SECTION 02080

ASBESTOS ABATEMENT

PART I - GENERAL

1.01 GENERAL REQUIREMENTS

A. The project Scope of Work includes removal of asbestos-containing building materials (ACBMs) encountered within the project area, identified as follows:

1. All Buildings included in the CSB and UCH Seismic Renovation Program are assumed to contain ACBM.

The following two documents are included at the end of Section 02080 and are also in the Information Available to Bidders-Item #3.

2. Email Subject Line from EH&S: “EH&S Haz Mat input for Parnassus Small Bldgs Demolision,” June 29, 2011
3. Email Subject Line from EH&S: “FW: Need some Haz Mat input on the following small bldgs.,” June 29, 2011

[Project-specific surveys will be performed during Phase 1 – Preconstruction Services.]

B. The boundaries within which ACBM is to be removed will be determined during Phase 1 – Preconstruction Services.

C. The Contractor shall visit the site to determine the types and amounts of asbestos-containing building materials included within the project scope.

D. All work shall conform to requirements of General Industry Safety Orders, Title 8, Chapter 4, Section 1529 of the California Code of Regulations and Title 29 of the Code of Federal Regulations Part 1926.58 and other applicable standards as listed in Section 1.02, Part F, of this document. All work procedures must be authorized by University’s EH&S prior to implementation.

E. Following are addresses of regulatory agencies.

1. DOSH: Division of Occupational Safety and Health (CAL/OSHA)
   Occupational Carcinogen Control Unit
   1390 Market Street, Suite 718
   San Francisco, CA 94102
   (415) 557-1677

2. OSHA: U.S. Department of Labor - OSHA (FED/OSHA)
1.02 DESCRIPTION OF WORK

A. The work specified herein shall be the removal of ACBM by competent persons who are knowledgeable in asbestos removal and will comply with all applicable Federal, State and Local regulations.
B. The Contractor for the asbestos abatement work shall provide all labor, materials, services, insurance, registrations, notifications, reports, permits and equipment necessary to carry out the work in accordance with all applicable Federal, State and Local regulations and specifications in this document.

C. The Contractor shall be responsible for restoring the abatement work area to conditions equal to or better than original. The Contractor shall repair any damages caused during the abatement activities at no additional expense to the University. The Contractor shall be responsible for all costs incurred by the University and/or the University’s tenants which result from physical damage caused by the Contractor, including damage due to water leakage from the work area.

D. The Contractor shall be responsible for area and personal air monitoring within the asbestos containment area during asbestos removal as required by Federal and/or Cal/OSHA regulations. Excursion air monitoring (30 minute), shall be performed as stipulated by Cal/OSHA for abatement workers. The air monitoring results and copies of the containment entry log must be submitted to University’s EH&S within 24 hours unless approval is obtained from University’s EH&S for delayed submittal. In the event that the Contractor fails to submit personal air monitoring results in the above specified timely manner University’s EH&S may require Type-C air be used by abatement workers in order to continue abatement.

E. University’s Industrial Hygienist shall conduct the final air clearance. Final air sampling shall be aggressive and all samples shall be analyzed by Transmission Electron Microscopy, EPA level II (Yamate) method. The average of all final air clearance sample results shall be equal to or less than 70 structures per square millimeter, and no single sample shall exceed 140 structures per square millimeter. If the results of final air clearance samples exceed the aforementioned specified limit then the shall be responsible for additional cleaning of the abatement area and all costs associated with re-sampling and analysis incurred by the University’s Industrial Hygienist.

F. All asbestos abatement work, including preparation and dismantling of containment, shall conform to the following applicable reference documents. Where conflicting or overlapping requirements or specifications exist, the more stringent requirements shall apply.

1. 29 CFR Section 1926.58 (Federal OSHA)
2. 29 CFR Section 1910 and 1926
3. 40 CFR Part 61
4. 40 CFR Part 261 and 269
5. 40 CFR 763 (RE: air sampling protocols).
6. CCR Title 8, Chapter 3.2, Article 2.5. Registration Asbestos Related Work
7. CCR Title 8, Chapter 4, Section 5208. General Industry Safety Orders; Asbestos
8. CCR Title 8, Chapter 4, Section 1529. Construction Safety Orders; Asbestos
9. CCR Title 8, All other applicable requirements
10. CCR Title 22, Section 66699 (re: hazardous waste regulations)
11. CCR Title 16, Chapter 8 (Contractor Licensing)
13. Bulletin #88
14. Proposition 65
15. SB 198 (Injury and Illness Prevention Program)
16. National and State Electrical Code, Plumbing Code, Building Code, and other related codes where applicable

1.03 LIABILITY AND INSURANCE REQUIREMENTS - Refer to Supplementary Conditions.

A. The contractor for asbestos abatement work shall provide asbestos abatement liability insurance for the project. Insurance shall include true "Occurrence" asbestos claim provisions without "Sunset" clause.

1.04 QUALIFICATIONS OF CONTRACTOR

The Contractor selected shall submit to the University, within ten (10) days after receipt of notice of such selection:

A. Documentation of DOSH registration and the certification issued by the State of California Contractors License Board.

B. Documentation of at least three successful asbestos abatement projects similar in scope and extent to this project. Documentation shall include:

1. Names and addresses of clients, type of asbestos abatement work performed and a description of size and scope for each of the three projects.

2. A list of citations or penalties, if any, incurred due to non-compliance with asbestos abatement project specifications and/or regulatory requirements.

The determination of compliance with this eligibility requirement shall be at the sole discretion of the University.

1.05 SUBMITTALS AND NOTICES

A. The Contractor shall submit the following reports and documentation to the University who will forward them to the UCSF Environmental Health and Safety Office (University’s EH&S). Work shall not commence until University’s EH&S has approved all documentation related to the following items:

1. Detailed schedule of work to be performed; schedule shall include abatement activities and dates.

2. Documentation that the Contractor has obtained all applicable permits, registrations, notifications and licenses related to asbestos abatement work from all regulating agencies, including, but not limited to the California State contractors license, Cal/OSHA asbestos registration, Cal-OSHA work-site notification and the BAAQMD NESHAPs notification.
3. Material Safety Data Sheets for all products that will be used for the project. This includes, but is not limited to, products used for wetting, penetrating, and encapsulating.


5. List of equipment, including personal protective equipment, which will be used for the project. Negative air machines/units (HOGs) and HEPA vacuums (VAC) shall be DOP certified at the UCSF project site, prior to abatement approval/start. Contractor to submit the record of passing certification to University’s EH&S once complete, prior to abatement approval. At its discretion, University’s EH&S may accept a manufacturers DOP test certificate in lieu of the aforementioned Contractor’s DOP test requirements.

6. Work Plan which contains specific workplace practices related to site preparation and containment construction, asbestos abatement/removal procedures and hazardous waste handling, load-out and disposal procedures. The Work Plan must also include an Emergency Contingency Plan which, at a minimum, addresses procedures which shall be followed in the event of a breach of containment, power failure, water leakage and fire.

7. Respirator fit testing records for each employee working on the project. Records must reflect that fit testing was conducted within the past six months.

8. Proof of current training certification for an EPA/AHERA accredited Asbestos Workers course for all abatement workers.


10. Document signed by a physician for each employee on the job proving that each employee has received in the past year an appropriate medical examination as detailed in 29 CFR 1926.58 and CCR Title 8. The exam must include a statement that the employee is approved to wear respiratory protection.

11. Name, address, telephone number, contact and State and Federal identification numbers for the hazardous waste transporter(s).

12. Name, address, telephone number, contact and State and Federal identification numbers of the hazardous waste disposal facility.

1.06 COST ALLOCATIONS - ASBESTOS ABATEMENT FORM

A. Contractor shall provide the University with quantities and cost allocations as shown in the Asbestos Abatement form found at the end of this section at completion of project.

1.07 VEHICLE AND SITE ACCESS

March 1, 1993
Revision (1) May 15, 1993
FM/EH&S:02080
File Name:document\word\asbestos\02080sec 02080-5 ASBESTOS ABATEMENT
A. Access to the job site on campus roads and parking lots shall be arranged between Contractor and University. Contractor's entrance to the building will be limited to locations designated by the University.

B. Parking will not be available at UCSF's main campus or other UCSF facilities for vehicles belonging to Contractor's personnel.

C. Access and location for the hazardous waste shipping container shall be arranged between Contractor and University prior to project start-up. Drop-off and pick-up of the container by the hazardous waste transporter is limited to low campus activity hours (after 7 pm and before 7 am).

1.08 INTERRUPTION OF BUILDING SERVICES

A. The Contractor shall secure the University's approval at least twenty-one (21) days prior to any service shutdown and/or cutover.

1.09 DEBRIS BOX

A. A secured debris box will be permitted after 7:00 p.m. in a location to be determined, but must be removed from the campus premises before 6:00 a.m. daily.

PART II - MATERIALS AND EQUIPMENT

2.01 MATERIALS AND EQUIPMENT

A. All materials required to complete the asbestos removal work shall be provided by the Contractor and be in accordance with applicable regulations.

B. Materials that become contaminated with asbestos shall be disposed of in accordance with the applicable regulations.

C. The Contractor shall provide all equipment and tools for asbestos abatement operations. This may include HEPA filtration systems, area isolation equipment and other suitable equipment. The HEPA filtered negative air machines must be maintained such that a minimum of four air changes occur per hour inside the abatement project area.

D. Enclosures shall be built of non-combustible materials. A polyethylene barrier with a thickness of 6-10 mil shall be clearly labeled as fire retardant treated.

E. The use of mastic removal chemicals must be approved by University’s EH&S prior to use. The use of solvent based mastic removers is restricted and only permitted in certain circumstances as determined by the University’s EH&S Industrial Hygienist.

F. A half-face respirator equipped with a dual HEPA filter cartridge shall be worn during abatement site preparation. If PAPR respirators are used, additional fully charged spare batteries must be readily available on site.
G. Ground Fault Circuit Interrupters shall be used on all equipment and an inspection program shall be followed, as per 29 CFR 1926 Construction Industry Safety and Health Standards.

H. Electrical extension cords shall be 12/3 gauge or larger.

I. All electrical plugs shall have an operative ground prong. Grounding adapters shall not be used unless authorized, in writing, by University’s EH&S.

J. In hospital environments, all electrical equipment are to have spark arrestors, and Contractor must provided evidence (documentation) of the presence and installation of spark arrestors.

K. In hospital environments, all electrical equipment is to be hard wired with a hospital grade plug.

L. Electrical outlets and extension cords shall be provided by the asbestos abatement Contractor for the purpose of air monitoring by the University’s Industrial Hygienist. The University’s Industrial Hygienist shall specify where the electrical outlets are needed, both inside (clearance monitoring) and outside (perimeter monitoring) of the regulated area. Two electrical outlets shall be provided per designated area.

M. A colored encapsulant shall be used to lock-down any remaining asbestos-containing materials bordering, but not included in, the scope of the project, i.e., pipe insulation ends fireproofing edges, etc.

N. The Contractor shall provide protective clothing (disposable suits) for use by the University’s Industrial Hygienist for jobsite inspection, final clearance inspection and retrieval of air monitoring equipment.

O. The Contractor shall have on-site a minimum of two company owned and labeled 2A, 10 B:C (or larger) fire extinguishers. One shall be located outside of containment, and the others shall be inside the containment; one fire extinguisher per 10,000 sq ft, and not further than 75 feet apart, starting from decontamination area entry way. The fire extinguishers shall have been inspected and certified as operative within the past 12 months.

P. A fully stocked First Aid Kit shall be maintained and clearly labeled on the jobsite at all times.

PART III - EXECUTION

3.01 PREPARATION

A. The work area shall be prepared in accordance with the following specified conditions:

1. The entire abatement area shall be pre-cleaned. Pre-cleaning shall include HEPA vacuuming and wet wiping all horizontal and vertical surfaces. All movable items of furnishings, equipment etc., shall be secured in a clean uncontaminated room and covered
with polyethylene. All non-movable items to be left in place shall be sealed in polyethylene.

2. Critical barriers shall be constructed by applying polyethylene, in an airtight fashion, over all penetrations into the work area. Penetrations shall include, but are not limited to all entryways, vents, windows and drains.

3. The abatement work area shall be fully contained by erection of an airtight, double layer 6-10 mil thick polyethylene sheet extending from ceiling to floor and wall to wall. A three stage decontamination unit equipped with a hot/cold water shower and 5 micron pore size water filtration unit is required for personnel entry/exit of the work area. All entrances shall have Z-flaps. All surfaces not described as part of the scope of work shall be covered with a double layer of 6-10 mil polyethylene. A sufficient number of negative air machines shall be used to maintain a pressure differential of minus 0.04 inches of water across the containment barriers at all times. A 24 hour recorder shall be installed to continuously monitor pressure differential inside the regulated work area. Negative air machines shall remain in operation 24 hours a day until final clearance of the work area is achieved.

4. A separate, multistage load-out chamber equipped with Z-flaps shall be used to removed decontaminated equipment and contained waste from the work area. Entry or exit of the work area through the load-out chamber is prohibited except in emergency situations.

5. The Contractor shall clearly mark and label emergency exits. These emergency exits should be separately polyethylened from the rest of the containment. The polyethylene on the walls shall end at the emergency exit. The emergency exit(s) shall be critically sealed and an overlapping sheet of polyethylene shall cover the exit. A knife shall be posted in the vicinity of the emergency exit door. The exit shall be clearly labeled and free of obstructions.

6. The Contractor shall install BAAQMD vision ports. There shall be enough vision ports available to see all of the abatement area within containment.

7. Where it is not feasible to establish a full containment, a substitute containment which meets the purpose and intent of a full containment shall be constructed if approved by University’s EH&S.

B. Asbestos abatement operations shall not commence until the following have been approved by University’s EH&S:

1. Arrangements for containing and disposing of wastewater resulting from wet stripping.

2. Work areas, decontamination enclosure systems and parts of the building required to remain in use have been effectively segregated and an inspection performed by the University’s EH&S Industrial Hygienist.
3. Tools, equipment, and material waste containers are on hand.

4. Arrangements have been made for jobsite security and safety.

5. All Permits have been obtained, all preparatory steps taken, and the following applicable notices posted:
   b. Cal/OSHA Work-site Notification
   c. BAAQMD NESHAPs Notification
   d. Emergency Exit Diagram (including placement of fire extinguishers)
   e. Emergency Phone Numbers and Location of Phone; 24 hour contact list with Contractor, University’s EH&S, University’s Project Manager, UC Police Department/Mt Zion Hospital Security (if applicable), utilities (University’s maintenance personnel) and the nearest Emergency Hospital facility.

3.02 ASBESTOS ABATEMENT

The Contractor shall:

A. Receive authorization from the University’s EH&S Industrial Hygienist prior to initiating any abatement activity. The University’s Industrial Hygienist will conduct a pre-abatement inspection prior to authorizing abatement.

B. Maintain a log of any personnel entering the containment area. The Contractor shall not allow any person to enter the containment area without prior University’s EH&S approval. This includes Contractor abatement personnel newly assigned to the jobsite.

C. Provide authorized visitors with protective clothing, whenever they are required to enter the work area.

D. Ensure that each worker and authorized visitor shall follow the approved procedures established by the Contractor and/or University’s EH&S.

E. Remove all existing asbestos-containing building materials (ACBM) as identified during pre-bid job walk within project demarcation. Removal will be done wet and kept wet. Contained waste shall be removed from the work area at the end of each shift if possible. The Contractor shall make arrangements with the University to store the ACBM in an area that is secured (lockable) and with restricted access.

F. Ensure asbestos fiber levels inside the containment do not exceed 1 fiber per cubic centimeter (f/cc) as determined by personal or area air samples using phase contrast microscopy analysis. If
this level is exceeded, Contractor shall take immediate action to reduce airborne fiber concentrations. If this level is exceeded for 2 consecutive shifts, the Contractor shall cease asbestos removal operations and perform necessary clean-up to reduce the airborne level to below 0.2 f/cc as indicated by subsequent air samplings.

G. Conduct personal exposure monitoring and provide monitoring results within 24 hours after samples are taken to University’s EH&S.

3.03 ON-SITE RECORDS

A. The following records must be available on-site throughout the entire course of the asbestos abatement work.

1. Work Plan which includes Emergency Contingency Plan
2. Personal air monitoring results, both 30 minute excursion and 8 hour TWA
3. EPA/AHERA Training Certificates for each worker and Certified Supervisor
4. The most recent medical and respirator fit testing documentation for all employees
5. Material Safety Data Sheet and product information sheet for all equipment and supplies used on site

3.04 CLEAN UP AND DISPOSAL

A. Asbestos waste shall be contained in a clear, 6 mil asbestos labeled bag, goosenecked and taped. Such a bag shall be placed into another asbestos labeled bag, also goosenecked and taped. A generator identification label shall be affixed to each bag. Double bagged, sealed and labeled containers of asbestos waste shall be removed daily, and at the end of the job, during low campus activity hours (before 7:00 a.m. and after 7:00 p.m.). All asbestos wastes shall be transported to a pre-approved (by University’s EH&S) Class II waste site, in accordance with CCR Title 22. University’s EH&S shall inspect the waste and sign the uniform hazardous waste shipping manifests prior to transporting and disposal. The University’s EH&S Industrial Hygienist is the only person authorized to sign the manifest and shall retain the original Yellow and Blue Generator copies of the manifest; and a copy of the Land Ban Restriction notification, in order to verify proper disposal.

B. Waste manifest forms shall be provided by the Contractor and include the following information in Box 3 (Generator’s name and mailing address):

University of California San Francisco
Office of Environmental Health & Safety
50 Medical Center Way
San Francisco, CA 94143-0942
Attn: Bert Luistro

March 1, 1993
Revision (1) May 15, 1993
FM/EH&S:02080
File Name:document\word\asbestos\02080sec 02080-10 ASBESTOS ABATEMENT
University’s EH&S will provide the Contractor with the Generator's US EPA ID No. (Box 1 of the Manifest) for each facility involved in the project scope of work.

C. Contaminated clothing and polyethylene shall be disposed of as hazardous waste.

D. Waste water from wet stripping, shower room, and worker and equipment decontamination systems shall be filtered through a filtration treatment system capable of removing all particles 5 microns or greater in size before it is discharged into the sanitary sewer system.

E. The work area shall remain under negative pressure until University’s EH&S has completed final air sampling and given approval to dismantle the containment.

F. If requested, the primary (bottom clean layer) polyethylene barrier located above ceilings shall be left in place after clean-up as a dust barrier during ensuing non-asbestos construction activities. If contamination cannot be removed from the barrier, the Contractor shall remove it and erect a new one in the same location.

G. All non-disposable equipment, including negative air machines shall be cleaned and decontaminated prior to removal from the containment area.

3.05 FINAL CLEARANCE

A. University’s EH&S shall provide a final inspection of the work area upon completion of all abatement and clean up tasks. The Contractor shall notify the University’s EH&S Industrial Hygienist 24 hours in advance of projected completion in order to schedule a final inspection.

B. The Contractor shall not encapsulate abated surfaces until the work area has passed final inspection as determined by the University’s EH&S industrial Hygienist. The University’s EH&S Industrial Hygienist shall inspect the work area surfaces for ACBM residue and debris and will identify to the Contractor specific areas (if any) which require additional cleaning. If additional cleaning is required, the University’s EH&S Industrial Hygienist shall re-inspect the work area following completion of clean up activities.

C. Following successful passage of final inspection, the Contractor shall encapsulate all abated surfaces. Once the encapsulant is dry, the Contractor shall remove, and dispose of as hazardous waste, the top (dirty) layer of polyethylene. The bottom (clean) layer of polyethylene and all critical barriers which cover entryways, windows, vents, drains and any other openings into the work area shall be left in place.

D. University’s EH&S shall conduct aggressive final air clearance as specified in Section 1.02, paragraph E and notify the Contractor of analysis results in a timely fashion. Failure of final air clearance will require the Contractor to re-clean (HEPA vacuum and wet wipe all surfaces) and re-encapsulate the work area prior to any final clearance retake.
E. Once final air clearance is attained (as determined by the University’s EH&S Industrial Hygienist), the Contractor will be given written approval to remove all remaining equipment and polyethylene from the work area and restore the work area to pre-abatement conditions.

3.06 ASBESTOS ABATEMENT TERMS:

AIR MONITORING: The process of measuring the fiber content of a specific volume of air.

ASBESTOS REMOVAL: Procedures to strip asbestos-containing materials from the designated areas and the disposal of these materials to an acceptable site.

AUTHORIZED VISITOR: The University or a representative of the University or any regulatory agency having jurisdiction over the project.

CLEAN ROOM: An uncontaminated room having facilities for the storage of employee's street clothing and uncontaminated materials and equipment.

ENCAPSULANT: A material used to coat asbestos material residue where removal has occurred. Encapsulants can be either penetrants or bridging materials. It is preferred that the material used to coat the ends of pipe TSI left in place be a bridging encapsulant. The remaining asbestos-containing material residue in the area should be covered with a penetrating agent.

ENCLOSURE: An airtight, impermeable temporary barrier used to separate an asbestos regulated area from a non-contaminated room.

EQUIPMENT DECONTAMINATION ENCLOSURE SYSTEM: A decontamination enclosure system for materials and equipment, typically consisting of a designated area of the work area, a wash area, a holding area, and an uncontaminated area.

EQUIPMENT ROOM: A contaminated area or room which is part of the worker decontamination enclosure system, with provisions for storage of contaminated clothing and equipment.

FULL CONTAINMENT: All critical barriers established and all surfaces not described as part of the Scope of Work is to be covered with two overlaying layers of 6 - 10 mil polyethylene.

HEPA VACUUM EQUIPMENT: High efficiency particulate air (absolute) filtered vacuuming equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining particulate of 0.3 microns or larger.

NEGATIVE PRESSURE: A HEPA filtered local exhaust system capable of maintaining a minimum pressure differential of minus 0.04 (-0.04) inches of water column relative to adjacent unsealed areas.

SHOWER ROOM: A room between the clean room and the equipment room in the worker decontamination enclosure system, with hot and cold or warm running water, suitably arranged for complete showering during decontamination. The shower room comprises an air lock between contaminated and clean areas.
WET CLEANING: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by afterwards disposing of these tools as asbestos-containing waste.

WORKER DECONTAMINATION ENCLOSURE SYSTEM: A multi-stage decontamination system consisting of an Equipment Room, a Shower Room and a Clean Room connected by overlapping polyethylene Z-flap air locks.

END OF SECTION
## ASBESTOS ABATEMENT

*(FILL IN TABLE USING MATERIAL LIST)*

<table>
<thead>
<tr>
<th>NO.</th>
<th>MATERIAL</th>
<th>ENCLOSURE REPAIR</th>
<th>ENCAPSULATE</th>
<th>REMOVAL</th>
<th>REPLACEMENT</th>
<th>LOCATION (FLOOR, ROOM, HALL, CORRIDOR, ETC.)</th>
<th>QUANTITY OF WORK (SF, LF OR NUMBER)</th>
<th>COST BREAK DOWN</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>CEILING TILES</td>
<td></td>
<td>X</td>
<td></td>
<td>RM 428</td>
<td>600 SF</td>
<td>$3,000</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>CEILING TILES</td>
<td></td>
<td>X</td>
<td></td>
<td>RM 428</td>
<td>600 SF</td>
<td>$2,000</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>VAT</td>
<td></td>
<td>X</td>
<td></td>
<td>1ST FLOOR-ALL</td>
<td>3000 SF</td>
<td>$15,000</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>PIPE</td>
<td></td>
<td>X</td>
<td></td>
<td>RM 428</td>
<td>75 LF</td>
<td>$1,500</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>PIPE</td>
<td></td>
<td></td>
<td></td>
<td>RM 428</td>
<td>75 LF</td>
<td>$750</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>PIPE, JOINTS</td>
<td></td>
<td>X</td>
<td></td>
<td>RM 428</td>
<td>15 LF</td>
<td>$900</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>CLEAN-UP</td>
<td></td>
<td></td>
<td></td>
<td>RM 500</td>
<td>----</td>
<td>$2,000</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL:** (MUST EQUAL CONTRACT PRICE) $25,150.00

**NOTE:**

1. Quantities of work may be taken from the specifications measured, or estimated.
2. Cost of abatement means all of contracts costs to perform the work including: preparation, worker protection, and decontamination or cleanup required for the abatement.
3. If decontamination or cleanup is performed without any abatement involved (alone), then the cost of this work is not considered abatement. Include: decontamination or cleanup costs for a project, or parts of a project, as item 29 quantities are not required.
<table>
<thead>
<tr>
<th>NO.</th>
<th>MATERIAL</th>
<th>ENCLOSURE REPAIR</th>
<th>ENCAPSULATE</th>
<th>REMOVAL</th>
<th>REPLACEMENT</th>
<th>LOCATION (FLOOR, ROOM, HALL, CORRIDOR, ETC.)</th>
<th>QUANTITY OF WORK (SF, LF OR NUMBER)</th>
<th>COST BREAK DOWN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## ASBESTOS ABATEMENT MATERIAL LIST

<table>
<thead>
<tr>
<th>NO.</th>
<th>MATERIAL</th>
<th>QUANTITY MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>SURFACE TREATMENT (SPRAYED-ON AND TROWELLED-ON)</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>FIRE PROOFING</td>
<td>SF</td>
</tr>
<tr>
<td>2</td>
<td>ACOUSTICAL PLASTER</td>
<td>SF</td>
</tr>
<tr>
<td>3</td>
<td>SIMULATED ACOUSTICAL PLASTER</td>
<td>SF</td>
</tr>
<tr>
<td>4</td>
<td>TEXTURES</td>
<td>SF</td>
</tr>
<tr>
<td></td>
<td><strong>INSULATION</strong></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>PIPES</td>
<td>LF OR SF</td>
</tr>
<tr>
<td>6</td>
<td>FITTINGS (JOINTS, VALVES, ETC.)</td>
<td>NUMBER</td>
</tr>
<tr>
<td>7</td>
<td>BOILERS</td>
<td>SF</td>
</tr>
<tr>
<td>8</td>
<td>BREECHING</td>
<td>SF</td>
</tr>
<tr>
<td>9</td>
<td>DUCTS</td>
<td>SF</td>
</tr>
<tr>
<td>10</td>
<td>TANKS</td>
<td>SF</td>
</tr>
<tr>
<td>11</td>
<td>SHAFTS</td>
<td>SF</td>
</tr>
<tr>
<td>12</td>
<td>PLENUMS</td>
<td>SF</td>
</tr>
<tr>
<td>13</td>
<td>OTHER MECHANICAL EQUIPMENT</td>
<td>SF</td>
</tr>
<tr>
<td></td>
<td><strong>MISCELLANEOUS</strong></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>FLOOR TILES</td>
<td>SF</td>
</tr>
<tr>
<td>15</td>
<td>LINOLEUM</td>
<td>SF</td>
</tr>
<tr>
<td>16</td>
<td>MASTIC</td>
<td>SF</td>
</tr>
<tr>
<td>17</td>
<td>CEILING TILES</td>
<td>SF</td>
</tr>
<tr>
<td>18</td>
<td>ROOFING MATERIAL</td>
<td>SF</td>
</tr>
<tr>
<td>19</td>
<td>REFACTORY INSULATION</td>
<td>SF</td>
</tr>
<tr>
<td>20</td>
<td>DRYWALL JOINT COMPOUND</td>
<td>LF OR SF</td>
</tr>
<tr>
<td>21</td>
<td>PLASTER, STUCCO</td>
<td>SF</td>
</tr>
<tr>
<td>22</td>
<td>TRANSITE WALLS</td>
<td>SF</td>
</tr>
<tr>
<td>23</td>
<td>TRANSITE PIPE</td>
<td>LF</td>
</tr>
<tr>
<td>24</td>
<td>TRANSITE CONDUIT</td>
<td>LF</td>
</tr>
<tr>
<td>25</td>
<td>TRANSITE COOLING TOWER</td>
<td>SF</td>
</tr>
<tr>
<td>26</td>
<td>TRANSITE LAB TOPS</td>
<td>SF</td>
</tr>
<tr>
<td>27</td>
<td>TRANSITE HOODS</td>
<td>SF</td>
</tr>
<tr>
<td>28</td>
<td>OTHER (DESCRIBE)</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td><strong>DECONTAMINATION OR CLEAN-UP</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DECONTAMINATION OR CLEAN-UP (ALONE)</td>
<td>NONE REQUIRED</td>
</tr>
</tbody>
</table>
Bodeen, Elaine

From: Toporkoff, Michael <Michael.Toporkoff@ucsf.edu>
Sent: Wednesday, June 29, 2011 8:53 AM
To: Brad Jacobson; E.Schaffarczyk@ccm.to
Subject: EH&S Haz Mat input for Parnassus Small Bldgs Demolishion

Follow Up Flag: Follow up
Flag Status: Completed

FYI:

From: Lomas, Jeffrey L.
Sent: Wednesday, February 23, 2011 1:09 PM
Subject: RE: Need some Haz Mat input on the following small bldgs

Mike,

For all five buildings (all built before 1980 and 1978 for lead), a full interior/exterior (top/bottom) asbestos-containing building materials (ACBM) survey and other hazardous materials identification (e.g., PCBs, lead, lead paint, various lab use chemicals, Freon-type chemical, silica, etc.), all followed by abatement and removal of all regulated ACBMs and hazardous materials throughout all five buildings shall be completed. The ACBM survey, hazardous materials identification, and abatement/removal shall be completed prior to renovation, alteration, demolition, and/or building materials disturbance. The surveys/identification and abatement/removal are required by OSHA (Cal/Fed OSHA), EPA, BAAQMD, and various other regulatory compliance measures and requirements. Notification for demolition of the buildings shall also be sent to BAAQMD (EPA), regardless if any hazardous materials are present (regular demo). Asbestos abatement/removal shall be completed first, prior to demolition, following OSHA CCR Title 8 1529 Class I-IV and BAAQMD Regulation 11/Rule II regulations and requirements by a certified asbestos (lead) and/or demolition contractor. All lead work shall be completed following OSHA CCR Title 8 1532.1 and/or 5198 and applicable EPA, CDHS, and HUD regulations and requirements. All asbestos, lead, and other hazardous materials removal (abatement) shall be completed under the direction of UCSF OEH&S Department. All chemical, biological, and RAM materials shall be picked up and disposed of through the OEH&S HMM Program.

There is known ACBMs and presumed-asbestos containing materials (PACM) found in all five buildings. I have various asbestos survey and abatement data for all buildings, except 735 Parnassus Building (I have completed little to nothing in that building during my time here at UCSF). Here is a brief listing of ACBMs, PACMs, and other hazardous materials for each building. They are:

1. Woods Bldg. (overall wood framed structure/metal base structural frame/some concrete): There is asbestos transite board attached to the majority of the building exterior surfaces, sewer lines with lead over PACM packing, and potential asbestos roofing materials, window glazing compounds, caulk compounds on some desk and bench tops/sinks and utilities, potential sinks with acoustic surface spray materials, pipe insulation (TSI), flooring, and wall plasters (sheet rock). Any restrooms may also have ceramic wall/floor tiles with asbestos grout/glue and also assumed to contain lead paint glazing materials.

2. Surge Bldg. (wood framed structure/metal base structural frame/some concrete): There is hundreds of linear feet of asbestos pipe TSI and assumed some HVAC duct TSI/tape, hundreds to thousands of square feet of asbestos flooring materials (9 & 12 inch sq.), wall materials (sheet rock joint compounds), sewer lines with lead over PACM packing, and potential fume hoods with asbestos transite board and/or circular flue, transite lab bench tops, sinks with asbestos acoustic spray materials, caulk compounds associated with the lab bench/sinks and utilities, The roof materials were abated years ago and should have been replaced with a non-asbestos roofing materials. Any restrooms may also have ceramic wall/floor tiles with asbestos grout/glue and also assumed to contain lead paint glazing materials.
3. MR IV Bldg. (overall wood framed structure on concrete base/some metal I Beam structural frame): This building has similar ACBMs, PACMs and hazardous materials as noted to be found in the Surge Building, except in larger quantities. There is known asbestos pipe TSI throughout the building interior (also in the crawlspace below the building) and found on the covering pipe lines located on the northeast building exterior area. There may be additional pipe with asbestos TSI on the roof. There is also asbestos flooring (linoleum and floor tiles/mastic), transite board in some fume hoods, abandoned lab top ovens/equipment with transite board and gaskets, sheet rock with asbestos joint/texture compounds that comprise the majority of the walls and ceiling surfaces located throughout the building interior, and caulks compounds associated with lab bench tops/sinks and on some utilities, such as, on HVAC flanges. The roofing materials and the roof mounted utilities may have asbestos tape and/or pipe TSI. Any restrooms may also have ceramic wall/floor tiles with asbestos grout/glue and also assumed to contain lead paint glazing materials. The paint on the exterior/interior is known to contain lead.

4. 374 Parnassus Bldg. (overall wood framed structure on concrete base/some metal I Beam structural frame): There is asbestos floor tile (9 & 12 inch sq.), sheet rock wall materials (joint/texture compounds), window glazing, and some pipe (HVAC) TSI. There is also assumed asbestos roofing materials. Any restrooms may also have ceramic wall/floor tiles with asbestos grout/glue and also assumed to contain lead paint glazing materials. The paint on the exterior/interior is known to contain lead.

5. 735 Parnassus Bldg. (overall wood framed structure on concrete base/some metal I Beam structural frame): This building is assumed to have similar ACBMs/PACMs as found in our 3rd and 5th Ave. housing buildings, such as, potential pipe TSI, window glazing materials, flooring, wall plasters (sheet rock and lath/texture plasters), wall papers, sinks with asbestos spray, roofing materials, and sewer lines with lead over PACM packing. There is a known asbestos HVAC/furnace TSI covering/tapes, which cover the garage/basement level furnace and associated supply (return) duct. Any restrooms may also have ceramic wall/floor tiles with asbestos grout/glue and also assumed to contain lead paint glazing materials.

Note: All five buildings are assumed to have and/or have the majority of the following hazardous materials within and/or on the exterior of the building. They are: radioactive materials (RAM-lab usage)/waste, PCB light ballasts, Freon-type coolants for HVAC-type units, elemental lead on sewer fittings and as roof jacks/flashing, lead-containing paint covering the interior/exterior surfaces, silica-type insulations and floor coverings, fluorescent lights for recycling, oil wastes, and various lab use chemicals and associated hazardous wastes (mainly MR IV and Surge Bldgs.) may and/or are present. There may be and/or it is assumed to be more potential hazardous materials than I listed, which would be found during the main surveys/abatement, etc.

FYI. I would recommend use of and/or apply any similar cost for full ACBM survey/abatement and demolition for cost estimates reference that was completed for the Aldea housing phase 3 and/or for the 3rd and 5th Ave. housing demo/abatement projects. I hope this information helps. Please let me know if you need further information and/or have questions.

Thanks.
Jeff Lomas
Asbestos/Lead Coordinator
OEH&S Dept., UCSF
Both buildings are also built before 1980 (1978 for lead) and are known to contain ACBMs, lead paint, and other hazardous lab and building materials similar to what was referenced in the below email previously sent, such as, PCBs, lead paint, RAM usage, oils, lead shielding, etc.

Here is some additional information requested for the two referenced buildings. They are:

1. Proctor Bldg. (overall wood framed structure on concrete base/some metal I Beam structural frame): I have some data from previous ACBM surveys and abatement projects for this building. The building has known sheet rock (lower floors) with both the core plaster and/or joint tape/compound and/or texture compounds all containing asbestos. There is also asbestos flooring materials (some 9 and 12 inch sq floor tile/mastic), potential asbestos transite lab bench tops and fume hood siding boards, HVAC tape, HVAC/pipe TSI, wall baseboard/glue, and caulk compounds associated with some HVAC, lab benches/sink tops, and utilities. There may also be mechanical rooms with additional ACBMs/lead paint. The building has similar ACBMs and/or hazardous materials as found in the previously referenced MR IV and/or 3rd/5th Ave. housing buildings, such as, potential asbestos roofing materials and window glazing compounds and potential RAM, biological, and chemical waste materials. Any restrooms may also have ceramic wall/floor tiles with asbestos grout/glue and also assumed to contain lead paint glazing materials. The paint on the exterior/interior of the building is assumed to contain lead.

2. Lab of Radiobiology Bldg. (overall structural concrete and metal I Beam/structural framing): This building has various ACBMs and some lead issues located throughout the building. I have a lot of data for this building, due to I was almost complete with a full building ACBM survey/sampling years ago. However, the survey/project was cancelled (was under the PM Rob Purcell), before I could complete the last area for the survey (completed about 80-90% of the building survey/sampling). The building has similar ACBMs and/or hazardous materials as found in the previously referenced MR IV Building, as well as, what might be found in the MSB. There is hundreds to thousands of linear feet of HVAC and pipe asbestos TSI, hundreds to as much as tens of thousands of square feet of asbestos flooring materials, asbestos sheet rock joint tape/compounds and/or texture plaster compounds, some lath/texture plaster wall/ceiling sections, most of the main roof is asbestos (there is also a secondary roof between the 3rd floor/2nd floor ceiling levels that may also be asbestos), and potential window glazing, transite lab bench/sink tops, fume hoods with asbestos transite board, wall baseboard/glue, and sink acoustic spray materials. There may be and/or is assumed that additional ACBMs/lead paint in the mechanical room areas. There is also a 0.05% asbestos coating located beneath the paint covering the exterior of the building. There may also be other radioactive materials issues with the building, such as decontamination issues, known lead shielding in wall and/or other spaces, and X Ray units (old federal funded radioactive use building) requiring decertification and for removal. Any restrooms may also have ceramic wall/floor tiles with asbestos grout/glue and assumed to contain lead paint glazing materials. The paint on the exterior/interior is known to contain lead. This building would most likely be the most expensive to abate/demolish of all seven buildings, due to the exterior asbestos coating, lead issues, abatement quantities, and radioactive units/wall shielding issues noted.
Same regulations and requirements apply as noted in the attached below email previously sent. I hope this additional hazardous materials information helps. Please let me know if you need further information and/or have questions.

Thanks.
J. Lomas