

**ASBESTOS IN ROOFING SYSTEMS
WORK PRACTICES AND DISPOSAL IN
ASSOCIATION WITH ROOFING PROJECTS**

1.0 GENERAL

1.1 SUMMARY

- A. The following procedures apply to the project manual and drawings for asbestos in roofing projects and shall be incorporated into all contract documents of the project.
- B. The Contractor's responsibilities shall include providing competent supervision, labor, materials, equipment, transportation, permits, personnel monitoring, etc., required to remove and dispose of asbestos containing and asbestos contaminated roofing materials such as but not limited to asphalt roof coatings, flashing, cements, and mastics. The Contractor shall adhere to all provisions in these Technical Specifications (TS), and comply with the latest federal, state and local agency requirements governing worker safety, removal, disposal and emission standards for asbestos abatement.
- C. Work covered by this section includes the handling of non-friable materials containing asbestos, procedures, and equipment required to protect workers and the environment from airborne asbestos fibers during the work described. Existing roofing and flashing materials, which are to be removed as part of this project, have been determined, by testing, to contain asbestos. Reports of such testing are available for inspection at the office of the Idaho Division of Public Works (DPW).
- D. The Contractor shall provide a "competent person" as defined in 29 CFR 1926.1101 and at least one trained NESHAP person onsite during the removal. In addition, the American Red Cross or equivalent shall certify at least one of the Contractor's site crewmembers at each work area have been trained in basic first aid and CPR.
- E. Dimensions, quantities and locations are approximate, included solely to provide general information to the Contractor. The Contractor is responsible for removal of all asbestos containing materials (ACM) specified herein without regard to accuracy of quantity recorded. The Contractors shall visit the site and familiarize themselves with the work and conditions under which the work is to be performed.
- F. Prior to commencing work the Contractor's "competent person" will identify asbestos hazards in the workplace, select the appropriate control strategy, take corrective measures to eliminate such hazards, and conduct an inspection to determine that the roofing material is intact and will likely remain intact during removal and disposal.

- G. Work includes cleaning and decontaminating all areas where asbestos containing materials (ACM) have been removed, proper transportation and disposal of all ACM waste. Contractor is responsible to use a landfill permitted to accept asbestos.
- H. The Contractor will submit an EPA-NESHAP "Courtesy" Notification of Renovation or the required 10-day Notification of Renovation if roof is not intact.
- I. The Contractor shall not proceed with on-site activities until the Owner's Representative, DPW Project Manager, and the Contractor have jointly inspected the area for pre-existing damage.

1.2 SCOPE OF WORK

- A. The scope of work requires the Contractor to complete all abatement work, meet the TS criteria for removal, cleanup and disposal. The Contractor's responsibilities include removal, transportation, and receipt for disposal at a state-approved landfill of all identified asbestos containing or contaminated materials (ACM).
- B. The Contractor is responsible for securing openings or access points to all abatement work areas. The Contractor will be required to isolate all roof level openings to the building including HVAC air intakes or shut down the heating and ventilation system. A drop sheet of 6-mil poly shall be placed on the ground around the building to protect the landscape and to facilitate clean up of any debris that may fall from the roof during removal.
- C. The Contractor shall conduct all work in a safe and professional manner insuring that the building occupants, workers, environment and the public are not exposed to hazardous levels of air borne asbestos. The Contractor will be required to make restitution for any and all damages caused by abatement activities to any of the building's components and systems.
- D. All asbestos-containing materials listed are subject to Class II removal requirements as defined by 29 CFR 1926.1101. The Contractor shall ensure that the following work practices are followed:

Engineering Controls for non-friable ACM: roof coatings, cements, and mastics:

1. Isolate all roof level heating and ventilation air intake sources or shut down the system.
2. Roofing material shall be removed in an intact state to the extent feasible.
3. Wet methods shall be used to remove roofing materials that are not intact or that will be rendered not intact during removal unless such wet methods are not feasible, or will create safety hazards.

4. Cutting machines shall be continuously misted unless a competent person determines that misting substantially decreases worker safety.
5. A HEPA dust collector shall collect all dust resulting from the cutting of a power roof cutter or HEPA vacuum along the cut line or by gently sweeping and then carefully and completely wiping up the still-wet dust and debris left along the cut line. Dry sweeping is never allowed.
6. Asbestos-containing material that has been removed from a roof shall not be dropped or thrown to the ground. The material is to be carried or passed to the ground by hand or lowered to the ground via covered, dust-tight chute, crane or hoist. All removed material must be down from the roof no later than at the end of the work shift. While the material remains on the roof it shall be kept wet.
7. Upon being lowered, unwrapped material shall be transferred to a closed receptacle in such manner so as to preclude dispersion of dust.

E. Alternative Work Practices and Controls. The Contractor may use different or modified engineering and work practices if the following provisions are used.

1. The employer demonstrates by providing data representing past employee exposure using similar removal methods for similar conditions under which will be used and that employee exposure will not exceed the PELs under any anticipated circumstances.

F. Respirator Protection General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this paragraph. Respirators must be used during:

1. Class II work when ACM is not removed in a substantially intact state.
2. Class II and III asbestos work that is not performed using wet methods, except for removal of ACM from sloped roofs when a negative-exposure assessment has been conducted and ACM is removed in an intact state.
3. Class II and Class III asbestos work for which a negative-exposure assessment has not been conducted.
4. The Contractor must implement a respiratory program in accordance with OSHA 29 CFR 1910.134.

G. Employee Information and Training.

1. The employer shall, at no cost to the employee, institute and ensure employee participation a training program for all employees who are likely to be exposed in excess of a PEL and for all employees who perform Class I through IV asbestos operations.
2. Training shall be provided prior to and at least annually thereafter. Class II work training shall include at a minimum the equivalent in curriculum, training method, and length to the EPA's Model Accreditation Program for Workers.

- H. Housekeeping: When vacuuming methods are selected HEPA filtered vacuuming equipment must be used. The equipment shall be used and emptied in a manner that minimizes the re-entry of asbestos into the workplace.

1.2.1 Asbestos Abatement

- A. Removal of roof materials will utilize the Work Practices and Engineering Controls for Class II Work. Removal procedures will be conducted in accordance with OSHA 29 CFR 1926.1101 and this Specification. Contractor personnel removing or disturbing ACM will be required, at a minimum; to wear a HEPA filtered negative pressure air purifying respirator unless a Negative Exposure Assessment (NEA) is provided demonstrating fiber control during removal of ACM materials.

If the NEA and employee monitoring are below the PEL of 0.1 fibers per cubic centimeter (f/cc) 8-hour TWA, and 1.0 (f/cc) 30-minute excursion limit, with proper work practices, the respirator program with medical surveillance will not apply.

The Contractor shall take necessary precautions to prevent water damage to adjacent areas. The roof surface must be allowed to dry before any placement of new roofing materials can be applied.

- B. Alternatives to these procedures must be submitted via written request to the DPW Project Manager prior to the pre-construction meeting.

1.3 SUBMITTALS

- A. The following shall be submitted to and accepted by the DPW Project Manager prior to the start of the project or commencing work involving asbestos materials.
- B. Contractor's anticipated schedule shall be submitted to the DPW Project Manager with the pre-work submittals.
- C. Provide proof that all permits and notifications have been secured in conjunction with removal, hauling, disposal and that timeliness of such actions meets requirements of federal, state, regional, and local authorities.
- D. Submit documentation that workers are currently certified and trained per the requirements of "Class II work activities for ACM roofing removal.
- E. Submit documentation that supervisors are currently certified as an Asbestos Supervisor per EPA 40 CFR 763 or a Competent Person as required by OSHA.

F. The Contractor shall submit post-work project documentation to DPW Project Manager within 10 days of substantial completion of asbestos abatement. Post-work documentation shall include at least the following:

1. All permits and notifications.
2. All waste shipment records.
3. Daily work logs.
4. All air monitoring analytical results.

1.4 JOB CONDITIONS

- A. Substantial completion for this project is defined as when final visual inspection determines each work area is completed and in compliance with the contract documents, federal, state and local regulations.
- B. For each asbestos abatement area under these specifications, asbestos abatement shall be scheduled and completed prior to all other construction activities that could have an adverse affect on the ACM. Damage to the building or adjacent properties, etc. caused by the Contractor will be repaired at no additional expense to owner.
- C. Work areas shall be secured or under the direct control of the Contractor at all times. Securing work areas includes locking access, removing any safety hazards, and securing all waste and equipment.

1.5 QUALITY CONTROL

- A. Contractor is responsible for performing all personal air monitoring as required by OSHA 29 CFR 1910.
 1. A “competent person”, “certified asbestos supervisor”, “NIOSH 582 Reader” or accepted equivalent training with a minimum of six (6) months experience is required for the Contractor's monitoring technician.
 2. An accredited laboratory shall analyze all samples taken by the Contractor. The lab is subject to acceptance by the Owner and DPW Project Manager. Analytical results shall be made available to the DPW Building Inspector within 24 hours of sample completion.
 3. Control limit for workers and inside the work area shall be one half of the PEL ($0.1 \text{ f/cc} \times 0.5 = 0.05 \text{ f/cc}$) times the respiratory protection factor of the least protective respirator used. $[(\text{PEL})(0.5)(\text{RPF})] = \text{Control Limits}$.
- D. Work Practices as a Function of Airborne Fiber Concentrations:
 1. Work Practices and Engineering Controls for Class II ACM removal procedures include misting water, wet sweeping and HEPA vacuums. The usage of

protective equipment (respirators, disposal coveralls) is continually used throughout the process for removal of non-intact roofing materials.

2. Should the air samples reach or exceed the control limit, abatement work must stop, change respirators (if necessary) and initiate cleaning. Abatement shall not resume until the fiber concentration is reduced below the control limit and the DPW Project Manager authorizes resumption of the abatement work.

1.6 APPLICABLE CODES, REGULATIONS, AND PUBLICATIONS

- A. All applicable codes, regulations, and standards have the same force and effect, and are made a part of the contract documents as if copied directly into the contract documents, or as if published copies are bound herewith. The Contractor is responsible and liable for full compliance with all applicable federal, state, and local regulations.

2.0 PRODUCTS

2.1 EQUIPMENT AND MATERIALS

- A. The Contractor shall use equipment and materials as listed below and any deviations shall be submitted to the Project Monitor for acceptance. The applicable Material Safety Data Sheet (MSDS) or U.S. Department of Labor Approval must accompany all such submittals. The Contractor shall allow the DPW Project Manager time to inspect any items used during the project for suitability and condition.
- B. The Mine Safety and Health Administration (MSHA) or National Institute for Occupational Safety and Health (NIOSH) must approve all respirators.
 1. Use, at a minimum, negative pressure half face respirator equipped with HEPA filtration cartridges during non-intact ACM roof removal, manual non-friable, or cut methods. Respiratory protection shall be increased as required by OSHA 29 CFR 1926.1101 Construction Standard when daily air monitoring indicates.
- C. Provide goggles to personnel engaged in asbestos operations when the use of a full-face respirator is not required.
- D. Provide “danger” signs and labeled barricades at all approaches to work areas. Locate signs where personnel may read the sign and take the necessary protective steps required before entering the area. Provide labels and affix to all asbestos materials, scrap, waste, debris, and other products contaminated with asbestos.
 1. Danger signs should conform to OSHA 29 CFR 1910.145(d)(4).
 2. Warning Labels should be sufficient size to be clearly legible and read:

**DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
BREATHING ASBESTOS DUST MAY
CAUSE SERIOUS BODILY HARM**

3. Warning Signs should be sufficient size to be clearly legible and read:

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

- E. Polyethylene barriers (sheeting) shall be 6-mil thickness and sealed with duct tape as necessary to prevent ACM contamination or water from the interior of the building during the course of work. Contractor shall stop work and immediately repair any tears or punctures in sheeting to prevent entry to the building.

3.0 EXECUTION

3.1 INSPECTION

- A. While performing asbestos related work, the Contractor shall be subject to on-site inspection by the DPW Building Inspector who may be assisted by safety or health personnel. Work found to be in violation of this specification, as determined by the Inspector, will be given a stop work immediately order and remain in effect until the violation is resolved. Standby time, additional monitoring, and laboratory analyses required to resolving the violation shall be at the Contractor's expense.

Satisfactory completion of these procedures consist of the following:

1. Visual inspection indicating that no enclosure breaches have occurred.
 2. Roof removal activities minimize interference with non-roofing activities and placards and asbestos barrier tape providing reasonable security measures denying access to personnel not involved in roofing removal.
- B. DPW Building Inspector finding the work area not ready for inspection while performing a clearance visual inspection will hold the Contractor and not the Owner responsible for any additional expenses incurred by the Inspector.

3.2 PREPARATION OF WORK AREAS

A. Work Area Preparation

1. The Owner will provide electric power and water sources, if applicable, in the area where abatement is taking place. The Contractor is responsible for safe installation of all temporary utilities per applicable code requirements. See OSHA requirements under the construction standard.

3.3 ASBESTOS REMOVAL

- A. Spray asbestos material with water using equipment capable of providing a "mist" application to reduce release of fibers. Spray asbestos material repeatedly during work process to maintain wet condition and minimize asbestos fiber dispersion. Removed ACM shall be lowered to disposal area minimizing breakage and fiber release. Dropping ACM to a lower level is not permitted. All ACM removed shall be cleaned up and secured by the end of each workday. No debris, unsecured equipment, tools, etc. shall remain on the work site past the end of each workday.

Removal surfaces must be thoroughly cleaned with wet sweeping (no dry sweeping will be allowed) until no traces of ACM can be seen and allowed to be thoroughly dry before new roofing materials are applied.

3.4 WASTE REMOVAL FROM THE WORK AREA

- A. Gross asbestos debris shall be removed and cleaned up by the end of each workday. All residues shall be removed by wet sweeping or HEPA vacuuming and disposed of as asbestos containing material.
- B. All intact ACM removed from the work area will be placed (via chute or lowered) directly from the roof into the disposal transport container i.e. truck bed which will be lined or covered, at a minimum, with one (1) layer of 6-mil polyethylene.
- C. All non-intact ACM removed from the work area will be placed (via chute or lowered) directly from the roof into the disposal transport container i.e. truck bed which will be lined and sealed with two (2) layers of 6-mil polyethylene.
- D. Enclosed disposable chutes will be required to have an additional water mist spray directly at the top of the chute for work greater than 50 feet from the ground. Forklifts and cranes can also be used for safe handling of materials from the roof to ground.

3.5 CLEANUP OF WORK AREAS

- A. During this work the surfaces being cleaned shall be kept wet. During cleaning critical barriers will remain in place and HVAC systems shall remain shut down, locked-out and sealed. Project Monitor must be notified to any deviation from these procedures.

Clean all other surfaces in the work area and any other contaminated areas with water and/or with HEPA vacuum equipment. After cleaning the work area, allow surfaces to dry completely. The DPW Building Inspector will perform a visual inspection to ensure that the work area is ACM free. Sealed containers and equipment used shall be included in the clean-up and removed from work areas.

If project performance is not satisfactory as determined by the DPW Building Inspector, the Contractor will re-clean all surfaces.

3.6 WASTE DISPOSAL

- A. Transport labeled and sealed containers, either enclosed with two layers of 6-mil polyethylene sheeting or covered for disposal to the authorized site. Procedures for transport and disposal shall comply with 40 CFR 61 Subpart M (NESHAP); 49 CFR Subchapter C (HMTA); and state, regional and local standards and regulations.
- B. Submit Waste Shipment Record (WSR) or documentation of disposal at the landfill.

3.7 REPAIR OF DAMAGE

- A. As part of the inspection relative to substantial completion, the DPW Building Inspector, and Owner will examine the project for damages. The project will not be considered substantially complete until all damaged items have been corrected to the satisfaction of the DPW Building Inspector and Owner.

3.8 RE-ESTABLISHMENT OF THE WORK AREA AND SYSTEMS

- A. Re-establishment of the work area shall occur after the visual inspection has been performed and documented to the satisfaction of the Owner, Owner's Representative and the DPW Building Inspector.
- B. Polyethylene barriers and tape shall be removed at this time and disposed of as asbestos contaminated waste.
- C. The Contractor, Owner, Owner's Representative, and the DPW Building Inspector shall visually inspect the work area for any remaining visible residue. Evidence of contamination will necessitate additional cleaning requirements.

- D. The Contractor will repair all areas of damage not scheduled for renovation or demolition that occurred as a result of abatement activities.

3.9 MEDICAL SURVEILLANCE

- A. The Contractor must provide medical surveillance to employees or agents that may be exposed to asbestos levels in excess of 0.10 f/cc during the abatement project.
- B. Medical Surveillance shall include at a minimum:
 - 1. A work/medical history to elicit symptomatology of respiratory disease.
 - 2. A chest X-ray evaluated by a Certified B-reader.
 - 3. A pulmonary function test interpreted by a Certified Pulmonary Specialist.
 - 4. A physician's exam of the employee.

3.10 ALTERNATIVE PROCEDURES

- A. Procedures described in this specification are to be utilized at all times. If specified procedures cannot be followed, a written request to the DPW Project Manager providing details of the problem encountered and recommended alternatives must be submitted. These alternative procedures shall provide equivalent or greater protection than procedures that they replace.