

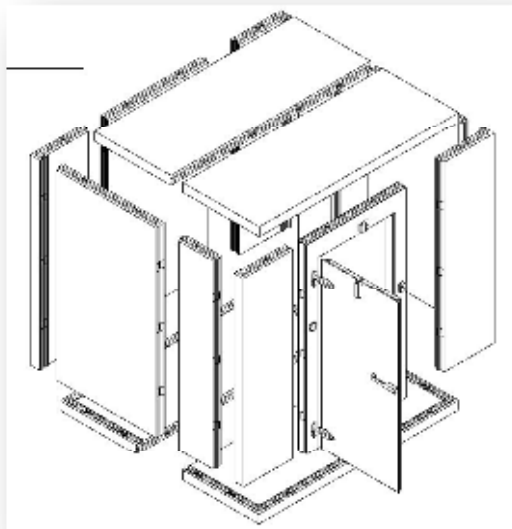
# **A/E Services Dietetics**

Project # 575-14-100

For the  
Department of Veterans Affairs  
GRAND JUNCTION MEDICAL CENTER  
Grand Junction, CO

## **Replacement of Refrigerators and Freezers 1<sup>st</sup> and 3<sup>rd</sup> Floors**

100% ABATEMENT & HAZMAT SPECIFICATIONS



06 / 25 / 2014

**GUIDON DESIGN INC.**

COOVERCLARK & ASSOCIATES  
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SECTION - 020640

LEAD HAZARD CONTROL SPECIFICATIONS  
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PART 1 - LEAD HAZARD CONTROL - GENERAL

1.01 RELATED DOCUMENTS:

- A. General provisions of the Contract, including General and Supplementary Conditions, and other Specification Sections, apply to work of this Section. Reference U.S. Department of Housing and Urban Development (HUD) Guidelines for the Control of Lead-Based Paint Hazards in Housing (HUD Guidelines), and OSHA Lead Standard, Title 29 Part 1926.62 of the Code of Federal Regulations (CFR).

1.02 PROJECT IDENTIFICATION:

- A. General: This Specification addresses potential lead-based paint (LBP) and lead-containing paint (LCP) hazards and informs the parties involved of their responsibility for complying with all applicable regulations pertaining to lead in renovation and demolition activities. This Specification establishes the compliance requirements for the disturbance of lead painted building components at the Veterans Affairs Medical Center (VAMC), 2121 North Avenue, in Grand Junction, Colorado. The VAMC is owned and managed by the U.S. Department of Veterans Affairs (Owner). The work of this Section shall take place prior to or in conjunction with the renovation of Building 1's 3<sup>rd</sup> floor dietetics.
- B. 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:
  - 1. Applicable codes and regulations;
  - 2. Notices and permits;

3. Existing site conditions and restrictions on use of the site;
4. Bid alternates, if applicable;
5. Lead-Based Paint Location Drawings (February 2014).

1.03 SCOPE OF WORK:

- A. Briefly and without force and effect upon the Contract Documents, the work of the Contract can be summarized as follows.
- B. Contractors (including all Subcontractors) are required to comply with 29 CFR 1926.62, the Federal and any applicable State lead in construction standards on this project. The regulations require the Contractors to protect their workers from exposures in excess of the Permissible Exposure Limit (PEL) of 50 micrograms per cubic meter of air ( $\mu\text{g}/\text{m}^3$ ). The standards do not define the amount of lead in paint that constitutes lead-containing paint. It is the Contractor's responsibility to determine the workers exposure level for any regulated activity that disturbs paint containing any amount of lead.
- C. Until the worker exposure level is determined, the Contractors are required to provide their workers with personal protection, including respirators and protective clothing while performing manual demolition, sanding, scraping, abrasive blasting, and burning of paint.
- D. If the exposure level indicates that additional worker protection and engineering controls are required for this project, it shall be provided by the Contractors. The Owner or Owner's Industrial Hygienist shall not incur any additional costs for measures required of the Contractors to comply with this project Specification.
- E. Prior to the commencement of lead-based paint disturbance, the Contractors shall prepare a written compliance program for this project that outlines the methods, procedures and controls to be followed during the disturbance of lead-containing paint. The compliance program shall be submitted to the Owner or Owner's Industrial Hygienist

prior to the start of any work covered under this project Specification.

- F. It is the Contractor's responsibility to maintain adequate controls and to perform personal air monitoring to insure worker safety for the duration of renovation and demolition work. Initial exposure assessment monitoring results shall be supplied to the Owner or Owner's Industrial Hygienist within 48 hours of the collection of the samples.
- G. Intact paint adhered to a building component is exempted from consideration as hazardous waste. It is the Contractor's responsibility to test renovation and demolition waste and debris to determine disposal requirements. It is the Contractor's responsibility to dispose of all lead-containing waste materials in accordance with applicable hazardous waste disposal regulations.

#### 1.04 DESCRIPTION OF WORK:

- A. The work includes the disturbance and proper disposal of lead-based painted building materials during renovation and demolition activities according to the requirements this Specification Section. Furnish all labor, materials, services, insurance, and equipment in accordance with the most stringent requirements applicable.

#### 1.05 PLAN OF ACTION:

- A. Submit a detailed renovation and demolition plan of the procedures proposed for use in complying with the requirements of this Specification. Include in the Plan of Action the location and layout of decontamination areas, the sequencing of lead-related construction work, the interface of trades involved in the performance of work, methods to be used to assure the safety of building occupants and visitors to the site, disposal methods, including the location of approved disposal site, methods for prevention of lead contamination and to prohibit visible emissions in the work area, and methods of segregating, storing, and testing any removed lead-based painted building components or waste materials. The plan

must be approved by the Owner or Owner's Industrial Hygienist prior to commencement of work. Failure to submit the Plan of Action in a timely fashion will not constitute an extension of time for the project.

1.06 INSPECTION:

- A. Prior to commencement of work, inspect areas in which work will be performed. Prepare a listing of existing damage to structures, surfaces, equipment or surrounding properties which could be misconstrued as damage resulting from the work. Photograph or videotape existing conditions as necessary to document conditions. Submit inspection report to the Owner or Owner's Industrial Hygienist prior to starting work.

1.07 POTENTIAL LEAD HAZARD:

- A. The disturbance or dislocation of lead-based or lead-containing painted building materials may cause lead contaminated dust to be released into the building's atmospheres, thereby creating a potential health hazard to workers and building occupants. Apprise all workers, supervisory personnel, Subcontractors and consultants who will be at the job site of the seriousness of the hazard and of proper work procedures which must be followed. Posting of the work area is referenced in paragraphs 1.11.D Signs and 3.1.B Non-Enclosure Requirements of this Specification.
- B. Where in the performance of the work, worker, supervisory personnel, Subcontractors, or consultants may encounter, disturb, or otherwise function in the immediate vicinity of any identified lead-containing materials, take appropriate continuous measures as necessary to protect all building occupants from the potential hazard of exposure to airborne lead contaminated dust. Such measures shall include the procedures and methods described herein and compliance with applicable regulations of Federal, State and local agencies.
- C. Medical Removal:
  - 1. Lead-related construction workers will be informed by their employer via written notification if blood lead

level is greater than 40 micrograms per deciliter of blood ( $\mu\text{g}/\text{dl}$ ).

2. The Occupational Safety and Health Administration (OSHA) requires that lead-related construction workers be removed from any job site due to lead exposure if:

a. Blood lead level is greater than 50  $\mu\text{g}/\text{dl}$ .

b. Physician recommends on basis of other medical evidence.

1.08 STOP WORK:

A. If the Owner or Owner's Industrial Hygienist, presents a written stop work order, immediately and automatically stop all work. Do not recommence work until authorized in writing by the Owner or the Owner's Industrial Hygienist.

1.09 LEAD-BASED PAINTED MATERIALS:

A. Lead-based painted building materials may be present at the work site.

B. X-ray Florescence (XRF) readings above the HUD and EPA regulatory limit of 1.0 milligrams per square centimeter ( $\text{mg}/\text{cm}^2$ ) (High Lead) and paint chip samples in excess of HUD and EPA regulatory limit of 0.5% lead content by weight for lead-based paint are considered lead based paint. XRF readings above zero  $\text{mg}/\text{cm}^2$  and paint chip samples in excess of 0% lead content by weight for lead are considered lead-containing paint. XRF readings of zero need to be confirmed by paint chip sample analysis in order for painted surface not to be considered lead-containing paint under 29 CFR 1926.62.

C. OSHA standards do not define the amount of lead in paint that constitutes lead-containing paint. It is up to the Contractors to determine the workers exposure level for any regulated activity that disturbs paint containing any amount of lead.

D. If any other materials are found, which are suspected of containing lead, immediately notify the Owner or Owner's Industrial Hygienist.



1.10 CONTRACTOR USE OF PREMISES:

- A. General: Contractors shall limit use of the premises to the work indicated, to allow for tenant occupancy, if possible.
- B. Contractor's Use of the Existing Building: Maintain existing buildings in a safe and weather tight condition throughout the renovation and demolition period. Repair all damage caused by renovation and demolition operations. Take all precautions necessary to protect the building and its occupants during the renovation and demolition period. Smoking, eating or drinking will not be permitted within the work area or building enclosure.

1.11 PARTIAL TENANT OCCUPANCY:

- A. The Owner reserves the right to maintain or place tenants as necessary. Maximum consideration will be given to renovation and demolition schedules that minimize tenant relocation and inconvenience. Such placing of tenants shall not constitute acceptance of the work or any part of the work.

1.12 SUBMITTALS:

- A. Before the start of work, submit the following submittals to the Owner or Owner's Industrial Hygienist for review. Do not begin work until these submittals are returned with the Owner Representative's action stamp indicating that the submittal is returned for unrestricted use or final-but-restricted use. Failure to deliver submittals in a timely fashion will not constitute an extension of time for this project.
- B. Plan of Action: Submit as a written report, in the same inspection as below, a plan of action carried out as required by Paragraph 1.05 Plan of Action.
- C. Inspection Report: Submit a written inspection report on existing damage, carried out as required by Paragraph 1.06 Inspection. Include copies of all photographs, video tapes, etc. Submit in the same manner as product data.

- D. Signs: Submit samples of signs and warning tape to be used. Example below:

**WARNING  
LEAD WORK AREA  
POISON  
NO SMOKING OR EATING**

- E. Waste Hauler License: Submit copy of State or local license for waste hauler, if applicable.
- F. Landfill Identification: Submit name and address of landfill where lead-containing waste materials are to be disposed. Include contact person and telephone number, if applicable.
- G. Chain of Custody Form for the Waste Shipment Record: Submit sample of Chain of Custody Form to be used.
- H. Sample of Disposal Bag and Labels: Submit sample of disposal bag and labels to be used.
- I. Respiratory Protection Program: Submit Contractor's written respiratory protection program manual as required by OSHA 29 CFR 1910.134 and OSHA 29 CFR 1926.62. Include Respiratory Protection Schedule attached to these Specifications.
- J. Respirator Fit Test Records: Submit current fit test records for all workers to be employed on this project.
- K. Medical Surveillance: Submit current physicals for all employees directly involved with this project. The records shall include blood tests for lead exposure. Blood tests shall be conducted for each individual before the project starts and when the project is finished.
- L. OSHA Compliance Program: Submit a written, detailed plan of the procedures proposed for the use in complying with the requirements of OSHA 29 CFR 1926.62. Include in the plan all components required under the standards. Contractors are encouraged to use the example of a Written Compliance Plan at the end of Chapter 9 in the HUD Guidelines. The plan must be submitted at least ten working days before the start of the project and be

approved by the Owner's Industrial Hygienist prior to the mobilization of equipment, supplies or workers to the site.

- M. Safety Data Sheets (SDS): Provide a copy of the SDS sheet for any product or hazardous material intended to be used. Such products shall include but not be limited to cleaning agents, surfactants, encapsulants and solvents. The SDS must be submitted at least ten days before the start of the work. The use of these products must be approved in writing by the Owner's Industrial Hygienist prior to the mobilization of equipment, supplies or workers to the site.
- N. Worker Training: Submit evidence that all workers have been trained, certified, and/or accredited in lead-related issues as required by Federal, State, and local codes or regulations. The State of Colorado requires all workers performing lead-based paint abatement in child occupied facilities and target housing, while this facility does not meet those qualifications, workers performing lead-based paint abatement operations for this project will be certified with the CDPHE for lead-based paint abatement work as means to verify appropriate training.
- O. Training Program: Worker training shall be in accordance with provisions in the OSHA lead standards and the CDPHE regulations.
- P. Certification of Worker's Acknowledgment for Each Worker: Submit Certificate of Worker's Acknowledgment attached to these Specifications for each worker involved with this project.
- Q. Permits, Licenses, and Certificates, if applicable: For the Owner's records, submit copies of waste shipment records, permits, licenses, certifications, releases, jurisdictional settlements, notices, receipts for fee payments, judgments and similar documents, correspondence and records established in conjunction with compliance with standards and/or regulations bearing upon the performance of the work.

#### 1.13 DEFINITIONS:

- A. Abatement: The process to eliminate lead release from lead-based painted building materials.

- B. Air Monitoring: The process of measuring the lead content of a specific volume of air in a stated period of time.
- C. Amended Water: Water to which a surfactant has been added.
- D. Clean Room: An uncontaminated area or room, with provisions for clean storage of worker's clothes and protective equipment.
- E. High Efficiency Particulate Air (HEPA) Filters: Filters capable of trapping and retaining 99.97 percent of fibers greater than 0.30 micrometers in size.
- F. HEPA Vacuum Equipment: Filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining microscopic fibers.
- G. Industrial Hygienist: Representative of the Owner.
- H. Lead Control Area: An area where lead removal operations are performed and which is sealed and/or isolated by physical barriers to prevent the spread of lead contaminated dust.
- I. Lead-Related Construction: Any construction, alteration, painting, demolition, salvage, renovation, repair, or maintenance of any residential or public building, including preparation and cleanup, that by using or disturbing lead-containing material or soil, may result in significant exposure of adults or children to lead.
- J. Owner: U.S. Department of Veterans Affairs.
- K. Regulated Area: A work area protected by polyethylene sheeting where lead removal operations are performed within a Lead Control Area.
- L. Removal: The act of removing and transporting lead-based painted building materials from the work site to a suitable disposal site.
- M. Surfactant: A chemical wetting agent, added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

- N. Wet Cleaning: The process of eliminating lead contamination from building surfaces and objects by using cloths, mops or other cleaning tools which have been dampened with amended water and then disposing of the cleaning tools as lead contaminated waste.
- O. Waste Generator: Any owner or operator of a source covered by NESHAP regulations whose act or process produces lead-containing waste. For this project, the waste generator is the U.S. Department of Veterans Affairs.
- P. Work Area: A regulated area protected by polyethylene sheeting where lead removal operations are performed within a Lead Control Area.

1.14 REGULATIONS:

- A. General Applicability of 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.
- B. Contractor's Responsibility: Contractors 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. Contractors are responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable Federal, State and local regulations. Contractors shall hold the Owner and Owner's Industrial Hygienist 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.
- C. Federal Requirements: Federal regulations which govern lead disturbance work or hauling and disposal of hazardous waste include but are not limited to the following:
  - 1. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA).

- a. Lead Standard:  
Title 29, Part 1926, Section 62
  - b. Respiratory Protection:  
Title 29, Part 1910, Section 134
  - c. Construction Industry:  
Title 29, Part 1910, Section 2
  - d. Hazard Communication:  
Title 29, Part 1910, Section 1200
  - e. Specifications for Accident Prevention Sign and Tags:  
Title 29, Part 1910, Section 145
2. U.S. Environmental Protection Agency (EPA).
- a. Resource Conservation and Recovery Act (RCRA):  
Title 40, Part 260 to 265
3. U.S. Department of Transportation (DOT).
- a. Hazardous Substances:  
Title 49, Part 171 and 172
- D. State Requirements: Contractors will abide by all State of Colorado regulations which govern lead disturbance work, hauling or disposal of hazardous waste materials.
- E. Local Requirements: Contractors will abide by all local regulations which govern lead disturbance work, hauling or disposal of hazardous waste materials.
- F. Permits: All hazardous waste is to be transported by an entity maintaining a current "Uniform Hazardous Waste Manifest" specifically for each material shipment as required. In addition, the waste must be transported by a Registered Hazardous Waste Hauler in a vehicle with the required Department of Transportation (DOT) approval sticker.

## PART 2 - LEAD HAZARD CONTROL - PRODUCTS

## 2.01 MATERIALS:

- A. Polyethylene Sheeting: Fire retardant polyethylene sheeting conforming to NFPA 701 and ASTM S502-74T for surface flammability and smoke density. A single polyethylene film in the largest sheet size possible to minimize seams, 6-mil thick, clear, frosted or black as indicated.
- B. Duct Tape: Provide duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to stick aggressively to polyethylene sheeting.
- C. Spray Adhesive: Shall not contain methylene chloride, as listed on the product's label and/or Safety Data Sheet (SDS). Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to polyethylene sheeting.
- D. Coveralls: Shall conform to OSHA Standards 29 CFR 1926.62: Provide disposable full-body coveralls and disposable head covers.
- E. Half-Face Respirators and HEPA Filters: Provide appropriate respirators and filters used in lead disturbance with a minimum protection factor of 10.
- F. Vacuum and Exhaust Equipment: Provide HEPA filtered vacuum and exhaust equipment with appropriate HEPA filters for lead contaminated dust particles.

## 2.02 RESPIRATORY PROTECTION:

- A. Types of Respirators: Instruct and train each worker involved with lead-related construction in proper respirator use and require that each worker will always wear a properly fitted respirator in the work area from the start of any operation which may cause airborne lead dust until the work area is completely decontaminated. Use respiratory protection appropriate for the lead contaminated dust levels encountered in the work place or as required for other toxic or oxygen-deficient situations encountered.
- B. 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, the more stringent requirement shall govern.

1. OSHA: U.S. Department of Labor, Occupational Safety and Health Administration, Safety and Health Standards 29 CFR 1910 and 1926.
  2. CGA: Compressed Gas Association, Inc., New York, Pamphlet G-7, "Compressed Air for Human Respiration", and Specification G-7.1 "Commodity Specification for Air".
  3. ANSI: American National Standards Institute Practices for Respiratory Protection, ANSI Z88.2-1980.
  4. NIOSH: National Institute for Occupational Safety and Health.
- C. Respiratory Protection Program: Comply with OSHA 29 CFR 1910.134 and 29 CFR 1926.62.
1. Require that respiratory protection be used at all times when there is any possibility of disturbance of lead-based painted building materials, whether intentional or accidental.
  2. Require that a respirator be worn by anyone in the Lead Control Area at all times regardless of activity, during a period that starts with any operation which could cause airborne lead contaminated dust, until the area has been cleared for reoccupancy in accordance with Part 3 Execution, of these Specifications.
  3. Regardless of airborne lead levels, require that the minimum level of respiratory protection used be half-face air-purifying respirators with high efficiency filters.
- D. Fit Testing:
1. Initial Fitting:



- a. Provide initial fitting of respiratory protection during a respiratory protection course of training under the direction of a Certified Industrial Hygienist (CIH).
  - b. Fit test type of respirator to be actually worn by each individual.
  - c. Allow an individual to use only those respirators for which training and fit testing has been provided.
2. As needed or required, check the fit of each worker's respirator by having irritant smoke blown onto the respirator from a smoke tube.
3. Upon Each Wearing:
  - a. Require that each time an air-purifying respirator is put on, it shall be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions or ANSI Z88.2 (1980).
- E. Type of Respiratory Protection Required: Provide Respiratory Protection as indicated in paragraph 2.2.F Respiratory Protection Factors. Where paragraph 2.2.F Respiratory Protection Factors does not apply, determine the proper level of protection by dividing the expected or actual airborne lead count in the work area by the "protection factor" given below. The level of respiratory protection which supplies an airborne lead level inside the respirator, at the breathing zone of the wearer, at or below the permissible exposure limit (PEL) is the minimum level of protection allowed.
- F. Respiratory Protection Factors:

<u>Respirator Type</u>	<u>Protection Factor</u>
1. Air purifying: Negative pressure respirator, High efficiency filter, Half facepiece.	10
2. Air Purifying:	50

Negative pressure respirator,  
High efficiency filter,  
Full facepiece, Quantitative Fit Test.

3. Powered Air Purifying (PAPR): 50\*  
Positive pressure respirator,  
Tight-fitting,  
High efficiency filter,  
Half Face
4. Powered Air Purifying (PAPR): 1,000  
Positive pressure respirator,  
Tight-fitting,  
High efficiency filter,  
Full Face
5. Type C supplied air: 1,000  
Positive pressure respirator,  
Pressure demand or other  
positive pressure mode,  
Full facepiece.
6. Self-contained breathing  
apparatus (SCBA): 10,000  
Positive pressure respirator,  
Pressure demand or other  
positive pressure mode,  
Full facepiece.

*\*No half face respirator can be given a protection factor rating greater than 50*

G. Air Purifying Respirators:

1. Negative Pressure - Half or Full Face Mask:
  - a. Supply a sufficient quantity of respirator filters approved for lead dust so that workers can change filters as required.
  - b. Respirators shall 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.

- c. Store respirators and filters at the job site in the Clean Room and protect totally from exposure to lead prior to their use.

2. Powered Air Purifying - Half or Full Face Mask:

- a. Supply a sufficient quantity of high efficiency respirator filters approved for lead contaminated dust 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.
- b. Regardless of flow, filter cartridges should be replaced after 40 hours of use. HEPA elements in filter cartridges should be protected from getting wet during showering.
- c. The exterior housing of respirator, including blower unit, filter cartridges, hoses, battery pack, face mask, belt and cords, should be washed each time a worker leaves the work area.
- d. Caution should be used to avoid electrical shorting of battery pack during washing.
- e. Provide an extra battery pack for each respirator so that one can be charging while one is in use.

PART 3 - LEAD HAZARD CONTROL - EXECUTION

REGULATED AREAS/NON-ENCLOSURE AREAS

3.01 DESCRIPTION OF WORK:

- A. When the historical air monitoring data or pilot operation results indicate that the 8-hour lead exposure will not exceed the OSHA PEL of  $50 \mu\text{g}/\text{m}^3$ , non-enclosure requirements as described below may be used. If measured lead levels exceed the PEL at any time during the course of the work or if visual emissions are detected, the Contractors will be required to take immediate corrective action. If the corrective actions are not successful, the Owner or Owner's Industrial Hygienist will require the Contractors to stop

work and construct containment systems as described in 29 CFR 1926.1101 of the OSHA regulations.

- B. Non-Enclosure Requirements: Demarcate the Lead Control Area by providing a roped-off and labeled perimeter 20 feet minimum around the work area where lead-based painted building materials are to be renovated or demolished. If measured lead levels collected outside of the Lead Control Area exceed the OSHA Action Level ( $30 \mu\text{g}/\text{m}^3$ ) or  $5 \mu\text{g}/\text{m}^3$  above the background level, at any time during the course of the work, the Contractors will be required to take immediate corrective action. If the corrective actions are not successful, the Owner or Owner's Industrial Hygienist will require the Contractors to stop work and construct containment systems as described in 29 CFR 1926.1101 of the OSHA regulations.
- C. Dust generation is to be minimized by misting lead-based paint and lead-containing paint containing materials with amended water before and after disturbance. Use caution to minimize breaking or cracking of lead-based painted building materials. In case of inclement weather, such as high winds or rain, which cause paint chips to migrate out of the work area CEASE ALL WORK until weather conditions improve.
- D. Minimum respiratory protection is a half facepiece air purifying negative pressure respirator with appropriate HEPA filter having a minimum protection factor of 10 for work environments up to  $500 \mu\text{g}/\text{m}^3$ .
- E. Full protective clothing is required as specified in paragraph 2.1.D Coveralls.
- F. Disposal shall be performed as specified in Paragraph 3.07 Disposal.

### 3.02 LEAD MONITORING AND TEST LABORATORY SERVICES:

- A. Description of Work: Lead monitoring carried out by the Owner or Owner's Industrial Hygienist to verify that the building beyond the work area and the outside environment remains uncontaminated. The Specification also sets forth the Stop Action Levels for airborne lead dust both inside and outside the work area and describes the procedure

required of the Contractors if the Stop Action Levels are met or exceeded.

B. Lead Monitoring:

1. Work Area Isolation:

a. The purpose of the Owner's lead monitoring is to detect faults in the work area isolation such as:

i. Contamination of the building outside of the work area with airborne lead particles.

ii. Failure of filtration or rupture in the differential pressure system (if applicable) causing contamination of air outside the building with airborne lead dust.

2. Should any of the above occur, immediately cease lead disturbance activities until the fault is corrected. Do not recommence work until authorized in writing by the Owner or Owner's Industrial Hygienist.

3. Work Area Airborne Lead Levels:

a. The Owner or Owner's Industrial Hygienist will monitor airborne lead dust levels in the work area.

b. The purpose of this air monitoring will be to detect airborne lead concentrations which may challenge the ability of the work area isolation procedures to protect the balance of the building or outside of the building from contamination by airborne lead particles.

4. Work Area Clearance:

a. To determine if the elevated airborne lead levels encountered during renovation and demolition operations have settled and subsequently been removed by cleaning, the Owner or Owner's Industrial Hygienist will collect and analyze wipe samples per Paragraph 3.05 Work Area Clearance.

5. The Owner or Owner's Industrial Hygienist will be conducting lead monitoring throughout the course of the project.

6. Stop Action Levels:

- a. If at any time in the renovation or demolition process the outside work area air monitoring results indicate that the lead concentration is at or above the OSHA Action Level ( $30 \mu\text{g}/\text{m}^3$ ) or  $5 \mu\text{g}/\text{m}^3$  above the background level, whichever is less, CEASE ALL WORK except corrective action.
- b. After correcting the cause of high lead levels outside the work area, HEPA vacuum all surfaces that potentially could be contaminated; wet wipe all surfaces using TSP solution; and HEPA vacuum a second time.
- c. If cause of high lead levels is inconclusive, or if a second outside high lead level sample is obtained, the Contractors will immediately go to next high contamination level.

8-Hour Air Monitoring Average ( $\mu\text{g}/\text{m}^3$ )	Containment Level	Respiratory Protection
< 50	Plastic on floor (1 foot out/each foot up)	Minimum of half-face dual cartridge HEPA respirator
> 50 < 500	Full plastic enclosure (critical seals, 2 layers of plastic on all surfaces except ceiling)	Minimum of half-face dual cartridge HEPA respirator
> 500 < 2,500	Full plastic enclosure with negative air	PAPR
> 2,500 < 50,000	Same; with attached shower facility	Type C

C. Laboratory Testing: The services of a testing laboratory may be employed by the Owner or Owner's Industrial Hygienist to perform laboratory analyses of the air

samples. A technician will be at the job site, and samples will be sent routinely by carrier for next day delivery, so that verbal reports on air samples can be obtained quickly.

1. A complete record of all air monitoring and results will be furnished to the Owner, the Owner's Industrial Hygienist, and the Contractors.
2. Written reports of all lead monitoring tests will be posted at the job site on a daily basis.

D. OSHA Compliance:

1. Contractors and their employees that are potentially exposed to lead levels in excess of the OSHA Action Level ( $30 \mu\text{g}/\text{m}^3$ ) must comply with the OSHA requirements for medical surveillance, exposure monitoring and training and education. The following flowsheet highlights the medical surveillance requirements, but the Contractors are responsible for knowing all the requirements.
2. Contractors must conduct all OSHA required lead monitoring and medical surveillance at no cost to the Owner or Owner's Industrial Hygienist. The laboratory testing will be done independently of the lab hired by the Owner or Owner's Industrial Hygienist.
3. Contractors must supply consultant with all results of the required monitoring and medical surveillance before the project can be closed out. If the Contractors fail to furnish all data or if the Contractors fail to properly act on the results, the Owner reserves the right to delay or postpone final retainage payment.
4. The Owner or Owner's Industrial Hygienist will not be performing air monitoring to meet Contractor's OSHA requirements for personnel sampling or any other purpose.

3.03 GENERAL RENOVATION AND DEMOLITION PROCEDURES:

- A. Setup and management of the Lead Control Area is to be under the supervision of a General Superintendent as described.

- B. Prior to commencing work, comply with requirements for Worker and Respiratory Protection.
- C. Do not allow eating, drinking, smoking and chewing tobacco or gum in the Lead Control Area.
- D. Prior to commencing work, clean existing dust or debris from the floor, walls and other surfaces in the immediate location of the work by damp-mopping or by HEPA filtered vacuum.
- E. Cover floor in the vicinity of the work area a minimum of one foot out for each foot to the top of the work area with 6-mil polyethylene drop sheet. Where work is adjacent to walls, extend polyethylene sheeting up walls and secure at soffits with duct tape. Also attach polyethylene sheeting to the building foundation at the areas of lead disturbance. This drop sheet demarcates the boundary of the Regulated Area, also defined as the work area.
- F. Seal all openings, doors, windows, supply and exhaust vents and convectors within ten feet of the work area with 6-mil polyethylene sheeting secured and completely sealed with duct tape.
- G. Lead-based and lead-containing painted building materials shall be carefully removed in manageable sections and all work must be conducted over protective polyethylene drop sheeting. Workers must exercise caution to avoid release of lead contaminated dust into the air. Do not saw or cut the materials. Dismantling operations must be conducted in a careful, constructive manner. Insure work is conducted while on polyethylene drop sheet. Immediately remove any lead-based or lead-containing paint debris which collects on the drop sheet either by using a HEPA vacuum or by wet cleaning methods.
- H. At completion of the work, proceed with equipment and worker decontamination in the following manner.
  - 1. While standing on polyethylene sheet, thoroughly HEPA vacuum ladder and any tools or equipment and pass to worker standing off sheet.
  - 2. Worker standing off the sheet, HEPA vacuum thoroughly the worker standing on the sheet.



3. Worker on the sheet, thoroughly HEPA vacuum all surfaces of the polyethylene sheeting, bags and any other items on the sheet including his own feet.

- I. If moving to the next work area in the same secured area, worker on the polyethylene drop sheet is to don clean foot covers, placing each foot, in turn, off the polyethylene sheet as the foot cover is put on. Remove clean foot covers at the next work area while standing on the polyethylene sheet at completion of work in that work area. Do not reuse foot covers to move off the polyethylene sheet.
- J. If work day is complete or if next work area is in another secured area, all workers shall remove disposable suits, turning them inside out while doing so. Workers on the sheet shall step off the sheet as the foot cover is removed.
- K. Fold sheet and all its contents toward the center.
- L. Place the sheet in a properly labeled disposal bag.
- M. Collapse the bag with the HEPA vacuum.
- N. Twist the bag shut and seal with duct tape by wrapping around bag neck at least 3 times. Clean all surfaces of the work area with a HEPA filtered vacuum until no visible residue remains.
- O. Workers are required to wash hands and face at a designated washing facility provided by the Contractors prior to leaving the job site.

#### 3.04 PROJECT DECONTAMINATION:

- A. The cleaning procedures including using a HEPA vacuum to clean all surfaces followed by a wet wiping with a TSP solution and finishing with another HEPA vacuuming.
- B. Daily cleanup consists of sealing and removing large debris and wet sweeping or mopping the work area.
- C. The final cleanup consists of a preliminary final cleanup (removing plastic and first cleaning), preliminary visual

inspection, painting/sealing, a number of cleaning cycles and the final inspection.

D. Cleaning Procedures:

1. HEPA Vacuuming Procedures:

- a. At the conclusion of the active renovation and demolition process, all surfaces in the work area should be thoroughly and completely HEPA vacuumed. These surfaces include, but are not limited to ceilings, walls, floor, windows, (sash, sill, well), doors, fixtures of any kind (light, restroom, kitchen), built-in cabinets and appliances. This includes not just disturbed surfaces, but also undisturbed surfaces exposed to lead dust generated by the renovation and demolition process.
- b. All rooms of the property should be included in this HEPA process, except for rooms that:
  - i. Were found free of lead paint and lead dust before the renovation or demolition process began.
  - ii. Were properly sealed before the renovation or demolition process began.
  - iii. Were never entered during the process.
- c. Rooms should be vacuumed by starting with the ceilings and working down to the floors.
- d. Lead dust adheres tenaciously, particularly to rough or porous materials such as weathered or worn wood surfaces and masonry surfaces, particularly concrete.

2. High-Phosphate Wash:

- a. Detergents with a high phosphate content (containing at least 5% trisodium phosphate (TSP) have been found to be most effective when used as part of the final cleanup process in a lead paint disturbance project.

- b. Because of concern for the impact of high-phosphate detergents on the environment, some States have regulated their use and some manufacturers have eliminated phosphates from their household detergents. However, high-TSP detergents can usually be found in hardware stores. Following are the proper procedures for using this product.
- 3. Read Manufacturer's Instructions:
  - a. Users of high-phosphate detergents should carefully follow the specific manufacturer's instructions for the proper use of the product, especially the dilution ratio recommended. Even diluted, trisodium phosphate should be used only with waterproof gloves as it is very irritating to the skin.
- 4. Use Appropriate Cleaning Equipment:
  - a. Since high-phosphate detergent mixture is used to wash down a variety of surfaces, several kinds of application equipment are needed, such as wringer, buckets, mops, squeegee sponge mops, variously sized hand sponges, and rags.
  - b. Using the proper equipment on each surface will enhance the quality of the high-phosphate wash process.
- 5. Use Proper Wet Cleaning Procedures:
  - a. At the conclusion of the active renovation and demolition process and after the first HEPA vacuuming, all surfaces identified as requiring HEPA vacuuming earlier should be thoroughly and completely washed with a high-phosphate solution.
- 6. Change Cleaning Mixture Regularly:
  - a. Many manufacturers of high-phosphate cleaners will indicate the surface area that their cleaning mixture will cover.
  - b. To avoid recontaminating the area, users should carefully follow the surface area limits provided by

the manufacturer and change the cleaning mixture accordingly.

- c. Contaminated water is potentially hazardous and should be disposed of properly.

E. Daily Cleaning: Daily cleanup helps minimize problems during final cleanup and limits the potential exposure of workers to lead dust throughout the renovation and demolition process. A thorough cleanup of the entire area under active lead disturbance should occur at the end of each workday.

1. Large Debris:

- a. A secure area inside the property must be designated as a temporary trash storage area.
- b. Large demolition-type debris (e.g., doors, windows, trim) should be wrapped in 6-mil polyethylene, sealed with tape and moved to the area designated for trash storage on the property.
- c. Since lead contaminated debris is a potentially hazardous waste, it should never be stored outside while awaiting removal/disposal.

2. Small Debris:

- a. Small debris should be collected and disposed of properly, however, before any sweeping occurs, the affected surfaces should be sprayed with a fine mist of water, to keep surface dust from becoming airborne and potentially contaminating other areas of the property and workers.
- b. Dry sweeping is prohibited.
- c. The swept debris should be placed in double 6-mil plastic bags, properly sealed and moved to the designated trash storage area.
- d. Care should be taken not to overload trash bags, which otherwise may rupture or puncture during handling and transport.

### 3. Exterior Cleanup:

- a. Undisturbed areas potentially affected by exterior lead disturbance should be protected by using a containment system.
- b. Because weather can adversely affect the efficacy of exterior containment, the surface plastic of the containment system should be removed at the end of each workday.
- c. On a daily basis, as well as during final cleanup, the immediate area should be examined visually to insure that no lead debris has escaped containment. Any such debris should be raked or swept and placed in double 6-mil plastic bags, which should then be sealed and stored along with other contaminated debris.

### F. Final Cleaning

#### 1. Preliminary Final Cleanup:

- a. Before final cleanup can begin and before lead surfaces can be painted or sealed, remove the plastic sheeting used for containment.
- b. This contaminated plastic sheeting must be removed and disposed of very carefully.
- c. Start removal with upper-level plastic, such as that on cabinets and counters.
- d. First spray or mist plastic with water to hold down dust and then fold plastic in upon itself to trap any dust residues inside.
- e. Before removal of floor plastic, spray and sweep or mop as detailed earlier.
- f. Fold carefully from the corners/ends to the middle to trap any remaining lead dust and place into double 6-mil plastic bags that are then sealed and removed from the premises.

- g. As with daily cleanups, this plastic removal process requires the use of protective equipment, including appropriate respirators.
  - h. Plastic sheets used to isolate contaminated rooms from non-contaminated rooms should not be removed at this time.
  - i. These sheets should remain until after the preliminary final cleanup is complete and then be carefully removed as described above.
- 2. After the plastic has been removed from the contaminated area, HEPA vacuum entire area, starting with the rooms farthest from the entrance to avoid retracking dust through the already cleaned area. In each room, begin vacuuming with the ceilings and proceed down the walls, making sure every surface is treated, including doors and door trim, windows, window sills, wells and trim, baseboards, etc.
- 3. Wash down the entire affected area with a TSP solution and then HEPA vacuum again. Do not deviate from or skip any step. To do so could mean that hazardous levels of lead dust and residue could be embedded in the new paint and mobilized later when that paint deteriorates or is abraded.
- G. Preliminary Visual Inspection: After the preliminary final cleanup effort is completed, an inspector shall visually inspect the entire affected area to insure that all lead dust, debris, or waste has been removed. If the results of the visual inspection are unsatisfactory, reclean affected surfaces in accordance with the inspector's instructions until satisfactory results are achieved.
- H. Final Cleanup: After painting/sealing is complete the final cleanup can take place. The recommended method for the entire affected area is HEPA vacuuming, TSP wash and HEPA vacuuming. Less rigorous final cleanup steps may be used as long as clearances are still met. The degree of final cleaning necessary can be determined by clearance testing during the pilot disturbance project or experience.
- I. Final Inspection: After the final cleanup is complete the final inspection will take place. The objective of the

inspection is to insure that all lead dust, debris, or waste has been removed.

- J. Post Disturbance Visual Inspection: Confirms job completeness by determining whether all renovation and demolition work has occurred according to the approved Plan of Action. Special attention will be given to areas where lead paint has been covered by drywall or metal coverings. Seal all edges and firmly attach coverings. The inspector will insure that all disturbed surfaces and all floors in the renovation and demolition area have been repainted or otherwise sealed. The inspector will present the Contractors with list of items to complete before the inspection process can continue.
- K. Pre-Clearance Dust Test: The inspector will determine whether the work area has been adequately cleaned by examining all surfaces for dust and debris. A damp cloth (or baby wipe) will be used to collect dust from surfaces such as floors or window sills. If dust is found in the work area, reclean the entire area and repeat the damp cloth test.
- L. Removal of Work Area Isolation: After all requirements of this Section and Paragraph 3.05 Work Area Clearance have been met:
  - 1. Remove decontamination unit.
  - 2. Remove the critical barriers separating the work area from the rest of the building. Remove any small quantities of residual material found upon removal of the plastic sheeting with wet wiping, HEPA filtered vacuum cleaners and local area protection. If significant quantities, as determined by the Owner or Owner's Industrial Hygienist, are found then the entire area affected shall be decontaminated as specified in this Section.
  - 3. Remove all equipment, materials, and debris from the work site.
  - 4. Dispose of all lead-containing waste material as specified in this Section.

M. Substantial Completion of Work: Lead disturbance work is substantially complete upon meeting the requirements of this Section and Paragraph 3.05 Work Area Clearance including submission of:

1. Certificate of Visual Inspection.
2. Receipts documenting proper disposal as required by Paragraph 3.07 Disposal.
3. Punch list detailing repairs to be made and incomplete items.

N. Certificate of Visual Inspection: Following Section 02082 Lead Removal and Disposal is a "Certificate of Visual Inspection". This certification is to be completed by the Contractors and certified by the Owner or Owner's Industrial Hygienist. Submit completed certificate with Application for Final Payment. Final payment will not be made until this certification is executed.

### 3.05 WORK AREA CLEARANCE:

- A. Contractor Release Criteria: The lead disturbance work area is cleared when the work area is visually clean and wipe samples show lead concentration have been reduced to the level specified below.
- B. Visual Inspection: Work of this Section will not begin until the visual inspection described in Paragraph 3.04 Project Decontamination is complete and has been certified by the Project Administrator.
- C. Clearance Testing: Remaining surface dust must be tested to insure that only very low levels of lead dust remain before re-occupancy is permitted. This surface dust testing process is referred to as clearance testing and the highest acceptable dust lead levels are referred to as clearance criteria.
- D. Wipe Sampling: Wipe sampling will be used to evaluate level of lead remaining in the work area. A commercial wipe moistened with a non-alcohol wetting agent will be used. Surface dust sampling will take place no sooner than 24 hours after completion of post-disturbance cleanup



activities. This will allow any airborne dust to settle onto the surfaces to be tested.

1. Number and Location of Surface Wipe Samples:

- a. Units with On-Site Paint Removal: Take three wipe samples in each work area (closet is not considered if adjacent area room is a work area) including a window well, window sill and floor. In addition, one sample will be taken outside the containment area, but within 10 feet, in 20% of the work areas.
- b. Units with Replacement, Encapsulation and/or Enclosure Only: Take one wipe sample in each work area, divided equally between window wells, window sills and floors. In addition, one sample will be taken outside the containment area, but within 10 feet, in 20% of the work areas.
- c. Exterior Work: Take three wipe tests on a horizontal surface in part of outdoor living area (e.g., front porch).

2. Work Area Clearance: Upon meeting the lead clearance criteria, the work of Paragraph 3.04 Project Decontamination can continue.

E. Clearance Criteria: Clearance criteria are separated into two categories.

1. Surfaces within the work area:

- a. In each work area within an individual unit, compare the wipe sample results with the clearance criteria below. If any of the wipe samples exceed the clearance criteria, the work area must be cleaned again and retested until the criteria are met.
  - i. Floors: 40 micrograms per square foot.
  - ii. Window Sills: 250 micrograms per square foot.
  - iii. Window Wells: 400 micrograms per square foot.

- b. If all wipe sample results for the work area meet the clearance criteria, the work area is cleared for reoccupancy. A unit may be cleared for reoccupancy only after all work areas within that unit have been cleared according to the criteria above.

2. Non-disturbed surfaces:

- a. Wipe samples will be taken in non-renovation and demolition areas. Compare these results to pre-disturbance wipe samples, and if there is a 15% or greater increase in lead concentration (minimum of 50  $\mu\text{g}/\text{ft}^2$  increase), the non-work area has been contaminated by the renovation or demolition process. Cleanup of non-disturbed contaminated areas to pre-disturbance levels is required at Contractor's expense.

- F. The Owner will be responsible for all reasonable and necessary costs associates with the initial clearance testing.
- G. If initial clearance testing requirements are not met, the Contractors are responsible for the additional testing costs.

3.06 FINAL INSPECTION:

- A. After final cleanup is complete, a final inspection will be conducted. Special attention will be given to areas where lead-based painted building materials have been removed. The Owner or Owner's Industrial Hygienist will conduct the final inspection with the Contractors. Once the inspection(s) are passed, dispose of any additional materials as described in Paragraph 3.03 General Removal Procedures.

3.07 DISPOSAL:

- A. This Section describes disposal of lead-based and lead-containing painted building materials. Accomplish disposal either by landfill or other acceptable methods.
- B. Waste Evaluation: The materials collected from the cleaning operations must be evaluated to determine if the materials are hazardous and require special handling.

Contractors are responsible for segregating waste as they are generated and labeling all waste containers appropriately. Stored waste must be labeled with the accumulation date, type of waste, name and address of the Owner and area from which it was generated. The waste shall be separated into a minimum of categories as follows:

1. Other construction debris including lead paint chips.
  2. Removed components including woodwork, windows and doors.
  3. Solvents, caustics and sludges from paint stripping operations (if any).
  4. Plastic sheeting and duct tape used to cover floors and seal ducts.
  5. Rags, sponges, mops, HEPA filters and other supplies used for clean up.
  6. Disposable work clothes and respirator filters.
- C. The Owner shall be responsible for laboratory testing of these materials as needed or required by Federal, State or local regulations. For materials suspected of containing lead, the Total Threshold Limit Concentration (TTLC) and the Soluble Limit Threshold Concentration (STLC) tests shall be conducted on samples from representative waste containers. Additional testing may be required under the U.S. Environmental Protection Agency for the Toxicity Characteristic Leaching Procedure (TCLP). Contractors may not remove the waste materials off the property until the results of laboratory tests are received. Hazardous wastes shall be removed from the property within 90 days from the initial storage date by a waste hauler with all required licenses from all State and local authorities with jurisdiction.
- D. Lead Hazardous Waste Criteria: Materials are to be considered hazardous waste if they exceed the following criteria for lead content:
1. Toxicity Characteristic  
Leaching Procedure (TCLP) 5.0 mg/l

## 2. Other applicable standards

- E. Determining Waste Generator Status: The results of the waste evaluation are used to determine whether the Owner is a conditionally exempt (no more than 100 kilograms per month), small (100-1,000 kilograms per month) or large (1,000 kilograms or more per month) waste generator. Generator status is determined by the amount of waste generated per month. Conditionally exempt waste generators (no more than 100 kilograms per month) are required only to dispose of their waste in compliance with State regulations, which in most States means that they must label their waste and take it to a licensed solid waste disposal facility. Both small (non-exempt) and large waste generators must follow additional procedures described below.
- F. Obtaining an EPA Identification Number: Unless the Owner is exempt, and EPA Identification Number must be obtained for each disturbance site. The attainment of an ID number is the Owner's responsibility and normally takes 3-6 weeks; therefore, the application should be submitted well in advance of the start of disturbance.
- G. Solid Waste Disposal: Solid waste which has been evaluated and determined not to be hazardous can be disposed of in a State approved landfill. The EPA does not generally consider intact painted building materials to be hazardous wastes. The determination is dependent, in part, upon the physical state of the waste. If during the demolition or dismantling of the buildings, the paint is separated from the building material (e.g. chemically or physically removed) then, the paint waste should be evaluated independently from the building material to determine its proper management. Large, intact painted building debris should be wrapped in two layers of 6-mil polyethylene, sealed and taped, and moved to a waste storage area. Waste should be transported to the approved disposal landfill in covered vehicles.
- H. Hazardous Waste Disposal: Hazardous waste must be disposed of at a hazardous waste disposal facility, usually defined as a treatment, storage, and disposal facility (TSDF). Provide containers and wrapped construction components with the required warning labels for the type of waste being disposed.

1. Load all lead-containing waste material in disposal bags or leak-tight drums. All materials are to be contained in one of the following:
  - a. Two 6-mil disposal bags.
  - b. Two 6-mil disposal bags and a drum.
  - c. Wrapped in 6-mil polyethylene sheeting and sealed with duct tape.
2. If a dumpster is to be located on site for the duration of the project arrange location of the dumpster with the Owner or Owner's Industrial Hygienist.
3. Do not store containerized materials outside of the work area. Take containers from the work area directly to a sealed truck or dumpster or temporary storage location arranged by the Owner or Owner's Industrial Hygienist. All open dumpsters are prohibited for any construction debris. Take special care in transporting the waste materials from the location of generation to the storage facility. Waste shall be removed from work areas at times selected to minimize contacts with tenants. The path from the work area to the storage locations shall be selected to be the shortest possible distance.
4. Contractors are responsible for the following requirements set by state or local regulations.
  - I. Treatment and Testing of Project Waste Water: The handling and treatment of project waste water must conform with all State and local regulations. Project waste water includes shower water and waste water from cleaning operations.
    1. All waste water shall be discharged into a sanitary filter. Do not discharge any waste water on ground or soil. Filter water as necessary to meet local requirements.
    2. Contractors are responsible for testing project waste water for lead content and provide results in writing to the Owner or Owner's Industrial Hygienist within ten days from the initiation of activities generating waste

water. Testing shall include at least three samples collected from each of the following:

- a. Hand washing
- b. Saw cutting
- c. Showers
- d. Cleaning operations

3. Indicate if filtration is needed to achieve compliance with these requirements. Provide documentation from the laboratory conducting analysis and analytical methods used.

J. Transportation: All waste is to be hauled by a waste hauler with all required licenses from all State and local authority's jurisdiction.

K. Disposal Site Procedures:

- 1. At the disposal site, sealed polyethylene bags shall be carefully unloaded from the truck. If bags are broken or damaged, return to work site for rebagging. Clean entire truck by HEPA vacuum and wet wipe methods.
- 2. Retain all copies of employee blood tests, receipts, waste shipment records, manifests, chain of custody forms and submit to the Owner or the Owner's Industrial Hygienist at the conclusion of the project.

### 3.08 TERMINATION:

A. Any disregard for the provisions of these Specifications shall be deemed just and sufficient cause for termination of the Contractors or Subcontractors without compromise or prejudice to the rights of the Contractor.

END OF SECTION

ATTACHMENT A  
RESPIRATORY PROTECTION SCHEDULE

Date: \_\_\_\_\_

Project Name: \_\_\_\_\_

Location: \_\_\_\_\_

Based upon blood-lead data encountered on previous projects of similar materials to those found on the above-referenced project, the following level of respiratory protection is proposed for the indicated operations in order to maintain an airborne lead level below the specified Permissible Exposure Limit (PEL) inside the respirator face-piece.

Operation	Anticipated $\mu\text{g}/\text{m}^3$	Respiratory Protection	Protection Factor	$\mu\text{g}/\text{m}^3$ in Mask
Installing sheet polyethylene				
Removing fascia, soffits, and roof vent house materials				
Cleaning "primary" sheet polyethylene				
Cleaning "critical" polyethylene barrier				
Disposal at landfill				
Other				

The contractor certifies that to the best of his knowledge and belief the previous represents a true and accurate representation of airborne lead concentration to be expected for the operations indicated, and are based upon airborne dust data from past projects with similar materials and operations.

Contractor: \_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_

ATTACHMENT B  
CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

Date: \_\_\_\_\_

Project Name: \_\_\_\_\_

Location: \_\_\_\_\_

Contractor: \_\_\_\_\_

WORKING WITH LEAD CAN BE DANGEROUS. INHALING LEAD DUST HAS BEEN LINKED WITH VARIOUS HEALTH PROBLEMS.

Your employer's contract with the U.S. Department of Veterans Affairs for the above project requires that you be supplied with the proper respirator and be trained in its use; you be trained in safe work practices and in the use of the equipment found on the job; and you receive a medical examination. These things are to have been done at no cost to you.

RESPIRATORY PROTECTION: You must have been trained in the proper use of respirators, and informed of the type of respirator to be used on the above-referenced project. You must be given a copy of the written respiratory protection manual issued by your employer. You must be equipped at no cost with the respirator to be used on the above project.

TRAINING COURSE: You must have been trained in the dangers inherent in breathing lead contaminated dust and in proper work procedures and personal and area protective measures. The topics covered in the course must have included the following:

- Toxicity of lead
- How can I protect myself? (respirators)
- Other chemical and safety hazards
- Using tools
- Completing the project
- Role of the inspector
- Lead in construction and abatement
- Monitoring and medical removal
- Signs and labels
- Preparing the work area
- Cleanup: how and why



- Worker responsibilities

MEDICAL EXAMINATION: You must have had a medical examination within the past 12 months at no cost to you. This examination must have included:

- Health history
- Pulmonary function tests
- Physical examination that pays particular attention to teeth, gums, and hematological, gastrointestinal, renal, cardiovascular and neurological systems
- Blood pressure measurement
- Blood sample - blood lead levels, hemoglobin and hematocrit, red cell indices, peripheral smear, morphology, blood urea nitrogen and serum creatine
- Routine urinalysis with microscopic examination
- May include an evaluation of a chest X-ray

By signing this document you are acknowledging only that the Owner of the buildings you are about to work on has advised you of your rights to training and protection relative to your employer, the Contractor.

Worker Signature: \_\_\_\_\_

Social Security No: \_\_\_\_\_

Print Name: \_\_\_\_\_

Witness: \_\_\_\_\_

ATTACHMENT C  
CERTIFICATION OF VISUAL INSPECTION

BUILDING: \_\_\_\_\_

SPECIFIC AREA: \_\_\_\_\_

PROJECT NUMBER: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_

CONTRACTORS CERTIFICATION

In accordance with the Contract Documents, the Contractor hereby certifies that the work area has been visually inspected (all surfaces including pipes, beams, ledges, walls, ceiling and floor, decontamination unit, sheet plastic, etc.) and has found no dust, debris, or residue.

SIGNATURE: \_\_\_\_\_

PRINT NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

INDUSTRIAL HYGIENIST'S CERTIFICATION

The Industrial Hygienist hereby certifies that the Contractor was accompanied on the visual inspection and verifies that the inspection has been thorough and to the best of the industrial hygienist's knowledge and belief, the Contractor's certification above is a true and honest one.

SIGNATURE: \_\_\_\_\_

PRINT NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

Grand Junction VAMC

June 25, 2014

Replacement of Refrigerators & Freezers

100%

Construction Document

Grand Junction, CO 81501

Project No.

575-14-100

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SECTION - 020810

ASBESTOS ABATEMENT SPECIFICATIONS  
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PART 1 - ASBESTOS ABATEMENT - GENERAL

1.01 RELATED DOCUMENTS:

- A. General provisions of the Contract, including General and Supplementary Conditions, and other Specification Sections, apply to work of this Section.

1.02 PROJECT IDENTIFICATION:

- A. General: This Specification is for the abatement of asbestos-containing plaster, cement board (transite), floor tile and floor tile with mastic at the Veterans Affairs Medical Center (VAMC), 2121 North Avenue, in Grand Junction, Colorado. The VAMC is owned and managed by the U.S. Department of Veterans Affairs (Owner). The work of this Section shall take place and be completed prior to and in conjunction with the planned renovation of Building 1's 3<sup>rd</sup> floor dietetics.
- B. Contract Documents: The Contract Documents describe the work of this project. The Contractor is directed to the specific requirements set forth in this section governing work on asbestos abatement. The Contractor's attention is also directed to the Asbestos-Containing Material Survey Report, dated November 24, 2010, provided for information, and the Hazardous Materials Contract Drawings which are part of this Contract.

1.03 SCOPE OF ABATEMENT WORK:

- A. The Asbestos Abatement Contractor (Contractor) shall assume that all material, for which removal is specified, contains asbestos and shall handle and dispose of as specified herein. This work shall be done in strict accordance with these Specifications. Compliance with all applicable Federal, State, and local regulations and the use of the best available technology, procedures, and methods for preparation, execution, cleanup, disposal, and safety are

absolutely required. Regulatory compliance is the sole responsibility of the Contractor.

- B. The Contractor shall inform itself of the conditions for the project, and is responsible for verifying the quantities and location of all work to be performed as outlined in this Section. Failure to do so shall not relieve the Contractor of its obligation to furnish all materials and labor necessary to carry out the provisions of the Contract. The work of the Contract can be summarized as follows:

1. Pre-Abatement: Wet clean and/or HEPA vacuum all movable and immovable fixtures, walls and floors in all areas scheduled for asbestos abatement prior to removal.
2. Abatement: Remove all (approximately 653 sq. ft.) floor tile from the eastern hallway of the third floor's suites section within areas that may be impacted by renovation activities as per Paragraph 3.13 of this Section and as indicated on the Contract Drawings.
3. Abatement: Remove all (approximately 2,622 sq. ft.) floor tile with mastic from the hallway and rooms in the western portion of the third floor's suites section within areas that may be impacted by renovation activities as per Paragraph 3.13 of this Section and as indicated on the Contract Drawings.
4. Abatement: Remove all (approximately 456 sq. ft.) cement board (transite) from window wells along the exterior wall perimeter of the suites section of the third floor within areas that may be impacted by renovation activities as per Paragraph 3.13 of this Section and as indicated on the Contract Drawings.
5. Post Abatement: Clean all affected areas and dispose of all materials removed under Paragraphs 1.03.B.2, 1.03.B.3 and 1.03.B.4 as nonhazardous, non-friable, asbestos-containing waste and in accordance with all applicable regulations and these Specifications. Segregate floor tile mastic and any solvent wastes, handle and dispose of independently as a RCRA hazardous waste.

6. Abatement: Remove all (approximately 7,535 sq. ft.) plaster from inward facing exterior walls and interstitial walls identified as plaster in asbestos building surveys that may be impacted by renovation activities as per Paragraph 3.13 of this Section and as indicated on the Contract Drawings.
  7. Post Abatement: Clean all affected areas and dispose of all materials removed under Paragraph 1.03.B.6 as hazardous, friable, asbestos-containing waste and in accordance with all applicable regulations and these Specifications.
- B. For the purposes of this Section the materials listed under Paragraphs 1.03.B.2, 1.03.B.3, 1.03.B.4 and 1.03.B.6 shall be considered Asbestos-Containing Material (ACM) as defined by Colorado Department of Public Health and Environment (CDPHE), Regulation 8, Part B.
  - C. For the purposes of this Section the materials listed under Paragraph 1.03.B.6 shall be considered Regulated Asbestos-Containing Material (RACM) as defined by CDPHE, Regulation 8, Part B. For the purposes of this Section, abatement of materials considered RACM shall be considered OSHA Class I work regardless of if these materials are surfacing, thermal system insulation or miscellaneous ACM.
  - D. For the purposes of this Section the materials listed under Paragraphs 1.03.B.2, 1.03.B.3, 1.03.B.4 and 1.03.B.6 shall be considered ACM as defined by the U.S. Occupational Safety and Health Administration (OSHA), in 29 CFR 1926.1101 (Asbestos in Construction Standard)
  - E. For the purposes of this Section the materials listed under Paragraphs 1.03.B.2, 1.03.B.3, 1.03.B.4 and 1.03.B.6 shall be considered Asbestos-Containing Building Material (ACBM) as defined by the U.S. Environmental Protection Agency (EPA), in 40 CFR 763, Subpart E (ASHERA).
  - D. For the purposes of this Section abatement of the materials listed under Paragraphs 1.03.B.2, 1.03.B.3 and 1.03.B.4 shall be considered OSHA Class II work and should follow any of the requirements established in this document for OSHA Class II work. More stringent requirements such as those applied to OSHA Class I work may be voluntarily applied to abatement work on these materials. If abatement

work on these materials is to be performed inside the same work area containment as that for any Class I work, then the rules and requirements for Class I work will supersede those for Class II work.

- E. For the purposes of this Section abatement of the materials listed under Paragraph 1.03.B.6 shall be considered OSHA Class I work and should follow any of the requirements established in this document for OSHA Class I work.

#### 1.04 DESCRIPTION OF ABATEMENT WORK:

- A. Furnish all labor, materials, services, insurance, and equipment in accordance with the most stringent requirements of EPA and OSHA and all other applicable regulatory agencies, to complete the removal and full abatement of ACM as described herein. The Contractor accepts the risk that the approximate quantities set forth in this Section and in the asbestos survey are inaccurate.
- B. The contractor will use only hand methods for the removal of floor tile and mastic with minimal breakage to the tile. The work will be performed under negative pressure as an added control to protect building occupants.

#### 1.05 SUBMITTAL REQUIREMENTS:

- A. All submittals by the Contractor shall be made in strict accordance with the provisions described below. No exceptions will be allowed.
- B. No portion of the work requiring submittals shall be commenced until the submittals are favorably reviewed by the Owner's Air Monitoring Specialist (AMS). Delays to the work caused by late or disapproved submittals shall be the sole responsibility of the Contractor. No extensions will be made to the Contract time on account of such delays.
- C. Substitutions: Contractor's requests for changes in the products, materials, equipment, and methods of abatement required by the Contract Documents are considered requests for substitutions.



D. Pre-abatement Submittals: As a condition of bidding and prior to a notice-to-proceed, the Contractor shall submit the following data to the Owner or Owner's AMS:

1. License: The Contractor shall submit proof of license as a General Abatement Contractor from the CDPHE as required by CDPHE Regulation 8, Part B.
2. Notification: The Contractor shall submit proof of notification made to the CDPHE, 10 working days prior to asbestos demolition or renovation activities, as required by CDPHE Regulation 8, Part B. Notification shall be updated and resubmitted as needed, due to project delays.
3. Permits: The Contractor shall submit proof of all current, valid permits required by Federal, State and local regulations, including arrangements for storage, transportation, and disposal of contaminated material. The selected disposal site must conform to the requirements of the Title 6 Colorado Code of Regulations (CCR) 1007-2, Part 1, Section 5.
4. Incident Report: The Contractor shall submit documentation of any past incident, accident, or emergency (incident report) that resulted in a known exposure of an employee, unprotected by an appropriate respirator, to asbestos fibers in excess of the PEL and/or excursion limit. If there are no such incidents to report, submit a notarized statement so stating.
5. Worker Certification: The Contractor shall submit proof of proper and current asbestos abatement worker certifications for personnel to be engaged in the work of this Section. This includes but is not limited to, annual EPA-approved training, annual respiratory protection determination, annual medical examination, biannual respirator fit-testing and current Colorado certification in the corresponding asbestos discipline.
6. Notice to Suppliers: The Contractor shall submit proof of notices sent to all suppliers of rental equipment and vehicles informing them of the nature of the use of their equipment.

7. Material List: The Contractor shall submit a complete list of all items proposed to be furnished and used under this Contract.
8. Hazard Communication Program (Hazcom): The Contractor shall submit a Hazcom Program which states how the Contractor plans to meet the various requirements of the program, including labeling, handling of material safety data sheets (MSDS), training, etc.

E. Product Submittals:

1. General: The Contractor shall submit product data and samples required by the Contract Documents.
2. 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, installation instructions, and catalog cuts. Clearly mark each copy to identify pertinent products or models and show performance characteristics and capacities.
3. Safety Data Sheet (Material Safety Data Sheet): The Contractor shall submit a Safety Data Sheet (SDS), or equivalent, for each material proposed for use on the work in accordance with OSHA Hazard Communication Standards (29 CFR 1910.1200 and 29 CFR 1926.59). Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated and/or manufacturer's specification.

F. Post Abatement Submittals:

1. The Contractor shall submit a copy of the CDPHE Uniform Hazardous Waste Manifest and the Notice and Certification required by 6 CCR 1007-2 regarding land disposal restrictions.
2. The Contractor shall submit certification that any rental vehicles and equipment have received a visual clearance inspection by the Asbestos Abatement Project Superintendent prior to return to the rental company.

3. The Contractor shall submit all OSHA compliance personal exposure air monitoring records conducted during the work.
  4. The Contractor shall submit copies of their daily progress log.
  5. The Contractor shall submit copies of their visitors' log.
- H. Air Monitoring Specialist's Action: Except for submittals of record, information or similar purposes, where action and return is required or requested, the Owner's AMS will review Contractor's submittals, mark to indicate action taken, and return. Compliance with specified characteristics is the Contractor's responsibility.
1. Review: The Owner's AMS will mark each submittal to indicate the action taken.
  2. Final Unrestricted Release: Where submittals are marked "Approved", that part of the work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
  3. Final-But-Restricted Release: When submittals are marked "Approved as Noted," that part of the work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
  4. Returned for Re-submittal: When submittal is marked "Not Approved, Revise, and Re-submit," do not proceed with that part of the work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; re-submit without delay. Repeat if necessary to obtain a different action mark.
  5. Do not permit submittals marked "Not Approved, Revise, and Re-submit," to be used at the Project site, or elsewhere where work is in progress.

6. Other Review: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required."

1.06 ABATEMENT OBSERVATION SERVICES:

A. Testing/Air Monitoring:

1. Throughout the entire removal and cleaning operations, air monitoring may be conducted by the Owner's AMS to check Contractor's compliance with these Specifications, with EPA and OSHA regulations, and any applicable State and local government regulations.
2. The Contractor shall provide, at its own expense, personal air monitoring of its employees in accordance with requirements set by OSHA.
3. The Contractor shall be responsible for all costs of any retesting necessitated by failure to pass clearance monitoring.
4. Monitoring Prior to Actual Removal: The Owner's AMS may conduct area monitoring and establish the reference baseline ambient fiber concentrations one day prior to the masking and sealing operations for each removal site. Two samples minimum per work area, and one additional sample for each 25,000 cubic feet of airspace in excess of 50,000 cubic feet of air space, are recommended when baseline air monitoring is conducted.
5. Monitoring During Asbestos Removal: The Owner's AMS may conduct quality control and area monitoring during potential worker exposure to airborne asbestos in accordance with the schedule below. If monitoring outside the asbestos control area shows airborne concentrations exceed the pre-work baseline reference, the Contractor shall stop all work, correct the condition(s) causing the increase and notify the Owner immediately. If no pre-work area monitoring was done to establish ambient air concentrations, then the AMS will use the Colorado Maximum Allowable Asbestos Level (MAAL) of 0.01 fibers per cubic centimeter (f/cc).

Area to be Sampled

Number of Samples

Volume

Inside work area (Work Area)	2	480 L
Outside work area but inside building (Barrier)	1	3,850 L
Outside building at local exhaust (Environmental)	1	3,850 L
Quality control (Exposure Monitoring)	2	480 L

6. Monitoring After Final Cleanup: The Owner's AMS will provide area monitoring and establish the airborne asbestos fiber level after final cleanup but before removal of the enclosure of the asbestos control area. The airborne asbestos level shall be no greater than 0.01 f/cc. Should any of the final samples indicate a higher value, the Contractor shall take appropriate actions to reclean the area and the monitoring shall be repeated.
7. Monitoring Results: Phase Contrast Microscopy (PCM) analysis will be completed and results reviewed by the Owner's AMS within 3 to 5 days of submission to the laboratory for final air monitoring. The Owner's AMS shall notify the Contractor and the Owner immediately of any exposures to fibers in excess of the acceptable limits. Alternatively, the AMS may choose to collect the final clearance air samples using Transmission Electron Microscopy (TEM) analysis. When using this method the average airborne asbestos level shall be less than the Colorado Regulation 8 clearance criteria of 70 structures per millimeter squared ( $s/mm^2$ ).

B. Certificate of Post Abatement Visual Inspection:

1. The Certificate of Post Abatement Visual Inspection shall be completed by the Contractor and the Owner's AMS following completion of the removal work, cleanup, and visual inspection of the work area. The Certificate of Post Abatement Visual Inspection shall be provided by the Owner's AMS to the Contractor for review and signing, if conditions are acceptable.

1.07 TERMINOLOGY/DEFINITIONS:

- A. Abatement: Procedure to control fiber release from asbestos-containing building materials, as well as removal.
  - 1. Post Removal Surface Lock-Down: Procedures necessary to coat surfaces from which asbestos-containing materials have been removed to control any residual fiber release.
  - 2. Removal: All herein specified procedures necessary to remove asbestos-containing materials from an area and dispose of the materials at an acceptable site in an acceptable manner.
- B. Abatement Activities: Any activity requiring respiratory protection as per this project manual which disturbs or has the potential to disturb any ACM. This includes, but is not limited to, the following activities: pre-cleaning, installing polyethylene, ACM removal, encapsulation, and enclosure.
- C. ACM or ACM: Asbestos-containing materials or asbestos-containing building materials.
- D. Air Lock: A system for permitting ingress or egress while limiting air movement from a contaminated area into an uncontaminated area, typically consisting of two curtained doorways at least 3 feet apart.
- E. Air Monitoring: The process of measuring the fiber content of a specific volume of air in a stated period of time. For this Contract, NIOSH Analytical Method 7400 shall be used. When "aggressive" air sampling is specified, blowers/fans are used to disperse settled fibers into the air during sampling, following procedures outlined in 40 CFR 763 Subpart E (AHERA).
- F. Air Monitoring Specialist: Representative of the Owner. Certified by the Colorado Department of Public Health and Environment as an Air Monitoring Specialist (AMS) under CCR 1001-10, Part B (Regulation 8).
- G. Amended Water: Water to which a surfactant has been added to reduce water surface tension and thereby provide a more rapid penetration.

- H. Authorized Visitor: The Owner's staff, the Owner's AMS or staff, or a representative of any regulatory or other agency having jurisdiction over the project.
- I. Barrier: Any surface which inhibits air and fiber movement from the work area to non-work areas. Can be comprised of one or a combination of several materials, including but not limited to plywood, polyethylene sheeting, duct tape, and spray-poly. A critical barrier is one which seals any opening (such as doorways, vents, windows, penetrations) between the work area and non-work areas.
- J. Curtained Doorway: Device to allow ingress or egress from one room to another while limiting air movement between the rooms, typically constructed by placing two overlapping sheets of opaque 6-mil polyethylene over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway, and securing the vertical edge of the other sheet along the opposite vertical side of the doorway.
- K. Decontamination Enclosure System: A series of connected rooms, with a curtained doorway between any two adjacent rooms, for the decontamination of workers and/or materials and equipment, constructed or moved onto site.
- L. Equipment Decontamination Unit: Decontamination enclosure system for materials and equipment, typically consisting of a designated area of the work area (wash-down station), a washroom, a holding room, a container room, and an uncontaminated area.
- M. Fixed Object: A unit of equipment or furniture in the work area which cannot be removed from the work area without dismantling.
- N. Gross Abatement Area: An asbestos removal area which is sealed and fully contained in polyethylene. Workers enter the abatement area through a decontamination enclosure system.
- O. HEPA Filter: A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97% of all fibers greater than 0.3 microns in diameter.

- P. HEPA Vacuum Equipment: High efficiency particulate air filtered vacuuming equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers greater than 0.3 microns in diameter.
- Q. Negative Air Pressure Equipment: An exhaust system capable of maintaining a constant, low velocity air flow through the Decontamination Unit and into the work area from adjacent uncontaminated areas and exhausting that air outside the building through HEPA filters.
- R. NIOSH: National Institute for Occupational Safety and Health.
- S. Owner: U.S. Department of Veterans Affairs (VA).
- T. Personnel Decontamination Unit: A decontamination enclosure system for workers. For the purposes of this section, two types of personnel decontamination units will be allowed depending on whether the work occurring inside the containment is considered to be Class I or Class II.
  - 1. Class I work personal decontamination unit consisting of a designated area of the work area (gross contaminant removal station), an equipment room, an air lock, a shower, an air lock, and a clean room and a final air lock as outlined below.
    - a. Equipment Room: A contaminated area or room in the personnel decontamination enclosure system with provisions for storage of contaminated clothing and equipment.
    - b. Curtained Doorway.
    - c. Shower Room: A room between the curtained doorways in the personnel decontamination enclosure system with hot and cold running water suitably arranged for complete showering during decontamination, which conforms to 29 CFR 1910.141.
    - d. Curtained Doorway.
    - e. Clean Room: An uncontaminated area or room which is part of the worker decontamination unit with



appropriate containers for storage of workers' street clothes and protective equipment.

2. Class II work personal decontamination unit consisting of a designated area of the work area (gross contaminant removal station), an air lock, a room for removal protective coveralls, an air lock, a personal cleaning room with wash bucket and HEPA vacuum, and a final air lock.

- U. Plasticizing: Procedures necessary using polyethylene sheeting, adhesives, and/or taping to seal an area airtight.
- V. Post Removal Lock-Down: A liquid material which can be applied to surfaces from which asbestos-containing materials have been removed to control the possible release of residual asbestos fibers, either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components (penetrating encapsulant).
- W. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.
- X. Wet Cleaning/Wiping: The process of eliminating visible dust from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by afterwards disposing of these cleaning tools as asbestos-contaminated waste.
- Y. Waste Generator: Any owner or operator of a source covered by NESHAP regulations whose act or process produces asbestos-containing waste. For this project, the waste generator is the U.S. Department of Veterans Affairs (VA).
- Z. Waste Shipment Record (WSR): The hazardous waste manifest and shipping document, required by 40 CFR 61 Subpart M and the CDPHE 6 CCR 1007-2 to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste.

#### 1.08 CODES AND REGULATIONS:

- A. 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.
- B. Federal Regulations: Those which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:
1. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) including but not limited to:
    - a. Asbestos Regulations  
Title 29, Part 1910, Section 1001 of the Code of Federal Regulations
    - b. Respiratory Protection  
Title 29, Part 1910, Section 134 of the Code of Federal Regulations
    - c. Construction Industry  
Title 29, Part 1926, Section 1101 of the Code of Federal Regulations
    - d. Access to Employee Exposure & Medical Records  
Title 29, Part 1910, Section 20 of the Code of Federal Regulations
    - e. Hazard Communication  
Title 29, Part 1910, Section 1200 and Part 1926, Section 59 of the Code of Federal Regulations
    - f. Specifications for Accident Prevention Signs and Tags  
Title 29, Part 1910, Section 145 of the Code of Federal Regulations
  2. U.S. Environmental Protection Agency (EPA) including but not limited to:
    - a. Worker Protection Rule  
40 CFR Part 763, Subpart G

CPTS 62044, FLR 2843-9  
Federal Register, Vol. 50, No. 134, 7/12/85  
P28530-28540

- b. Regulation for General Industry  
Title 40, Part 61, Subpart A of the  
Code of Federal Regulations
  - c. National Emission Standard for Asbestos  
Title 40, Part 61, Subpart M of the Code of Federal  
Regulations including Asbestos NESHAP Revision;  
Final Rule, Federal Register; Tuesday, November 20,  
1990.
  - d. Asbestos Hazard Emergency Response Act: Final Rule  
Title 40, Part 763, Subpart E of the Code of Federal  
Regulations
3. U.S. Department of Transportation (DOT) including but  
not limited to:
- a. Hazardous Substances: Final Rule  
Regulation 49 CFR, Parts 171 and 172
- C. State and Local Regulations: Abide by all State and local  
regulations which govern asbestos abatement work or hauling  
and disposal of asbestos waste materials including but not  
limited to:
- 1. State of Colorado Department of Public Health and  
Environment (CDPHE) including but not limited to:
    - a. Air Quality Control Commission "The Control of  
Hazardous Air Pollutants" Part B - Emission  
Standards for Asbestos  
Title 5 of Colorado Code of Regulations 1001-10,  
Part B (Regulation 8)
    - b. Solid and Hazardous Waste Commission/ Hazardous  
Materials and Waste Management Division, Part 1 -  
Regulations Pertaining to Solid Waste Sites and  
Facilities  
Title 6, Colorado Code of Regulations 1007-2
- D. Standards: Those which govern asbestos abatement work but  
are not limited to the following:

1. American National Standards Institute (ANSI)

- a. Fundamentals Governing the Design and Operation of  
Local Exhaust Systems  
Publication Z9.2-79
- b. Practices for Respiratory Protection  
Publication Z88.2-80

E. EPA Guidance Documents: Those which discuss asbestos abatement work or hauling and disposal of asbestos waste materials are listed below only for the Contractor's information. These documents do not describe the work and are not a part of the work of this Contract.

- 1. Guidance for Controlling Asbestos-Containing Materials  
in Buildings  
(Purple Book) EPA 560/5-85-024.
- 2. Asbestos Waste Management Guidance  
EPA 530-SW-85-007.

F. State and Local Agencies:

- 1. Send written notification as required by State and local regulations prior to beginning any work on asbestos-containing materials.
  - a. Permit Coordinator  
Colorado Department of Public Health and Environment  
APCD-IE-B1  
43000 Cherry Creek Drive South  
Denver, CO 80246-1530  
(303) 692-3100
- 2. As required by Local Fire Department

G. Permits:

- 1. Obtain all building and special permits required for the asbestos abatement work.

H. Licenses:

1. 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.
  2. 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 the Project Data Binder, covered earlier.
- I. Sign Requirements: Project identification signs or Contractor/Supplier informational signs in excess of that required by law shall be subject to approval by the Owner.
1. Warning signs as required by OSHA regulation 29 CFR 1926.1101, warning signs shall bear the following information designating regulated areas:

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

2. Allow no other signs to be displayed. Remove all signs upon completion of abatement.

- J. Label Requirements: Provide labels affixed to all asbestos waste containers.
1. Warning labels as required by OSHA regulation 29 CFR 1926.1101 as follows:

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

2. Informational labels as required by NESHAP regulation 40 CFR 61 Subpart M with the name of the waste generator and the location at which the waste was generated. If handwritten, use, at a minimum, indelible ink to legibly record the required information.

3. Information labels as required with the following words and information displayed in accordance with the requirements of 49 CFR 172.304 as amended November 1, 1983.

HAZARDOUS WASTE - State and Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the Colorado Department of Public Health and Environment.

Generator's Name: \_\_\_\_\_

Address: \_\_\_\_\_

Manifest Document Number: \_\_\_\_\_

- K. Transport Sign Requirements: Provide signs during waste transport and disposal, as required by:

1. NESHAP, 40 CFR 61, Subpart M, mark vehicles used to transport asbestos-containing waste material during the loading and unloading of the waste so that the signs are visible as follows:

**DANGER  
ASBESTOS DUST HAZARD  
CANCER AND LUNG DISEASE HAZARD  
AUTHORIZED PERSONNEL ONLY**

2. The U.S. Department of Transportation, 49 CFR 171 and 172.

1.09 ALTERNATE CONTAINMENT SYSTEMS:

- A. Alternate containment methods to the specified method will be considered by the Owner and/or Owner's AMS on an individual basis. The Contractor shall submit written documentation on the alternative method, patent and license information, and assurances of compliance with Federal, State, and local regulations with its request. The method shall meet the technical requirements of the specified method including but not limited to maintenance of a

negative pressure within the containment, exhausting negative air outside of the building, and the number of air exchanges.

1.10 PROJECT COORDINATION:

A. Description of Work:

1. Scope: To set forth procedures, conditions and responsibility for coordination of the total abatement project.

B. Administrative and Supervisory Personnel:

1. Asbestos Abatement Project Superintendent: The Contractor shall designate a full-time Asbestos Abatement Project Superintendent who meets the requirements of a "Competent Person" as defined by 29 CFR 1926.32(f). This person shall have completed an EPA-approved AHERA Contractor/Supervisor certification course, be certified with the State of Colorado as an Asbestos Contractor/Supervisor and have a minimum of one year on-the-job training. Prior to commencing work, the Contractor shall submit the name of the Asbestos Abatement Project Superintendent to the Owner's AMS. The Asbestos Abatement Project Superintendent shall remain until the project is complete and cannot be removed without the written consent of the Owner and Owner's AMS. The Contractor must meet the qualifications of the Asbestos Abatement Project Superintendent as stated above and in the absence of the Asbestos Abatement Project Superintendent, arrange for performance of all required duties.

C. Duties of the Asbestos Abatement Project Superintendent:

1. General

- a. Coordination: Coordinate the work of all Subcontractors and material suppliers.
- b. Supervision: Supervise the activities of every phase of the asbestos abatement work taking place on the project.

- c. Communication: Establish lines of authority and communication at the job site. Maintain direct contact with workers within the contained work area through electronic means.
  - d. Permits: Assist in obtaining building and special permits required for construction.
  - e. Location: The Asbestos Abatement Project Superintendent shall be present on the job at all times when work is being performed.
  - f. Regulations: Responsible for compliance with all applicable Federal, State, and local regulations with regard to asbestos-containing materials.
2. Interpretation of Contract Documents
- a. Consultation: Consult with the General Contractor and Owner's AMS to obtain interpretations.
  - b. Assistance: Assist in resolution of any questions.
  - c. Transmission: Transmit written interpretations to concerned parties.
3. Cessation of Work: Stop all work not in accordance with the requirements of the Contract Documents.
4. Coordinate and assist in the preparation of the following:
- a. Asbestos Abatement Project Meetings: Help schedule and assist at all project meetings.
  - b. Construction Schedules: Prepare and submit all construction schedules. Supervise work to monitor compliance with schedules.
  - c. Product Data and Samples: Administer the processing of all submittals required by the Project Manual.
  - d. Testing: Coordinate all required material for testing.



- e. Temporary Facilities: Construct, maintain and monitor all temporary facilities.
- f. Substitutions and Product Options: Administer the processing of all substitutions.
- g. Project Close-out: Conduct final inspections and assist in collection and preparation of close-out documents.
- h. Cleaning: Direct and execute a continuing cleaning program throughout construction, requiring each trade to dispose of its debris.
- i. Project Record Documents: Maintain project data binder and all other record documents up to date.
- j. Safety: Enforce all applicable safety requirements.
- k. Changes: Recommend and assist in the preparation of requests to the Owner's AMS for any changes in the Contract.
- l. Application for Payment: Assist in the preparation and be knowledgeable of each entry in the Application and Certificates for Payment.
- m. Cutting and Patching: Supervise and control all cutting and patching of other trades in the asbestos removal areas while asbestos work is in progress.

D. Special Reports:

- 1. General: Except as otherwise indicated, submit special reports directly to the Owner within one day of occurrence requiring special report, with copy to the Owner's AMS and others affected by occurrence.
- 2. 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 written report listing chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information at the next scheduled meeting but no later than one calendar day (24

hours) from the time of occurrence. When such events are known or predictable in advance (such as scheduled power outages), advise the Owner in advance at earliest possible date.

- a. Releases of more than one pound of friable asbestos into the environment must be reported to the National Response Center, (800) 424-8802 as per Section 103 of CERCLA, 40 CFR Part 300.405 discovery or notification and 40 CFR Part 302..

1.11 POTENTIAL ADDITIONAL ON-SITE ASBESTOS-CONTAINING MATERIALS:

- A. The Contractor is instructed that the following materials may be present on-site and potentially contain asbestos.
- B. The following materials were previously identified inside the area covered by this scope of work. These materials are supposed to have been previously removed but may be unexpectedly encountered when performing work inside the area covered by this scope of work.
- C. The removal of the following materials is not within the scope of work for this Section but may be added at a later date, if necessary.
  1. Asbestos-containing pipe insulation (inside walls or ceilings, or previously not recorded).
    - a. Asbestos containing pipe insulation was previously identified in this building and on this level. The contractor is informed of this and instructed to handle any removal work of this material as Class I work and follow all the requirements set down in this specification for Class I work.
  2. Additional floor tile and/or mastic.
  3. Additional plaster on unmarked walls or ceilings.
  4. Additional cement board (transite).

1.12 ASSUMED ON-SITE ASBESTOS-CONTAINING MATERIALS:

- A. The Contractor is instructed that the following materials may be present on-site and potentially contain asbestos.

- B. The following materials were not previously identified in past surveys as asbestos containing. However, these materials are not infrequently discovered during the course of renovation and/or demolition work.
- C. The removal of the following materials is not within the scope of work for this Section but may be added at a later date, if necessary.
  - 1. Vapor barriers under ceramic tiles (walls and floors).
  - 2. Adhesive behind wall fixtures or gypsum wallboard.
  - 3. Heat shields above light fixtures.
  - 4. Electrical wire insulation inside wall cavities.
  - 5. Thermal insulation inside walls or other void spaces.
  - 6. Other suspect materials not previously tested and confirmed to not-contain asbestos.

## PART 2 - ASBESTOS ABATEMENT - PRODUCTS

### 2.01 PERSONNEL PROTECTION:

- A. Prior to commencement of work, the workers shall be instructed and shall be knowledgeable on the hazards of asbestos exposure, use and fitting of respirators, protective clothing, decontamination procedures, and all aspects of asbestos work procedures; workers shall have medical examinations.
- B. The Contractor acknowledges that it alone is responsible for enforcing personnel protection requirements and that these Specifications provide only a minimum acceptable standard for each phase of operation.
- C. Provide workers with personally issued and marked respiratory equipment approved by NIOSH and acceptable to all OSHA standards.

- D. Where not in violation of OSHA requirements, the Contractor shall provide, as a minimum, the following respirator protection for each phase of operation:
1. Pre-cleaning/Wet Wiping of Area: NIOSH half-face dual cartridge respirators equipped with HEPA cartridges.
  2. Plastic Installation: NIOSH half-face dual cartridge respirators equipped with HEPA cartridges.
  3. Asbestos Removal and Cleanup: NIOSH full-face powered air-purifying respirators equipped with HEPA cartridges.
  4. Plastic Removal: NIOSH half-face dual cartridge respirators equipped with HEPA cartridges.
  5. Loading Waste Material on Truck (outside work area): NIOSH half-face dual cartridge respirators equipped with HEPA cartridges.
  6. Unloading Bags at Landfill: NIOSH half-face dual cartridge respirators equipped with HEPA cartridges.
- E. The above schedule is minimum respiratory protection acceptable. Should any condition, for any reason, be encountered where the exposure level inside the mask, after applying the appropriate protection factor of the respiratory equipment in use, exceeds 0.01 f/cc, substitute respiratory equipment with protection factors which reduce worker exposure levels inside the mask to below 0.01 f/cc.
- F. No visitors shall be allowed in work area, except as authorized by the Owner or Owner's AMS. Provide authorized visitors with suitable respirators with fresh cartridges, whenever they are required to enter the work area, to a maximum of 10 per day.
- G. Provide workers with sufficient sets of disposable protective full-body clothing. Such clothing shall consist of full-body coveralls, footwear, and head gear as manufactured by Kimberly Clark "Kleenguard", one-piece coveralls or equal. Provide eye protection and 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 disposed of as asbestos waste. Disposable clothing shall not be allowed to accumulate and shall be disposed of as contaminated waste.

- H. Provide authorized visitors with suitable protective clothing, headgear, footwear, and gloves as described above whenever they are required to enter the work area.

## 2.02 MATERIALS:

- A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name.
  - 1. Store all materials subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient to prevent damage or contamination.
  - 2. Damaged or deteriorating materials shall not be used and shall be removed from the premises. Material that becomes contaminated with asbestos shall be disposed of in accordance with applicable regulations.
- B. Plastic Sheeting: A minimum 6-mil for floor and walls unless otherwise specified, in sizes to minimize the frequency of joints.
- C. Tape: Capable of sealing joints of adjacent sheets of polyethylene and for attachment of polyethylene sheets to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions.
- D. Adhesives: Capable of sealing joints of adjacent sheets of polyethylene and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions.
  - 1. For this project, 3M76, 77, "Poly Prep" spray adhesive or equal.
- E. Caulks: As specified or approved.
- F. Surfactant: Shall consist of 50% polyoxyethylene ether and 50% of polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration of one ounce of surfactant to 5 gallons of water. Use "Aqua-Gro" by

Aquatrols Corp. of America, Pennsauken, New Jersey, or equal. Prior to bidding, the Contractor shall be responsible for verifying that this surfactant is compatible with the materials to be removed and its substrates. If found to be incompatible, the Contractor shall supply suitable wetting agents at no extra cost to the Owner.

- G. Impermeable Containers: Suitable to receive and retain any asbestos-containing or contaminated materials until disposal at an approved site. The containers shall be labeled in accordance with 40 CFR 61, Subpart M. Containers must be both air and water tight and must be resistant to damage and rupture.
- H. Warning Labels and Signs: As required by OSHA regulations 29 CFR 1926.1101.
- I. Glove Bags: "Safe-T-Strip" as manufactured by Asbeguard Equipment, Inc., 130 Esna Park Drive, Markham, Ontario, Canada, L3R 1E3, "Profo-Bag" as manufactured by Asbestos Control Technology, Inc., P. O. Box 183, 38 North Pine Avenue, Maple Shade, New Jersey, 08052, or equal.
- J. Encapsulants: American Coatings Corporation "Cable Coating 22P" penetrating encapsulant; Better Working Environments, Inc., "Removal Encapsulant" and "bridging encapsulant", as applicable, or equal.
- K. Other Materials: Provide all other materials, such as, but not limited to lumber, plywood, nails, and hardware, which may be required to properly prepare and complete this project.

## 2.03 TOOLS AND EQUIPMENT:

- A. Provide suitable tools for asbestos removal.
  - 1. Water Sprayer: Airless or a low pressure sprayer for amended water application as applicable.
  - 2. Air-Purifying Equipment: High Efficiency Particulate Air (HEPA) Filtration Systems shall comply with ANSI Z9.2-1979. No air movement system or air equipment should discharge asbestos fibers outside the work area. Thus, the negative air unit shall be equipped with a

three filter bank with the last being the HEPA filter capable of removing 99.97% of fibers >0.3 µm (micrometers).

3. Paint/Encapsulant Sprayer: Airless.
4. Scaffolding: As required to accomplish the specified work and meet all applicable safety regulations.
5. Vacuums: Use HEPA type such as Nilfisk GA 73, or equal.
6. Other tools and equipment as necessary.

### PART 3 - ASBESTOS ABATEMENT - EXECUTION

#### 3.01 POSTING OF THE PROJECT:

- A. Post warning signs in and around the work area to comply with OSHA regulations 29 CFR 1926.1101 and 5 CCR 1001-10, Part B and in compliance with all other Federal, State, and local requirements.

#### 3.02 WORK AREA PREPARATION - OWNER:

- A. The Contractor, in coordination with the Owner, shall shutdown electric power to the work area. The Contractor may use existing electrical service to the building for temporary electrical power during abatement work.
- B. The Contractor, in coordination with the Owner, shall shutdown or isolate heating, cooling, and ventilating air systems to the work area.
- C. Before the work is begun, and unless otherwise specified, the Owner shall remove from the work area all movable items and equipment.

#### 3.03 WORK AREA PREPARATION - CONTRACTOR:

- A. Removal of asbestos-containing materials from the Level 3 Suites.
  1. Pre-clean fixed objects within the work area, first using HEPA vacuum equipment and then wet cleaning

methods as appropriate, and completely enclose with minimum 6-mil thick plastic sheeting sealed with tape.

2. Prior to commencing abatement work, shut down and isolate heating, cooling, and ventilating air systems to prevent contamination and fiber dispersal to other areas of the building. Seal vents within the work area with tape and 6-mil plastic sheeting.
3. Clean the work area first using HEPA vacuum equipment and then wet cleaning methods as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters. Do not use HEPA vacuum equipment on wet surfaces unless units are specially constructed for wet/dry use. HEPA vacuuming or damp sponge with regular water would be appropriate.
4. At a minimum, a negative pressure enclosure shall be constructed by establishing critical seals around the work area by sealing all openings, vents, windows, doors, and other penetrations into the work area with 6-mil polyethylene. Negative pressure shall be established by installing sufficient negative air filtration devices to provide one air exchange every 15 minutes. Class I work area containments will maintain a negative relative pressure between the work area and adjacent areas equal to or in excess of -0.02 inches of water. Decontamination facilities shall be constructed as described in Paragraph 3.04 of this Section. The contractor is to use an adequate number of negative air machines to meet the criteria above plus at least one additional unit available to come into use as a back-up and to allow for filter replacement on primary negative air units. The contractor shall demonstrate appropriate pressure differential for Class I work area containments with use of a manometer located outside the containment by the decontamination unit and fitted with a tape chart to continuously record pressure differential between inside the work area and immediately outside it. All containments are to have the air flow into decontamination units and waste load-outs, across work area and out negative air machines verified by use of ventilation smoke tubes.



- a. The following are air exchange calculations for estimating the volume of air needed to be moved through the each containment per hour and the estimated number of negative air machines needed assuming an average flow rate of 2,000 cubic feet per minute (cfm) per machine and the use of at least one extra unit per containment:
    - i. Proposed containment as outlined in drawings:  
84 ln.ft. length x 68 ln.ft. width x 10 ft. presumed height = 57,120 cubic feet volume  
(57,120) volume x 4 = 228,480 cu. ft. air needed to be moved per hour  
(228,480) / 2,000 cfm / 60 min + 1 unit = (3) estimated number of units needed
  - b. The containments proposed are optional to the contractor, however, if different containments are use the contractor will need to ensure the following:
    - i. Containments that include any of the materials listed in paragraph 1.03.B.6 must meet the standards of Class I containments as described in this specification. Containments containing only materials described in paragraphs 1.03.B.2, 1.03.B.3 and 1.03.B.4 may be removed using Class II controls as described in this specification.
    - ii. Any containment designs will need to be created by, reviewed by, approved by and signed by a State of Colorado certified Asbestos Project Designer according to the requirements established in CCR 1001-10, Part B (Regulation 8).
5. Restrict access to the immediate area, as needed, by constructing temporary barriers in accordance with Paragraph 3.05 of this Section.
  6. Build decontamination units at entrances to and exits from the work area.
  7. Maintain and mark emergency exits from the work area, or establish alternate exits satisfactory to the local Fire Marshall.

8. Contractor shall install viewing windows at work area so that all abatement work can be viewed from outside the containment area. Viewing windows are to have dimensions of at least twelve inches vertical by twelve inches horizontal.

### 3.04 DECONTAMINATION ENCLOSURE SYSTEMS:

- A. General: The Contractor shall use portable decontamination units acceptable to EPA and OSHA, connected to the work area with framed-in or accordion tunnels, if necessary, and line the tunnels with plastic, sealed with tape at all joints in the plastic, or shall construct decontamination units on-site.
- B. Access: In all cases, access between contaminated rooms or areas shall be through a curtained doorway. In all cases, access between any two rooms within the decontamination enclosure systems shall be through a curtained doorway.
- C. Decontamination Enclosure Systems will be constructed in either of the following ways, depending on whether the work area containment is for Class I or Class II work according to OSHA regulations on asbestos in construction.
  1. Worker Decontamination Enclosure System for Class I work: Construct a worker decontamination enclosure system contiguous to the work area consisting of three totally enclosed chambers as follows:
    - a. An equipment room with two curtained doorways, one to the work area and one to the shower room.
    - b. A shower room with two curtained doorways, one to the equipment room and one to the clean room, via curtained doorways. The shower room shall contain at least one shower with hot and cold or warm water at the tap with individual shut-off valves inside the showers.

Careful attention shall be paid to the shower enclosure to insure against leakage of any kind. Ensure a supply of soap and towels at all times in the shower room. Drainage from showers shall be

disposed of as contaminated water or filtered as specified below.

- c. Waste water containing asbestos, including drainage from decontamination showers, shall be either disposed of as contaminated waste or filtered in accordance with the following requirements prior to introduction into the sanitary sewer system.
    - i. Filter water to 5 microns ( $\mu\text{m}$ ) using filters designed for that purpose.
    - ii. Spare filters of all necessary sizes shall be maintained at the site at all times to replace pre-filters during cleaning.
    - iii. When the pre-filters become clogged, replace with spares, dispose of accumulated debris as contaminated waste, and wash out the pre-filters in the shower, allowing the drainage from the cleaning operation to go through the filtration system.
    - iv. When the final filters become clogged, remove the filters, replace with new, and dispose of the clogged filters as contaminated waste.
    - v. Provide a holding tank for contaminated waste water as required to prevent backup of water into shower when the amount of water generated exceeds the flow rate of the filters.
  - d. A clean room with one curtained doorways into the shower and one entrance or exit to non-contaminated areas of the building. The clean room shall have sufficient space for storage of the workers' street clothes, towels, and other non-contaminated items.
2. Worker Decontamination Enclosure System for Class II work: Construct a worker decontamination enclosure system contiguous to the work area consisting of at least two chambers, the one on the clean side containing the following:

- i. A HEPA filtered vacuum cleaner to aid in removal of debris from workers and waste containers leaving the work area.
- ii. A wash bucket and disposable rags to aid in removal of debris from workers and waste containers leaving work area.
- iii. Self-sealing flaps on both the entrance to the work area interior and the entrance to the decontamination from outside the work area.
- iv. Appropriate warning signs on the outer most flap to the decontamination unit entry visible from outside the work area. The warning sign is to be in accordance with rules and guidelines set forth in 29 CFR 1926.1101.

### 3.05 SEPARATION OF WORK AREA FROM NON-WORK AREAS:

- A. Temporary barriers for corridors, doorways, and cased openings not to be used for passage during abatement shall be sealed with an appropriate barrier to restrict entry into the work area and stop the free flow of air from inside the work area to outside the work area.
  1. Class I work area containments will be constructed with no less than two layers of at least 4-mil thick polyethylene sheeting on all wall surfaces not being abated, no less than two layers of at least 6-mil thick polyethylene sheeting on all floor surfaces not being abated and at least one layer of at least 4-mil thick polyethylene sheeting covering all ceilings not being abated. These layers in addition to critical barriers installed over all openings and airways.
  2. Class II work area containments will be constructed using minimum of four feet high splash guards along all exposed wall surfaces of at least 4-mil thickness when flooring materials is being abated and will otherwise consist of critical barriers over all openings and airways.
- B. Visual separation shall be accomplished at all "see-thru" locations using opaque polyethylene. This separation does

not need to be incorporated within the other seals involved on this project.

3.06 LOCATION AND ACTIVATION OF NEGATIVE AIR PRESSURE:

- A. Maintain negative pressure system in the work area during all asbestos abatement work for which gross abatement techniques are specified or required.
- B. Comply with paragraph J.2 of the EPA document, Guidance for Controlling Friable Asbestos-Containing Materials in Buildings, June 1985.
- C. Provide one spare exhaust unit per work area at all times. Spare exhaust units shall be of the same size and capacity as the largest operating units.
- D. Suspend electrical cords off the floor and out of workers' way to protect the cords from damage from traffic, sharp objects, and pinching. Do not fasten cords with staples, and do not hang cords from nails or suspend with wire.
- E. Provide number of exhaust units in each work area to provide one air change every 15 minutes in all locations of the work area.
- F. Locate units so that make-up air enters the work area primarily through the decontamination facility and traverses the work area as much as possible. Use Section J.3 of the EPA document, Guidance for Controlling Friable Asbestos-Containing Materials in Buildings, "Purple Book", June 1985. Use drawings provided with this document for recommended locations of negative air machines.
- G. Provide additional make-up air openings as shall be necessary to effectively move air through the work area and to avoid creating too high a pressure differential that would damage or cause "blow-in" of temporary barriers and plastic coverings. Provide inlets by making openings in the plastic sheeting near the ceiling and as far as possible from the exhaust units. Provide self-closing polyethylene flaps over the openings to prevent backflow of air from the contained area to the outside.
- H. Provide minimum number of auxiliary make-up air openings to maintain negative pressure. A negative pressure equal to

or in excess of -0.02 inches of water differential shall be maintained for all Class I work area containments.

- I. Vent all exhaust units to the outside of the building. Provide flexible or rigid duct as necessary to provide exterior venting and proper location of exhaust units. Ducts shall be completely sealed, in good repair, and protected from possible damage within the work area.
- J. After the work area has been prepared, the decontamination facility set up, and the exhaust units installed, start the units (one at a time if more than one is provided). Visually check the direction of air movement through the openings in the barriers, and verify movement of air in all locations of the work area by use of ventilation smoke tubes. Adjust the location of exhaust units, or provide additional exhaust units for the work area if the test indicates inadequate or improper air movement.
- K. After removal has begun, maintain operation of exhaust units continuously to maintain a constant negative pressure until final clearance results are achieved. Do not turn units off at the end of the work shift or when removal operations temporarily stop.
- L. Change filters in exhaust units in accordance with manufacturer's recommendations and paragraph J.3.2.2.1 of the EPA document, Guidance for Controlling Friable Asbestos-Containing Materials in Buildings, "Purple Book", June 1985 or when there is obvious loss of negative pressure.
- M. When a final inspection and the results of the final air monitoring tests indicate an acceptable level of airborne fibers, remove and dispose of pre-filters and shut off the exhaust units. If the exhaust units are to be used in another work area, leave the final filter in place and seal all intake openings to the unit to prevent contamination due to asbestos fibers collected on the final filter. If the exhaust units are not to be used in other work area, remove the final filter and dispose of as contaminated waste.
- N. If equipment dismantling operations result in visible dust on surfaces, replace filters, restart exhaust units, reclean surfaces and perform additional area air monitoring

(at Contractor's expense) until the level of airborne fibers is acceptable as specified.

- O. Dispose of all filters as asbestos-contaminated waste material as specified.

3.07 FIRE EXITS:

- A. Designate and maintain emergency and fire exits from the work area in accordance with local codes and regulations. All exits shall be clearly marked with fluorescent tape or red enamel and shall be clearly visible from any part of the work area.

3.08 COMMUNICATIONS:

- A. Provide an electronic communications system suitable for inside or outside, and inter-room communications, in order to monitor all activities within the work area and to readily transfer messages from one location to another.

3.09 SECURITY:

- A. The Owner will make all necessary provisions for 24- hour building security for areas designated for this project. The Contractor shall be responsible for maintaining security of the abatement areas throughout the Contract Period.

3.10 MAINTENANCE OF DECONTAMINATION ENCLOSURES:

- A. Class I Enclosure Decontamination Units:

1. At the beginning of each work shift and throughout removal, all seals and curtained doorways shall be inspected, and if not found in proper condition, repaired immediately.
2. Respiratory equipment shall be cleaned, repaired, and sanitized after each use.
3. Soap and shampoo shall be in the showers at all times.
4. Fresh towels shall be available at all times.
5. All areas shall be kept clean and in order.

6. Provide a disposal bag for contaminated filters in the shower room.
7. Provide storage for wet and dry towels.
8. Ensure that the drainage filtering systems are kept clean and operable at all times.
9. At the end of each decontamination period, the shower, air locks, and clean room shall be cleaned and dried.
10. At the end of each work shift: the two air locks and the shower shall be thoroughly disinfected; the filter bag (if applicable) shall be returned to the equipment room for disposal; the equipment room and first air lock shall be thoroughly HEPA vacuumed and wet cleaned.

B. Class II Enclosure Decontamination Units:

1. At the beginning of each work shift and throughout removal, all seals and curtained doorways shall be inspected, and if not found in proper condition, repaired immediately.
2. Respiratory equipment shall be cleaned, repaired, and sanitized after each use.
3. A HEPA vacuum will be available in the decontamination unit at all times.
4. A wash bucket with soap will be available in the decontamination unit at all times.
5. All areas shall be kept clean and in order.
6. Provide a disposal bag for contaminated filters in the decontamination unit.
7. Provide storage for wet and dry towels.
8. At the end of each decontamination period, the decontamination unit shall be cleaned and dried.

3.11 WORKER PROTECTION - TO BE POSTED IN CLEAN AND EQUIPMENT ROOMS:



- A. All workers and authorized personnel, in order to enter the work area, shall:
  - 1. Remove all clothing, unless it is to remain in the equipment room for eventual disposal. This applies to work inside all Class I containments, but not Class II.
  - 2. Don protective clothing (coveralls, gloves, boots, etc.).
  - 3. Don the appropriate respiratory protection, following all training procedures and manufacturer's instructions. Hood shall be worn over respirator straps.
- B. All workers and authorized personnel, in order to leave the work area, shall:
  - 1. Remove gross (visible) contamination from themselves and its equipment.
  - 2. Enter the equipment room and, keeping respirator in place, remove all protective clothing, including gloves and boots. Place contaminated clothing in the bag(s) provided. Store gloves and/or boots in their respective areas.
  - 3. Still wearing the respirator, proceed to the first air lock. Once inside, ensure all curtained doorways behind are properly closed.
  - 4. Respirator still in place, move into the second chamber of the decontamination unit or shower room and rinse off thoroughly. If wearing dual cartridge respirators, make sure the cartridges are completely soaked before removing the respirator and disposing of cartridges in the container provided.
  - 5. Decontamination Procedures:
    - a. For Class I containments: Complete by showering, thoroughly soaping, and shampooing.
    - b. For Class II containments: Complete washing using a the wash bucket provided.
  - 6. Proceed to the clean room, dry off, dress, and return respirator to the storage area.

7. No smoking, eating, or drinking shall be allowed inside decontamination enclosures.

3.12 PRE-ABATEMENT INSPECTIONS:

- A. Upon completion of all work area preparation and four hours before abatement work is to begin, notify the Owner's Air Monitoring Specialist (AMS) that the work area is ready for inspection.
- B. The Contractor shall not begin abatement work until the Owner's AMS has inspected the area and any deficiencies have been corrected.

3.13 REMOVAL OF ASBESTOS-CONTAINING MATERIALS:

- A. Contractor shall prepare the work area in accordance with Paragraph 3.03 of this Section.
- B. Restrict access to the immediate area by constructing temporary barriers in accordance with Paragraph 3.05 of this Section.
- C. Construct isolation barriers that seal off all openings to the work area. This shall be done with 6-mil plastic sheeting and duct tape.
- D. Wet asbestos-containing materials continuously with a surfactant to reduce airborne fiber concentrations during removal.
- E. HEPA vacuum any loose debris and remove any debris left on the floor.
- F. Remove ACM for disposal in accordance with Paragraph 3.18 of this Section.
- G. After all ACM have been removed, all floors, walls and surfaces shall be wet wiped and/or HEPA vacuumed.
- H. After successful clearance monitoring the Contractor shall remove all the isolation barriers.

- I. Reestablish in their proper position objects which have been moved to temporary locations in the course of the work.
- J. Clearance criteria as per Paragraph 3.15 of this Section.
- K. Post removal lock-down of affected area as per Paragraph 3.16 of this Section.
- L. Test for clearance as per Paragraph 3.17 of this Section.

3.14 EQUIPMENT REMOVAL PROCEDURES:

- A. Clean external and internal surfaces of all non-fixed equipment and/or objects by thoroughly wet wiping and/or rinsing, before moving such items into the Equipment Decontamination Unit for final cleaning and removal to uncontaminated areas.
- B. Objects and equipment removed shall be stored in areas designated by the Owner.

3.15 CLEARANCE CRITERIA:

- A. Upon completion of removal, placement of removed material and debris in dumpster or other container, and final HEPA vacuuming of surfaces, notify Owner's AMS that the abatement area is ready for post abatement visual inspection. Provide additional removal or cleaning as directed by the Owner's AMS to provide acceptable surfaces for construction of the new materials with no additional disturbance of ACM.
- B. Upon acceptance of abated surfaces by the Owner's AMS, remove seals and asbestos barrier tape. Dispose of as asbestos-containing waste.

3.16 POST ABATEMENT LOCK-DOWN OF AFFECTED AREAS:

- A. The work area shall have passed post abatement visual inspection prior to post removal lock-down. Negative air must continue to run and workers must remain in specified respiratory protection.

B. An approved lock-down agent shall be applied, using airless spraying equipment, to all areas of the project where asbestos-containing materials have been removed.

C. Lock-down:

1. Upon completion of lock-down application to all surfaces from which asbestos has been removed, the Contractor shall inform the Owner's AMS that the area is ready for clearance monitoring.

### 3.17 TEST FOR CLEARANCE:

A. PCM Clearance:

1. The Owner's AMS will provide area monitoring and establish the airborne asbestos fiber level after final cleanup but before removal of the enclosure of the asbestos control area. A minimum of five PCM clearance air samples shall be collected from the interior of each asbestos control area. No air sample will have results greater than 0.01 fibers per cubic centimeter (f/cc). Should any of the final sample sets indicate a higher value, the Contractor shall take appropriate actions to re-clean the area and the monitoring shall be repeated. If the specified clearance level is not achieved on the first round of testing, the Contractor shall reimburse the Owner for all additional air monitoring costs incurred - at a rate of \$500.00/area retested.

A. TEM Clearance:

1. The Owner's AMS will provide area monitoring and establish the airborne asbestos fiber level after final cleanup but before removal of the enclosure of the asbestos control area. A minimum of five TEM clearance air samples shall be collected from the interior of each asbestos control area. The average airborne asbestos level shall be less than the AHERA clearance criteria of 70 s/mm<sup>2</sup>. Should any of the final sample sets indicate a higher value, the Contractor shall take appropriate actions to reclean the area and the monitoring shall be repeated. If the specified clearance level is not achieved on the first round of testing, the Contractor shall reimburse the Owner for all additional air

monitoring costs incurred - at a rate of \$800.00/area retested.

3.18 DISPOSAL OF ASBESTOS-CONTAINING MATERIAL AND WASTE (SOLID AND/OR LIQUID):

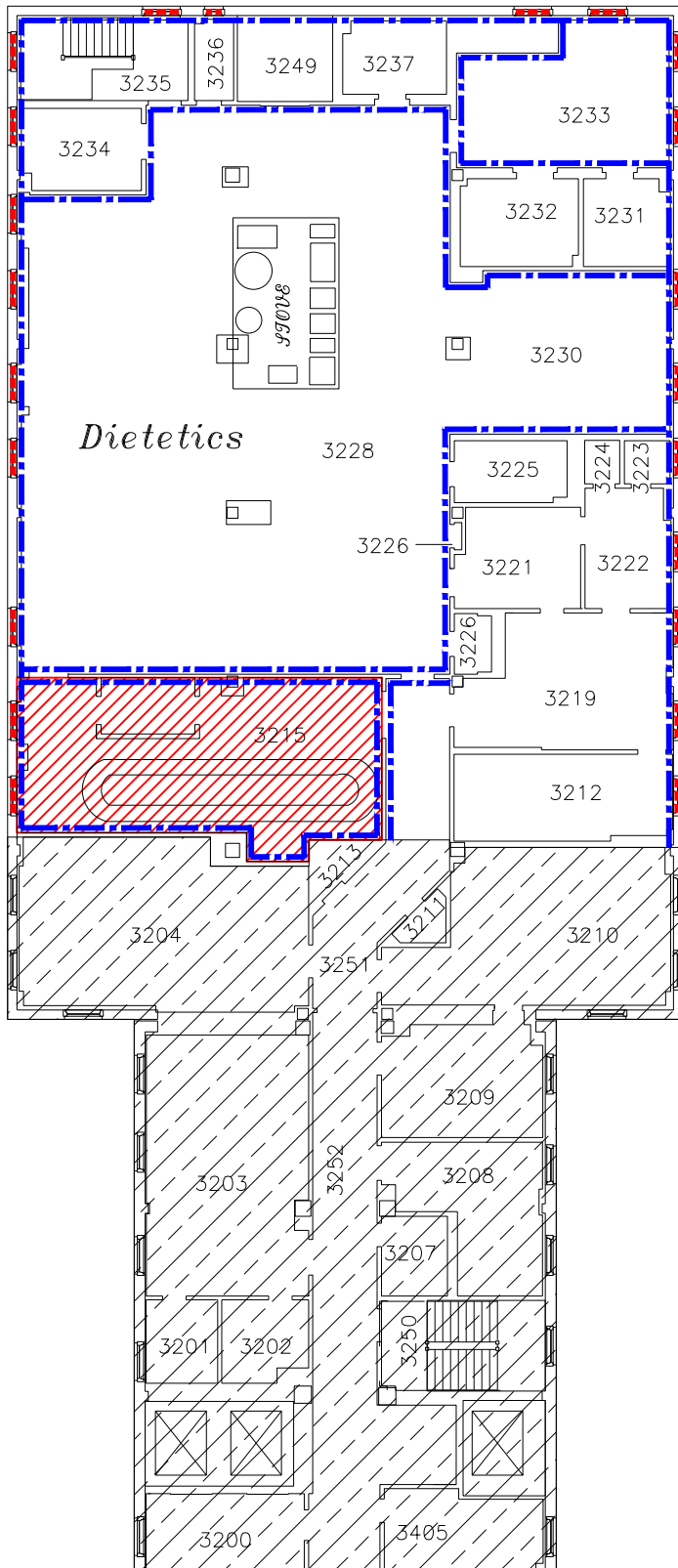
- A. As the work progresses, and to prevent exceeding available storage capacity on-site, workers from uncontaminated areas in full protective clothing and dual cartridge respirators shall enter the decontamination unit and place the appropriate supply of specified containers within the holding room. Ensure that not all curtained doorways are opened at one time during waste removal. Ensure that all containers are sealed properly before removing for transport and disposal. Drums will not be required if Contractor uses sealed bins or enclosed trucks to store and transport double-bagged waste.
- B. Prepare and have the Owner sign the Waste Shipment Record (WSR), Non-Hazardous Waste Manifest (nHWM) or Hazardous Waste Manifest (HWM) depending on the characteristics of the waste stream, for each load of asbestos-containing waste transported off the facility site. Ensure that the WSR/nHWM/HWM is completed by the transporter(s) and waste disposal site operator.
- C. Mark vehicles (trailers) use to transport asbestos-containing waste material in compliance with 40 CFR 61, Subpart M and during the transport of asbestos-containing waste in compliance with 49 CFR 171 & 172.
- D. Vehicles (trailers) used for transporting ACM to disposal sites shall have a completely enclosed, lockable storage compartment if drum requirement is to be deleted. Storage compartments shall be plasticized and sealed with a minimum of one (1) layer of 6-mil polyethylene on the sides and two (2) layers of 6-mil polyethylene on the floor. The compartments shall be thoroughly wet cleaned and/or HEPA vacuumed following the disposal of each load of material at the dump site. At the conclusion of the project (or before transport vehicles are used for other purposes), the polyethylene shall be properly removed and disposed of as contaminated waste. After this is accomplished, compartments shall once again be wet cleaned and/or HEPA vacuumed in order to eliminate all debris prior to reuse of the vehicles. Rented vehicles shall receive clearance

inspection prior to being returned to the rental company. All plastic sheeting, tape, cleaning material, including mops and sponges, clothing, filters, and all other contaminated disposable materials shall be packaged, labeled, and disposed of as asbestos-containing waste.

- E. Dispose of materials at an authorized disposal site in accordance with the requirements of Federal, State, and local disposal authorities.
- F. An approved hazardous waste hauler shall deliver the asbestos-containing waste to a landfill which has all of the necessary approvals to receive asbestos-containing waste in the State of Colorado.

END OF SECTION

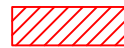
N:\Asbestos\OuterOfficeCAD\Denver\2014\AM147504\AM147504.dwg, fig 1 acm loc dietetics, 3/20/2014 8:50:50 AM, kfarrell, ANSI full bleed A (8.50 x 11.00 inches)



#### Explanation



Area outside scope of work



Asbestos-Containing Floor Tile



Asbestos-Containing Floor Tile & Adhesive



Asbestos-Containing Plaster Wall



Asbestos-Containing Transite Panels

#### Note:

Potential for unmarked Asbestos-Containing Pipe Insulation

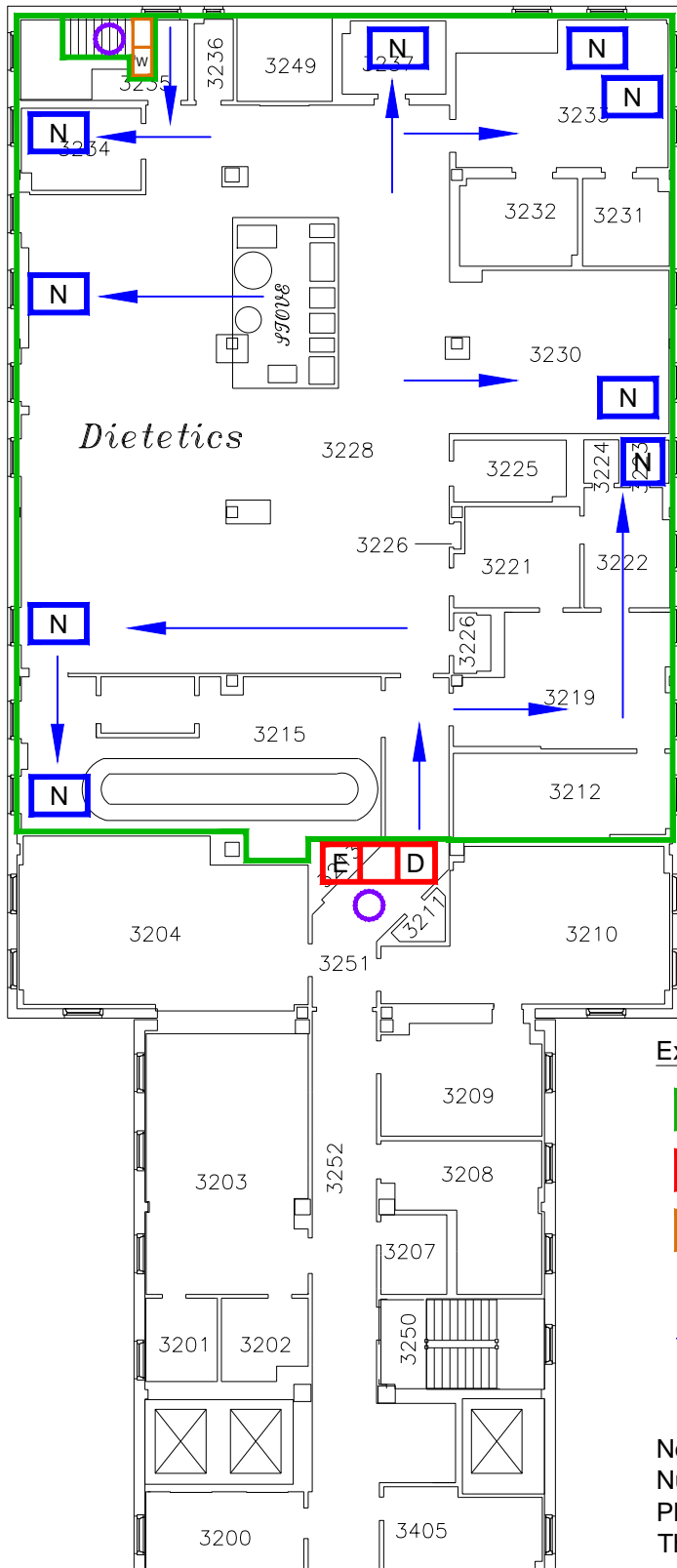
Project Mgr:	BJH
Drawn By:	Keith
Checked By:	BJH
Approved By:	KS
Project No.	AM147504
Scale:	1" = 20' - 0"
File No.	AM147504.dwg
Date:	March 2014

**IHI** A Terracon COMPANY  
ENVIRONMENTAL  
10625 West I-70 Frontage Road North Wheat Ridge, Colorado  
PH. (303) 423-3300 FAX. (303) 423-3353

Asbestos-Containing Material Locations - Dietetics Upgrade  
Guidon, VAMC Grand Junction - Hazardous Material Specifications  
**Guidon Design, Inc.**  
2121 North Avenue  
Grand Junction, Colorado

FIG. No.  
**1**







N:\Asbestos\OuterOfficeCAD\Denver\2014\AM147504\AM147504.dwg, fig 2 abate design dietetics, 4/30/2014 2:29:01 PM, k.klarrell, ANSI full bleed A (8.50 x 11.00 inches)



0 5 10 20  
SCALE IN FEET



#### Explanation

-  Class I Containment
-  Class I Containment Three Stage Decontamination Unit
-  Two Stage Waste Load-Out Location
-  Negative Air Machine Locations
-  Negative Air Flow Direction Thru Containment
-  Manometer Location

#### Note:

Number and Location of Negative Air Machine Units may vary.  
Placement of Negative Air Machines Should Optimize Air Flow Through Work Space.

Project Mgr:	BJH
Drawn By:	Keith
Checked By:	BJH
Approved By:	KS
Project No.	AM147504
Scale:	1" = 20' - 0"
File No.	AM147504.dwg
Date:	March 2014

**IHI** A Terracon COMPANY  
ENVIRONMENTAL  
10625 West I-70 Frontage Road North Wheat Ridge, Colorado  
PH. (303) 423-3300 FAX. (303) 423-3353

Asbestos Abatement Design - Dietetics Upgrade  
Guidon, VAMC Grand Junction - Hazardous Material Specifications  
**Guidon Design, Inc.**  
2121 North Avenue  
Grand Junction, Colorado

FIG. No.  
**2**



June 25, 2014

Guidon Design, Inc.  
7317 Mount Meeker Rd  
Longmont, CO 80503

**Terracon**

Attn: Mr. Ugljesa Janjic, AIA  
P: (303) 551-4528

Re: Asbestos Abatement Specification  
Veterans Affairs Medical Center  
Building 1, 3<sup>rd</sup> Floor, Dietetics Replacement for Fridge and  
Freezers  
2121 North Avenue  
Grand Junction, Colorado  
Terracon Project Number: AM147504

Dear Mr. Janjic:

This asbestos abatement specification was drafted with consideration made to the requirements for an asbestos abatement project design outlined in 5 CCR 1001-10, Part B, Section III.C.3. This document was made using the best available information for the project site and scope of work.

If you have any questions regarding this report please contact the undersigned at 303-423-3300.

Sincerely,  
**Terracon Consultants, Inc.**



Brian Ramsell  
Colorado Asbestos Abatement Project Designer #19528

Designed by  
Brendan Hainsworth  
Colorado Asbestos Abatement Project Designer #14677

Grand Junction VAMC  
Replacement of Refrigerators & Freezers  
Grand Junction, CO 81501

June 25, 2014  
100% Construction Document  
Project No. 575-14-100

SECTION - 160120  
REMOVAL OF POLYCHLORINATED BIPHENYLS  
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- 2.01 Materials and Equipment

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- 3.01 Spill Clean-Up, Contamination and Marking
- 3.02 Containerization and Marking
- 3.03 Handling
- 3.04 Transportation to Disposal Facility
- 3.05 Unloading and Records

-----  
SECTION - 160120

HAZARDOUS MATERIALS REMOVAL SPECIFICATIONS  
-----

PART 1 - PCB LIGHT BALLAST REMOVAL - GENERAL

1.01 RELATED DOCUMENTS:

- A. General provisions of the Contract, including General and Supplementary Conditions, and other Specification Sections, apply to work of this Section.

1.02 PROJECT IDENTIFICATION:

- A. General: This Specification is for the removal of Polychlorinated Biphenyl (PCB)-containing fluorescent light ballasts at the Veterans Affairs Medical Center (VAMC), 2121 North Avenue, in Grand Junction, Colorado. The VAMC is owned and managed by the U.S. Department of Veterans Affairs (Owner). The work of this Section shall take place and be completed prior to and in conjunction with the renovation of Building 1's 3<sup>rd</sup> floor dietetics.
- B. Contract Documents: The Contract Documents describe the work of this project. The Contractor is directed to the specific requirements set forth in this section governing hazardous materials abatement.

1.03 SCOPE OF REMOVAL WORK:

- A. All fluorescent lighting fixtures containing ballasts that are not specifically labeled "non-PCB" shall be assumed to contain PCB ballasts in addition to those labeled as "PCB". The Contractor shall be responsible for removal and disposal of all PCB-containing ballasts within light fixtures. This Section applies to all PCB-containing light ballasts to be removed, transported and disposed in an Environmental Protection Agency (EPA)-approved facility which has been designated for the disposal of PCB-containing materials.
- B. The work, in general, includes, but is not limited to, the following:

1. Partial dismantling of light fixtures and removal of ballasts;
2. Cleaning of any PCB contamination on fixtures' surfaces;
3. Placement of all PCB ballasts, or PCB-contaminated items, generated as a result of work activities, in approved containers (supplied by the Contractor);
4. Marking and labeling of all PCB containers for storage purposes;
5. Transportation of all PCB containers for disposal purposes;
6. Provision of properly filled out Uniform Hazardous Waste Manifests to the transporter and the obtaining of certificates of disposal from the disposal facility.

1.04 DESCRIPTION REMOVAL OF WORK:

- A. Furnish all labor, materials, services, insurance, and equipment in accordance with the most stringent requirements of EPA, OSHA, CDPHE and all other applicable regulatory agencies, to complete the removal of PCB-containing materials as described above.

1.05 QUALITY ASSURANCE:

- A. The work under this Section includes the handling of highly toxic substances and materials requiring special expertise. Therefore, specific qualifications must be met by the Contractor.
- B. License Requirements: The firm performing the work of this Section must have a current EPA authorization number for the transportation of hazardous wastes, including PCBs.
- C. Qualifications Statement: Provide a Statement of Qualifications to the Owner's Industrial Hygienist for review and acceptance. The Contractor shall submit the Statement in advance of the performance of the work, as to permit adequate time for review and accept the firm to perform the work. The Statement shall provide sufficient data and information to prove to the satisfaction of the

Owner's Industrial Hygienist that the firm performing the work of this Section is fully experienced in the handling, transportation and disposal of PCB-contaminated articles and items.

- D. The statement shall, at a minimum, provide the following information and data regarding work experience with PCBs.
1. Show, that as a major activity of work, the firm proposing to perform work of this Section has been engaged in PCB-related activities, including the handling, transportation and storage of PCB and PCB-containing articles and items.
  2. Provide data proving experience on a minimum of three prior projects involving the type of activities noted above during the last three years.
  3. Provide proof of current licensing for the transportation and hauling of hazardous wastes as required under B above.
- E. Fees and Permits: The Contractor shall pay all necessary fees and permits related to the handling, transportation and disposal of PCB articles and items.

1.06 APPLICABLE REFERENCES:

- A. The applicable sections, latest editions and addenda of regulations, codes, industry standards and recommended practices issued on behalf of or by the following government agencies, form a part of this specification.
1. EPA - Environmental Protection Agency
  2. OSHA - Occupational Safety and Health Administration
  3. CDPHE - Colorado Department of Public Health and Environment
  4. NEC - National Electrical Code
  5. NEMA - National Electrical Manufacturers Association
  6. RCRA - Resource Conservation and Recovery Act

7. TSCA - Toxic Substances and Control Act

8. DOT - Department of Transportation

9. All other applicable Federal, State, and local codes, standards and regulations.

B. The Contractor is cautioned that they are responsible for ascertaining the extent to which these regulations affect its operations and to comply therewith.

1.07 SAFETY PROCEDURES AND WORKER PROTECTION:

A. Take all precautions and measures required to protect employees, related trade employees, inspection personnel, and the general public from exposure to PCB solids, liquids and vapors.

B. Worker Protection and Marking: Prior to commencing any PCB-related work activities provide barricades, and warning signs clearly to identify and effectively to guard against unauthorized entry into work area.

C. All electrical equipment upon which PCB related activities are to be performed shall be disconnected from any power source prior to commencing any work.

D. All equipment shall be confined to the work area until work is complete and containers are sealed and equipped properly and safely stored for transport.

1. Barricades: Shall be constructed in accordance with asbestos enclosure systems (Section Asbestos Abatement) if asbestos abatement activities are being performed simultaneously. No additional PCB-related temporary enclosures need be constructed, except as needed in case of a PCB-related emergency.

2. Signs: During the PCB work phase, the Contractor shall place at intervals of approximately ten feet, warning signs. The warning signs for the work area shall comply with OSHA 1910.145, and shall have black letters on a white background, with the word "Danger" in red. Sign shall be in English and in Spanish.

- E. Protective measures shall be provided for the transit of PCB materials within the building along the entire pathway to the transporting vehicle.
- F. Protective Clothing and Equipment: At all times when PCB materials in any volume are not sealed in drums, containers or electrical equipment, workers shall wear:
  - 1. Disposable, non-porous gloves with a high degree of impermeability to chlorinated and aromatic solvents. For use on this project gloves shall be "Viton" gloves or approved equal;
  - 2. Disposable whole-body clothing, impermeable to PCBs. For use on this project use "Saranex" suits or approved equal;
  - 3. Respiratory protection, NIOSH/OSHA-approved supplied-air respirator with organic vapor canister/high-efficiency particulate air filter that has a full facepiece and is operated in a pressure-demand mode or other positive-pressure mode;
  - 4. If asbestos abatement activities are being performed simultaneously, the level of particulate respiratory protection must be at least the level required at that stage of asbestos work. The level of organic vapor respiratory protection is dependent upon the particular solvents being used in the decontamination procedure - refer to solvent Safety Data Sheet of specific solvent for respirator protection requirements;
  - 5. Eye protection;
  - 6. Hard hats.
- G. The Contractor shall provide protective clothing, eye protection and respiratory protection as necessary.
- H. Workers with cuts or scratches shall seal these wounds with "Newskin" or a similar product and a protective bandage before entering the work area. Similarly, workers who accidentally incur minor cuts or scratches in the course of work activities shall leave the work area, cleanse the wound with medical grade soap, seal the wound and cover

with a protective bandage before returning to the work area.

1.08 PCB CONTINGENCY PLAN:

- A. The Contractor shall submit a detailed job-specific plan of the work and site safety and health procedures to be used in the removal and transportation of materials containing PCBs. This plan shall be in accordance with all Federal, State and local requirements. The plan shall be prepared, signed, sealed and dated by an industrial hygienist. Plan shall include a sketch showing the location, size, and details of all PCB filled equipment, location of worker changing room, and location and quantity of suitable waste containers. The plan shall be provided 10 days prior to the start of PCB work. Prior to beginning work, the Contractor shall meet with the Owner and Owner's Industrial Hygienist to discuss in detail the PCB plan, including work procedures and safety precautions. No work shall proceed until the work, site safety and health plans are approved.
- B. Submit the name, address and telephone number of the individual that prepared the PCB work, site safety and health plan.
- C. Site safety and health plan shall follow the requirements of 29 CFR 1910 Part 120.

1.09 EMPLOYEE TRAINING:

- A. Within one year prior to assignment to PCB work, each employee of the Contractor shall be instructed by an industrial hygienist or other qualified person with regard to the hazards of PCBs. Submit certification, signed and dated, that each such employee meets the training required by 29 CFR 1910.120.

1.10 SUPERVISION:

- A. The Contractor shall provide the services of a qualified PCB Service Supervisor.
- B. All PCB-related work including separating of ballasts from light fixtures and handling of PCB items or fluids of any type shall be under the direct supervision of the PCB Service Supervisor.



- C. Prior attendance at and satisfactory completion of an examination following a documented formalized training course on regulations and procedures for handling, marking, transportation, disposal spill prevention/clean-up, safety precautions, and testing of PCB items.
- D. Training in an awareness of obligations and responsibilities for protection of people, property, and environment from hazardous waste exposure or contamination.

1.11 PERMITS, LICENSES AND NOTIFICATION:

- A. License Requirements: The Contractor performing the work of this Section must have a current EPA authorization number for the transportation of hazardous wastes and have any licenses or registration that may be required by the CDPHE, including PCBs.
- B. The Contractor shall be responsible for obtaining all necessary permits in conjunction with PCB removal, hauling and disposal, and furnish timely notification of such actions required by Federal, State, and local authorities. Notify the Owner five days prior to the commencement of this type of work. Provide copies to the Owner's Industrial Hygienist of all permits required for the removal, hauling and disposal of PCBs. Permits shall be in compliance with 40 CFR 761 and 40 CFR 260-280 and other State and local disposal requirements where applicable.

PART 2 - PCB LIGHT BALLAST REMOVAL - PRODUCTS

2.01 MATERIALS AND EQUIPMENT:

- A. Storage Containers:
  - 1. All ballasts containing PCB material shall be stored in sealed DOT 17C containers.
  - 2. All PCB solid wastes, and items including disposable items used in the course of the work such as rags, sorbents, protective clothing, etc., shall be stored in sealed DOT 5, 5B or 17C containers.

3. All liquids generated as a result of clean up activities shall be disposed of in DOT 17E containers.

B. Solvents, Sorbents and Liquid Cleaners:

1. Solvents: Diesel fuel, deodorized kerosene or other solvents recognized for high degree of PCB solubility.
2. Sorbents: Material recognized for high degree of absorption.
3. Liquid Cleaners: Concentrated liquid alkaline base cleaners. All cleaners shall be non-toxic.
4. Abide by all precautions for safe handling and use indicated on the SDS sheets.

PART 3 - PCB LIGHT BALLAST REMOVAL - EXECUTION

3.01 SPILL CLEAN-UP, CONTAMINATION AND MARKING:

- A. Clean-up of Work Area, PCB items and spills at the end of each work shift:
  1. Equipment and Tools: After the last unit of electrical lighting has been separated from ballasts, all tools and equipment used in the work shall be decontaminated and properly stored for reuse.
    - a. Where work surfaces have contacted PCB fluids they shall be scraped clean, wiped with solvent, wiped clean and all debris placed in open-type drums.
    - b. All tools that may have come in contact with PCB at any concentration shall be thoroughly cleaned with solvent, wiped clean and properly stored.
- B. PCB items (Electrical Equipment): All exterior surfaces of electrical equipment to be removed that may have come in contact with PCBs or contaminated oils or fluids either during the course of work activities or due to past leaks shall be thoroughly cleaned with solvent and wiped clean.
- C. Slabs, Floors and Walls: All concrete (or other surfaces) which have come in contact with PCBs or PCB mixtures in the

course of the work as a result of past leaks shall be thoroughly cleaned using a combination of sorbents, solvents and cleaners.

- D. Where feasible, the Contractor shall arrange to remove such articles and place into an appropriate DOT container, then transfer directly to transport vehicles prior to general clean-up.

### 3.02 CONTAINERIZATION AND MARKING:

- A. All liquids generated as a result of work activities and clean-up operations shall be placed in closed top drums and sealed.
- B. All solids such as sorbents, rags, disposable protective clothing, and other incidentals shall be placed in open top drums and sealed.
- C. All drums shall be permanently marked as to specific contents and dated. In addition, each drum shall be marked in accordance with 40 CFR 761.40 and 40 CFR 761.45.

### 3.03 HANDLING:

- A. All drums containing PCBs must be sealed, marked and inventoried prior to loading on transport vehicle. Containers shall be securely fastened to wood pallets (supplied by the Contractor) using metal banding prior to transfer to the transport vehicle using a hoist or lift truck.
- B. Drums and pallets shall be secured to the transport vehicle to prevent movement in transit.

### 3.04 TRANSPORTATION TO DISPOSAL FACILITY:

- A. All drums containing PCBs shall be transported off-site to an EPA-approved disposal facility, licensed and permitted. Transportation to disposal facility shall be in compliance with, but not limited to, 49 CFR 171-180.
- B. Transport all drums via licensed/permitted transporters. The facility transporter must not have received a notice of violation within the last six months. If the facility transporter receives a notice of violation during the

project from any regulatory agency, the Contractor shall notify the Owner immediately.

- C. Minimum of two Contractor's personnel shall be in attendance at all times when PCB containers are being loaded and unloaded.
- D. Vehicles used for transporting of PCB containers must be plainly and visibly marked in accordance with all applicable regulations.

### 3.05 UNLOADING AND RECORDS:

#### A. Unloading and Storage

- 1. The Contractor's transport vehicles shall be unloaded utilizing similar equipment and methods as for loading.
- 2. Immediately following unloading of the PCB transport vehicle the cargo area shall be inspected to check for any fluid leaks. If any fluids are found, the source of the leaking drum or item shall be identified and sealed.
- 3. The contaminated cargo area shall be thoroughly cleaned with sorbents, solvents and liquid cleaner. Cleaning solvents and solids shall be placed in proper drums.

#### B. Upon completion of all PCB work-related activities, the Contractor performing the work outlined in this Section shall provide a complete record with the project close-out. The record shall include, but not be limited to, the following data:

- 1. Name of the firm performing the work outlined in this Section and technician in charge.
- 2. Ballasts removed:
  - a. Manufacturer and serial number of each ballast.
  - b. Date removed from service and location.
- 3. Date transported to disposal site:
  - a. Weight in pounds.

4. Drums (Containers, where applicable):

- a. Drum size (e.g. 30 or 55 gallon);
- b. Identification of contents, (i.e. ballasts, cleaning solvents, solids, rags, sorbents, etc.);
- c. Weight in pounds of contents of each drum (or container).
- d. Date items were disposed of and location and name of company receiving them.

C. The contract work will not be considered complete until receipt of listed record data by the Owner.

D. Hazardous Waste Manifests shall be provided for all PCB-containing materials. Hazardous Waste Manifests shall be provided to the Owner for signing at the time that hazardous materials are removed from the building property. A completed, signed copy of the Hazardous Waste Manifests shall be provided to the Owner within five days of the time the hazardous materials are received at the disposal facility.

END OF SECTION

Grand Junction VAMC

June 25, 2014

Replacement of Refrigerators & Freezers

100%

Construction Document

Grand Junction, CO 81501

Project No.

575-14-100

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REMOVAL OF POLYCHLORINATED BIPHENYLS  
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PART 3 - PCB LIGHT BALLAST REMOVAL - EXECUTION

- 3.01 Spill Clean-Up, Contamination and Marking
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- 3.05 Unloading and Records

Grand Junction VAMC

Replacement of Refrigerators & Freezers

Grand Junction, CO 81501

June 25, 2014

100% Construction Document

Project No. 575-14-100

SECTION - 160130  
FLUORESCENT TUBE REMOVAL SPECIFICATIONS  
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- 2.01 Personal Protective Equipment

PART 3 - FLUORESCENT TUBE REMOVAL - EXECUTION

- 3.01 Handling and Transportation
- 3.02 Recordkeeping

-----  
SECTION - 160130

FLUORESCENT TUBE REMOVAL SPECIFICATIONS  
-----

PART 1 - FLUORESCENT TUBE REMOVAL - GENERAL

1.01 RELATED DOCUMENTS:

- A. General provisions of the Contract, including General and Supplementary Conditions, and other Specification Sections, apply to work of this Section.

1.02 PROJECT IDENTIFICATION:

- A. General: This Specification is for the removal of all fluorescent light tubes at the Veterans Affairs Medical Center (VAMC), 2121 North Avenue, in Grand Junction, Colorado. The VAMC is owned and managed by the U.S. Department of Veterans Affairs (Owner). The work of this Section shall take place and be completed prior to and in conjunction with the renovation of Building 1's 3<sup>rd</sup> floor dietetics.
- B. Contract Documents: The Contract Documents describe the work of this project. The Contractor is directed to the specific requirements set forth in Section 00810 governing hazardous materials abatement.

1.03 SCOPE OF REMOVAL WORK:

- A. The Contractor shall be responsible for handling, transportation and delivery of fluorescent light tubes to a State registered recycler or a registered lamp crusher off-site.

1.04 SAFETY PROCEDURES AND WORKER PROTECTION:

- A. Take all precautions and measures necessary not to break fluorescent light tubes.

1.05 NOTIFICATIONS:



- A. Show proof of State registration to crush light tubes, or the registration of an approved crushing subcontractor, and the registration of the recycler before removing fluorescent light tubes.

## PART 2 - FLUORESCENT TUBE REMOVAL - PRODUCTS

### 2.01 PERSONAL PROTECTIVE EQUIPMENT

- A. All work should be performed using the appropriate personal protective equipment (PPE). This equipment includes but is not limited to:
  - 1. Safety Glass, ANSI Z87.1 Approved
  - 2. Work Gloves, cut resistant, appropriate for work being performed
  - 3. Other PPE as may be required by site conditions

## PART 3 - FLUORESCENT TUBE REMOVAL - EXECUTION

### 3.01 HANDLING AND TRANSPORTATION:

- A. All fluorescent light tubes taken from light fixtures at the project site shall be removed from the building at the end of each work day, and shall be taken directly to a State registered recycler or a registered lamp crusher located off-site.

### 3.02 RECORDKEEPING

- A. Provide written notification and documentation to the Owner for all lamp recycling and disposal activities. The documentation shall include: the daily and total number of lamps removed and transported to the recycler or crusher; and copies of all transportation manifests and recycler's receipts.

END OF SECTION

Grand Junction VAMC

June 25, 2014

Replacement of Refrigerators & Freezers  
Documents

100% Construction

Grand Junction, CO 81501  
575-14-100

Project No.

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