room, along with the location of the nearest telephone.

G. The Contractor shall provide verification of first aid/CPR training for personnel responsible for providing first aid/CPR. OSHA requires medical assistance within 3 minutes of a life-threatening injury/illness. Bloodborne Pathogen training shall also be verified for those personnel required to provide first aid/CPR.

H. The Emergency Action Plan shall provide for a Contingency Plan in the event that an incident occurs that may require the modification of the standard operating procedures during abatement. Such incidents include, but are not limited to, fire; accident; and power failure. The Contractor shall detail procedures to be followed in the event of an incident assuring that work is stopped and wetting is continued until correction of the problem.

1.24 PRE-START MEETING

Prior to commencing the work, the Contractor shall meet with the VPCIH to present and review, as appropriate, the items following this paragraph. The Contractor's Competent Person(s) who will be on-site

shall participate in the pre-start meeting. The pre-start meeting is to discuss and determine procedures to be used during the project. At this meeting, the Contractor shall provide:

A. Proof of Contractor licensing.

B. Proof the Competent Person is trained and accredited and approved for working in this State. Verification of the experience of the Competent Person shall also be presented.

C. A list of all workers who will participate in the project, including experience and verification of training and accreditation.

D. A list of and verification of training for all personnel who have current first-aid/CPR training. A minimum of one person per shift must have adequate training.

E. Current medical written opinions for all personnel working on-site meeting the requirements of 29 CFR 1926.1101 (m).

F. Current fit-tests for all personnel wearing respirators on-site meeting the requirements of 29 CFR 1926.1101 (h) and Appendix C.

G. A copy of the Contractor's Standard Operating Procedures for Class I Glovebag Asbestos Abatement. In these procedures, the following information must be detailed, specific for this project.

1. Regulated area preparation procedures;
2. Notification requirements procedure of Contractor as required in 29 CFR 1926.1101 (d);
3. and Decontamination procedures for employees;
4. Class II abatement methods/procedures and equipment to be used;
5. Personal protective equipment to be used;

H. At this meeting the Contractor shall provide all submittals as required.

I. Procedures for handling, packaging and disposal of asbestos waste.

J. Emergency Action Plan and Contingency Plan procedures.

1.25 PROJECT COORDINATION

The following are the minimum administrative and supervisory personnel necessary for coordination of the work.

1.26 PERSONNEL

A. Administrative and supervisory personnel shall consist of a qualified Competent Person as defined by OSHA in the Construction Standards and the Asbestos Construction Standard; Contractor Professional Industrial Hygienist and Industrial Hygiene Technicians. These employees are the

Contractor's representatives responsible for compliance with these specifications and all other applicable requirements.

B. Non-supervisory personnel shall consist of an adequate number of qualified personnel to meet the schedule requirements of the project. Personnel shall meet required qualifications. Personnel utilized on-site shall be pre-approved by the VA representative. A request for approval shall be submitted for any person to be employed during the project giving the person's name; social security number; qualifications; accreditation card with picture; Certificate of Worker's Acknowledgment; and Affidavit of Medical Surveillance and Respiratory Protection and current Respirator Fit Test.

C. Minimum qualifications for Contractor and assigned personnel are:

1. The Contractor has conducted within the last three (3) years, three (3) projects of similar complexity and dollar value as this project; has not been cited and penalized for serious violations of asbestos regulations in the past three (3) years; has adequate liability/occurrence insurance for asbestos work; is licensed in applicable states; has adequate and qualified personnel available to complete the work; has comprehensive standard operating procedures for asbestos work; has adequate materials, equipment and supplies to perform the work.
2. The Competent Person has four (4) years of abatement experience of which two (2) years were as the Competent Person on the project; meets the OSHA definition of a Competent Person; has been the Competent Person on two (2) projects of similar size and complexity as this project; has completed EPA AHERA/OSHA/State/Local training requirements/accreditation(s) and refreshers; and has all required OSHA documentation related to medical and respiratory protection.
3. The Contractor Professional Industrial Hygienist (CPIH) shall have five (5) years of monitoring experience and supervision of asbestos abatement projects; has participated as senior IH on five (5) abatement projects, three (3) of which are similar in size and complexity as this project; has developed at least one complete standard operating procedure for asbestos abatement; has trained abatement personnel for three (3) years; has specialized EPA AHERA/OSHA training in asbestos abatement management, respiratory protection, waste disposal and asbestos inspection; has completed

the NIOSH 582 Course, Contractor/Supervisor course; and has appropriate medical/respiratory protection records/documentation.

4. The Abatement Personnel shall have completed the EPA AHERA/OSHA abatement worker course; have training on the standard operating procedures of the Contractor; has one year of asbestos abatement experience; has applicable medical and respiratory protection documentation; has certificate of training/current refresher and State accreditation/license.

1.27 GENERAL - RESPIRATORY PROTECTION PROGRAM

The Contractor shall develop and implement a Respiratory Protection Program (RPP) which is in compliance with the January 8, 1998 OSHA requirements found at 29 CFR 1926.1101 and 29 CFR 1910.132;134. ANSI Standard Z88.2-1992 provides excellent guidance for developing a respiratory protection program. All respirators used must be NIOSH approved for asbestos abatement activities. The written respiratory protection shall, at a minimum, contain the basic requirements found at 29 CFR 1910.134 (c)(1)(i - ix) - Respiratory Protection Program.

1.28 RESPIRATORY PROTECTION PROGRAM COORDINATOR

The Respiratory Protection Program Coordinator (RPPC) must be identified and shall have two (2) years experience coordinating the program. The RPPC must provide a signed statement attesting to the fact that the program meets the above requirements.

1.29 SELECTION AND USE OF RESPIRATORS

The procedure for the selection and use of respirators must be submitted to the VA as part of the Contractor's qualification. The procedure must written clearly enough for workers to understand. A copy of the Respiratory Protection Program must be available in the clean room of the decontamination unit for reference by employees or authorized visitors.

1.30 MINIMUM RESPIRATORY PROTECTION

Minimum respiratory protection shall be a half face, HEPA filtered, air purifying respirator when fiber levels are maintained consistently at or below 0.1 f/cc. A higher level of respiratory protection may be provided or required, depending on fiber levels. Respirator selection shall meet the requirements of 29 CFR 1926.1101 (h); Table 1, except as indicated in this paragraph. Abatement personnel must have a respirator for their exclusive use.

1.31 MEDICAL WRITTEN OPINION

No employee shall be allowed to wear a respirator unless a physician has determined they are capable of doing so and has issued a current written opinion for that person.

1.32 RESPIRATOR FIT TEST

All personnel wearing respirators shall have a current qualitative/quantitative fit test which was conducted in accordance with 29 CFR 1910.134 (f) and Appendix A. Fit tests shall be done for PAPR's which have been put into a failure mode.

1.33 RESPIRATOR FIT CHECK

The Competent Person shall assure that the positive/negative fit check is done each time the respirator is donned by an employee. Headcoverings must cover respirator headstraps. Any situation that prevents an effective facepiece to face seal as evidenced by failure of a fit check shall preclude that person from wearing a respirator until resolution of the problem.

1.34 MAINTENANCE AND CARE OF RESPIRATORS

The Respiratory Protection Program Coordinator shall submit evidence and documentation showing compliance with 29 CFR 1910.134 (h) Maintenance and care of respirators.

1.35 TRAINING OF ABATEMENT PERSONNEL

Prior to beginning any abatement activity, all personnel shall be trained in accordance with OSHA 29 CFR 1926.1101 (k)(9) and any additional State/Local requirements. Training must include, at a minimum, the elements listed at 29 CFR 1926.1101 (k)(9)(viii). Training shall have been conducted by a third party, EPA/State approved trainer meeting the requirements of EPA 40 CFR 763 Appendix C (AHERA MAP). Initial training certificates and current refresher and accreditation proof must be submitted for each person working at the site.

1.36 MEDICAL EXAMINATIONS

Medical examinations meeting the requirements of 29 CFR 1926.1101 (m) shall be provided for all personnel working in the regulated area, regardless of exposure levels. The physician's written opinion as required by 29 CFR 1926.1101 (m)(4) shall be provided for each person and shall include in the opinion the person has been evaluated for working in a heat stress environment while wearing personal protective equipment and is able to perform the work.

1.37 PERSONAL PROTECTIVE EQUIPMENT

Provide whole body clothing, head coverings, foot coverings and any other personal protective equipment as determined by conducting the hazard assessment required by OSHA at 29 CFR 1910.132 (d). The Competent Person shall ensure the integrity of personal protective equipment worn for the duration of the project. Duct tape shall be used to secure all suit sleeves to wrists and to secure foot coverings at the ankle.

1.38 REGULATED AREA ENTRY PROCEDURE

Worker protection shall meet the most stringent requirements. The Competent Person shall ensure that each time workers enter the regulated area, they remove ALL street clothes in the clean room of the decontamination unit and put on new disposable coveralls, head coverings, a clean respirator, and then proceed through the shower room to the equipment room where they put on non-disposable required personal protective equipment.

1.39 DECONTAMINATION PROCEDURE

The Competent Person shall require all personnel to adhere to following decontamination procedures whenever they leave the regulated area.

A. When exiting the regulated area, remove all disposable PPE and dispose of in a disposal bag provided in the regulated area.

B. Carefully decontaminate and clean the respirator. Put in a clean container/bag.

1.40 REGULATED AREA REQUIREMENTS

The Competent Person shall meet all requirements of 29 CFR 1926.1101 (o) and assure that all requirements for Class I glovebag regulated areas at 29 CFR 1926.1101 (e) are met applicable to Class II work. All personnel in the regulated area shall not be allowed to eat, drink, smoke, chew tobacco or gum, apply cosmetics, or in any way interfere with the fit of their respirator.

1.41 DESCRIPTION:

Provide each regulated area with a fiber drum with a disposal bag in it for personnel waste materials.

1.42 WASTE/EQUIPMENT DECONTAMINATION AREA (W/EDA):

The Competent Person shall provide a W/EDA for removal of all waste, equipment and contaminated material from the regulated area.

1.43 WASTE/EQUIPMENT DECONTAMINATION PROCEDURES:

Contain all waste in 6 mil poly bags. Clean/decontaminate bags and pass through a doule 6 mil flap doorway into another bag or fiber drum. Remove to disposal dumpster/gondola/vehicle. At no time shall unprotected personnel from the clean side be allowed to enter the regulated area.

PART 2 – PRODUCTS

2.1 GENERAL REQUIREMENTS (ALL ABATEMENT PROJECTS)

Prior to the start of work, the Contractor shall provide and maintain a sufficient quantity of materials and equipment to assure continuous and efficient work throughout the duration of the project. Work shall not start unless the following items have been delivered to the site and the CPIH has submitted verification to the VA's representative to this effect:

A. All materials shall be delivered in their original package, container or bundle bearing the name of the manufacturer and the brand name (where applicable).

B. Store all materials subject to damage off the ground, away from wet or damp surfaces and under cover sufficient enough to prevent damage or contamination. Flammable materials cannot be stored inside buildings. Replacement materials shall be stored outside of the regulated/work area until abatement is completed.

C. The Contractor shall not block or hinder use of buildings by patients, staff, and visitors to the VA in partially occupied buildings by placing materials/equipment in any unauthorized place.

D. The Competent Person shall inspect for damaged, deteriorating or previously used materials. Such materials shall not be used and shall be removed from the worksite and disposed of properly.

D. Poly sheeting for critical barriers/floors in the regulated area shall be 6 mil.

F. If required, the method of attaching polyethylene sheeting shall be agreed upon in advance by the Contractor and the VA and selected to minimize damage to equipment and surfaces.

G. An adequate number of infra-red heating units, HEPA vacuums, scrapers, sprayers, nylon brushes, brooms, disposable mops, rags, sponges, staple guns, shovels, ladders and scaffolding of suitable height and length as well as meeting OSHA requirements shall be provided. Fall protection devices, water hose to reach all areas in the regulated area, airless

spray equipment, and any other tools, materials or equipment required to conduct the abatement project shall also be provided. All electrically operated hand tools, equipment, electric cords shall be equipped with GFCI protection.

H. Special protection for objects in the regulated area shall be detailed. (e.g., plywood over carpeting or hardwood floors to prevent damage from scaffolds, water, and falling material.)

I. Impermeable fiberboard drums and disposal bags 2 layers of 6 mil, for asbestos waste shall be pre-printed with labels, markings and address as required by OSHA, EPA and DOT regulations.

J. The VA shall be provided a copy of the MSDS as required for all hazardous chemicals under OSHA 29 CFR 1910.1200 - Hazard Communication. Chlorinated compounds shall not be used with any spray adhesive or other product. Appropriate encapsulant(s) shall be provided.

K. OSHA DANGER demarcation signs, as many and as required by OSHA 29 CFR 1926.1101(k)(7) shall be provided and placed by the Competent Person. All other posters and notices required by Federal and State regulations shall be posted in the Clean Room.

L. Adequate and appropriate PPE for the project and number of personnel/shifts shall be provided. All personal protective equipment issued must be based on a hazard assessment conducted under 29 CFR 1910.132(d).

2.2 CONTAINMENT BARRIERS AND COVERINGS IN THE REGULATED AREA

A. Using critical barriers, seal off the perimeter to the regulated area to completely isolate the regulated area from adjacent spaces. All horizontal surfaces, as required, in the regulated area must be covered with 2 layers of 6 mil fire retardant poly to prevent contamination and to facilitate clean-up. Should adjacent areas become contaminated, immediately stop work and clean up the contamination at no additional cost to the Government. Provide firestopping and identify all fire barrier penetrations due to abatement work as specified in Section 2.2.8; Section 07 92 00, FIRESTOPPING. 2.2.2 PREPARATION PRIOR TO SEALING THE REGULATED AREA

B. Place all tools, scaffolding, materials and equipment needed for working in the regulated area prior to erecting any plastic sheeting. Remove all uncontaminated removable furniture, equipment and/or supplies from the regulated area before commencing work, or completely cover with two layers of 6-mil fire retardant poly sheeting and secure

with duct tape. Lock out and tag out any HVAC systems in the regulated area.

2.3 CONTROLLING ACCESS TO THE REGULATED AREA

Access to the regulated area is allowed only through the personnel decontamination facility (PDF), if required. All other means of access shall be eliminated and OSHA DANGER demarcation signs posted as required by OSHA. If the regulated area is adjacent to or within view of an occupied area, provide a visual barrier of 6 mil opaque fire retardant poly sheeting to prevent building occupant observation. If the adjacent area is accessible to the public, the barrier must be solid.

2.4 CRITICAL BARRIERS

Completely separate any openings into the regulated area from adjacent areas using fire retardant poly at least 6 mils thick and duct tape. Individually seal with two layers of 6 mil poly and duct tape all HVAC openings into the regulated area. Individually seal all lighting fixtures, clocks, doors, windows, convectors, speakers, or any other objects in the regulated area. Heat must be shut off any objects covered with poly.

2.5 SECONDARY BARRIERS:

A loose layer of 6 mil fire retardant poly shall be used as a drop cloth to protect the floor/horizontal surfaces from debris generated during the Class II work, except for floor tile abatement. This layer shall be replaced as needed during the work.

2.6 EXTENSION OF THE REGULATED AREA

If the enclosure of the regulated area is breached in any way that could allow contamination to occur, the affected area shall be included in the regulated area and constructed as per this section. If the affected area cannot be added to the regulated area, decontamination measures must be started immediately and continue until air monitoring indicates background levels are met.

2.7 FIRESTOPPING:

A. Through penetrations caused by cables, cable trays, pipes, sleeves must be firestopped with a fire-rated firestop system providing an air tight seal.

B. Firestop materials that are not equal to the wall or ceiling penetrated shall be brought to the attention of the VA Representative. The Contractor shall list all areas of penetration, the type of sealant

used, and whether or not the location is fire rated. Any discovery of penetrations during abatement shall be brought to the attention of the VA Representative immediately. All walls, floors and ceilings are considered fire rated unless otherwise determined by the VA Representative or Fire Marshall.

C. Any visible openings whether or not caused by a penetration shall be reported by the Contractor to the VA Representative for a sealant system determination. Firestops shall meet ASTM E814 and UL 1479 requirements for the opening size, penetrant, and fire rating needed.

2.8 MONITORING, INSPECTION AND TESTING

A. Perform throughout abatement work monitoring, inspection and testing inside and around the regulated area in accordance with the OSHA requirements and these specifications. The CPIH shall periodically inspect and oversee the performance of the Contractor IH Technician. The IH Technician shall continuously inspect and monitor conditions inside the regulated area to ensure compliance with these specifications. In addition, the CPIH shall personally manage air sample collection, analysis, and evaluation for personnel, regulated area, and adjacent area samples to satisfy OSHA requirements. Additional inspection and testing requirements are also indicated in other parts of this specification.

B. The VA will employ an independent industrial hygienist (VPIH/CIH) consultant and/or use its own IH to perform various services on behalf of the VA. The VPIH/CIH will perform the necessary monitoring, inspection, testing, and other support services to ensure that VA patients, employees, and visitors will not be adversely affected by the abatement work, and that the abatement work proceeds in accordance with these specifications, that the abated areas or abated buildings have been successfully decontaminated. The work of the VPIH/CIH consultant in no way relieves the Contractor from their responsibility to perform the work in accordance with contract/specification requirements, to perform continuous inspection, monitoring and testing for the safety of their employees, and to perform other such services as specified. The cost of the VPIH/CIH and their services will be borne by the VA except for any repeat of final inspection and testing that may be required due to unsatisfactory initial results. Any repeated final inspections and/or testing, if required, will be paid for by the Contractor.

C. If fibers counted by the VPIH/CIH during abatement work inside the regulated area, utilizing the NIOSH 7400 air monitoring method, exceed 0.05 f/cc, the Contractor shall stop work. If fiber levels exceed 0.01 f/cc outside the regulated area, the Contractor shall stop work. The Contractor may request confirmation of the results by analysis of the samples by TEM. Request must be in writing and submitted to the VA's representative. Cost for the confirmation of results will be borne by the Contractor for both the collection and analysis of samples and for the time delay that may/does result for this confirmation. Confirmation sampling and analysis will be the responsibility of the CPIH with review and approval of the VPIH/CIH. An agreement between the CPIH and the VPIH/CIH shall be reached on the exact details of the confirmation effort, in writing, including such things as the number of samples, location, collection, quality control on-site, analytical laboratory, interpretation of results and any follow-up actions. This written agreement shall be co-signed by the IH's and delivered to the VA's representative.

2.9 SCOPE OF SERVICES OF THE VPIH/CIH CONSULTANT

A. The purpose of the work of the VPIH/CIH is to: assure quality; resolve problems; and prevent the spread of contamination beyond the regulated area. In addition, their work includes performing the final inspection and testing to determine whether the regulated area or building has been adequately decontaminated. All air monitoring is to be done utilizing PCM/TEM. The VPIH/CIH will perform the following tasks:

//1. Task 1: Establish background levels before abatement begins by collecting background samples. Retain samples for possible TEM analysis.//

//2. Task 2: Perform continuous air monitoring, inspection, and testing outside the regulated area during actual abatement work to detect any faults in the regulated area isolation and any adverse impact on the surroundings from regulated area activities.//

3. Task 3: Perform unannounced visits to spot check overall compliance of work with contract/specifications. These visits may include any inspection, monitoring, and testing inside and outside the regulated area and all aspects of the operation except personnel monitoring.

4. Task 4: Provide support to the VA representative such as evaluation of submittals from the Contractor, resolution of unforeseen developments, etc.

5. Task 5: Perform, in the presence of the VA representative, final inspection and testing of a decontaminated regulated area or building at the conclusion of the abatement and clean-up work to certify compliance with all regulations and the VA requirements/specifications.
6. Task 6: Issue certificate of decontamination for each regulated area or building and project report.

B. All documentation, inspection results and testing results generated by the VPIH/CIH will be available to the Contractor for information and consideration. The Contractor shall cooperate with and support the VPIH/CIH for efficient and smooth performance of their work.

C. The monitoring and inspection results of the VPIH/CIH will be used by the VA to issue any Stop Removal orders to the Contractor during abatement work and to accept or reject a regulated area or building as decontaminated.

D. All air sampling and analysis data will be recorded on VA Form 10-0018.

2.10 MONITORING, INSPECTION AND TESTING BY CONTRACTOR CPIH

The CPIH is responsible for managing all monitoring, inspections, and testing required by these specifications, as well as any and all regulatory requirements adopted by these specifications. The CPIH is responsible for the continuous monitoring of all subsystems and procedures which could affect the health and safety of the Contractor's personnel. Safety and health conditions and the provision of those conditions inside the regulated area for all persons entering the regulated area is the exclusive responsibility of the Contractor /Competent Person. The person performing the personnel and area air monitoring inside the regulated area shall be an IH Technician, who shall be trained and shall have specialized field experience in air sampling and analysis. The IH Technician shall have a NIOSH 582 Course or equivalent and show proof. The IH Technician shall participate in the AIHA Asbestos Analysis Registry or participate in the Proficiency Analytic Testing program of AIHA for fiber counting quality control assurance. The IH Technician shall also be an accredited EPA/State Contractor/Supervisor and Building Inspector. The IH Technician shall have participated in five abatement projects collecting personal and area samples as well as responsibility for documentation. The analytic laboratory used by the Abatement Contractor to analyze the samples shall be AIHA accredited for asbestos PAT. A daily log documenting all

OSHA requirements for air monitoring for asbestos in 29 CFR 1926.1101(f), (g) and Appendix A. This log shall be made available to the VA representative and the VPIH/CIH. The log will contain, at a minimum, information on personnel or area sampled, other persons represented by the sample, the date of sample collection, start and stop times for sampling, sample volume, flow rate, and fibers/cc. The CPIH shall collect and analyze samples for each representative job being done in the regulated area, i.e., removal, wetting, clean-up, and load-out. No fewer than two personal samples per shift shall be collected and one area sample per 1,000 square feet of regulated area where abatement is taking place and one sample per shift in the clean room area shall be collected. In addition to the continuous monitoring required, the CPIH will perform inspection and testing at the final stages of abatement for each regulated area as specified in the CPIH responsibilities.

2.11 STANDARD OPERATING PROCEDURES

The Contractor shall have established Standard Operating Procedures (SOP's) in printed form and loose leaf folder consisting of simplified text, diagrams, sketches, and pictures that establish and explain clearly the ways and procedures to be followed during all phases of the work by the contractor's personnel. The SOP's must be modified as needed to address specific requirements of the project. The SOP's shall be submitted for review and approval prior to the start of any abatement work. The minimum topics and areas to be covered by the SOP's are:

A. Minimum Personnel Qualifications
B. Contingency Plans and Arrangements
C. Security and Safety Procedures
D. Respiratory Protection/Personal Protective Equipment Program and Training
E. Medical Surveillance Program and Recordkeeping
F. Regulated Area Requirements for Class II work
G. Decontamination Facilities and Entry/Exit Procedures (PDF and W/EDF)
H. Monitoring, Inspections, and Testing
I. Removal Procedures for Class II Materials
J. Disposal of ACM Waste
K. Regulated Area Decontamination/Clean-up
L. Regulated Area Visual and Air Clearance

M. Project Completion/Closeout

2.12 PRE-START MEETING SUBMITTALS

Submit to the VA a minimum of 14 days prior to the pre-start meeting the following for review and approval. Meeting this requirement is a prerequisite for the pre-start meeting for this project.

A. Submit a detailed work schedule for the entire project reflecting contract documents and the phasing/schedule requirements from the CPM chart.

B. Submit a staff organization chart showing all personnel who will be working on the project and their capacity/function. Provide their qualifications, training, accreditations, and licenses, as appropriate. Provide a copy of the "Certificate of Worker's Acknowledgment" and the "Affidavit of Medical Surveillance and Respiratory Protection" for each person.

C. Submit Standard Operating Procedures developed specifically for this project, incorporating the requirements of the specifications, prepared, signed and dated by the CPIH.

D. Submit the specifics of the materials and equipment to be used for this project with brand names, model numbers, performance characteristics, pictures/diagrams, and number available for the following:

1. HEPA vacuums, air monitoring pumps, calibration devices, infrared heating machines, and emergency power generating system.
2. Encapsulants, surfactants, hand held sprayers, airless sprayers, fire extinguishers.
3. Personal protective equipment.
4. Fire safety equipment to be used in the regulated area.

E. Submit the name, location, and phone number of the approved landfill; proof/verification the landfill is approved for ACM disposal; the landfill's requirements for ACM waste; the type of vehicle to be used for transportation; and name, address, and phone number of subcontractor, if used. Proof of asbestos training for transportation personnel shall be provided.

F. Submit required notifications and arrangements made with regulatory agencies having regulatory jurisdiction and the specific contingency/emergency arrangements made with local health, fire, ambulance, hospital authorities and any other notifications/arrangements.

G. Submit the name, location and verification of the laboratory and/or personnel to be used for analysis of air and/or bulk samples. Air monitoring must be done in accordance with OSHA 29 CFR 1926.1101(f) and Appendix A.

H. Submit qualifications verification: Submit the following evidence of qualifications. Make sure that all references are current and verifiable by providing current phone numbers and documentation.

1. Asbestos Abatement Company: Project experience within the past 3 years; listing projects first most similar to this project: Project Name; Type of Abatement; Duration; Cost; Reference Name/Phone Number; Final Clearance; Completion Date
2. List of project(s) halted by owner, A/E, IH, regulatory agency in the last 3 years:
   Project Name; Reason; Date; Reference Name/Number; Resolution
3. List asbestos regulatory citations, penalties, damages paid and legal actions taken against the company in the last 3 years. Provide copies and all information needed for verification.

I. Submit information on personnel: Provide a resume; address each item completely; provide references; phone numbers; copies of certificates, accreditations, and licenses. Submit an affidavit signed by the CPIH stating that all personnel submitted below have medical records in accordance with OSHA 29 CFR 1926.1101(m) and 29 CFR 1910.20 and that the company has implemented a medical surveillance program and maintains recordkeeping in accordance with the above regulations. Submit the phone number and doctor/clinic/hospital used for medical evaluations.

1. CPIH: Name; years of abatement experience; list of projects similar to this one; certificates, licenses, accreditations for proof of AHERA/OSHA specialized asbestos training; professional affiliations; number of workers trained; samples of training materials; samples of SOP's developed; medical opinion; current respirator fit test.
2. Competent Person(s)/Supervisor(s): Number; names; social security numbers; years of abatement experience as Competent Person/Supervisor; list of similar projects as Competent Person/Supervisor; as a worker; certificates, licenses, accreditations; proof of AHERA/OSHA specialized asbestos training; maximum number of personnel supervised on a project; medical opinion; current respirator fit test.

3. Workers: Numbers; names; social security numbers; years of abatement experience; certificates, licenses, accreditations; training courses in asbestos abatement and respiratory protection; medical opinion; current respirator fit test.

J. Submit copies of State license for asbestos abatement; copy of insurance policy, including exclusions with a letter from agent stating in plain English the coverage provided and the fact that asbestos abatement activities are covered by the policy; copy of SOP's incorporating the requirements of this specification; information on who provides your training, how often; who provides medical surveillance, how often; who does and how is air monitoring conducted; a list of references of independent laboratories/IH's familiar with your air monitoring and standard operating procedures; copies of monitoring results of the five referenced projects listed and analytical method(s) used.

K. When rental equipment is to be used in regulated areas or used to transport asbestos waste, the contractor shall assure complete decontamination of the rental equipment before return to the rental agency.

2.13 SUBMITTALS DURING ABATEMENT

A. The Competent Person shall maintain and submit a daily log at the regulated area documenting the dates and times of the following: purpose, attendees and summary of meetings; all personnel entering/ exiting the regulated area; document and discuss the resolution of unusual events such as critical barrier breeching, equipment failures, emergencies, and any cause for stopping work; representative air monitoring and results/TWA's/EL's. Submit this daily log to VA's representative.

B. The CPIH shall document and maintain the following during abatement and submit as appropriate to the VA's representative.

1. Inspection and approval of the regulated area preparation prior to start of work and daily during work.
2. Removal of any poly critical/floor barriers.
3. Visual inspection/testing by the CPIH.
4. Packaging and removal of ACM waste from regulated area.
5. Disposal of ACM waste materials; copies of Waste Shipment Records/landfill receipts to the VA's representative on a weekly basis.

2.14 SUBMITTALS AT COMPLETION OF ABATEMENT

The CPIH shall submit a project report consisting of the daily log book requirements and documentation of events during the abatement project including Waste Shipment Records signed by the landfill's agent. The report shall include a certificate of completion, signed and dated by the CPIH, in accordance with Attachment #1. The VA Representative will forward the abatement report to the Medical Center after completion of the project.

PART 3 - EXECUTION

3.1 PRE-ABATEMENT MEETING

The VA representative, upon receipt, review, and substantial approval of all pre-abatement submittals and verification by the CPIH that all materials and equipment required for the project are on the site, will arrange for a pre-abatement meeting between the Contractor, the CPIH, Competent Person(s), the VA representative(s), and the VPIH/CIH. The purpose of the meeting is to discuss any aspect of the submittals needing clarification or amplification and to discuss any aspect of the project execution and the sequence of the operation. The Contractor shall be prepared to provide any supplemental information/ documentation to the VA's representative regarding any submittals, documentation, materials or equipment. Upon satisfactory resolution of any outstanding issues, the VA's representative will issue a written order to proceed to the Contractor. No abatement work of any kind described in the following provisions shall be initiated prior to the VA written order to proceed.

3.2 PRE-ABATEMENT INSPECTIONS AND PREPARATIONS

Before any work begins on the construction of the regulated area, the Contractor will:

A. Conduct a space-by-space inspection with an authorized VA representative and prepare a written inventory of all existing damage in those spaces where asbestos abatement will occur. Still or video photography may be used to supplement the written damage inventory. Document will be signed and certified as accurate by both parties.

B. The VA Representative, the Contractor, and the VPIH/CIH must be aware of 10/95 A/E Quality Alert indicating the failure to identify asbestos as applicable to glovebag abatement in the areas listed. Make sure these areas are looked at/reviewed on the project:

Lay-in ceilings concealing ACM; ACM behind walls/windows from previous renovations; inside chases/walls; transite piping/ductwork/sheets; behind radiators; below window sills; water/sewer lines; electrical conduit coverings; steam line trench coverings.

C. Ensure that all furniture, machinery, equipment, curtains, drapes, blinds, and other movable objects which the Contractor is required to remove from the regulated area have been cleaned and removed or properly protected from contamination.

D. Shut down and seal with a minimum of 2 layers of 6 mil fire retardant poly all HVAC systems and critical openings in the regulated area. The regulated area critical barriers shall be completely isolate the regulated area from any other air in the building. The VA's representative will monitor the isolation provision.

E. Shut down and lock out in accordance with 29 CFR 1910.147 all electrical circuits which pose a potential hazard. Electrical arrangements will be tailored to the particular regulated area and the systems involved. All electrical circuits affected will be turned off at the circuit box outside the regulated area, not just the wall switch. The goal is to eliminate the potential for electrical shock which is a major threat to life in the regulated area due to water use and possible energized circuits. Electrical lines used to power equipment in the regulated area shall conform to all electrical safety standards and shall be isolated by the use of a ground fault circuit interrupter (GFCI). All GFCI shall be tested prior to use. The VA's representative will monitor the electrical shutdown.

F. If required, remove and dispose of carpeting from floors in the regulated area.

G. Inspect existing firestopping in the regulated area. Correct as needed.

3.3 PRE-ABATEMENT CONSTRUCTION AND OPERATIONS

A. Perform all preparatory work for the first regulated area in accordance with the approved work schedule and with this specification.

B. Upon completion of all preparatory work, the CPIH will inspect the work and systems and will notify the VA's representative when the work is completed in accordance with this specification. The VA's representative may inspect the regulated area and the systems with the VPIH/CIH and may require that upon satisfactory inspection, Contractor's employees perform all major aspects of the approved SOP's,

especially worker protection, respiratory systems, contingency plans, decontamination procedures, and monitoring to demonstrate satisfactory operation.

C. The CPIH shall document the pre-abatement activities described above and deliver a copy to the VA's representative.

D. Upon satisfactory inspection of the installation of and operation of systems the VA's representative will notify the Contractor in writing to proceed with the Class II asbestos abatement work in accordance with this specification.

3.4 OSHA DANGER SIGNS

Post OSHA DANGER signs meeting the specifications of OSHA 29 CFR 1926.1101 at any location and approaches to the regulated area where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted at a distance sufficiently far enough away from the regulated area to permit any personnel to read the sign and take the necessary measures to avoid exposure. Additional signs will be posted following construction of the regulated area enclosure.

3.5 SHUT DOWN - LOCK OUT ELECTRICAL

Shut down and lock out electric power to the regulated area. Provide temporary power and lighting. Insure safe installation including GFCI of temporary power sources and equipment by compliance with all applicable electrical code requirements and OSHA requirements for temporary electrical systems. Electricity shall be provided by the VA.

3.6 SHUT DOWN - LOCK OUT HVAC

Shut down and lock out heating, cooling, and air conditioning system **(HVAC)** components that are in, supply or pass through the regulated area. Investigate the regulated area and agree on pre-abatement condition with the VA's representative. Seal all intake and exhaust vents in the regulated area with duct tape and 2 layers of 6-mil poly. Also, seal any seams in system components that pass through the regulated area. Remove all contaminated HVAC system filters and place in labeled 6 mil poly disposal bags for disposal as asbestos waste.

3.7 SANITARY FACILITIES

The Contractor shall provide sanitary facilities for abatement personnel and maintain them in a clean and sanitary condition throughout the abatement project.

3.8 WATER FOR ABATEMENT

The VA will provide water for abatement purposes. The Contractor shall connect to the existing VA system. The service to the shower(s) shall be supplied with backflow prevention.

3.9 PRE-CLEANING MOVABLE OBJECTS

Pre-clean all movable objects within the regulated area using a HEPA filtered vacuum and/or wet cleaning methods as appropriate. After cleaning, these objects shall be removed from the regulated area and carefully stored in an uncontaminated location.

3.10 PRE-CLEANING FIXED OBJECTS

Pre-clean all fixed objects in the regulated 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 may be significant. Also, pay particular attention to wall, floor and ceiling penetration behind fixed items. After precleaning, enclose fixed objects with 2 layers of 6-mil poly and seal securely in place with duct tape. Objects (e.g., permanent fixtures, shelves, electronic equipment, laboratory tables, sprinklers, alarm systems, closed circuit TV equipment and computer cables) which must remain in the regulated area and that require special ventilation or enclosure requirements should be designated here along with specified means of protection. Contact the manufacturer for special protection requirements.

3.11 PRE-CLEANING SURFACES IN THE REGULATED AREA

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

3.12 CONTAINMENT BARRIERS AND COVERINGS FOR THE REGULATED AREA

Seal off any openings at the perimeter of the regulated area with critical barriers to completely isolate the regulated area and to contain all airborne asbestos contamination created by the abatement activities. Should the adjacent area past the regulated area become contaminated due to improper work activities, the Contractor shall suspend work inside the regulated area, continue wetting, and clean the adjacent areas in accordance with procedures described in these

specifications. Any and all costs associated with the adjacent area cleanup shall not be borne by the VA.

3.13 PREPARATION PRIOR TO SEALING OFF

Place all infrared machines, materials, equipment and supplies necessary to isolate the regulated area inside the regulated area. Remove all movable material/equipment as described above and secure all unmovable material/equipment as described above. Properly secured material/equipment shall be considered to be outside the regulated area.

3.14 CONTROLLING ACCESS TO THE REGULATED AREA

Access to the regulated area shall be permitted only by the competent person. All other means of access shall be closed off by proper sealing and OSHA DANGER demarcation signs posted on the clean side of the regulated area where it is adjacent to or within view of any occupiable area. An opaque visual barrier of 6 mil poly shall be provided so that the abatement work is not visible to any building occupants. If the area adjacent to the regulated area is accessible to the public, construct a solid barrier on the public side of the sheeting for protection and isolation of the project. The barrier shall be constructed with normal 2″ x 4″ (50mm x 100mm) wood or metal studs 16″ (400mm) on centers, securely anchored to prevent movement and covered with a minimum of ½″ (12.5mm) plywood. Provide an appropriate number of OSHA DANGER signs for each visual and physical barrier. Any alternative method must be given a written approval by the VA's representative.

3.15 CRITICAL BARRIERS

The regulated area must be completely separated from the adjacent areas, and the outside by at least 2 layers of 6 mil fire retardant poly and duct tape/spray adhesive. Individually seal all supply and exhaust ventilation openings, lighting fixtures, clocks, doorways, windows, convectors, speakers, and other openings into the regulated area with 2 layers of 6 mil fire retardant poly, and taped securely in place with duct tape/spray adhesive. Critical barriers must remain in place until all work and clearances have been completed.

3.16 EXTENSION OF THE REGULATED AREA

If the regulated area barrier is breached in any manner that could allow the passage of asbestos fibers or debris, the Competent Person shall immediately stop work, continue wetting, and proceed to extend

the regulated area to enclose the affected area as per procedures described in this specification. If the affected area cannot be enclosed, decontamination measures and cleanup shall start immediately. All personnel shall be isolated from the affected area until decontamination/cleanup is completed as verified by visual inspection and air monitoring. Air monitoring at completion must indicate background levels or less than 0.01 f/cc.

3.17 FLOOR BARRIERS

If floor removal is not being done, all floors in the regulated area shall be covered with 2 layers of 6 mil fire retardant poly and brought up the wall 12 inches.

3.18 REMOVAL OF CLASS II FLOORING; ROOFING; AND TRANSITE MATERIALS:

All applicable requirements of OSHA, EPA,<and DOT shall be followed during Class II work. Keep materials intact; do not disturb; wet while working with it; wrap as soon as possible with 2 layers of 6 mil plastic for disposal.

3.19 REMOVAL OF FLOORING MATERIALS:

A. All requirements of OSHA Flooring agreement provisions shall be followed:
   1. Negative air machine shall be used to effect some negative pressure in the regulated area. A spare machine shall be available.
   2. Follow RFCI recommended work practices for removal of resilient Floor coverings.
   3. Mechanical chipping or sanding is not allowed.
   4. Wet clean and HEPA vacuum the floor before and after removal of flooring.
   5. Place a 6 mil poly layer 4’ by 10’ adjacent to the regulated area for use as a decontaminated area. All waste must be contained in the regulated area.
   6. Package all waste in 6 mil poly lined fiberboard drums.

3.20 REMOVAL OF MASTIC

A. The mastic removal material must be a "low odor" or "no odor" material.
B. Follow RFCI recommended work practices for removal of mastic.
C. Package all waste in 6 mil poly lined fiberboard drums.
D. Prior to application of any liquid material, check the floor for penetrations and seal before removing mastic.
E. The use of any solvents is prohibited in the removal of mastic.

3.21 DISPOSAL OF CLASS II WASTE MATERIAL:

Package and dispose of waste materials as per this specification. All OSHA, EPA, and DOT requirements must be met. Landfill requirements for packaging must also be met. Disposal of non-friable waste must be done in accordance with applicable regulations.

3.22 PROJECT DECONTAMINATION

A. The entire work related to project decontamination shall be performed under the close supervision and monitoring of the CPIH.

B. If the asbestos abatement work is in an area which was contaminated prior to the start of abatement, the decontamination will be done by cleaning the primary barrier poly prior to its removal and cleaning of the regulated area surfaces after the primary barrier removal.

C. If the asbestos abatement work is in an area which was uncontaminated prior to the start of abatement, the decontamination will be done by cleaning the primary barrier poly prior to its removal, thus preventing contamination of the building when the regulated area critical barriers are removed.

3.23 REGULATED AREA CLEARANCE

Air testing and other requirements which must be met before release of the Contractor and re-occupancy of the regulated area space are specified in Final Testing Procedures.

3.24 WORK DESCRIPTION

Decontamination includes the cleaning and clearance of the air in the regulated area and the decontamination and removal of the enclosures/facilities installed prior to the abatement work including primary/critical barriers, PDF and W/EDF facilities.

3.25 PRE-DECONTAMINATION CONDITIONS

A. Before decontamination starts, all ACM waste from the regulated area shall be removed, all waste collected and removed, and the secondary barrier of poly removal and disposed of along with any gross debris generated by the work.

B. At the start of decontamination, the following shall be in place:

1. Critical barriers over all openings consisting of two layers of 6 mil poly which is the sole barrier between the regulated area and the rest of the building or outside.
2. Decontamination facilities, if required for personnel and equipment in operating condition.

3.26. CLEANING:

Clean all surfaces of the regulated area by wet methods and/or HEPA vacuuming. Do not use dry dusting/sweeping methods. If determined by the CPIH/VPIH/CIH additional cleaning(s) may be needed.

3.27 VISUAL INSPECTION AND AIR CLEARANCE TESTING

Notify the VA representative 24 hours in advance for the performance of the final visual inspection and testing. The final visual inspection and testing will be performed by the VPIH/CIH after the cleaning.

3.28 VISUAL INSPECTION

Final visual inspection will include the entire regulated area, all poly sheeting, seals over HVAC openings, doorways, windows, and any other openings. If any debris, residue, dust or any other suspect material is detected, the cleaning shall be repeated at no cost to the VA. Dust/ material samples may be collected and analyzed at no cost to the VA at the discretion of the VPIH/CIH to confirm visual findings. When the regulated area is visually clean the final testing can be done.

3.29 AIR CLEARANCE TESTING

A. After an acceptable final visual inspection by the VPIH/CIH and VA Representative, the VPIH/CIH will perform the final testing. Air samples will be collected and analyzed in accordance with procedures for PCM in this specification. If the release criteria are not met, the Contractor shall repeat the final cleaning and continue decontamination procedures. Additional inspection and testing will be done at the expense of the Contractor.

B. If the results of the PCM are acceptable, remove the critical barriers. Any small quantities of residue material found upon removal of the poly shall be removed with a HEPA vacuum and localized isolation. If significant quantities are found as determined by the VPIH/CIH, then the entire area affected shall be cleaned as specified in the final cleaning.

C. If release criteria are met, proceed to perform the abatement closeout and to issue the certificate of completion in accordance with these specifications.

3.30 FINAL AIR CLEARANCE PROCEDURES

A. Contractor's Release Criteria: Work in a regulated area is complete when the regulated area is visually clean and airborne fiber levels have been reduced to or below 0.01 f/cc as measured with PCM methods.

B. Air Monitoring and Final Clearance Sampling: To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to the specified level, the VPIH/CIH will secure samples and analyze them according to the following procedures:

1. Fibers Counted: "Fibers" referred to in this section shall be either all fibers regardless of composition as counted in the NIOSH 7400 PCM method.
2. All clearance air testing samples shall be collected on 0.8µ MCE filters for PCM analysis. Air samples will be collected in areas subject to normal air circulation. A minimum of 5 PCM samples will be collected with at least 1200 Liters of air sampled. All results must be less than 0.01 f/cc for clearance.

3.31 COMPLETION OF ABATEMENT WORK

A. After thorough decontamination, complete asbestos abatement work upon meeting the regulated area clearance criteria and fulfilling the following:

1. Remove all equipment, materials, and debris from the project area.
2. Package and dispose of all asbestos waste as required.
3. Repair or replace all interior finishes damaged during the abatement work.
4. Fulfill other project closeout requirements as specified elsewhere in this specification.

3.32 CERTIFICATE OF COMPLETION BY CONTRACTOR

The CPIH shall complete and sign the "Certificate of Completion" in accordance with Attachment 1 at the completion of the abatement and decontamination of the regulated area.

3.33 WORK SHIFTS

All work shall be done during administrative hours (8:00 AM to 4:30 PM) Monday - Friday excluding Federal Holidays. Any change in the work schedule must be approved in writing by the VA Representative.

ATTACHMENT #1

CERTIFICATE OF COMPLETION

DATE:
PROJECT NAME:
VAMC/ADDRESS:

1. I certify that I have personally inspected, monitored and supervised the abatement work of (specify regulated area or Building): which took place from / / to / /

2. That throughout the work all applicable requirements/regulations and the VA's specifications were met.

3. That any person who entered the regulated area was protected with the appropriate personal protective equipment and respirator and that they followed the proper entry and exit procedures and the proper operating procedures for the duration of the work.

4. That all employees of the Abatement Contractor engaged in this work were trained in respiratory protection, were experienced with abatement work, had proper medical surveillance documentation, were fit-tested for their respirator, and were not exposed at any time during the work to asbestos without the benefit of appropriate respiratory protection.

5. That I performed and supervised all inspection and testing specified and required by applicable regulations and VA specifications.

6. That the conditions inside the regulated area were always maintained in a safe and healthy condition and the maximum fiber count never exceeded 0.5 f/cc, except as described below.

7. That all glovebag work was done in accordance with OSHA requirements and the manufacturer's recommendations.

CPIH Name:

Signature/Date:

Asbestos Abatement Contractor's Name:

Signature/Date:

ATTACHMENT #2

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME: DATE:
PROJECT ADDRESS:
ABATEMENT CONTRACTOR'S NAME:

WORKING WITH ASBESTOS CAN BE HAZARDOUS TO YOUR HEALTH. INHALING ASBESTOS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCERS. IF YOU SMOKE AND INHALE ASBESTOS FIBERS YOUR CHANCES OF DEVELOPING LUNG CANCER IS GREATER THAN THAT OF THE NON-SMOKING PUBLIC.
Your employer's contract with the owner for the above project requires that: You must be supplied with the proper personal protective equipment including an adequate respirator and be trained in its use. You must be trained in safe and healthy work practices and in the use of the equipment found at an asbestos abatement project. You must receive/have a current medical examination for working with asbestos. These things shall be provided at no cost to you. By signing this certificate you are indicating to the owner that your employer has met these obligations.
RESPIRATORY PROTECTION: I have been trained in the proper use of respirators and have been informed of the type of respirator to be used on the above indicated project. I have a copy of the written Respiratory Protection Program issued by my employer. I have been provided for my exclusive use, at no cost, with a respirator to be used on the above indicated project.
TRAINING COURSE: I have been trained by a third party, State/EPA accredited trainer in the requirements for an AHERA/OSHA Asbestos Abatement Worker training course, 32 hours minimum duration. I currently have a valid State accreditation certificate. The

topics covered in the course include, as a minimum, the following:

Physical Characteristics and Background Information on Asbestos
Potential Health Effects Related to Exposure to Asbestos
Employee Personal Protective Equipment
Establishment of a Respiratory Protection Program
State of the Art Work Practices
Personal Hygiene
Additional Safety Hazards
Medical Monitoring
Air Monitoring
Relevant Federal, State and Local Regulatory Requirements, Procedures, and Standards
Asbestos Waste Disposal

MEDICAL EXAMINATION: I have had a medical examination within the past 12 months which was paid for by my employer. This examination included: health history, occupational history, pulmonary function test, and may have included a chest x-ray evaluation. The physician issued a positive written opinion after the examination.

Signature:
Printed Name:
Social Security Number: Witness:

ATTACHMENT #3

AFFIDAVIT OF MEDICAL SURVEILLANCE, RESPIRATORY PROTECTION AND TRAINING/ACCREDITATION

VA PROJECT NAME AND NUMBER:

VA MEDICAL FACILITY:

ABATEMENT CONTRACTOR'S NAME AND ADDRESS:

1. I verify that the following individual
   Name: Social Security Number:
   who is proposed to be employed in asbestos abatement work associated with the above project by the named Abatement Contractor, is included in a medical surveillance program in accordance with 29 CFR 1926.1101(m), and that complete records of the medical surveillance program as required by 29 CFR 1926.1101(m)(n) and 29 CFR 1910.20 are kept at the offices of the Abatement Contractor at the following address.
   Address:
2. I verify that this individual has been trained, fit-tested and instructed in the use of all appropriate respiratory protection systems and that the person is capable of working in safe and healthy manner as expected and required in the expected work environment of this project.
3. I verify that this individual has been trained as required by 29 CFR 1926.1101(k). This individual has also obtained a valid State accreditation certificate. Documentation will be kept on-site.
4. I verify that I meet the minimum qualifications criteria of the VA specifications for a CPIH.
   Signature of CPIH: Date:

   Printed Name of CPIH:

   Signature of Contractor: Date:

   Printed Name of Contractor:

ATTACHMENT #4

ABATEMENT CONTRACTOR/COMPETENT PERSON(S) REVIEW AND ACCEPTANCE OF THE VA'S ASBESTOS SPECIFICATIONS

VA Project Location:

VA Project #:

VA Project Description:

This form shall be signed by the Asbestos Abatement Contractor Owner and the Asbestos Abatement Contractor's Competent Person(s) prior to any start of work at the VA related to this Specification. If the Asbestos Abatement Contractor's/Competent Person(s) has not signed this form, they shall not be allowed to work on-site.

I, the undersigned, have read VA's Asbestos Specification regarding the asbestos abatement requirements. I understand the requirements of the VA's Asbestos Specification and agree to follow these requirements as well as all required rules and regulations of OSHA/EPA/DOT and State/Local requirements. I have been given ample opportunity to read the VA's Asbestos Specification and have been given an opportunity to ask any questions regarding the content and have received a response related to those questions. I do not have any further questions regarding the content, intent and requirements of the VA's Asbestos Specification.

At the conclusion of the asbestos abatement, I will certify that all asbestos abatement work was done in accordance with the VA's Asbestos Specification and all ACM was removed properly and no fibrous residue remains on any abated surfaces.

Abatement Contractor Owner's Signature Date

Abatement Contractor Competent Person(s) Date

Date

Date

- - - END

APPENDIX C

SIGN-OFF DOCUMENTATION FORMS

CERTIFICATION OF VISUAL INSPECTION

Contractor certificate of visual inspection:

In accordance with Section 01711 "Project Decontamination" the contractor hereby certifies that he has visually inspected the work area (all surfaces including pipes, beams, ledges, walls, ceiling and floor, Decontamination Unit, sheet plastic, etc.) and has found no dust, debris or residue.

By: (Signature): _____ Date: _____

(Print Name):_____

(Print Title): _____

Project administrator certification:

The Project Administrator and/or Air Monitoring Service Representative hereby certifies that he has accompanied the contractor on his visual inspection and verifies that his inspection has been thorough and to the best of his knowledge and belief, the contractor's certification above is true and honest.

By: (Signature): _____ Date: _____

(Print Name):_____

(Print Title): _____

CERTIFICATE OF COMPLETION

DATE:_____

PROJECT NAME:_____

VAMC/ADDRESS:_____

1. I certify that I have personally inspected, monitored and supervised the abatement work of (specify regulated area or Building): _____ which took place from / / to / /
2. That throughout the work all applicable requirements/regulations and the VA's specifications were met.
3. That any person who entered the regulated area was protected with the appropriate personal protective equipment and respirator and that they followed the proper entry and exit procedures and the proper operating procedures for the duration of the work.
4. That all employees of the Contractor engaged in this work were trained in respiratory protection, were experienced with abatement work, had proper medical surveillance documentation, were fit-tested for their respirator, and were not exposed at any time during the work to asbestos without the benefit of appropriate respiratory protection.
5. That I performed and supervised all inspection and testing specified and required by applicable regulations and VA specifications.
6. That the conditions inside the regulated area were always maintained in a safe and healthy condition and the maximum fiber count never exceeded 0.5 f/cc, except as described below.
7. That the negative pressure system was installed, operated and maintained in order to provide a minimum of 4 actual air changes per hour with a continuous -0.02" of water column pressure.

Signature/Date: _____

Signature/Date: _____

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME: _____ DATE: _____

PROJECT ADDRESS: _____

ABATEMENT CONTRACTOR'S NAME: _____

WORKING WITH ASBESTOS CAN BE HAZARDOUS TO YOUR HEALTH. INHALING ASBESTOS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCERS. IF YOU SMOKE AND INHALE ASBESTOS FIBERS YOUR CHANCES OF DEVELOPING LUNG CANCER IS GREATER THAN THAT OF THE NON-SMOKING PUBLIC.

Your employer's contract with the owner for the above project requires that: You must be supplied with the proper personal protective equipment including an adequate respirator and be trained in its use. You must be trained in safe and healthy work practices and in the use of the equipment found at an asbestos abatement project. You must receive/have a current medical examination for working with asbestos. These things shall be provided at no cost to you. By signing this certificate you are indicating to the owner that your employer has met these obligations.

RESPIRATORY PROTECTION: I have been trained in the proper use of respirators and have been informed of the type of respirator to be used on the above indicated project. I have a copy of the written Respiratory Protection Program issued by my employer. I have been provided for my exclusive use, at no cost, with a respirator to be used on the above indicated project.

TRAINING COURSE: I have been trained by a third party, State/EPA accredited trainer in the requirements for an AHERA/OSHA Asbestos Abatement

Worker training course, 32 hours minimum duration. I currently have a valid State accreditation certificate. The topics covered in the course include, as a minimum, the following:

Physical Characteristics and Background Information on Asbestos
Potential Health Effects Related to Exposure to Asbestos
Employee Personal Protective Equipment
Establishment of a Respiratory Protection Program

State of the Art Work Practices
Personal Hygiene
Additional Safety Hazards
Medical Monitoring
Air Monitoring
Relevant Federal, State and Local Regulatory Requirements, Procedures, and Standards
Asbestos Waste Disposal

MEDICAL EXAMINATION: I have had a medical examination within the past 12 months which was paid for by my employer. This examination included: health history, occupational history, pulmonary function test, and may have included a chest x-ray evaluation. The physician issued a positive written opinion after the examination.

Signature: _____

Printed Name: _____

Social Security Number: _____ Witness: _____

AFFIDAVIT OF MEDICAL SURVEILLANCE, RESPIRATORY PROTECTION AND TRAINING/ACCREDITATION

VA PROJECT NAME AND NUMBER: _____

VA MEDICAL FACILITY: _____

ABATEMENT CONTRACTOR'S NAME AND ADDRESS: _____

1. I verify that the following individual

   Name: _____ Social Security Number: _____

   who is proposed to be employed in asbestos abatement work associated with the above project by the named. Contractor, is included in a medical surveillance program in accordance with 29 CFR 1926.1101(m), and that complete records of the medical surveillance program as required by 29 CFR 1926.1101(m)(n) and 29 CFR 1910.20 are kept at the offices of the Contractor at the following address.

   Address: _____

2. I verify that this individual has been trained, fit-tested and instructed in the use of all appropriate respiratory protection systems and that the person is capable of working in safe and healthy manner as expected and required in the expected work environment of this project.

3. I verify that this individual has been trained as required by 29 CFR 1926.1101(k). This individual has also obtained a valid State accreditation certificate. Documentation will be kept on-site.

4. I verify that I meet the minimum qualifications criteria of the VA specifications for a CPIH.

Signature of CPIH: _____ Date: _____

Printed Name of CPIH: _____

Signature of Contractor: _____ Date: _____

Printed Name of Contractor: _____

ABATEMENT CONTRACTOR/COMPETENT PERSON(S) REVIEW AND ACCEPTANCE OF THE VA'S ASBESTOS SPECIFICATIONS

VA Project Location: _____

VA Project #: _____

Project Description: _____

This form shall be signed by the Asbestos Abatement Contractor Owner and the Asbestos Abatement Contractor's Competent Person(s) prior to any start of work at the VA related to this Specification. If the Asbestos Abatement Contractor's/Competent Person(s) has not signed this form, they shall not be allowed to work on-site.

I, the undersigned, have read VA's Asbestos Specification regarding the asbestos abatement requirements. I understand the requirements of the VA's Asbestos Specification and agree to follow these requirements as well as all required rules and regulations of OSHA/EPA/DOT and State/Local requirements. I have been given ample opportunity to read the VA's Asbestos Specification and have been given an opportunity to ask any questions regarding the content and have received a response related to those questions. I do not have any further questions regarding the content, intent and requirements of the VA's Asbestos Specification.

At the conclusion of the asbestos abatement, I will certify that all asbestos abatement work was done in accordance with the VA's Asbestos Specification and all ACM was removed properly and no fibrous residue remains on any abated surfaces.

Abatement Contractor Owner's Signature _____ Date _____

Abatement Contractor Competent Person(s) _____ Date _____

RESPIRATORY PROTECTION PROGRAM

Project Name_____

Location_____ Date: _____

Based upon airborne asbestos-fiber counts encountered on previous projects of similar type working on materials similar to those found on the above-referenced project. The following level of respiratory protection is proposed for the indicated operations to maintain an airborne fiber count (as measured by P&CAM 239 Method) below the specified Permissible Exposure Limit (PER) inside respirator face piece.

Operation	Anticipated f/cc	Respiratory protection	Protection factor	f/cc in mask
Installing sheet plastic				
Removing trim in contact with asbestos-containing material				
Removal of Architectural finish or fireproofing				
Removal of pipe insulation				
Removal of fitting insulation				
Encapsulation of pipe & boiler insulation				
Gross debris removal				
Cleaning "primary" sheet plastic				
Cleaning "critical" barrier				
Removing decontamination unit				
Disposal at land fill				
Other				

The contractor certifies that to the best of his knowledge and belief the above represent a true and accurate representation of Airborne Fiber Counts to be expected for the operations indicated, and are based upon airborne fiber data from past projects with similar materials and operations.

Contractor_____

Signed by:_____

Signature_____Date_____

Print Name_____

Title_____

APPENDIX D

ASBESTOS DESIGNER CERTIFICATIONS

Certificate No: 5LM01261102PD

Expiration Date: January 26, 2012

This is to certify that

Michael T. Muff

has attended and successfully completed an

ASBESTOS PROJECT DESIGNER
INITIAL TRAINING COURSE

permitted by
the State of Minnesota under Minnesota Rules 4620.3702 to 4620.3722
and meets the requirements of
Section 206 of Title II of the Toxic Substances Control Act (TSCA)
conducted by

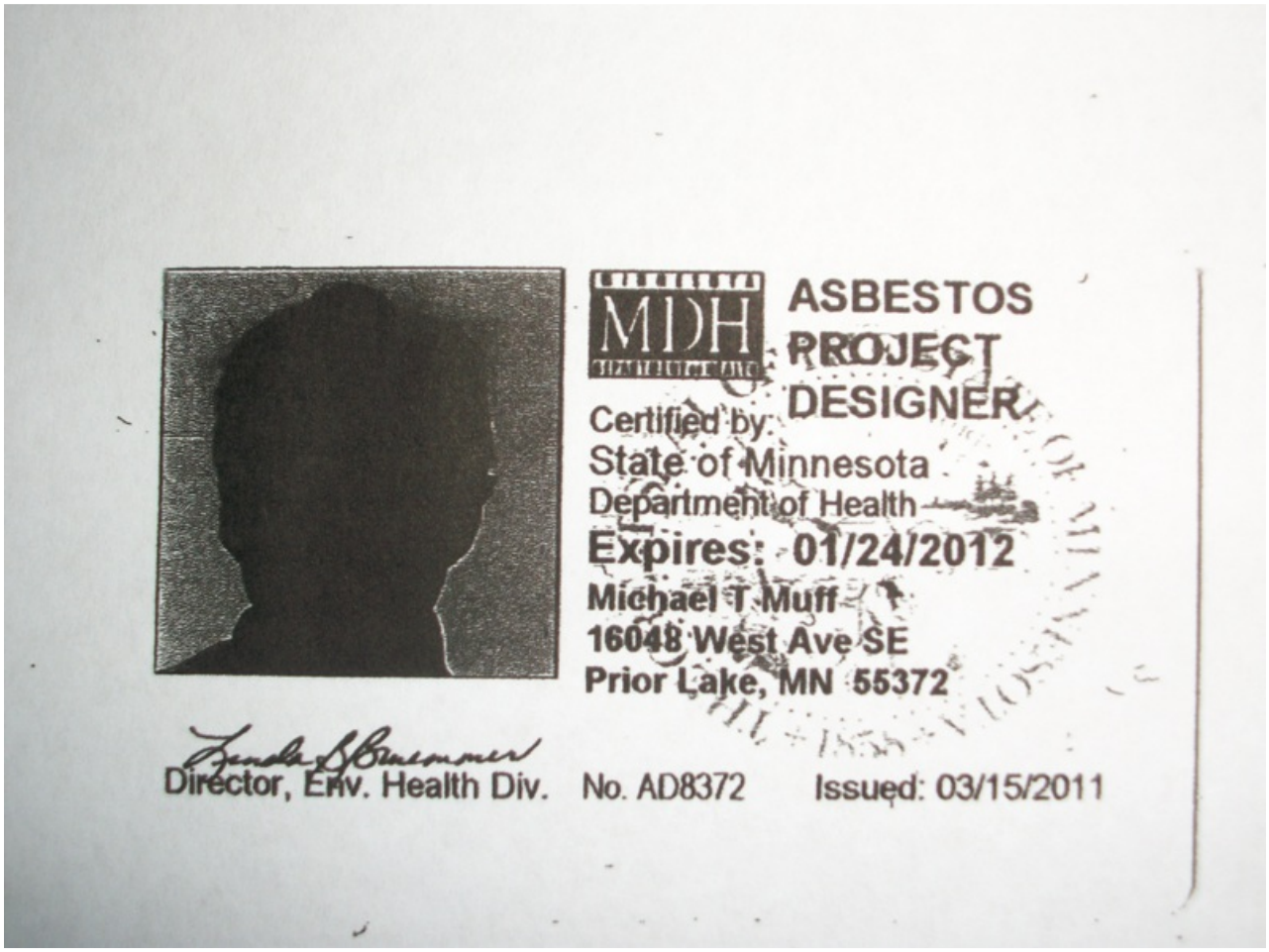
Lake States Environmental, Ltd.

in

White Bear Lake, MN on January 24 - 26, 2011
Examination Date: January 26, 2011

Lake States Environmental, Ltd
P. O. Box 645, Rice Lake, WI 54868
(800) 254-9811

John R Tripp
Training Instructor


MDH
ASBESTOS
PROJECT
DESIGNER
Certified by:
State of Minnesota
Department of Health
Expires: 01/24/2012
Michael T Muff
16048 West Ave SE
Prior Lake, MN 55372
Director, Env. Health Div.
No. AD8372
Issued: 03/15/2011