

REMOVAL OF ASBESTOS-CONTAINING ROOFING MATERIALS

Divisions 00 & 01 ARE PART OF THIS SECTION

GENERAL**1.01 SCOPE:**

The work required under this section consists of all asbestos abatement related items necessary and required to complete the work as indicated in the Contract Documents. Refer to project drawings and previous asbestos survey report prepared by T. Brooks & Associates, a division of Provost & Pritchard Consulting Group (TBA/P&P) for information concerning locations of identified asbestos-containing roofing materials to be impacted as part of the proposed project.

Based on representative bulk sampling of low-slope and steep-slope asphaltic roofing systems on representative structures at the subject school site considered as part of our investigation, asphaltic built-up roofing with silver roof coating tested positive for asbestos at various roof locations. All roofs which were identified as containing asbestos are to be treated as asbestos-containing for the purposes of the project. All work which disturbs ACRM shall be conducted in accordance with these specifications and all applicable local, state and federal regulations having jurisdiction over the work.

The Contractor shall comply with the requirements of OSHA's Hazard Communications Standard for but not limited to hazardous materials, fall protection, and shall provide employee training as required under OSHA regulations.

The Contractor shall provide all items, articles, materials, operations, or methods listed, mentioned or scheduled on the drawings and/or specified herein, including all labor, materials, equipment, and incidentals necessary and required for their completion.

Contractor shall utilize fall protection measures in accordance with Cal/OSHA requirements to protect the health and safety of employees engaged in work as part of the project.

1.02 WORK INCLUDED:

All non-asbestos containing roofing materials and related items, which are not contaminated with ACRM elements or debris may be treated as non-asbestos-containing for the purposes of the project, as long as the waste is segregated.

Contractor shall abate all identified asbestos-containing roofing building materials (ACRM's) at specified roof locations at the subject site as indicated in the project design documents so as to allow for renovation operations involving those structures as defined in project documents. Contractor shall review previous Asbestos Survey Report prepared by T. Brooks & Associates, a division of Provost & Pritchard Consulting Group dated February 16, 2023 to determine locations of identified asbestos-containing roofing materials (ACRM's) at

the subject site which will be impacted by the proposed renovation operations based on review of asbestos survey and all project design documents.

All work involving disturbance of roofing materials designated as asbestos-containing materials shall be completed by a contractor currently registered and licensed by the State of California for asbestos related work. Work shall not commence until approval of all asbestos related submittals from Contractor or qualified abatement sub-contractor.

The Contractor shall make provision for site security and operational procedures such that Building employees, tenants, other trades, and the general public shall not be exposed to airborne asbestos above regulatory levels as a result of activities performed under the Contract. Non abatement employees or personnel, or non-abatement work shall not be permitted within any posted "regulated area" during the course of work involving disturbance of asbestos-containing roofing materials.

All work involving disturbance of asbestos-containing roofing materials shall be as determined by the project design documents. The Contractor shall provide necessary lighting, fall protection, and safety equipment as required or regulated to complete the specified work if conducted at night. Night work requires permission of the Building Owner.

Off-loading of ACRM shall be in compliance with OSHA requirements and these specifications.

Contractor may only off-load roofing materials, including asbestos-containing roofing materials from the roof during limited hours as designated by the Owner and its Asbestos Consultant Representative. Any asbestos-containing roofing materials which have been disturbed, and which remain on the roof overnight shall be placed in sealed waste bags, or covered with 6-mil polyethylene film prior to the end of the shift during which they are disturbed and shall be placed within a "regulated area" on the roof with proper labeling per OSHA regulations.

Off-loading of roofing materials by forklift or other mechanical means shall be performed by Contractor's employees and shall be performed only during hours designated by the Building Owner or its Representative. Any off-loading by non-mechanical means, such as use of a waste chute shall be approved by the Building Owner and its Asbestos Consultant Representative.

1.03 DEFINITIONS:

Abatement: Procedures to control fiber release from asbestos containing building materials. Includes removal, enclosure and encapsulation.

Air Monitoring: The process of measuring the asbestos fiber content of a specific volume of air in a stated period of time using methods approved or recommended by OSHA, EPA, or NIOSH.

Amended Water: Water to which a surfactant has been added to reduce airborne asbestos emissions.

Asbestos: The asbestiform varieties of serpentine (chrysotile), riebeckite (crocidolite), cummingtonite, grunerite (amosite), anthophyllite, actinolite, and tremolite.

Asbestos-Containing Roofing Materials (ACRM): Roofing materials either containing more than 0.1% by weight of asbestos or contaminated with friable asbestos to a degree that handling the materials may reasonably be expected to give rise to exposure to airborne asbestos fibers above regulated levels.

Authorized Visitor: Authorized representatives of the Building Owner, its representative, or a representative of any regulatory or other agency having jurisdiction over the project.

Building Owner's Asbestos Consultant: T. Brooks & Associates, a division of Provost & Pritchard Consulting Group.

Building Owner's Representative: Designated employee of Building Owner.

Competent Person: A person who has successfully completed an EPA -abatement supervisor training program and whose accreditation with state and federal regulatory agencies is current.

Disposal: All procedures necessary to transport and deposit the asbestos-contaminated material stripped and removed from the building to a waste disposal site in compliance with applicable Federal, State, and Local regulations.

Disposal Site: A site approved by the California Department of Public Health (CDPH) and the US Environmental Protection Agency (EPA) for the disposal of asbestos containing waste (Class I or II).

Encapsulation: All procedures necessary to coat all asbestos-containing materials with an encapsulant to prevent the dispersal of asbestos fibers into the air.

Encapsulant: A liquid which can be applied to asbestos-containing material and which reduces likelihood of possible release of fibers from the material by penetrating into the material and binding its components together, or which provides an impervious polymeric coating firmly bound to the ACM.

HEPA Filter: High Efficiency Particulate Air (absolute) filter capable of trapping and retaining 99.97% of particles with diameters than or equal to 0.3 micrometers. In no case shall the HEPA filter permit the discharge of air containing more than 0.01 asbestos structures/cc.

HEPA Vacuum Equipment: Vacuum equipped with a HEPA filter in the exhaust outlet, and so designed and maintained that 99.91% of all asbestos fibers (greater than or equal to 0.3 micrometers diameter) in the inlet air are collected and retained. In no case shall the HEPA

vacuum equipment permit the discharge of air containing more than 0.01 asbestos structures/cc.

HVAC: Heating, ventilation and air conditioning system.

Industrial Hygienist: A person qualified by training and/or expertise to specify measures for the recognition, evaluation, and control of occupational health hazards. In this project, an acceptable industrial hygienist must have substantial experience in the management of asbestos exposure.

PCM: Phase Contrast Microscopy according to NIOSH Method 7400.

Permissible Exposure Limit (PEL): Airborne concentration of asbestos in excess of 0.1 fibers per cubic centimeter (f/cc) of air as an eight hour time-weighted average (TWA) as determined by the method prescribed in the current California Occupational Safety and Health Standards.

Regulated Area: An area established by the employer to demarcate areas where Class I, II and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit.

Removal: All procedures herein specified, as regulated by local, state, or federal agencies, or necessary to strip asbestos-containing material from designated areas in a safe manner and dispose of these materials at an acceptable disposal site.

Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the amount of water required for a given operation or area and enhancing the effect of the water in reducing fiber release.

TEM: Transmission Electron Microscopy according to AHERA specifications for Level II analysis.

Transport: Hauling of asbestos-containing wastes from the building to the disposal site and deposit of the wastes therein, in accordance with all Cal/EPA, CHP, Cal/OSHA or other applicable regulations.

Work Area: An isolated area of the building where abatement activities are performed.

Worker: Contractor employee who has completed course work and passed the exam for an EPA accredited AHERA asbestos abatement worker.

1.04 SUBMITTALS:

Approval by the Building Owner and/or it's designated representative is required of the following submittals, which shall be provided following award in compliance with the

Project Requirements. Submittals shall include all elements required by Building Owner the Project Design Professionals, as well as those herein stipulated, or as required by applicable regulations.

The successful contractor shall provide a submittal to the Building Owner and/or its Designated Representative before commencement of any project work, and before the project pre-roof construction conference that includes the following information:

1. Pre-Abatement Plan: Submit to the Building Owner and/or its Designated Representative a written work plan describing:
 - a. Methods of performing the removal work.
 - b. Schedule for asbestos related abatement work.
 - c. Plans for construction of isolation barriers and HVAC shut down.
 - d. Schedule of removal of debris.
 - e. Qualifications of firm to conduct Air Sampling Operations.
 - f. Locations of dumpster(s) or temporary storage of ACRM at site.
2. Notifications: Notify in writing the following agencies listed below:
 - a. Cal/OSHA District Office
 - b. San Joaquin Valley Air Pollution Control District (if required)
3. Supervisor Training: Submit written proof that all supervisors proposed for the project meet the criteria for a "competent person as defined under 8 CCR 1529 and have successfully completed an EPA - approved supervisor's training course in asbestos abatement, including the source of the training. Supervisor shall be EPA certified as a Contractor/Supervisor for asbestos and the State of California Certified under the Department of Industrial Relations.
4. Worker Training: Submit written proof that all employees have successfully completed an EPA - approved course in asbestos abatement and have had instruction on the hazards of asbestos exposure, on use and fitting of respirators, on protective dress, and on all aspects of work procedures and protective procedures including all topics listed in 8 CCR 1529 (0)(1)(a-c).
5. Written proof satisfactory that all employees have been examined by a licensed physician within the last year and have found to be physically suited to perform asbestos related work, including wearing a respirator and other PPE while performing vigorous labor.
6. Injury & Illness Prevention Program: Submit a written Injury and Illness Prevention Program in compliance with SB 198.
7. Air Monitoring Program: Submit a written description of the proposed air monitoring program for this project, including the names of the industrial hygienist, certified asbestos consultant, and/or air monitoring technicians, types of equipment, sampling procedures, calibration, record keeping, and analytical laboratory proposed.

Contractor Submittals During Construction Phase:

1. Daily Air Monitoring Results: Copies of all daily personal air monitoring results shall be submitted within 48 hours of completion of shift during which they are collected.

2. Copies of all applicable transport manifests and disposal receipts for all asbestos waste material.
3. Work shall not commence until required submittals have been approved.

1.05 PERSONNEL PROTECTION:

Training: Prior to commencement of work, all employees of the Contractor to be assigned to this project (including supervisors) shall be instructed, and shall be knowledgeable, in areas described in and those described in 8 CCR 1529. That training shall be equivalent to "AHERA Contractor/Supervisor and Abatement Worker" training.

Respiratory protection equipment, at a minimum, shall consist of a personally issued, individually identified NIOSH/MSHA approved half-face respirator equipped with HEPA filter cartridges. Additional respiratory protection shall be as required by CCR Title 8, Section 1529 and CFR 1926.

The Contractor shall have in place a respiratory protection program in accordance with the requirements of the California Occupational Safety and Health Standards. At a minimum, all workers shall be qualitatively fit-tested at time of respirator selection according to current regulations and shall have been fit-tested for each proposed respirator type during the proceeding eleven (12) month period.

The Contractor shall ensure that there is always a sufficient supply of replacement filters, of the type described above, and that filters are changed in accordance with regulatory requirements, or as required based on actual job conditions.

Outer work clothes shall consist of disposable full body coveralls.

The Contractor shall ensure that all employees that will wear a respirator during any part of the work are instructed on its proper use, including proper fitting, and changing of filters. Eating, drinking, and smoking while in any "regulated area" will not be permitted.

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

1. OSHA - U.S. Department of Labor Occupational Safety and Health Administration, Safety and Health Standards 29 CFR 1910, Section 1001 and Section 1910.134.29 CFR 1926.
2. Cal/OSHA - 8 CCR 1529.
3. NIOSH - National Institute for Occupational Safety and health under the provisions of 30 CFR Part II.

4. All other applicable local, state and federal regulations have jurisdiction over the work.
5. In addition to these requirements for the prevention of exposure to and dissemination of asbestos fibers, all applicable safety requirements, including electrical safety and fall protection shall be complied with by the Contractor and any subcontractors acting under its' direction. Contractor shall provide regulatory oversight over all subcontractors as stipulated under Cal/OSHA requirements.

Worker Changing Area: The room shall be located at ground level and shall have a curtained doorway to the outside. The Contractor shall be constructed to provide privacy from surrounding areas.

Shower waste-water shall be filtered prior to discharge to the sanitary sewer, with filtration acceptable to the Building Owner and the local water quality district. At minimum, all waste or shower water shall be run through a five micron (5µm) final filter. All requirements governing discharge of asbestos fibers to the sewer system shall be followed.

Worksite Entry: All contractor personnel and authorized visitors prior to entering the work area shall sign the entry log and put on protective clothing and a HEPA-equipped respirator for which they have received training and been approved by a licensed physician.

Worksite Exit: Each worker shall remove gross contamination from disposable or protective clothing before leaving the work area by HEPA vacuum. Remove all disposable or protective clothing (shorts may be worn under disposable or other protective clothing) and dispose of appropriately in labeled containers for disposal. Remove and dispose of respirator filter cartridges in labeled containers for disposal. The respirator shall be washed and rinsed.

Workers shall not eat, drink, smoke or chew gum or tobacco at the worksite except in areas designated by the Building Owner.

Decontamination, respiratory protection, and work procedures are to be followed by all Contractor employees and Authorized Visitors.

1.06 AIR MONITORING: INITIAL AND DAILY

Personal and perimeter air monitoring shall be conducted by the contractor on each day that work is conducted which involves the disturbance of asbestos-containing roofing materials. Personal monitoring may be conducted by abatement contractor if overseen by a qualified competent person familiar with air sampling operations. Perimeter monitoring may be conducted by independent, third-party Certified Asbestos Consultant (CAC), or Certified Site Surveillance Technician (SST) (acting under the direction of a CAC). Monitoring, shall be conducted for entire shift or as required under Cal/OSHA regulations. Perimeter monitoring may be performed by its Asbestos Consultant at the discretion of the Building Owner shall be conducted at ground level. Personal monitoring shall include both Excursion (30 minute) and Full Shift monitoring per OSHA requirements.

If it is found that airborne fiber levels of personal air samples have exceeded the Permissible Exposure Limits of 1.0 f/cc (30 minute excursion monitoring) or 0.1 fibers per cubic centimeter (f/cc) over an eight (8) hour time weighted average, the Contractor shall be required to take additional measures as required by the Building Owner or its Representative as required to reduce airborne levels below the PEL's. All air samples found to exceed any PEL shall be re-analyzed by TEM method. TEM analysis shall be conducted at laboratory selected by the Building Owner. Such additional testing shall be performed for each occurrence by an approved and accredited laboratory using Transmission Electron Microscopy (TEM), to determine the actual asbestos content. This additional analysis shall be completed at no cost to the Building Owner. Contractor shall pay Asbestos Consultant directly for all costs related to re-analysis by TEM method, including lab fees, consultant services, etc.

Personal air monitoring shall be conducted specifically on those individuals working at the point where the asbestos-containing materials are being removed.

Air monitoring shall be performed by individuals and firms qualified and knowledgeable in air sampling operations, and knowledgeable in asbestos abatement operations. The firm and/or individual providing air monitoring on the project shall be acceptable to the Building Owner, and Asbestos Consultant Representative. Contractor shall provide qualifications of air monitoring firm and specific individual performing the monitoring as requested by the Building Owner prior to the start of asbestos related work.

The Contractor shall insure that all samples shall be taken under standard industry protocol and tested at a laboratory which is accredited by the American Industrial Hygiene Association and participating in the Proficiency in Analytical Testing (PAT) Program of the National Institute for Occupational Safety and Health.

A copy of the results of all air monitoring performed by the Contractor shall be submitted to the Building Owner within forty-eight (48) hours of end of shift during which they were collected.

PART 2 – PRODUCTS

2.01 GENERAL MATERIALS:

Plastic Sheeting: Shall be min 6-mils thick and fire-resistant polyethylene sized in lengths and widths to minimize the frequency of joints.

Tape: Shall be capable of sealing joints of adjacent sheets of plastic and of attachment of plastic sheets to finished or unfinished surfaces of dissimilar materials and shall be capable of adhering under dry and wet conditions, including use of amended water.

Disposal Containers: Shall be suitable to receive and retain any asbestos-containing materials until disposed of at an approved site. All dumpsters or temporary storage containers for storing ACRM contaminated materials shall be lined with one layer of 10 mil

polyethylene and sealed before transport in accordance with local, state and federal requirements, and the requirements of the designated landfill.

Wetting Agent: Shall consist of 50% polyoxyethylene and 50% polyethylene ester, or equivalent, and shall be mixed with water at concentration of one ounce wetting agent to 5 gallons of water (or as recommended by the manufacturer) to produce amended water.

Warning Labels & Signs: Shall be as required by EPA, OSHA, and Health and Welfare Agency (Prop 65) regulations.

HEPA Vacuum: A high efficiency particulate air (HEPA) filtered vacuum capable of trapping and retaining 99.97% of all particles larger than 0.3 microns.

Other Materials: The Contractor shall furnish all materials required to complete the abatement related work. Costs for such materials and equipment shall be reflected in Contractor's bid.

PART 3 EXECUTION

3.01 JOB SITE POSTING:

Job Site Documents: The Contractor shall provide and post the following documents at the project site:

1. All project plans and specifications including addenda and change orders.
2. Copies of Material Safety Data sheets for all materials used on the project.
3. List of all AHERA competent supervisors and workers.
4. Written Injury and Illness Prevention program.
5. Written respiratory protection program.
6. Sign-in sheet for all persons entering a "Regulated Area".
7. All documents required by Cal/OSHA or any other regulatory agency having jurisdiction over the work.

3.02 WORK AREA ISOLATION:

Work areas of the will be isolated off from rest of structure.

Contractor shall post danger signs meeting the requirements of Cal/OSHA regulations (8 CCR 1529), and California Health & Safety Code Section 25916 et seq. at any location and all approaches to the location where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted at a distance sufficiently far enough away

from the work area to permit an employee or visitor to read the sign and take necessary protective measures to avoid exposure or as required by Cal/OSHA.

Seal off all drains and other building openings between the work area and the interior of the building with 6 mil polyethylene and duct tape in accordance with Cal/OSHA requirements. The Contractor shall inspect all building openings at the beginning of each day and periodically during the work period.

The Contractor shall limit access to the work area to his personnel, emergency services personnel and Authorized Visitors. A log book of all visitors who enter the work area must be kept recording the name, affiliation, time in and time out for each visitor.

Adequate portable fire extinguisher equipment shall be maintained within the work area as defined by OSHA and/or local fire department officials. Fire extinguishers shall be fully charged and currently certified as required by law. Fire extinguishers shall be spaced throughout the roof to be readily accessible in the event of a fire.

3.03 REMOVAL:

When cleaning roof surface, do not use tools or devices which would cause debris to become airborne i.e., brooms, blowers, high pressure rinse, etc. Asbestos-containing dust and debris shall be maintained in wetted condition while being disturbed. No dry sweeping of ACRM contaminated will be allowed.

Adequately wet ACRM with amended water prior to the initiation of the removal process. Amended water shall be applied periodically during the work period to suppress dust in keeping with Cal/OSHA requirements.

The wetting solution shall be applied with low-pressure equipment or a water hose with a shut-off nozzle to avoid displacement and dispersal of asbestos fibers.

Contractor shall protect roof mounted equipment and cables within raceways.

All asbestos-containing roofing materials will be carried to the edge of the roof where off loading and transport will take place by means of a hoist, ramp, crane, or forklift. No dropping of ACRM from the roof will be permitted.

Carefully lower properly wetted asbestos-containing material that has been removed in units or sections to the ground without dropping or throwing into the designated receptacle.

A waste chute shall not be used for offloading of ACM roofing.

While still wet, roofing debris must be placed into plastic lined and properly labeled disposal containers.

At the end of each work shift, no loose ACRM debris shall remain on the roof.

3.04 DISPOSAL:

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE ULTIMATE DISPOSAL OF ASBESTOS WASTES AT AN APPROVED DISPOSAL SITE ACCORDING TO APPLICABLE REGULATIONS. This will include preparation and distribution of Non-Hazardous Waste Manifests with the signature approval of the Building Owner.

Copies of all waste manifests and disposal receipts shall be submitted to the Building Owner as a close-out submittal.

3.05 CLEANUP:

Remove all visible accumulations of asbestos material and debris. Wet clean and HEPA vacuum all substrates within the work area. Clean all dust from roof elements upon completion of work.

END OF SECTION