Asbestos Management Program
Operations and Maintenance Plan

Summary: This University of California, San Francisco (UCSF) Asbestos Operations and Maintenance (O&M) Plan is to be implemented for the purpose of minimizing and/or eliminating the possibility of exposure to airborne asbestos fibers for UCSF building tenants, the public using UCSF buildings, tenant employees and maintenance workers.

1. Program Description

This University of California, San Francisco (UCSF) Asbestos Operations and Maintenance (O&M) Plan is to be implemented for the purpose of minimizing and/or eliminating the possibility of exposure to airborne asbestos fibers for UCSF building tenants, the public using UCSF buildings, tenant employees and maintenance workers. The UCSF Operations and Maintenance Plan will remain in effect until all asbestos-containing materials (ACM) have been completely removed from all UCSF facilities.

2. Scope

The UCSF O&M Plan is designed to minimize the possibility of accidental disturbance of asbestos-containing materials and to protect UCSF workers and building occupants who must work around these materials. The UCSF O&M plan includes the following items:

A written plan,
A warning and notification system,
A periodic, routine in-house monitoring or inspection system,
A work control/permit system to control activities that might disturb ACM,
A provision for training campus employees who will come in contact with the materials and, if necessary,
A thorough documentation and record keeping system.

The UCSF O&M Plan follows a systematic approach to document UCSF's intentions and to provide an inter-disciplinary approach to the protection of the building occupants and employees. Therefore, technical assistance and recommendations are obtained from
relevant parties including Environment, Health & Safety (EH&S), legal counsel, the building staff, Facilities Services (including maintenance and custodial personnel), an architectural/engineering or consulting firm, medical advisor, and possibly contractors and other periodically employed journeymen who may work in the campus facilities.

3. Definitions

Accredited Inspectors: Must be AHERA-trained as a Building Inspector/Management Planner. (EH&S or EH&S approved representative)

AHERA : Asbestos Hazard Emergency Response Act

Asbestos : Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.

Asbestos-Containing Material (ACM) Any material containing more than 1% asbestos.

Asbestos-Containing Construction Material (ACCM): Any manufactured construction material which contains more than one tenth of 1 percent asbestos by weight.

Asbestos Coordinator : The person that exercises control over management and recordkeeping functions relating to UCSF in which activities covered by this program take place. This person is an EH&S employee.

Certified Asbestos Consultant: An asbestos consultant certified by the Division of Occupational Safety and Health (DOSH) pursuant to 8 CCR 1529, Section (q).

Encapsulation: Asbestos-containing material coated with a penetrating or bridging sealant to prevent release of asbestos fibers into the air.

Enclosure: Asbestos-containing material physically separated from the building environment by means of erecting permanent airtight barriers.

Deferred Action: In conjunction with a well-defined O&M Plan, the actual removal, encapsulation or enclosure is postponed to a later date. It should be noted that under this alternative the exposure potential remains and the potential liability to UCSF should be considered when deferring action.

Friable: Any material that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

Non-friable: A material which, when dry, may not be crumbled, pulverized, or reduced to powder by hand pressure.

Operations and Maintenance Plan (O&M): Specific procedures and practices developed for the interim control of asbestos containing materials in buildings until they are removed.

Removal: The asbestos-containing material is removed from UCSF buildings by qualified professionals and, if applicable, state licensed and trained personnel and disposed of by burial in a site specifically approved for asbestos.
Staff Support Personnel: Personnel include employees from Facilities Management staff or contractors acting on behalf of UC San Francisco.

4. Responsibilities

4.1 The UCSF Asbestos Coordinator shall implement the asbestos control program. Duties shall include:

4.1.1 Documenting, updating, publicizing, and disseminating the UCSF Operations and Maintenance Plan.

4.1.2 Maintaining the documented inventory of asbestos-containing materials and their locations.

4.1.3 Managing the asbestos assessments, surveys and abatement plans.

4.1.4 Participating in the development, review and monitoring of program designs, and/or repair and alteration projects to ensure compliance with applicable standards and regulations when asbestos-containing materials are to be disturbed.

4.1.5 Managing and/or performing periodic asbestos inspections and air monitoring.

4.1.6 Implementing asbestos training if UCSF decides to train in-house crews for small asbestos abatement projects.

4.1.7 Participating in the medical surveillance program when the safety and occupational health physician has determined this program should be established.

4.1.8 Ensuring asbestos programs are documented and recordkeeping requirements are in compliance with regulations.

4.1.9 Responsibility for recordkeeping including maintaining the official UCSF Operations and Maintenance Plan, the master list of buildings, employee program and training records, and the master list of regulated areas.

4.1.10 Seeking technical direction and assistance from a qualified Industrial Hygienist through Environment, Health and Safety (EH&S) for program development and implementation, inspection, and personnel training.

4.1.11 Ensuring that recommended procedures and safety precautions are followed before authorizing construction and maintenance work involving ACM.

4.2 Capital Programs (CP) and Design & Construction (D&C) - The duties should include:

Advance partnering with the Asbestos Coordinator on all construction and renovation activities. This includes completion of the EH&S Project Request Approval Form.

4.3 Facilities Services (FS)/Project Management and Project Assessment Team – The duties should include:
Advance partnering with the Asbestos Coordinator on all construction, renovation, maintenance, or equipment repair work. This includes completion of the EH&S Project Request Approval Form.

4.4 Facilities Management/Trades Group-The duties should include:

Advance partnering with the Asbestos Coordinator on all construction, renovation, maintenance, or equipment repair work. This includes completion of the Job Request and Authorization Form for Maintenance Projects-FM Trades Group.

Informing the Asbestos Coordinator when damage to ACM is observed or when debris needs to be cleaned up.

Avoiding patch or repair of any damaged ACM until the Asbestos Coordinator has assessed the ACM.

5. Specific Program Components

5.1 WARNINGS AND NOTIFICATION

The UCSF Operations and Maintenance Plan has a provision for notifying UCSF building occupants of the presence of asbestos-containing materials. Assembly Bill 3713 (i.e., The Connelly Bill) passed in California requires building owners to notify employees of the presence of asbestos in their work place. The notification is performed by the EH&S staff.

EH&S notifies building occupants of the presence of asbestos in buildings on an annual basis by posting an Asbestos Notification document throughout the campus. The Asbestos Notification is also posted on the EH&S website. This notification follows the requirements of the Connelly Bill. The Asbestos Notification states that campus-wide asbestos in buildings survey has been conducted and the results are available for review.

UCSF personnel often contact EH&S to ask if a material contains asbestos in their building. EH&S reviews existing data, may collect a sample of the material and then notifies the building occupant of the results. EH&S periodically holds open forums to notify building occupants of the presence of asbestos prior to the initiation of building renovation projects in order to answer any questions the occupants might have.

5.1.1 CONTROLLED ACCESS AREAS

Another method used for warning and notification of building occupants is the use of warning labels or stickers in controlled areas:

Definition: Controlled area stickers are for those areas generally accessed by custodians, maintenance workers or contractors but not by the general public or students. Usually, the entrance to these areas is kept locked to prevent unauthorized personnel from entering. The sticker informs people that they are entering an area containing asbestos materials.

Purpose: The purpose of controlled area stickers is to inform workers, before they enter an area to perform any work, that their activities may disturb asbestos materials. If a maintenance worker intends to work on equipment in a mechanical room, the sticker alerts the worker to the fact that their supervisor must discuss with the asbestos Coordinator whether their work will impact asbestos containing materials.
Controlled area stickers will be placed on all entrances to mechanical rooms, crawl spaces, attics, pipe chases, and pipe tunnels known to contain asbestos. In some cases, the entrance may be a regular door to a boiler room. But in other cases, the entrance may be a two-foot by two-foot panel accessing the bathroom pipe chase. The sticker should be placed on the door so it is visible and easily read. The stickers will read: “Danger--asbestos, cancer and lung disease hazard. Authorized Personnel Only. Respirators and protective clothing are required in this area.”

5.2 PERIODIC INSPECTION AND AIR MONITORING

An air monitoring program will provide useful supplemental information to the inspection program. However, air monitoring is used only as a supplemental management tool and not as a replacement for the physical and visual inspection. Air monitoring can only detect an asbestos fiber release after it has occurred and therefore, will not serve as an effective preventive measure. Baseline airborne asbestos fiber levels should be established; a representative number of air samples should be collected throughout each building during normal operating hours. Subsequent air monitoring should be conducted if there is a release or suspected release of asbestos fibers. Air monitoring will be conducted by EH&S staff or their qualified EH&S representative.

5.2.1 PERIODIC INSPECTION

An accredited inspectors should:

Inspect friable ACMs and non-friable ACMs for damage or deterioration and report findings to the Asbestos Coordinator.

Investigate the source of debris found by custodial or other staff support personnel.

The Staff Support Personnel (such as Facilities Services staff) and building occupants should:

Inform the Asbestos Coordinator when damage to the ACM is observed or when debris needs to be cleaned up.

5.2.2 WORK CONTROL / PERMIT SYSTEM

The system requires completion of the Asbestos Project Request Approval Form prior to commencement of any project. The form asks for information on the schedule and location of the project and a description of the work. This procedure includes requesting the assistance of EH&S to identify and locate ACM. EH&S maintains files of known ACM locations. Furthermore, EH&S is involved with the authorization process and is able to impose conditions with respect to health and safety, suggest work practices, and recommend personal protective equipment.

5.4 O&M PROCEDURES/ WORK PRACTICES

Currently, UCSF personnel are not trained or authorized to perform O&M procedures and work practices listed in sections 5.4.1 – 5.4.4. All asbestos removal work is currently performed by contracted registered and certified abatement contractors. However, contract personnel engaged to perform O&M procedures and work practices are required to follow
the elements of this section, as applicable, in addition to all applicable federal, state, and local regulations, standards, and codes governing asbestos management.

The O&M procedures are designed to structure a program for handling specific types of asbestos-containing materials (ACM) and activity areas. The purpose of the program is to minimize the exposure potential of a specific type of ACM or activity area by addressing and organizing special procedures to: 1) clean up and properly dispose of asbestos fibers previously released, 2) repair damaged ACM, 3) prevent further disturbance or damage of the ACM, and 4) monitor conditions until removal.

Most areas with ACM can be cleaned by wet methods and/or HEPA-vacuuming methods. As different circumstances arise, modifications may be necessary. Regardless of the circumstances, prudent safety precautions should be used. Cleaning and/or removal of ACM should never be performed without a NIOSH-approved respirator and wet methods of cleaning or removal.

When work involves removal of ACM, personnel should follow emergency abatement techniques. All removal work shall be performed by AHERA-trained personnel wearing respirators that provide adequate protection from airborne asbestos fiber concentrations existing in the work area.

The following paragraphs (5.4.1 – 5.4.5) describe interim repair and control techniques to be employed by qualified personnel when asbestos-containing materials are damaged or deteriorated. Because of the high costs associated with these techniques, they shall generally be considered as temporary control techniques rather than alternatives to removal. When these repair practices are conducted, workers should:

Wear full-body disposable protective clothing and a powered air-purifying respirator or, at a minimum, a half-face, dual cartridge respirator equipped with HEPA filters and NIOSH-approved for protection from airborne asbestos fibers.

Isolate the work area with barriers and warning signs. Seal off all HVAC ducts, windows and any other sources of air circulation through the work area.

Pre-clean the work area with wet-cleaning and/or HEPA-vacuuming techniques. Vacuum all the carpets throughout the building with a High Efficiency Particulate Air (HEPA)-filtered vacuum cleaner; NEVER use a conventional cleaner. HEPA-vacuum all curtains, books and other stationary items. Discard vacuum bags and filters in sealed plastic bags according to EPA regulations for disposal of asbestos waste. Mop all non-carpeted floors with wet mops. Wipe all shelves and other horizontal surfaces with damp cloths. Use a mist spray bottle to keep cloths damp. Discard cloths and mop heads in sealed plastic bags according to EPA regulations for disposal of asbestos waste.

Place a layer of six-mil polyethylene plastic on the floor beneath the item to be repaired or replaced. The plastic should be one foot in length and width for each foot above the floor where the work is to be conducted, but never less than six feet by six feet. Where this work area is confined by walls, workers should extend the plastic up the wall at least one foot and seal the top edge with duct tape.

Thoroughly dampen all debris with amended water from the clean-up and repair work, seal the debris in two six-mil polyethylene bags (or two layers of six-mil plastic sheeting), label
properly per OSHA, EPA and DOT and dispose of the bags as asbestos containing waste. If an outside contractor conducts the cleanup, it is that contractor’s responsibility to dispose of the debris waste according to hazardous waste disposal regulations.

When performing the repair work, workers should take precautions to minimize disturbances of the asbestos-containing material.

After performing the repair work, workers should clean the floor plastic with wet and/or vacuuming techniques and dispose of with the same procedures accorded asbestos-containing material.

5.4.1 PIPE INSULATION AND MUDDLED JOINT FITTINGS

Work area preparation and cleaning shall be in accordance with the requirements previously listed in this section.

Repair minor dents and tears in the protective jacket with duct tape or bridging encapsulant with glass cloth reinforcement. Duct tape should only be used for temporary control until the bridging encapsulant is installed. If the glove bag removal is not feasible, wrap uncovered pipe insulation with protective jackets consisting of bridging encapsulant with glass cloth reinforcement.

Wrap moderately water damaged or contact damaged pipe insulations with new protective jackets, or reinsulate affected areas. The source of the water damage must be eliminated. More severely damaged pipe insulation may require removal by glove or gross containment techniques. Request authorization for removal from EH&S.

Monitor the condition of the asbestos-containing materials and non-asbestos-containing materials. This will greatly assist in routine monitoring and detection of potential ACM deterioration.

5.4.2 FIREPROOFING

Work area preparation and cleaning shall be in accordance with the requirements listed previously.

On a temporary basis, the exposure potential of fireproofing can be reduced by constructing airtight walls and ceilings around the ACM, enclosing the exposed area. This process will disturb the ACM through contact, vibration, etc., so the same isolation and control techniques used for removal projects must be incorporated into this type of work. An enclosure project would generally be applicable only to a small area. Enclosure of a large area often requires such effort and expense that removal is a more cost effective and practical solution.

Fireproofing may be sprayed with an encapsulant if the fireproofing is well bonded to its substrate and is less than one inch thick. This is to be considered a temporary control measure. As with enclosure, isolation and control techniques used for removal projects must be incorporated into encapsulation work. Test results have shown that, due to the impact of the spray, spraying with an encapsulant can entrain into the air more fibers than a gross wet removal project.
If the fireproofing has localized water damage and/or is becoming delaminated in a small area, spot removal of the damaged material may be necessary. If the remaining fireproofing is well bonded to its substrate, it can then be encapsulated; however, the source of the water must be eliminated.

If work involves hanging ducts, conduit or pipes, etc., from surfaces sprayed with fireproofing, the asbestos material around the area may have to be abated prior to the work. Avoid disturbing fireproofing whenever possible.

5.4.3 ACOUSTICAL PLASTERS (SPRAYED-ON OR TROWELED-ON)

Work area preparation and cleaning shall be in accordance with the requirements listed previously.

If the plaster is in good condition, with no delamination, deterioration or signs of water damage, it should be left alone but carefully monitored for signs of change in status.

If the plaster is water damaged and/or is becoming delaminated from the substrate, it should be removed rather than encapsulated. Encapsulation can make the condition worse by increasing the rate of delamination. The source of the water damage must be eliminated. Request authorization for removal from EH&S.

Avoid disturbing acoustical plaster by not hanging plants, drilling holes in the ceiling, and moving furniture, etc.. Work area preparation and cleanup for all types of maintenance and repair work shall be in accordance with the requirements listed previously in this section. When the plaster must be disturbed, mist the affected area with amended water (soap and water solution) and use a HEPA vacuum to collect fibers being released.

5.4.4 MISCELLANEOUS/CEMENTITIOUS MATERIALS

Fiber released from cementitious (nonfriable) materials is normally extremely low unless these materials are broken, drilled, sanded, or otherwise disturbed. During disturbance, the materials should be thoroughly dampened followed by a thorough HEPA equipped vacuuming to collect fibers being released. Follow the work area preparation and cleanup requirements previously listed. Some examples of cementitious and miscellaneous nonfriable materials that may contain asbestos are:

- Floor tiles - Tile underlay
- Wall plasters - Transite pipes
- Scratch coats - Drywall plaster
- Transite paneling - Linoleum
- Exterior siding - Roofing felts
- Friction products - Brake linings, clutches, etc.

5.4.5 ASBESTOS CONTAINING CEILING PANELS

Work area preparation and cleaning shall be in accordance with the requirements listed previously.

Only personnel trained in Asbestos Awareness and equipped with proper respiratory protection and disposable coveralls should displace these panels in HSE/HSW/ACC. Ceiling panels should be carefully lifted out of the T-bar and slid gently over on top of the
adjacent ceiling panels without breaking or tipping the panel. Caution should be taken to make sure that the ceiling panel covers are not damaged by abrasion.

All ceiling access in HSE / HSW / & ACC should be performed following the UCSF Ceiling Access Policy.

6. Regulatory Requirements

All work shall be performed in strict accordance with all applicable federal, state, and local regulations, standards, and codes governing asbestos abatement, and any other trade work done in conjunction with the abatement.

The most recent editions of any relevant regulation, standard, document, or code shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall apply.

Such documents include, but are not limited to, the following:

• US Department of Labor, Occupational Safety and Health Administration (OSHA)
  - Personal Protective Equipment (29 CFR 1926, Subpart E)
  - Specifications for Accident Prevention, Signs, and Tags (29 CFR 1910.145)

• California Division of Occupational Safety and Health (Cal/OSHA)
  - Title 8 of the California Code of Regulations, General Industry Safety Orders, Section 5208 - Asbestos Standard (8 CCR GISO 5208) and Construction 8 CCR 1529
  - Registration for Asbestos-Related Work (8 CCR 341.6 through 341.14)
  - Respiratory Protective Equipment Standard (8 CCR GISO 5144)
  - Hazard Communication Standard (8 CCR GISO 5194)
  - Accident Prevention Program (8 CCR GISO 3203)
  - Access to Employee Exposure and Medical Records (8 CCR GISO 3204)
  - Accident Prevention Signs (8 CCR GISO 6003)
  - Emergency Action Plan (8 CCR GISO 3220)
  - Fire Prevention Plan (8 CCR GISO 3221)
- Electrical Safety Orders (8 CCR, Chapter 4, Subchapter 5)
- Construction Safety Orders (8 CCR, Chapter 4, Subchapter 4)

• US. Environmental Protection Agency (EPA) National Emissions Standard for Hazardous Air Pollutants (NESHAP) Asbestos Regulation (40 CFR 61, Subparts A, B, and M)

• Bay Area Air Quality Management District (BAAQMD) Regulation 11, Rule 2, Asbestos Emissions from Demolition/Renovation activities

• American National Standards Institute (ANSI)

• National Fire Protection Association (NFPA)
- National Electric Code (No. 70-1984)
- Fire Extinguishers (No. 10-1984)

• California Department of Public Health (CDPH), Title 22, Division 4, Chapter 30 of the California Code of Regulations - Minimum Standards for Management of Hazardous and Extremely Hazardous Waste

7. Reporting Requirements

Notification to regulatory agencies is generally made by the asbestos contractor. Notification to affected UCSF personnel is facilitated by the asbestos coordinator. All notifications shall be performed in strict accordance with all applicable federal, state, and local regulations, standards, and codes governing asbestos abatement, and any other trade work done in conjunction with the abatement.

The most recent editions of any relevant regulation, standard, document, or code shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall apply.

Such documents include, but are not limited to, those listed in section 6.0.

8. Information and External References

8.1 Recordkeeping

The original of all documents pertaining to this O&M Plan will be kept on file at EH&S. The standard documents to be kept on file will be:

Reports of Survey and Laboratory Analyses - Original
Records of Areas Removed or Encapsulated

Disposal Records Verification

8.2 Files of ACM on Campus
Consult with EH&S for the most updated files.

8.3 Forms and Protocols

EH&S Asbestos Project Request Approval Form
Asbestos Work Requisition/Authorization Form for Maintenance Projects