

## Scope of Work

HMS PROJECT NUMBER: S14019

SITE ID: Solano Community College  
Buildings 100, 500, 700, 800, 1400, 1500, 1600, & 1700  
4000 Suisun Valley Road  
Fairfield, CA

### CONTACT PERSONS:

	<b>Owner Representative</b>	<b>HMS, Inc.</b>
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### BACKGROUND

Solano Community College will be performing an HVAC and EMS Efficiency Project . This work will be phased, first phase starting in the Winter of 2014 and the second phase starting in the Summer of 2015. As part of this renovation both asbestos-containing and lead-containing materials will be impacted. Other materials that may be impacted, but are not necessarily hazardous, including freon.

The removal of all potentially hazardous materials in this project will be performed by a Cal/OSHA registered asbestos abatement contractor.

A set of project plans will be provided by Kitchell CEM for the renovation project. The contractor may use these as reference, in addition to the sampling report provided.

It is strongly recommended that the supervisor read these specifications prior to arriving onsite to assure they understand the requirements set forth to protect onsite staff, students, workers, and the environment.

### REQUIREMENTS

The abatement contractor's onsite supervisor must have a copy of these specifications onsite at all times.

Remediation Contractors must carry each specific trade classification license for the materials and systems they will be removing/altering/disturbing or carry the B-General Contractor's license. This is per current Contractors State Licensing Board (CSLB) requirements and will remain in effect until the CSLB creates a separate and distinct specialty trade license for asbestos abatement contractors.

This project is to be conducted per this Scope of Work and the attached specifications . If there are conflicts between this Scope of Work and any of the following specifications, which are listed below, the scope of work shall prevail.

General Asbestos Requirements  
Requirements For The Disturbance Of Lead  
Other Hazardous Materials

**MATERIALS & LOCATIONS OF ABATEMENT WORK**

Location of materials are generalized by building in the tables below. Contractor shall refer to project drawings for work to be completed. The abatement contractor shall be responsible to verify amounts to be abated/remediated.

**ASBESTOS**

***Building 100***

Material/Description	Location	Asbestos Content	Friable/Non-Friable
Spray-on-Ceiling Texture	Library	10% Chrysotile	Friable (RACM)
2'x4' False Ceiling Panels-Pinhole/Fissure Pattern	Throughout (Except Restrooms, Lobby, Room 106, and Library)	Trace Chrysotile	Friable (RACM)
Drywall & Joint Compound	Throughout	2% Chrysotile in Joint Compound	Friable (RACM)
TSI w/Paper Wrap	Attic Space	10% Amosite	Friable (RACM)
Concrete Sealant - Yellow	Attic Space	2% Chrysotile	Non-Friable

***Building 500***

Material/Description	Location	Asbestos Content	Friable/Non-Friable
Drywall - Smooth	Restrooms	2% Chrysotile (Joint Compound)	Friable (RACM)
Duct Seam Tape	Attic Space - Metal Ducts at Joints	2% Chrysotile	Friable
Drywall - Orange Peel Texture	Classrooms and Corridors	2% Chrysotile (Texture) 2% Chrysotile (Joint Compound)	Friable (RACM)
Beige HVAC Putty	Plenum	5-10% Chrysotile	Non-Friable
Silver Paint on Rolled Roofing	Roof	10-20% Chrysotile	Non-Friable

***Building 700***

Material/Description	Location	Asbestos Content	Friable/Non-Friable
Drywall	Throughout - Walls	1-5% Chrysotile	Friable (RACM)
Duct Seam Tape	Plenum	2% Chrysotile	Friable
Yellow HVAC Putty	Plenum	5-10% Chrysotile	Non-Friable

Black Putty	Roof	10-20% Chrysotile	Non-Friable
Gray Putty on PVC	Roof	30-40% Chrysotile	Non-Friable

**Building 800**

Material/Description	Location	Asbestos Content	Friable/Non-Friable
12" ACT w/Brown Mastic	Restrooms	2% Chrysotile (Brown Mastic)	Non-Friable

**Building 1400**

Material/Description	Location	Asbestos Content	Friable/Non-Friable
Drywall w/Texture Wallpaper	Corridors	2% Chrysotile (Joint Compound)	Friable (RACM)
White Sealant on HVAC Ducts	Plenum	Assumed	Non-Friable

**Building 1500**

Material/Description	Location	Asbestos Content	Friable/Non-Friable
Drywall - Smooth	Ceilings	2% Chrysotile (Skim Coat) 2% Chrysotile (Joint Compound)	Friable (RACM)
Drywall - Orange Peel Texture	Walls Throughout	2% Chrysotile (Texture) 2% Chrysotile (Joint Compound)	Friable (RACM)

**Building 1600**

Material/Description	Location	Asbestos Content	Friable/Non-Friable
Drywall w/Tan Wallpaper Covering	Lower Walls	2% Chrysotile	Friable (RACM)
Duct Seam Tape w/Silver Paint	Exterior Metal Duct Work on Roof	2% Chrysotile (Silver Paint)	Non-Friable
White Sealant	Roof - 3 <sup>rd</sup> Level at HVAC Seams	5% Chrysotile	Non-Friable

**Building 1700**

Material/Description	Location	Asbestos Content	Friable/Non-Friable
Drywall - Unfinished	Throughout	1-5% Chrysotile	Friable (RACM)

The following materials have been sampled by either HMS, Inc. or Kleinfelder and came back none detected for asbestos :

**Building 100**

12" ACT - Pinhole/Gouge & Brown Mastic Tabs  
 Duct Seam Tape  
 Plaster - Smooth

**Building 500**

12" ACT & Brown Mastic  
 2'x4' False Ceiling Panels - Pinhole/Gouge  
 Fiberglass TSI w/Paper Wrap & Brown Sealant  
 Gray Sealant on Exterior HVAC Units  
 White Sealant on Exterior HVAC Ducts  
 Rolled Roofing

**Building 700**

2'x4' False Ceiling Panels - Look Like 2'x2'  
 Silver Foil Tape w/Glue & Gray Sealant  
 Light Fixture Insulation  
 Rolled Roofing  
 Gray Sealant on Exterior Metal Duct  
 Gray/Black Sealant on Exterior HVAC Unit

**Building 800**

2'x4' False Ceiling Panels - Look Like 2'x2'  
 Drywall -Smooth  
 HVAC Foil Tape & Glue  
 Drywall w/Textured Wallpaper  
 Duct Seam Tape  
 Fiberglass TSI w/Paper Wrap & Glue  
 White HVAC Sealant  
 Rolled Roofing  
 Black Roof Mastic  
 Gray HVAC Mastic

**Building 1400**

Yellow Mastic on Drywall  
 White HVAC Putty  
 Plaster - Smooth  
 2'x4' False Ceiling Panels - Look Like 2'x2'  
 Foil Tape & Glue on HVAC Ducts  
 Duct Seam Tape  
 Fiberglass TSI w/Paper Wrap & Glue  
 Rolled Roofing  
 Black Roof Mastic  
 Gray HVAC Mastic

**Building 1500**

White Duct Seam Tape  
Black Tar  
2'x4' False Ceiling Panels - Pinhole/Gouge  
Fiberglass TSI w/Paper Wrap & Sealant  
Rolled Roofing  
Black Roof Mastic  
Gray HVAC Sealant  
Brown Sealant on Fiberglass TSI w/Paper Wrap

**Building 1600**

Silver Duct Tape w/Yellow Glue  
Duct Seam Tape- White  
Fiberglass TSI w/Paper Wrap & Glue  
2'x4' False Ceiling Panels - Pinhole/Gouge  
Gray Putty  
White Putty  
Brown Sealant on Fiberglass TSI w/Paper Wrap  
White Sealant on Fiberglass TSI w/Paper Wrap  
Rolled Roofing  
Black Roofing Mastic

**Building 1700**

2'x2' False Ceiling Panels - Pinhole/Gouge  
Duct Seam Tape  
White Sealant on HVAC Duct  
Gray Sealant on HVAC Unit - Exterior  
Dark Gray Sealant on HVAC Seams - Exterior

Any materials not noted above must be assumed to contain asbestos until sampled and proven otherwise.

**LEAD**

The paints found throughout this site on both the interior and exterior have been found to contain low-level lead. These paints shall be handled in accordance with the Requirements for Disturbance of Lead or with this Scope of Work.

The ceramic wall tiles and baseboards of the site (notably restrooms) contain a lead-based glazing. These tiles will need to be handled in accordance with the Requirements for Disturbance of Lead or with this Scope of Work.

Since this project is not being performed as an "abatement of a lead hazard" or in response to an elevated blood lead level, the contractor shall not file a CDPH Form 8551. This work is classified as lead in construction only.

In the event that the contractor impacts lead-containing paints or coatings outside of a contained area, contractor will be responsible for all financial costs to perform cleanup of the lead hazard, supply of CDPH trained workers with one Supervisor to perform cleanup, and costs for sample collection and analysis of clearance wipe samples by HMS, Inc.

Removal of components that contain lead shall be performed as much as possible inside of the negative pressure enclosure required for asbestos abatement to limit containment setup.

Further requirements for the handling of lead-containing wastes are provided in this document.

**OTHER HAZARDOUS MATERIALS**

Mercury-containing light tubes shall be removed and disposed of as outlined in the Other Hazardous Materials Requirements.

#### TIME PERIOD

The contractor shall provide a sufficient work- force to complete all removal operations for the project, including containment setup, collection of clearance air samples, and removal of containment within the allotted time provide by Kitchell CEM. This project will consist of three phases. Phase one will include Buildings 800 & 1500 (work completed in Winter 2014), phase two will include, 500, 700, 1400, 1600, and 1700 (work completed in Summer 2015), and phase three will be Building 100 (undetermined time frame).

#### WORKING HOURS

7:00 AM - 05:00 PM, Monday through Friday. Additional, or alternate hours may be approved by Solano Community College District and HMS, Inc., but must be requested in writing at least 48 hours prior to the start of the alternate schedule.

#### PROJECT SUBMITTALS

Contractor shall refer to sections 2.31a, 2.31b, and 2.31c of attached General Asbestos Requirements for all pre-start submittals. These pre-start submittals shall be provided to HMS, Inc. at least 10 working days prior to the project start date to allow sufficient time for review. Sections 2.4 and 2.41 address the requirements for daily paperwork to be submitted to HMS, Inc.

Section 2.7 addresses project submittals required at the close of the project.

#### DISPOSITION & STORAGE OF ITEMS IN AREA - RESPONSIBLE PARTY

Most loose equipment and furniture will be removed from the abatement areas prior to start of the project. All items removed by the abatement contractor must be either turned over to the owner (as noted or indicated in the plans) or disposed of by the abatement contractor.

#### OCCUPANCY

None in the immediate area, however, other buildings and adjacent areas may be occupied by staff and students.

#### PRE-CLEANING

No pre-cleaning of asbestoscontaining or lead-contaminated materials is expected. Small amounts of garbage clean-up may be required.

#### ELECTRICITY/WATER

Available; however, the contractor shall be responsible for any electrical connections needed. Long hoses and electrical cords may be required.

#### DECONTAMINATION/CONTAINMENT SETUP

Contractor shall refer to attached General Requirements for the setup requirements of containments for each asbestos or lead containing material impacted. The contractor must limit the number of containments as much as possible to help alleviate the costs for clearance air sampling for Solano Community College District.

Asbestos and lead containments must have a three stage decontamination chamber with an operational shower installed. Each stage of this decon must have z-flaps between itself and the adjoining stage(s). Shower chambers and equipment washing chambers must be equipped with catch pans of sufficient size

to capture and hold water which overflows from showering and washing activities. (see attached General Asbestos Requirements for additional information).

All surfaces and equipment that are not subject to removal during this project are to be protected with two layers of six mil poly. **These cleaning barriers are to be installed after “critical barrier only” negative pressure check has been passed.**

#### DOP OR EQUIVALENT CHALLENGE TESTING

On-site DOP (or equivalent) challenge testing shall be required on all equipment using HEPA filters, and certificates shall be provided to HMS, Inc. or Kitchell project manager. All equipment shall arrive at the project site visually clean. Units arriving dirty or contaminated shall be removed from the project site until corrections can be made.

#### NEGATIVE AIR

The contractor shall ensure that sufficient negative air units are used to create a minimum negative pressure of -0.030 inches with at least four air changes per hour until clearance has been achieved. All negative air machines shall remain sealed when not functioning.

#### ABATEMENT METHOD

Contractor shall refer to the attached HMS, Inc. General Requirements for setup and abatement requirements for materials.

Remove all light ballasts required and dispose of ballasts as PCB containing, unless marked as “Non-PCB” on ballast label per attached Other Hazardous Materials section in the General Asbestos Specifications.

Contractor shall provide 24 hour notice to HMS, Inc. personnel for pre-start and final visual inspections to allow proper staffing if necessary to limit the time of inspection.

Once a final visual inspection is passed at interior containment areas, the contractor may encapsulate the poly. Contractor shall take care not to apply encapsulant to floor or other surfaces which may prohibit the installation of new materials.

### ***Asbestos***

#### **Drywall Removal Requirements**

1. The doors, windows, and penetrations into the rooms shall be sealed as critical barriers with 6-mil polyethylene. An attached three stage decon with operable shower is required. The Scope of Work may require more chambers depending upon the project size.
- b) Powered air purifying HEPA respirators, rubber boots, gloves, and disposable coveralls are to be used as a minimum for worker protection.
- c) Shut down and lock out all heating, ventilating and air-conditioning-system (HVAC) components that are in, supply or pass through the work area. Seal all intake and exhaust vents in the work area with tape and two layers of 6-mil polyethylene within the work area (interior) and one layer of 6-mil poly on the exterior of the building. Also seal any seams in system components that pass through the work area. Remove all HVAC system filters and place in labeled 6-mil polyethylene bags for storing and eventual disposal as asbestos-contaminated waste.
4. The drywall must be double bagged and “goose-necked” in 6 mil poly bags. It is acceptable to place several “goose-necked” bags of drywall into a barrel lined with a second 6 mil poly bag that is “goose-necked”.
5. All drywall must be sufficiently wetted with amended water when being removed.

6. Negative pressure shall be established, maintained and recorded. This shall be verified by using ventilation smoke tubes.
7. All non-asbestos-containing materials left in the work area shall be covered by two layers of 6-mil polyethylene sheeting. If any non-asbestos containing materials become contaminated with asbestos during removal activities these materials shall be disposed of as asbestos-containing materials by the Contractor.
8. A critical barrier only, negative pressure check shall be required prior to the set-up of interior containment.
9. Cover floors in the work area with polyethylene sheeting. Floor shall be covered with a minimum of two layers of 6-mil polyethylene sheeting. Plastic shall be sized to minimize seams. A distance of at least six (6) feet between seams is sufficient. DO NOT locate any seams at wall/floor joints. Floor sheeting shall extend at least twelve inches (12") up the sidewalls of the work area. Sheeting shall be installed in a fashion so as to prevent slippage between successive layers of material. A layer of 10-mil polyethylene sheeting and/or plywood will be required to protect certain flooring materials -- carpets, hardwood floors, tiles, etc. At no time will wall or ceiling surfaces be permitted to be dropped onto unprotected floors. This includes areas where the floor surfaces contain asbestos.
10. Cover asbestos-containing walls in the work area with polyethylene sheeting if these walls are to remain or if these walls are non-asbestos containing and will remain. Walls shall be covered with a minimum of two layers of 4-mil polyethylene sheeting. Plastic shall be sized to minimize seams. Seams shall be staggered and separated by a distance of at least six feet (6'). DO NOT locate any seams at wall/floor joints. Wall sheeting shall overlap floor sheeting by at least twelve inches (12") beyond the wall/floor joint to provide a better seal against water damage and for pressure differential maintenance. Wall sheeting shall be secured adequately to prevent it from falling away from the walls. This may require additional support/attachment when pressure differential systems are utilized.
11. Cover asbestos -containing ceilings in the work area with polyethylene sheeting if they are to remain or if these ceilings are non-asbestos-containing and will remain. Ceilings shall be covered with a minimum of two layers of 4 mil polyethylene sheeting. Plastic shall be sized to minimize seams. Seams shall be staggered and separated by a distance of at least six feet (6'). DO NOT locate seams at wall/ceiling joints. Ceiling sheeting shall overlap wall sheeting by at least twelve inches (12") beyond the ceiling/wall joint to provide a better seal against water damage and for pressure differential maintenance. Ceiling sheeting shall be secured adequately to prevent it from falling away from the walls. This may require additional support/attachment when pressure differential systems are utilized.
12. Asbestos Abatement Contractor is required to all remove nails, screws and/or other wall/ceiling material attachments.
13. Asbestos Abatement Contractor may not cut any sheer wall for any reason, without prior consent from the project Architect.
14. No damage will be permitted to studs that are to remain in place. Wall surfaces are to be peeled away, not pounded. The Contractor shall be financial responsible for any damage caused to studs.
15. Contractor is responsible for clean-up of all texturing and joint compound found on studs and rafter, as well as other surfaces behind, or inset into, the drywall materials.
16. Adhere to other requirements as stated in Sections 1-19, 21 and 22.
17. Following removal of all drywall, the contractor shall encapsulate the area with an encapsulate that is compatible with the reinstallation of wall and/or ceiling surfaces. The floors shall not be

encapsulated unless otherwise noted in the Scope of Work, or stipulated by the HMS, Inc. Project Manager.

### **Roof Work**

1. Contractor shall provide all necessary equipment, tools, materials, lighting, labor, etc. to perform the work. Sufficient lighting shall be provided to illuminate the entire removal and transit areas for removal of roofing material, and for the final visual inspection by the Owner's agent/site representative.
18. The Contractor shall provide worker safety according to all OSHA regulations (Title 8), including use of tie-offs, harnesses, and lanyards. Particular attention shall be given to the placement and securing of accesses (ladders, etc.) to the roof and for fall protection for those working near the perimeter of the roof.
19. All ladders used shall conform to Cal/OSHA requirements. The ladders shall extend at least three feet above the roof line, and shall be tied off to the building to prevent them from sliding.
20. The Contractor will be responsible for all clean-up and costs associated with the decontamination of interior spaces in the event of contamination of an interior space.
21. The Contractor is responsible for removal of asbestos containing silver painted roofing and mastic on the roofing system down to substrate as marked out by Mechanical Contractor.
22. The Contractor is responsible for obtaining all necessary permits to perform this work, including any local permits for work in the evening/night hours when applicable.
23. Removal of non-friable asbestos-containing roofing is designated as Class II work. Half-masks and disposable coveralls shall be used at a minimum by all workers, at all times, when within the regulated area.
24. No personnel will be allowed into the regulated area during actual removal work without proper respiratory and personal protective equipment. Work boots with hard soles are required to be worn by all Remediation personnel.
25. All materials must be removed wet by an amended water solution or encapsulant as necessary.
26. The contractor must HEPA vacuum the abated areas after roofing materials have been removed.

### **TSI/Duct Seam Tape**

1. Contractor shall establish a regulated area according to the requirements of 8 CCR1529 and as enhanced by this specification and the Scope of Work, including but not limited to the posting of the area and allowing on authorized personnel into the work area.
2. Half-masks and disposable suits (at a minimum) shall be used during this work.
3. The area shall be restricted to those personnel involved in the work, so posting of the accesses is required.
4. Where the pipewrap cannot be removed completely from penetrations in the walls, floors, or ceilings, the pipewrap shall be removed at least one inch into the opening and sealed with a bridging encapsulant to grade. The Contractor may choose to fill large gaps with fiberglass insulation, prior to sealing with the encapsulant.
5. The Contractor is responsible for salvage and decontamination of all support systems, hangers, brackets, saddles, etc. These items shall be inventoried by the Contractor, and verified by the Owner's agent/site representative before and after abatement. The Contractor will be responsible for replacement of any items lost or damaged.

- 6 The Contractor shall be responsible for ensuring the piping system remains adequately supported at all times. This may be achieved by readjusting existing hanger brackets as insulation is removed, or by other approved methods, such as inserting wood blocks to replace the thickness of the removed insulation.
7. All of the Contractor's materials, including poly sheeting, tape, joint compound, etc. shall be removed at the completion of the work performed.

### **2'x4' False Ceiling Panels**

1. The doors, windows, and penetrations into the rooms shall be sealed as critical barriers with 6-mil polyethylene. An attached three stage decon with operable shower is required.
2. Powered air purifying HEPA respirators, rubber boots, gloves, and disposable coveralls are to be used as a minimum for worker protection.
3. Shut down and lock out all heating, ventilating and air-conditioning-system (HVAC) components that are in, supply or pass through the work area. Seal all intake and exhaust vents in the work area with tape and two layers of 6-mil polyethylene within the work area (interior) and one layer of 6-mil poly on the exterior of the building. Also seal any seams in system components that pass through the work area. Remove all HVAC system filters and place in labeled 6-mil polyethylene bags for storing and eventual disposal as asbestos-contaminated waste.
4. The contractor must use care when removing the false ceiling panels. The tiles are extremely friable.

### ***Lead***

1. For interior work site preparation, one layer of 6-mil poly sheeting must be placed on the entire floor. However, the entire floor area need not be covered by poly for large interior areas where the disturbance of lead is limited to the perimeter of the area. If the entire floor area is not covered with poly, the poly must extend out a minimum of ten feet from those areas where lead will be disturbed. The poly sheeting must be secured to the floor using tape so there is no gap between the floor and the wall.
2. If individual rooms are being worked in, seal all doorways with a primitive airlock flap to prevent contamination of other areas of the building. Post Lead Warning Signs at the building exterior near main and all secondary entryways. All ventilation systems must be turned off or sealed off in the room or interior space where lead will be disturbed. Any exceptions to this must be approved by THE OWNER. Ventilation system ducts and/or registers must be sealed with poly if they are within 20 feet of the disturbance of lead even if they are turned off. If furniture or other equipment are to remain in place, cover with a single layer of poly sheeting. All cleanup of the work area shall be performed using a HEPA vacuum and wet washing techniques.
3. If scraping or sanding is to be performed, this work must be done using wet methods unless a vacuum recovery system is used that includes HEPA filtration.

See lead specifications requirements for additional information.

**No work at this site is considered “lead abatement,” at this point. Contractors are not to file form 8552 with CDPH unless lead hazards are created or encountered during the project. If lead hazards are created by the contractor (General, remediation or other sub) during the project, these must be abated by lead in construction certified workers and supervisors per CDPH Title 17 regulations.**

No high pressure or water blasting may be used for any portion of the asbestos abatement or lead remediation work. This includes final cleanup of the containment areas.

#### CLEARANCE AIR SAMPLES

Transmission Electron Microscopy (TEM) clearance air samples shall be collected from each asbestos containment and analyzed in accordance with AHERA protocol prior to work by other contractors. The contractor will be responsible for the costs of retaking clearance air samples (both sampling time and analysis costs) if the initial sampling set fails to meet requirements set forth by AHERA regulations. Cost of retaking clearance air samples is \$1,640 for TEM analysis.

HMS, Inc. may collect sufficiency of containment samples in order to provide evidence that lead work was properly contained by remediation contractor. The contractor will be responsible for costs associated with re-taking and analyzing any samples which show elevated levels of lead in dust. Cost of retaking sufficiency of containment samples will be \$300 for Atomic Absorption (AA) analysis.

#### ASBESTOS DISPOSAL

The contractor is responsible for all hazardous and non-hazardous disposal. Solano Community College can arrange a designated area for Contractors waste bins if necessary.

All waste bags shall have visibly damp materials, but shall not contain loose water. In the event loose water is discovered within a waste bag, it shall be absorbed with kitty litter, sawdust or similar product prior to the bag being sealed. If opening and re-sealing of bag is required, all work shall be performed inside the negative pressure containment.

All waste shall be double bagged in 6-mil polyethylene bags and sealed in a “gooseneck” fashion.

Drywall, 2'x4' false ceiling panels, TSI, and duct seam tape waste shall be considered friable, hazardous asbestos containing waste and require a hazardous waste manifest.

Contractor shall provide stick-on labels for bags that meet the Cal/OSHA, NESHAP, and DTSC requirements for hazardous and non-hazardous waste container labeling. Pre-labeled bags are acceptable, provided the labeling is sufficient for this project. Any missing or insufficient labeling on waste bags must be completed or corrected with stick on labels.

All asbestos waste, hazardous or not, shall be manifested. Non-hazardous waste shall be manifested on a non-hazardous waste manifest.

#### LEAD DISPOSAL

Lead waste streams shall be characterized by the abatement contractor and discarded as outlined in the Requirements for the Disturbance of Lead, based on the characterization result. Copies of laboratory results must be provided to HMS, Inc. or Kitchell project manager prior to disposal.

The contractor shall notify the Solano Community College or Kitchell at least 24 hours in advance of when the manifest must be signed. Under no circumstances will the contractor sign the manifest on behalf of Solano Community College.

## SECURITY/SAFETY

The contractor shall be responsible for the security of the containment and his equipment. For security purposes, plywood barriers shall be erected if exterior containments are used.

GFI's shall be used on all electrical equipment.

A copy of the contractor's safety meeting notes shall be given to the on-site HMS, Inc. or Kitchell project manager. Safety meetings shall be held at least once a week or as work practices change.

## WORKER PROTECTION

Workers shall wear half-face negative pressure respirators with P100 (HEPA) cartridges, except when removing drywall. Workers shall utilize powered air-purifying respirators (PAPR) during this removal process until personal air sample results show the workers are below the PEL for asbestos. Disposable coveralls such as Tyvek or equivalent shall be worn by all workers during all phases of this project.

## PREVAILING WAGE REQUIREMENTS

The asbestos abatement contractor is fully and totally responsible at all times for compliance with payment of prevailing wage rates pursuant to provisions of the California Labor Code, for compliance with Division 2, Part 7, Chapter 1, California Labor Code, including but not limited to Section 1776; and for compliance with California Labor Code, Section 1777.5 for all apprenticeable occupations.

## LIQUIDATED DAMAGES

Per Solano Community College contract.

Written by: Shannon Johanson, Cal/OSHA 12-4874, CDPH 24367

Date: September 11, 2014

Reviewed by: Harry Stevens, Cal/OSHA 95-1624, CDPH IA/S/M 2399

Date: September 11, 2014

## **GENERAL ASBESTOS REQUIREMENTS**

### **SECTION 1. DEFINITIONS**

**Abatement** - Procedures beyond a special operations and maintenance program to control fiber release from asbestos-containing materials. Includes removal, encapsulation, enclosure, repair.

**ACGIH** - American Conference of Governmental Industrial Hygienists

**AHERA** - Asbestos Hazard Emergency Response Act

**AIHA** - American Industrial Hygiene Association

**Air Filtration Device** - A portable exhaust system equipped with HEPA filtration and capable of maintaining a constant low velocity air flow into contaminated areas from adjacent uncontaminated areas. At a minimum, the air intake for the air filtration device, must have a pre-filter on it which can be changed within the containment area.

**Airlock** - A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area. The airlock shall consist of a minimum of two curtained Z-flap doorways separated by a distance of at least three (3) feet such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.

**Air Monitoring** - The process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure normally utilized for asbestos follows the NIOSH Standard Analytical Method for Asbestos in Air Method 7400. For clearance air monitoring, electron microscopy methods may be utilized for detection of smaller fibers and specific fiber identification.

**Air Sampling Professional** - The professional contracted or employed by the Owner to supervise and/or conduct air monitoring and analysis schemes. The air sampling professional must be a Cal/OSHA Certified Asbestos Consultant or Site Surveillance Technician. This individual shall not be affiliated in any way other with the contractor performing the abatement work.

**Ambient Air** - The air outside buildings and structures or the air as it normally exists in a space prior to abatement.

**Amended Water** - Water to which a surfactant has been added.

**ANSI** - American National Standards Institute

**Approval/Acceptance** - A written means of approving/accepting a product, containment set-up, work practice. Approval/Acceptance by HMS, Inc. Project Manager may be given verbally, if followed in written format. Failure of HMS, Inc. Project Manager to address an issue either verbally or in writing does not imply Approval/Acceptance.

**Asbestos** - Means the asbestiform varieties of serpentine (chrysotile), riebeckite (crocidolite), cummingtonite grunerite (amosite), anthophyllite, actinolite, and tremolite.

**Asbestos-Containing Construction Material (ACCM)** - Cal/OSHA term used to describe construction materials that contain asbestos in amounts greater than one-tenth of one percent (0.1%) either alone or mixed with fibrous or non-fibrous materials. With the exception of waste issues, for the purposes of this contract the terms ACM and ACCM shall be interchangeable.

**Asbestos-Containing Material (ACM)** - Term used by Cal/OSHA, and U.S. EPA to include any material containing more than one-percent (1%) asbestos. With the exception of waste issues, for the purposes of this contract the terms ACM and ACCM shall be interchangeable.

**Asbestos-Containing Hazardous Waste** - Materials defined by the State of California to be packaged, labeled, transported, and disposed of as an asbestos hazardous waste. This includes all friable asbestos-containing material over one-percent (1%) asbestos. This also includes all asbestos-containing material

containing less than one-percent asbestos for which one or more bulk samples have not been point counted and found to contain less than one-percent (1%) asbestos.

**Asbestos-Containing Waste Material** - Asbestos-containing material or asbestos-contaminated objects requiring disposal.

**Asbestos Project Manager** - An individual who is qualified by virtue of experience and education, designated as the Owner's representative and responsible for overseeing the asbestos abatement portion of the project. This person is generally the same as the HMS, Inc. Project Manager.

**ASTM** - American Society for Testing and Materials

**Authorized Visitor** - The Owner (and any designated representative) and any representative of a regulatory or other agency having jurisdiction over the project.

**Bagout Chamber** - See "Waste Load-out/Transfer System".

**Bidder** - A duly licensed and accredited asbestos contractor who has submitted a bid. If bid walk is mandatory, bidder must attend the walk in order for bid to be considered responsive.

**Cal/OSHA** - California Division of Occupational Safety and Health

**Certified Industrial Hygienist (CIH)** - An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.

**Cleaning Barriers** - Cleaning barriers are used in addition to critical barriers and are primarily to aid in the decontamination of the area after the completion of asbestos removal work. Cleaning barriers are normally comprised of plastic sheeting placed over non-asbestos-containing surfaces (e.g. wall, floors, ceilings, casework, etc.), and asbestos-containing surfaces not scheduled for removal, in the regulated area.

**Clean Room** - An uncontaminated area or room which is a part of the worker decontamination enclosure system with provisions for storage of workers' street clothes and clean protective equipment. Also, the term includes uncontaminated area or room of a Waste Transfer Airlock.

**Competent Person** - The Contractor's employee who meets the requirements of and is responsible for the activities of the Competent Person as described in Title 8 CCR 1529. The includes but is not limited to an individual who has current AHERA Contractor/Supervisor accreditation and has the responsibility and authority to ensure that the Contractor's employees comply with the contract documents and all relevant Cal/OSHA regulations.

**Containment** - The temporary isolation of the work area from the rest of the building to prevent escape of asbestos fibers.

**Contract Documents** - Written contractual agreements between the Owner and the Contractor that pertain to the work on this project.

**Contractor** - The Contractor is the person or entity identified as such in the Contract Documents; references to "Contractor" include the Contractor's authorized representative.

**Contractor/Supervisor** - A person who successfully completed an initial U.S. EPA and/or state-approved five-day AHERA-accreditation course and who has maintained that training through approved annual refresher training, and possesses current and valid AHERA-accreditation documentation as a AHERA-accredited Contractor/Supervisor

**Class I, II, III, or IV Work**- Work classes described in 8 CCR 1529 that describe different levels of asbestos work.

**Critical Barrier** - Critical Barriers used to restrict water and air flow. Critical Barriers are the barriers placed over openings in the walls and ceilings of a work area in order to ensure that airborne fibers cannot escape the work area via these openings. The Contractor will construct impermeable barriers at all exits or openings, including doorways, duct chases, mechanical shafts, elevator shafts, floor openings, drains, and the like, so that all possible exit or entrance routes are effectively barricaded and sealed. Unless otherwise specified in the Contract documents, critical barriers shall be constructed of at least one layer of 6-mil thick poly.

**Critical Barrier Negative Pressure Test** - Required test for negative pressure with only critical barriers and air filtration units installed. This test must be conducted prior to the installation of cleaning barriers, but may be conducted with or without the decontamination unit in place.

**Curtained Doorway, Z-Flapped** - A device to allow ingress or egress from one room to another while permitting minimal air movement between spaces (such as the various rooms of the decontamination chamber). Each Curtained Doorway will consist of three sheets of poly. The first barrier will be a sheet of poly covering the entire passage and taped to the ceiling, walls, and floor. This sheet will be slit vertically in order for the workers to pass through it. Another sheet of poly will cover the first sheet but be taped only to the ceiling (or top of the first barrier) and down one wall. The third sheet of poly will be placed on the opposite side of the slit poly from the second sheet. The third sheet of poly will be attached in a similar manner as the second sheet except the wall attachment will be to the opposite wall. Each barrier must be weighted at the bottom in order to ensure that it will lay flat against the slit sheet opening should the negative pressure system fail.

Other designs are permissible, if approved by the HMS, Inc. onsite project manager.

**Decontamination Enclosure System** - (Also known as Decon or Waste Transfer Decon) A series of connected rooms designed for the decontamination of workers and equipment that is separated from the work area and from each other by z-flapped curtained doorways. This unit shall be constructed with at least two layers of six-mil poly for the floors, walls, and ceiling. The floor of the dirty room shall consist of two layers of six-mil poly plus a third layer of poly, four-mil or thicker, to be used as a removable drop layer. Drop layer is to be removed as needed, but not less than daily. All decontamination enclosure systems used for worker entry and exit shall be equipped with a shower. At no time shall z-flaps of Decontaminations Enclosure System chambers be taped, held or otherwise blocked open.

**DOP** - Dioctylphthalate particles which are normally used as an agent for testing the efficiency of HEPA filters.

**Demolition** - The wrecking or taking out of any load-supporting structural member, casework, items or surfaces of a facility together with any related handling operations and disposal.

**Dust or Debris** - Material visible to the HMS, Inc. Project Manager. Dust and debris may be contaminated with asbestos, and may affect the asbestos work practices, containment or clearance air samples required on this project, whether contaminated with asbestos or not.

**Encapsulant, Bridging/Penetrating** - A liquid material which can be applied to asbestos-containing material to control the possible release of asbestos fibers from a material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

**Encapsulant, Lock-down** - A liquid product designed to mist the air within a contained area after the containment has passed visual clearance by the HMS, Inc. Project Manager. Lock-down encapsulant is designed to bind asbestos fibers together and to create a tacky surface causing non-visible asbestos fibers, settling out of the air, to adhere to containment poly.

**EPA** - U.S. Environmental Protection Agency

**Equipment Decontamination Enclosure System** - That portion of a decontamination enclosure system designed for controlled transfer of materials and equipment into or out of the work area, consisting of a clean room, washroom and holding area.

**Equipment Room** - A contaminated area or room which is part of the worker/equipment decontamination enclosure system with provisions for storage of contaminated clothing and equipment.

**Exterior of Containment HEPA Filtered Pressure Differential Unit** - An air-purifying unit positioned outside, rather than inside the regulated work area. The face, or filter portion of the unit is integrated within the work area, and the remainder of the unit (housing, wheels, rivets, control panel, etc.) is located outside of the work area. This allows filters on the air intake to be changed from within the regulated area but access to the machine itself is available to those outside the area. Pressure differential units which pass DOP testing across the HEPA filter, but fail at rivets, control panels, wheels, etc. may be used in this fashion as long as the failure point of the unit can remain on the exterior of containment while the face of the unit and filters are inside containment.

**Facility** - Any institutional, commercial or industrial structure, installation, or building.

**Facility Component** - Any item (pipe, duct, boiler, tank, reactor, turbine, furnace, etc.) at or in a facility, any portion of a facility or any structural member in or at a facility.

**Federal OSHA** or **OSHA** - Federal Occupational Safety and Health Administration.

**Fixed object** - A piece of equipment or furniture in the work area which cannot be removed, or will not be removed by Owner's decision, from the work area.

**Friable asbestos** - Asbestos-containing material which, when dry, can be crumbled to dust by hand pressure.

**Glovebag Technique** - A method with limited applications for removing small amounts of friable asbestos-containing materials from ducts, short piping runs, valves, joints, elbows, and other non-planar surfaces. The glovebag assembly is a manufactured or fabricated device consisting of a glovebag (typically constructed of 6 mil transparent polyethylene or polyvinylchloride plastic), two inward projecting long sleeves, an internal tool pouch, and an attached, labeled receptacle for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process. Glovebags must meet the specification requirements for glovebags as listed in 8 CCR 1529.

All workers who are permitted to use the glovebag technique must be highly trained, experienced and skilled in this method. All techniques and procedures employed by the contractor shall be approved by the HMS, Inc. Project Manager.

**HVAC** - Heating, ventilation and air conditioning system.

**HEPA Filter** - A high efficiency particulate air filter capable of removing particles 0.3 microns in diameter from an air stream with 99.97% efficiency.

**HEPA Vacuum** - A vacuum system equipped with HEPA filtration.

**HMS, Inc. Project Manager** - An individual, employed by (or sub contracted to) Hazard Management Services, Inc., who is qualified by virtue of experience and education, designated as the Owner's representative and responsible for overseeing the asbestos abatement, and/or other activities.

**Holding Area** - A clean space where clean supplies and equipment are stored before being placed into containment. Also, a contaminated space, adjacent to a shower or equipment washing chamber, where dirty equipment or packaged waste is stored prior to removal from containment.

**Load-out Chamber System** - See "Waste Load-out/Transfer System".

**Lock-down** - To mist the air and to wet surfaces with an agent designed to bind asbestos fibers together and to create a tacky surface causing non-visible asbestos fibers, settling out of the air, to adhere to containment poly.

**Magnehelic Gauge** - Instrument for measuring the static air-pressure differential across a barrier.

**Manometer** - See "Magnehelic gauge". This project requires at least one properly calibrated and fully functioning recording manometer.

**Mil** - An abbreviation for millimeter. Generally used when referring to the thickness of plastic (poly) sheeting used to contain the regulated area.

**Mini-Enclosures** - Mini-enclosures may be used where glovebag setups are not feasible. The use of them must be approved by the HMS, Inc. Project Manager. Mini-enclosures shall be constructed of six-mil polyethylene (attached with tape and/or glue to walls and floors) and shall be small enough for a maximum of two workers who can enter the enclosure one time, complete the abatement exercise, pass out the containerized debris and exit. The workers shall have available a change room contiguous to the work area where they can remove their coveralls prior to leaving the area.

**Monitoring** - May include:

- a) Visual inspection for the presence of visible emissions; or
- b) Air monitoring performed in accordance with accepted methods;
- c) Collecting core samples of encapsulated or bridged materials.
- d) Collecting other bulk samples during and following abatement.
- e) Sampling substrata following abatement.

- f) Inspection of abatement contractor's, and contractor's employees, work practices for compliance to these and other specifications and applicable regulations.

**Movable object** - An unattached piece of equipment or furniture in the work area which can be removed from the work area.

**NVLAP** - National Voluntary Laboratory Accreditation Program.

**NESHAP** - The National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61, Nov. 20, 1990)

**NIOSH** - The National Institute for Occupational Safety and Health

**Outside Air** - The air outside of containment.

**Owner** - The Owner includes the individual or entity that owns the property and, unless otherwise stated, the Owner's authorized representatives, including the HMS, Inc. Project Manager, the Owner's Board of Trustees and the Owner's officers, employees, agents and representatives.

**PCM** - Phase contrast microscopy according to NIOSH Method 7400.

**Poly** - Polyethylene sheeting.

*Note: All poly on this project must be flame-retardant.*

**Pressure Differential Unit (PDU)** - See "Air Filtration Device" Also known as "Negative Air Machine" or "Hog".

**Pre-start Meeting** - Meeting held before the beginning of the project in which final details of the project are discussed and Contractor provides Project Monitor with pre-job submittal packet.

**Prior experience** - Experience required of the contractor on asbestos projects of similar nature and scope to ensure capability of performing the asbestos abatement in a satisfactory manner. Similarities shall be in areas related to material composition, project size, abatement methods required, number of employees and the engineering, work practice and personal protection controls required.

**Project Manager/Project Monitor** - See "Asbestos Project Manager" or "HMS, Inc. Project Manager."

**Regulated Area** - An area established by a contractor to demarcate areas where the contractor's employees may conduct Class 1, 2, or 3 work as described in 8 CCR 1529 or airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the permissible exposure limit.

Additionally, "regulated area" means any measure used to restrict access to an area where personnel impacting asbestos-containing materials are required to wear respiratory protection and/or protective clothing by the project specifications, or applicable regulations, regardless of airborne asbestos concentration levels.

**Regulations** - shall include all relevant federal, state, and local regulations including but not limited to:

- a. U.S. Environmental Protection Agency Regulations for Asbestos (Title 40, Code of Federal Regulations, Part 61, Subparts A & B)
- b. Title 8, Chapter 4, Subchapters 1 through 21, California Administrative Code, General Industry Safety orders, Section 5208 "Asbestos" or the applicable sections of the Federal Asbestos Regulations. Cal/OSHA Construction Safety Orders, Section 1529.
- c. "Asbestos Hazard Emergency Response Act", U. S. Environmental Protection Agency, 40 CFR, Part 763. Final Rule and Notice.
- d. Applicable local county Air Pollution Control Districts and Air Quality Management Districts.

**Removal** - The stripping of any asbestos-containing materials from surfaces, substrates or components of a facility. As per various regulations, the ground is considered a substrate.

**Regulated Area**- An area where asbestos-containing materials are going to be disturbed and may release asbestos fibers into the air and whose entrances have been posted. A regulated area is required for all Class I, II, or III work as described in 8 CCR 1529 or whenever the work may release asbestos in concentrations over the OSHA Permissible Exposure Limit (PEL) or Excursion Limit.

**Renovation** - Altering in any way one or more facility components.

**Scope of Work** - Job specific information and specifications used in combination with these Asbestos General Requirements. If conflicts exist between the Scope of Work and these specifications, the stricter requirement

will be enforced unless the conflict is specifically addressed in writing in the Scope of Work for this project.

**Shower Room** - A room between the clean room and the equipment room in the decontamination enclosure with hot and cold or warm running water controllable at the tap and suitably arranged for complete showering during decontamination. The shower room must be equipped with an overflow pan to contain water splashed, leaked or spilled out of the shower unit.

**Staging Area** - The secured area outside of containment where clean equipment and supplies are stored. Waste must not be stored within the staging area unless placed within an additional lockable container or area approved by the HMS, Inc. Project Manager.

**Strip** - To take off friable asbestos materials from any part of a facility.

**Structural Member** - Any load-supporting member of a facility, such as beams and load-supporting walls or any non-load-supporting member, such as ceilings and non-load supporting walls.

**Submittals** - Pre, in-progress and post job documents submitted by contractor to Owner's representative as indicated in General Requirements and Bidding Requirements.

**Surfactant** - A chemical wetting agent added to water to improve penetration.

**Temporary Enclosure System** - A system by where the regulated work area is isolated from the rest of the building or structure in a manner that prevents the escape of airborne asbestos fibers. Also see "Containment"

**TEM** - Transmission Electron Microscopy according to AHERA specifications for Level II analysis on all AHERA projects. Non-AHERA projects may employ other levels of TEM analysis.

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

**Waste Load-out/Transfer System** - A decontamination system utilized for transferring containerized waste from inside to outside of the work area. A series of three connected rooms used for the load-out of asbestos-containing materials that have been properly containerized. The waste loadout chamber system shall normally consist of three connected chambers adjacent to the work area. Each chamber shall be constructed with at least two layers of six-mil thick poly for the floors, walls, and ceiling. The chamber located closest to the work area is known as the dirty chamber, and in addition to the two layers of six-mil thick poly on the floor, shall also have a third layer of poly, four-mil or thicker, to be used as a removable drop layer. The drop layer is to be removed as needed but at least daily. The chamber located closest to the outside the work area is known as the clean chamber. See Section 15 for proper use of waste Load-out/Transfer System.

**Wet cleaning** - The process of eliminating asbestos contamination and visible dust and debris from building surfaces and objects by using cloths, mops, or other utensils which have been dampened with water and afterwards thoroughly decontaminating them or disposing of them as asbestos contaminated waste.

**Work area** - Designated rooms, spaces, or areas of the project in which asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area or temporary enclosure is a work area that is isolated from the rest of the facility by the use of critical barriers and cleaning barriers, a decontamination system, and additional means of signs and barriers to reduce access by unauthorized persons. A contained work area is a work area which has been sealed, polyed, and equipped with a decontamination enclosure system. The work area includes all decontamination chambers, waste transfer system and the abatement area. A non-contained work area is an isolated or controlled-access work area which has not had poly installed nor been equipped with a decontamination enclosure system.

**Worker** - A person who successfully completed an initial U.S. EPA and/or state-approved four-day AHERA-accreditation course and who has maintained that training through approved annual refresher training, and possesses current and valid AHERA-accreditation documentation as a AHERA-accredited asbestos worker.

**SECTION 2. NOTIFICATIONS, SUBMISSIONS, POSTINGS**

**2.1 Site Investigations**

By submitting a bid to the primary contractor, and being listed by the primary contractor as the sub-contractor for asbestos related work, the asbestos abatement contractor acknowledges that they have investigated and satisfied themselves as to:

A) the conditions affecting the work, including but not limited to, physical conditions of the site which may bear upon site access, handling, and storage of tools and materials, access to water, electric, or other utilities, or otherwise affect performance of required activities

B) the character and quality of all surface and subsurface materials or obstacles to be encountered, in so far as, this information is reasonably ascertainable from an inspection of the site, including exploratory work done by the Solano Community College or a designated consultant, as well as, information presented in drawings and specifications included with this contract. Any failure by the asbestos abatement contractor to acquaint themselves with available information will not relieve them from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The owner is not responsible for any conclusions or interpretations made by the asbestos abatement contractor on the basis of the information made available by Solano Community College District.

**2.2 Notification**

Prior to commencement of work the Contractor shall send notices of the work to be completed to the agencies listed below with a copy of each to be provided to the Owner or its representative at the pre-start meeting.

For compliance with 40 CFR part 61.146 of Subpart M, send notice at least ten (10) working days prior to start of work to the all of the following appropriate agencies:

EPA, Region 9 Asbestos Program Enforcement 75 Hawthorne Street San Francisco, CA 94105	Chief Compliance Division California Air Resources Board P.O. Box 2815 Sacramento, CA 95812 (for non-EPA delegated counties)
Local Air Pollution Control District (APCD) or Local Air Quality Management District (AQMD)	

For compliance with 8 CCR 1529 and 8 CCR 5203, send written notice at least one day prior to start of work to:

State of California  
Department of Occupational Safety and Health  
District Office

These notices shall include, at a minimum, the name and address of the contractor, the name and address of the worksite, the type of work to be done including the percent asbestos content of the material, the methods used to prevent migration of the fibers, personal protective measures, the number of his workers involved, any union representation of the workers and the methods of disposal including the names and EPA numbers of both the certified hauler and the waste disposal site. The notices shall also include start and finish dates. Changes in start and completion dates shall be reported immediately to the proper agency. Use forms provided by agency whenever possible.

**2.3 Prestart Submittals - Contractor**

Submit copies of documents required per below:

- a. Copy of State of California CSLB Active License
- b. Copy of State of California CSLB Asbestos Certification
- c. Copy of Department of Industrial Relations; Division of Occupational Safety and Health; Certificate of Registration for Asbestos-related Work

- d. The asbestos abatement contractor shall submit a statement, signed by an officer of the company, containing the following information:
  1. A record of any citations issued by Federal, State, or Local regulatory agencies within the last 3 years, relating to asbestos abatement activity. Include projects, dates, and resolutions.
  2. A list of penalties incurred through non-compliance with asbestos abatement project specifications, including liquidated damages, overruns in scheduled time limitations, and resolutions.
  3. Situations in which an asbestos-related contract has been terminated including projects, dates, and reasons for terminations.
  4. A list of any asbestos-related legal proceedings/claims in which the Contractor (or employees scheduled to participate in this project) has participated or is currently involved. Include descriptions or role, issue, and resolution to date.

Submit copies of notifications to government agencies.

Submit proof satisfactory to the Owner that required permits have been acquired applicable to the project being performed and specific to the project site and location. If no city, county, or other permits for parking, waste bin location, or variances for scheduled work hours are required, this should be stated in writing and submitted to the Owner.

Submit Subcontractors information or statement that subcontractors will not be required or used during this project. This statement should also include that if it becomes necessary to use a subcontractor during this project that the subcontractor will not be allowed to perform work until all required documentation has been submitted for review by the Owner or HMS, Inc., and the Contractor receives written approval for use of the subcontractor on this project.

Submit a complete list of all rented equipment, or equipment expected to be rented from an outside contractor for use in "Regulated Areas," "Work Areas," or "Containments," where the equipment may be exposed to elevated levels of airborne asbestos. If no equipment is to be rented a statement should be submitted stating no rental equipment will be used on the project. The statement should also include that, if it becomes necessary to use rented equipment, written statements from each rental company will be provided to the Owner prior to its use, indicating the rental company's acknowledgment that the equipment is provided for and may be used in areas where airborne levels of asbestos may be present.

Submit non-emergency telephone numbers, other than 911, for the appropriate Police, Sheriff, and Fire Departments. This list of numbers shall also include the name, pager or cell phone numbers of the onsite supervisor and his immediate company supervisor.

Submit detailed written directions from the project site to the medical facility to be used in case of an emergency. Also include a map which sufficiently shows the route to be taken from the site to the designated medical facility.

Submit written emergency procedures pertinent to the work to be performed and which can be implemented by site personnel if the need arises.

Submit detailed information on preparation of work area, personal protective equipment, employee experience, training and assigned responsibilities during the project. Also list decontamination procedures for personnel, work area and equipment, abatement methods and procedures, required air monitoring program, procedures for handling and disposing of waste materials and procedures for final decontamination and cleanup.

Submit a detailed work schedule. The schedule shall have, as a minimum, the work area and the day/month for beginning and terminating work in each work area. During progress of work, it shall be the Contractor's responsibility to keep the schedule current and up to date.

Submit to the Owner shop drawings, on projects where requested in the Scope of Work, for layout and construction of decontamination enclosure systems and barriers for isolation of the work area as detailed in this specification and required by applicable regulations.

Submit documentation satisfactory to the Owner that the Contractor's employees, including foremen, supervisor, and any other company personnel or agents who may be exposed to airborne asbestos fibers or who may be responsible for any aspects of abatement activities, have received required US EPA AHERA training.

Submit documentation from physician that all employees or agents who may be exposed to airborne asbestos in excess of background levels, action level, or the PEL have been provided with an opportunity to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects. In addition, document that personnel have received medical monitoring as required by Cal/OSHA regulations. The Contractor must be aware of and provide information to the examining physician about unusual conditions in the workplace environment (e.g., high temperatures, humidity, chemical contaminants) that may impact on the employee's ability to perform work activities.

Submit documentation of respirator fit-testing for all Contractor employees and agents who must enter any work area where asbestos-containing materials may or will be impacted. This fit-testing shall be in accordance with qualitative or quantitative procedures as required by OSHA regulations or be quantitative in nature.

Documentation pertaining to NIOSH approvals for all respiratory protective devices utilized on site shall also be included.

Submit copy of waste transporters Department of Toxic Substances Control, Hazardous Waste Transporter Registration if hazardous asbestos-containing waste is to be removed during the project. If hazardous asbestos-containing waste will not be generated submit the name, address, and registration information for the waste hauler to be used for transporting the waste.

Submit documentation listing the name and site address of the waste facility designated to receive asbestos-containing waste generated during this project. This documentation shall also include the EPA identification number, and a copy of the current permit authorizing the waste facility to accept and dispose of asbestos-containing waste.

Submit Material Safety Data Sheets (MSDS) for any and all applicable materials, supplies, etc. These documents must be legible and completely reveal information required to be communicated to the Contractor's employees, visitors, and Owner Representatives.

Submit manufacturers' certifications that high efficiency particulate air (HEPA) vacuums, pressure differential units and other local exhaust ventilation equipment conform to ANSI Z9.2-79.

Submit name of laboratory/person to be used for Phase Contrast Microscopy (PCM) analysis and copy of current NVLAP Certificate of Accreditation (if applicable), and most recent NIOSH Proficiency Analytical Testing Program results.

Submit a written statement that OSHA monitoring will be performed for all asbestos-related activities performed during this project. This statement must be on company letterhead, dated, include name of the site or project being worked on, and signed by an authorized agent of the company performing the asbestos-related work.

Submit manufacturer's documentation pertaining to the capability of waste water filters to filter particles of 1.0 micron in size.

With the Owner's representative, inspect the premises wherein all abatement and abatement related activities will occur and submit a statement signed by both, agreeing on building and fixture condition prior to the commencement of work.

Submit a copy of the pre-start safety meeting, held prior to start of abatement, which has been signed by all contractor employees working or visiting this project.

Submit a copy of the contractor's written Respiratory Protection Program.

All other submittal documents listed in the "Bidding Requirements" and "Bid, Prestart & Post Job Submittal List".

Submit each of the following and other pre-abatement documents required above, unless exempted in the scope of work or the bidding requirements, prior to the start of abatement:

- \_\_\_\_\_ Name and number of transporter
- \_\_\_\_\_ Name and EPA number of Hazardous Waste Site
- \_\_\_\_\_ Notification to EPA-NESHAPS (when required)
- \_\_\_\_\_ Notification to Regional Air Resource Board (when required)
- \_\_\_\_\_ Notification to local APCD or AQMD
- \_\_\_\_\_ Notification to CAL/OSHA (prior to start)
- \_\_\_\_\_ Notification to local police
- \_\_\_\_\_ Notification to fire department
- \_\_\_\_\_ Notification to emergency medical facility
- \_\_\_\_\_ City permits e.g. parking or dumpster (when required)
- \_\_\_\_\_ Written emergency plans
- \_\_\_\_\_ Schedule of work - changes
- \_\_\_\_\_ Equipment list, MSDS for all materials used on project, including but not limited to, spray glue, encapsulants, wetting agents, mastic remover, etc..
- \_\_\_\_\_ Shop drawings of decon and containment describing in detail a layout of work plan if different from those specified herein.
- \_\_\_\_\_ Training records - AHERA (Supervisor and worker)\*
- \_\_\_\_\_ Respiratory fit tests for each employee\*
- \_\_\_\_\_ Medical records for each employee\*
- \_\_\_\_\_ Written Respiratory Protection Program.
- \_\_\_\_\_ Written Storm Water Protection Plan.

Note\* No contractor worker will be allowed inside containment prior to verification of AHERA, respirator and medical documentation. This verification must either be onsite or faxed to HMS, Inc.'s office prior to entry.

### **2.31 Prestart Submittals - Owner**

Owner shall provide to the Contractor prior to commencement of work:

- a. Any available pre-abatement air sampling data to Contractor.
- b. List of Owner's employees/agents who will or may require worksite access.
- c. Data on equipment access protection and/or shutdown procedures.

### **2.4 Submittals During the Work Process**

#### **The following documentation shall be submitted to the HMS, Inc. Project Manager:**

The contractor shall submit daily - copies of work site entry/exit logbooks with information on worker and visitor access.

The contractor shall submit daily - a copy of a one-page summary of job progress. This summary must include the names of all employees onsite, the hours worked and a brief description of the work completed at the site(s). This summary is in addition to the daily documentation required to be submitted by OSHA and AHERA regulations and other HMS, Inc. specifications.

The contractor shall submit daily - copies of the air-differential manometer readings (see Section 12)

The contractor shall submit results of air sampling data collected during the course of the abatement including OSHA compliance air monitoring results. Contractor shall submit sample results within 72 hours of collection of the samples for samples to be considered valid indicators of employee exposures within containment. Lack of valid exposure assessments may, at HMS, Inc. Project Manager's discretion, result in the contractor being required to raise worker personal protection levels.

The contractor shall submit copies of HEPA-filter change log.

Submit weekly copy of on-site safety meeting documentation. Each safety meeting must be signed by all employees working on the project for that week.

During abatement the Owner shall submit to the Contractor results of bulk material analyses and air sampling data collected during the course of the abatement. These serve only to monitor Contractor performance during the project.

The contractor shall submit copies of all transport manifests, trip tickets, weights and disposal receipts for all asbestos waste materials removed from the work area during the abatement process.

### **2.5 Clean-Room Area Postings**

Postings may be in a prominent area adjacent to the clean room, but must be visible to workers entering and exiting the containment.

List of persons authorized to enter restricted area. The list shall include, among others, the following names with addresses and phone numbers:

Contractor	Testing Laboratory
Air-sampling Professional	Owner's representatives
Asbestos Project Manager	Any other designated by the Owner
Regulatory Agency Personnel	

A copy of the daily entry/exit log book shall be maintained in the clean room area of the worker decontamination system and provided to the HMS, Inc. Project Manager weekly or as otherwise requested.

Telephone numbers, other than 911, of all emergency response personnel shall be prominently posted in the clean change area and equipment room. The locations of the nearest telephones shall be indicated on a map or diagram.

Written emergency procedures shall be posted in the clean room.

Written entry/exit procedures shall be posted in the clean room and equipment room. (See Section 9)

All of the contractor's personnel and area air sampling results shall be posted in the clean room area within 72 hours of collection, unless otherwise noted.

A copy of the CAL-OSHA and EPA or Local APCD notification shall be posted in the clean room area.

A CAL-OSHA Information poster and a CAL-OSHA Construction Site poster shall be posted in the clean room area.

Copies of Material Safety Data Sheets (MSDS) for all materials onsite shall be posted in the clean room area. Bag out/load out/waste transfer procedures must be listed in writing at the load out exit.

A copy of the contractor's written Respiratory Protection Program.

## **2.6 Job Site Documents**

The following shall be available at each job site:

1. List of all AHERA-accredited workers and supervisors entering the regulated area.
2. An updated list of all contractor and subcontractor employees who have worked on this job.
3. All contract specifications, Scope of Work, addendums, change orders, etc.  
Contractor competent person must sign a document stating he has full knowledge of the Scope of Work and contract specifications.
4. Written Injury and Illness Prevention Program.
5. Training records.
6. Medical records.
7. Written Respiratory Protection Program
8. Fit test records for all contractor employees

## **2.7 Project Close-out Documentation and Submittals**

The Contractor shall generate a demolition "as built" drawing detailing all walls, floors, ceilings, mechanical items, plumbing, wiring and structural components which were removed, to what extent each of these items was removed (e.g. entire wall demolished from floor to ceiling), and in what areas. The contractor must provide this drawing to the Owner and HMS, Inc. at the conclusion of the interior asbestos abatement activities when required in the Scope of Work or requested by HMS, Inc. or Owner. Digital pictures of remaining conditions would be helpful, but are not required.

Unless submitted during the project, the Contractor shall submit the following post-job submittals to the Owner within thirty (30) days of the completion of asbestos abatement work.

- \_\_\_\_\_ Copies of revised notifications to regulatory agencies.
- \_\_\_\_\_ Receipts and weight tickets from the landfill operator acknowledging the Contractor's delivery of wastes and including dates, container types and quantities, and tarred weights of material delivered, and all appropriate signatures.
- \_\_\_\_\_ A copy of the worker/visitor log showing the following for all persons entering the work area: date, name, social security number, entering and leaving times, company or agency represented, and reason for entry. The contractor's time records will not be accepted in lieu of a worker/visitor log. Include a signed cover sheet certifying that the copy is a complete copy of the log from the job.
- \_\_\_\_\_ Copies of all accident reports submitted during the course of work.
- \_\_\_\_\_ A copy of worker exposure monitoring results collected in compliance with DOSH regulations (Title 8 CCR, Section 1529) including daily/representative/full-shift/breathing-zone air samples and 30-minute excursion samples. Include a cover sheet signed by an authorized representative of the testing laboratory performing the work, indicating that the data is complete and accurate.
- \_\_\_\_\_ Information on all new workers not covered by the pre-job submittals.
- \_\_\_\_\_ If applicable, a copy of the asbestos waste documentation showing dates, times, manifest numbers, quantities of wastes, types of containers removed from the work area, the hauler, and the signature of the recorder.
- \_\_\_\_\_ A Land Disposal Restrictions Notification and Certification.
- \_\_\_\_\_ Completed Uniform Hazardous Waste forms including information required for the Waste Shipment Record.
- \_\_\_\_\_ A complete record of the air filtration devices used certifying DOP testing (if performed) and printed record, indicating continuous operation and documenting differential air pressure.
- \_\_\_\_\_ All submittals required before, during, or after the project that have not been submitted must be received by HMS, Inc. prior to HMS, Inc. signing off on contractors final payment or pay retention release.
- \_\_\_\_\_ Copies of Prevailing Wage Certification Records

## **SECTION 3. SITE SECURITY**

The regulated area shall be restricted to authorized, trained personnel wearing appropriate personal protective equipment.

If required in the Scope of Work and whenever an entire building is placed under containment, the work area(s) under construction must be isolated from the remainder of the property and/or adjacent properties with temporary chain link fencing. This fencing does not eliminate or reduce plywood barrier requirements for any portion of containment that exists on exteriors of buildings. Temporary fencing must be supported at least once every section of fencing by concrete block or equivalent.

Unless exempted in the Scope of Work any portion of containment on the exterior of the buildings must be protected by a burglar resistant, lockable plywood structure. This structure must have a roof and be at

least 8 feet tall. This plywood barrier must be solid plywood and be constructed in a manner sufficient to withstand expected weather conditions (i.e. wind, rain, etc.). A soffit overhang may be used for the roof of this structure, barrier walls must extend completely up to soffit overhang ceiling.

Entry into the work area by unauthorized individuals shall be reported immediately to the Owner by the Contractor.

A log book shall be maintained in the clean room area of the worker decontamination system. Anyone who enters the work areas must record name, affiliation, time in, and time out for each entry. A copy of the daily log shall be provided to the HMS, Inc. Project Manager daily or as otherwise requested.

Access to the work area shall be through a worker decontamination system. All other means of access (doors, windows, hallways, etc.) shall be blocked or locked so as to prevent entry to or exit from the work area. The only exceptions for this rule are the waste loadout air-lock, and emergency exits in case of fire or accident.

Emergency exits shall NOT be locked, however, they shall be sealed with polyethylene sheeting and tape until needed. These emergency exits shall be clearly designated. They shall also have a razor knife permanently in place to facilitate emergency exit.

Contractor should have control of site security during abatement operations, in order to protect work efforts and equipment. During off-hours access to the abatement area shall be restricted by a lockable entry.

Contractor will have Owner's assistance in the enforcement of restricted access by Owner's employees.

Storage of asbestos containing debris, hazardous or not, will be such that access to it is limited to the contractor. Lockable bins shall be utilized and they shall be locked at all times except when loading occurs. No soft covers will be allowed for any storage bins.

All Owner policies and procedures regarding site security and safety shall be strictly adhered to by the Contractor.

Keys and/or lock combinations to all lockable enclosures and waste bins must be provided to the HMS, Inc. Project Manager prior to the start of abatement.

#### **SECTION 4. EMERGENCY PLANNING**

Emergency planning and procedures shall be developed by the Contractor prior to abatement initiation and agreed to by Contractor and Owner.

Emergency procedures shall be established and presented to all employees and the HMS, Inc. Project Manager prior to the beginning of any work. A written emergency plan must be posted.

Emergency planning shall include written notification of police, fire, and emergency medical personnel of planned abatement activities, work schedule and layout of work area, particularly barriers that may affect response capabilities. Emergency planning shall include considerations of fire, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, and heat related injury. A copy of the written Injury and Illness Prevention Program shall be on the work site.

Employees shall be trained in evacuation procedures in the event of workplace emergencies. Telephone numbers of all emergency response personnel shall be prominently posted in the clean change area and equipment room, along with the locations of the nearest telephone indicated on a map or diagram.

At least two fire extinguishers shall be present on site. At least one fire extinguisher shall be present outside of the containment. Additional extinguishers shall be distributed according to Cal/OSHA requirements or as identified in the Scope of Work.

At least one fire extinguisher shall be present inside containment.

An emergency blast horn shall be placed inside of any containment comprising more than a single building space for emergency evacuation in the event of a fire or other emergency.

If required in the Scope of Work, a means of radio communication shall be established between inside and outside of containment whenever a containment has a section(s) not directly visible from a clear-sight view window. This requirement may be met through walkie talkies or by wired communication systems. HMS, Inc. project monitor is to be given a communication device tied into communication system used by the contractors crew.

The contractor shall clearly mark emergency egress routes in brightly colored spray paint, tape, or equivalent, within the containment area. When required by the specification, or deemed necessary by the HMS, Inc. Project Manager, the contractor shall station flashlights throughout the work area to be used in the advent of an electrical power outage. Tools that can be used to cut containment poly must be placed at each emergency egress location.

Emergency exit signs, and arrows painted, taped or otherwise marked shall be located approximately three feet from the floor level. This will make signs visible for standing workers as well as workers required to crawl to emergency egress location.

In the event of a power and/or water interruption all abatement work, other than cleanup of debris on the ground, is to stop. Work disturbing asbestos cannot continue until the power and/or water is restored or the Project Manager authorizes emergency procedures

During hot working conditions, such as in an attic space during summer, or in containments where live steam or hot water lines are exposed, special attention must be given to the possibility of heat stress and burns.

In the case of fire, or other life threatening situations, all decontamination requirements are null and void. Immediate preservation of life takes precedence over decontamination requirements.

If emergency personnel (fire, police, paramedics, etc.) are called to the project site, they must be informed of the fact that the project is an asbestos abatement project and whether containment has been established and/or breached.

## SECTION 5. PRE-START MEETING (See also Section 2)

The successful Bidder, his on-site supervisory personnel, and Air Sampling Professional (if applicable), representatives of the Owner, Owner's Asbestos Project Manager, and other individuals as necessary shall be present at a pre-start meeting **TIME AND PLACE TO BE DETERMINED**.

Responsibility for notification of building occupants regarding impending activity shall be determined at this meeting.

At this meeting the Contractor shall provide all required submittals, as indicated in Section 2, Part 2.3.

The Contractor's supervisory personnel must be given a complete copy of the Scope of Work, and attached abatement specifications (including these Asbestos General Requirements), and must be familiar with them prior to the pre-start meeting. Delays caused by an onsite contractor foreman not being familiar with the requirements of these specifications will not extend the Contractor's completion date.

In addition, contractor shall be prepared to provide detailed information on preparation of work area, personal protective equipment, employee experience, training and assigned responsibilities during the project. Contractor must also be prepared to discuss decontamination procedures for personnel, work area and equipment, abatement methods and procedures, required air monitoring program, procedures for handling and disposing of waste materials and procedures for final decontamination and cleanup. A sequence of work and performance schedule, procedures for dealing with heat stress and emergency procedures shall also be submitted.

If applicable, a detailed work-area-by-work-area schedule must be submitted at this time. The schedule shall have, at a minimum, the work area and the day/month for beginning and terminating work in each work area. During progress of work, it shall be the contractor's responsibility to keep the schedule current and up to date.

## SECTION 6. MATERIALS AND EQUIPMENT

### 6.1 CONTRACTOR EQUIPMENT AND SUPPLIES

Deliver all consumable materials in the original packages, containers or bundles bearing the name of the manufacturer and brand name (where applicable). These must be approved by the Owner. Polyethylene (Poly) sheeting, 4-mil thick for walls and 6-mil thick for floors and all other uses, shall be provided in widths selected to minimize the frequency of joints.

All poly shall be flame-retardant, fire-rated poly. This includes all poly used for decon setups whether or not they are erected inside of the building.

Polyethylene sheeting utilized for worker decontamination enclosure shall be opaque white or black in color and each layer shall be a minimum of 6-mil thick. At least two layers shall be required. Modesty barriers are to be erected whenever and wherever the HMS, Inc. Project Manager determines one is needed.

Disposal bags shall be of 6-mil polyethylene with labels required by OSHA, DOHS, Toxic Substance Control regulations.

Disposal drums shall be metal or fiber board with locking ring tops to be used only if required and/or allowed by selected dumpsite.

Stick-on labels as per DTSC and OSHA requirements for disposal drums shall be provided.

Warning signs as required by OSHA shall be provided and posted per regulations.

Surfactant (wetting agent) shall be a 50/50 mixture of polyoxyethylene ether and polyoxethylene ester or equivalent, mixed and used according to the manufacturer's directions.

A sufficient quantity of pressure differential units equipped with HEPA filtration and operated in accordance with ANSI Z9.2-79 and EPA guidance document EPA 560/5-83-002 Guidance for Controlling Friable Asbestos-Containing Materials in Buildings, Appendix F: Recommended Specifications and Operating Procedures for the Use of Negative Pressure Systems for Asbestos Abatement, shall be utilized so as to meet the requirements of Section 12 of this specification.

All HEPA filtration equipment must be tested with DOP or an equivalent testing agent (see Section 12).

The contractor will provide adequate number of respirators for the work force. These respirators will include, when specified:

- a. Full face piece supplied air respirators with HEPA-filtered disconnects operated in positive pressure or pressure demand mode.
- b. Full face piece, tight-fitting, powered air-purifying respirators with HEPA-filters,
- c. Half mask or full face respirators with HEPA filters.

All respirators shall be NIOSH-approved and be equipped with supplies for immediate replacement of defective parts.

Contractor shall provide full-body disposable protective clothing, including head, body, and foot coverings, such as Tyvek, or equivalent, to all workers and authorized visitors in sizes adequate to accommodate movement without tearing. No street clothes, unless excepted by Scope of Work or other portions of this specification are allowed to be worn under disposable protective clothing.

The Contractor shall provide additional safety equipment (e.g., hard hats, eye protection, safety shoes, disposable PVC gloves), as necessary to all workers and authorized visitors

Non-skid footwear shall be provided to all abatement workers.

A sufficient supply of scaffolds, ladders, lifts and hand tools (e.g., scrapers, wire cutters, brushes, utility knives, wire saws, etc.) shall be provided as needed. Only fiberglass ladders shall be used within the work area. Wooden ladders and wooden handled tools shall not be allowed within the work area.

Rubber dustpans and rubber squeegees shall be provided for cleanup.

A sufficient supply of HEPA-filtered vacuum systems shall be available.

The HMS, Inc. Project Manager may require the use of additional equipment if he feels the number or amount of certain items or materials is not sufficient.

Vacuums and pressure differential units shall arrive on site sealed and free of debris. Pre-filters of all pressure differential units must be new and unused.

All product data sheets and all Material Safety Data sheets (MSDS) shall be submitted for all products and materials prior to their use on the job site.

All contractor equipment and supplies must arrive on site clean and dust free. Equipment must be inspected and accepted by HMS, Inc. Project Manager as it arrives onsite. Any equipment covered with dust (no matter the source of dust), plaster debris, multiple layers of encapsulant and/or spray glue, or any other debris will not be accepted. Chipped and or rusted equipment will not be accepted even if it is to be

used outside of containment. Delays caused by a lack of clean equipment will not extend Contractor's schedule.

Equipment rejected due to a lack of cleanliness must be removed from Owner's grounds in order to be cleaned. Dirty equipment wrapped in plastic will not be acceptable.

The decision of the Owner, HMS, Inc. Project Manager or the Owner's representative on all equipment and supplies shall be final.

## 6.2 RENTAL EQUIPMENT AND SUPPLIES

Any equipment rented and delivered to the site for the purpose of conducting asbestos abatement work must be accompanied with documentation verifying that the rental agency has been notified, and acknowledges receipt of notification that the equipment being rented will be used for asbestos abatement work. This documentation must be submitted to the HMS, Inc. Project Manager prior to the equipment being delivered to the job site. Rental equipment, including scaffolding, will be held to the same standard of cleanliness as all other equipment on this project.

All rented equipment must be inspected and accepted by HMS, Inc. Project Manager as it arrives onsite. Any equipment covered with dust (no matter the source of dust), plaster debris, multiple layers of encapsulant and/or spray glue, or any other debris will not be accepted. Delays caused by a lack of clean equipment will not extend Contractor's schedule. Equipment rejected due to a lack of cleanliness must be removed from Owner's grounds in order to be cleaned. Dirty equipment wrapped in plastic will not be acceptable.

The HMS, Inc. Project Manager must be informed 24 hours prior to the delivery of any rental equipment.

The decision of the Owner, HMS, Inc. Project Manager or the Owner's representative on all rental equipment and supplies shall be final.

## SECTION 7. WORK SITE FACILITIES

Contractors are responsible for supply temporary construction toilets for use by crew and Solano Community College Representatives inspecting or visiting this project site.

At no-time will workers be allowed to exit the containment area, once abatement has begun disturbing asbestos, without showering prior to entering the clean chamber of the decon. (Exception to this may be made, at HMS, Inc. project manager's discretion, for Project Manager and Contractor's supervisor for conducting a clearance visual during which the HMS, Inc. Project Manager may allow street clothes to be worn under disposable overalls).

At no time shall workers exit the clean room/changing area wearing anything other than street clothes, including pants and shirt.

The Owner shall provide water for construction purposes Contractor shall connect to existing Owner system at fire hydrant.

Waste water discharge will be conducted per the approved SWPPP plan. The owner or its representative shall specify the location of waste bins. The owner, when applicable, shall specify acceptable routes of travel.

The contractor is responsible for all damages to Owner's property caused by the delivery, placement, or removal of a waste bin. Damaged property shall be repaired to equal or better condition than was present prior to the activity causing the damage.

## SECTION 8. RESPIRATORY PROTECTION

All respiratory protection shall be provided to workers in accordance with the submitted written respiratory protection program, which includes all items as required by OSHA. This program shall be posted in the clean room of the worker decontamination enclosure system or adjacent to the clean room.

The Contractor shall ensure that all workers entering the regulated area wear appropriate respiratory protection. Respiratory protection provided workers shall be in accordance with 8 CCR 1529, and 8 CCR 5144 and the respiratory protection program submitted by the Contractor. This program shall be available at the work site.

The HMS, Inc. Project Manager, his or her onsite representative, or the Owner or their representative may deny access to the regulated area to anyone who, in the final judgment of the HMS, Inc. Project Manager, is not properly wearing adequate respiratory protection for the project conditions. This includes but is not limited to those wearing unidentified respirators, those with improperly sealed respirators, those wearing respirators in an improper manner such as over their protective suit hood, or in any other fashion judged by the HMS, Inc. Project Manager to be improper or inadequate to protect the individual from the airborne asbestos at the project site.

The Contractor shall provide each worker needing respiratory protection with his or her own, individually identified, NIOSH-approved respirator. At a minimum, these respirators will be equipped with a P-100 series HEPA filter. The Contractor shall provide additional filter types if that becomes necessary for specific hazards discovered on the job site or if required in the contract documents.

The Contractor shall ensure that all workers use the respirator in compliance with the manufacturer's instructions for proper use and care of that product.

Workers must perform positive and negative respirator seal checks each time a respirator is put on, provided the respirator design so permits.

The Contractor shall ensure that those workers wearing powered air purifying respirators test the air flow rate according to the frequency and methods specified by the manufacturer.

Workers shall be given, at least, a qualitative fit test in accordance with procedures detailed in the Cal/OSHA requirements for all respirators to be used on this abatement project. An appropriately administered quantitative fit test may be substituted for the qualitative fit test.

The Contractor shall ensure and provide written records to the HMS, Inc. Project Manager that all workers wearing tight-fitting respirators have been appropriately fit tested in accordance with the requirements of 8 CCR 5144.

The Contractor shall ensure that nothing interferes with the seal of the respirator to the face of the worker. This includes but is not limited to facial hair, clothing, protective clothing, equipment or anything else that comes between the respirator and the face of the worker.

Use of any respirator must be in compliance with the manufacturer's instructions for proper use and care of that product.

The Contractor shall ensure that workers wear respirators underneath protective clothing

Workers conducting any work that may create an airborne release of asbestos must wear appropriate respiratory protection. This includes, but is not limited to the pre-cleaning of asbestos contamination off of furniture, equipment and floors, and the set-up of contaminated work areas.

The judgment of the HMS, Inc. Project Manager shall be final if there is a disagreement between the Owner and the Contractor regarding the need for wearing or the type of personal protection required.

In no event will a negative exposure assessment be allowed to lower respiratory protection, from that listed in the Scope of Work or required by regulation in the absence of an NEA, prior to the start of a project. Air samples used for negative exposure assessments created after the project has started must be from work conducted under this contract.

#### Minimum Respiratory Protection for OSHA Class I Work

Unless specified differently in the contract documents, the Contractor's employees conducting Class I work will wear tight-fitting, full-face powered-air purifying respirators for all Class I work that will take more than one hour to complete. They must wear a minimum of a half-face negative air-purifying respirator for Class I work lasting less than one hour. Contract documents may require additional respiratory protection, such as the use of supplied air respirator systems if, in the opinion of the HMS, Inc. Project Manager, the airborne asbestos levels are expected to exceed one fiber per cubic centimeter of air (1 f/cc).

After work has begun, if the Contractor wishes to lower respiratory protection requirements, such as for glovebag or other work, he or she must demonstrate to the HMS, Inc. Project Manager that personal air sampling results from that project prove that airborne fibers levels are below the Cal/OSHA Permissible Exposure Limit. The Project Manager will normally require sampling results used for this purpose to include several days of sampling taken during the work expected to generate the highest airborne levels. The Project Manager will have final authority regarding whether or not the respiratory protection may be reduced below the need for powered-air purifying respirators.

Unless stated otherwise in the contract documents, for the purposes of respiratory protection, Class I work will include the removal of materials such as gypsum board surfaces that are covered with a texturing or skim coat material that contains over one percent asbestos.

#### Minimum Respiratory Protection for Class II and III Work Practices

Unless specified differently in the contract documents, the Contractor's employees conducting Class II or III work will wear a minimum of half-face, air-purifying respirators. Contract documents may require additional respiratory protection, such as the use of full face air-purifying respirators or powered-air-purifying respirators.

After work has begun, if a Contractor wishes to lower respiratory protection requirements, he or she must demonstrate to the HMS, Inc. Project Manager that personal air sampling results from that project prove that airborne fibers levels are below the limit of quantification for the phase contrast microscopy method. The Project Manager will normally require sampling results used for this purpose to include several days of sampling taken during the work expected to generate the highest expected airborne levels. The Project Manager will have final authority regarding whether or not the respiratory protection may be reduced or eliminated. For example, the HMS, Inc. Project Manager may require personal samples be analyzed by TEM before determining that asbestos does not pose an airborne health risk.

#### Respiratory Protection for All Work Classes and Unclassified Work

Respiratory protection will always be required if thermal system or surfacing materials are disturbed or if any asbestos-containing materials will not be removed substantially intact.

The HMS, Inc. Project Manager has full authority to raise the level of respiratory protection required for access to the regulated area if in his or her judgment additional respiratory protection is required. For example, if personal air sample results collected by either the Contractor or HMS, Inc. indicate higher than expected levels, the Project Manager is authorized to increase the level of required respiratory protection. The HMS, Inc. Project Manager will determine if the increased respiratory protection is due to new, unexpected developments such as the discovery of new materials, or if the increase is due to the Contractor failing to follow good work practices. The judgment on this matter by the HMS, Inc. Project Manager will be final.

The Owner is not responsible for increased costs or delays resulting from the need to increase respiratory protection should the reason for the increased respiratory protection be due to the Contractor's failure to adequately utilize wet work methods and/or the prompt cleanup of debris.

The Contractor may only implement respiratory protection changes after receiving written approval for the change from the HMS, Inc. Project Manager.

Waste transport and disposal personnel must wear at least half-face, air-purifying respirators when handling intact sealed bags. Powered-air purifying respirators must be worn if waste containers spill, break, or in any other fashion require a Class I work cleanup be performed.

The contractor shall comply with the respiratory protection requirements listed in 8 CCR 1529 until that date that 8 CCR 5144 includes assigned protection factors for all respirators. The following list of respirators and their assigned "protection factors" shall be the criteria for the selection of respiratory protection.

## RESPIRATOR SELECTION

RESPIRATOR SELECTION	PROTECTION FACTOR
Half-mask air purifying respirator equipped with high efficiency particulate air (HEPA) filter - P-100	10
Full-face air purifying respirator equipped with HEPA filter - P-100	10
Half or full-face, powered air purifying respirators equipped with HEPA filter - P-100	1,000
Type C continuous flow supplied air	1,000
Full facepiece, supplied air respirator operated in pressure demand mode	1,000
Full facepiece, supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus	1,000

Workers shall be provided, as a minimum, with personally issued and marked respirators equipped with high efficiency particulate air (HEPA) filters approved by NIOSH to be worn in the designated work area and/or whenever a potential exposure to asbestos exists. Owner or its representative may refuse entry to the work area to a worker with an unidentified respirator.

Sufficient filters shall be provided for replacement as required by the workers or applicable regulations. Disposable respirators shall not be used.

No worker shall be exposed to levels estimated to be greater than 0.01 f/cc inside their respirator as determined by the protection factor of the respirator worn and the work area fiber levels.

Whenever type C respirator protection is used, compressed air systems shall be designed to provide air volumes and pressures to accommodate respirator manufacturer specifications. The compressed air system shall have a reservoir of adequate capacity to allow the escape of all respirator wearers from contaminated areas in the event of compressor failure.

Compressors must meet the requirements of 29 CFR 1910.134(d).

Location of compressors must be approved by Owner for exhaust and noise considerations.

Compressors must have an in-line carbon monoxide monitor and periodic inspection of carbon monoxide monitors must be documented. Documentation of adequacy of compressed air systems/respiratory protection systems must be retained on site. This documentation will include a list of compatible components with the maximum number and type of respirators that may be used with the system. Periodic testing of compressed air shall insure that systems provide air of sufficient quality (Grade D breathing air). Documentation of this testing, including a description of the process used to perform the test and results of each test must be submitted to the HMS, Inc. Project Manager weekly.

Location of compressors must be approved by Owner for exhaust and noise considerations.

Whenever powered air-purifying respirator protection is used, a sufficient supply of replacement batteries and HEPA filter cartridges shall be provided to the workers. At least one spare fully charged battery must be available on-site for each PAPR in use. The flow rate delivered to the face piece shall be checked and recorded by the Contractor on the sheet provided by the HMS, Inc. Project Manager each time a worker dons the respirator. Written respiratory protection program must detail how this testing is to be performed by each employee or the onsite supervisor. The Contractor shall ensure that the flow rate for PAPRs meets the requirements listed in 8 CCR 1544 regarding tight and loose fitting respirators as appropriate. The Contractors shall also ensure that PAPRs are worn, checked and maintained according to the directions of the manufacturer.

During encapsulation operations or usage of other organic base aerosols (e.g. spray glue, expanding foam, etc.) workers shall be provided with combination organic vapor/HEPA filter respirator cartridges.

The contractor shall comply with OSHA CFR 1926.110(h) (Respiratory Protection) and Cal/OSHA Title 8 5144. The following list of respirators and their associated "protection factors" shall be the criteria for the selection of respiratory protection.

Sufficient filters shall be provided for replacement as required by the workers or applicable regulations. Disposable respirators shall not be used.

No worker shall be exposed to levels greater than 0.01 f/cc as determined by the protection factor of the respirator worn and the work area fiber levels.

Whenever powered-air-purifying respirator protection is used, a sufficient supply of replacement batteries and P100 HEPA filter cartridges shall be provided to the workers. At least one spare fully charged battery must be available on-site for each PAPR in use. The flow rate delivered to the face piece shall be checked and recorded by the Contractor on the sheet provided by the HMS, Inc. Project Manager each time a worker dons the respirator. Written respiratory protection program must detail how this testing is to be performed, and whether it will be performed by each employee or the onsite supervisor.

During encapsulation operations or usage of other organic base aerosols (e.g. spray glue, expanding foam, etc.) workers shall be provided with combination organic vapor/HEPA filter respirator cartridges.

During application of spray-poly, appropriate NIOSH approved respirators shall be worn.

## SECTION 9. PERSONNEL PROTECTION REQUIREMENT AND TRAINING

Prior to commencement of abatement activities all personnel who will be required to enter the work area or handle containerized asbestos containing materials must have received adequate training in accordance with the OSHA, EPA AHERA and NESHAP regulations.

Special on-site training on equipment and procedures unique to this job site shall be performed by the Contractor as required by law or recommended by the equipment manufacturer.

The Contractor shall provide training in emergency response and evacuation procedures.

See Section 8 for respiratory protection requirements.

Disposable clothing, including head, foot and full body protection, shall be provided in sufficient quantities and adequate sizes for all workers and authorized visitors. Damaged coveralls shall be immediately repaired or replaced.

Hard hats, protective eye-wear, proper protective gloves, rubber boots and/or other footwear shall be provided by the Contractor as required for workers and authorized visitors. Safety shoes may be required for some activities.

Contractor personnel shall not wear street clothes or clothes of any type underneath the protective disposable clothing. Upon exiting the work area, no items worn in the work area, such as clothing, personal protective gear, footwear, or hair coverings will be allowed to be worn past the shower of the decontamination unit. Contractor worker(s) have the option of wearing disposable undergarments underneath protective clothing, or they may be nude underneath the protective disposable clothing.

Each time the worker(s) enter the work area they will don new disposable clothing and undergarments. Street clothes (including underwear and shoes) shall not be allowed inside the work area, except during visual clearance activities.

The HMS, Inc. Project Manager may use personal judgment to allow authorized personal to wear street clothes under protective clothing during the construction of final visual or other short-duration visits into the regulated area during times which asbestos is not being disturbed and gross debris is not present. In these situations, approved by the HMS, Inc. Project Manager, the authorized person shall deposit the protective clothing on the dirty side of the decontamination system and may proceed through the shower and clean room wearing the clothes they wore under their protective clothing.

## SECTION 10. WORKER DECONTAMINATION ENCLOSURE SYSTEMS (WASTE TRANSFER DECON)

Worker decontamination enclosure systems shall be provided at all locations where workers will enter or exit the work area. One system at a single location for each contained work area is preferred. Enclosure systems may be constructed out of metal, wood or plastic support as appropriate. Plans for construction, including materials and layout, shall be submitted as shop drawings and approved, in writing, by the Owner or its representative prior to work initiation. Detailed descriptions of portable, prefabricated units, if used, must be submitted for the Owner's approval. The worker decontamination enclosure system shall consist of at least a clean room, a shower room, and an equipment room. All decontamination units shall have, at least, two layers of 6-mil polyethylene sheeting.

Unless stated otherwise in the Scope of Work, all decontamination units, pressure differential units, and other portions of containment outside the building shall be covered with a 2"x 4" wood studs and 1/2" plywood enclosure for security. Pressure differential units shall be secured as necessary to the building or ground. Exhaust openings shall have metal grates to prevent objects from being put into the exhaust

openings. Pressure differential exhaust shall be exhausted to an area acceptable to HMS, Inc. Project Manager and mounted through a solid surface, such as plywood.

Entry and exit from all airlocks and decontamination enclosure system chambers shall be through doorways designed to restrict air movement between chambers when not in use.

Each decontamination chamber shall have, at least, a four inch lip of poly from the floor up the wall to prevent possible transfer of water and debris between chambers. Excess plastic at the corners of this floor is to be fitted to the sides of the chamber by folding plastic and taping, as opposed to cutting away excess poly and taping seams. In addition to this four inch lip of poly the shower chamber shall have an overflow pan, in which the shower unit sits, that is capable of holding two inches of water. The filter system and any hose connections transferring contaminated water shall be located in a secondary containment, such as a metal pan. Any leakage shall be double-bagged or re-filtered.

The dirty side shall have an extra layer of 6-mil polyethylene sheeting on the floor as a "drop cloth" and it shall be replaced at least daily.

The clean room shall be sized and equipped to adequately accommodate the work crew and personal protection equipment. Minimum size of clean and dirty chambers shall be three feet by three feet, minimum size may be increased by requirements in the Scope of Work. Lighting, heat and electricity shall be provided as necessary for comfort.

This space shall not be used for storage of tools, equipment or materials (except as specifically designated), nor as office space.

Shower room shall contain one or more operable showers as necessary to adequately accommodate workers, minimum of one shower for every ten (or portion thereof) workers. The shower enclosure shall be constructed to ensure against leakage of any kind. In addition, the shower shall be a separate unit from the decon walls. The shower unit cannot be made from poly. Metal or hard plastic is acceptable. An adequate supply of soap, shampoo and towels shall be supplied by the Contractor and available at all times. Shower water shall be drained, collected and filtered through a system with at least 1.0 micron particle size collection capability.

The shower pan in the shower chamber shall be, at least, 3' x 3' in size. The shower chamber shall be constructed so that no water from the shower can spray out of the chamber, nor any water run down the sides of the poly and miss the pan. The shower chamber dimensions shall be determined by the size of the shower pan but are not to be smaller than 3' wide by 3' long by 7' tall.

Abatement work will be stopped if decon is not kept in acceptable condition.

Storage or consumption of food and/or beverages shall not be permitted inside the containment or within any of the decontamination chambers. Food or drink consumption within containment will result in the abatement worker(s) dismissal from the site for the duration of the project.

## SECTION 11. WORKPLACE ENTRY AND EXIT PROCEDURES

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

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

All personnel, before entering the work area, shall read and be familiar with all posted regulations, personal protection requirements (including workplace entry and exit procedures) and emergency procedures. A sign-off sheet shall be used to acknowledge that these have been reviewed and understood by all personnel prior to entry.

All personnel shall proceed first to the clean room (or area), remove all clothes and don appropriate respiratory protection and disposable coveralls, head covering and foot covering. Hard hats, eye protection and gloves shall also be worn, as appropriate. Clean respirators and protective clothing shall be provided and utilized by each person for each separate entry into the work area.

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

Before leaving the work area all personnel shall remove gross contamination from the outside of respirators and protective clothing by brushing and/or wet-wiping procedures. (Small HEPA vacuums with brush attachments may be utilized for this purpose.) Each person shall clean bottoms of protective footwear in the walk-off pan just prior to entering the equipment room.

Personnel shall proceed to equipment room where they remove all protective equipment except respirators. Deposit disposable clothing into appropriately labeled containers for disposal. All clothing items, including underwear or hair coverings must be removed and disposed of prior to entering the shower.

Reusable, contaminated footwear shall be stored in the equipment room when not in use in the work area. This footwear shall be cleaned prior to being removed from the work area. Placing footwear in two 6 mil poly bags is sufficient for moving from one containment to another, but not for moving from one site to another. Contaminated footwear shall remain within the equipment room for the duration of the project. Cleaned footwear may be removed from containment, but must be approved by HMS, Inc. Project Manager.

Still wearing respirators, personnel shall proceed to the shower area, clean the outside of the respirators and the exposed face area under running water prior to removal of respirator, then shower and shampoo to remove residual asbestos contamination. Various types of respirators will require slight modification of these procedures.

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

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

## SECTION 12. DIFFERENTIAL AIR PRESSURE SYSTEMS (See also Section 13)

### 12.1 NEGATIVE PRESSURE REQUIREMENT

Negative pressure shall be maintained at 0.35" water differential at all times during abatement activities, including entry/exit and bag out procedures. Contractor shall assign crew members to determine cause of loss of pressure any time containment's negative pressure drops below 0.35" water differential. All work will be stopped in any containment for which the negative pressure drops below 0.025" water differential, until problem is resolved and pressure returns to 0.04" water differential or better.

In the event that containment cannot be brought up to 0.35" water differential, abatement contractor must increase number of negative pressure differential units until 10 air changes per hour is taking place. If this fails to raise negative pressure to acceptable levels, contractor may request in writing a reduction in negative pressure requirements. If HMS, Inc. project manager agrees that contractor has tried all possible remedies, HMS, Inc. project manager may grant reduction in negative pressure requirement. HMS, Inc. project manager is under no obligation to grant this request.

All negative pressure units installed, but not operating, must be sealed at both the exhaust location and the intake of the machine. This will prevent back draft which could allow asbestos fiber contamination from the HEPA filter.

## 12.2 DOP (OR EQUIVALENT) TESTING

Contractor shall provide differential air pressure systems for each work area in accordance with Appendix J of EPA "Guidance for Controlling Asbestos-Containing Materials in Buildings," EPA 560/5-85-024.

All HEPA filtered systems used on this project shall be tested and certified by an independent company, approved in advance by HMS, Inc., on-site and prior to use. All vacuums and pressure differential units shall meet ANSI Z9.2, using an appropriate testing agent. Documentation of these tests shall be provided to the HMS, Inc. Project Manager prior to the use of any HEPA system.

DOP, or equivalent, testing must be conducted on-site, unless stated otherwise in the Scope of Work. All HEPA filtered units, including but not limited to, vacuums, air pressure differential units, and make-up air filters must be tested onsite. Testing of air pressure differential units must include testing of the wheel attachments, control panel, and seam and rivets of the housing, as well as the HEPA filter itself. A unit which passes DOP testing across the filter, but which fails testing for any component of the housing may be certified as an "Exterior of Containment HEPA Filtered Unit" only.

All HEPA equipped equipment to be used on the project must be delivered to the site empty of all debris, clean and free of dust, and in full operating condition. Covering dirty units with poly, other than the HEPA filter surface, will not be acceptable.

DOP or equivalent testing must be conducted by an independent testing company approved in advance by HMS, Inc. Contractors may not test their own equipment.

DOP or equivalent testing is required when any HEPA filters are changed.

All HEPA filtered machines, including but not limited to vacuums and negative pressure differential machines, shall be utilized in the manner in which they were DOP tested.

Any negative pressure unit turned upside down, or on its side, must be returned to an upright position and re-DOP tested. Negative pressure units shall not be used on this project while laid on their side or upside down.

In case of a power outage, contractor must seal exhaust ducts against back draft into containment.

All negative air units will have the filter sealed with poly and tape before being shutdown to prevent backdrafting.

## 12.3 DIFFERENTIAL RECORDING PRESSURE INSTRUMENTS

Differential air pressure shall be continuously monitored by Contractor using a recording instrument, Dwyer Instrument Co., "Photohelic Gauge" or equivalent, connected to an appropriate circular chart recorder or a comparable recorder that maintains a record of dates, times and pressure differentials. The location of the pressure measurement tap shall be approved in advance by the HMS, Inc. Project Manager. During the operation of the unit, circular charts shall be collected on a daily basis, dated, and signed by an OSHA Competent Person present on site. Pressure differential shall be checked a minimum of every hour during the work shift by a person familiar with the operation of the pressure-differential-filtration units, as well as the recording device. Each check shall be documented with a time and date notation on the circular chart and "Manometer Readings" form along with the initials of the person performing the check. A copy of the circular chart record shall be submitted to the HMS, Inc. Project Manager on a daily basis. The circular chart shall record time, date, pressure differential, coordinates, and location.

In the event the manometer recording mechanism fails, the Contractor shall be responsible for manually recording the pressure differential at fifteen (15) minute intervals. The log shall be kept until the recording device is operational. The log shall be provided to the HMS, Inc. Project Manager on a daily basis.

The "Manometer Readings" form shall be a record of dates and times of pressure readings and instrument stability.

Connect recording instrument to an audible alarm which will activate at pressure differential of -0.025 inches water gauge air pressure.

Defective or non-operating instrumentation may require temporary stoppage of work until instrumentation is replaced.

For larger projects at least one manometer station shall be in place for each 25,000 square feet of containment space.

#### 12.4 DIFFERENTIAL PRESSURE SYSTEM

Exhaust air shall be vented only to the exterior of the building at locations approved by the Owner unless otherwise noted or directed in the Scope of Work or by arrangement with the HMS, Inc. Project Manager. Such outlets shall not be near or adjacent to other building intake vents or louvers or at entrances to building. Openings made in the enclosure system to accommodate these units shall be made airtight with tape and/or caulking as needed. They shall NOT be exhausted into occupied areas of the building. Twelve inch (12") extension ducting shall be used to reach from the work area to the outside when required. Careful installation by the contractor, air monitoring by HMS, Inc. and daily inspections by the contractor shall be done to ensure that the ducting does not release fibers into uncontaminated building areas.

The work area shall have a differential air pressure of -0.04 inches water whenever the work is being performed including removal, gross clean-up, encapsulation of surfaces, bag-out operations and worker entry and exit procedures. If pressure differential ever drops below 0.025 inches water differential, all work, other than cleanup of waste on the floor of containment, must be halted until reason for pressure differential drop has been determined and corrected.

Only unused pre-manufactured, reinforced flex ducting shall be used within the containment area for exhausting of filtered air. Contractor may not construct ducting using poly or other materials.

All interior of containment air pressure differential units and flex ducting must be wrapped in poly during all abatement activities. This poly wrap is to be removed after "finish detail" work has been completed, but prior to clearance visual.

Flex ducting must be supported by solid surface at point of exit from containment. This may require contractor to install plywood, or similar, structure for exhaust point.

### SECTION 13. EXECUTION

#### 13.1 EXECUTION

Contractor and Owner shall investigate the work area and agree (in writing, if necessary) on the pre-abatement condition of the work area.

Contractor shall post danger signs meeting the OSHA specifications at locations and approaches to locations where airborne concentrations of asbestos may exceed ambient background levels.

When electrical supply within area of abatement poses a hazard, contractor, in conjunction with the Owner, shall shut down and lock out electric power to all work areas. Contractor shall provide temporary power and lighting sources, ensure safe installation (including ground faulting) of temporary power sources and

equipment by complying with all applicable electrical code requirements and OSHA requirements for temporary electrical systems. Contractor shall have a licensed electrician shut down and lock out electric power, and setup temporary power and lighting sources. All cost of electricity shall be paid for by the Owner unless specified differently in the Scope of Work. Cost for set-up of temporary power is the responsibility of the abatement contractor unless specified differently in the Scope of Work.

When plumbing is required to be altered or becomes damaged, contractor shall have a licensed plumber disconnect and cap all water as necessary within the work area. Water shall be provided by the Owner from a location near the work area, but not necessarily within the work area.

Shut down and lock out all heating, ventilating and air-conditioning-system (HVAC) components that are in, supply, or pass through the work area. Seal all intake and exhaust vents in the work area with tape and 6-mil polyethylene within the work area (interior) and on the exterior of the building. Also seal any seams in system components that pass through the work area.

Pre-clean all fixed objects in all work areas using HEPA-filtered vacuums and/or wet-cleaning techniques as appropriate or deemed necessary by the HMS, Inc. Project Manager. Careful attention must be paid to machinery behind grills or gratings where access may be difficult but contamination significant. After pre-cleaning, enclose fixed objects in 6-mil polyethylene sheeting and seal securely in place with tape.

Pre-clean all surfaces in all work areas using HEPA filtered vacuums and/or wet cleaning methods as appropriate. Do not disturb asbestos-containing materials during the pre-cleaning phase.

Unless otherwise stated in the Scope of Work or by agreement with the HMS, Inc. Project Manager all non-asbestos-containing materials left in the work area shall be covered by two layers of 6-mil polyethylene sheeting. If any non-asbestos containing materials become contaminated with asbestos during removal activities these materials shall be disposed of as asbestos-containing materials by the Contractor. The HMS, Inc. Project Manager shall determine the friability of these materials prior to disposal. These materials shall be manifested appropriately.

Contractor shall seal all windows, doorways, elevator openings, corridor entrances, drains, ducts, grills, grates, diffusers, skylights and other openings between the work area and uncontaminated areas outside of the work area. These openings must be sealed with 6-mil polyethylene sheeting and tape. These protective layers shall be in addition to the two polyethylene layers on floors, ceilings and walls. These openings are referred to as critical barriers. Seal all cracks in critical barrier areas with tape, caulk, or foam prior to sealing critical barriers.

A critical barrier only, negative pressure check shall be required prior to the set-up of interior containment. Prior to the Contractor covering critical barriers with additional layers of wall, floor, or ceiling poly, the installation and integrity of critical barrier seals must be approved by the HMS, Inc. Project Manager. Wall, floor and ceiling poly installed prior to the critical barrier negative pressure check shall be removed by the Contractor if deemed required by the HMS, Inc. Project Manager in order to properly test critical barriers.

All items attached to asbestos-containing materials and items which cannot be removed without disturbing asbestos-containing materials shall be removed by the Contractor after establishment of containment and negative pressure. If these items are to be "saved and returned" or "reused" by the Owner, the Contractor must remove and clean them without damage. These items must be cataloged using the attached "Return Item Inventory Sheet" provided by HMS, Inc.

Plastic shall be sized to minimize seams. A distance of at least six (6) feet between seams is sufficient. DO NOT locate any seams at wall/floor joints. Floor sheeting shall extend at least twelve inches (12") up the sidewalls of the work area. Sheeting shall be installed in a fashion so as to prevent slippage between successive layers of material. A layer of 10-mil polyethylene sheeting and/or plywood may be required by the HMS, Inc. Project Manager to protect certain flooring materials -- carpets, hardwood floors, tiles, etc. At

no time will wall or ceiling materials be permitted to be dropped onto unprotected floors. This includes areas where the floor surfaces contain asbestos.

Contractor shall cover walls in the work area with polyethylene sheeting. Walls shall be covered with a minimum of two layers of 4-mil polyethylene sheeting. Plastic shall be sized to minimize seams. Seams shall be staggered and separated by a distance of at least six feet (6'). DO NOT locate any seams at wall/floor joints. Wall sheeting shall overlap floor sheeting by at least twelve inches (12") beyond the wall/floor joint to provide a better seal against water damage and for pressure differential maintenance. Wall sheeting shall be secured adequately to prevent it from falling away from the walls. This may require additional support/attachment when pressure differential systems are utilized.

Contractor shall cover ceilings in the work area with polyethylene sheeting. Ceilings shall be covered with a minimum of two layers of 4 mil polyethylene sheeting. Plastic shall be sized to minimize seams. Seams shall be staggered and separated by a distance of at least six feet (6'). DO NOT locate seams at wall/ceiling joints. Ceiling sheeting shall overlap wall sheeting by at least twelve inches (12") beyond the ceiling/wall joint to provide a better seal against water damage and for pressure differential maintenance. Ceiling sheeting shall be secured adequately to prevent it from falling away from the walls. This may require additional support/attachment when pressure differential systems are utilized.

The contractor shall add clear sight windows in the containment walls at least 1' x 2' in size. The HMS, Inc. Project Manager will approve quantity and placement of these inspection windows. HMS, Inc. Project Manager has the right to require more clear sight windows or require placement of windows to be altered.

The equipment room shall be used for storage of equipment and tools at the end of a shift after they have been decontaminated using a HEPA-filtered vacuum and/or wet-cleaning techniques as appropriate. A walk-off pan shall be located in the work area just outside the equipment room. A six-mil. disposal bag or a drum lined with a labeled 6-mil polyethylene bag for collection of disposable clothing shall be located in this room.

Contractor shall obtain written containment visual clearance from HMS, Inc. Project Manager prior to the start of abatement in any and all containments.

Contractor is not responsible for normal tape damage due to tape requirements for containment set-up, unless specifically mentioned in the Scope of Work. Contractor is responsible for excessive tape damage and damage from spray glue application, staples, nails, hooks, etc. installed to support containment.

Install and initiate operation of pressure differential equipment as needed to maintain differential-air pressure of -0.040 inches of water. There shall be a sufficient number of differential air pressure units to maintain a minimum of four air changer per hour. All pressure differential units shall have pre-filters at the intake of the system which must be changeable from inside the containment area. Openings made in the enclosure system to accommodate these units shall be made airtight with tape and/or caulking as needed. They shall NOT be exhausted into occupied areas of the building. Twelve inch (12") extension ducting shall be used to reach from the work area to the outside when required. Careful installation, air monitoring and daily inspections shall be done to ensure that the ducting does not release fibers into uncontaminated building areas.

All flex ducting, protected by poly during abatement or not, pre-filters and intermediate filters shall be manifested and discarded as friable, hazardous asbestos-containing materials. A flex tube may be used for multiple containments on the same job as long as it is moved from one containment to another in two 6 mil poly bags

Once the containment has been constructed and reinforced as necessary with pressure differential units in operation as required, the contractor shall test the enclosure for leakage utilizing smoke tubes. The containment shall be repaired or reconstructed as needed.

All HEPA systems used on this project shall be tested and certified onsite by an independent company prior to use. (See section 12)

Contractor shall submit logs documenting filter changes for each pressure differential unit.

Contractor shall clearly identify and maintain emergency and fire exits from the work area.

Work shall not begin each day until:

- a. Enclosure systems, or modifications thereof, have been designed and built by the contractor and each step approved by the APM. If design of containment is to be altered in any way, after it is approved by the HMS, Inc. Project Manager, a written explanation of how and why the containment is to be altered must be submitted to the HMS, Inc. Project Manager for approval.
  - b. Pressure-differential systems are functioning according to an acceptable design.
  - c. All pre-abatement submissions, notifications, postings and permits have been provided and are satisfactory to the Owner or its representative.
  - d. All equipment for abatement, clean-up and disposal is on hand.
  - e. All worker training (and AHERA certification) is completed and documented.
  - f. The contractor has installed all required clear transparent view ports made of plastic or equivalent, in the polyethylene wall so that activities can be visually monitored by the project manager from outside the containment. This window shall measure approximately 1' wide by 2' high. It shall be installed at a location approved by the HMS, Inc. Project Manager. It is recognized that viewing ports are not possible in all locations.
  - g. All pressure-differential units and vacuums have received and passed onsite DOP testing.
  - h. Contractor has at least one competent person at each site in which work is taking place.
  - i. All necessary documents and information have been posted or are on the work site.
- See Section 2.

### 13.2 POWER OUTAGE PROCEDURES

The following procedures shall be followed in the event of a power outage (no matter the source of the outage):

1. Immediately stop abatement activities.
2. Wet all debris and/or friable materials within the containment.
3. Depart containment area as soon as reasonable. Shower out or use Hudson sprayers to decontaminate worker if shower is inoperable due to power outage.
4. Seal containment area including:
  - A. Decon units
  - B. Makeup air ports
  - C. Bag out chambers
  - D. Negative pressure air exhausts or inlets (must be sealed in fashion that will allow for exhaust of air to occur when power is restored)
  - E. Re-establish APD before starting abatement
5. Contractors will be given credit against liquidated damages for all actual down time plus two hours for shut down procedures, decontamination procedures and start up, (total of 6 hours) unless power outage is attributable to abatement contractor actions.

If a generator is required in the specifications, made necessary due to extended power outages, or chosen to be used by the abatement contractor the following issues must be addressed:

Generator must not violate any local noise ordinances nor disturb adjacent building occupants. Generator exhaust must not be allowed to contaminate the makeup air being pulled into the containment. It must, also, not be allowed to mix with HVAC air supplied to adjacent occupied buildings.

### 13.3 WORK SCHEDULE

A detailed work area by work area schedule must be submitted at the pre-start meeting. The schedule shall have, at a minimum, the work area and the day/month for beginning and terminating work in each work area. During progress of work, it shall be the contractor's responsibility to keep the schedule current and up to date.

Contractor's request to change this schedule must be submitted to HMS, Inc. in writing at least 48 hours prior to the proposed addition, deletion or change in hours of a work shift.

This would include working more than one shift per day, working extra days in the week, changing work hours or work days, etc. If 48 hours notice is not given, the proposed work shift may be canceled by HMS, Inc. Project Manager. The Owner and/or HMS, Inc. Project Manager reserves the right to deny any changes in the work schedule.

If the contractor wishes to work on a Federal or State holiday, more than five days a week, or more than 9 hours a day, Contractor becomes responsible for cost of project management fees to cover extended hours. If contractor fails to appear onsite without notifying HMS, Inc. Project Manager 24 hours in advance, the contractor becomes responsible for all HMS, Inc. Project Manager travel fees, onsite time fees, and other associated project management fees for that day.

### SECTION 14. REMOVAL PROCEDURES

Contractor shall wet all asbestos-containing material with an amended water solution using equipment capable of providing a fine spray mist, in order to reduce airborne-fiber concentrations when the material is disturbed. Saturate the material to the substrate; however, do not allow excessive water to accumulate in the work area. Keep all removed material wet enough to prevent fiber release until it can be containerized for disposal. Maintain high humidity in the work area by misting or spraying to assist in fiber settling and reduce airborne concentrations. Wetting procedures are not equally effective on all types of asbestos-containing materials but shall none-the-less be used in all cases.

Saturated asbestos-containing material shall be removed in manageable sections. Removed material should be containerized immediately (as soon as removed). Surrounding areas shall be periodically sprayed and maintained in a wet condition until visible material is cleaned up. Gross debris shall be cleaned up and bagged prior to any work stoppage, such as for breaks, lunch, end of each shift, or project shut down (voluntary or not).

Material removed from building structures or components shall not be dropped or thrown onto unprotected floors at any time. Floors shall be covered with poly regardless if they are being removed after ceiling or walls. Material should be removed as intact sections or components whenever possible and carefully lowered to the floor.

Containers (6-mil polyethylene bags or drums) shall be sealed when full. Double bagging of waste material is necessary. Bags shall not be overfilled. They should be securely sealed to prevent accidental opening and leakage by tying tops of bags in an overhand knot or by taping in gooseneck fashion. Do not seal bags with wire or cord.

Drums shall be used to dispose of asbestos-containing waste with sharp-edged components (e.g., nails, screws, metal lath, tin sheeting). Waste must be double bagged and goose-necked within drums.

After completion of all stripping work, surfaces from which asbestos-containing materials have been removed shall be wet-brushed and sponged or cleaned by some equivalent method to remove all visible residue.

After the work area has been rendered free of visible residues (and verified clean by the APM), a thin coat of a satisfactory encapsulating agent shall be applied to lock-down non-visible fibers on all surfaces, in the

work area including structural members, building components and plastic sheeting on walls, floors and covering non-removable items, to seal in non-visible residue. Unprotected flooring surfaces shall not be encapsulated unless otherwise noted in the Scope of Work or indicated by the HMS, Inc. Project Manager.

After asbestos-containing materials have been removed from floor surfaces. These floor surfaces shall be washed with a TSP solution, or similar detergent acceptable to the Client, follow-up flooring contractor, and HMS, Inc, Project Manager, prior to clearance air tests.

## SECTION 15. WASTE CONTAINER PASS-OUT PROCEDURES

Asbestos-contaminated waste that has been containerized shall be transported out of the work area through the waste transfer airlock or through an approved pass-out arrangement.

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

The inside team, wearing appropriate protective clothing and respirators for inside the work area, shall clean the outside, including bottoms, of properly labeled containers (bags, drums, or wrapped components) using HEPA vacuums and wet-wiping techniques and transport them into the waste container pass-out airlock. Provisions for spray cleaning exterior of bags, equipment, and removable items shall be present in the waste pass-out. Waste water from this operation shall be collected and filtered as required through a 1.0 micron filter. No worker from the inside team shall further exit the work area through this airlock.

The three-chamber system is utilized in the following manner. Workers inside the work area place the waste in the initial waste container, which is usually a bag. They then rinse the bag and seal it. They hand it to a worker in the dirty chamber room who inspects the bag and, if it is clean, places it in the secondary waste container. The secondary container is either another bag or a lined rigid-wall container such as a barrel or box as required in the Scope of Work. The worker then seals the secondary container and may attach the proper labeling. The worker places the container in the middle chamber. The worker in the clean chamber then reaches in and lifts the container into the clean chamber.

The worker inspects it and if not already labeled, attaches the proper labels. The worker then passes the container to the outside worker who transports the container either to the waste transport vehicle or to a holding area. At no time shall z-flaps of transfer system chambers be taped, held or otherwise blocked open. The Contractor must not allow more than one poly airlock doorway to be open at any one time. This prevents a tunnel system and a breakdown in the isolation of the work area. Negative pressure must be maintained during all waste load-out activities.

The contract documents or the HMS, Inc. Project Manager may in allow a one or two chamber system to be used for some projects, as long as the liability to the client, in the judgment of the HMS, Inc. Project Manager is not increased. As with a three-chamber system, in a one or two chamber system, the Contractor may never allow more than one poly air flap doorway to be open at any one time. For example, a one chamber system would function in the following manner. Workers in the work area rinse and seal the initial waste container. They hand the initial container to a worker in the load-out chamber. That worker verifies that the container is clean and then places it into the secondary container which will be either another bag or lined ridged-wall container depending on the specifications. The load-out worker then seals the container and applies the appropriate labels. The sealed, labeled container is then passed to the outside workers who transport it to the waste transport container or holding area.

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

## SECTION 16. CLEAN-UP PROCEDURE AND VISUAL CLEARANCE CRITERIA

### 16.1 CLEAN-UP PROCEDURE

Remove and containerize all visible accumulations of asbestos-containing material and asbestos-contaminated debris utilizing rubber dust pans and rubber squeegees to move material around. DO NOT

use metal shovels to pick up or move accumulated waste. Special care shall be taken to minimize damage to floor sheeting.

Wet-clean all surfaces in the work area using rags, mops and sponges as appropriate. (Note: Some HEPA vacuums might not be wet-dry vacuums.) To pick up excess water and gross wet debris, a wet-dry shop vacuum with HEPA filter may be used.

Airless sprayers and water hoses shall not be used in a "power washing" fashion on any surfaces.

Contractor shall remove each cleaned layer of polyethylene sheeting from walls and floors. Windows, doors, HVAC system vents and all other critical barriers shall remain sealed. The pressure differential units shall remain in continuous operation. Decontamination enclosure systems shall remain in place and be utilized.

Remove all containerized waste from the work area.

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

Contractor shall clean work area and conduct pre-clearance visual. Once pre-visual has been passed by contractor, contractor shall allow dust to settle within containment for 24 hours, then return and re-clean by HEPA-vacuums and/or wet-cleaning all objects and surfaces in the work area again. At this point HMS, Inc. will conduct the final visual. If final visual fails, contractor must reclean area until final visual passes. Once final visual is passed, contractor will be instructed to encapsulate the containment area, unless encapsulation of containment has been disallowed in the Scope of Work or material specific specification.

Contractor may request a reduction in the 24-hour waiting period, if personal samples collected during the abatement work and detail clean-up work have shown fiber levels below the PEL. Reduction of waiting period must be made in writing, accompanied by personal sample results from this project. Contractor must acknowledge that reduction in waiting period may result in failed clearance air samples and that retaking and re-analyzing these air samples will be at the contractor's expense. Reduction in waiting time will be at the discretion of the HMS, Inc. Project Manager and client.

#### 16.2 VISUAL CLEARANCE CRITERIA:

The **Contractor** shall perform a pre-final visual of the removal area and adjacent surfaces prior to requesting that the Owner's representative conduct a final visual inspection. The pre-final visual performed by the Contractor shall verify that all materials have been completely removed from the work area, and that the work area meets the requirements specified in Section 17.

Upon completion of the pre-final visual inspection by the Contractor a final visual of the containment area will be performed by the Owner's representative. The HMS, Inc. Project Manager will determine the clearance criteria for the project. At a minimum, no three dimensional debris shall be left within the work area; all poly shall be wet wiped so that no visible dust or debris is left; the decontamination chambers shall be clean of all debris; the waste transfer area shall be clean of all debris; all equipment and supplies shall be clean of all debris. The Contractor shall not be released to encapsulate the containment until receiving written acceptance by the Owner's representative stating the removal area and the containment have met the criteria of the Owner's representative for completeness of removal and cleanliness of the containment barriers and surfaces.

When required, clearance air sampling shall be performed following the requirements specified in Section 17 after encapsulation of the containment has taken place and a sufficient amount of time has passed to allow the encapsulant to dry.

The Owner shall determine the method of analysis to be used based on the amount and type of material removed within a containment.

The HMS, Inc. Project Manager will conduct the final visual inspection of the work area for visible residue. If any accumulation of residue is observed, it will be assumed to be asbestos and the 24-hour settling period/cleaning cycle will be repeated.

Additional cleaning cycles shall be provided by the contractor, as necessary, at no cost to the Owner until the specified clean criteria have been met.

**HMS, Inc. Project Manager has final say on whether or not an area meets these requirements.**

Following the satisfactory completion of clearance-air monitoring, remaining barriers may be removed and properly discarded as non-asbestos containing waste. If contamination exists behind these critical barriers, additional cleaning and air monitoring may be required.

Final visual will be conducted by at least one HMS, Inc. Project Manager. HMS, Inc. may supply additional personnel for inspection in order both to speed the inspection and to more thoroughly inspected the containment areas.

Owner, contractor and HMS, Inc. Project Manager shall jointly review the work area and make a damage assessment, after clearance air samples have passed and containment has been torn down.

**SECTION 17. CLEARANCE AIR MONITORING**

Following the completion of clean-up operations, the contractor shall notify the HMS, Inc. Project Manager in writing that work areas are ready for final visual inspection. This notification is to be made only after contractor foreman has made a visual inspection of his own.

After the HMS, Inc. Project Manager has given a final written approval of the clean-up operations, the contractor shall proceed to "lock-down" the containment area with an encapsulant. Exception to this is for containments that are not to be encapsulated prior to clearance air testing according to the Scope of Work (i.e. floor tile only projects).

Owner shall then arrange for an Air Monitoring Professional to sample the air in the work area for airborne fiber concentrations. Clearance-air monitoring shall proceed 24 hours after lock-down or when the area is dry, whichever is later.

Contractor may request a reduction in the 24-hour waiting period, if personal samples collected during the abatement work and detail clean-up work have shown fiber levels below the PEL. Reduction of waiting period must be made in writing, accompanied by personal sample results from this project. Contractor must acknowledge that reduction in waiting period may result in failed, or overloaded (with encapsulant) clearance air samples and that retaking and re-analyzing these air samples will be at the contractor's expense. Reduction in waiting time will be at the discretion of the HMS, Inc. Project Manager and the Owner.

Air samples will be taken using the "aggressive" air sampling techniques described in the AHERA regulations unless noted differently in the Scope of Work for non-AHERA sites. In the case aggressive samples cannot be collected (e.g. in a dirt floor area) this will be noted in the Project Manager's notes.

If PCM analysis is used for clearance air samples, all clearance samples at all locations shall indicate a fiber concentration of less than or equal to 0.01 f/cc for release of the work area.

If TEM analysis is to be used for clearance air samples, then the clearance criteria shall be the same as AHERA, unless otherwise specified in the Scope of Work.

Areas exceeding these levels shall be re-cleaned and, if appropriate, re-encapsulated at no additional cost to the owner. All areas where clearance air samples fail will be re-tested.

The contractor shall be responsible for all subsequent air sampling costs if air samples fail to meet clearance criteria levels. This cost includes four hours of time for HMS, Inc. personnel to collect the air samples and the cost of laboratory analysis.

**Roof Removal:** No clearance air monitoring required. Only a visual inspection of the roof for roofing debris will be provided.

**Tar-like Pipe Wrap Removal:** This non-friable material will only be removed by cutting the clean ends of the pipe it is insulating. No clearance air monitoring required.

**TSI Removal:** When removal is less than three linear feet within a single glovebag (or similar) containment, no clearance air monitoring will be required.

Regardless of the method used, when removal exceeds three linear feet within a single containment clearance air monitoring will be performed prior to the removal of the containment barriers.

**Drywall Removal:** Regardless of the asbestos content, when the quantity of drywall removed exceeds 3 square feet, clearance air monitoring will be performed prior to the removal of the containment barriers.

**VFT & Mastic Removal:** When the quantity removed exceeds 3 square feet, clearance air monitoring will be performed prior to the removal of the containment barriers.

## SECTION 18. MONITORING

Owner reserves the right to perform air and performance (contractor work practices, house keeping, record keeping, etc.) monitoring at any time.

Contractor shall conduct personal air monitoring in accord with OSHA regulations. Results shall be made available to the HMS, Inc. Project Manager within 72 hours of collection. Hard copies of these results shall be supplied to HMS, Inc. Project Manager within 7 days of collection. Failure to supply these sample results in the specified time may cause work to be stopped until all delinquent results have been submitted. Loss of contractor work time because of non compliance of the provisions of this paragraph will not extend the date for work completion.

Owner may take air samples prior to, during, and after the project. Work shall not be considered complete until all air sampling has been completed and satisfactory levels have been obtained. "Satisfactory levels" shall be those established by AHERA, unless more stringent requirements have been identified in the Scope of Work, General Specifications, General Requirements, or other Project Specifications.

In areas where soil contamination may be present, soil samples must meet specified criteria in Scope of Work prior to clearance air samples collection.

Owner, or HMS, Inc. Project Manager, shall be authorized to issue a STOP WORK order whenever Contractor's work or protective measures are not in accord with published regulations or contract specifications.

## SECTION 19. DISPOSAL PROCEDURES

### 19.1 DISPOSAL PROCEDURES

Waste transport and disposal personnel must wear at least half mask HEPA-cartridge type respirators when handling intact sealed bags.

Disposal bags shall be of 6-mil polyethylene, pre-printed with labels as required by California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) regulations.

Disposal drums shall be plastic, metal or fiber board with locking ring tops. If heavy duty card board boxes are allowed in the Scope of Work, they may replace the barrels. Cardboard boxes must be sturdy enough not to be deformed or compromised by the weight of the materials disposed within them. Minimum singlewall cardboard box edge crush rating is 32 lbs/in.

All containers, including bags and barrels or boxes must be labels the same as the ACM waste disposal bags.

All waste shall be double bagged in 6-mil polyethylene bags and goose-necked. These bags will then be placed into disposal drums as described above.

Contractor shall provide stick-on labels for disposal containers that meet the Cal/OSHA, NESHAPS, and DTSC requirements for hazardous and non-hazardous waste container labeling.

All waste bags shall have visibly damp materials but shall not contain loose water. In the event loose water is discovered within a waste bag, it shall be absorbed with kitty litter, saw dust or similar product prior to the bag being sealed.

All asbestos waste, hazardous or not, shall be manifested. Non-hazardous waste shall be manifested on a non-hazardous waste manifest.

All waste containers (barrels or boxes) shall be sealed in a manner that allows them to be opened for inspection of sealed bags within by HMS Project Manager, Regulatory personnel and Dumpsite personnel.

Waste placed into boxes or barrels at the project site must be disposed of within the same boxes and barrels at the dumpsite. Removal of waste from these boxes and barrels is not allowed. As the work progresses, to prevent exceeding available storage capacity onsite, sealed and labeled containers of asbestos-containing waste shall be removed and transported to the prearranged disposal location.

Disposal must occur at an authorized site in accordance with regulatory requirements of NESHAPS and applicable State and Local guidelines and regulations, including the California State Environmental Protection Agency, Toxic Substances Control Division regulations.

Transport vehicles shall be marked with the sign prescribed by NESHAPS regulations during loading and unloading to warn people of the presence of asbestos.

All dump receipts, trip tickets, waste manifests, NESHAP Waste Shipment Record (WSR) and other documentation of disposal shall be delivered to the Owner, for the Owner's records. The WSR is not required if the cubic yards of asbestos-containing waste is indicated on the Waste Manifest. The manifest should be signed by the Owner, the hauler, and the Disposal Site Operator as the responsibility for the material changes hands. If a second hauler is employed, his name, address, telephone number and signature should also appear on the form. The WSR, if used, shall be signed by the Owner or its agent and the disposal site operator.

All manifests shall have asbestos waste identified as: "RQ, Asbestos, 9, NA2212, III". This requirement may be changed as new regulations are issued. See "Waste Disposal" requirements at end of "General Requirements".

All manifests shall be accompanied by a "Notice and Certification". A signed copy of this must be provided to the Owner or Owner's agent.

### 19.2 TRANSPORTATION TO THE LANDFILL

Once drums, bags and wrapped components have been removed from the work area, they shall be loaded into an enclosed (solid walls, ceiling and floor) truck or dumpster, which has been lined with 6-mil polyethylene (walls and floor).

When moving containers, utilize hand trucks, carts and proper lifting techniques to avoid back injuries. Trucks with lift gates are helpful for raising drums during truck loading.

Personnel loading asbestos-containing waste shall be protected by disposable clothing including head, body and foot protection and, at a minimum, half-face piece, air-purifying, dual cartridge respirators equipped with high-efficiency filters. Any debris or residue observed on containers or surfaces outside of the work area resulting from clean-up or disposal activities shall be immediately cleaned up using HEPA filtered vacuum equipment and/or wet methods as appropriate.

No waste containers shall be on site which contain other hazardous waste, or hazardous waste from another owner. Waste from multiple sites of the same owner within the same waste container is acceptable; however, it must be manifested separately.

If contractor is storing waste from various sites of one owner, all transportation vehicles shall be covered by the same regulations as the dumpster or truck being used to haul the waste to the dump. If equipment or supplies are to be left in vehicles during hauling of waste to dumpster or truck, waste and equipment/supplies must be separated by a solid (wood or metal) barrier which has been sealed as a critical barrier. A poly wall barrier is not sufficient.

Dumpster truck or storage bin must be locked at all times except when being filled.

It is the contractor's responsibility to see that all dumpsters, trucks, and storage bins arrive onsite completely free from debris.

The contractor shall provide a weight receipt that identifies the net weight of the material being discarded.

### 19.3 DISPOSAL AT THE LANDFILL

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

Bags, drums, barrels and components shall be inspected as they are off-loaded at the disposal site. Material in damaged containers shall be re-packed in empty drums or bags as necessary. (Local requirements may not allow the disposal of asbestos waste in drums. Check with appropriate agency and institute appropriate alternative procedures.)

Waste containers shall be placed on the ground at the disposal site, not pushed or thrown out of the trucks (weight of wet material could rupture containers).

Personnel off-loading containers at the disposal site shall wear protective equipment consisting of disposable head, body and foot protection and, at a minimum, half-face piece, air-purifying, dual cartridge respirators equipped with high-efficiency filters.

Following the removal of all containerized waste, the truck cargo area shall be decontaminated using HEPA vacuums and/or wet methods to meet the no visible residue criteria. Polyethylene sheeting shall be

removed and discarded, along with contaminated cleaning materials and protective clothing, in bags or drums at the disposal site.

## SECTION 20. SPECIFIC PROCEDURES AND REQUIREMENTS

NOTE: All Specific Procedures and Requirements listed in Section 20 shall be reviewed by the contractor along with the Scope of Work issued for the project. If any perceived conflicts are present between the Scope of Work and these specifications or within the General Requirements specification itself, the contractor shall ask for a written interpretation from the HMS, Inc. Project Manager prior to submission of his bid. If conflicts in the "Scope of Work" and this specification or with the General Requirements specification itself are discovered after the start of abatement, the more stringent specification and/or requirements will be enforced. The HMS, Inc. Project Manager shall make the determination as to what which requirements and/or specifications are more stringent.

### 20.1 GENERAL REPAIR OF DAMAGED THERMAL SYSTEM INSULATION (TSI) PROCEDURES

Where TSI has been damaged, and it is feasible to repair the small nicks, cuts, and exposed ends, the following procedures shall be performed:

1. Contractor shall establish a regulated area according to the requirements of 8 CCR1529 and as enhanced by this specification and the Scope of Work, including but not limited to the posting of the area and allowing on authorized personnel into the work area.
2. Piece of 4-6 mil poly sheeting shall be placed directly under the area to be worked to collect any fallen debris or repair compound.
3. Half-masks and disposable suits (at a minimum) shall be used during this work.
4. The area shall be restricted to those personnel involved in the work, so posting of the accesses is required. In some cases, poly shall be used to cover the access points.
5. A HEPA-vacuum must be in the immediate area to pre-clean any debris observed surrounding the damaged section, or in the event of a mishap.
6. If work is performed indoors, the ventilation system shall be off in the areas worked in to prevent fiber distribution. Ventilation supply and exhaust ducts shall be covered with poly sheeting.
7. It will be necessary to remove small sections of other insulation material, such as fiberglass, if debris from the damaged pipewrap has contaminated it.
8. If appropriate, contractor shall HEPA-vacuuming the damaged section will collect all loose, hanging, friable insulation material prior to any further repair work.
9. Very small cracks, holes, nicks, and cuts can be repaired with only joint compound or with a single layer of wettable cloth and appropriate bridging encapsulant. Larger sections of damaged pipewrap, particularly where pipe hangers or metal channel have damaged the insulation, will require at least two layers of wettable cloth.
10. Where the pipewrap cannot be removed completely from penetrations in the walls, floors, or ceilings, the pipewrap shall be removed at least one inch into the opening and sealed with a bridging encapsulant to grade. The Contractor may choose to fill large gaps with fiberglass insulation, prior to sealing with the encapsulant.
11. All of the Contractor's materials, including poly sheeting, tape, joint compound, etc. shall be removed at the completion of the work performed.

## 20.2 GLOVEBAG TECHNIQUE REQUIREMENTS

Where the glovebag technique is specified for removal of Thermal System Insulation (TSI), or in those areas where the Contractor opts to use glovebags, all of the following conditions must be met:

1. The Contractor shall develop a regulated area that meets the requirements of 8 CCR 1529 regarding posting and limited access.
2. The Contractor shall follow the procedures recommended by the manufacturer of the glovebags, and the specifications required by Federal OSHA and Cal/OSHA regulations
3. All critical openings within the regulated area shall be sealed prior to set up of the containment.
4. At least one layer of 6 mil poly must be used to contain the abatement area.
5. Stationary objects in the immediate area of the room which cannot be removed from the work area must be covered with at least one layer of 4 mil poly sheeting after being pre-cleaned.
6. A minimum three stage decontamination unit with a shower shall be contiguous with the containment for areas requiring removal of more than 6 linear feet of TSI, or 10 square feet of surfacing material.
7. Negative pressure shall be established and a circular graph recording manometer shall be attached to the containment per Section 13.
8. A HEPA-filtered vacuum shall be in the immediate area for use in conjunction with the bags or in case of a spill.
9. Glovebags may not be used on surfaces where temperatures exceed 150 degrees Fahrenheit.
10. Glovebags may be used only once, and may not be moved or slid for removal of a second section of TSI.
11. At least two persons shall perform Class I glovebag removal as defined by Federal and Cal/OSHA.
12. Before beginning the operation, loose and friable material adjacent to the glovebag operation shall be wrapped and sealed in two layers of 6 mil poly sheeting or otherwise rendered intact.
13. Where the system uses an attached waste bag, such bag shall be connected to a collection bag using a hose or other materials which shall withstand pressure of ACM waste and water without losing its integrity.
14. The Contractor shall apply a sufficient volume of amended water to all pipewrap scheduled for removal while it is enclosed in the glovebag.
15. A sliding valve or other device shall separate the waste bag from the hose to ensure no exposure when the waste bag is disconnected.
16. Prior to placement in the disposal bag, glovebags shall be collapsed by removing air within them using a HEPA-vacuum.
17. Upon detachment, the glovebag must be immediately placed into at least two 6 mil thick disposal bags. The disposal bags must be sealed using the "gooseneck" sealing technique.
18. Where pipes enter walls, floors, or ceilings which are not within the scope of the project, the

pipewrap shall be removed at least 1" into the structure and the pipewrap end must be sealed with bridging encapsulant and/or wettable cloth.

19. If the Contractor chooses to use a Negative Pressure Glove Bag System, Negative Pressure Glove Box System, or Water Spray Process System in lieu of the traditional Glovebag System, the Contractor shall submit to Owner's agent/site representative detailed written procedures on those systems which will be used. In addition, air sampling data, generated by the Contractor, must be provided to Owner's agent/site representative. Owner's agent/site representative must provide prior approval to alternate techniques and approaches to those specifications detailed here.
20. The Contractor is responsible for salvage and decontamination of all pipe system supports, hangers, brackets, saddles, etc. These items shall be inventoried by the Contractor, and verified by the Owner's agent/site representative before and after abatement. The Contractor will be responsible for replacement of any items lost or damaged.
21. The Contractor shall be responsible for ensuring the piping system remains adequately supported at all times. This may be achieved by readjusting existing hanger brackets as insulation is removed, or by other approved methods, such as inserting wood blocks to replace the thickness of the removed insulation.

### 20.3 MINI-CUBE ENCLOSURE REQUIREMENTS

1. For the purposes of these specifications, "mini-cube enclosure", "mini-enclosure", and "mini-cube" are all used interchangeably and mean the same. The mini-cube enclosure is required to be constructed whenever small sections of walls, ceilings, or pipe insulation are to be removed for electrical, plumbing, mechanical, etc., work. The purpose is to create an enclosed and controlled work environment while removing asbestos or accessing an attic space which is contaminated.
2. Enclosure walls and floors must be constructed of at least two layers of fire-rated 6 mil poly sheeting. No visible holes, cracks, penetrations, etc. shall be within this enclosure. The upright frame shall be adjustable in order to butt the top of the enclosure to the wall or ceiling area. A single drop layer of 6 mil poly sheeting shall be put down and removed daily at the end of the work shift. For work involving removal of TSI by glovebag technique, only one layer of 6 mil poly sheeting is required for construction of the mini-enclosure. All mini-enclosures, mini-cubes, etc. must have a view port that allows the HMS, Inc. Project Manager to view the activities going on inside the regulated area. The placement, number, and size of the view port(s) must be acceptable to the HMS, Inc. Project Manager.
3. At least two chambers shall be present, separated by flapped poly sheeting doors. The first chamber upon entrance will be called the "clean" chamber, while the second chamber will be called the "dirty" chamber.
4. Since the top of the enclosure must be open in the chamber where ceiling access will take place, special care must be taken prior to moving the enclosure. If the mini-enclosure is designed to be portable, the enclosure must be sealed at the top prior to being moved to the next location. This may be achieved by temporarily sealing the top of the chamber with poly and tape from the inside.
5. Dirty chamber must be sealed around work area in a fashion that creates an air-tight seal without causing damage to floor, walls, ceilings or other materials. This may be achieved by use of a pliable material, such as non-porous foam rubber, or other methods approved by the HMS, Inc. project manager. A tight seal must be maintained without damage to the remaining materials (this may be difficult if tape is used).

6. For access to an attic space, position the enclosure at the location to be worked. The enclosure must be butted up to the ceiling surface to form a semi-seal between the top of the enclosure and the ceiling. The enclosure can then be completely sealed to the ceiling, using tape. After a seal has been established, access into the ceiling can then proceed.
7. A HEPA vacuum shall be used to establish "negative pressure" or airflow into the enclosure. This shall be verified by using ventilation smoke tubes.
8. The following equipment and materials, at a minimum, must be present inside the mini-enclosure "dirty" chamber:
  - 6 mil poly bag with clean rags for cleaning.
  - Amended water in a Hudson-like sprayer for the rags.
  - Empty bag for disposal of items.
  - Flashlights or drop light as appropriate.
  - Personal Protective Equipment including extra suits incase of multiple entry/exits
  - Amended water in a properly labeled Hudson Sprayer
  - Daily change of 6 mil poly sheeting drop layer.
  - Other tools needed to perform task.
9. The following equipment and materials, at a minimum, must be present inside of the mini-enclosure "clean" chamber:
  - Clean potable water in a Hudson-like sprayer which is labeled "Clean Potable Water Only". A new container must be designed for potable water only. No container used previously to hold liquids will be allowed. No open containers will be allowed.
  - Clean disposable shower or hand towels for drying hands, arms, and face.
  - 6 mil poly bag for disposal of towels and other items.
  - Any other tools the Contractor requires, such as tape, screwdrivers, etc.
10. The work area must be delineated with the proper barrier tape and the outside of the poly-flapped entry to the mini-cube must be posted with OSHA required warning signs for a regulated area.
11. Clean disposable coveralls must be worn entering the mini-enclosure, and must be removed prior to leaving the mini-enclosure. Depending upon the work being performed, the Contractor may choose to "double suit" in disposable coveralls. All workers shall use the Clean Room and its supplies for personal hygiene prior to exiting the enclosure.
12. For work involving removal of more than 6 linear feet of TSI, or greater than 10 square feet of surfacing material (regardless of method to be used), a shower must be attached to the mini-cube enclosure and be contiguous with the work environment, and comply with all other decontamination requirements in related sections of this specification.
13. If there is removal of greater than 3 linear feet of TSI, or greater than 3 square feet of surfacing

material (regardless of the method used), the enclosure must remain in place until a final visual is passed, and clearance air samples are collected by Owner's agent/site representative. Where work involves less than these quantities, only a visual inspection by Owner's agent/site representative will be required prior to removal of the mini-enclosure. Mini-enclosure shall be constructed in a fashion that will stay in place, remain intact and under negative pressure for numerous days while awaiting clearance air sample results.

## 20.4 ROOFING ABATEMENT REQUIREMENTS

### **General Requirements**

1. Except as amended here and in Section 24, Asbestos Specification/ Procedures, all other Sections of this Exhibit shall be followed.
2. Work may be halted at the discretion of the Owner's agent/site representative if wind conditions occur which can or does cause removed roofing materials to be blown off the roof area, or beyond the designated removal area perimeter. All roofing work shall be coordinated to allow other trades to work at the same time as long as their work is located in areas where contamination cannot occur. No cutting, sanding, grinding, or removal of any type will take place until all preparations for removal have been completed and inspected by the onsite project manager. This section may be amended in other sections of this specification for this project.
3. All work hours at the site shall be determined by the Owner or as defined in other sections of this Exhibit.
4. All work shall be coordinated with the other trades involved on this project, with central coordination being primary between the abatement contractor and the demolition contractor for the project. However, Owner's agent/site representative must be notified of projects in advance as stated in other sections of this Exhibit.
5. The Contractor shall provide all necessary equipment, tools, materials, lighting, labor, etc. to perform the work. Sufficient lighting shall be provided to illuminate the entire removal and transit areas for removal of roofing material, and for the final visual inspection by the Owner's agent/site representative if the work is to be performed at night.
6. All HEPA equipment to be used on the project must be delivered to the site empty of all debris, clean, free of dust, and in full operating condition. HEPA equipment to be used inside any building must have been DOP tested within the last 90 days. This DOP certification must be verified by Owner's agent/site representative prior to its use.
7. The Contractor shall provide worker safety according to all OSHA regulations (Title 8), including use of tie-offs, harnesses, and lanyards. Particular attention shall be given to the placement and securing of accesses (ladders, etc.) to the roof and for fall protection for those working near the perimeter of the roof.
8. All ladders used shall conform to Cal/OSHA requirements. The ladders shall extend at least three feet above the roof line, and shall be tied off to the building to prevent them from sliding.

### **Contractor Responsibilities**

9. The Contractor shall be responsible for securing all exposed roof surfaces, including any roof penetrations against weather after roofing materials have been removed. Protection of the roof must be made with an impermeable barrier to prevent water from entering the building structure.

10. The Contractor will be responsible for all clean-up and costs associated with the decontamination of occupied spaces in the event of contamination of an occupied space.
11. The Contractor is responsible for obtaining all necessary permits to perform this work, including any local permits for work in the evening/night hours.
12. Standards of cleanliness for fluted metal decks located underneath asbestos-containing roofing materials. It is possible for the abatement crew to remove the asbestos-containing roofing materials without breaking through or removing the light grey insulation material beneath it. If removal of asbestos roofing materials is performed as described above, and the insulation material remains intact, Solano Community College District's agent/site representative can conduct a final visual for asbestos-containing debris. Once this inspection has been completed, and the requirement for no remaining asbestos-containing debris on the roof is met, the insulation layer is removed.

At this point, asbestos is no longer an issue, and Solano Community College's agent/site representative will allow minor amounts of the non-asbestos debris to remain in the fluted areas of the deck. General cleaning of the flutes is conducted to a point where the amount of debris remaining is reduced to a minimal amount without having to completely clean or vacuum the flute channel.

The Solano Community College District is unaware of any potential hazard which could be caused by leaving some non-asbestos debris, and does not consider it necessary to have the flute channels detailed beyond generally clean conditions. However, if the fiberboard layer is extensively damaged during removal of the asbestos-containing materials, and asbestos-containing roofing debris cannot be distinguished from non-asbestos containing roofing materials, all flutes shall be vacuumed and cleaned as set forth in the project specifications.

#### **General Roof Removal Instructions and Requirements**

13. Removal of non-friable asbestos-containing roofing is designated as Class II work. Half-masks and disposable coveralls shall be used at a minimum by all workers, at all times, when within the regulated area.
14. No personnel will be allowed into the regulated area during actual removal work without proper respiratory and personal protective equipment. Work boots with hard soles are required to be worn by all abatement personnel. No athletic, street, or dress shoes are to be worn during work activities.
15. All roofing material shall be removed in an intact state to the extent feasible.
16. All roofing is to be removed wet by an amended water solution or encapsulant as necessary.
17. The abated roof area shall be HEPA vacuumed after roofing materials have been removed. Particular attention shall be directed at the flute channels of metal decks.

#### **Pre-Abatement Preparation Requirements**

18. The perimeter of the roof where removal is to be conducted, shall be posted with barrier tape at a distance of at least 20 feet from the edge of the removal area. This barrier tape will provide a buffer zone, and assist in the restriction of non-abatement personnel.

Poly sheeting shall be placed on the ground directly below the work area or on the adjacent roof surfaces and cover an area extending out at least 10 feet. The Contractor shall secure the poly to the ground using tape, weights, or other means to secure the poly from being picked up by wind or becoming a trip hazard. The Contractor shall secure the poly to the adjacent roof surfaces with tape, etc.

## **Waste Bins and Waste Bin Preparations**

19. The Contractor is responsible for inspecting all waste bins delivered to the job site for load worthiness. The Owner's agent/site representative reserves the right to refuse any waste bin without any additional cost to the client, which upon examination, and in the opinion of the site representative, has a high probability of failure of doors, skids, walls, floors, or which contains other debris.
20. The Contractor shall be required to place footing materials of sufficient thickness, strength, and size under the casters, footings, and/or runners of waste bin(s) to prevent damage of property surfaces. The contractor is responsible for all damages to Owner's property caused by the delivery, placement, or removal of a waste bin. Damaged property shall be repaired to equal or better condition than was present prior to the activity causing the damage. This section may be amended in Section 24, Asbestos Specification/Procedures for this project.
21. Unless the roofing material is carried or passed to the ground by hand, it shall be lowered to the ground via covered, dust-tight chute, crane, or hoist. All waste shall be sufficiently wetted with amended water to prevent fiber release. If fiber release cannot be prevented, then the chute and bin must be within a negative pressure enclosure. In no case shall roofing materials be dropped or thrown into trucks, bins or dumpsters from the roof without the protection of a dust tight chute or other means acceptable to the HMS, Inc. Project Manager.

## **Posting and Label Requirements for:**

### Regulated Area Entry Points and Waste Bin Perimeters

22. Access to regulated areas shall be posted as outlined by Cal/OSHA Title 8, 1529 (k)(7)(B) 1 and 2 with warning signs. Perimeters of waste bin(s) shall also be posted as outlined by Cal/OSHA Title 8, 1529 (k)(7)(B) 1 and 2 with barrier tape bearing the following information:

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

These postings are required to warn non-abatement personnel of the restricted access, and potential hazard which exists in the vicinity of the regulated areas and waste bin(s).

### Building Perimeter at Ground Level

Building perimeters shall be posted with barrier tape bearing one of the following descriptions:

**CAUTION** in black letters on a solid yellow background.

**DANGER** in black letters on a solid red background.

**DANGER ASBESTOS HAZARD** in black letters on a solid red background.

### WASTE MATERIAL CONTAINERS

29. Roofing waste material containers, including the "burrito wrapped" material, shall have warning labels affixed in accordance with Cal/OSHA Title 8, 1529 (k)(8)(A-D).

**DANGER  
CONTAINS ASBESTOS FIBERS**

**AVOID CREATING DUST  
CANCER AND LUNG DISEASE HAZARD**

**General Requirements for Creating Roof Penetrations**

30. All roofing penetration cuts (if any) shall be at the direction of the primary contractors' Job Foreman, and coordinated with Owner's agent/site representative as to the time of work. Any equipment to be used for the purposes of cutting, grinding, or sanding must meet or exceed all Cal/OSHA requirements regarding HEPA filtration and wetting/misting. Any equipment rented for the purpose of conducting asbestos work must be accompanied with documentation verifying that the rental agency has been notified, and acknowledges receipt of notification that the equipment being rented will be used for asbestos related work. This documentation will be submitted to Owner's agent/site representative prior to the equipment being used on the job site.

The penetration area shall be surrounded by a 10 foot wide section of at least 4 mil poly. This poly will help in the cleanup of small roofing material particles which may otherwise be mixed onto the surface of surrounding roof material. If the penetration is within 10 feet of the edge of the roof, poly shall be placed on the ground (or roof) directly below the work area. The Contractor shall secure the poly to the ground using tape, weights, or other means to secure the poly from wind and becoming a trip hazard.

**Waste Disposal and Documentation Requirements**

31. Roofing waste may be disposed as non-hazardous asbestos waste, in a landfill permitted to accept non-friable, non-hazardous asbestos roofing material. If the asbestos roofing material is currently friable, or becomes friable during its removal, it shall be disposed of in a landfill permitted to accept friable asbestos waste.

It is acceptable to dispose of bagged or sealed roofing waste into open topped dumpsters lined with a single layer of 6 mil poly sheeting. The Contractor shall completely enclose all roofing waste material commonly known as "burrito wrap" in the dumpster using 6 mil poly sheeting.

Upon being lowered, unwrapped material shall be transferred to a closed receptacle in such a manner as to preclude the dispersion of dust. In addition to the 6 mil poly sheeting, the top of the dumpster shall be completely enclosed with a tarp which is secured to the vehicle for transport or storage onsite if left overnight. The type of material for the tarp shall meet all requirements for transport of hazardous materials.

32. The Contractor is required to provide to Owner's agent/site representative a copy of the "trip tickets" indicating the actual weight of waste material.

**20.5 VINYL ASBESTOS FLOOR TILE (VFT) REMOVAL REQUIREMENTS**

Contractor shall conduct VFT and/or mastic removal within a regulated area as defined by 8 CCR 1529.

1. The doors, windows, and penetrations into the rooms shall be sealed with polyethylene. All ventilation systems shall be locked-out and sealed as critical barriers. An attached three stage decon with operational shower is required. The Scope of Work may require more chambers depending upon the project size.
2. Baseboards shall be removed if necessary to access all VFT. If baseboard mastic contains asbestos, baseboards are not to be disturbed prior to start of abatement.
3. Half-mask respirators, rubber boots, gloves, and disposable coveralls are to be used as a minimum for worker protection.

4. The VFT's must be double bagged in 6 mil poly bags. It is acceptable to place several bags of VFTs into a barrel lined with a second 6 mil poly bag.
5. All VFT's and mastic must be sufficiently wetted with amended water when being lifted off the floor.
6. The mastic layer may be removed either by solvent or wet buffing with a solvent. If a solvent is used, the negative air unit exhaust shall be directed down wind as much as possible, or a sufficient length of exhaust hose will be required to prevent re-entrainment of the vapors. Any solvents used for removing mastic shall be non-toxic low odor and non-flammable. A material safety data sheet for the solvent shall be provided and subject to approval by the project manager prior to use.
7. During removal of the mastic with solvent or other organic based liquid, combination respiratory cartridges (organic vapor/HEPA) shall be worn to protect against asbestos and the solvent.
8. If floors are removed after walls and ceilings, full enclosure of the walls and ceiling with poly will be required, no matter what method of tile and mastic removal is used. If floors are removed prior to walls and ceilings which will eventually be removed as asbestos containing materials, then critical barriers and splash guards are all that will be required. All surfaces and materials not being removed as asbestos containing material must be covered with poly no matter which order floors walls and ceiling are abated.
9. Following removal of all floor tile and mastic, the contractor shall wash the floors thoroughly using a solution of trisodium phosphate (TSP) and water. Sufficient water shall be used for final rinsing of the floor for a clean finish.
10. No bead blasting or shot blasting is allowed to be performed on these projects.
11. Baseboards may have multiple layers of mastic, all layers are to be removed.

#### 20.6 DRYWALL REMOVAL REQUIREMENTS

1. The doors, windows, and penetrations into the rooms shall be sealed as critical barriers with 6-mil polyethylene. An attached three stage decon with operable shower is required. The Scope of Work may require more chambers depending upon the project size.
2. Powered air purifying HEPA respirators, rubber boots, gloves, and disposable coveralls are to be used as a minimum for worker protection.
3. Shut down and lock out all heating, ventilating and air-conditioning-system (HVAC) components that are in, supply or pass through the work area. Seal all intake and exhaust vents in the work area with tape and two layers of 6-mil polyethylene within the work area (interior) and one layer of 6-mil poly on the exterior of the building. Also seal any seams in system components that pass through the work area. Remove all HVAC system filters and place in labeled 6-mil polyethylene bags for storing and eventual disposal as asbestos-contaminated waste.
4. The drywall must be double bagged and "goose-necked" in 6 mil poly bags. It is acceptable to place several "goose-necked" bags of drywall into a barrel lined with a second 6 mil poly bag that is "goose-necked".
5. All drywall must be sufficiently wetted with amended water when being removed.
6. Negative pressure shall be established, maintained and recorded. This shall be verified by using ventilation smoke tubes.
7. Contractor, in conjunction with the Solano Community College District/Owner, shall shut down and lock

out electric power to all work areas. Contractor shall provide temporary power and lighting sources, ensure safe installation (including ground faulting) of temporary power sources and equipment by complying with all applicable electrical code requirements and OSHA requirements for temporary electrical systems. Contractor shall have a certified electrician shut down and lock out electric power, and setup temporary power and lighting sources. All cost for electric supply shall be paid for by the Solano Community College District/Owner.

8. Contractor shall have a certified plumber disconnect and cap all water and gas within the work area. Water shall be provided by the Solano Community College District from a location near the work area, but not within the work area.
9. All non-asbestos-containing materials left in the work area shall be covered by two layers of 6-mil polyethylene sheeting. If any non-asbestos containing materials become contaminated with asbestos during removal activities these materials shall be disposed of as asbestos-containing materials by the Contractor.
10. A critical barrier only, negative pressure check shall be required prior to the set-up of interior containment.
11. Cover floors in the work area with polyethylene sheeting. Floor shall be covered with a minimum of two layers of 6-mil polyethylene sheeting. Plastic shall be sized to minimize seams. A distance of at least six (6) feet between seams is sufficient. DO NOT locate any seams at wall/floor joints. Floor sheeting shall extend at least twelve inches (12") up the sidewalls of the work area. Sheeting shall be installed in a fashion so as to prevent slippage between successive layers of material.

A layer of 10-mil polyethylene sheeting and/or plywood will be required to protect certain flooring materials -- carpets, hardwood floors, tiles, etc. At no time will wall or ceiling surfaces be permitted to be dropped onto unprotected floors. This includes areas where the floor surfaces contain asbestos.

12. Cover asbestos-containing walls in the work area with polyethylene sheeting if these walls are to remain or if these walls are non-asbestos containing and will remain. Walls shall be covered with a minimum of two layers of 4-mil polyethylene sheeting. Plastic shall be sized to minimize seams. Seams shall be staggered and separated by a distance of at least six feet (6'). DO NOT locate any seams at wall/floor joints. Wall sheeting shall overlap floor sheeting by at least twelve inches (12") beyond the wall/floor joint to provide a better seal against water damage and for pressure differential maintenance. Wall sheeting shall be secured adequately to prevent it from falling away from the walls. This may require additional support/attachment when pressure differential systems are utilized.
13. Cover asbestos -containing ceilings in the work area with polyethylene sheeting if they are to remain or if these ceilings are non-asbestos-containing and will remain. Ceilings shall be covered with a minimum of two layers of 4 mil polyethylene sheeting. Plastic shall be sized to minimize seams. Seams shall be staggered and separated by a distance of at least six feet (6'). DO NOT locate seams at wall/ ceiling joints. Ceiling sheeting shall overlap wall sheeting by at least twelve inches (12") beyond the ceiling/wall joint to provide a better seal against water damage and for pressure differential maintenance. Ceiling sheeting shall be secured adequately to prevent it from falling away from the walls. This may require additional support/attachment when pressure differential systems are utilized.
14. If floor tile and drywall are to be removed within the same work area the floor tile and mastic shall be removed first, followed by the drywall removal. If the contractor wishes to submit a different removal work plan it shall be submitted prior to the beginning of the project. The HMS, Inc. Project Manager will review this work plan and respond in writing if it is accepted, or if it is accepted under condition of amendment.
15. Asbestos Abatement Contractor is required to remove nails, screws and/or other wall/ceiling material attachments.

16. Asbestos Abatement Contractor may remove studs with asbestos containing materials still attached, as long as they are to be removed, and are disposed of as asbestos-containing material.
17. Asbestos Abatement Contractor may not cut any sheer wall for any reason, without prior consent from the project Architect.
18. No damage will be permitted to studs that are to remain in place. Wall surfaces are to be peeled away, not pounded. The Contractor shall be financial responsible for any damage caused to studs.
19. Contractor is responsible for clean-up of all texturing and joint compound found on studs and rafter, as well as other surfaces behind, or inset into, the drywall materials.
20. Adhere to other requirements as stated in Sections 1-19, 21 and 22.
21. Following removal of all drywall, the contractor shall encapsulate the area with an encapsulate that is compatible with the reinstallation of wall and/or ceiling surfaces.  
The floors shall not be encapsulated unless otherwise noted in the Scope of Work, or stipulated by the HMS, Inc. Project Manager.

NOTE: All Specific Procedures and Requirements listed in Section 20 shall be reviewed by the contractor along with the Scope of Work issued for the project. If any perceived conflicts are present between the Scope of Work and these specifications or within the General Requirements specification itself, the contractor shall ask for a written interpretation from the HMS, Inc. Project Manager prior to submission of his bid. If conflicts in the "Scope of Work" and this specification, or with the General Requirements specification itself are discovered after the start of abatement, the more stringent specification and/or requirements will be enforced. The HMS, Inc. Project Manager shall make the determination as to which requirements and/or specifications are more stringent. If the materials to be removed during the course of project do not relate to any of the procedures in Section 20 or multiple materials exist within the work area, the contractor shall follow those procedures outlined in Sections 1-19, 21 and 22.

## SECTION 21. PATENTS AND PREVAILING WAGES

### 21.1 PATENTS

Contractor shall pay all royalties and license fees required for the performance of the work. Contractor shall defend suits or claims resulting from contractor's or any subcontractor's infringement of patent rights and shall indemnify Owner and Owner's representative from losses on account thereof.

## SECTION 22. PERMITS AND FEES

If any permits are required to be issued for any of the Work to be performed by Contractor, Subcontractor(s) or Sub-subcontractor(s) as part of the Project, it shall be the sole responsibility of the Contractor to expeditiously obtain all such permits and any costs incurred by the Contractor in obtaining such Permits shall be included within the Contract Price.

## Lead Related Construction Specifications

### PART 1: GENERAL REQUIREMENTS

#### 1.1 SUMMARY

These specifications are designed to minimize and control potential lead hazards during demolition of construction materials that contain lead.

The primary focus of these specifications is to address the work practices and procedures that the Contractor must follow when conducting activities that may disturb lead in coatings on building surfaces.

No Contractor shall begin work that will disturb any surfaces in a manner that will either expose a worker to possible lead containing dust or create possible lead containing waste, until all required pre-construction documentation has been reviewed and written approval from The Owner has been received. Any Contractor observed conducting such activities without having written approval from THE OWNER will be instructed to stop work. Work will not be allowed to resume until the aforementioned approval has been received by the Contractor.

These specifications shall apply to all work activities that are expected to disturb coatings containing lead. These activities include demolition of coated surfaces and the removal of lead coated building components.

The Contractor shall utilize engineering controls to limit the release of lead dust or debris. These engineering controls may include, but are not limited to, using wet methods, using tools with vacuum recovery systems with High Efficiency Air Particulate (HEPA) filtration, using vacuums with HEPA filtration, and the prompt cleanup of any debris produced. Dry scraping, sanding, grinding, or abrading lead-containing materials is not permitted.

#### 1.2 REGULATORY COMPLIANCE

There are various agencies that regulate activities involving lead-containing paints and coatings. The following definitions are discussed in order to assist in the interpretation of the requirements that follow. The following is a summary list of the most important agencies and regulations that apply to the disturbance of lead and lead in coating during construction work. This list is not to be considered comprehensive. The Contractor is responsible for complying with all applicable Federal, State, and Local regulations that may apply to the specific work being conducted by the Contractor.

##### 1.2.1 ENVIRONMENTAL PROTECTION AGENCY (EPA)

Lead: Identification of Dangerous Levels of Lead; Final Rule (40 CFR Part 745 Subpart D)

The EPA defines lead-based paint as paints and coatings that contain lead in concentrations equal to or more than one milligram per square centimeter (1 ug/cm<sup>2</sup>), 5000 parts per million (5000 ppm), or one half of one percent (0.5%) by weight. EPA regulations apply to all housing and child-occupied facilities built before 1978. When the term A lead-based paint is used in the context of these specifications, the term is used only to refer to paint that contains lead in concentrations equal to or greater than that defined by the EPA as lead-based paint. (This is to differentiate lead-based paint from the term A lead-containing paint as used for compliance with OSHA and Cal/OSHA.)

##### 1.2.2 HOUSING AND URBAN DEVELOPMENT (HUD)

Requirements for Notification, Evaluation and Reduction of Lead-Based Paint Hazards in Federally Owned Residential Property and Housing Receiving Federal Assistance (24 CFR Part 35)

The HUD Rule for Federal Housing (shortened name) applies to all residential properties built before 1978 that receive Federal financial assistance. This regulation uses the same definition of lead-based paint as the EPA. The work practices and procedures described in these specifications are designed to comply with occupant and worker protection regulations as mandated by OSHA and Cal/OSHA regulations for work that disturbs lead paint. These specifications are not designed to comply with all the requirements of 24 CFR Part 35. THE OWNER may require additional practices and procedures in the scope of work for activities conducted in properties covered by the HUD Rule for Federal Housing.

### 1.2.3 CALIFORNIA DEPARTMENT OF HEALTH SERVICES (CDPH)

Accreditation, Certification, and Work Practices For Lead-Based Paint And Lead Hazards (Title 17, CCR, Division 1, Chapter 8, Sections 35000-361000)

This regulation primarily applies to residential and public buildings located in California. The definition of a public building is one that is generally accessible to the public. Some aspects of this regulation, particularly those that pertain to the definition of presumed lead-based paint and the containment requirements for disturbing lead-based paint apply to all structures in California.

This CDPH regulation definition of lead-based paint is identical to the EPA/HUD definition of 1 ug/cm<sup>2</sup>, 5000 ppm, 0.5% by weight. In addition, this regulation requires all paint on structures in California to be treated as presumed lead-based paint unless the paint is on a home built after 1978 or a school built after 1992.

The CDPH regulation differentiates between work that disturbs lead as part of renovation or maintenance work and work that disturbs lead as part of abatement work as defined in Title 17. The work practices and procedures described in these specifications are designed to comply with worker protection regulations as mandated by OSHA and Cal/OSHA regulations for work that disturbs lead as part of demolition work. These specifications are not designed to comply with the requirements for abatement as defined in the CDPH Title 17 regulation. THE OWNER may require additional practices and procedures in the scope of work for activities conducted as abatement as defined by Title 17.

### 1.2.4 OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (CAL/OSHA)

Lead Standard for the Construction Industry (CFR 1926.62)(8 CCR 1532.1)

This standard regulates work done by employees who may disturb lead as part of renovation or maintenance work.

The OSHA and the Cal/OSHA standards are virtually identical though Cal/OSHA adds some requirements that are not in the OSHA standard.

OSHA and Cal/OSHA regulate lead whenever lead is determined to exist in a material. When the term lead-containing paint is used in the context of these specifications, the term is used to refer to paint that contains lead in an amount equal to or above the reporting limit for the laboratory analysis or detected by an X-ray Fluorescent Analyzer (XRF).

In addition, Cal/OSHA uses the EPA/HUD/CDPH definition of lead-based paint (1 ug/cm<sup>2</sup>, 5000 ppm, 0.5% by weight) for their pre-job notification requirements discussed in section 1.3.

The Cal/OSHA standard has additional requirements that are not in the Federal OSHA standard found in CFR 1926.62. Contractors not familiar with the California standard must familiarize themselves with the additional requirements. The following information summarizes the significant additional requirements in the Cal/OSHA standard. This summary is not meant to substitute for the Contractor reading and being familiar with the Cal/OSHA requirements.

- a. The California standard requires employers to notify Cal/OSHA before employees conduct a trigger task that will disturb more than 100 square or linear feet of material that contains lead in concentrations equal to or above 1 ug/cm<sup>2</sup>, 5000 ppm, 0.5% by weight. The notification also applies to welding or torch cutting that takes more than one hour in a shift. Trigger tasks are described in 8 CCR 1532.1 (d)(2). In brief, they include manual demolition, scraping, sanding, using HEPA-attached equipment, using heat guns to remove lead paint, welding, torch cutting, and using other more aggressive techniques. (This is a summary list and does not list all task that are considered trigger tasks.)
- b. The California standard defines lead-containing paint at the Consumer Product Safety Commission's (CPSC) level of 0.06% by weight or 600 ppm for non-trigger tasks. However both the California and Federal OSHA standards require training, personal protective equipment, and specific work practice precautions whenever employees will disturb lead in any concentration (including less than 600 ppm). Thus Cal/OSHA (like OSHA) regulates paint when it contains lead above the reporting limit for laboratory analysis or detectable by an XRF.
- c. The California standard also requires CDPH lead training and certification for any supervisors or workers who are shown to be exposed to airborne lead levels above the PEL in residential or public buildings. (A public building is defined as being generally accessible to the public.)
- d. The California standard uses the term a regulated area. Cal/OSHA requires the supervisor to establish a regulated area whenever workers may be exposed to airborne lead over the PEL or if they will perform A trigger tasks as defined in 8 CCR 1532.1 (d)(2).

### 1.3 LEAD WORK PRE-JOB NOTIFICATION REQUIREMENTS

The Contractor is responsible for complying with the Lead-Work Pre-Job Notification as specified in 8 CCR 1532.1 (p). Notification is required for this project, therefore, the Contractor must provide the notification to Cal/OSHA and provide a copy of this notification to THE OWNER as part of the Contractor's pre-work submittal package.

### 1.4 DOCUMENTS PROVIDED TO THE OWNER BY THE CONTRACTOR

While additional documents may be required by the scope of work for this project, at a minimum the Contractor will be required to provide THE OWNER with the following documents regarding the Contractors ability to safely disturb paint and other materials that contain lead.

#### 1.4.1 DOCUMENTS SUBMITTED PRIOR TO THE START OF WORK

- a. A written compliance plan must be provided to THE OWNER and include the following:
  1. A description of equipment and materials, controls, crew size, job responsibilities, and operations and maintenance procedures for each activity in which lead is disturbed and potentially emitted;
  2. A description of specific control methods (wet methods, engineering controls, etc.);
  3. Technology considered in meeting the Cal/OSHA permissible exposure level (PEL);
  4. Air monitoring data documenting sources of lead emissions;
  5. A detailed implementation schedule for the compliance plan, including the schedule for inspections by a competent person;

6. A description of the lead work practice program which will be used to control worker exposures. This includes the use of protective work clothing, equipment, hygiene facilities and practices, and housekeeping practices;
7. A description of the steps the Contractor will take to minimize the generation of hazardous waste produced on this project. This includes, but is not necessarily limited to how the contractor will separate waste streams. For example, how will the Contractor keep potentially hazardous waste such as paint chips and dust from being disposed of with other potentially non-hazardous construction materials and debris.

**Note: If the Contractor is found conducting lead related work not specifically mentioned and described in the compliance plan, the work will be stopped until a compliance plan including that work is submitted, reviewed, and approved by THE OWNER.**

- b. The Contractor shall submit to THE OWNER copies of recent (performed within the previous 12 months or less) blood sampling and analysis test results of lead (BLL) and zinc protoporphyrin (ZPP) levels for all workers who will be performing any Trigger Tasks with regards to lead-containing paints as defined in 8 CCR 1532.1 (d)(2).
- c. The Contractor shall submit to THE OWNER copies of current medical evaluations and respiratory fit test records done in compliance with 8 CCR 1532.1 for all workers exposed to lead and/or who will wear respirators on this project. The Contractor is responsible for maintaining current documents and resubmitting copies to THE OWNER for any worker whose documents expire during the project. Any worker observed on a job site who either is not approved to conduct work by THE OWNER or has been approved but documentation pertaining to training, medical evaluation, or respiratory fit testing has expired, will be instructed to stop work until these documents are received by THE OWNER and the worker is approved to perform work that disturbs lead.
- d. The Contractor shall submit to THE OWNER proof that the supervisor and workers meet the training requirements listed in 8 CCR 1532.1 (l)(2) for employees who may be exposed above the Action Level of 30 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) based on an eight hour time-weighted average.
- e. If CDPH regulations are triggered the Contractor shall submit to THE OWNER proof of current CDPH certification as a lead supervisor for the onsite competent person for all projects that include trigger tasks (as defined in 8 CCR 1532.1 (d)(2)). This requirement applies whether the activities disturb lead-based paint or lead-containing paint. (Summary: the supervisor must be a CDPH Certified Lead Supervisor if the crew will conduct trigger tasks on paint containing lead.)
- f. If CDPH regulations are triggered the Contractor shall submit to THE OWNER proof of current CDPH certification as lead workers for all workers who will conduct trigger tasks (as defined in 8 CCR 1532.1 (d)(2)) whenever the tasks will disturb lead-based paint as defined by EPA/HUD/CDPH.

#### 1.5.1 Documents That Must Be Provided THE OWNER During The Work (Or Following Completion Of The Work If Applicable)

The following documents must be provided THE OWNER following completion of the physical activities associated with the project. The following documents must be received and approved by THE OWNER before the work is considered completed and payment issued.

- a. The Contractor must provide the results of exposure sampling done to comply with the requirements of 8 CCR 1532.1 (d). Sample information must include (but is not restricted

t) the name of the individuals wearing the samples, the individuals' Social Security Number or Company ID number, the date the samples were collected, identification by unique method of the area where the work is being performed, and identification of the work being performed. Laboratory results shall be provided to THE OWNER within 72 hours of sample collection.

- b. The Contractor must provide all waste disposal documentation.
- c. Local sanitation district Wastewater Discharge Permit for Surface Washers (if required).

### 1.5 THIRD PARTY OVERSIGHT

THE OWNER has retained the services of an independent third-party consultant to provide oversight of the project. The Contractor shall treat this third-party consultant as a designated representative of THE OWNER.

### 1.6 AIR SAMPLING BY THE OWNER

THE OWNER may determine it appropriate to collect air samples to evaluate the effectiveness of the Contractor's engineering controls and work practices. Air sampling may also be used to verify the effectiveness of the Contractor's containment system.

### 1.7 AIR SAMPLING BY THE CONTRACTOR

The Contractor is responsible for conducting exposure air sampling of the Contractor's employees that complies with the requirements of 8 CCR 1532.1 (d). Should the Contractor wish to make use of the exceptions to air sampling stated in 8 CCR 1532.1 (d)(3)(C) & (D), the Contractor must submit the required information to THE OWNER and receive written approval from THE OWNER prior to the Contractor reducing the personal protection, containment, or engineering controls stated in this specification. In summary, prior to any actions being taken based on the results of previous sampling conducted at different job sites, THE OWNER must specifically approve the use of those results and the actions the Contractor wishes to take on the basis of the results of that sampling.

### 1.8 NOTIFICATION OF EMPLOYERS OF EMPLOYEES IN ADJACENT AREAS

The Contractor is responsible for ensuring that employers of employees in areas adjacent to the work being conducted have been notified that work disturbing lead will take place. This notification is in addition to the posting of lead regulated area signs. This notification of adjacent employers is the ultimate responsibility of the Contractor but should be done in consultation with THE OWNER. In summary, this notice shall be provided to all other contractors and subcontractors in areas adjacent to the work. Those employers must be notified in advance of any upcoming work that will disturb or impact lead in a manner that may generate airborne levels of lead that could present a potential exposure to workers at or above the Permissible Exposure Limit (PEL) as defined in 8 CCR 1532.1©.

This notice shall also provide information on the control measures being implemented and a warning that the employer's employees are to remain outside of the posted regulated areas.

### 1.9 PROTECTION OF ADJACENT ITEMS

The Contractor shall remove or protect items (if any) located within 20 feet of all paint disturbance areas in order to avoid contaminating those items with lead. Those items may have to be relocated or disposed of prior to the start of work. The Contractor must coordinate with THE OWNER the removal of items, the storage of those items, and the protection of items or materials left inside the work area.

### 1.10 PROTECTION OF ACCESS/EGRESS OF BUILDING OCCUPANTS

The Contractor is responsible for ensuring that building occupants and those in adjacent areas are not exposed to lead dust or debris as they enter or exit buildings. The Contractor shall ensure that building occupants and others in the adjacent area do not enter the lead regulated area and have a safe means of access and egress to the building.

### 1.11 TRAINING REQUIREMENTS

For all work that will require performing trigger tasks (as defined in 8 CCR 1532.1 (d)(2) on lead-containing or lead-based paint, the Contractor shall provide a competent person who is currently certified as a lead supervisor by CDPH. The CDPH-certified supervisor must be on site whenever work disturbing lead is being conducted. Workers conducting trigger tasks on lead-based paint do **not have** to be CDPH certified, unless CDPH regulations are triggered by exposure levels or creation of a lead hazard during stabilization or demolition activities. Those conducting trigger tasks or other activities disturbing lead on lead-containing paint (but not lead-based paint) must, at a minimum, meet the training requirements listed in 8 CCR 1532.1 for those workers who may be exposed above the Action Level.

### 1.12 SUSPENSION OF WORK

THE OWNER or its designated agents may suspend all work that disturbs lead if any controls (such as barriers) fail, if excessive amounts of debris known or suspected to contain lead are detected outside the containment, or if work is on the exterior of a structure and wind speeds are more than twenty miles per hour, or if in the judgment of THE OWNER, other factors exist that determine the work must be stopped because of the potential of lead hazards being created. For example, THE OWNER may conduct perimeter monitoring and discover that lead is being released in concentrations above 1 ug/m<sup>3</sup> above background levels or work area air monitoring that is above 15 ug/m<sup>3</sup> calculated on an eight-hour time-weighted-average. In either case, THE OWNER may suspend work until more effective containment, work practices, and engineering controls are utilized.

## 2.0 MATERIALS AND EQUIPMENT

### 2.1 FIRE RESISTANT PLASTIC SHEETING (POLY)

All plastic sheeting used on this project must be fire resistant.

### 2.2 CHALLENGE TESTING OF HEPA FILTRATION SYSTEMS

All HEPA equipped vacuums and pressure differential units to be used on this project during lead-containing paint operations shall be tested and meet ANSI requirements using DOP or an equivalent testing agent. This testing must take place on site prior to their use and after replacement of any HEPA filter removed from previously tested equipment. Copies of all certifications must be provided to THE OWNER prior to use of the equipment.

### 2.3 VACUUM-ASSISTED TOOLS

When using power tools to disturb lead, the Contractor shall only use tools that have a vacuum assisted process equipped with HEPA filtration. The Contractor must receive written approval from THE OWNER for the use of all power tools for which the Contractor feels a HEPA-vacuum assisted process is not feasible.

### 2.4 POWER WASHING

For the purposes of this specification, power washing is defined as: The use of a low pressure a power washer to rinse/wash stable painted or coated surfaces to remove dust, dirt, grime, and other foreign matter in preparation for re-painting. In no circumstance is this to be construed as water blasting, and is not intended nor shall be used to remove lead-containing paints or coatings from surfaces. Areas of loose, peeling, cracking, or unstable coatings shall be stabilized using the appropriate methods and personnel

protective equipment as specified by Cal/OSHA and CDPH regulations (if applicable), and these specifications.

If lead paint chips are removed by power washing, all water runoff must be contained. Prior to performing power wash operations the Contractor must determine if the local sanitation district requires a Wastewater Discharge Permit for Surface Washers. Should this permit be required, the Contractor is responsible for obtaining it, accurately completing it and adhering to the permit requirements.

## 2.5 PERSONAL PROTECTIVE EQUIPMENT

The Contractor shall use respirators and personal protective equipment as required by 8 CCR 1532.1 and as appropriate based on personal air monitoring results. All respirators must be NIOSH/OSHA approved.

Respirator fit test records and the respiratory protection program shall be retained on site as part of the project documentation if respiratory protection is used on this project. Disposable dust/mist respirators shall not be used.

At a minimum, half-face respirators with P-100 cartridges will be required during surface preparation where there is manual scraping or sanding.

At a minimum, the Contractor must ensure that no lead dust or debris is tracked out of the contained, regulated area. The Contractor must ensure that all those allowed into the regulated area have adequate foot coverings that ensure that they will not track contaminated material out of the area when they leave.

## 3.0 EXECUTION

### 3.1 SUMMARY

Contractors conducting lead related construction work will be evaluated on a performance standard which includes, but is not limited to, cleanliness of work area, work practices as verified by exposure monitoring, containment set up, and ultimately, the clean up of paint chips, dust, and debris.

Any work practice that creates paint chips, dust, or painted debris must be conducted within a regulated area as defined in 8 CCR 1532.1 and within a containment at least as stringent as described in these specifications. The containment system shall be designed and constructed to prevent visible dust or debris from escaping the work area. The regulated area shall be in compliance with the Cal/OSHA lead in construction standard found in 8 CCR 1532.1 (i)(6) and Title 17. In addition, the containment shall be designed to avoid generation of airborne lead in concentrations above 1 ug/m<sup>3</sup> above background levels as measured downwind at the perimeter of the work area.

### 3.2 COMPLIANCE WITH REQUIREMENTS FOR THE PERMISSIBLE EXPOSURE LIMIT AND ACTION LEVEL

Contractor must comply with all OSHA requirements specified for work that results in exposures over the PEL. This will include, but is not limited to, complying with requirements for training, personal protection, regulated area development, blood testing, personal air monitoring, the development of a written compliance plan, and the notification of employers in adjacent areas.

Contractors must assume the Action Level of 30 micrograms per cubic meter (ug/m<sup>3</sup>) will be exceeded each time a new job task is conducted.

Contractors shall conduct personal air monitoring for each different work practice or activity that disturbs materials containing lead. Monitoring shall continue until all different job classifications have been shown not to expose workers to lead levels above the Action Level of 30 ug/m<sup>3</sup>.

THE OWNER may choose to collect area air samples within the work area. These samples results may be used to generate an eight-hour, time-weighted average. The result of area samples in a lead work area should normally be far below what the workers are breathing. Therefore THE OWNER air work area air samples that result in exposures above 15 ug/m<sup>3</sup> will trigger a re-evaluation of the Contractor's work practices, engineering controls, and containment system.

### 3.2.1 PERSONAL AIR SAMPLING

The Contractor is responsible for conducting personal air monitoring during disturbance of lead-containing or lead-based paint to evaluate airborne exposures during performance of any work listed as a Trigger Task as discussed in 8 CCR 1532.1 (d) (2). This sampling shall be in accordance with Cal/OSHA regulations found in Title 8 Section 1532.1, in order to determine worker exposure to lead and evaluate the effectiveness of the Contractor's written Compliance Work Plan submitted to THE OWNER.

### 3.2.2 ALTERNATE WORK PLANS

The Contractor may submit alternate work plans to the Owner's suggested work practices. These alternate work plans must be approved by THE OWNER prior to their implementation.

### 3.3 PROHIBITED WORK PRACTICES

The following work activities are prohibited on the project:

- a. Open-flame burning or torching.
- b. Machine sanding or grinding without a tool equipped with a vacuum recovery system that includes High Efficiency Particulate Air (HEPA) filtration.
- c. Un-contained hydro-blasting or high-pressure washing.
- d. Abrasive blasting or sandblasting without a tool equipped with a vacuum recovery system that includes HEPA filtration or done outside of a negative pressure enclosure.
- e. Heat guns operating above 1,100 degrees Fahrenheit.
- f. Dry scraping (except for limited areas where electrical hazards create a higher risk than lead.)
- g. Use of methylene chloride based paint strippers.

### 3.4 COMPETENT PERSON

The Contractor shall have a competent person (as defined by Cal/OSHA) onsite at all times to supervise and oversee all activities which may disturb materials containing lead. This person must be a CDPH Certified Lead Supervisor if trigger tasks will be performed as described in 8 CCR 1532.1 (d)(2). Trigger tasks include but are not limited to, manual demolition, scraping and sanding, using heat guns, power tool cleaning with or without dust collection systems, abrasive blasting, welding, cutting, torch burning, and debris clean-up.

### 3.5 WORK SITE PREPARATION

Preparation of the work area at the site must be completed using 6-mil polyethylene (poly) sheeting placed over floors, asphalt, concrete, soil, vegetation, and other surfaces in the immediate work area.

#### 3.5.1 EXTERIOR WORK SITE PREPARATION

For exterior work site preparation, one layer of 6-mil poly sheeting should be placed on the ground extending at least 20 feet beyond the perimeter of surfaces included in the work. Depending on wind conditions, the poly may need to be extended further than twenty foot minimum. The poly on the ground must be adequate to catch all paint chips, dust and debris that is released by the work.

Do not anchor ladder feet on top of plastic (puncture the plastic to anchor ladders securely to ground). For all other exterior painted surfaces, protect the poly sheeting with boards to prevent puncture from falling debris, nails, etc., if necessary. Secure the plastic to the side of the building with tape, or other anchoring system, so there is no gap between the plastic and the building. Weight all plastic sheets down using wooden two-by-fours or similar objects. If water blasting is to be performed raise edges of the plastic to create a catch basin to prevent runoff of contaminated water.

The exterior of all windows located within ten feet of any disturbance of lead must be sealed by covering them with at least one layer of six mil thick poly sheeting. All ventilation machinery within 20 feet of the disturbance should be sealed by at least one layer of six mil thick poly sheeting. Keep all windows within 20 feet of working surfaces closed, including windows of adjacent structures.

Should the disturbance of paint involve removing paint from the exterior of a window, then the Contractor must seal the inside of the window with two layers of 6 mil thick poly. There shall be no gaps between the interior wall and the material. THE OWNER may choose to waive the requirement to seal the inside of the window with two layers of poly if the disturbance of lead involves less than 5% of the painted surface area of an exterior window.

Those in adjacent areas must be kept a sufficient distance from any chance of encountering lead dust and debris. Therefore the Contractor shall erect barrier tape at a 20-foot perimeter outside the edge of the containment area poly sheeting. This barrier tape shall comply with 8 CCR 1532.1 (m) and read WARNING, LEAD WORK AREA, POISON, NO SMOKING OR EATING.

The barrier tape must not be directly adjacent to poly sheeting used to contain dust and debris. There must be a buffer zone between the poly sheeting and the barrier tape. In summary, if the poly sheeting extends ten feet out from the surface being disturbed, the barrier tape must be placed 30 feet away from the surface being disturbed. If however, the poly sheeting extends to 20 feet out, then the barrier tape must be at least 40 feet out from the surface being disturbed. The area off the poly sheeting, but inside of the barrier tape, is still part of the regulated area but is not allowed to have any lead dust or debris present at any time.

THE OWNER recognizes that the distances described in developing the containment may not be feasible in certain situations. However, compromises in these requirements must be specifically approved by THE OWNER prior to their implementation.

The Contractor shall not conduct exterior work if wind speeds are greater than 20 miles per hour.

Work must stop and cleanup occur before rain begins.

The Contractor shall not leave debris or poly sheeting out overnight. The Contractor shall keep all debris, stored in metal barrels if hazardous waste, in a secured area until final disposal.

### 3.5.2 INTERIOR SITE PREPARATION (NOT EXPECTED FOR THIS PROJECT)

For interior work site preparation, one layer of 6-mil poly sheeting must be placed on the entire floor. However, the entire floor area need not be covered by poly for large interior areas where the disturbance of lead is limited to the perimeter of the area. If the entire floor area is not covered with poly, the poly must extend out a minimum of ten feet from those areas where lead will be disturbed. The poly sheeting must be secured to the floor using tape so there is no gap between the floor and the wall.

If individual rooms are being worked in, seal all doorways with a primitive airlock flap to prevent contamination of other areas of the building. Post Lead Warning Signs at the building exterior near main and all secondary entryways. All ventilation systems must be turned off or sealed off in the room or interior space where lead will be disturbed. Any exceptions to this must be approved by THE OWNER. Ventilation system ducts and/or registers must be sealed with poly if they are within 20 feet of the disturbance of lead even if they are turned off. If furniture or other equipment are to remain in place, cover with a single layer of poly sheeting. All cleanup of the work area shall be performed using a HEPA vacuum and wet washing techniques.

### 3.6 WET WORK PRACTICES

If scraping or sanding is to be performed, this work must be done using wet methods unless a vacuum recovery system is used that includes HEPA filtration.

### 3.7 ABRASIVE BLASTING

Where abrasive blasting is performed by the Contractor, a negative pressure enclosure must be constructed using at a minimum six mil thick poly sheeting. The Contractor shall utilize air filtration units equipped with HEPA filtration to establish a negative pressure within the work area. Sufficient make-up air ports shall be installed with flapped openings and pre-filters to assist in providing outside air for dilution of airborne particulate. The integrity of the negative pressure enclosure shall be maintained at all times during the abrasive blasting work to prevent fugitive emissions.

### 3.8 OMITTED

### 3.9 LEAD WASTE MANAGEMENT

Waste disposal of all materials is the responsibility of the Contractor. The Contractor must plan the work in order to minimize the generation of hazardous waste during the demolition operation. The Contractor must create separate waste streams as necessary. This particularly includes the separation of any loose paint chips or flakes from other construction debris. All waste streams must be identified by the Contractor before the work begins and separated during the course of the project to minimize costs of disposal. The Contractor is responsible for all costs associated with the testing, removal, packing, loading, shipping, and disposal of lead containing waste generated during this project. (This does not include waste water testing done to determine if power washing is permitted.)

The Contractor is required to comply with all regulations in Title 8 Section 1532.1 Lead in Construction, Cal/EPA Title 22 for waste classification and disposal.

#### 3.9.1 LEAD WASTE TESTING

The Contractor must conduct appropriate waste stream characterization testing and/or filtering prior to disposal of waste products such as water, sand, paint chips, vacuum debris, and filters generated during surface preparation activities. Once completed, the test analysis results must be submitted to THE OWNER for review. The Contractor is responsible for all costs associated with waste stream testing.

The Contractor may not remove or dispose of the identified materials from the job site until this review has been completed and the Contractor has been informed by THE OWNER of their concurrence that the materials have been properly tested and meet the requirements allowing the materials to be classified as non-hazardous. This process does not apply to any waste assumed or determined to meet levels of lead requiring the waste to be disposed of as hazardous waste.

#### 3.9.2 WASTE MANIFESTS

The Contractor is responsible for obtaining and properly completing any Uniform Hazardous Waste Manifests needed for the disposal of lead containing waste. However, the Contractor **SHALL NOT** sign any Uniform Hazardous Waste Manifests for the Owner.

The Contractor **SHALL** contact THE OWNER in advance of the scheduled pick up time and date so the waste materials can be visually inspected for proper packing. At that time the Contractor will deliver the Uniform Hazardous Waste Manifest to THE OWNER so it can be properly signed by THE OWNER.

### 3.10 DECONTAMINATION PROCEDURES

Decontamination procedures shall be established by the Contractor depending upon the airborne concentrations of lead, and shall, at a minimum, be in compliance with 8 CCR 1532.1 (i)(1-5). As stated in 8 1532.1 (i)(1-5), the Contractor shall assure that these decontamination facilities are used by the supervisor and workers. For work that does not exceed the PEL, the Contractor must assure that a hand-washing station is available and used by the supervisor and workers.

For work that exceeds the PEL, or is assumed to exceed the PEL, the Contractor must provide a shower facility.

#### 3.10.1 AVOIDING CONTAMINATION OF ADJACENT AREAS BY PROPER DECONTAMINATION

The Contractor must ensure that no lead-contaminated dust or debris is tracked out of the regulated, contained area on the clothes or footwear of those allowed in the work area. Footwear worn out of the work area must have been covered by protective booties if worn in the work area. Following removal of the protective covering over the footwear, all footwear worn in the work area must be HEPA vacuumed before allowing it to be worn out of the regulated area. Footwear that can be washed before leaving the work area does not need to be covered by protective booties as long as the exterior of the footwear is thoroughly washed prior to being worn outside of the regulated area.

Should THE OWNER discover that an occupant of the regulated area leave the regulated area without properly decontaminating, the Contractor will be required to clean the adjacent areas that in the opinion of THE OWNER may have been exposed to lead dust or debris from this action. Failure to properly decontaminate is demonstrated by wearing protective clothing outside the regulated area that was previously worn in the area or by wearing footwear outside the regulated area that was not properly covered and/or decontaminated. The failure to adequately decontaminate will trigger the following cleaning. In all areas determined necessary by THE OWNER, the Contractor will be required to HEPA vacuum, then wet wash, then HEPA vacuum again all potentially contaminated areas and items to the satisfaction of THE OWNER. THE OWNER will not need to demonstrate the need for this cleaning by the presence of visible dust and will not need to collect settled dust samples in order to require the Contractor to implement the cleaning routine.

#### 3.11 ENSURING EFFECTIVENESS OF CONTAINMENT

The containment system use by the Contractor must be designed to eliminate any lead dust or debris from leaving the regulated work area in an uncontrolled, uncontained fashion. Should the interior and exterior site preparation described in this section not be adequate at controlling the release of lead dust and debris, the Contractor must stop work and design a more effective containment system. The Contractor is responsible for designing an effective containment system. Should that require a different type of Containment than described in the compliance work plan provided THE OWNER, the Contractor must obtain approval from THE OWNER to implement the proposed replacement type of containment. All costs associated with developing an effective containment system are the responsibility of the Contractor.

##### 3.11.1 WORK PRACTICES DONE TO ENSURE EFFECTIVENESS OF THE CONTAINMENT

The Contractor shall ensure the prompt cleanup of dust and debris created by the work. At a minimum, this means the work area must be cleaned of any visible dust and debris prior to any work stoppage (such as for breaks and/or lunch, or, if the containment is for an interior space, prior to the end of the work shift.)

The Contractor shall not allow significant amounts of paint chips and debris to gather on the poly sheeting and be trampled by the workers feet.

The Contractor shall ensure that at least one worker is assigned to chase down any paint chips or debris that might be blown off the containment. This is particularly necessary for any work done on the exterior of multi-story buildings.

### 3.11.3 WORK INVOLVING WHOLE COMPONENT REMOVAL

Prior to whole building components being removed, or demolition activities being started, loose peeling and flaking paint must first be either removed from the component surfaces or stabilized. Any paint flakes generated during this work must be separated into appropriate waste streams and handled as a hazardous waste, or as deemed appropriate based on results of proper analytical testing results.

### 3.11.4 AIR SAMPLING DONE TO ASSURE EFFECTIVENESS OF THE CONTAINMENT

The Contractor should design engineering controls and barriers in order to ensure that the work does not generate an airborne release of lead more than 1 ug/m<sup>3</sup> above background levels as measured by THE OWNER at the perimeter of the work.

THE OWNER may also choose to collect area air samples within the regulated area. Should these samples indicated an airborne lead level that is more than half of the Action Level (15 ug/m<sup>3</sup> as determined by an eight-hour time-weighted average), the Contractor shall change the engineering controls and/or work practices in order to ensure that future area air samples results drop below 15 ug/m<sup>3</sup>.

### 3.12 SUBMITTAL REQUIREMENTS

The following documents shall be provided to THE OWNER prior to, during, and at the completion of the work. Additional documents may be required by THE OWNER. This form is developed for the convenience of the Contractor and does not necessarily represent all the documentation needed for all jobs.

#### 3.12.1 LEAD-RELATED WORK PRE-CONSTRUCTION SUBMITTALS

1. \_\_\_\_\_ Current Training Records for Lead
  - A. \_\_\_\_ Lead-Related Construction Training  
Compliance with 8 CCR 1532.1 (l)(2) for all supervisors and workers
  - B. \_\_\_\_ Lead-Related Construction Certification by CDPH  
Certification as specified by 8 CCR 1532.1 (l)(3) if required by these specifications or by project conditions.

*Summary of specification requirements: All supervisors/workers must meet Cal/OSHA training requirements for those exposed over the Action Level. Supervisors must be CDPH certified as Lead Supervisors if they will supervise the implementation of trigger tasks on lead-containing paint. Workers do not have to be CDPH Certified Lead Workers unless CDPH regulations are triggered. The intent of the supervisor being CDPH certified is to assure the contractor supervisor has sufficient experience to manage a project of this size and complexity.*

2. \_\_\_\_\_ Written Compliance Plan

3. \_\_\_\_\_ Written Respiratory Protection Program
4. \_\_\_\_\_ Current Worker Related Documentation
  - A. \_\_\_\_ Copies of Recent BLL and ZPP Analysis Reports for Workers (Performed Within Previous 12 Months)
  - B. \_\_\_\_ Medical Evaluation Stating each Employee is Cleared for Respirator Use (Performed Within the Previous 12 Months)
  - C. \_\_\_\_ Respiratory Fit Tests for Each Employee (Current by OSHA and Cal/OSHA Standards)
5. \_\_\_\_\_ Written Notification to Cal/OSHA to comply with 8 CCR 1532.1 (p) Pre-Work Job Notification

The following documents shall be provided to THE OWNER prior to, during, and at the completion of the work. Additional documents may be required by THE OWNER. This form is developed for the convenience of the Contractor and does not necessarily represent all the documentation needed for all jobs.

**3.12.2 LEAD-RELATED INTERIM CONSTRUCTION SUBMITTALS**

1. \_\_\_\_\_ Waste Stream Characterization Testing Results (prior to removal of waste from the site and generated during work impacting materials containing lead. This does not include whole architectural components.)
2. \_\_\_\_\_ Exposure Assessment (Air Monitoring) Results of Employees Performing Trigger Tasks (Within 72 Hours of Sample Collection)
3. \_\_\_\_\_ DOP Testing Documentation
4. \_\_\_\_\_ Worker Documentation for New Workers Assigned to the Project or Workers With Documentation on File Which Expired During the Project.

The following documents shall be provided to THE OWNER prior to, during, and at the completion of the work. Additional documents may be required by THE OWNER. This form is developed for the convenience of the Contractor and does not necessarily represent all the documentation needed for all jobs.

**3.12.3 LEAD-RELATED POST CONSTRUCTION SUBMITTALS**

Contractor shall provide the following post-construction submittals to THE OWNER through the designated channels within thirty (30) days of completion of lead-related work.

1. \_\_\_\_\_ Completed Uniform Hazardous Waste forms for lead waste disposal (if applicable with reference in the final letter that all waste forms have been submitted to the Owner through proper channels).
2. \_\_\_\_\_ Letter stating that all documentation has been submitted to THE OWNER through proper

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Note: Any item on this list submitted during the course of the project and received by THE OWNER will not need to be submitted again, unless specifically requested.



## OTHER HAZARDOUS MATERIALS

### **POLYCHLORINATED BIPHENYLS (PCB's) LIGHT BALLAST HANDLING PROCEDURES**

The Contractor may be instructed to remove light fixtures which contain light ballasts during demolition/renovation activities specified in the contract documents. These light ballasts typically contain PCBs in the oil used as coolant and lubricant. Any ballast containing PCBs is to be considered a "Hazardous Waste", and the Contractor is responsible for ensuring personnel who perform PCB related work (inspection, removal, clean-up) are trained and qualified to do so. All workers must also follow current OSHA regulations including 29 CFR 1910.120 and 8 CCR 5192, as well as other applicable federal, state and local laws and regulations.

#### **PCB Light Ballasts**

All light ballasts manufactured through 1978 are magnetic ballasts which contain PCBs. Installation of ballasts manufactured prior to 1978 continued for several more years. As a result it can be expected that any building constructed before 1980 which has not had a complete lighting retrofit is likely to have PCB containing ballasts. Therefore, unless the ballast is electronic (this type is PCB free), determined by testing not to contain PCBs, or the manufacturers label on the ballast states "No PCBs", it is assumed all light ballasts on this site contain PCB's, and must therefore be handled as a hazardous waste by the Contractor. The Contractor may have other options for disposal of any light ballasts found not to contain PCB's.

#### **Light Ballast Inspection**

Contractor should disconnect all power and de-energize all electrical equipment to be impacted prior to performing inspection of electrical devices scheduled for removal or replacement. This de-energizing should be performed by or under the supervision of a licensed electrician. Contractor shall inspect each ballast prior to its removal to determine if the ballast is leaking, if oily residue is present on the exterior of the ballast or the ballast has been damaged resulting in a leak. Upon discovering and prior to removal of any oil coated, leaking, or damaged ballast Contractor shall contact Owners representative to discuss work procedures, waste requirements, etc.

#### **Handling Work Practices of Undamaged Light Ballasts**

Handling of ballasts shall be consistent with existing ballast conditions. While a ballast may not initially indicate any damage or leakage to be present, it may become damaged or begin to leak for any number of reasons during the removal and handling process. Any skin contact will probably constitute overexposure to PCBs since they are easily absorbed through the skin. It is recommended any personnel who will perform PCB related work should at a minimum wear protective clothing, including chemically-resistant gloves, goggles, boots, and disposable coveralls.

#### **Handling Work Practices of Damaged Light Ballasts**

Handling of damaged ballasts shall be performed in a manner consistent with existing and current federal, state and local laws and regulations. Clean-up of spills, or contaminated surfaces will require the use of specifically trained and properly protected personnel utilizing state of the art work practices, removal equipment, and materials. The Owners representative must be notified prior to the performance of this type of work.

## **PCB Containing Waste**

All PCB containing light ballasts, removed by the Contractor, shall be placed in leak tight approved containers (metal barrels) until they are removed from the site by a waste transporter permitted to haul hazardous materials. Barrels must not be loaded in excess of their approved capacity. For most barrels this is 750 pounds. No other materials except, a sufficient amount of absorbent packing material, shall be included with the light ballasts.

The Contractor should contact their waste hauler prior to the start of work for information pertaining to recommendations or the waste haulers stated requirements for packing PCB containing ballasts. However, at a minimum, the absorbent packing material should be added to the bottom of the waste barrel prior to the first ballast. Absorbent packing material should then be added intermittently as necessary to encase the ballasts as the waste barrel is being filled. When the waste barrel is filled, or no more light ballasts will be added, additional absorbent packing material should be added to completely cover the ballasts and the container then sealed.

Contractor is also responsible for appropriate labeling of waste barrels and securing of lids to meet federal and/or state requirements while being stored on the site.

All leaking or damaged ballasts must be handled in accordance with federal and state disposal requirements and shall be separated from undamaged ballasts in preparation for incineration at an appropriately licensed facility.

The Contractor is responsible for all costs associated with the removal, packing, loading, shipping, and disposal of each barrel of waste generated during this project. The Contractor is also responsible for obtaining and properly completing any Uniform Hazardous Waste Manifests needed for the disposal of PCB waste. However, the Contractor **SHALL NOT** sign any Uniform Hazardous Waste Manifests for the Owner.

## **UNIVERSAL WASTE LAMP HANDLING PROCEDURES**

The Contractor may be instructed to remove light fixtures which contain lamps which are designated as "Universal Waste" during demolition/renovation activities specified in the contract documents. If the Contractor is instructed to remove such fixtures the following handling procedures shall be followed.

### **Universal Wastes**

Universal wastes are hazardous wastes that are more common and pose a lower risk to people and the environment than other hazardous wastes. Federal and State regulations identify universal wastes. The regulations, called the "Universal Waste Rule," are in the California Code of Regulations (CCR), title 22, division 4.5, chapter 23.

### **Universal Waste Lamps**

Universal Waste Lamp, also referred to as "lamp" is defined as the bulb or tube portion of an electric lighting device. A lamp is specifically designed to produce radiant energy, most often in the ultraviolet, visible, and infra-red regions of the electromagnetic spectrum. Examples of common universal waste electric lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Any lamp which is not spent and has been designated to be reused is not classified as a waste and does not meet the requirements of a hazardous waste or a universal waste.

### **Mercury-added lamps**

Mercury-added lamps (effective February 9, 2004): Fluorescent tubes and several other types of lamps (not incandescent light bulbs) contain a small amount of mercury that is necessary for their operation. Currently, most fluorescent lamps contain enough mercury to be a hazardous waste.

### **Universal Waste Lamp Disposal**

Spent lamps typically contain concentrations of mercury exceeding the established Total Threshold Limit Concentration and/or the Soluble Threshold Limit Concentration values. Therefore, these lamps must be sent to an authorized recycle facility, or to a universal waste consolidator for shipment to an authorized recycling facility.

At a minimum the lamps must be packaged in boxes/packages/containers which are structurally sound, adequate to prevent breakage, and compatible with the content of the lamps. These packages must remain closed and be free of damage which could cause leakage under reasonably foreseeable conditions.

Each container shall be labeled or marked clearly with one of the following phrases: "Universal Waste–Lamp(s)," or "Waste Lamp(s)." or "Used Lamp(s)".

Documentation in the form of a log, invoice, manifest, bill of lading or other shipping document is required to be submitted to HMS, Inc. for each shipment of waste from the project site. This documentation shall include: name and address of generator and address of site waste is generated on, quantity of lamps to be shipped, date of shipment, name and address of hauler, and name and address of waste facility receiving the waste.

### **Hazardous Waste Designation**

Any lamp which is not designated for recycling or continued use in a different fixture for which the lamp is manufactured for use in must be handled, managed, and disposed of as a hazardous waste in accordance with Cal/EPA Title 22. Since all spent lamps are required to be recycled the Owner will not approve of the disposal of lamps as hazardous without consultation and review of the specific circumstances which warrant this change in designation.

### **MERCURY SWITCHES**

Thermostat switches that contain mercury are considered a hazardous waste if removed and disposed. Where the contract requires removal of thermostat switches, the contractor shall follow all requirements for packaging and disposal of these mercury containing wastes.

### **SMOKE DETECTORS WHICH MAY CONTAIN A RADIOACTIVE ELEMENT**

The Contractor shall be responsible for the removal of any and all smoke detectors which may contain a radioactive element, which may be present in any building or corridor prior to the demolition of any building included in this project. These types of detectors are easily identified by reviewing the label which is usually found on the back of the detector. Older units may display the international radiation symbol (three bladed propeller) and the radioactive content. Newer units state the radioactive content and their Nuclear Regulatory Agency (NRC) license number.

The Contractor shall be responsible for contacting the manufacturer of any smoke detector with a radioactive element present to determine their return policies. The California Department of Toxic Substance Control (DTSC) has stated that it is a condition of the manufacturers NRC license that they must accept returned units for disposal. The Contractor shall be responsible for all costs associated with removing, packaging, and shipping of the detectors in compliance with the manufacturers policies and procedures.

Contractor shall submit to the Owner a letter from the manufacturer which includes the number of units received, date received, and acceptance of the shipment for disposal by that manufacturer.

### **Additional Waste Management Requirements**

The Contractor is responsible for managing lamps in a manner which prevents release of any universal waste or component of a universal waste to the environment. The Contractor is also responsible for the immediate clean up of materials (mercury or other hazardous constituents) released by a lamp broken during removal or otherwise damaged while being handled into a container or containers designed to accommodate the resulting waste and its contents.

The Contractor is responsible for training employees in proper handling, packaging, storing and labeling the universal waste, as well as, how to respond to releases (66273.13). This may be accomplished by providing employees written instructions or posting these instructions in the area where the universal waste lamps are being stored.

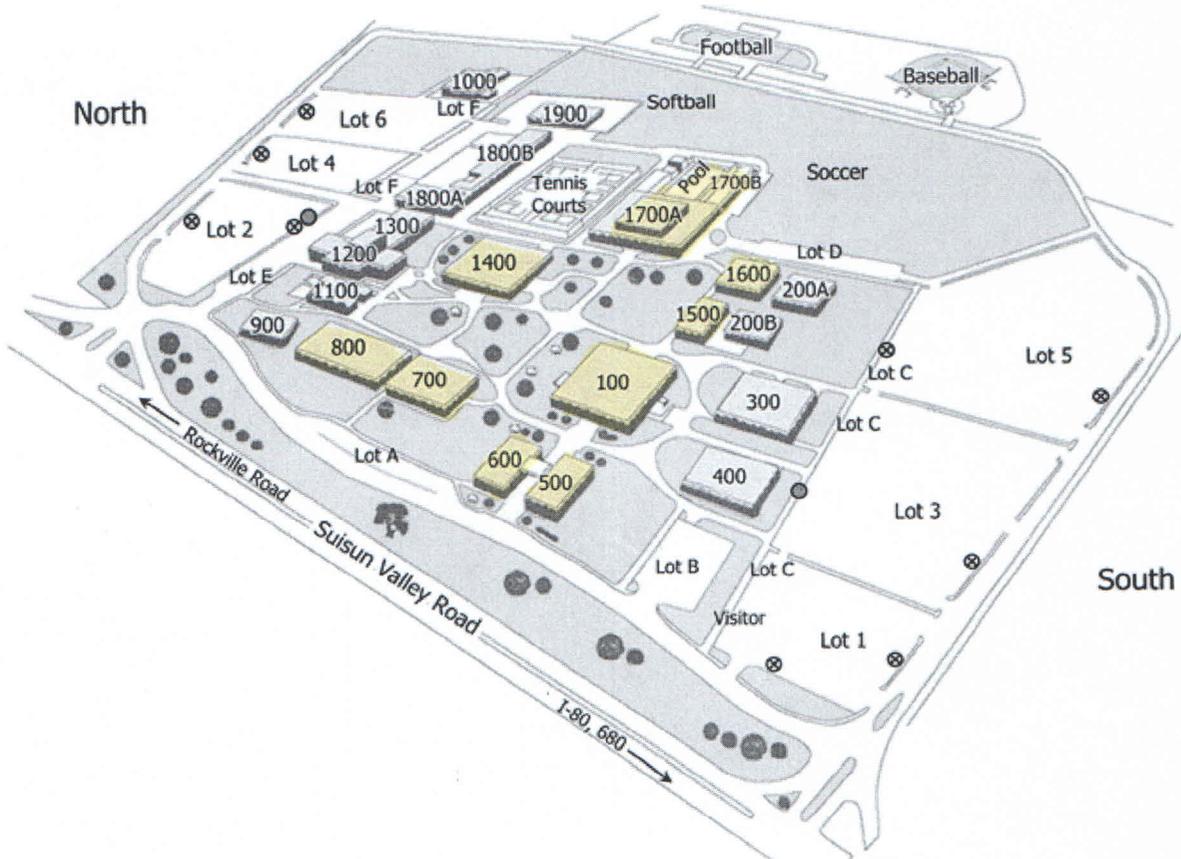
The Contractor is responsible for all costs associated with the removal, packing, loading, shipping, clean up and disposal of hazardous materials removed during this project, and any waste generated due to breakage during this project. The Contractor is also responsible for obtaining and properly completing any Uniform Hazardous Waste Manifests needed for the disposal of lamp waste. However, the Contractor **SHALL NOT** sign any Uniform Hazardous Waste Manifests for the Owner.

It **SHALL** be the responsibility of the Contractor to contact the Owner in advance of the scheduled pick up time and date so the waste materials can be visually inspected for proper packing, and to have the Uniform Hazardous Waste Manifest properly signed by a Owner representative.



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**Hazardous Materials Survey  
Solano Community College  
HVAC and EMS Efficiency Project Implementation  
Buildings 100, 500, 600, 700, 800, 1400, 1500,  
1600, & 1700  
4000 Suisun Valley Road  
Fairfield, CA 94534-3197**



September 10, 2014

Mr. Ali Gharaviram  
Senior Project Manager  
Kitchell CEM  
Solano Community College District  
360 Campus Lane, Suite 203  
Fairfield, CA 94534

Dear Mr. Gharaviram:

This letter contains the results of Hazard Management Services, Inc. (HMS, Inc.) limited asbestos inspection in Buildings 100, 500, 700, 800, 1400, 1500, 1600, 1700 and 2000, located on the Solano Community College Campus, 4000 Suisun Valley Road, Fairfield, California. This inspection was requested in order to verify suspect materials exist on ceilings and within attic spaces in these areas, and sample materials that have not been previously sampled for asbestos content prior to a renovation project. The inspection was conducted between September 2-4, 2014 by Mrs. Shannon Johanson and Mr. Gary Wickel. Mrs. Johanson is an EPA-accredited Building Inspector, Cal/OSHA Site Surveillance Technician. Mr. Wickel is an EPA-accredited Building Inspector.

#### **Inspection Limitations**

This inspection was limited to accessible materials on ceilings, attic spaces, and roofs for the upcoming HVAC and EMS Efficiency Project Implementation. Destructive sampling techniques were not used during this inspection. Thermal system insulation (TSI), pipe wrap was seen running through wall cavities and up towards the roof. This material was sampled where accessible in various buildings. It is a possibility that materials suspected to contain asbestos, other than those listed in this report may exist under or behind current surfacing materials.

Fiberglass TSI with paper wrap was found in the Attics of every building. In Building 100, fiberglass TSI runs have hard pack asbestos TSI under the hangers. HMS, Inc. assumes this material may exist in other building associated with this project. If this material is found it should be assumed to contain asbestos until sampled and proven otherwise.

HMS, Inc. did not sample the roof on Building 1700, or the upper roof Building 1600. The white PVC style roof appeared to be new and HMS, Inc. is not properly equipped to patch this type of roof. However, as roofing materials are legal to contain asbestos, these roofing materials must be assumed to contain asbestos until sampled and proven otherwise.

HMS, Inc. sampled the rolled composition roofing of buildings involved in these inspections. HMS, Inc. is not aware how much of the roof will be disturbed during this project. We tried to limit most of our sampling around the HVAC units involved in this project. While HMS, Inc. repaired the roof penetrations, these penetrations should be repaired by roofers certified in each individual style of roofing product. This should be conducted as part of the upcoming renovation work.

#### **Procedures-Asbestos**

Based on the project plans and using copies of the previous survey report from Klienfelder, HMS, Inc. personnel conducted a visual inspection of each building. Samples were collected from materials that are expected to be impacted but which had not been previously sampled or found to be negative for asbestos during the Klienfelder inspection. The samples were sent, along with a proper chain of custody, to Forensic Analytical Laboratories, Inc. (FALI) of Hayward, California. FALI is accredited by the National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program for the analysis of bulk asbestos fibers by polarized light microscopy (PLM) with dispersion staining.. Copies of FALI's laboratory reports and accreditation are attached.



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 Kitchell CEM  
 September 10, 2014  
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**Results-Asbestos by Building**

104 total samples were collected from various suspect materials and submitted for analysis by PLM. Results of laboratory analysis are indicated below by Building number.

**Building 100**

Material/Description	Location	Asbestos Content	Friable/Non-Friable
Spray-on-Ceiling Texture	Library	10% Chrysotile	Friable (RACM)
2'x4' False Ceiling Panels- Pinhole/Fissure Pattern	Throughout (Except Restrooms, Lobby, Room 106, and Library)	Trace Chrysotile	Friable (RACM)
Drywall & Joint Compound	Throughout	2% Chrysotile in Joint Compound	Friable (RACM)
TSI w/Paper Wrap	Attic Space	10% Amosite	Friable (RACM)
Concrete Sealant - Yellow	Attic Space	2% Chrysotile	Non-Friable

**Building 500**

Material/Description	Location	Asbestos Content	Friable/Non-Friable
Drywall - Smooth	Restrooms	2% Chrysotile (Joint Compound)	Friable (RACM)
Duct Seam Tape	Attic Space - Metal Ducts at Joints	2% Chrysotile	Friable (RACM)
Drywall - Orange Peel Texture	Classrooms and Corridors	2% Chrysotile (Texture) 2% Chrysotile (Joint Compound)	Friable (RACM)
Beige HVAC Putty	Plenum	5-10% Chrysotile	Non-Friable
Silver Paint on Rolled Roofing	Roof	10-20% Chrysotile	Non-Friable

**Building 700**

Material/Description	Location	Asbestos Content	Friable/Non-Friable
Drywall	Throughout - Walls	1-5% Chrysotile	Friable (RACM)
Duct Seam Tape	Plenum	2% Chrysotile	Friable (RACM)
Yellow HVAC Putty	Plenum	5-10% Chrysotile	Non-Friable
Black Putty	Roof	10-20% Chrysotile	Non-Friable
Gray Putty on PVC	Roof	30-40% Chrysotile	Non-Friable



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**Building 800**

Material/Description	Location	Asbestos Content	Friable/Non-Friable
12" ACT w/Brown Mastic	Restrooms	2% Chrysotile (Brown Mastic)	Non-Friable

**Building 1400**

Material/Description	Location	Asbestos Content	Friable/Non-Friable
Drywall w/Texture Wallpaper	Corridors	2% Chrysotile (Joint Compound)	Friable (RACM)
White Sealant on HVAC Ducts	Plenum	Assumed	Non-Friable

**Building 1500**

Material/Description	Location	Asbestos Content	Friable/Non-Friable
Drywall - Smooth	Ceilings	2% Chrysotile (Skim Coat) 2% Chrysotile (Joint Compound)	Friable (RACM)
Drywall - Orange Peel Texture	Walls Throughout	2% Chrysotile (Texture) 2% Chrysotile (Joint Compound)	Friable (RACM)

**Building 1600**

Material/Description	Location	Asbestos Content	Friable/Non-Friable
Drywall w/Tan Wallpaper Covering	Lower Walls	2% Chrysotile	Friable (RACM)
Duct Seam Tape w/Silver Paint	Exterior Metal Duct Work on Roof	2% Chrysotile (Silver Paint)	Non-Friable
White Sealant	Roof - 3 <sup>rd</sup> Level at HVAC Seams	5% Chrysotile	Non-Friable



Mr. Ali Gharaviram, Senior Project Manager  
Kitchell CEM  
September 10, 2014  
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**Building 1700**

Material/Description	Location	Asbestos Content	Friable/Non-Friable
Drywall - Unfinished	Throughout	1-5% Chrysotile	Friable (RACM)

The following materials came back none detected for asbestos and may be impacted without special regard to asbestos:

**Building 100**

12" ACT - Pinhole/Gouge & Brown Mastic Tabs  
Duct Seam Tape  
Plaster - Smooth

**Building 500**

12" ACT & Brown Mastic  
2'x4' False Ceiling Panels - Pinhole/Gouge  
Fiberglass TSI w/Paper Wrap & Brown Sealant  
Gray Sealant on Exterior HVAC Units  
White Sealant on Exterior HVAC Ducts  
Rolled Roofing

**Building 700**

2'x4' False Ceiling Panels - Look Like 2'x2'  
Silver Foil Tape w/Glue & Gray Sealant  
Light Fixture Insulation  
Rolled Roofing  
Gray Sealant on Exterior Metal Duct  
Gray/Black Sealant on Exterior HVAC Unit

**Building 800**

2'x4' False Ceiling Panels - Look Like 2'x2'  
Drywall -Smooth  
HVAC Foil Tape & Glue  
Drywall w/Textured Wallpaper  
Duct Seam Tape  
Fiberglass TSI w/Paper Wrap & Glue  
White HVAC Sealant  
Rolled Roofing  
Black Roof Mastic  
Gray HVAC Mastic

**Building 1400**

Yellow Mastic on Drywall  
White HVAC Putty  
Plaster - Smooth  
2'x4' False Ceiling Panels - Look Like 2'x2'  
Foil Tape & Glue on HVAC Ducts  
Duct Seam Tape  
Fiberglass TSI w/Paper Wrap & Glue  
Rolled Roofing  
Black Roof Mastic  
Gray HVAC Mastic



Mr. Ali Gharaviram, Senior Project Manager  
Kitchell CEM  
September 10, 2014  
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**Building 1500**

White Duct Seam Tape  
Black Tar  
2'x4' False Ceiling Panels - Pinhole/Gouge  
Fiberglass TSI w/Paper Wrap & Sealant  
Rolled Roofing  
Black Roof Mastic  
Gray HVAC Sealant  
Brown Sealant on Fiberglass TSI w/Paper Wrap

**Building 1600**

Silver Duct Tape w/Yellow Glue  
Duct Seam Tape- White  
Fiberglass TSI w/Paper Wrap & Glue  
2'x4' False Ceiling Panels - Pinhole/Gouge  
Gray Putty  
White Putty  
Brown Sealant on Fiberglass TSI w/Paper Wrap  
White Sealant on Fiberglass TSI w/Paper Wrap  
Rolled Roofing  
Black Roofing Mastic

**Building 1700**

2'x2' False Ceiling Panels - Pinhole/Gouge  
Duct Seam Tape  
White Sealant on HVAC Duct  
Gray Sealant on HVAC Unit - Exterior  
Dark Gray Sealant on HVAC Seams - Exterior

**Recommendations-Asbestos**

Disturbance of any asbestos-containing material (ACM that contains one percent asbestos or more), or asbestos-containing construction material (ACCM is a construction material that contain more than one tenth of one percent asbestos), that could generate airborne asbestos fibers and is regulated by the California Division of Occupational Safety and Health (Cal/OSHA). Cal/OSHA worker health and safety regulations apply during any disturbance of ACM or ACCM by a person while in the employ of another. This is true regardless of friability or quantity disturbed. Since it has been estimated that more than 100 square feet of ACM will be removed for this project, a licensed Asbestos Contractor, registered with Cal/OSHA is required for abatement activities.

If more than 160 square feet or 260 linear feet of a regulated asbestos material is to be impacted, a 10 working day notification must be filed with the Yolo-Solano Air Quality Management District (YSAQMD).

The 2'x4' false ceiling panels (FCP) located in Building 100 are extremely friable and should not be disturbed without proper containment, PPE, and training.

Thank you for the opportunity to perform this inspection. If you have any questions please feel free to contact me at (916) 628-0050 or by e-mail at [sjohanson@hazmanage.com](mailto:sjohanson@hazmanage.com).

Sincerely,

Shannon Johanson  
Branch Manager  
Cal/OSHA 12-4874  
Lead ST 24367

Reviewed by:

Harold L. Stevens  
Vice president/General Manager  
Cal/OSHA CAC 95-1624 CDPH  
CDPH IA/S/M 2399

Enclosures:



# HMS, Inc. Accreditations

DEPARTMENT OF INDUSTRIAL RELATIONS  
Division of Occupational Safety and Health  
Asbestos Unit  
2424 Arden Way, Suite 495  
Sacramento, CA 95825-2417  
(916) 574-2993 Office (916) 483-0572 Fax  
<http://www.dir.ca.gov/dir/databases.html> [actu@dir.ca.gov](mailto:actu@dir.ca.gov)



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361

363

Hazard Management Services, Inc  
Shannon M Johanson  
207 McHenry Ave.  
Modesto

' CA 95354

June 11, 2014

Dear Certified Asbestos Consultant or Technician:

Enclosed is your certification card. **To maintain your certification, you must abide by the rules printed on the back of the certification card.**

Your certification is valid for a period of one year. If you wish to renew your certification, you must apply for renewal at least 60 days before the expiration date shown on your card. [8 CCR 341.15(h)(1)].

Please hold and do not send copies of your required AHERA refresher renewal certificates to our office until you apply for renewal of your certification.

Certificates must be kept current if you are actively working as a CAC or CSST. The grace period is only for those who are not actively working as an asbestos consultant or site surveillance technician.

Please contact our office at the above address, fax number or email; of any changes in your contact/mailling information within 15 days of the change.

Sincerely,

Jeff Ferrell  
Senior Safety Engineer

Attachment: Certification Card

cc: File

Renewal – Card Attached (Revised 10/24/2012)

State of California  
Division of Occupational Safety and Health  
Certified Site Surveillance Technician

**Shannon M Johanson**



Name

Certification No. **12-4874**

Expires on **06/20/15**

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code.



**COEH** CENTER FOR OCCUPATIONAL  
& ENVIRONMENTAL HEALTH

University of California Berkeley



This certifies that

**Shannon Johanson**

has attended the four hour course  
AHERA Refresher for Asbestos Inspectors and Management Planners

and has completed the requisite training for asbestos accreditation under TSCA Title II  
September 9, 2013

Course Date

*John R. Blum*

*Barbara A. Plog*

~~September 9, 2013~~  
September 9, 2013

Continuing Education Director  
B1124-13

September 9, 2014

Certificate Number: CA-002-06

Date of Exam:

Expiration Date:

Cal/OSHA Approval Number:

Center for Occupational and Environmental Health Continuing Education Program

UC Berkeley Mailcode 5120, 2223 Fulton Street, Berkeley, CA 94720-5120 Ph: (510) 643-7277 Fax: (510) 643-7291



# Forensic Analytical Laboratory, Inc. Accreditations



**National Voluntary  
Laboratory Accreditation Program**



**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005**

**Forensic Analytical Laboratories, Inc.**

3777 Depot Road, Suite 409

Hayward, CA 94545-2761

Mr. David Sandusky

Phone: 510-887-8828 Fax: 510-887-4218

E-Mail: daves@falaboratories.com

URL: <http://www.falaboratories.com>

**BULK ASBESTOS FIBER ANALYSIS (PLM)**

**NVLAP LAB CODE 101459-0**

***NVLAP Code    Designation / Description***

18/A01            EPA 600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

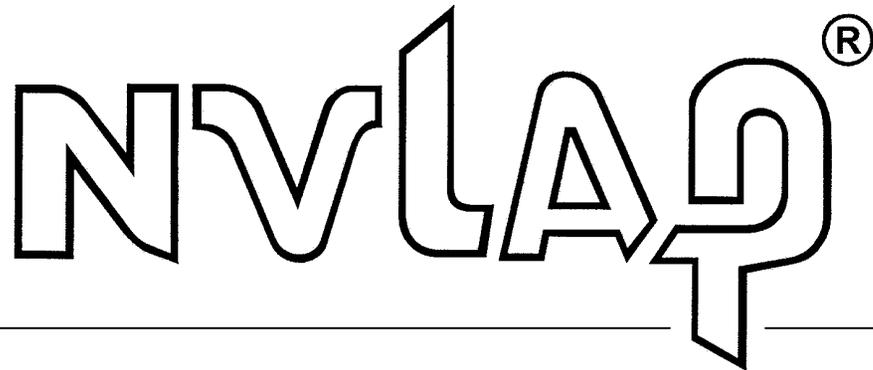
18/A03            EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

2014-07-01 through 2015-06-30

*Effective dates*

*For the National Institute of Standards and Technology*

United States Department of Commerce  
National Institute of Standards and Technology



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**Certificate of Accreditation to ISO/IEC 17025:2005**

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NVLAP LAB CODE: 101459-0

**Forensic Analytical Laboratories, Inc.**  
Hayward, CA

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,  
listed on the Scope of Accreditation, for:*

**BULK ASBESTOS FIBER ANALYSIS**

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.  
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality  
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2014-07-01 through 2015-06-30

*Effective dates*



A handwritten signature in black ink, appearing to read 'William R. M. L. Q.', is written over a horizontal line.

*For the National Institute of Standards and Technology*



# HMS, Inc. Accreditations



# Forensic Analytical Laboratory, Inc. Accreditations



# Asbestos Bulk Sample Results and Chain-of-Custody



# Asbestos Bulk Sample Maps



# Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Hazard Mgmt Svcs-Fresno/Bakersfield  
Shannon Johanson  
Fresno Location  
371 E. Bullard Ave., Ste. 109  
Fresno, CA 93710

**Client ID:** 1636  
**Report Number:** B195476  
**Date Received:** 09/03/14  
**Date Analyzed:** 09/04/14  
**Date Printed:** 09/04/14  
**First Reported:** 09/04/14

**Job ID/Site:** S14019A - Solano Community College Dist., Building 100

**FALI Job ID:** 1636

**Date(s) Collected:** 09/02/2014

**Total Samples Submitted:** 21

**Total Samples Analyzed:** 21

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019A-01A</b>	11556623						
Layer: White Semi-Fibrous Material		Chrysotile	10 %				
Total Composite Values of Fibrous Components:		<b>Asbestos (10%)</b>					
Cellulose (Trace)							
<b>HMS-S14019A-01B</b>	11556624						
Layer: White Semi-Fibrous Material		Chrysotile	10 %				
Total Composite Values of Fibrous Components:		<b>Asbestos (10%)</b>					
Cellulose (Trace)							
<b>HMS-S14019A-01C</b>	11556625						
Layer: White Semi-Fibrous Material		Chrysotile	10 %				
Total Composite Values of Fibrous Components:		<b>Asbestos (10%)</b>					
Cellulose (Trace)							
<b>HMS-S14019A-02A</b>	11556626						
Layer: Brown Mastic			ND				
Layer: Tan Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (80 %) Talc (Trace)							
<b>HMS-S14019A-02B</b>	11556627						
Layer: White Non-Fibrous Material			ND				
Layer: Brown Mastic			ND				
Layer: Grey Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (60 %) Fibrous Glass (20 %) Talc (Trace)							
<b>HMS-S14019A-02C</b>	11556628						
Layer: White Non-Fibrous Material			ND				
Layer: Brown Mastic			ND				
Layer: Grey Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (60 %) Fibrous Glass (20 %) Talc (Trace)							

**Client Name:** Hazard Mgmt Svcs-Fresno/Bakersfield

**Report Number:** B195476

**Date Printed:** 09/04/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019A-03A</b>	11556629						
Layer: Grey Fibrous Material							<b>ND</b>
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (40 %)	Fibrous Glass (40 %)						
<b>HMS-S14019A-04A</b>	11556630						
Layer: Beige Non-Fibrous Material		Chrysotile					<b>Trace</b>
Layer: Paint							<b>ND</b>
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (2 %)	Fibrous Glass (90 %)						
<b>HMS-S14019A-04B</b>	11556631						
Layer: Beige Non-Fibrous Material		Chrysotile					<b>Trace</b>
Layer: Paint							<b>ND</b>
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (2 %)	Fibrous Glass (90 %)						
<b>HMS-S14019A-04C</b>	11556632						
Layer: Beige Non-Fibrous Material		Chrysotile					<b>Trace</b>
Layer: Paint							<b>ND</b>
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (2 %)	Fibrous Glass (90 %)						
<b>HMS-S14019A-05A</b>	11556633						
Layer: White Drywall							<b>ND</b>
Layer: Yellow Fibrous Material							<b>ND</b>
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (15 %)	Fibrous Glass (50 %)						
<b>HMS-S14019A-05B</b>	11556634						
Layer: White Drywall							<b>ND</b>
Layer: Off-White Skimcoat/Joint Compound		Chrysotile					<b>2 %</b>
Layer: Paint							<b>ND</b>
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (20 %)							
<b>HMS-S14019A-06A</b>	11556635						
Layer: White Drywall							<b>ND</b>
Layer: Paint							<b>ND</b>
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (20 %)	Fibrous Glass (3 %)						
<b>HMS-S14019A-06B</b>	11556636						
Layer: White Drywall							<b>ND</b>
Layer: Off-White Skimcoat/Joint Compound		Chrysotile					<b>2 %</b>
Layer: Paint							<b>ND</b>
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (20 %)	Fibrous Glass (3 %)						

**Client Name:** Hazard Mgmt Svcs-Fresno/Bakersfield

**Report Number:** B195476

**Date Printed:** 09/04/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019A-07A</b>	11556637						
Layer: White Semi-Fibrous Material		Amosite	10 %				
Layer: White Fibrous Material			ND				
Layer: Foil			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (9%)</b>					
Fibrous Glass (Trace)	Synthetic (3 %)						
<b>HMS-S14019A-07B</b>	11556638						
Layer: White Semi-Fibrous Material		Amosite	10 %				
Layer: White Fibrous Material			ND				
Layer: Foil			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (9%)</b>					
Fibrous Glass (Trace)	Synthetic (3 %)						
<b>HMS-S14019A-08A</b>	11556639						
Layer: Yellow Fibrous Material			ND				
Layer: Yellow Mastic			ND				
Layer: Foil			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)	Fibrous Glass (80 %)						
<b>HMS-S14019A-08B</b>	11556640						
Layer: Yellow Fibrous Material			ND				
Layer: Yellow Mastic			ND				
Layer: Foil			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)	Fibrous Glass (80 %)						
<b>HMS-S14019A-09A</b>	11556641						
Layer: Yellow Non-Fibrous Material		Chrysotile	2 %				
Total Composite Values of Fibrous Components:		<b>Asbestos (2%)</b>					
<b>HMS-S14019A-10A</b>	11556642						
Layer: Grey Plaster			ND				
Layer: White Plaster			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)							
<b>HMS-S14019A-10B</b>	11556643						
Layer: Grey Plaster			ND				
Layer: White Plaster			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)							

**Client Name:** Hazard Mgmt Svcs-Fresno/Bakersfield

**Report Number:** B195476

**Date Printed:** 09/04/14

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Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
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Tad Thrower, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

Analytical results and reports are generated by Forensic Analytical Laboratories Inc. (FALI) at the request of and for the exclusive use of the person or entity (client) named on such report. Results, reports or copies of same will not be released by FALI to any third party without prior written request from client. This report applies only to the sample(s) tested. Supporting laboratory documentation is available upon request. This report must not be reproduced except in full, unless approved by FALI. The client is solely responsible for the use and interpretation of test results and reports requested from FALI. Forensic Analytical Laboratories Inc. is not able to assess the degree of hazard resulting from materials analyzed. FALI reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified. All samples were received in acceptable condition unless otherwise noted.

**Bulk Request Analysis Form**  
 Hazard Management Services, Inc.  
 1911 Douglas Blvd., Suite 85-349  
 Roseville, CA 95661  
 (916) 628-0050 Phone (916) 781-6837 Fax

**Client:** Solano Community College Dist.  
**Job Site:** Building 100  
**Project ID:** S14019A  
**Project Manager:** Shannon Johanson  
**Date Collected:** 9/2/14  
**Collected by:** Shannon Johanson  
**Date Submitted:** 9/2/14  
**Laboratory:** FALI

**Analysis Requested:**

PLM with Dispersion Staining     Flame AA  
 TEM (Bulk)     Other:  
**Turnaround Time:**  Same Day     24 Hour  
 Other:

**Special Instructions:**

Please fax results to (209) 575-5657  
 Please email results to: sjohanson@hazmanage.com  
 Other:

SAMPLE #	MATERIAL DESCRIPTION/LOCATION
HMS-S14019A-01A	Spray-on-Ceiling Texture Building 100, Library Mezzanine, East Side
HMS-S14019A-01B	Spray-on-Ceiling Texture Building 100, Library Mezzanine, At Center
HMS-S14019A-01C	Spray-on-Ceiling Texture Building 100, Library Mezzanine, West Side
HMS-S14019A-02A	12" ACT w/Brown Mastic - Pinhole/Gouge Pattern Building 100, Staff Restrooms at Damage
HMS-S14019A-02B	12" ACT w/Brown Mastic - Pinhole/Gouge Pattern Building 100, Women's Restroom Off Main Hallway, Near Entry
HMS-S14019A-02C	12" ACT w/Brown Mastic - Pinhole/Gouge Pattern Building 100, Lobby, At Edge of Ceiling
HMS-S14019A-03A	2'x4' FCP - Pinhole Pattern Building 100, Faculty Area, Room 106, Near Entrance
HMS-S14019A-04A	2'x4' FCP - Pinhole/Fissure Pattern Building 100, Staff Lounge, North Side
HMS-S14019A-04B	2'x4' FCP - Pinhole/Fissure Pattern Building 100, Main Corridor, West End
HMS-S14019A-04C	2'x4' FCP - Pinhole/Fissure Pattern Building 100, Room 153, Near Entrance
HMS-S14019A-05A	Drywall (Above 12" ACT) Building 100, Staff Restroom Ceiling, Near Sink
HMS-S14019A-05B	Drywall (Above 12" ACT) Building 100, Women's Restroom Ceiling
HMS-S14019A-06A	Drywall - Smooth (Newer) Building 100, South Corridor, At Entrance Ceiling
HMS-S14019A-06B	Drywall (Newer) Building 100 South Corridor
HMS-S14019A-07A	TSI w/Paper Wrap Building 100, Faculty Area, Attic Space

**Bulk Request Analysis Form**  
 Hazard Management Services, Inc.  
 1911 Douglas Blvd., Suite 85-349  
 Roseville, CA 95661  
 (916) 628-0050 Phone (916) 781-6837 Fax

**Client:** Solano Community College Dist.  
**Job Site:** Building 100  
**Project ID:** S14019A  
**Project Manager:** Shannon Johanson  
**Date Collected:** 9/2/14  
**Collected by:** Shannon Johanson  
**Date Submitted:** 9/2/14  
**Laboratory:** FALI

**Analysis Requested:**  
 PLM with Dispersion Staining     Flame AA  
 TEM (Bulk)     Other:  
**Turnaround Time:**  Same Day     24 Hour  
 Other:  
**Special Instructions:**  
 Please fax results to (209) 575-5657  
 Please email results to: sjohanson@hazmanage.com  
 Other:

SAMPLE #	MATERIAL DESCRIPTION/LOCATION
HMS-S14019A-07B	TSI w/Paper Wrap Building 100, Faculty Area, Attic Space, at Hanger
HMS-S14019A-08A	Duct Seam Tape Building 100, Faculty Area, Attic Space
HMS-S14019A-08B	Duct Seam Tape Building 100, Main Corridor, Attic Space
HMS-S14019A-09A	Concrete Sealant - Yellow Building 100, Faculty Area, Near Room106
HMS-S14019A-10A	Plaster - Smooth Building 100, Staff Restroom #1, South Wall
HMS-S14019A-10B	Plaster - Smooth Building 100, Staff Restroom #2, North Wall

Submitted by: Shannon Johanson

Date: 9/2/14

Submitted via:  Dropoff  FedEx  Courier  Other:

Received by: [Signature]

Date: 09-03-14 10:44 RCVD FX



# Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Hazard Mgmt Svcs-Fresno/Bakersfield  
Shannon Johanson  
Fresno Location  
371 E. Bullard Ave., Ste. 109  
Fresno, CA 93710

**Client ID:** 1636  
**Report Number:** B195611  
**Date Received:** 09/08/14  
**Date Analyzed:** 09/09/14  
**Date Printed:** 09/09/14  
**First Reported:** 09/09/14

**Job ID/Site:** S14019B - Solano Community College Dist., Building 500

**FALI Job ID:** 1636

**Date(s) Collected:** 09/03/2014

**Total Samples Submitted:** 16

**Total Samples Analyzed:** 16

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019B-01A</b>	11557873						
Layer: White Drywall			ND				
Layer: Off-White Skimcoat/Joint Compound		Chrysotile	2 %				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019B-01B</b>	11557874						
Layer: White Drywall			ND				
Layer: White Skimcoat/Joint Compound			ND				
Layer: Off-White Tape			ND				
Layer: White Skimcoat/Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019B-01C</b>	11557875						
Layer: White Drywall			ND				
Layer: Off-White Skimcoat/Joint Compound		Chrysotile	2 %				
Layer: White Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019B-02A</b>	11557876						
Layer: Beige Tape		Chrysotile	2 %				
Total Composite Values of Fibrous Components:		<b>Asbestos (2%)</b>					
Cellulose (40 %)	Fibrous Glass (7 %)						
<b>HMS-S14019B-02B</b>	11557877						
Layer: Beige Tape		Chrysotile	2 %				
Total Composite Values of Fibrous Components:		<b>Asbestos (2%)</b>					
Cellulose (Trace)	Fibrous Glass (20 %)						
<b>HMS-S14019B-03A</b>	11557878						
Layer: Beige Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (35 %)	Fibrous Glass (45 %)						

Client Name: Hazard Mgmt Svcs-Fresno/Bakersfield

Report Number: B195611

Date Printed: 09/09/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019B-04A</b>	11557879						
Layer: White Drywall			ND				
Layer: Off-White Skimcoat/Joint Compound		Chrysotile	2 %				
Layer: White Tape			ND				
Layer: Off-White Texture		Chrysotile	2 %				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019B-04B</b>	11557880						
Layer: White Drywall			ND				
Layer: White Texture			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019B-04C</b>	11557881						
Layer: White Drywall			ND				
Layer: Off-White Skimcoat/Joint Compound		Chrysotile	2 %				
Layer: White Tape			ND				
Layer: White Texture			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019B-05A</b>	11557882						
Layer: White Drywall			ND				
Layer: White Skimcoat/Joint Compound			ND				
Layer: Off-White Tape			ND				
Layer: White Skimcoat/Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019B-06A</b>	11557883						
Layer: White Non-Fibrous Material			ND				
Layer: Yellow Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)	Fibrous Glass (30 %)						
<b>HMS-S14019B-07A</b>	11557884						
Layer: Grey Non-Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)	Synthetic (5 %)						
<b>HMS-S14019B-08A</b>	11557885						
Layer: White Non-Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)							

**Client Name:** Hazard Mgmt Svcs-Fresno/Bakersfield

**Report Number:** B195611

**Date Printed:** 09/09/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019B-09A</b>	11557886						
Layer: Stones			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**  
Cellulose (7 %)      Fibrous Glass (30 %)  
Comment: Bulk complex sample.

<b>HMS-S14019B-09B</b>	11557887						
Layer: Stones			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**  
Cellulose (10 %)      Fibrous Glass (30 %)  
Comment: Bulk complex sample.

Client Name: Hazard Mgmt Svcs-Fresno/Bakersfield

Report Number: B195611

Date Printed: 09/09/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019B-09C</b>	11557888						
Layer: Stones			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Grey Fibrous Material			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**

Cellulose (5 %)      Fibrous Glass (30 %)

Comment: Bulk complex sample.



Tad Thrower, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

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# Bulk Request Analysis Form

Hazard Management Services, Inc.

1911 Douglas Blvd., Suite 85-349

Roseville, CA 95661

(916) 628-0050 Phone (916) 781-6837 Fax

Client: Solano Community College Dist.  
 Job Site: Building 500  
 Project ID: S14019B  
 Project Manager: Shannon Johanson  
 Date Collected: 9/3/14  
 Collected by: Shannon Johanson  
 Date Submitted: 9/5/14  
 Laboratory: FALI

**Analysis Requested:**

PLM with Dispersion Staining  Flame AA

TEM (Bulk)  Other:

Turnaround Time:  Same Day  24 Hour

Other: \_\_\_\_\_

**Special Instructions:**

Please fax results to (209) 575-5657

Please email results to: sjohanson@hazmanage.com

Other: \_\_\_\_\_

SAMPLE #	MATERIAL DESCRIPTION/LOCATION
HMS-S14019B-01A	Drywall - Smooth Building 500, Women's Restroom, At Ceiling Near Entry
HMS-S14019B-01B	Drywall - Smooth Building 500, Men's Restroom, Southeast Corner
HMS-S14019B-01C	Drywall - Smooth Building 500, Mechanical
HMS-S14019B-02A	Duct Seam Tape Main Corridor (532), Attic Space, Near Room 504
HMS-S14019B-02B	Duct Seam Tape Building 500, Corridor 511, Attic Space at Center
HMS-S14019B-03A	2'x4' FCP - Pinhole/Gouge Building 500, Main Corridor, Near Room 504
HMS-S14019B-04A	Drywall - Orange Peel Texture Building 500, Corridor 511, By Drinking Fountain
HMS-S14019B-04B	Drywall - Orange Peel Texture Building 500, Corridor 532, By Room 501
HMS-S14019B-04C	Drywall - Orange Peel Texture Building 500, Near Office 519
HMS-S14019B-05A	Drywall - Unfinished Building 500, Corridor 511, Above Ceiling
HMS-S14019B-06A	Fiberglass TSI w/Paper Wrap & Brown Sealant Building 500, Mechanical Room 525, At Pipes
HMS-S14019B-07A	Gray Sealant Building 500, Roof, At HVAC Unit Bolts
HMS-S14019B-08A	White Sealant Building 500, Roof, at HVAC Ducts
HMS-S14019B-09A	Rolled Roofing Building 500, Roof, Southeast Corner by Exhaust Unit
HMS-S14019B-09B	Rolled Roofing Building 500, Roof, By HVAC Unit

*Signature*

09-08-14A10:25 RCVD

# Bulk Request Analysis Form

Hazard Management Services, Inc.

1911 Douglas Blvd., Suite 85-349

Roseville, CA 95661

(916) 628-0050 Phone (916) 781-6837 Fax

Client: Solano Community College Dist.

Job Site: Building 500

Project ID: S14019B

Project Manager: Shannon Johanson

Date Collected: 9/3/14

Collected by: Shannon Johanson

Date Submitted: 9/5/14

Laboratory: FALI

## Analysis Requested:

PLM with Dispersion Staining  Flame AA

TEM (Bulk)  Other:

Turnaround Time:  Same Day  24 Hour

Other: \_\_\_\_\_

## Special Instructions:

Please fax results to (209) 575-5657

Please email results to: sjohanson@hazmanage.com

Other: \_\_\_\_\_

SAMPLE #	MATERIAL DESCRIPTION/LOCATION
HMS-S14019B-09C	Rolled Roofing Building 500, Roof, Southwest Corner

Submitted by: Shannon Johanson

Date: 9-5-14

Submitted via:  Dropoff  FedEx  Courier  Other:

09-08-14A10:25 RCVD

Received by: Gjn

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



# Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Hazard Mgmt Svcs-Fresno/Bakersfield  
Shannon Johanson  
Fresno Location  
371 E. Bullard Ave., Ste. 109  
Fresno, CA 93710

**Client ID:** 1636  
**Report Number:** B195609  
**Date Received:** 09/08/14  
**Date Analyzed:** 09/09/14  
**Date Printed:** 09/09/14  
**First Reported:** 09/09/14

**Job ID/Site:** S14019C - Solano Community College Dist., Building 700

**FALI Job ID:** 1636

**Date(s) Collected:** 09/03/2014

**Total Samples Submitted:** 11

**Total Samples Analyzed:** 11

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019C-01A</b>	11557859						
Layer: Beige Fibrous Material			<b>ND</b>				
Layer: Paint			<b>ND</b>				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (35 %)	Fibrous Glass (45 %)						
<b>HMS-S14019C-01B</b>	11557860						
Layer: Beige Fibrous Material			<b>ND</b>				
Layer: Paint			<b>ND</b>				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (35 %)	Fibrous Glass (45 %)						
<b>HMS-S14019C-02A</b>	11557861						
Layer: Tan Tape		Chrysotile	<b>5 %</b>				
Total Composite Values of Fibrous Components:		<b>Asbestos (5%)</b>					
<b>HMS-S14019C-02B</b>	11557862						
Layer: Tan Tape			<b>ND</b>				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)	Fibrous Glass (7 %)	Synthetic (7 %)					
<b>HMS-S14019C-03A</b>	11557863						
Layer: Yellow Mastic			<b>ND</b>				
Layer: Tan Fibrous Material			<b>ND</b>				
Layer: Foil			<b>ND</b>				
Layer: Grey Non-Fibrous Material			<b>ND</b>				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (70 %)							
<b>HMS-S14019C-04A</b>	11557864						
Layer: Beige Fibrous Material			<b>ND</b>				
Layer: Paint			<b>ND</b>				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (35 %)	Fibrous Glass (45 %)						

Client Name: Hazard Mgmt Svcs-Fresno/Bakersfield

Report Number: B195609

Date Printed: 09/09/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019C-05A</b>	11557865						
Layer: Stones			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Stones			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Beige Fibrous Material			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**  
Cellulose (10 %)      Fibrous Glass (10 %)  
Comment: Bulk complex sample.

<b>HMS-S14019C-05B</b>	11557866						
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Tan Fibrous Material			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**  
Cellulose (3 %)      Fibrous Glass (15 %)  
Comment: Bulk complex sample.

Client Name: Hazard Mgmt Svcs-Fresno/Bakersfield

Report Number: B195609

Date Printed: 09/09/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019C-05C</b>	11557867						
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Stones			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Stones			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**  
Cellulose (Trace)      Fibrous Glass (15 %)  
Comment: Bulk complex sample.

<b>HMS-S14019C-06A</b>	11557868						
Layer: Grey Semi-Fibrous Material			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**  
Synthetic (Trace)

<b>HMS-S14019C-07A</b>	11557869						
Layer: Grey/Black Non-Fibrous Material			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**  
Synthetic (Trace)



Tad Thrower, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

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# Bulk Request Analysis Form

Hazard Management Services, Inc.

1911 Douglas Blvd., Suite 85-349

Roseville, CA 95661

(916) 628-0050 Phone (916) 781-6837 Fax

Client: Solano Community College Dist.  
 Job Site: Building 700  
 Project ID: S14019C  
 Project Manager: Shannon Johanson  
 Date Collected: 9/3/14  
 Collected by: Shannon Johanson  
 Date Submitted: 9/5/14  
 Laboratory: FALI

Analysis Requested:  
 PLM with Dispersion Staining  Flame AA  
 TEM (Bulk)  Other:  
 Turnaround Time:  Same Day  24 Hour  
 Other:  
 Special Instructions:  
 Please fax results to (209) 575-5657  
 Please email results to: sjohanson@hazmanage.com  
 Other:

SAMPLE #	MATERIAL DESCRIPTION/LOCATION
HMS-S14019C-01A	2'x4' FCP (look like 2'x2') Building 700, Main Corridor
HMS-S14019C-01B	2'x4' FCP (look like 2'x2') Building 700, Corridor by 704
HMS-S14019C-02A	Duct Seam Tape Building 700, Main Corridor, Attic Space Near 707
HMS-S14019C-02B	Duct Seam Tape Building 700, Main Corridor, Attic Space Near Women's Restroom
HMS-S14019C-03A	Silver Foil Tape w/Glue & Gray Sealant Building 700, Corridor, Attic Space Near 705
HMS-S14019C-04A	Light Fixture Insulation Building 700, Corridor, Attic Space, Near 705 at Center Light
HMS-S14019C-05A	Rolled Roofing Building 700, Roof, At HVAC Unit
HMS-S14019C-05B	Rolled Roofing Building 700, Roof, Near Vent by HVAC Unit
HMS-S14019C-05C	Rolled Roofing Building 700, Roof, Northwest Corner
HMS-S14019C-06A	Gray Sealant on Metal Building 700, Roof, At Vent
HMS-S14019C-07A	Gray/Black Sealant Building 700, Roof, At HVAC Unit

Submitted by: Shannon Johanson

Date: 9-5-14

Submitted via:  Dropoff  FedEx  Courier  Other:

09-08-14A10:19 RCVD

Received by: gn sp

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



# Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Hazard Mgmt Svcs-Fresno/Bakersfield  
Shannon Johanson  
Fresno Location  
371 E. Bullard Ave., Ste. 109  
Fresno, CA 93710

**Client ID:** 1636  
**Report Number:** B195620  
**Date Received:** 09/08/14  
**Date Analyzed:** 09/09/14  
**Date Printed:** 09/09/14  
**First Reported:** 09/09/14

**Job ID/Site:** S14019D - Solano Community College Dist., Building 800

**FALI Job ID:** 1636

**Date(s) Collected:** 09/03/2014

**Total Samples Submitted:** 15

**Total Samples Analyzed:** 15

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019D-01A</b>	11557951						
Layer: Grey Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (35 %)	Fibrous Glass (45 %)						
<b>HMS-S14019D-01B</b>	11557952						
Layer: Grey Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (35 %)	Fibrous Glass (45 %)						
<b>HMS-S14019D-02A</b>	11557953						
Layer: White Drywall			ND				
Layer: White Skimcoat/Joint Compound			ND				
Layer: Off-White Tape			ND				
Layer: White Skimcoat/Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019D-03A</b>	11557954						
Layer: Silver Foil			ND				
Layer: Clear Mastic			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)	Fibrous Glass (Trace)						
<b>HMS-S14019D-04A</b>	11557955						
Layer: White Drywall			ND				
Layer: Brown Mastic		Chrysotile	2 %				
Layer: Tan Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (55 %)	Fibrous Glass (3 %)						

Client Name: Hazard Mgmt Svcs-Fresno/Bakersfield

Report Number: B195620

Date Printed: 09/09/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019D-05A</b>	11557956						
Layer: White Drywall			ND				
Layer: White Texture			ND				
Layer: Off-White Woven Material			ND				
Layer: Light Grey Coating			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (20 %)							
<b>HMS-S14019D-05B</b>	11557957						
Layer: White Drywall			ND				
Layer: White Skimcoat/Joint Compound			ND				
Layer: White Tape			ND				
Layer: White Texture			ND				
Layer: Off-White Woven Material			ND				
Layer: Light Grey Coating			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (20 %)							
<b>HMS-S14019D-06A</b>	11557958						
Layer: Off-White Tape			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (40 %) Fibrous Glass (10 %)							
<b>HMS-S14019D-06B</b>	11557959						
Layer: Off-White Tape			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (70 %)							
<b>HMS-S14019D-07A</b>	11557960						
Layer: Off-White Fibrous Material			ND				
Layer: Foil			ND				
Layer: Yellow Non-Fibrous Material			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (65 %) Fibrous Glass (10 %)							
<b>HMS-S14019D-08A</b>	11557961						
Layer: Stones			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace) Fibrous Glass (30 %)							
Comment: Bulk complex sample.							

Client Name: Hazard Mgmt Svcs-Fresno/Bakersfield

Report Number: B195620

Date Printed: 09/09/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019D-08B</b>	11557962						
Layer: Stones			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**

Cellulose (Trace) Fibrous Glass (30 %)

Comment: Bulk complex sample.

<b>HMS-S14019D-08C</b>	11557963						
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**

Cellulose (Trace) Fibrous Glass (35 %)

Comment: Bulk complex sample.

<b>HMS-S14019D-09A</b>	11557964						
Layer: Black Tar			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**

Cellulose (Trace)

<b>HMS-S14019D-10A</b>	11557965						
Layer: Grey Non-Fibrous Material			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**

Cellulose (Trace) Synthetic (3 %)

**Client Name:** Hazard Mgmt Svcs-Fresno/Bakersfield

**Report Number:** B195620

**Date Printed:** 09/09/14

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Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
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Tad Thrower, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

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**Bulk Request Analysis Form**  
**Hazard Management Services, Inc.**  
 1911 Douglas Blvd., Suite 85-349  
 Roseville, CA 95661  
 (916) 628-0050 Phone (916) 781-6837 Fax

**Client:** Solano Community College Dist.  
**Job Site:** Building 800  
**Project ID:** S14019D  
**Project Manager:** Shannon Johanson  
**Date Collected:** 9/3/14  
**Collected by:** Shannon Johanson  
**Date Submitted:** 9/5/14  
**Laboratory:** FALI

**Analysis Requested:**  
 PLM with Dispersion Staining       Flame AA  
 TEM (Bulk)       Other:  
**Turnaround Time:**  Same Day       24 Hour  
 Other:  
**Special Instructions:**  
 Please fax results to (209) 575-5657  
 Please email results to: sjohanson@hazmanage.com

SAMPLE #	MATERIAL DESCRIPTION/LOCATION
HMS-S14019D-01A	2'x4' FCP (Look like 2'x2') Building 800, Main Corridor, Next to 800B Electrical Room
HMS-S14019D-01B	2'x4' FCP (Look like 2'x2') Building 800, Room 812, Near Front of Classroom
HMS-S14019D-02A	Plaster - Smooth Building 800, Women's Restroom Ceiling
HMS-S14019D-03A	Foil Tape & Glue Building 800, Corridor 800E, Attic Space
HMS-S14019D-04A	12" ACT w/Mastic Building 800, Staff Restroom
HMS-S14019D-05A	Drywall w/Texture Wallpaper Building 800, Corridor 800E, South Wall
HMS-S14019D-05B	Drywall w/Texture Wallpaper Building 800, Main Corridor by Drinking Fountain
HMS-S14019D-06A	Duct Seam Tape Building 800, Main Corridor, North Side of Plenum
HMS-S14019D-06B	Duct Seam Tape Building 800, Main Corridor, North Side of Plenum
HMS-S14019D-07A	Fiberglass TSI w/Paper Wrap & Glue Building 800, Main Corridor, North End at Center
HMS-S14019D-08A	Rolled Roofing Building 800, Roof, North Side of HVAC Unit
HMS-S14019D-08B	Rolled Roofing Building 800, Roof, Southeast Corner
HMS-S14019D-08C	Rolled Roofing Building 800, Roof, Near HVAC Unit
HMS-S14019D-09A	Black Mastic Building 800, Roof, on Vent Pipe Near HVAC
HMS-S14019D-10A	Gray Mastic Building 800, Roof, at HVAC Unit

Submitted by: Shannon Johanson  
 Submitted via:  Dropoff  FedEx  Courier  Other:  
 Received by: gn RP

Date: 9-5-14  
 09-08-14A10:16 RCVD  
 Date: \_\_\_\_\_



# Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Hazard Mgmt Svcs-Fresno/Bakersfield  
Shannon Johanson  
Fresno Location  
371 E. Bullard Ave., Ste. 109  
Fresno, CA 93710

**Client ID:** 1636  
**Report Number:** B195626  
**Date Received:** 09/08/14  
**Date Analyzed:** 09/09/14  
**Date Printed:** 09/09/14  
**First Reported:** 09/09/14

**Job ID/Site:** S14019E - Solano Community College Dist., Building 1400

**FALI Job ID:** 1636

**Date(s) Collected:** 09/04/2014

**Total Samples Submitted:** 16

**Total Samples Analyzed:** 16

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019E-01A</b>	11558014						
Layer: Beige Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (35 %)	Fibrous Glass (45 %)						
<b>HMS-S14019E-01B</b>	11558015						
Layer: Beige Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (35 %)	Fibrous Glass (45 %)						
<b>HMS-S14019E-02A</b>	11558016						
Layer: Light Pink Drywall			ND				
Layer: Off-White Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019E-02B</b>	11558017						
Layer: Light Pink Drywall			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (20 %)							
<b>HMS-S14019E-02C</b>	11558018						
Layer: Light Pink Drywall			ND				
Layer: Off-White Joint Compound			ND				
Layer: Off-White Tape			ND				
Layer: Off-White Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019E-02D</b>	11558019						
Layer: Light Pink Drywall			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (20 %)							

**Client Name:** Hazard Mgmt Svcs-Fresno/Bakersfield

**Report Number:** B195626

**Date Printed:** 09/09/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019E-03A</b>	11558020						
Layer: White Non-Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)							
<b>HMS-S14019E-04A</b>	11558021						
Layer: Brown Mastic			ND				
Layer: Yellow Fibrous Tile			ND				
Layer: White Drywall			ND				
Layer: Paint			ND				
Layer: Beige Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (2 %) Fibrous Glass (30 %)							
<b>HMS-S14019E-04B</b>	11558022						
Layer: Brown Mastic			ND				
Layer: Yellow Fibrous Tile			ND				
Layer: White Drywall			ND				
Layer: Paint			ND				
Layer: Beige Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (2 %) Fibrous Glass (30 %)							
<b>HMS-S14019E-05A</b>	11558023						
Layer: Tan Fibrous Material			ND				
Layer: White Drywall			ND				
Layer: Beige Joint Compound		Chrysotile	Trace				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (5 %)							
<b>HMS-S14019E-06A</b>	11558024						
Layer: Grey Non-Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
<b>HMS-S14019E-07A</b>	11558025						
Layer: Tan Non-Fibrous Material			ND				
Layer: Black Woven Material			ND				
Layer: Tan Woven Material			ND				
Layer: Tan Non-Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (10 %) Fibrous Glass (7 %)							
<b>HMS-S14019E-08A</b>	11558026						
Layer: Off-White Non-Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					

**Client Name:** Hazard Mgmt Svcs-Fresno/Bakersfield

**Report Number:** B195626

**Date Printed:** 09/09/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019E-09A</b>	11558027						
Layer: Tan Fibrous Material			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: White Stones			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**

Cellulose (Trace)      Fibrous Glass (30 %)

Comment: Bulk complex sample.

<b>HMS-S14019E-09B</b>	11558028						
Layer: Tan Fibrous Material			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: White Stones			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**

Cellulose (Trace)      Fibrous Glass (30 %)

Comment: Bulk complex sample.

<b>HMS-S14019E-09C</b>	11558029						
Layer: Tan Fibrous Material			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: White Stones			ND				

Total Composite Values of Fibrous Components: **Asbestos (ND)**

Cellulose (Trace)      Fibrous Glass (30 %)

Comment: Bulk complex sample.

**Client Name:** Hazard Mgmt Svcs-Fresno/Bakersfield

**Report Number:** B195626

**Date Printed:** 09/09/14

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Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
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Tad Thrower, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

Analytical results and reports are generated by Forensic Analytical Laboratories Inc. (FALI) at the request of and for the exclusive use of the person or entity (client) named on such report. Results, reports or copies of same will not be released by FALI to any third party without prior written request from client. This report applies only to the sample(s) tested. Supporting laboratory documentation is available upon request. This report must not be reproduced except in full, unless approved by FALI. The client is solely responsible for the use and interpretation of test results and reports requested from FALI. Forensic Analytical Laboratories Inc. is not able to assess the degree of hazard resulting from materials analyzed. FALI reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified. All samples were received in acceptable condition unless otherwise noted.

# Bulk Request Analysis Form

Hazard Management Services, Inc.

1911 Douglas Blvd., Suite 85-349

Roseville, CA 95661

(916) 628-0050 Phone (916) 781-6837 Fax

Client: Solano Community College Dist.  
 Job Site: Building 1400  
 Project ID: S14019E  
 Project Manager: Shannon Johanson  
 Date Collected: 9/4/14  
 Collected by: Shannon Johanson  
 Date Submitted: 9/5/14  
 Laboratory: FALI

Analysis Requested:  
 PLM with Dispersion Staining  Flame AA  
 TEM (Bulk)  Other:  
 Turnaround Time:  Same Day  24 Hour  
 Other:  
 Special Instructions:  
 Please fax results to (209) 575-5657  
 Please email results to: sjohanson@hazmanage.com  
 Other:

SAMPLE #	MATERIAL DESCRIPTION/LOCATION
HMS-S14019E-01A	2'x2' FCP Pinhole/Gouge Building 1400, Student Services, East Side
HMS-S14019E-01B	2'x2' FCP Pinhole/Gouge Building 1400, Book Store Entry at Center
HMS-S14019E-02A	Drywall - Smooth Building 1400, Lobby, West Wall
HMS-S14019E-02B	Drywall - Smooth Building 1400, Book Store, Office 1431, North Wall Center
HMS-S14019E-02C	Drywall - Smooth Building 1400, Women's Restroom Ceiling, Over Stall
HMS-S14019E-02D	Drywall - Smooth Building 1400, Nurse Reception, East Wall
HMS-S14019E-03A	Plaster - Smooth Building 1400, Men's Restroom Ceiling, at Entry
HMS-S14019E-04A	12" ACT - Pinhole/Fissure Building 1400, Food Court, West Wall by Entry
HMS-S14019E-04B	12" ACT - Pinhole/Fissure Building 1400, Food Service, South Wall
HMS-S14019E-05A	Drywall w/Textured Wallpaper Building 1400, Food Service, West Wall by Entry
HMS-S14019E-06A	Gray Sealant Building 1400, Roof, HVAC Unit Bolts
HMS-S14019E-07A	Duct Seam Tape Building 1400, Mechanical Room, At Duct
HMS-S14019E-08A	White Sealant Building 1400, Roof, At Pipe Near HVAC Unit
HMS-S14019E-09A	Rolled Roofing Building 1400, Roof, At HVAC Unit
HMS-S14019E-09A	Rolled Roofing Building 1400, Roof, Near HVAC Unit, South Side

Mislabeled  
09B →

09-08-14A10:25 RCVD

*Handwritten signature*

# Bulk Request Analysis Form

Hazard Management Services, Inc.

1911 Douglas Blvd., Suite 85-349

Roseville, CA 95661

(916) 628-0050 Phone (916) 781-6837 Fax

Client: Solano Community College Dist.  
Job Site: Building 1400  
Project ID: S14019E  
Project Manager: Shannon Johanson  
Date Collected: 9/4/14  
Collected by: Shannon Johanson  
Date Submitted: 9/5/14  
Laboratory: FALI

Analysis Requested:  
 PLM with Dispersion Staining  Flame AA  
 TEM (Bulk)  Other:  
Turnaround Time:  Same Day  24 Hour  
 Other:  
Special Instructions:  
 Please fax results to (209) 575-5657  
 Please email results to: sjohanson@hazmanage.com  
 Other:

SAMPLE #	MATERIAL DESCRIPTION/LOCATION
HMS-S14019E-09C	Rolled Roofing Building 1400, Roof, North Side Near HVAC

Submitted by: Shannon Johanson Date: 9-5-14  
Submitted via:  Dropoff  FedEx  Courier  Other: 09-08-14A10:25 RCVD  
Received by: Agm Ry- Date: \_\_\_\_\_



# Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Hazard Mgmt Svcs-Fresno/Bakersfield  
Shannon Johanson  
Fresno Location  
371 E. Bullard Ave., Ste. 109  
Fresno, CA 93710

**Client ID:** 1636  
**Report Number:** B195621  
**Date Received:** 09/08/14  
**Date Analyzed:** 09/09/14  
**Date Printed:** 09/09/14  
**First Reported:** 09/09/14

**Job ID/Site:** S14019F - Solano Community College Dist., Building 1500

**FALI Job ID:** 1636

**Date(s) Collected:** 09/03/2014

**Total Samples Submitted:** 14

**Total Samples Analyzed:** 14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019F-01A</b>	11557966						
Layer: Beige Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (45 %)							
<b>HMS-S14019F-01B</b>	11557967						
Layer: Beige Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (45 %)							
<b>HMS-S14019F-02A</b>	11557968						
Layer: White Non-Fibrous Material			ND				
Layer: Tan Non-Fibrous Material			ND				
Layer: Off-White Fibrous Material			ND				
Layer: Silver Foil			ND				
Layer: Off-White Woven Material			ND				
Layer: Yellow Mastic			ND				
Layer: Yellow Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)	Fibrous Glass (10 %)						
<b>HMS-S14019F-03A</b>	11557969						
Layer: White Drywall			ND				
Layer: Off-White Joint Compound	Chrysotile		2 %				
Layer: Off-White Tape			ND				
Layer: Off-White Joint Compound	Chrysotile		2 %				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						

**Client Name:** Hazard Mgmt Svcs-Fresno/Bakersfield

**Report Number:** B195621

**Date Printed:** 09/09/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019F-03B</b>	11557970						
Layer: White Drywall							<b>ND</b>
Layer: Off-White Joint Compound		Chrysotile					<b>Trace</b>
Layer: Off-White Tape							<b>ND</b>
Layer: Off-White Joint Compound		Chrysotile					<b>Trace</b>
Layer: Paint							<b>ND</b>
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019F-03C</b>	11557971						
Layer: Off-White Drywall							<b>ND</b>
Layer: White Joint Compound							<b>ND</b>
Layer: Paint							<b>ND</b>
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019F-04A</b>	11557972						
Layer: White Drywall							<b>ND</b>
Layer: White Joint Compound		Chrysotile					<b>2 %</b>
Layer: Off-White Tape							<b>ND</b>
Layer: White Joint Compound		Chrysotile					<b>2 %</b>
Layer: Paint							<b>ND</b>
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019F-05A</b>	11557973						
Layer: Off-White Non-Fibrous Material							<b>ND</b>
Layer: Paint							<b>ND</b>
Layer: Yellow Mastic							<b>ND</b>
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)	Fibrous Glass (7 %)						
<b>HMS-S14019F-06A</b>	11557974						
Layer: Black Tar							<b>ND</b>
Layer: Black Felt							<b>ND</b>
Layer: Black Tar							<b>ND</b>
Layer: Black Felt							<b>ND</b>
Layer: Black Tar							<b>ND</b>
Layer: Black Felt							<b>ND</b>
Layer: Black Tar							<b>ND</b>
Layer: Black Felt							<b>ND</b>
Layer: Black Tar							<b>ND</b>
Layer: Black Felt							<b>ND</b>
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)	Fibrous Glass (10 %)						
Comment: Bulk complex sample.							

Client Name: Hazard Mgmt Svcs-Fresno/Bakersfield

Report Number: B195621

Date Printed: 09/09/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019F-06B</b>	11557975						
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (55 %) Fibrous Glass (Trace)							
Comment: Bulk complex sample.							
<b>HMS-S14019F-06C</b>	11557976						
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (55 %) Fibrous Glass (10 %)							
Comment: Bulk complex sample.							
<b>HMS-S14019F-07A</b>	11557977						
Layer: Black Mastic			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)							
<b>HMS-S14019F-08A</b>	11557978						
Layer: Grey Non-Fibrous Material			ND				
Layer: Black Mastic			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)							
<b>HMS-S14019F-09A</b>	11557979						
Layer: White Non-Fibrous Material			ND				
Layer: Yellow Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (2 %) Fibrous Glass (5 %)							



Tad Thrower, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

Analytical results and reports are generated by Forensic Analytical Laboratories Inc. (FALI) at the request of and for the exclusive use of the person or entity (client) named on such report. Results, reports or copies of same will not be released by FALI to any third party without prior written request from client. This report applies only to the sample(s) tested. Supporting laboratory documentation is available upon request. This report must not be reproduced except in full, unless approved by FALI. The client is solely responsible for the use and interpretation of test results and reports requested from FALI. Forensic Analytical Laboratories Inc. is not able to assess the degree of hazard resulting from materials analyzed. FALI reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified. All samples were received in acceptable condition unless otherwise noted.

**Client Name:** Hazard Mgmt Svcs-Fresno/Bakersfield

**Report Number:** B195621

**Date Printed:** 09/09/14

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Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
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**Bulk Request Analysis Form**  
 Hazard Management Services, Inc.  
 1911 Douglas Blvd., Suite 85-349  
 Roseville, CA 95661  
 (916) 628-0050 Phone (916) 781-6837 Fax

**Client:** Solano Community College Dist  
**Job Site:** Building 1500  
**Project ID:** S14019F  
**Project Manager:** Shannon Johanson  
**Date Collected:** 9/3/14  
**Collected by:** Shannon Johanson  
**Date Submitted:** 9/5/14  
**Laboratory:** FALI

**Analysis Requested:**  
 PLM with Dispersion Staining     Flame AA  
 TEM (Bulk)     Other:  
**Turnaround Time:**  Same Day     24 Hour  
 Other:  
**Special Instructions:**  
 Please fax results to (209) 575-5657  
 Please email results to: sjohanson@hazmanage.com  
 Other:

SAMPLE #	MATERIAL DESCRIPTION/LOCATION
HMS-S14019F-01A	2'x4' FCP Pinhole/Gouge Building 1500, Main Corridor, Near 1531
HMS-S14019F-01B	2'x4' FCP Pinhole/Gouge Building 1500, Room 152, North Side
HMS-S14019F-02A	Duct Seam Tape Building 1500, Main Corridor, By Room 1531
HMS-S14019F-03A	Drywall - Smooth Building 1500, Mechanical Room Ceiling, At Center
HMS-S14019F-03B	Drywall - Smooth Building 1500, Mechanical Room, Southwest Corner
HMS-S14019F-03C	Drywall - Smooth Building 1500, Men's Restroom Ceiling
HMS-S14019F-04A	Drywall - Orange Peel Texture Building 1500, Main Corridor, Near 1518
HMS-S14019F-05A	Fiberglass TSI w/Paper Wrap & Sealant Building 1500, Mechanical Room at Straight Run
HMS-S14019F-06A	Rolled Roofing Building 1500, Roof, At Center Vent
HMS-S14019F-06B	Rolled Roofing Building 1500, Roof, Southeast Corner
HMS-S14019F-06C	Rolled Roofing Building 1500, Roof, Near HVAC Unit
HMS-S14019F-07A	Black Roof Mastic Building 1500, Roof, on Pipes/HVAC Flashing
HMS-S14019F-08A	Gray Sealant Building 1500, Roof, On HVAC Unit
HMS-S14019F-09A	Brown Sealant on Fiberglass TSI w/Paper Wrap Building 1500, Mechanical Room

Submitted by: Shannon Johanson  
 Submitted via:  Dropoff  FedEx  Courier  Other:  
 Received by: Am Dr

Date: 9-5-14  
 Date: 09-08-14A10:17 RCVD



# Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Hazard Mgmt Svcs-Fresno/Bakersfield  
Shannon Johanson  
Fresno Location  
371 E. Bullard Ave., Ste. 109  
Fresno, CA 93710

**Client ID:** 1636  
**Report Number:** B195606  
**Date Received:** 09/08/14  
**Date Analyzed:** 09/08/14  
**Date Printed:** 09/08/14  
**First Reported:** 09/08/14

**Job ID/Site:** S14019G - Solano Community College Dist., Building 1600

**FALI Job ID:** 1636

**Date(s) Collected:** 09/05/2014

**Total Samples Submitted:** 19

**Total Samples Analyzed:** 19

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019G-01A</b>	11557825						
Layer: White Drywall			ND				
Layer: Off-White Adhesive			ND				
Layer: Tan Semi-Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019G-01B</b>	11557826						
Layer: White Drywall			ND				
Layer: Off-White Joint Compound		Chrysotile	2 %				
Layer: White Tape			ND				
Layer: Off-White Adhesive			ND				
Layer: Tan Semi-Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019G-02A</b>	11557827						
Layer: White Drywall			ND				
Layer: White Joint Compound			ND				
Layer: White Tape			ND				
Layer: White Joint Compound			ND				
Layer: Paint			ND				
Layer: Off-White Mastic			ND				
Layer: Tan Semi-Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019G-02B</b>	11557828						
Layer: White Drywall			ND				
Layer: White Joint Compound			ND				
Layer: Yellow Tape			ND				
Layer: White Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						

**Report Number:** B195606

**Date Printed:** 09/08/14

**Client Name:** Hazard Mgmt Svcs-Fresno/Bakersfield

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019G-03A</b>	11557829						
Layer: Yellow Adhesive			ND				
Layer: Tan Fibrous Material			ND				
Layer: Silver Foil			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (80 %)	Fibrous Glass (10 %)						
<b>HMS-S14019G-04A</b>	11557830						
Layer: White Tape			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (90 %)							
<b>HMS-S14019G-04B</b>	11557831						
Layer: White Tape			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (90 %)							
<b>HMS-S14019G-05A</b>	11557832						
Layer: Yellow Adhesive			ND				
Layer: Tan Fibrous Material			ND				
Layer: Silver Foil			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (80 %)	Fibrous Glass (10 %)						
<b>HMS-S14019G-06A</b>	11557833						
Layer: Tan Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (35 %)	Fibrous Glass (45 %)						
<b>HMS-S14019G-06B</b>	11557834						
Layer: Tan Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (35 %)	Fibrous Glass (45 %)						
<b>HMS-S14019G-07A</b>	11557835						
Layer: Grey Putty			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)	Synthetic (10 %)						
<b>HMS-S14019G-08A</b>	11557836						
Layer: Grey Putty			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)	Synthetic (10 %)						
<b>HMS-S14019G-09A</b>	11557837						
Layer: Brown Non-Fibrous Material			ND				
Layer: White Fibrous Material			ND				
Layer: Foil			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (15 %)	Synthetic (5 %)						

Client Name: Hazard Mgmt Svcs-Fresno/Bakersfield

Report Number: B195606

Date Printed: 09/08/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019G-10A</b>	11557838						
Layer: White Non-Fibrous Material			ND				
Layer: Yellow Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)	Fibrous Glass (5 %)						
<b>HMS-S14019G-11A</b>	11557839						
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (2 %)	Fibrous Glass (45 %)						
Comment: Bulk complex sample.							
<b>HMS-S14019G-11B</b>	11557840						
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Layer: Black Tar			ND				
Layer: Black Felt			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (2 %)	Fibrous Glass (45 %)						
Comment: Bulk complex sample.							
<b>HMS-S14019G-12A</b>	11557841						
Layer: White Tape			ND				
Layer: Silver Paint		Chrysotile	2 %				
Total Composite Values of Fibrous Components:		<b>Asbestos (Trace)</b>					
Cellulose (75 %)							
<b>HMS-S14019G-13A</b>	11557842						
Layer: Black Mastic			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (10 %)							

**Client Name:** Hazard Mgmt Svcs-Fresno/Bakersfield

**Report Number:** B195606

**Date Printed:** 09/08/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019G-14A</b>	11557843						
Layer: White Semi-Fibrous Material		Chrysotile	5 %				
Total Composite Values of Fibrous Components:		<b>Asbestos (5%)</b>					
Cellulose (Trace)							



Tad Thrower, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

Analytical results and reports are generated by Forensic Analytical Laboratories Inc. (FALI) at the request of and for the exclusive use of the person or entity (client) named on such report. Results, reports or copies of same will not be released by FALI to any third party without prior written request from client. This report applies only to the sample(s) tested. Supporting laboratory documentation is available upon request. This report must not be reproduced except in full, unless approved by FALI. The client is solely responsible for the use and interpretation of test results and reports requested from FALI. Forensic Analytical Laboratories Inc. is not able to assess the degree of hazard resulting from materials analyzed. FALI reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified. All samples were received in acceptable condition unless otherwise noted.

# Bulk Request Analysis Form

Hazard Management Services, Inc.

1911 Douglas Blvd., Suite 85-349

Roseville, CA 95661

(916) 628-0050 Phone (916) 781-6837 Fax

Client: Solano Community College Dist.  
 Job Site: Building 1600  
 Project ID: S14019G  
 Project Manager: Shannon Johanson  
 Date Collected: 9/4/14  
 Collected by: Shannon Johanson  
 Date Submitted: 9/5/14  
 Laboratory: FALI

**Analysis Requested:**

PLM with Dispersion Staining  Flame AA  
 TEM (Bulk)  Other:

Turnaround Time:  Same Day  24 Hour  
 Other: \_\_\_\_\_

**Special Instructions:**

Please fax results to (209) 575-5657  
 Please email results to: sjohanson@hazmanage.com  
 Other: \_\_\_\_\_

SAMPLE #	MATERIAL DESCRIPTION/LOCATION
HMS-S14019G-01A	Drywall w/Tan Wallpaper Covering Building 1600, Corner by Room 1629
HMS-S14019G-01B	Drywall w/Tan Wallpaper Covering Building 1600, Main Corridor, North End, West Wall
HMS-S14019G-02A	Drywall - Smooth Building 1600, Main Corridor, Near Center Attic Access
HMS-S14019G-02B	Drywall - Smooth Building 1600, Office, North Wall
HMS-S14019G-03A	Silver Duct Tape w/Yellow Glue Building 1600, Attic Space over Main Corridor
HMS-S14019G-04A	Duct Seam Tape Building 1600, Main Corridor Attic Space on Metal Duct
HMS-S14019G-04B	Duct Seam Tape Building 1600, Main Corridor on Metal Duct
HMS-S14019G-05A	TSI w/Paper Jacket & Glue Building 1600, Main Corridor, Attic Space
HMS-S14019G-06A	2'x4' FCP Pinhole/Gouge Building 1600, Office, West Side
HMS-S14019G-06B	2'x4' FCP Pinhole/Gouge Building 1600, Classroom 1442, North Side
HMS-S14019G-07A	Gray Putty Building 1600, Office, On Metal Duct at Joint
HMS-S14019G-08A	White Putty Building 1600, Office, On Metal Duct at Joint
HMS-S14019G-09A	Brown Sealant on TSI Paper Wrap Building 1600, Mechanical Room, at Vertical Pipe
HMS-S14019G-10A	White Sealant on TSI Paper Wrap Building 1600, Mechanical Room, West Side
HMS-S14019G-11A	Rolled Roofing Building 1600, Roof, Vent at Northwest Center

*[Handwritten Signature]*  
 09-08-14A10:18 RCVD

# Bulk Request Analysis Form

Hazard Management Services, Inc.

1911 Douglas Blvd., Suite 85-349

Roseville, CA 95661

(916) 628-0050 Phone (916) 781-6837 Fax

Client: Solano Community College Dist.  
Job Site: Building 1600  
Project ID: S14019G  
Project Manager: Shannon Johanson  
Date Collected: 9/4/14  
Collected by: Shannon Johanson  
Date Submitted: 9/5/14  
Laboratory: FALI

Analysis Requested:  
 PLM with Dispersion Staining  Flame AA  
 TEM (Bulk)  Other:  
Turnaround Time:  Same Day  24 Hour  
 Other:  
Special Instructions:  
 Please fax results to (209) 575-5657  
 Please email results to: sjohanson@hazmanage.com  
 Other:

SAMPLE #	MATERIAL DESCRIPTION/LOCATION
HMS-S14019G-11B	Rolled Roofing Building 1600, Roof, Northeast Corner
HMS-S14019G-12A	Duct Seam Tape w/Silver Paint Building 1600, Roof, Exterior Metal Duct
HMS-S14019G-13A	Black Mastic Building 1600, Roof, Upper Roof, at HVAC bolts
HMS-S14019G-14A	White Sealant Building 1600, Roof, 3 <sup>rd</sup> Level, at HVAC Duct Seams.

Submitted by: Shannon Johanson

Date: 9-5-14

Submitted via:  Dropoff  FedEx  Courier  Other:

09-08-14A10:18 RCVD  
Date: \_\_\_\_\_

Received by: [Signature]

**Bulk Request Analysis Form**  
**Hazard Management Services, Inc.**  
 1911 Douglas Blvd., Suite 85-349  
 Roseville, CA 95661  
 (916) 628-0050 Phone (916) 781-6837 Fax

Client: Solano Community College Dist.  
 Job Site: Building 1700  
 Project ID: S14019H  
 Project Manager: Shannon Johanson  
 Date Collected: 9/4/14  
 Collected by: Shannon Johanson  
 Date Submitted: 9/5/14  
 Laboratory: FALI

Analysis Requested:  
 PLM with Dispersion Staining     Flame AA  
 TEM (Bulk)     Other:  
 Turnaround Time:  Same Day     24 Hour  
 Other:  
 Special Instructions:  
 Please fax results to (209) 575-5657  
 Please email results to: sjohanson@hazmanage.com  
 Other:

SAMPLE #	MATERIAL DESCRIPTION/LOCATION
HMS-S14019H-01A	2'x2' FCP Pinhole/Gouge Building 1700, Accross from 1740 Dance Room
HMS-S14019H-01B	2'x2' FCP Pinhole/Gouge Building 1700, By Room 1756 Sports Medicine
HMS-S14019H-02A	Duct Seam Tape Building 1700, Near 1740 Dance Studio, Attic Space
HMS-S14019H-03A	12" ACT - Pinhole Building 1700, Women's Team Room at Center Near Wall
HMS-S14019H-03B	12" ACT - Pinhole Building 1700, Women's Team Room, East Side
HMS-S14019H-04A	White Sealant on HVAC Duct Building 1700, Corridor Near Gym
HMS-S14019H-05A	Drywall - Smooth Building 1700, Corridor Near Storage
HMS-S14019H-05B	Drywall - Smooth Building 1700, Corridor Near Office 1726
HMS-S14019H-05C	Drywall - Smooth Building 1700, Room 1750 Equipment Room, Near Roof Access
HMS-S14019H-06A	Gray Sealant Building 1700, Roof, At HVAC Bolt
HMS-S14019H-07A	Dark Gray Sealant Building 1700, Roof, HVAC Duct Seam

Submitted by: Shannon Johanson

Date: 9-5-14

Submitted via:  Dropoff  FedEx  Courier  Other:

Received by: gn pp

Date: 09-08-14A10:18 RCVD



# Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Hazard Mgmt Svcs-Fresno/Bakersfield  
Shannon Johanson  
Fresno Location  
371 E. Bullard Ave., Ste. 109  
Fresno, CA 93710

**Client ID:** 1636  
**Report Number:** B195608  
**Date Received:** 09/08/14  
**Date Analyzed:** 09/09/14  
**Date Printed:** 09/09/14  
**First Reported:** 09/09/14

**Job ID/Site:** S14019H - Solano Community College Dist., Building 1700

**FALI Job ID:** 1636

**Date(s) Collected:** 09/04/2014

**Total Samples Submitted:** 11

**Total Samples Analyzed:** 11

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019H-01A</b>	11557848						
Layer: Light Grey Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (35 %)	Fibrous Glass (45 %)						
<b>HMS-S14019H-01B</b>	11557849						
Layer: Light Grey Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (35 %)	Fibrous Glass (45 %)						
<b>HMS-S14019H-02A</b>	11557850						
Layer: Off-White Tape			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (80 %)							
<b>HMS-S14019H-03A</b>	11557851						
Layer: Grey Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (35 %)	Fibrous Glass (45 %)						
<b>HMS-S14019H-03B</b>	11557852						
Layer: Grey Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (35 %)	Fibrous Glass (45 %)						
<b>HMS-S14019H-04A</b>	11557853						
Layer: White Non-Fibrous Material			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (Trace)	Synthetic (Trace)						
<b>HMS-S14019H-05A</b>	11557854						
Layer: White Drywall			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		<b>Asbestos (ND)</b>					
Cellulose (20 %)	Fibrous Glass (10 %)						

Client Name: Hazard Mgmt Svcs-Fresno/Bakersfield

Report Number: B195608

Date Printed: 09/09/14

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
<b>HMS-S14019H-05B</b>	11557855						
Layer: Off-White Drywall			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019H-05C</b>	11557856						
Layer: White Drywall			ND				
Layer: White Skimcoat/Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (20 %)	Fibrous Glass (10 %)						
<b>HMS-S14019H-06A</b>	11557857						
Layer: Light Grey Non-Fibrous Material			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							
<b>HMS-S14019H-07A</b>	11557858						
Layer: Grey Non-Fibrous Material			ND				
Total Composite Values of Fibrous Components:		Asbestos (ND)					
Cellulose (Trace)							



Tad Thrower, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

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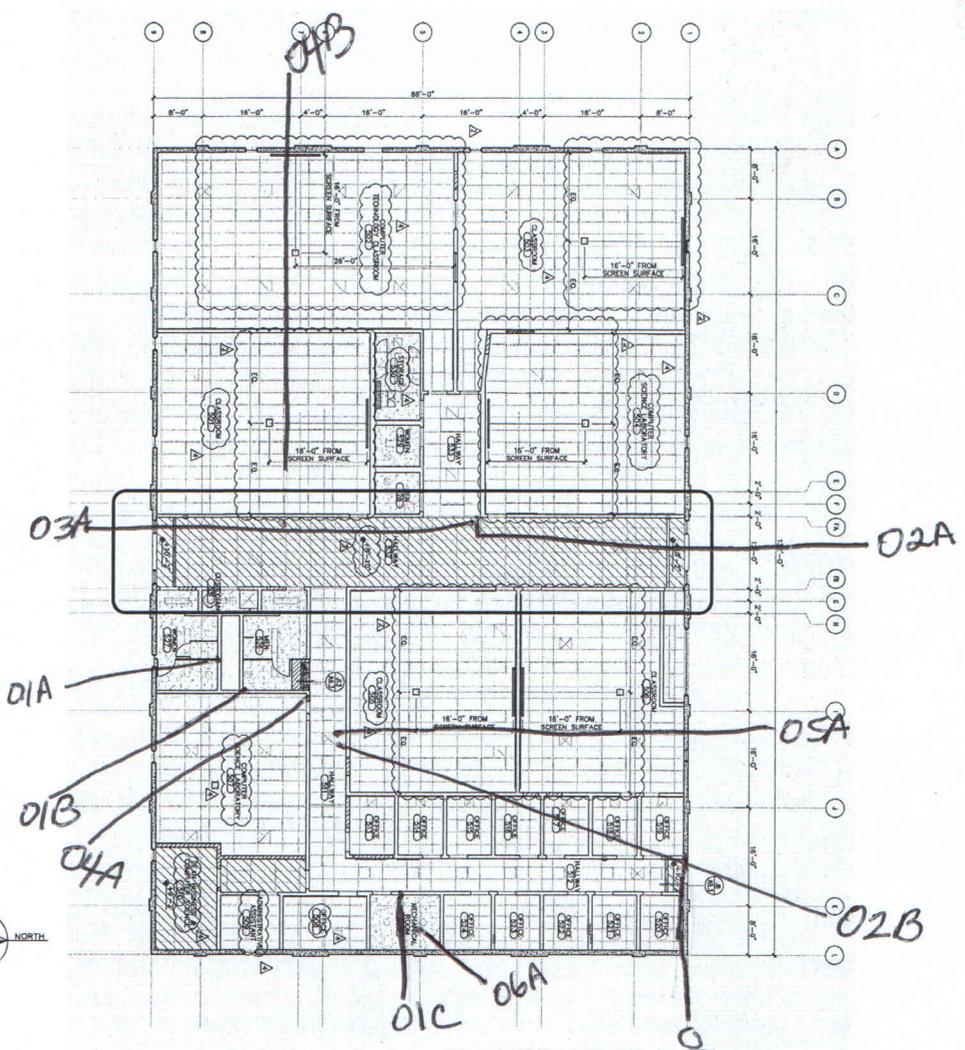
# Asbestos Bulk Sample Maps





Asbestos Bulk Sample Locations  
 Hms, Inc.  
 9/3/14  
 Shannon Johnson & Gary Wickel

1 BLDG 500 - REFLECTED CEILING PLAN



- LEGEND:
- OILING HOIST
  - 1/2\"/>

<p>DATE: 2/07/14</p> <p>JOB NO: 2000E4</p> <p>PROJECT: BR-500-5-RCP</p>	<p>SCALE: AS SHOWN</p> <p>REFLECTED CEILING PLAN - BUILDING 500</p>	<p>REVISIONS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>NO.</th> <th>DATE</th> <th>BY</th> <th>CHKD.</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	DATE	BY	CHKD.					<p>NOT FOR CONSTRUCTION</p>	<p>SOLANO COMMUNITY COLLEGE          HVAC AND EMS EFFICIENCY PROJECT IMPLEMENTATION          BRIDGING DOCUMENTS</p> <p>SOLANO COMMUNITY COLLEGE          4000 SUSUN VALLEY ROAD          FAIRFIELD, CA 94534</p>	<p><b>KITCHELL</b></p> <p>Capital Expenditure Managers          2700 Gateway Oaks Drive          Sacramento, CA 95833          (916) 548-7700</p>
NO.	DATE	BY	CHKD.										





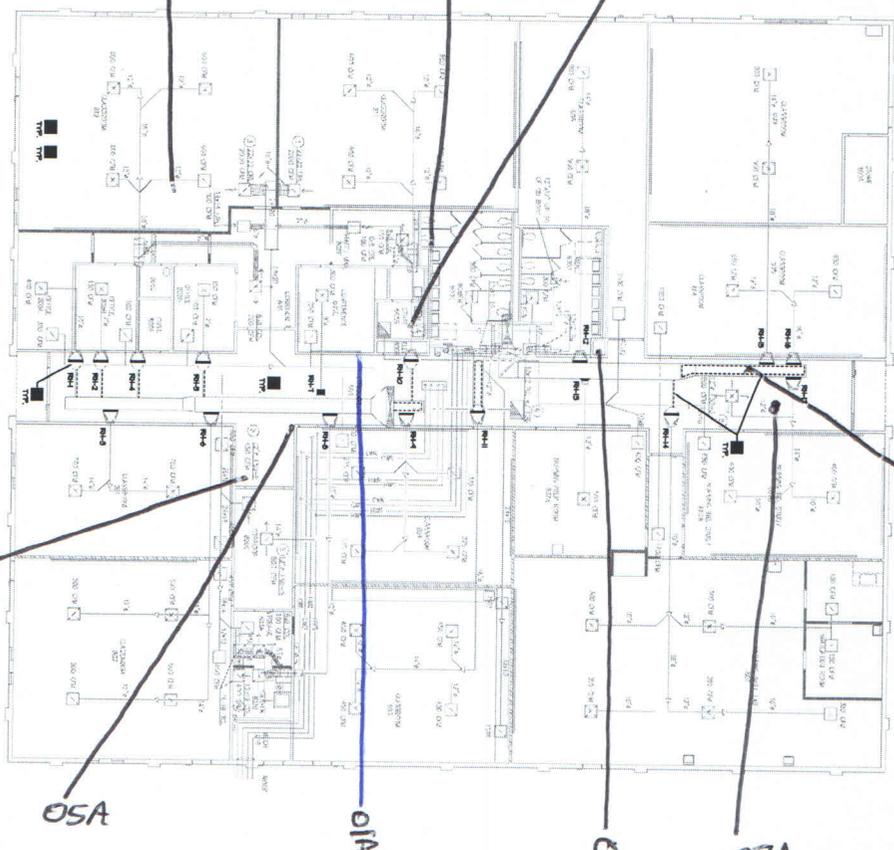


EXISTING HEATING COIL SCHEDULE									
MARK	MODEL	NET FLOOR AREA (SQ. FT.)	FACE AREA (SQ. FT.)	FACE (SQ. FT.)	LAT (SQ. FT.)	CAPACITY (TONS)	FLOW (GPM)	COIL SIZE (IN)	REMARKS
01A		400	63	86	5.9		1		12345
01B		150	63	77	1.9	0.2			12345
01C		1400	63	80	22.7	2.3			12345
01D		2000	63	84	0.4	0.4			12345
01E		150	63	77	1.9	0.2			12345
01F		2000	63	84	41.0	4.1			12345
01G		300	63	77	3.9	0.4			12345
01H		1000	63	77	13.0	1.3			12345
01I		1500	63	78	21.1	2.1			12345
01J		2000	63	82	47.7	4.8			12345
01K		1000	63	80	20.2	2.0			12345
01L		1000	63	80	20.2	2.0			12345
01M		500	63	77	6.5	0.7			12345
01N		2000	63	84	41.0	4.1			12345
01O		1000	63	80	20.2	2.0			12345
01P		1000	63	80	20.2	2.0			12345
01Q		1000	63	80	20.2	2.0			12345
01R		1000	63	80	20.2	2.0			12345
01S		1000	63	80	20.2	2.0			12345
01T		1000	63	80	20.2	2.0			12345
01U		1000	63	80	20.2	2.0			12345
01V		1000	63	80	20.2	2.0			12345
01W		1000	63	80	20.2	2.0			12345
01X		1000	63	80	20.2	2.0			12345
01Y		1000	63	80	20.2	2.0			12345
01Z		1000	63	80	20.2	2.0			12345

REMARKS:  
 1. WATER TEMPERATURE RANGE: 160F - 180F  
 2. ALL UNIT PARAMETERS TO BE VERIFIED BY THE CONTRACTOR.  
 3. SEE SCHEDULE FOR ADDITIONAL INFORMATION.

2 BLDG 800 - EXISTING REHEAT SCHEDULE

Asbestos Bulk Sample Locations  
 Hms, Inc.  
 9/3/14  
 Shannon Johanson & Gary Wickel



1 BLDG 800 - FLOOR PLAN



- 1. REMOVE ALL EXISTING REHEAT COILS AND ASSOCIATED DUCTWORK AND EQUIPMENT FROM ALL ROOMS.
- 2. REMOVE ALL EXISTING REHEAT COILS AND ASSOCIATED DUCTWORK AND EQUIPMENT FROM ALL ROOMS.
- 3. REMOVE ALL EXISTING REHEAT COILS AND ASSOCIATED DUCTWORK AND EQUIPMENT FROM ALL ROOMS.
- 4. REMOVE ALL EXISTING REHEAT COILS AND ASSOCIATED DUCTWORK AND EQUIPMENT FROM ALL ROOMS.
- 5. REMOVE ALL EXISTING REHEAT COILS AND ASSOCIATED DUCTWORK AND EQUIPMENT FROM ALL ROOMS.

**KITCHELL**  
 Capital Equipment Managers  
 2720 Century Oaks Drive  
 Sacramento, CA 95833  
 (916) 484-7700

SOLANO COMMUNITY COLLEGE  
 HVAC AND EMS EFFICIENCY PROJECT IMPLEMENTATION  
 BRIDGING DOCUMENTS

SOLANO COMMUNITY COLLEGE  
 4000 SUISSUN VALLEY ROAD  
 FAIRFIELD, CA 94534

DATE: 2/07/14  
 SHEET: BR-300-1-FP

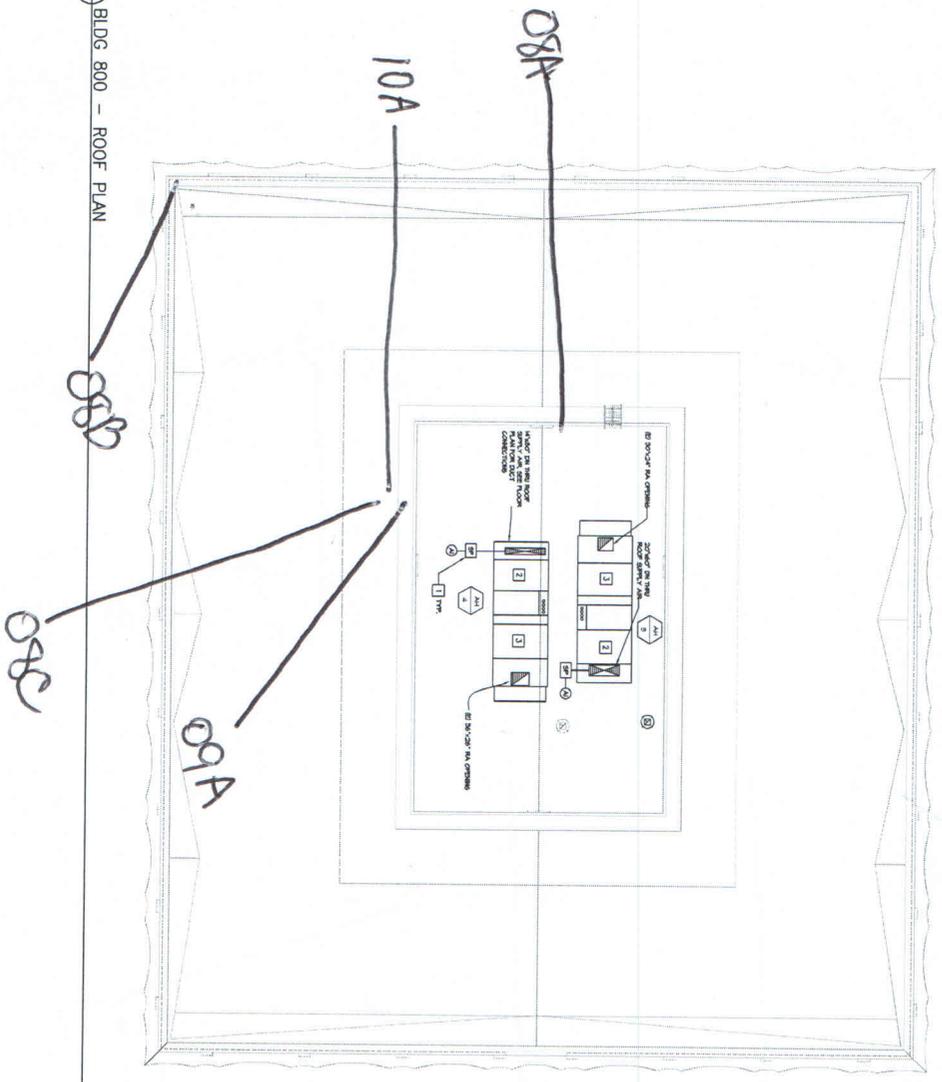
### EXISTING AIR HANDLER UNIT SCHEDULE

MARK	SUPPLY FAN										RETURN FAN										MANUFACTURER: GOVERMANN			
	MODEL	CFM	TSP W.C.	HP	HPM	VOLTS/PHASE	WHEEL DIA.	CLASS	MODEL	CFM	TSP W.C.	HP	HPM	VOLTS/PHASE	WHEEL DIA.	CLASS	CLC COL.	HTC COL.	QA CFM	BOX, AIR FILTER (THROUGH AWAY)	NO. 5 SIZE AIR FOL W.C.	WARRANT REMARKS		
1	AFH NTB 2	12000	4.11	1/34	15	480/3	33.0	II	FC2H10 D001	10200	1.92	3.4	646	480/3	20.0	I	CC-2	HC-1	2100	6CM x 9CM	125	102000	12	
2	AFH NTB 2	10300	4.11	1/34	15	480/3	30.0	II	FC2H18 D001	6750	1.91	3.17	510	480/3	8.13	I	CC-3	HC-3	3750	6CM x 9CM	125	92000	12	

1. REMOVE SUPPLEMENTARY ELECTRIC PIPING FOR AIR HANDLER UNIT. DISCONNECT AND REMOVE. REINSTALL BY MECHANICAL CONTRACTOR.  
2. DISCONNECT AND REMOVE SUPPLEMENTARY ELECTRIC PIPING. REINSTALL BY MECHANICAL CONTRACTOR.

2 BLDG 800 - EXISTING AHU SCHEDULE

1 BLDG 800 - ROOF PLAN



- REMARKS**
- 1. NEW EXHAUST FAN TO BE INSTALLED TO EXISTING SUPPLY VENT.
  - 2. EXISTING VENT ON EXISTING IS TO BE SUPPLY/EXHAUST CONTROL.
  - 3. EXISTING VENT ON EXISTING IS TO BE SUPPLY/EXHAUST CONTROL. REMOVE EXHAUST VENT TO THICK SUPPLY VENT THROUGH EXISTING VENT.
- SEE SCHEDULE FOR ADDITIONAL INFORMATION



1/8" = 1'-0"



SOLANO COMMUNITY COLLEGE  
HVAC AND EMS EFFICIENCY PROJECT IMPLEMENTATION  
BRIDGING DOCUMENTS

SOLANO COMMUNITY COLLEGE  
4000 SUISUN VALLEY ROAD  
FAIRFIELD, CA 94534

NOT FOR CONSTRUCTION

MECHANICAL ROOF PLAN & SCHEDULE - BUILDING 800

REVISIONS

NO.	DATE	BY	DATE
1	2/07/14		

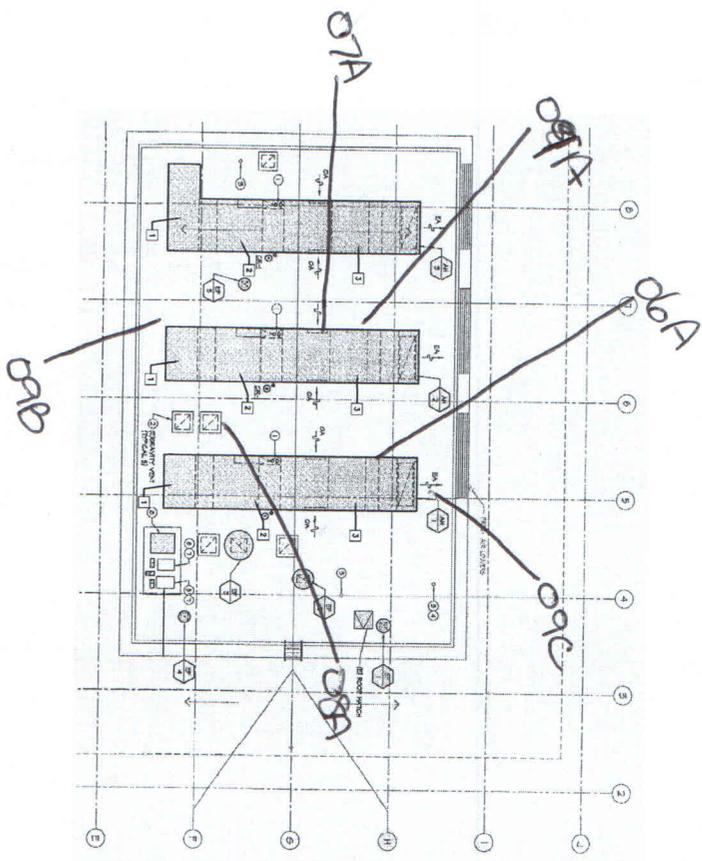
BR-800-2-RP



# EXISTING AIR HANDLER UNIT SCHEDULE

MARK	MODEL	CFM	TSP - W.C.	SUPPLY FAN				RETURN FAN				D.G.	HTG	O.A.	FILTERS (G3 ASHRAE PLATED)	INITIAL AIR PD	WEIGHT	REMARKS								
				HP	IP	HP	IP	HP	IP	HP	IP								COIL	COIL	CFM	NO. & SIZE	NO. & SIZE	W.G.	LB/RS	
AH1	PF-40 5881 PLUS	20000	1.15	11	20	103	460-34-60	4025	II	PF-36 6886 PLUS	9175	1.9	3.1	1.5	661	460-34-60	36.5	II	CC-1	HC-1	1675	(2) 24" x 24" x 2"	(2) 24" x 24" x 2"	0.5	22000	BLDG. 1400
AH7	PF-40 5881 PLUS	20000	1.15	8	20	079	460-34-60	4025	II	PF-30 5881 PLUS	1000	1.5	1.75	5	760	460-34-60	30	II	CC-2	HC-2	1000	(2) 24" x 24" x 2"	(2) 24" x 24" x 2"	0.5	20000	BLDG. 1400
AH3	PF-40 5881 PLUS	20390	3.0	4	20	079	460-34-60	4025	II	PF-44 5881 PLUS	10000	1.5	6.6	5/4	944	460-34-60	44.5	II	CC-3		3350	(2) 24" x 24" x 2"	(2) 24" x 24" x 2"	0.5	22000	BLDG. 1400

2 BLDG 1400 - EXISTING AHU SCHEDULE



1 BLDG 1400 - ROOF PLAN

- NOTES:**
- 1 SCOPE
  - 2 NEW STATE PRESSURE SENSOR TO CONTROL NEW SUPPLY VAV.
  - 3 NEW VAV ON EXISTING SUPPLY MAIN MOTORS (0.5 HP, 20 HP, 24 HP).
  - 4 NEW VAV ON EXISTING RETURN MAIN MOTORS (0.5 HP, 3 HP, 24 HP).
  - 5 CONTROL RETURN FAN VAV TO TRACK SUPPLY VAV THROUGHOUT THE SCHEDULE FOR ADDITIONAL INFORMATION.



1/8" = 1'-0"

**KITCHELL**  
 Mechanical Equipment Division  
 2750 Colton Road  
 Suite 300  
 Fairfield, CA 94503  
 (925) 946-0700

SOLANO COMMUNITY COLLEGE  
 HVAC AND EMS EFFICIENCY PROJECT IMPLEMENTATION  
 BRIDGING DOCUMENTS

SOLANO COMMUNITY COLLEGE  
 4000 SUISUN VALLEY ROAD  
 FAIRFIELD, CA 94534

**NOT FOR CONSTRUCTION**

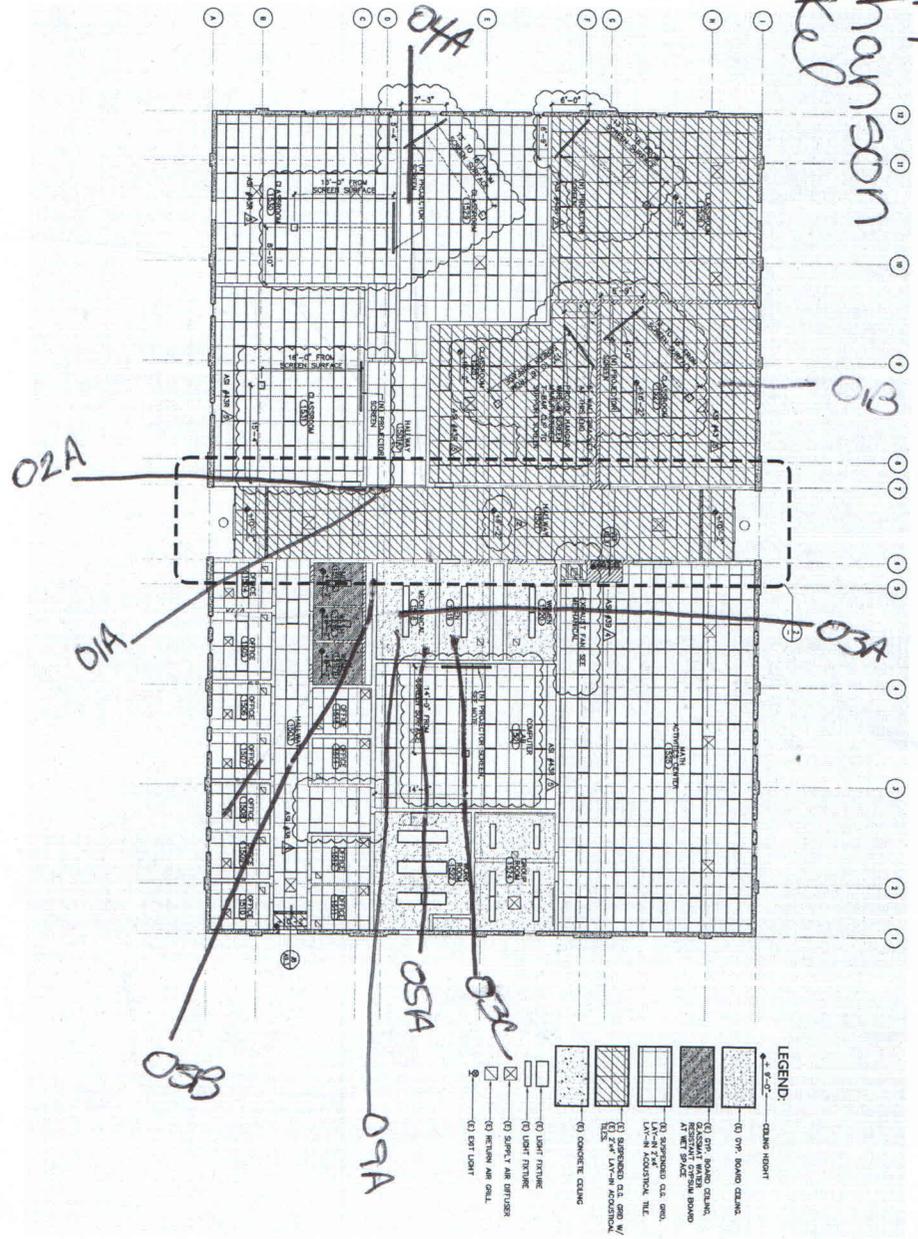
MECHANICAL ROOF  
 PLAN & SCHEDULE -  
 BUILDING 1400

REVISIONS

NO.	DATE	BY	DATE

300024  
 2/20/14  
 BR-1400-2-RP

Asbestos Bulk Sample Locations  
 Hms, Inc.  
 Sept. 3, 2014  
 Shannon Johansson  
 & Gary Wickett



1 BLDG. 1500 - REFLECTED CEILING PLAN

1/8" = 1'-0"

**KITCHELL**  
 PROJECT MANAGERS  
 2720 Gateway Oaks Drive  
 Suite 300 - Cl 95633  
 (916) 448-9700

SOLANO COMMUNITY COLLEGE  
 HVAC AND EMS EFFICIENCY PROJECT IMPLEMENTATION  
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 4000 SUISUN VALLEY ROAD  
 FAIRFIELD, CA 94534

**NOT FOR CONSTRUCTION**  
 REVISED DOCUMENTS

REFLECTED CEILING  
 PLAN - BUILDING  
 1500

REVISIONS

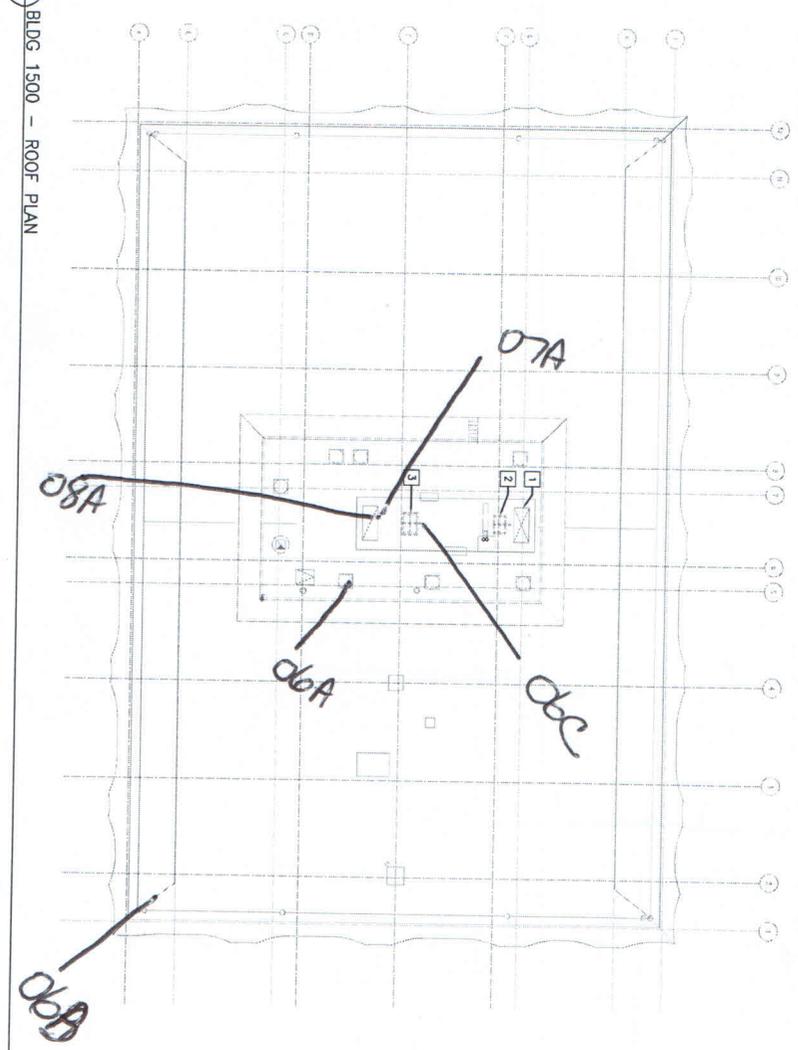
NO.	DATE	BY	CHK

DATE: AS SHOWN  
 SCALE: AS SHOWN  
 SHEET NO. 306E4  
 SHEET DATE 2/07/14  
 BR-1500-5-RCP

SYMBOL	MANUFACTURER	MODEL	EQUINE QUANTITY	AIR DEL. COE.		AIR LCC. COE.		CONDENS. COE.		SOUND P.W.		RETURN AIR		ELECTRICAL		EFFECTIVE	EFFECTIVE
				AT 55°F	AT 65°F	AT 55°F	AT 65°F	AT 55°F	AT 65°F	AT 55°F	AT 65°F	AT 55°F	AT 65°F	AT 55°F	AT 65°F		
1	YORK	Y07-681027/240	240	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82

2 BLDG 1500 - EXISTING AHU SCHEDULE

1 BLDG 1500 - ROOF PLAN



- # NOTES:
- 1. METAL STUD PRESSURE WASH TO CORNER WITH 1/2" MIN.
  - 2. METAL STUD PRESSURE WASH TO CORNER WITH 1/2" MIN.
  - 3. METAL STUD PRESSURE WASH TO CORNER WITH 1/2" MIN.
  - 4. METAL STUD PRESSURE WASH TO CORNER WITH 1/2" MIN.
  - 5. METAL STUD PRESSURE WASH TO CORNER WITH 1/2" MIN.

Asbestos Bulk Sample  
 HMs, Inc.  
 Sept. 3, 2014  
 Shannon Johanson  
 & Gary Wickel



SOLANO COMMUNITY COLLEGE  
 HVAC AND EMS EFFICIENCY PROJECT IMPLEMENTATION  
 BRIDGING DOCUMENTS

SOLANO COMMUNITY COLLEGE  
 4000 SUBUN VALLEY ROAD  
 FAIRFIELD, CA 94534

REVISIONS

NO.	DATE	BY	DATE

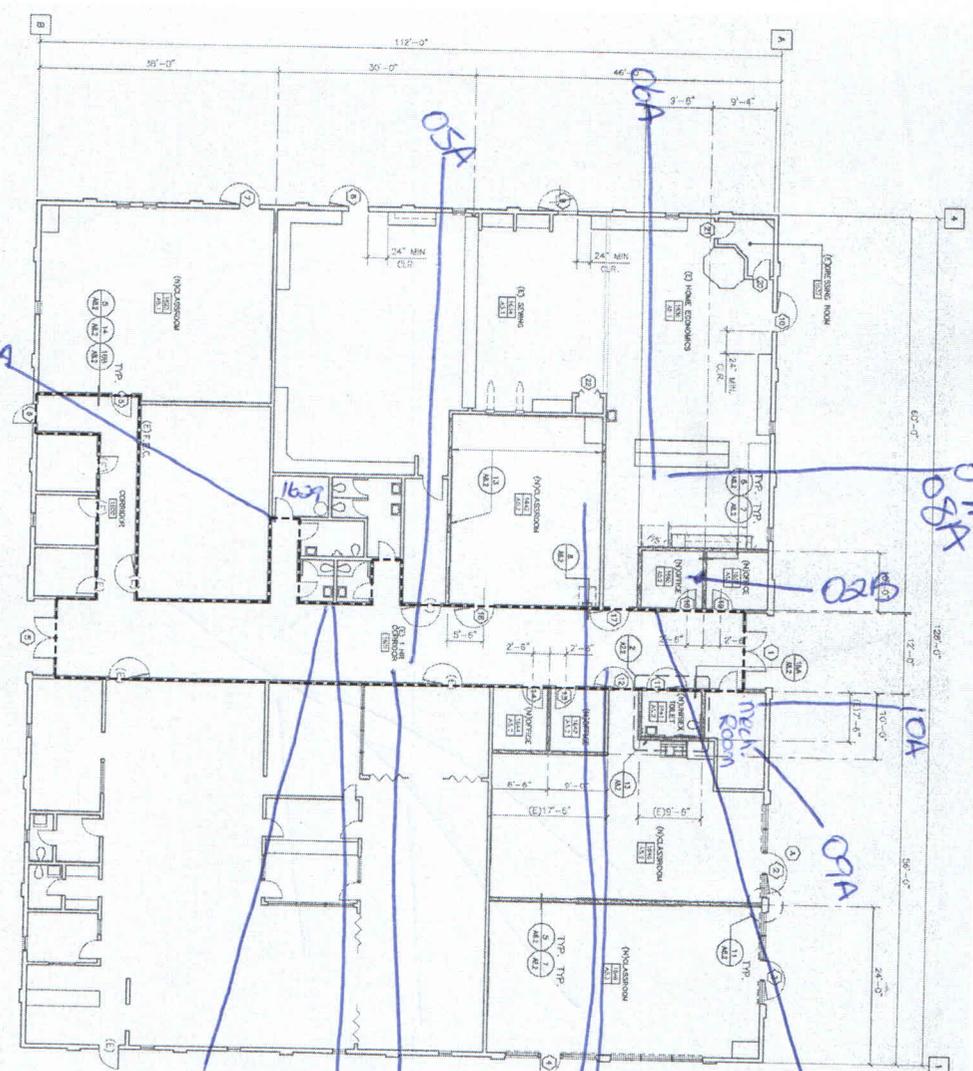
MECHANICAL ROOF  
 PLAN & SCHEDULE -  
 BUILDING 1500

DATE: 2/07/14  
 DRAWN BY: BR-1500-24RP

1 BLDG 1600 - FIRE RATED WALLS & CEILINGS



1/8" = 1'-0"



LEGEND  
--- EXISTING 1 HOUR FIRE RATED WALLS & CEILING

Asbestos Bulk Sample Locations  
HMS, Inc.  
Sept. 5, 2014  
Shannon Johanson & Gary Wick

SOLANO COMMUNITY COLLEGE  
HVAC AND EMS EFFICIENCY PROJECT IMPLEMENTATION  
BRIDGING DOCUMENTS  
  
SOLANO COMMUNITY COLLEGE  
4000 SUISUN VALLEY ROAD  
FAIRFIELD, CA 94534

**KITCHELL**  
2700 Colton Oaks Drive  
Bldg 500  
Fairfield, CA 94503  
(707) 946-9700

**NOT FOR CONSTRUCTION**

PROJECT TITLE  
FIRE RATED WALLS & CEILING PLAN - BUILDING 1600  
SCALE AS SHOWN

REVISIONS

NO.	DATE	BY	CHK

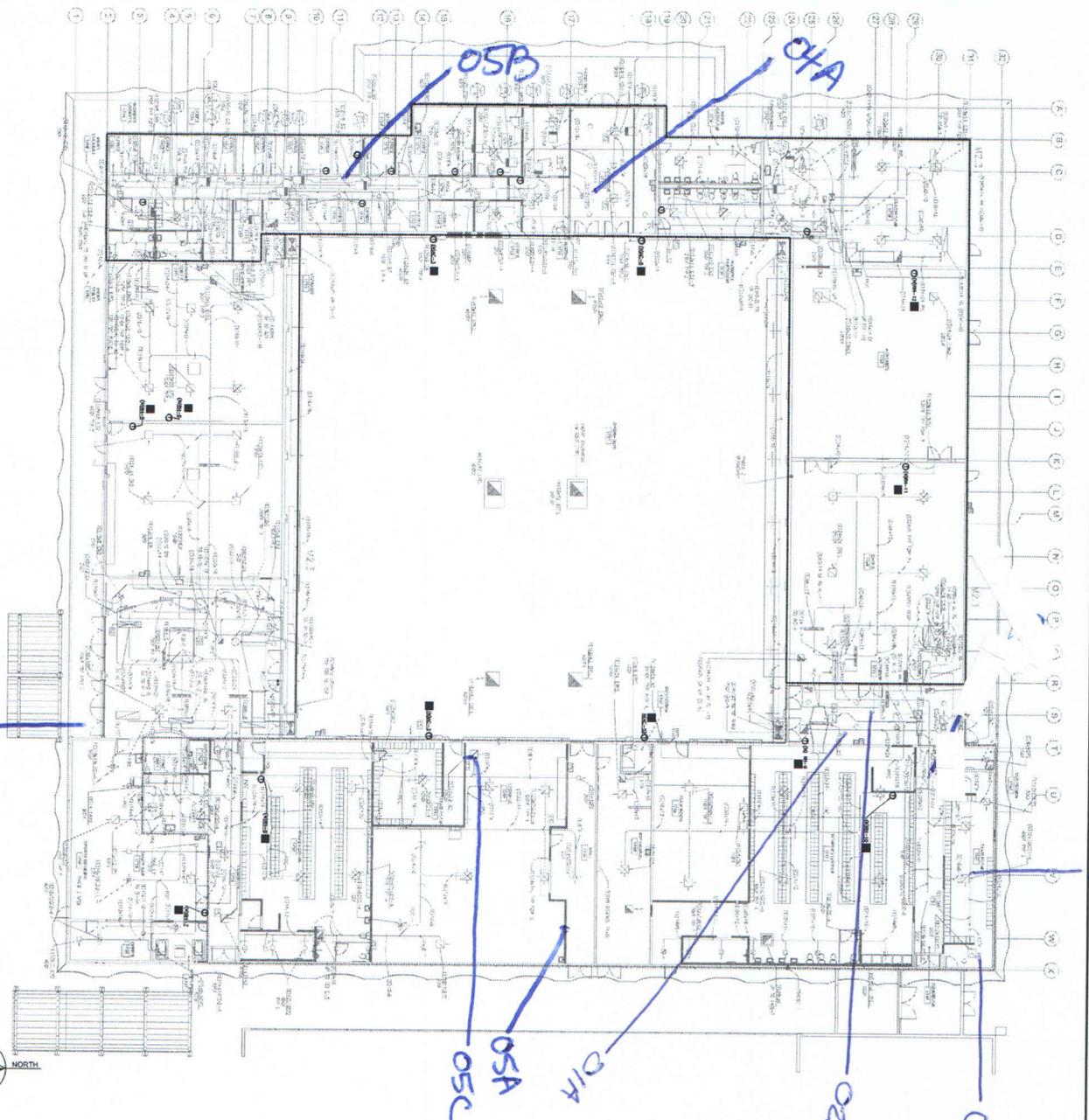
DATE  
2/20/14  
SHEET  
BR-1600-4-FRW



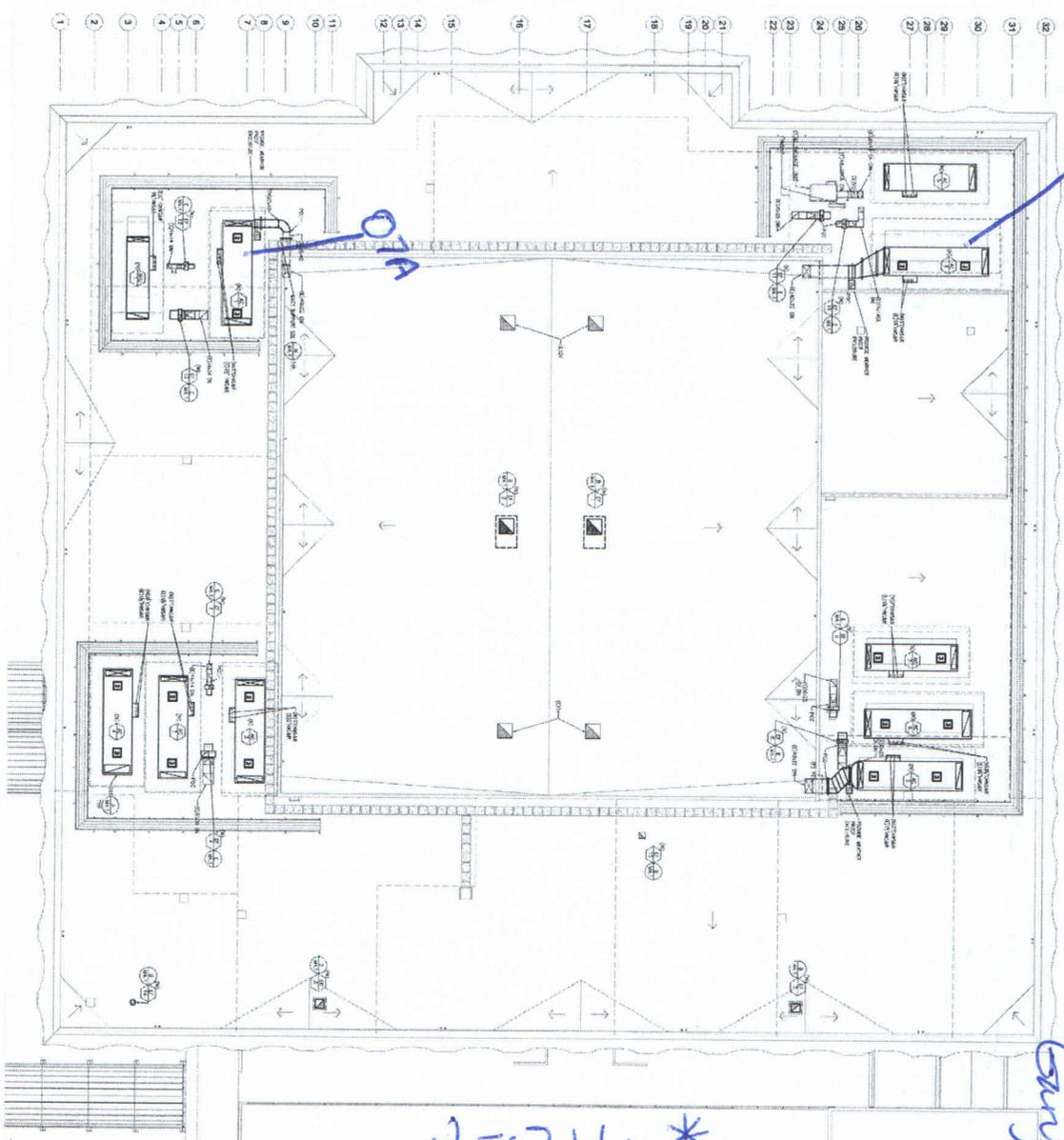
MECHANICAL FLOOR PLAN - BUILDING 1700

01B

3/32" = 1'-0"



1 BLDG 1600 - ROOF PLAN



Asbestos Bulk Sample Locations  
 thms, Inc.  
 Sept. 4, 2014  
 Shannon Johanson  
 Gary Wic

\* thms, Inc. did not  
 Sample the roofing.  
 It appears to be  
 new. This material  
 is assumed until  
 proven otherwise.

- 1 ROOF VENTS SHALL BE CONSTANT VOLUME DURING COOLING SEASON AND CONTROLLED AS EXISTING DURING THE WARM SEASON TO MAINTAIN TEMPERATURES OF THE ROOFING AND INSULATION BELOW 175°F. MAINTAIN THE ROOFING AND INSULATION TEMPERATURES OF THE ROOF VENT.
  - 2 NEW VENT ON EXISTING ROOFING SHALL BE 18" DIA. VENT WITH 18" DIA. VENT CAP.
  - 3 NEW VENT ON EXISTING ROOFING SHALL BE 18" DIA. VENT WITH 18" DIA. VENT CAP.
- SEE SCHEDULE FOR ADDITIONAL INFORMATION.



1/8" = 1'-0"

<p>DATE: 03/07/14          SHEET: BR-1700-2-RP</p>	<p>MECHANICAL ROOF PLAN - BUILDING 1700</p>	<p>PERIOD DOCUMENTS</p>	<p>SOLANO COMMUNITY COLLEGE              HVAC AND EMS EFFICIENCY PROJECT IMPLEMENTATION              BRIDGING DOCUMENTS</p> <p>SOLANO COMMUNITY COLLEGE              4000 SUSHUN VALLEY ROAD              FAIRFIELD, CA 94534</p>	<p><b>KITCHELL</b>              General Building/Industrial              2700 Oakley Oaks Drive              Suite 300, CA 94588              (925) 466-0100</p>
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