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Forms (At end of this specification)
ASBESTOS ABATEMENT SPECIFICATION

I. The Project consists of

A. Project Location: TBA

B. Project Administrator: TBA

C. Asbestos Project Manager:

University of Colorado at Boulder
Department of Environmental Health and Safety
1000 Regent Drive, Campus Box 375
Boulder, CO 80309-0375
(303) 492-6168/ Fax (303) 492-2854
Michael Yanker

D. Designer/Air Monitoring Specialist: TBA

II. Contract Documents dated September 18, 2000, and were prepared by Michael Yanker, Division of Environmental Health and Safety

III. The University will use this specification where the work consists of 260 linear feet on pipes, 160 square feet on other surfaces, the project consists primarily of Category I, Non-Friable ACM Floor time and/or Mastic, the project be one of small scale/short duration, and be estimated at less than $25,000. The removal process will be in accordance with local, state, and/or federal regulations, including but not limited to all of the requirements of AQCC Regulation 8, 29 CFR 1926.1101 (OSHA), EPA (NESHAP) 40 CFR Part 61, and this Asbestos Abatement Specification.

A. During the course of the renovations, should materials be discovered which were not previously presented as Asbestos Containing Materials (ACM), or should the renovation scope of work expand beyond that as defined in Asbestos Abatement Specification, Schedule of Asbestos Containing Materials, the Contractor(s) is required to cease with operations which may disturb these materials, until such a time that these ACM materials are inspected and/or assessed by the EH&S Asbestos office for impact to the renovations.
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B. Locations, approximate quantities affected, approximate areas affected have been offered as an informational tool, and are estimates observed at the time of assessments and development of this document. Quantity determinations are the responsibility of the Contractor, and therefore, it is recommended that field verification made by the Contractor, prior to Request For Proposal Submittal.

C. As the Architectural Plans do not necessarily indicate the Asbestos Abatement Scope of Work which may be affected by the renovation Scope of Work, the Asbestos Abatement Scope of Work, as approved by the University, is located in Asbestos Abatement Specification, Schedule of Asbestos-Containing Materials at the end of this section.

SCHEDULE OF ASBESTOS-CONTAINING MATERIALS

<table>
<thead>
<tr>
<th>Item Location</th>
<th>Estimated Quantity</th>
<th>Asbestos Content</th>
<th>Other Components</th>
</tr>
</thead>
</table>

I. Refer to attached additional Owner Submittal for specific analysis (if applicable) Specific analysis for Asbestos Containing Materials is available through the UCB Environmental Health & Safety Asbestos Coordinator. To review this information, contact the EH&S Asbestos office for arrangements.

A. Specific AHERA RATINGS have been applied for the type of Asbestos Containing Materials from the following table:

<table>
<thead>
<tr>
<th>AHERA RATINGS</th>
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<tr>
<td>Rating</td>
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Asbestos Forms: C= Chrysotile, A= Armosite
IV. Scope of Work Areas are defined as:

A. Gross Removal within Full-Enclosure Area(s) (Requires all elements of local, state, and federal regulations, including but not limited to AQCC Regulation 8, 29 CFR 1926.1101, etc.)
B. Gross Removal within Mini/Secondary-Enclosure Area(s)
C. Glove Bag Removal within Mini/Secondary-Enclosure Area(s)
D. Component Removal within Mini/Secondary-Enclosure Area(s)
E. Gross Removal within Mini/Secondary-Enclosure Area(s) (Floor Tile/Mastic, AQCC Regulation 8, Appendix B)
F. O&M, all activities defined within these Asbestos Abatement Specifications, including but not limited to patching (and wrapping unprotected insulation), repairing, cleaning, labeling, etc., within regulated area(s).

V. Request for Proposal will be defined on a project by project basis.

VI. Alternates: Alternate Request for Proposal Work Areas will be defined on a project by project basis.

VII. Areas which have been reviewed and assessed, but will not be within the scope of the Asbestos Abatement Specification, will be defined on a project by project basis.

A. During a normal inspection, and more specifically when non-destructive sampling techniques are employed, it is not within the scope of the inspection to remove surface materials to inspect the structures and/or materials which may be under the surface, i.e., within or under concealed areas such as under carpet, under sub-floors, within chases, walls, crawlspaces, tunnels, etc., to remove suspect Asbestos Containing Material(s), to move and/or sample electrical wiring which has not been ‘locked out’, etc. All said areas are to be assumed as containing >1.0% Asbestos, until such a time that these areas are made accessible, and/or rendered safe so that sampling can be performed.

1. Caution shall be used during all renovation or demolition which is discovered to contain or is suspected of containing an Asbestos Containing Material (ACM). Under local, state and/or federal regulations, should such an event occur, the Client and/or Contractor is required to cease operations, which may effect this (these) material(s) until an inspection is concluded and a determination is made by an AHERA and State Certified Asbestos Building Inspector.

2. Disturbance of these areas could create a potential health hazard.
Section 101: Examination of Site

I. Failure to visit the site will in no way relieve any Contractor from the necessity of furnishing materials or performing work that may be required to complete work in accordance with the contract documents without additional cost to the University. Request for Proposal will be accepted from only those Bidders who attend the Pre-Bid conference at bid site, which will be indicated on a project by project basis.

Section 102: Work Under Other Contracts

I. The Work will be constructed under a single prime contract with the Contractor.

II. Separate Contractor(s): The University may award a separate contract(s) for performance of certain construction operations at the site. Those operations may be conducted simultaneously with the work under this Contract. The separate contract(s) may include the following:

A. Contract: At this time, a separate Industrial Hygienist (IH) contract has been awarded to: TBA to assist with the Asbestos Abatement Specification, and for Air Monitoring- Test Laboratory Services.

1. The IH firm will follow all requirements as outlined in the UCB Specification for Industrial Hygiene Consulting Services.

III. Contractor shall cooperate fully with separate contractors so that work under those contracts may be carried out smoothly, without interfering with or delaying work under this contract.

Section 103: Work Sequence

I. The work will be conducted in phases.

A. Phase: Work of the phases shall be substantially complete, ready for reconstruction prior to that phase of the Contract, and in accordance with the following Project Schedule:

1. a. Request for Proposal
   b. Work Schedule
   c. Mobilization
   d. Asbestos Abatement
   e. Substantially complete work
   f. Demobilization will be directed on a project basis.

2. Additive/ Deductive Alternate Asbestos Abatement, where applicable.

3. Unit Pricing, Asbestos Abatement, where applicable.
Section 104: Asbestos-Containing Materials

I. The work of this contract involves activities that will disturb asbestos-containing Materials (ACM). The location and type of ACM known to be present at the work-site is set forth in the drawings and/or the Asbestos Abatement Specification, Schedule of Asbestos Containing Materials, which will be directed on a project by the project basis.

Section 105: Asbestos Health Risk

I. The disturbance or dislocation of ACM may cause asbestos fibers to be released. Apprise all workers, supervisory personnel, subcontractors and consultants who will be at the job site of the seriousness of the risk and the proper work procedures which must be followed.

II. Where in the performance of the work, workers, supervisory personnel, subcontractors, consultants may encounter, disturb, or otherwise function in the immediate vicinity of any identified ACM, take appropriate continuous measures as necessary to protect all building occupants from the risk of exposure to airborne asbestos. Such measures shall include the procedures and methods described herein, and compliance with regulations of applicable federal, state and local agencies.

Section 106: Contractor Use of Premises

I. Limit use of the premise to work in the areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the work is indicated.
   A. Owner Occupancy: Allow for owner occupancy and use by the public.
   B. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Owner, the Owner’s employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

II. Use of the Existing Building: Maintain the existing building in a weather tight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during construction period.
A. Smoking: Smoking or open fires will not be permitted within the building enclosure or on the premises.

B. Toilet Rooms: Except for toilet rooms designated for use by the Contractor’s personnel at the time of the Pre-Construction Conference, use of existing toilets within the building, by the Contractor’s personnel, will not be permitted.

C. Floor Drains and Sinks: Except for those floor drains and sinks designated for the use by the Contractor, the use of other existing sinks and drains for the use of shower waste water and cleaning of equipment is strictly prohibited.

Section 107: Occupancy Requirements

I. Full Owner Occupancy: The Owner may occupy the site and existing building during the entire construction period. Cooperate with the owner during construction operations to minimize conflicts and facilitate owner usage. Perform the Work so as not to interfere with the Owner’s operations.

A. The Asbestos Project Manager/Designer will prepare a certificate of Substantial Completion for each specific portion of the work to be occupied prior to Owner occupancy.

Section 108: Applications for Payment

I. Each application for payment shall be consistent and in accordance with Contractor Contract, as certified by the Asbestos Project Manager/Designer and paid for by the owner.

Section 109: Submittals

I. Before Start of Work: Submit one copy each to the following: UCB Environmental Health & Safety (EH&S) Asbestos Coordinator, Asbestos Project Manager/Designer (when applicable) for review. Do not start until these submittals are returned with the approval of the EH&S Asbestos Coordinator, Asbestos Project Manager/Designer, and the University Project Administrator.

A. Plan of Action
B. Contingency Plans
C. Project Directory
D. Notifications: copy of notification sent to other appropriate entities and agencies at the work site, and to emergency service agencies will include:
   1. CDPHE for all required notifications and permits
   2. Boulder Fire Department which explicitly shows work area, staging and schedule
   3. University Police Department

*Note: Each notification will include a 24/7 emergency phone number and contact person.*
University of Colorado at Boulder
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E. Pre-Construction Inspection: Report on inspection carried out as required by this section. Include copies of all photographs, videotapes, etc.
F. Contractor’s Construction Schedule.
G. Accreditation: Submit evidence in the form of training course certificates for the General Superintendent, Supervisors, and Forepersons as asbestos abatement supervisors in accordance with AHERA and CDPHE requirements. Submit evidence in the form of training course certificates that each worker is trained as an asbestos abatement worker in accordance with AHERA requirements along with CDPHE certifications for each worker assigned to the project.
H. Resume: Submit resume of General Superintendent/Supervisor.

II. Submit Daily: Provide two (2) copies information purposes of all documents indicated in the following subsections to Project Administrator by end of the next working day they are received by the Contractor.
A. Section on Record Keeping
B. Section on Special Reports

III. Project Close-out: Submit two (2) copies for information purposes of all documents indicated in the following sections at final close-out of project as a project close-out submittal.
A. Section on Record Keeping
B. Section on Special Reports

IV. Before Start of Work submit the following to the EH&S Asbestos Coordinator and Asbestos Project Manager/Designer for review. Do not begin work until these submittals are approved and returned.
A. Material Safety data Sheet: Submit Material Safety Data Sheets, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) Include at a minimum the following:
   2. Mastic Remover solvent material.
   3. All other MSDS for any other hazardous materials or chemicals that may be used for each project.
Plan of Action

I. Prepare a detailed plan of the procedures proposed for use in complying with the requirements of this specification.

A. Include in the plan:
   1. The location and layout of decontamination areas.
   2. The sequencing of asbestos work along with the interface of trades involved in the performance of work.
   3. Methods to be used to assure the safety of building occupants and visitors to the site.
   4. Disposal plan including location approved disposal site, packaging of removed asbestos debris and a detailed description of the methods to be employed to control pollution.

B. Expand upon the use of portable HEPA ventilation system, closing out of the building’s HVAC system, method of removal to prohibit visible emissions. Provide calculations for cubic feet of work area and number of air changes with number of units.

C. Additionally, the Plan of Action is to include all the requirements of “Project Design” in accordance with AQCC Regulation 8, Part B; "means the preparation of plans, specifications, project procedures, containment design/placement, descriptions of engineering controls, and shop drawings for an asbestos abatement project or response action.
   1. It shall include an accurate and detailed scope of work, quantities of material to be removed, removal methods, and air exchange calculations.

D. Drawings shall include locations of ACM to be abated, location of the documentation unit, waste load out, negative air units, air intake and exhaust, and emergency exits when applicable.

E. Prior to the start of any asbestos abatement involving 1,000 linear feet on pipes, or 3,000 square feet on other surfaces, a written project design shall be developed by a CDPHE certified project designer under these regulations.
   1. A copy of the project design shall be submitted to the EH&S Asbestos Coordinator for review. Work shall not commence until such design is approved with out changes.
   2. A signed copy of the project design shall be available on site at all times during the abatement activities for review by inspectors, the Asbestos Project Manager, Air Monitoring Specialist, Owner, Project Administrator, and Designer.
II. Before Start of Work: Submit the following to the EH&S Asbestos Coordinator and the Asbestos Project Manager/Designer for review. Do not start work until these submittals are returned with Asbestos Project Manager/Designer’s approval indicating that the submittal is returned for unrestricted use.

A. Submittals: Submit three (3) copies of the Plan of Action. The EH&S Asbestos Coordinator and Asbestos Project Manager/Designer will retain one each, one will be returned marked with action taken and corrections or modifications required.

B. Do not use, or allow other to use, submittals marked “Not Approved, Revise and Resubmit” at the Project Site or elsewhere where work is in progress.

CONTINGENCY PLAN

I. Prepare a contingency plan for emergencies or any other event that may require breaching of work area containment or modification or abridgement of documentation or work area isolation procedures.

A. Include in this plan procedures for performing electrical and mechanical repairs inside containment after abatement work has begun.

B. Include in plan specific procedures for decontamination or work area isolation in the event of breech of containment or emergency responses.

C. Note that nothing in this Asbestos Abatement Specification should impede safe exiting or providing of adequate medical attention in the event of an emergency.

NOTICES

I. State and Local Agencies, including but not limited to the State of Colorado Department of Public Health and Environment (CDPHE):

II. Send written notification as required by state and local regulations prior to beginning any work.

A. Postmark or Deliver Written Notification as required by Colorado Air Quality Control Division (AQCC) Asbestos Regulations (ACQQ Regulation 8, Part B) to the Asbestos Contact at least 10 working days (or in the case of Courtesy) Notification, as soon as practical) prior to beginning any work on Asbestos-Containing Materials (ACM) that require such notification. Send notification to the following address:
II. Before Start of Work: Submit the following, including but not limited to Notification Applications, Permit Applications Variance Requests and/or Waiver Requests to the EH&S Asbestos Coordinator and Asbestos Project Manager/Designer for review. No submittal to CDPHE or work shall begin until these submittals are returned with the EH&S Asbestos Coordinator’s and Asbestos Project Manager’s/Designer’s written response indicating that the submittal is returned for submittal to the CDPHE and appropriate agencies.

A. Permits, Licenses, and Certificates: For the Owner’s records, submit copies of Permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

B. Notices: Submit notices required by federal, state and local regulations together with proof of timely transmittal to agency requiring the notice.
   1. Evaluation and certification of alternative work procedures or the use of a alternative method (including variance requests), prior to any local, state and/or federal regulatory agency.
      a. Permits: Submit copies of current valid permits required by state and local regulations.
      b. Licenses: Submit copies of all state and local licenses and permits necessary to Carry out the work of this contract.

AIR MONITORING - TEST LABORATORY SERVICES

I. The Owner has contracted for all air monitoring. Air monitoring may be conducted, inside, outside, or both locations of the work area during the work, as well as clearance sampling at the end of the project.

A. All air monitoring will be conducted in accordance with State and Federal regulations as well as University "Specification for Industrial Hygiene Consulting Services, Asbestos Abatement".

B. All OSHA-required personnel air monitoring is the responsibility of the Industrial Hygiene Consulting Firm, who will be responsible for documenting the required analytical turnaround times and posting of air
monitoring results for Contractor personnel. The firm will coordinate with the Asbestos Abatement Contractor for personal sampling or any other purpose. The AMS will supply daily Project surveillance and air-monitoring results to verify the Asbestos Abatement Contractor is complying with all applicable OSHA, EPA, CDPHE and local regulations as well as the current UCB Asbestos Abatement Project Specifications. Daily written reports shall be posted, and furnished to the Asbestos Abatement Contractor, EH&S Asbestos Coordinator and Asbestos Project Manager/Designer/Air Monitoring Specialist prior to the commencement of the next shift.

II. Outside Work Area: If any air sample taken outside of the Work Area exceeds established Baseline(s) or MAAL of 0.01 f/cc, PCM, immediately and automatically stop all work except corrective action. The asbestos Project Manager/Designer will determine the source of the high reading and so notify the Contractor and EH&S Asbestos Coordinator in writing. If the high reading was the result of a failure of Work Area isolation measures isolation measures initiate the following actions:

A. Immediately erect new critical barriers to isolate the affected area from the balance of the building. Erect Critical Barriers at the next existing structural isolation of the involved space (e.g. wall, ceiling, floor).
B. Decontaminate the affected area.
C. Require that respiratory projection be worn in affected area until area is cleared for re-occupancy.
D. Leave Critical Barriers in place until completion of work and insure that the operation of the pressure differential system in the work area results in a flow of air from the balance of the building into the affected area.
E. If the exit from the clean room of the personnel decontamination unit enters the affected area, established a decontamination facility consisting of a Shower Room and Changing Room at entry point to affected area.
F. After Certification of Visual Inspection in the Work Area remove critical barriers separating the work area from the affected area. Final air samples will be taken within the entire area.

III. Affect on Contract Sum:

A. Complete corrective work with no change in the Contract Sum (adjustment may be in the form of a deduction) if high airborne fiber counts were caused by Contractor’s activities, as follows:
   1. For any and all Test Laboratory Services and Consultant Services, additional PCM and/or TEM confirmation analysis, per Work Area which do not meet the Asbestos Abatement Specification Criteria, and are determined to be caused by Contractor’s activities.
2. For any and all costs incurred by the Owner, Occupants, Owner Employees, Work under other Contracts, etc., per Work Area which do not meet the Asbestos Abatement Specification criteria, and are determined to be caused by Contractor’s activities.

IV. The Contractor may conduct his own air monitoring and laboratory testing. If selected, the cost of such air monitoring and laboratory testing shall be at no additional cost to the Owner, and will be in compliance with all local, state and/or federal regulations. AQCC Regulation 8 requires that an Air Monitoring Specialist, independent of the Abatement Contractor, obtain all required air monitoring samples, i.e., final clearance air monitoring, negative air exhaust inside of building, and/or MAAL air monitoring. As described, ‘any’ air monitoring performed in conjunction with or adjacent to Abatement Project is considered MAAL air monitoring. Should such air monitoring be requested, prior authorization from the EH&S Asbestos Coordinator, Asbestos Project Manager and Project Administrator shall be obtained, and the results shall be furnished to the Owner, Project Administrator, EH&S Asbestos Coordinator Asbestos Project Manager/Designer, and Air Monitoring Specialist within 24 hours.

STOP WORK

I. If the Owner, Project Administrator, EH&S Asbestos Coordinator, Asbestos Project Manager/Designer or Air Monitoring Specialist presents a written stop work order, immediately and automatically conform to that stop work order, while maintaining temporary enclosures and pressure differential. Do not recommence abatement work until authorized in writing by Owner/Project Administrator/ Asbestos Project Manager/Designer, and EH&S Asbestos Coordinator.

II. Immediately initiate the following actions after being presented with a stop work order:
   A. Cease all asbestos removal activities, or any other activities that disturbs ACM.
   B. Repair any fallen, ripped or otherwise failed work area isolation measures.
   C. Maintain in operation all work area isolation measures.
   D. Maintain all worker protections.
   E. Fog the air in the work area with a mist of amended water to reduce airborne fiber levels.

III. Do not recommence work until authorized in writing by the Owner/Project Administrative/Asbestos Project Manager/Designer and EH&S Asbestos Coordinator.
IV. Affect on Contract Sum:

A. Complete corrective work with no change in the Contract Sum (adjustment may be in the form of a deduction) if high airborne fiber counts were caused by Contractor’s activities, non-compliance with the Asbestos Abatement Specification, etc., as follows:

1. For any and all Test Laboratory Services and Consultant Services, additional PCM and/or TEM confirmation analysis, etc., per Work Area which do not meet the Asbestos Abatement Specification criteria, and are determined to be caused by the Contractor’s activities.

2. For any and all costs incurred by the Owner, Occupants, Owner Employees, Work under other Contracts, etc., per Work Area which do not meet the Asbestos Abatement Specification criteria, and are determined to be caused by Contractor’s activities.
# STOP WORK ORDER

<table>
<thead>
<tr>
<th>Building</th>
<th>Work Area/Containment</th>
<th>Material(s)</th>
<th>Quantity(ies)</th>
<th>Type Containment (Full/Mini/Regulated Area)</th>
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</table>

**Stop Work Order**

In accordance with local, state and/or federal regulations, and/or the Asbestos Abatement Specification, the Asbestos Abatement Contractor is hereby ordered to stop work in the aforementioned Work Area. The Asbestos Abatement Contractor is to immediately and automatically conform to this stop work order, while maintaining temporary enclosures and pressure differential. The Asbestos Abatement Contractor is to immediately initiate all of the actions as described in Asbestos Abatement Specification after being presented with a stop work order, as well as any other actions, as deemed necessary by the Owner, Project Administrator, Asbestos Project Manager, and/or Designer, etc. Do not recommence abatement work until authorized in writing by Owner/Project Administrator/Asbestos Project Manager/Designer.

**Stop Work Order Cause**

Stop Work Order was issued due to:

- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

**Stop Work Order Issued By**

**Date Stop Work Issued**

**Date Stop Work Released**
TEMPORARY PRESSURE DIFFERENTIAL AND AIR CIRCULATION SYSTEM

I. HEPA Filters: Provide units whose final filter is the HEPA type with the filter media (folded into closely pleated panels) completely sealed on all edges with a structurally rigid frame.

   A. **Provide ‘new’ HEPA filters** (or Sealed Units) that are individually tested and certified by the manufacturer to have an efficiency of not less than 99.97 percent when challenged with 0.3 um dioctylphthalate (DOP) particles when tested in accordance with the Military Standard Number 282 and Army Instruction Manual 136-300-175A. Provide filters that bear a UL586 label to indicate ability to perform under specified conditions.

   B. ‘New’ Pre-Filter, which protect the final filter by removing the larger particles, are required to prolong the operating life of the HEPA filter.

II. Accomplish the pressure differential by exhausting a sufficient number of HEPA filtered fan units from the work area. The number of units required will depend on machine characteristics, the seal at barriers, and required air circulation. Determine the number of units required for pressure isolation.

III. Vent HEPA filtered fan units to outside of building unless authorized only by the EH&S Asbestos Coordinator in writing.

MINI/SECONDARY-ENCLOSURES AND GLOVEBAGS

I. Work of this section consists of preparing a Regulated Area for work for which there is no negative exposure assessment or that involves drilling, cutting, abrading, sanding, chipping, breaking, or sawing of thermal system insulation or surface material.

II. Glove bag: Remove ACM inside a glove bag according to local, state, and/or federal regulations, including but not limited to ACQQ Regulation 8 and OSHA 29 CFR 1926.1101. Contractor is to install glove bags **only** as they are used.

III. Mini/Secondary Enclosures

   A. A mini enclosure is a small walk-in enclosure which accommodates no more than two persons, and a secondary enclosure will comply with mini enclosure requirements and will accommodate a larger scale project. Provide a fabricated or job-made enclosure of 6 mil. (0.15 mm) plastic or equivalent. Place the enclosure under negative pressure by means of HEPA filtered vacuum or similar HEPA filtered ventilation unit.
1. Temporary Pressure Differential & Air Circulation System: HEPA filtered vacuum cleaner with the vacuum in space outside Mini/Secondary-Enclosure may be used for compliance. Provide a minimum of 8 air changes per hour in the Work Room.

2. All bags are to be transported through the building in clean sealed containers that have never been in asbestos Work Area, Mini-Enclosure or decontamination unit.

IV. Provide a remote personnel decontamination unit for worker decontamination.

V. Sequence of Work: Before beginning work of this sub-section complete the following:
   A. Isolation of area
   B. Construction of a personnel decontamination unit

VI. Work Room: Construct Work Room in the same manner as a Primary barrier fabricated from 6 mil (0.15 mm) sheet plastic. Arrange so that Primary Barrier provides both a Critical and Primary Barrier. Line walls and floor of Work Room with a continuous Secondary Barrier.

VII. Change Room: Provide an approximately 3 feet by 3 feet (0.9m x 0.9m) Change Room, with additional space required for storage, attached to each Work Room. Fabricate Change Room from 6 mil (0.15 mm) sheet plastic in the same manner as a Primary Barrier. Locate so that access to Work area is though Change Room.

VIII. Signage: At entry to Change Room post a manufactured caution sign displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926.1101.

IX. Mini/Secondary-Enclosure Decontamination: At completion of all work decontaminate the Work and Changing Rooms.

FULL-ENCLOSURES

I. A full enclosure is a walk-in enclosure in accordance with local, state, and/or federal regulations, including but not limited to the stringency of AQCC Regulation 8, 29 CFR 1926.1101 (OSHA), and this Asbestos Abatement Specification.

II. Relative Pressure in Work Area: Continuously maintain the work area at an air pressure that is lower than that in any surrounding space in the building, or at any location in the immediate proximity outside of the building envelope. This
pressure differential when measured across any physical or critical barrier must equal or exceed a static pressure of:

A. -0.02 inches (0.50 mm) of water

B. If at any time the pressure differential when measured across any physical or critical barrier does not equal or exceed a static pressure of -0.02 inches (0.50 mm) of water, immediately and automatically conform to stop work order as described, while maintaining temporary enclosures and pressure differential. Make immediate correction to work area until such a time that the static pressure of -0.02 inches (0.50 mm) of water is maintained. Do not recommence abatement work until authorized in writing by Owner/Project Administrator/Asbestos Project Manager/Designer and EH&S Asbestos Coordinator.

**WORKER PROTECTION-ASBESTOS ABATEMENT**

I. AHERA Accreditation: All workers are to be accredited as Abatement Workers as required by the EPA Model Accreditation Plan (MAP) asbestos abatement worker training (40 CFR Part 763, Subpart E, Appendix C).

II. State and Local License: All workers are to be trained, certified and accredited as required by state or local code or regulation, including but not limited to AQCC Regulation 8 Part B.

III. Training- Class I: Train in accordance with 29 CFR 1926.1101. Provide training for workers who will be performing Class I operations that is equivalent in curriculum, training methods and length to the EPA Model Accreditation Plan (MAP) asbestos abatement worker training (40 CFR Part 763, Subpart E, Appendix C).

IV. Training- Class II Intact (Non-Friable): Provide training for workers who will be performing Class II work on materials that are friable, or will become friable during the work that is the equivalent in curriculum, training method and length to the EPA Interim Final Model Accreditation Plan (MAP) asbestos abatement worker training (40 CFR Part 763, Subpart E, Appendix C).
RESPIRATORY PROTECTION

I. Instruct and train each worker involved in asbestos abatement or maintenance and repair of friable asbestos containing materials (ACM) in proper respiratory use. Require that each worker always wear a respirator properly fitted on the face in the Work Area from start of any operation which may cause airborne asbestos fibers until the Work Area is completely decontaminated. Use respiratory protection appropriate for the fiber level encountered in the work place or as required for other toxic or oxygen-deficient situations encountered.


III. Require that respirators be used in the following circumstances:
   A. During all Class I asbestos jobs.
   B. During all Class II work where the ACM is not removed in substantially intact state.
   C. During all Class II and III work which is not performed using wet methods.
   D. During all Class III jobs where the employer does not produce a “negative exposure assessment”.
   E. During all class IV work performed within the regulated areas where employees performing other work are required to wear respirators.
   F. During emergencies where the airborne asbestos fiber concentration is not known, a self-contained breathing apparatus (SCBA) must be used.

IV. Require that respiratory protection be used at all times that there is any possibility of disturbance of ACM whether intentional or accidental.

V. Require that a respirator be worn by anyone in a Work Area at all times, regardless of activity, during a period that starts with any operation which could cause airborne fibers until the area has been cleared for re-occupancy.

VI. Regardless of Airborne Fiber Levels: Require that the minimum level of respiratory protection used to be half-face air purifying respirators with high efficiency filters.

VII. Do not allow the use of single-use, disposable, or quarter-face respirators for any purpose.
SPECIFIED PERMISSABLE EXPOSURE LIMITS (PEL)

I. Specified Permissible Exposure Limits (PEL): Ensure that no worker is exposed to an airborne concentration of asbestos in excess of the Time-Weighted Average (TWA) limit, and Excursion Limit (EL) set forth below.

A. Time Weighted Average (TWA) Limit- Concentration of airborne asbestos fibers to which any worker may be exposed as an eight (8) hour time-weighted average (TWA) shall not exceed the following.

1. 0.1 fibers per cubic centimeter

B. Excursion Limit (EL)- Concentration of airborne asbestos fibers to which any worker may be exposed as averaged over sampling period at thirty (30) minutes shall not exceed the following.

1. 1.0 fibers per cubic centimeter

CONTRACT CLOSEOUT- ADMINISTRATIVE

I. The Contractor shall file a written notice with the Project Administrator that the work in the opinion of the Contractor, is complete under the terms of the contract.

II. The Project Administrator will complete the Close-out Checklist and Contract Close-out forms, and forward them to the Contractor.

III. The Contractor will complete and date all items indicated to be completed on the Close-out Checklist and Contract Close-out forms. When all items are completed, the Contractor will sign both forms and forward them to the Project Administrator along with a letter stating that all punch list items are complete.

IV. The Project Administrator issues a Notice of Acceptance.

CONTRACT CLOSEOUT- ASBESTOS ABATEMENT

I. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

A. Submit the final payment request with the releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.

B. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
C. Submit a certified copy of Asbestos Project Manager’s/Designer’s final inspection list of items to be completed or corrected, endorsed and dated by the Asbestos Project Manager/Designer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Asbestos Project Manager/Designer.

D. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

II. Re-inspection Procedure: The Asbestos Project Manager/Designer will reinstate the Work upon receipt of notice that the Work, including inspection list items from the earlier inspections. Has been completed, except for items whose completion is delayed under circumstances acceptable to the Asbestos project Manager/Designer.

A. Upon completion or re-inspection, the Asbestos Project Manager/Designer will prepare a certificate of final acceptance. If the Work is incomplete, the Asbestos Project Manager/Designer will advise the Contractor of Work that is incomplete or obligations that have not been fulfilled but are required for final acceptance.

B. If necessary, re-inspection will be repeated.

PROJECT DECONTAMINATION

I. Work includes the decontamination of the air in the Work Area which has been, or may have been contaminated by the elevated airborne asbestos fiber levels generated during abatement activities, or which may previously have had elevated fiber levels due to friable asbestos-containing materials (ACM) in the space.

II. All Air Samples will be taken using aggressive sampling techniques.

A. In each Work Area after completion of all cleaning work, a minimum number of samples in accordance with AQCC Regulation 8 will be taken and analyzed.

B. Release Criteria: Decontamination of the work site is complete when every Work Area sample is at or below the 0.01 f/cc (PCM). If any sample is above this level, then decontamination is incomplete and re-cleaning and re-sampling is required.

III. Visual inspection: Perform visual inspections of the work area along with the Project Manager/Designer/Air Monitoring Specialist on completion of the decontamination process (where required, and at the discretion of the Project Manager/Designer).
A. Contractor will provide an adequate notification, in writing, to and mutually agreeable with the Asbestos Project Manager/Designer/Air Monitoring Specialist of any requests for Visual Inspection(s), or Final Cleaning Visual Inspection(s).

B. Follow inspection procedures in EPA Purple Book

C. Follow inspection procedures in AQCC Regulations 8 standard for visual inspections, requirement for visual inspections, ASTM E1368.

D. Follow inspection procedures in AQCC Regulation 8 standard for visual inspections, requirement for visual inspections, Section III. C.7.a., Clearing Abatement Projects.

IV. Affect on Contract Sum:

A. Complete corrective work with no change in the Contract Sum (adjustment may be in the form of a deduction) if Project Decontamination does not meet the Asbestos Project Manager/Designer/Air Monitoring Specialist of any requests for Visual Inspection(s), or Final Cleaning Visual Inspection(s).

1. For any and all test Laboratory Services and Consultant Services, any additional PCM, TEM, and/or PLM confirmation analysis, etc., per Work Area, which do not meet the Asbestos Abatement Specification criteria.

2. for any and all costs incurred by the Owner, Occupants, Owner Employees, Work under other Contracts, etc., per Work Area which do not meet the Asbestos Abatement Specification criteria, and are determined to be caused by Contractor’s activities.

VISUAL INSPECTION(S)

I. Before Active Abatement begins, complete Pre-Abatement Visual Inspection to confirm that the Contractor has properly prepared and has visually inspected the Work Area. All posting of permits and certifications, installation and proper operation or implementation a of all work practices, decontamination units, waste load out areas, pre-cleaning of surfaces, manometers, disposal containers, integrity of enclosures, water, surfactants, equipment, materials, protective clothing, respiratory protection will be verified at time of inspection. When the area is ready, complete the certification at the end of this section.

II. After final cleaning, perform a complete final visual inspection of the entire work area including: all surfaces, ceiling, walls, floor, decontamination unit, all plastic sheeting, seals over ventilation openings; look for debris from any source, residue on surfaces, dust or other matter. If any debris, residue, dust or other matter is found repeat final cleaning and continue decontamination procedure from that point. When the area is visually clean, no debris, residue, dust or other material is found, complete the certification at the end of this section. Final visual inspection is not complete until confirmed in writing, on the certification.
III. Affect on Contract Sum:

A. Complete corrective work with no change in Contract Sum (adjustment may be in the form of a deduction) if Pre-Abatement Visual Inspection and/or Final Visual Inspection does not meet the Asbestos Abatement Specification criteria, as follows:

1. For any and all Test Laboratory Services and Consultant Services, any additional PCM, TEM, and/or PLM confirmation analysis, etc., per Work Area, which does not meet the Asbestos Abatement Specification criteria.
2. For any and all costs incurred by the Owner, Occupants, Owner Employees, Work under other Contracts, etc., per Work Area which do not meet the Asbestos Abatement Specification criteria, and are determined to be caused by Contractor’s activities.

CERTIFICATE(S) OF VISUAL INSPECTION(S)

I. “Certificate of Pre-Abatement Visual Inspection(s)” is to be completed by the Contractor and certified by the Asbestos Project Manager, Designer, and Air Monitoring Specialist. Submit completed Certificate with Application for Final Payment. Final Payment will not be made until this Certification is executed.

II. “Certificate of Visual Inspection(s)” is to be completed by the Contractor and certified by the Asbestos Project Manager, Designer, and Air Monitoring Specialist. Submit completed Certificate with Application for Final Payment. Final Payment will not be made until this Certification is executed.

SUBSTANTIAL COMPLETION OF ABATEMENT WORK

I. Asbestos Abatement Work is Substantially Complete upon meeting Final Clearance Air Monitoring criteria including submission of:

   A. Certificate of Visual Inspection(s).
   B. Receipts Documenting proper disposal.
   C. Punch list detailing repairs to be made and incomplete items.
REMOVAL OF ASBESTOS-CONTAINING MATERIALS

I. All removal of asbestos containing materials will be in accordance with State of Colorado and Federal regulations and University of Colorado at Boulder specifications.

II. Thoroughly wet ACM to be removed prior to removal and/or tooling to reduce fiber dispersal into the air.
   A. Accomplish wetting by a fine spray (mist) of amended water or removal encapsulant. Saturate material sufficiently to wet to the substrate without causing excess dripping.
   B. Allow time for amended water removal encapsulant to penetrate material thoroughly. If amended water is used, spray material repeatedly during the work process to maintain a continuously wet condition.
   C. If removal encapsulant is used, apply in strict accordance with manufacturer’s written instructions. Perforate outer covering of any installation which has been painted and/or jacketed in order to allow penetration of amended water removal encapsulate, or use injection equipment to wet material under the covering.

III. Mist work area continuously with amended water whenever necessary to reduce airborne fiber levels. Where necessary, carefully strip away while simultaneously spraying amended water or removal encapsulate on the installation to minimize dispersal of asbestos fibers into the air.

IV. Remove saturated ACM in small sections from all areas. Do not allow material to dry out. As it removed, simultaneously pack material while still wet in disposal bags. Twist neck of bags, bend over and seal with minimum three wraps of duct tape. Clean outside and move to Wash Down Station adjacent to Material Decontamination Unit.

V. Evacuate air from disposal bags with HEPA filtered vacuum cleaner before sealing.

DISTURBANCE OF ACM DURING O&M WORK

I. This work is repair or maintenance work that may disturb ACM, but where the OSHA PEL is not exceeded and release of ACM, dust and debris is confined to the immediate location of the disturbance. In the OSHA construction standard (29 CFR 1926.1101), it is Class III work on TSI or Surfacing ACM with negative exposure assessment, Class IV work activities to clean up waste and debris containing ACM and PACM, or Class IV work without a negative exposure
assessment. Class III asbestos work includes repair and maintenance operations, where ACM, including thermal system insulation and surfacing material, is likely to be disturbed. If the quantity of material disturbed exceeds the capacity of one 60 inch x 60 inch glove bag and/or waste bag, or is more than 25 linear feet or 20 square feet, the activity is Class I or II and exceeds the limitation of the work practices in the Asbestos Abatement Specification.

A. Personal Air Samples: Perform work in a manner that maintains airborne fiber levels below the PEL of 0.1 f/cc and that results in a negative exposure assessment as defined by OSHA in 29 CFR 1926.1101.

B. Area Samples: Area sampling will be performed in a manner that maintains airborne fiber levels in the vicinity of the work below the MAAL level of 0.01 f/cc as measured by phase contrast microscopy (PCM) using the NIOSH 7400 method.

II. Should any of the above levels be exceeded, immediately cease asbestos abatement activities until the fault is corrected. Do not recommence work until authorized by the Asbestos Project Manager/Designer.

III. Air Monitoring by Owner: The Owner’s may perform air monitoring to verify that work is being performed in a manner that meets the exposure goals set forth in this Asbestos Abatement Specification.

IV. Air Monitoring required by OSHA is work of the Industrial Hygienist Contractor.

V. Affect on Contract Sum:

A. Complete corrective work with no charge in the Contract Sum (adjustment may be in the form of a deduction) if Disturbance of ACM during O&M Work occurs which does not meet the Asbestos Abatement Specification criteria, as follows:

1. For any and all Test Laboratory Services and Consultant Services, any additional PCM, TEM, and/or PLM confirmation analysis, per Work Area, which do not meet the Asbestos Abatement Specification criteria.

2. For any and all costs incurred by the Owner, Occupants, Owner Employees, Work under the Contracts, etc., per Work Area which do not meet the Asbestos Abatement Specification criteria, and are determined to be caused by Contractor’s activities.

DISPOSAL OF REGULATED ASBESTOS-CONTAINING MATERIAL

I. All waste is to be hauled by a waste hauler with all required licenses from all state and local authority with jurisdiction.
II. Liquid waste: All liquid wastes must be disposed of in accordance with regulatory requirements and manufacturer's instructions. At no time shall any liquid wastes be disposed of in storm sewer systems. Liquid wastes must have the approval and concurrence of the landfill operator prior to disposal.

III. Load all adequately wetted Regulated Asbestos-Containing Material in disposal bags or leak-tight containers. All materials are to be contained in one of the following.

A. Two 6 mil (0.15 mm) disposal bags and placed into a lined truck or dumpster.
B. Two 6 mil (0.15 mm) disposal bags and a fiberboard drum or steel drum.

IV. Protect interior of truck or dumpster with Critical and Primary Barriers.

V. Carefully load containerized waste in fully enclosed dumpsters, trucks or other appropriate vehicles for transport. Exercise care before and during transport, to insure that no unauthorized persons have access to the material.

VI. Warning Signs: During loading and unloading mark dumpsters, receptacles and vehicles with a sign complying with requirements of the EPA NESHAP regulation (40 CFR Part 61).

VII. Do not store containerized materials outside of the Work Area. Take the containers from the Work Area directly to a sealed truck or dumpster.

VIII. Do not transport bagged materials in open trucks. Label drums with same warning labels as bags. Uncontaminated drums may be reused. Treat drums that have been contaminated as Regulated Asbestos-Containing Material and dispose of in accordance with this Asbestos Abatement Specification.

IX. Advise the landfill operator, at least ten days in advance of transport, of the quantity or material to be delivered.

X. At disposal site unload containerized waste:

A. At the disposal site, sealed plastic bags may be carefully unloaded from the truck. If bags are broken or damaged, follow all landfill operator’s instructions and/or return to work site for re-bagging. Clean entire truck and contents.
B. The University of Colorado at Boulder will only accept landfill of asbestos-containing materials at the following sites (not listed by preference) for friable asbestos-containing materials:

1. BFI Tower Road  
   5904 Florence Avenue Northeast  
   Albuquerque, New Mexico 87113  
   (505) 823 9006

2. Waste Control Management  
   355 West Whitney  
   Salt Lake City, Utah 84115  
   (801) 485 6655

3. Denver Arapahoe Disposal Site  
   3500 S. Gun Rd.  
   Aurora, CO 80018  
   (303) 690 4303/ (303) 690 8138

C. The University of Colorado at Boulder will only accept landfill of asbestos-containing materials at the following sites for non-friable asbestos-containing materials:

1. Keer Environmental  
   5904 Florence Avenue Northeast  
   Albuquerque, New Mexico 87113  
   (505) 823 9006

2. Waste Control Management  
   355 West Whitney  
   Salt Lake City, Utah 84115  
   (801) 485 9431

3. Denver Regional  
   1441 Weld Country Rd. 6  
   Erie, CO 80516  
   (303) 673 9431

4. Denver Arapahoe Disposal Site  
   3500 S. Gun Club Rd.  
   Aurora, CO 80018  
   (303) 690 4303/ (303) 690 8138

XI. Retain receipts from landfill or processor for materials disposed of.
XII. At completion of hauling and disposal of each load submit copy of waste manifest, chain of custody form, and landfill receipt to Asbestos Project Manager/Designer.