1.01 CONDITIONS AND REQUIREMENTS

Division 1 - General Requirements shall govern work under all Divisions of the Specifications.

1.02 SPECIFICATION LANGUAGE EXPLANATION

Specifications are of abbreviated, simplified or streamlined type and include incomplete sentences. Omissions of words or phrases such as "the Contractor shall," "in conformity therewith," "shall be," "as noted on the Drawings," "a," "the" are intentional. Supply omitted words or phrases by inference in same manner as they are when "NOTE" occurs on Drawings. Supply words "shall be" or "shall" by inference when colon is used within sentences or phrases. Supply words "on the Drawings" by inference when "as indicated" is used with sentences or phrases.

Where reference is made to specifications, societies, institutes, or associations or manufacturer's directions, they are, except as may be inconsistent herewith, made part of specifications, to same extent as if written out in full herein. Use latest edition, at time of bidding, if a date is not given.

1.03 SUBMITTALS

A. Prepare data for use by the University of Colorado, Facilities Management personnel.

B. Format:

1. Submit electronically in Portable Document Format (PDF) format as one document, OCR (Optical Character Recognition) searchable, bookmarked according to the Construction Specifications Institute (CSI) standards.

2. Title shall be "SPECIFICATIONS", and shall include:
   a. Name of project and submittal stage and date of submittal (month, day, and year).
   b. University of Colorado Project number (Include on cover and in header or footer of each page)

1.04 CONTENT OF MANUAL

A. An electronically-written table of contents shall be provided for each volume, arranged according to CSI standards.
   Include the following:
   1. Name of responsible installing principal contractor, address, and telephone number.

1.05 ABBREVIATIONS

References in Contract Documents to trade associations, technical societies, recognized authorities and other institutions include following organizations, which are sometimes referred to only by corresponding abbreviations:

- AA  Aluminum Association
- AAMA  Architectural Aluminum Manufacturer's Association
- ACI  American Concrete Institute
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIMA</td>
<td>Acoustical and Insulating Materials Association (successor to AMA and IBI)</td>
</tr>
<tr>
<td>AISC</td>
<td>American Institute of Steel Construction</td>
</tr>
<tr>
<td>AISI</td>
<td>American Iron and Steel Institute</td>
</tr>
<tr>
<td>AITC</td>
<td>American Institute of Timber Construction</td>
</tr>
<tr>
<td>AMA</td>
<td>Acoustical Materials Association</td>
</tr>
<tr>
<td>ANSI</td>
<td>American National Standards Institute (successor to USASI and ASA)</td>
</tr>
<tr>
<td>APA</td>
<td>American Plywood Association</td>
</tr>
<tr>
<td>ASHRAE</td>
<td>American Society of Heating, Refrigerating and Air Conditioning Engineers</td>
</tr>
<tr>
<td>ASTM</td>
<td>American Society for Testing Materials</td>
</tr>
<tr>
<td>AWI</td>
<td>Architectural Woodwork Institute</td>
</tr>
<tr>
<td>AWPA</td>
<td>American Wood Preservers Association</td>
</tr>
<tr>
<td>AWS</td>
<td>American Welding Society</td>
</tr>
<tr>
<td>CDA</td>
<td>Copper Development Associations, Inc.</td>
</tr>
<tr>
<td>CM/GC</td>
<td>Construction Manager/General Contractor</td>
</tr>
<tr>
<td>CRA</td>
<td>California Redwood Association</td>
</tr>
<tr>
<td>CRSI</td>
<td>Concrete Reinforcing Steel Institute</td>
</tr>
<tr>
<td>CS</td>
<td>Commercial Standard (U.S. Department of Commerce)</td>
</tr>
<tr>
<td>DFPA</td>
<td>Douglas Fir Plywood Association</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>FGMA</td>
<td>Flat Glass Marketing Association</td>
</tr>
<tr>
<td>FIA</td>
<td>Factory Insurance Association</td>
</tr>
<tr>
<td>FM</td>
<td>Factory Mutual Engineering Division</td>
</tr>
<tr>
<td>FS</td>
<td>Federal Specification</td>
</tr>
<tr>
<td>MIA</td>
<td>Marble Institute of America</td>
</tr>
<tr>
<td>MIL</td>
<td>Military Specification</td>
</tr>
<tr>
<td>MILMA</td>
<td>Metal Lath Manufacturer's Association</td>
</tr>
<tr>
<td>NAAMM</td>
<td>The National Association of Architectural Metal Manufacturers</td>
</tr>
<tr>
<td>NBFU</td>
<td>National Board of Fire Underwriters</td>
</tr>
<tr>
<td>NBS</td>
<td>National Bureau of Standards</td>
</tr>
<tr>
<td>NCMA</td>
<td>National Concrete Masonry Association</td>
</tr>
<tr>
<td>NEC</td>
<td>National Electric Code (of NBFU)</td>
</tr>
<tr>
<td>NEMA</td>
<td>National Electrical Manufacturers' Association</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Association</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute of Occupational Safety and Health</td>
</tr>
<tr>
<td>NMWIA</td>
<td>National Mineral Wool Insulation Association</td>
</tr>
<tr>
<td>NPVLMA</td>
<td>National Paint, Varnish and Lacquer Manufacturers' Association</td>
</tr>
<tr>
<td>NTMA</td>
<td>The National Terrazzo and Mosaic Association</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>PCA</td>
<td>Portland Cement Association</td>
</tr>
<tr>
<td>PCI</td>
<td>Prestressed Concrete Institute</td>
</tr>
<tr>
<td>PEI</td>
<td>Porcelain Enamel Institute</td>
</tr>
<tr>
<td>PS</td>
<td>Product Standard (U.S. Department of Commerce)</td>
</tr>
<tr>
<td>SCPI</td>
<td>Structural Clay Products Institute</td>
</tr>
<tr>
<td>SDI</td>
<td>Steel Deck Institute</td>
</tr>
<tr>
<td>SJI</td>
<td>Steel Joist Institute</td>
</tr>
<tr>
<td>SMACNA</td>
<td>Sheet Metal and Air Conditioning Contractor's National Association</td>
</tr>
<tr>
<td>SPA</td>
<td>Southern Pine Association</td>
</tr>
<tr>
<td>SPI</td>
<td>The Society of Plastic Industry, Inc.</td>
</tr>
<tr>
<td>SPR</td>
<td>Simplified Practice Recommendation (U.S. Department of Commerce)</td>
</tr>
<tr>
<td>SSPC</td>
<td>Steel Structures Painting Council</td>
</tr>
<tr>
<td>SWI</td>
<td>Steel Window Institute</td>
</tr>
</tbody>
</table>
1.04 LAYING OUT WORK

The Contractor will furnish reference bench mark and maintain bench mark and all other grades, lines, and levels and dimensions as indicated in the Contract Documents. Report any errors or inconsistencies in above to Owner before commencing work.

Except as delegated by subcontract or normal trade practice, the Contractor will be responsible for all lines, elevations, and measurements of work indicated.

1.05 EXAMINATION OF SITE

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 Owner.

END OF SECTION
PART 1 - GENERAL

1.01 SCHEDULE OF DRAWINGS, SPECIFICATIONS AND ADDENDA

The following Drawings, Project Manual, and Addenda from the Contract Documents.

A. Set(s) of Drawings dated January 21, 2013. Drawing list is as follows:

<table>
<thead>
<tr>
<th>Sheet No.</th>
<th>Titled</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHEET 1</td>
<td>COVER SHEET</td>
</tr>
<tr>
<td>SHEET 2</td>
<td>1240 GRANDVIEW – ABATEMENT FLOOR PLAN</td>
</tr>
<tr>
<td>SHEET 3</td>
<td>1243 GRANDVIEW – ABATEMENT FLOOR PLAN</td>
</tr>
<tr>
<td>SHEET 4</td>
<td>1244 GRANDVIEW – ABATEMENT FLOOR PLAN</td>
</tr>
<tr>
<td>SHEET 5</td>
<td>SITE DEMOLITION PLAN</td>
</tr>
</tbody>
</table>


C. Addenda: All Addenda issued prior to bidding.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

A. Work covered: Work under this contract includes all materials, equipment, labor, insurance, bond and permits necessary to complete the work indicated on the drawings, described in specifications, addenda or reasonably inferred.

B. Base Bid:

Base Bid #1 – 1220 Grandview Ave., Abatement for Structure Relocation

1. The Work includes the removal and disposal of approximately 195 SF of asbestos containing ceiling plaster and fiberboard lath. The material is friable and the Work shall be performed in a full containment. Remove all plaster, lath and fasteners, leaving clean wood ceiling framing components, stone masonry walls and clean other surfaces in the Work Area.

2. The Work includes the removal and disposal of approximately 80 LF of metal duct with asbestos containing duct wrap. The material is friable and the Work shall be performed in a full containment. Remove all duct/duct wrap from the Basement level, leaving approximately 12” of clean metal duct where duct risers extend to upper floors. At each of these locations, the perimeter of duct shall be sealed with caulking, expandable foam or other form of air-stop. The perimeter of ducts at supply diffusers on upper floors shall also be sealed.

3. The Work includes the removal and disposal of approximately 3 SF of asbestos containing flue patch material. The material is friable and the Work shall be performed in a full containment. Remove material from brick masonry/mortar substrate.

4. The Work includes the removal and disposal of one (1) furnace unit with asbestos containing gasket material. The material is friable and the Work shall be performed in a full containment.

5. The Work includes the removal and disposal of one (1) metal fireplace hood with asbestos containing seam cement. The material is non-friable and the Work shall be performed
6. using non-friable removal methods in an OSHA-regulated area, removing each the metal flue as a component.

7. The Work includes the removal and disposal of 450 SF of asbestos contaminated soil and associated contaminated debris. The material is friable and the Work shall be performed in a full containment. Contaminated soil shall be removed to a depth of 4” from existing grade, as measured from the underside of first-floor framing.

8. The Work includes the removal and disposal of all Regulated Building Materials, including but not limited to, mercury vapor lamps, PCB ballasts, compact fluorescent lamps, thermostat/gauge mercury ampules, smoke detection devices and air conditioning equipment refrigeration gases. Coordinate with UCB EH&S Dept. for disposal requirements, generator numbers, etc.

Base Bid #2 – 1243 Grandview Ave., Abatement for Structure Relocation

1. The Work includes the removal and disposal of approximately 50 LF of metal duct with asbestos containing duct wrap. The material is friable and the Work shall be performed in a full containment. Remove all duct/ductwrap from the Basement level, leaving approximately 12” of clean metal duct where duct risers extend to upper floors. At each of these locations, the perimeter of duct shall be sealed with caulking, expandable foam or other form of air-stop. The perimeter of ducts at supply diffusers on upper floors shall also be sealed.

2. The Work includes the removal and disposal of one (1) furnace unit with asbestos containing gasket material. The material is friable and the Work shall be performed in a full containment.

3. The Work includes the removal and disposal of seven (7) windows with asbestos containing glazing compound. The material is non-friable and the Work shall be performed using non-friable removal methods in an OSHA-regulated area, removing each the window as a component.

4. The Work includes the removal and disposal of all Regulated Building Materials, including but not limited to, mercury vapor lamps, PCB ballasts, compact fluorescent lamps, thermostat/gauge mercury ampules, smoke detection devices and air conditioning equipment refrigeration gases. Coordinate with UCB EH&S Dept. for disposal requirements, generator numbers, etc.

Base Bid #3 – 1244 Grandview Ave., Abatement for Structure Relocation

1. The Work includes the removal and disposal of approximately 100 LF of metal duct with asbestos containing duct wrap and duct tape. The material is friable and the Work shall be performed in a full containment. Remove all duct/duct wrap from the Basement level, leaving approximately 12” of clean metal duct where duct risers extend to upper floors. At each of these locations, the perimeter of duct shall be sealed with caulking, expandable foam or other form of air-stop. The perimeter of ducts at supply diffusers on upper floors shall also be sealed.

2. The Work includes the removal and disposal of one (1) furnace unit with asbestos containing gasket material. The material is friable and the Work shall be performed in a full containment.
3. The Work includes the demolition of the wood side-porch structure located on the east side of the facility. Dispose of painted wood components as lead-containing hazardous waste.

4. The Work includes the removal and disposal of all Regulated Building Materials, including but not limited to, mercury vapor lamps, PCB ballasts, compact fluorescent lamps, thermostat/gauge mercury ampules, smoke detection devices and air conditioning equipment refrigeration gases. Coordinate with UCB EH&S Dept. for disposal requirements, generator numbers, etc.

C. Add Alternates – See Section 01030

1.03 CONTRACTORS

All work will be executed under one prime construction contract between the Owner and the Contractor.

Except as indicated otherwise, all work under this contract will be under the direction of the prime contractor.

The Owner may conduct, either through separate contract or in-house, work to accommodate relocation of telecom/data distribution and/or structure relocation. These activities should be coordinated and scheduled with the Owner around the schedule for abatement, demolition and site work.

1.04 JOB CONDITIONS

A. Areas of the building(s) immediately adjacent to areas under construction will be occupied by the public during the work of this project. Conduct the work of this project in a manner that will minimize disruption of the Owner's occupancy of adjacent areas. Limit construction operations to those methods and procedures which will not adversely and unduly affect the Owner's occupied spaces inclusive of parking facilities.

B. Do not interrupt building access and use, except as permitted by the Owner.

Provide eight (8) work days notice to the Owner of construction activities which will severely impact the occupancy and use of adjacent areas.

C. Provide temporary barriers and/or partitions as required to protect the occupants of the building and the general public from injury due to the work of this project; and/or to protect adjacent areas of the building from the spread of dust and dirt caused by the work or this project.

Remove temporary barriers and partitions upon completion of the Project.

1. Temporary partitions shall be constructed of 1/2" plywood on the construction face nominal 2" X 4" wood studs and 1/2" gypsum wallboard on the public occupied face.

D. Do not interrupt power, lighting, plumbing, telephone and HVAC services to occupied areas without Owner's approval. Such interruptions must be scheduled at least eight (8) work days in advance and have Owner's approval.
E. The Contractor shall have access to the Work Areas to perform work of this Contract between the hours of 8:00 a.m. to 5:00 p.m., Monday through Friday. Deviations from the specified schedule must be approved in writing by the Owner and Owner's Representative.

F. At least 72 hours in advance. Deviations include work outside of the approved work hours, work on weekends, and work on holidays.

1.05 PROTECTION OF WORK AND ADJACENT PROPERTY

A. Buildings and property adjacent to work included in this project may be subject to damage due to construction operations.

Prior to the start of the work included in this Contract engage the services of a photographer to record the existing condition of adjacent structures and property. Contractor shall provide one set on disk to the Owner and retain negatives and one set of prints for their records. Sufficient photos with adequate detail to thoroughly document the conditions surrounding the work shall be provided.

B. At the completion of the project, Contractor shall restore existing buildings, landscaping, parking facilities and property to same condition as prior to the start of the work.

C. In addition to the requirements of the General Conditions of the Contract for Construction, the Contractor shall:

1. Notify, in writing, the Owner of University or private property which interferes with the work and arrange with them for disposition of such property.

2. Provide and maintain proper shoring and bracing to prevent earth from caving or washing into excavation. Provide temporary protection around openings through and at floors, roofs, and other openings.

3. Provide and maintain proper shoring and bracing for existing underground utilities, sewers, etc., encountered during excavation work, to protect them from collapse or other type of damage until such time as they are to be removed, incorporated into the work of this project, or can be properly back-filled upon completion of new work.

4. Weather Protection: Provide protection against rain, snow, wind, ice, storms, or heat so as to maintain work, materials, apparatus, and fixtures free from injury or damage. At the end of each day's work, cover new work likely to be damaged.

5. Provide and maintain adequate protection of the work from damage due to freezing, especially freezing earth and soils. Risk of proceeding with the work on or with freezing or frozen materials will be the sole responsibility of the Contractor.

6. Water Protection: Provide protection from damage at all times from rain water, ground water, backing up of drains or sewers, and other water. Provide pumps and equipment enclosures to provide this protection.

7. The Contractor will maintain free of obstructions and debris, all designated corridors and emergency exits, handicap access ramps and sidewalks to building. Provide temporary directional handicapped signage for routing to the nearest accessible facilities.

1.06 EXISTING FURNITURE AND EQUIPMENT
The Owner will remove or relocate existing movable furniture and equipment from the areas in which the Contractor is working. Notify the Owner not less than three days prior to starting work in areas where furniture and equipment require moving.

1.07 CONTRACTOR'S ACCESS PARKING AND STAGING AREAS

A. Work included in this project will need to be performed within the limitations of available access at the site. The University shall limit the area available for staging and parking due to the additional number of construction projects planned during the execution of this contract. Contractor shall adjust the means and methods of construction to allow for the restrictions surrounding the site.

B. All parking on campus except for some one-hour zones on city streets and a few metered spaces is under control and authority of the Parking and Transportation Services (PTS) of the University. All University parking is by permit only.

C. Types of parking and staging are defined as follows:

   General Staging Areas are approved areas adjacent to the site when available or in University designated group staging yards. General Staging Areas may be used for any purpose, including employee parking, on a space available basis, but must be coordinated through the UCB Project Manager and PTS. Vehicles may not park outside of general staging areas except in areas coordinated and approved by PTS.

   Restricted Staging Areas are approved areas near the site for the construction dumpster, off-loading of equipment, contractor's work trailer, and materials that are soon to be incorporated into the work. No vehicles shall park in a restricted staging area for more than 20 minutes between the hours of 8:00 a.m. and 5:00 p.m. weekdays.

   Contractor Employee Parking are areas for workers needing parking on campus. Coordinate through UCB Project Manager and PTS.

   Prohibited Parking are areas designated in the Contract Documents as No Parking areas. The contractor shall not allow any parking in areas so designated under any circumstance.

D. The restrictions in this Section are in addition to any other restrictions or rules provided by PTS. Fees shall be assessed for the use of any PTS facility for staging and construction activities.

E. The designated parking/staging area for this project shall be:

   A fenced staging area may be placed on the vacant property west of 1243 Grandview. Although the property is undeveloped and unimproved, the property shall be returned to its original condition upon completion of the project, including grading and seeding.

   Parking on streets near the Project Site is regulated by CUB Parking Services. Up to four (4) parking spaces may be purchased from CUB Parking Services, for the use of vehicles, dumpsters, etc., for $49/month.

F. The staging areas for this project are located in landscaped areas. The contractor shall protect all trees located within the staging areas to the drip line of the trees. Sod and planting beds within the staging areas shall be restored to a "like-new" condition upon completion of the work.
G. Vehicles parked on sidewalks or in landscape areas outside the designated staging areas cause damage to University property. The contractor shall reimburse the University $25.00 per vehicle per occurrence for vehicles parked outside the designated staging areas. This amount shall be in addition to any fines which might be levied by PTS.

1.08 OCCUPANCY REQUIREMENTS

A. Owner may occupy designated areas for the purpose of storage of furnishings and equipment and installation of equipment.

B. Execute Certificate of Substantial Completion for each designated portion of work prior to Owner occupancy. Contractor shall allow:
   1. Access for Owner personnel.
   2. Use of parking facilities.
   3. Operation of HVAC and electrical systems.

C. On occupancy, Owner will provide, for occupied areas:
   1. Operation of HVAC and electrical systems.

1.09 CONSTRUCTION AND SEQUENCE SCHEDULE:

A. In order to accommodate the uninterrupted operation of the existing building during the various phases of construction, the sequence of construction operations shall be as follows:
   1. The sequence concept is to: (1) prepare the existing facility to function during renovation through completion; (2) hence occupy the newly remodeled portion; and (3) upon completion, finally reoccupy the remodeled portions.
   2. Utilizing this concept break down the Schedule into broad scope categories augmented by “Owner Action” and “Contractor action” columns that indicate coordination tasks which define the various phases of the work.
   3. The intent of the categorization is to generally summarize the nature and extent of work to be performed without in any way limiting specific requirements of the Contract Documents.
   4. Some overlapping between the several construction operations will occur, and where possible, permission may be granted to start certain portions of the work before the previous operations were completed in their entirety. Such detail scheduling shall be done as the work progresses, provided that the Owner’s operations remains uninterrupted, but in all cases must receive Owner approval.
   5. Where it may not be possible to complete certain mechanical and electrical services in connection with making the work complete and ready for occupancy, temporary services as directed and as approved shall be installed to permit occupancy by the Owner at the earliest possible date.
   6. The construction sequence schedule and related drawings are intended to aid the Contractor in bidding and in the preparation of a specific construction schedule. Deviations of sequence may be made upon approval of the Owner and the Architect. The preparation of a specific construction schedule remains the responsibility of the Contractor.

1.10 TEMPORARY ELECTRIC SERVICE
A. Connect to existing power service. Power consumption shall not disrupt owners need for continuous service. Owner to pay for power consumed. Provide power outlets for construction operations, branch wiring, distribution boxes, and flexible power cords as required.

B. Should the use of a generator be required to provide power for the project, the Contractor shall arrange for all costs associated with generator use, including delivery, setup, rental for duration, fuel/fueling, and removal/pick-up.

END OF SECTION
PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to work of this section.

1.02 SURVEYS, LAYOUTS, AND LEVELS

A. General: Working from lines and levels established by the existing building, and as shown in relation to the work, establish and maintain bench marks and other dependable markers to set the lines and levels for the work of construction as needed to properly locate every element of the work of the entire project. Calculate and measure required dimensions as shown (within recognized tolerances if not otherwise indicated); do not scale the drawings to determine dimensions. Continuously advise tradesmen performing the work of the marked lines and levels provided for use in the layout of work.

1.03 PROJECT RECORD DOCUMENTS

A. Maintain at job site, one copy of:
   1. Contract Drawings
   2. Specifications
   3. Addenda
   4. Reviewed Shop Drawings
   5. Change Orders
   6. Other Modifications to Contract
   7. Field Test Records
   8. As-Built Drawings

B. Maintain documents in clean, dry, legible condition and do not use record documents for construction purposes. Make documents available at all times for inspection by the Consultant and Owner.

C. Label each document "Project Record" in 1" or larger printed letters.

D. Record drawing information in colored pencil with different colors for the various systems and defined by color legend.

E. Record drawings and specifications shall include the following:
   1. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure. Location of concealed valves, dampers, controls, balancing devices, junction boxes, clean-outs, and other items requiring access or maintenance.
   2. Field changes of dimension and detail, changes made by Change Order or Field Order and details not on original contract drawings.
   3. Fire protection and alarm systems shop drawings.
F. Submit all record drawings to the Consultant at the completion of the project.

1.04 CLEANING

A. Cleaning and Protection Work: At the time each unit of work or element of the construction is completed (substantially) in each area of the Project, clean the unit or element to a condition suitable for occupancy and use (as intended), and restore minor or superficial damage. Replace units and elements which are damaged beyond successful restoration. Clean and restore adjoining surfaces and other work which was soiled or damaged (superficially) during the installation; replace other work damaged beyond successful restoration. Where the performance of subsequent work could possibly result in damage to the complete unit or element, provide protective covering or other provisions to minimize possible damage. Repeat cleaning and protection operations during remainder of construction period, wherever work might otherwise be damaged by sustained soiling or exposure.

B. During Construction: Oversee cleaning and ensure that building, grounds, and public properties are maintained free from accumulation of waste materials and rubbish. At reasonable intervals during daily progress of work, clean up site and access and dispose of waste materials, rubbish, and debris. Vacuum clean interior building areas when ready and continue vacuum cleaning on an as-needed basis until building is ready for acceptance or occupancy.

1.05 PROJECT SIGN

Erect no project sign or job-site sign of any kind, except warning signs as specified in Section 01500, without written authorization of the Owner.

1.06 COORDINATION

A. The Contractor shall coordinate the work so as not to interfere with the building custodian’s normal cleanup activities.

B. The Contractor shall be responsible for coordinating all the work of the project. The Contractor shall coordinate the efforts of all subcontractor(s) and the deliveries of suppliers so that the work progresses in an orderly fashion without delay towards timely completion of a complete project in accordance with the drawings and specifications.

C. The Contractor shall note that concurrent with his work, other contractors, suppliers, and the Owner’s facilities and maintenance personnel may be working in relatively close proximity. The Contractor will be solely responsible for coordinating his work with that of other contractors and will make no claims for failure to do so.

1.08 METHODS OF CONSTRUCTION

A. The procedure and method of construction is the prerogative and the responsibility of the Contractor. If professional assistance is required to safely implement method of construction, the Contractor shall, on his own, employ professional help.

1.09 ADMINISTRATIVE AND SUPERVISORY PERSONNEL:
A. General Superintendent: Provide a full-time General Superintendent who is experienced in administration and supervision of asbestos abatement projects including Work practices, protective measures for building and personnel, disposal procedures, etc. This person is the Contractor's Representative responsible for compliance with all applicable Federal, State and local regulations, particularly those relating to asbestos-containing materials.

B. Experience and Training: The General Superintendent must have completed a course at an EPA Training Center or equivalent certificate course in asbestos abatement procedures, and have had a minimum of two (2) years on-the-job training in asbestos abatement procedures.

C. Competent Person: The General Superintendent is to be a Competent Person as required by OSHA in 29 CFR 1926.

D. State Certification: The General Superintendent is to be trained, certified and licensed to do abatement Work in the State of Colorado and must have current certifications as evidence of this training.

E. Accreditation: The General Superintendent is to be accredited as an Asbestos Abatement Supervisor in accordance with the AHERA regulation 40 CFR Part 763, Subpart E, Appendix C.

END OF SECTION
PART 1 - GENERAL

1.01 GENERAL ALTERNATE REQUIREMENTS

A. General: The description for each alternate is recognized to be incomplete and abbreviated but implies that each change must be complete for the scope of work affected. Refer to applicable sections and to applicable drawings for the specific requirements of the owner, whether or not references are so noted in the description of each alternate. Modify surrounding work as required to integrate with the work of each alternate.

1.02 SPECIFIC ALTERNATES

A. Add Alternates:

Add Alternate #1 - 1220 Grandview Ave., Abatement for Structure Demolition

1. The Work includes the removal and disposal of approximately 10 SF of asbestos containing plaster patch material (approximately 1 SF at 10 locations.). The material is friable and the Work shall be performed in a full containment. Remove all plaster, lath and fasteners, leaving clean wood wall framing components. Non-ACM plaster in proximity to ACM plaster shall be cut in a neat and uniform fashion to accommodate removal of ACM plaster, and rough edges of remaining non-ACM plaster shall be coated with a light lockdown application to promote successful air monitoring clearances.

2. The Work includes the removal and disposal of two (2) asbestos-cement chalkboards. The material is non-friable and shall the Work shall be performed using non-friable removal methods in an OSHA-regulated area, removing each chalkboard as a component.

3. The Work includes the removal and disposal of approximately 70 LF of metal duct with asbestos containing duct wrap. The material is friable and the Work shall be performed in a full containment. The material is located within wall cavities and chases and the Work includes all non-ACM plaster demolition necessary to locate and remove duct/ACM duct wrap.

4. The Work includes the removal and disposal of metal fireplace hood with asbestos containing seam sealant. The material is non-friable and the entire fireplace hood shall be removed as a component in a secondary containment. Note: the plaster material to which the hood is affixed contains trace asbestos.

Add Alternate #2 - 1243 Grandview Ave., Abatement for Structure Demolition

1. The Work includes the removal and disposal of approximately 10 SF of asbestos containing plaster patch material (approximately 1 SF at 10 locations.). The material is friable and the Work shall be performed in a full containment. Remove all plaster, lath and fasteners, leaving clean wood wall framing components. Non-ACM plaster in proximity to ACM plaster shall be cut in a neat and uniform fashion to accommodate removal of ACM plaster, and rough edges of remaining non-ACM plaster shall be coated with a light lockdown application to promote successful air monitoring clearances.
2. The Work includes the removal and disposal of approximately 85 LF of metal duct with asbestos containing duct wrap. The material is friable and the Work shall be performed in a full containment. The material is located within wall cavities and chases and the Work includes all non-ACM plaster demolition necessary to locate and remove duct/ACM duct wrap.

3. The Work includes the removal and disposal of approximately 350 SF of asbestos containing wall and ceiling plaster. The material is friable and the Work shall be performed in a full containment. Remove all plaster, lath and fasteners, leaving clean wood wall and ceiling framing components, and clean other surfaces in the Work Area.

4. The Work includes the removal and disposal of approximately 630 SF of asbestos containing floor tile and mastic adhesive. The material is non-friable, but shall be removed in a full containment, due to proximity of these materials to other friable ACM being removed. Remove all floor tile and mastic from wood or concrete substrate.

5. The Work includes the removal and disposal of approximately 25 LF of asbestos containing caulking. The material is non-friable the Work shall be performed using non-friable removal methods in an OSHA-regulated area.

Add Alternate #3 - 1244 Grandview Ave., Abatement for Structure Demolition

1. The Work includes the removal and disposal of 29 windows with asbestos containing glazing compound. The material is non-friable and the Work shall be performed using non-friable removal methods in an OSHA-regulated area, removing each the window as a component.

2. The Work includes the removal and disposal of approximately 20 LF of metal duct with asbestos containing duct wrap. The material is friable and the Work shall be performed in a full containment. The material is located within wall cavities and chases and the Work includes all non-ACM plaster demolition necessary to locate and remove duct/ACM duct wrap.

3. The Work includes the removal and disposal of approximately 110 SF of asbestos containing floor tile and mastic adhesive. The material is non-friable and shall be removed in a secondary containment. Remove all floor tile and mastic from concrete or wood substrate.

4. The Work includes the removal and disposal of approximately 100 SF of non-ACM sheet flooring and asbestos containing adhesive. The material is non-friable and shall be removed in a secondary containment. Remove all flooring and adhesive from wood substrate.

5. The Work includes the removal and disposal of all painted exterior wood elements, with the exception of the side porch (included in Base Bid). Painted exterior wood elements shall be disposed of as lead-containing hazardous waste.

Add Alternate #4- 1220 Grandview Ave., Site Demolition

1. The Work includes the demolition and disposal of one (1) 3,374 SF two-story residential structure with basement. Demolition shall include all stone and concrete footings and foundations, concrete floor slabs, wood framing, masonry, roofing, and all remaining interior finish materials and mechanical/electrical equipment.
2. The Work includes the complete removal of all demolition debris from the site. The Contractor shall control the distribution of demolition debris throughout the site and confine debris to the building footprint area and travel area to/from debris loading zone. All site soil contaminated with demolition debris shall be scraped and removed from the site at the Contractor’s expense. Contractor shall inspect the site with the Owner’s Representative upon completion of demolition to verify all demolition debris is removed and shall promptly remove any remaining debris identified during this inspection, to the satisfaction of the Owner and Owner’s representative.

3. The Work includes proper isolation and capping of site utilities to achieve demolition, including but not limited to water, sewer, gas, electric, and buried communications. Utility termination shall be performed per specification and requirements of municipality or private owner of each utility. Utility locates, permits, notices, and coordination are the responsibility of the contractor.

4. The Work includes the removal and disposal of asphalt and concrete site paving and concrete sidewalks. The Work also includes protecting similar site features within and outside of the project limits.

5. The Work includes the removal and disposal of all turf, trees, shrubs and plantings within the limits of disturbance, as shown on the drawings, unless identified to be protected in place. Coordinate identification of trees to be protected in place with the Owner’s Representative.

6. The Work includes the removal and disposal of all other miscellaneous debris and site features. Coordinate complete list of miscellaneous items to be removed with the Owner’s Representative.

7. The Work includes all necessary traffic control, including coordination of traffic control plan, if applicable.

8. The Work includes backfill and compaction of soil in building foundation excavations.

Add Alternate #5 - 1243 Grandview Ave., Site Demolition

1. The Work includes the demolition and disposal of one (1) 3,573 SF two-story residential structure with basement. Demolition shall include all stone and concrete footings and foundations, concrete floor slabs, wood framing, masonry, roofing, and all remaining interior finish materials and mechanical/electrical equipment.

2. The Work includes the complete removal of all demolition debris from the site. The Contractor shall control the distribution of demolition debris throughout the site and confine debris to the building footprint area and travel area to/from debris loading zone. All site soil contaminated with demolition debris shall be scraped and removed from the site at the Contractor’s expense. Contractor shall inspect the site with the Owner’s Representative upon completion of demolition to verify all demolition debris is removed and shall promptly remove any remaining debris identified during this inspection, to the satisfaction of the Owner and Owner’s representative.

3. The Work includes proper isolation and capping of site utilities to achieve demolition, including but not limited to water, sewer, gas, electric, and buried communications. Utility termination shall be performed per specification and requirements of municipality or private owner of each utility. Utility locates, permits, notices, and coordination are the responsibility of the contractor.
4. The Work includes the removal and disposal of asphalt and concrete site paving and concrete sidewalks. The Work also includes protecting similar site features within and outside of the project limits.

5. The Work includes the removal and disposal of all turf, trees, shrubs and plantings within the limits of disturbance, as shown on the drawings, unless identified to be protected in place. Coordinate identification of trees to be protected in place with the Owner’s Representative.

6. The Work includes the removal and disposal of all other miscellaneous debris and site features. Coordinate complete list of miscellaneous items to be removed with the Owner’s Representative.

7. The Work includes all necessary traffic control, including coordination of traffic control plan, if applicable.

8. The Work includes backfill and compaction of soil in building foundation excavations.

Add Alternate #6- 1244 Grandview Ave., Site Demolition

1. The Work includes the demolition and disposal of one (1) 3,041 SF single-story residential structure with basement. Demolition shall include all stone and concrete footings and foundations, concrete floor slabs, wood framing, masonry, roofing, and all remaining interior finish materials and mechanical/electrical equipment.

2. The Work includes the compete removal of all demolition debris from the site. The Contractor shall control the distribution of demolition debris throughout the site and confine debris to the building footprint area and travel area to/from debris loading zone. All site soil contaminated with demolition debris shall be scraped and removed from the site at the Contractor’s expense. Contractor shall inspect the site with the Owner’s Representative upon completion of demolition to verify all demolition debris is removed and shall promptly remove any remaining debris identified during this inspection, to the satisfaction of the Owner and Owner’s representative.

3. The Work includes proper isolation and capping of site utilities to achieve demolition, including but not limited to water, sewer, gas, electric, and buried communications. Utility termination shall be performed per specification and requirements of municipality or private owner of each utility. Utility locates, permits, notices, and coordination are the responsibility of the contractor.

4. The Work includes the removal and disposal of asphalt and concrete site paving and concrete sidewalks. The Work also includes protecting similar site features within and outside of the project limits.

5. The Work includes the removal and disposal of all turf, trees, shrubs and plantings within the limits of disturbance, as shown on the drawings, unless identified to be protected in place. Coordinate identification of trees to be protected in place with the Owner’s Representative.

6. The Work includes the removal and disposal of all other miscellaneous debris and site features. Coordinate complete list of miscellaneous items to be removed with the Owner’s Representative.
7. The Work includes all necessary traffic control, including coordination of traffic control plan, if applicable.

8. The Work includes backfill and compaction of soil in building foundation excavations.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. General Contractor is responsible for all of the work of this contract.
   1. Assign and subcontract portions of the work as required to assure that all work is constructed in compliance with these documents.
   2. Coordinate the work of the several subcontractors for the project.
   3. Coordinate work of this contract with work by separate contractors.

B. Each subcontractor shall:
   1. Coordinate work of his own employees and subcontractors.
   2. Expedite his work to assure compliance with schedules.
   3. Coordinate his work with that of other subcontractors and work by separate contractor.
   4. Comply with orders and instructions of owner.

C. Related Requirements
   1. All Division 1 Sections.

1.02 CONSTRUCTION ORGANIZATION AND START-UP

A. Establish on-site lines of authority and communications.
   1. Attend pre-construction meeting with subcontractors upon commencement of the project.
   2. Establish procedures for intra-project communications.
      a. Submittals.
      b. Reports and records.
      c. Recommendations.
      d. Coordination Drawings.
      e. Schedules.
      f. Resolution of conflicts.
      a. Consult with Architect to obtain interpretation.
      b. Assist in resolution of questions or conflicts which may arise.
      c. Transmit written interpretations to subcontractors, and to other concerned parties.
   4. Assist in obtaining permits and approvals.
      a. Obtain building permits and special permits required for work or for temporary facilities.
      b. Verify that subcontractors have obtained inspections for work and for temporary facilities.
   5. Control the use of site.
      a. Supervise field engineering and site layout.
      b. Allocate space for each subcontractor's use for field offices, sheds, work and storage areas.
      c. Establish access, traffic and parking allocations and regulations.
      d. Monitor use of site during construction.
1.03 CONTRACTOR DUTIES

A. Construction Schedules.
   1. Coordinate schedules with several subcontractors.
   2. Monitor schedules as work progresses.
      a. Identify potential variances between schedules and probable completion dates for each phase.
      b. Recommend adjustments in schedule to meet required completion dates.
      c. Adjust schedules of subcontractors as required.
      d. Document changes in schedule.
   3. Observe work of each subcontractor to monitor compliance with schedule.
      a. Verify that labor and equipment are adequate for the work and the schedule.
      b. Verify that product procurement schedules are adequate.
      c. Verify that product deliveries are adequate to maintain schedule.

B. Process Submittals, Shop Drawings, Product Data and Samples.
   1. Review for compliance with Contract Documents.
      a. Field dimensions and clearance dimensions.
      b. Relation to available space.
      c. Relation to other trades, equipment and systems.
      d. Contingency Plans for emergency actions.
      e. Telephone Numbers and location of emergency services.
      f. Notifications sent to emergency service agencies.
      g. Accreditation/Certification: submit current resume and evidence in form of training course certificate of accreditation and state Certification of General Superintendent as an asbestos abatement supervisor.
      h. Project Design (if applicable)
      i. Permit/Notifications to Regulatory Agencies
      j. Submit to Architect.

C. Monitor the use of temporary utilities.
   1. Verify that adequate services are provided and maintained.

D. Inspection and Testing.
   1. Inspection work to assure performance in accord with requirements of Contract Documents.
   2. Administer special testing and inspections of suspected work.
   3. Reject work which does not comply with requirements of Contract Documents.
   4. Coordinate testing laboratory services.
      a. Verify that required laboratory personnel are present.
      b. Verify that tests are made in accordance with specified standards.
      c. Review test reports for compliance with specified criteria.
      d. Recommend and administer required retesting.

E. Monitor contractor’s periodic cleaning.
   1. Enforce compliance with specifications.
   2. Resolve any conflicts.

F. Coordinate changes.
   1. Recommend necessary or desirable changes.
   2. Assist owner in negotiating change orders.
   3. Promptly notify all subcontractors of pending changes.
G. Maintain Reports and Records at Job Site available to Architect and Subcontractors.
   1. Log progress of work of each subcontractor.
   2. Records
      a. Contracts.
      b. Purchase orders
      c. Materials and equipment records.
      d. Applicable handbooks, codes and standards.
   3. Obtain information from subcontractors and maintain file of Project Record Documents.
   4. Assemble documentation for handling of claims and disputes.
   5. Daily Log: Maintain within the Decontamination Unit a daily log documenting the dates and time of the following items:
      Visitation; authorized and unauthorized.
      Personnel, by name, entering and leaving the Work Area.
      Certifications and Medical Examinations for all personnel
      Special or unusual events, i.e. barrier breaching, equipment failures, accidents.
      Air monitoring tests and test results.
      Documentation of Contractor's completion of the following:
      Inspection of Work Area preparation prior to start of removal and daily thereafter.
      Inspection of negative pressure differential equipment and manometers
      Removal of any sheet plastic barriers.
      Contractor's inspections prior to lockdown, encapsulation, enclosure or any other operation that will conceal the condition of asbestos containing materials or the substrate from which such materials have been removed.
      Removal of waste materials from Work Area.
      Contractors final inspection/final air test analysis.
      Submit a copy of this log at final closeout of Project as a project closeout submittal.

G. Coordinate work of this Contract and requirements of this section with work by Separate Contract including but not limited to:
   1. Relocation of structures by separate contract.

1.04 CONTRACT CLOSEOUT

A. Coordinate equipment start-up.
   1. Provide seven days notification prior to start-up of each item.
   2. Ensure that each piece of equipment or system is ready for operation.
   3. Execute start-up under supervision of responsible persons in accordance with manufacturer's instructions.
4. Perform required testing and balancing.

5. Record dates of start of operation of systems and equipment. Submit written report that equipment or system has been properly installed and is functioning correctly.

6. Provide written notice of beginning of warranty period for equipment put into service.

B. Demonstration and Instructions
   1. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to Substantial Completion.
   2. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, seasonal operation, and shutdown of each item of equipment.

C. At completion of work of each Section, conduct an inspection to assure that
   1. Specified cleaning has been accomplished.
   2. Temporary facilities have been removed from site.

D. At completion
   1. Conduct an inspection to list work to be completed or corrected.
   2. Supervise correction and completion of work as established in Certificate of Completion.

E. When a portion of the Project is occupied prior to final completion, coordinate established responsibilities of each subcontractor.

F. Final completion.
   1. When each Subcontractor determines that work is finally complete, conduct an inspection to verify completion of work.
   2. Assist owner and architect in inspection.

G. Administer contract closeout.
   1. Receive and review Subcontractor's final submittals.
   2. Transmit to architect with recommendation for action.

END OF SECTION
PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included: This section establishes general requirements in addition to those indicated in the General Conditions of the Contract for Construction pertaining to cutting, fitting, and patching of the work required to:
   1. Make the several parts fit properly.
   2. Uncover work to provide for installation, inspection, or both, of ill-timed work.
   3. Remove and replace work not conforming to requirements of Contract Documents.
   4. Patch new construction into existing construction.

B. Related Work:
   1. In addition to requirements specified, upon the Consultant's request, uncover work to provide for inspection of covered work, and remove samples of installed materials for testing.
   2. Do not cut or alter work performed under separate contract without the Consultant's written permission.

1.02 QUALITY ASSURANCE

A. Perform all cutting and patching in strict accordance with pertinent requirements of the Specifications and, in the event no such requirements are determined, in conformance with the Consultant's written direction.
   1. Use skilled workmen to perform all cutting and patching work.
   2. Use methods least likely to damage existing surfaces and materials to remain, while providing proper surfaces to receive installation of repair, patching, and/or new work.

B. Visual Quality:
   1. Do not cut and patch work exposed to public view, and the exterior and/or interior of the building in a manner that will result in an unacceptable appearance as determined by the Consultant.
   2. Do not cut and patch work in a manner that will result in obvious appearance that cutting and patching work was done.
   3. When cutting existing structural concrete, do not extend saw cuts beyond the corners of the required opening on either side of the opening.

1.03 EXISTING CONSTRUCTION

A. Where cutting and patching of existing construction is required; prior to start of work, inform Owner of existing construction to be disturbed. Owner will determine if elements of existing construction contain asbestos. Do not proceed with work until after Owner has examined areas to be disturbed. Refer to Exhibit A, Project Pre-Inspection for Possible Presence of Asbestos for additional information concerning the possible presence of materials containing asbestos.

1.04 SUBMITTALS

A. Submit proposed cutting and patching procedures in writing for the following categories of work prior to proceeding with this work:
1. Cutting new openings in existing structural concrete walls, parapets, and suspended slabs.
2. Cutting new openings in existing roofs and roofing materials.

B. Submittals shall comply with Section 01300.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Except as otherwise indicated in pertinent sections of these specifications, or as directed by the Consultant, use materials which are identical to existing materials in workmanship, appearance, and performance.

B. If identical materials are not available, match existing as closely as possible, especially existing visual characteristics.

PART 3 - EXECUTION

3.01 INSPECTION

A. Before proceeding, inspect existing conditions, including elements subject to movement or damage during cutting, excavating, backfilling, and patching.

B. After uncovering the work, inspect conditions affecting installation of new work.

C. If uncovered conditions are not as anticipated or if existing construction is not as indicated on the Drawings, immediately notify the Consultant for further instructions.

3.02 PREPARATION

A. Provide shoring, bracing, and support as required to maintain structured integrity of the project.

B. Take all necessary action required to protect adjacent existing surfaces from damage due to the work of this section.

C. Take all precautions necessary to protect existing surfaces and materials, new work, and the work of this section from damage due to adverse weather conditions.

D. Provide temporary support of work to cut and adjacent work to prevent failure or damage due to the work of this section.

E. Properly prepare substrate surfaces exposed during cutting as required to receive the work of this or other sections of these specifications in strict compliance with manufacturer's recommendations and these specifications.
3.03 EXECUTION

A. Perform all required cutting and patching as required or reasonably implied under pertinent sections of these specifications.

B. Perform cutting and demolition by methods which will prevent damage to other portions of the work and will provide proper finished installation complying with the specified tolerances and finishes.

3.04 PERFORMANCE

A. Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs and new work. Saw-cut and otherwise isolate areas to be demolished.

B. Repair or otherwise rebuild and/or construct all surfaces affected by cutting and demolition. Execute fitting and adjustment of products to provide totally finished installation to comply with tolerances, finishes, and profiles of adjacent surfaces, whether new or existing.

C. Restore work which has been cut or exposed by demolition; install new construction in compliance with specifications for type of new work to be done or as required to match existing adjacent surfaces. In no case shall any exposed existing surface be left in a raw, marred, or unfinished surface.

D. Refinish entire surfaces as necessary to provide an even finish.
   1. Continuous Surfaces: To nearest intersections.

END OF SECTION
PART 1 - GENERAL

1.01 RELATED DOCUMENTS:
   A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 - Specification sections, apply to work of this section.

1.02 SUMMARY:
   A. Section Includes:
      1. General administrative requirements and procedures and related applicable codes.

1.03 APPROVAL AND RECOMMENDATION AGENCIES:
   A. The University of Colorado at Boulder has jurisdiction for the interpretation and enforcement of code requirements for construction of projects.

1.04 CODES:
   A. All Contractors shall comply with all applicable codes, ordinances and regulations in effect at the time of bid openings.

APPROVED STATE BUILDING CODES

The following approved building codes and standards have been adopted by State Buildings Programs (SBP) as the minimum requirements to be applied to all state-owned buildings and physical facilities including capital construction and controlled maintenance construction projects.

The 2006 edition of the International Building Code (IBC)
(as adopted by the Colorado State Buildings Program as follows: Chapters 2-35 and Appendices C and I)

The 2006 edition of the International Mechanical Code (IMC)
(as adopted by the Colorado State Buildings Program as follows: Chapters 2-15 and Appendix A)

(as adopted by the Colorado State Buildings Program)

The 2008 edition of the National Electrical Code (NEC)
(National Fire Protection Association Standard 70) (as adopted by the Colorado State Electrical Board)

The 2006 edition of the International Plumbing Code (IPC)
(as adopted by the Colorado Examining Board of Plumbers as follows: Chapter 1 Section 101.2,102, Chapters 2-13 and Appendices B, D, E, F and G)

The 2006 edition of the International Fuel Gas Code (IFGC)
(as adopted by the Colorado Examining Board of Plumbers as follows: Chapter 1 Section 101,102, Chapters 2-8 and Appendices A, B, C and D)

The National Fire Protection Association Standards (NFPA)
The 2004 edition of the ASME Boiler and Pressure Vessel Code
(as adopted by the Department of Labor and Employment/Boiler Inspection Section as follows: sections I, IV, VIII-Divisions 1 and 2 and 3, X and B31.1)

The 2004 edition of the National Boiler Inspection Code (NBIC)
(as adopted by the Department of Labor and Employment/Boiler Inspection Section)

The 2004 edition of the Controls and Safety Devices for Automatically Fired Boilers CSD-1
(as adopted by the Department of Labor and Employment/Boiler Inspection Section)

(as adopted by the Department of Labor and Employment/Boiler Inspection Section)

The 2007 edition of ASME A17.1 Safety Code for Elevators and Escalators
(as adopted by the Department of Labor and Employment/Conveyance Section and as amended by ASME International)

The 2005 edition of ASME A17.3 Safety Code for Existing Elevators and Escalators
(as adopted by the Department of Labor and Employment/Conveyance Section and as amended by ASME International)

The 2005 edition of ASME A18.1 Safety Standard for Platform Lifts and Stairway Chairlifts
(as adopted by the Department of Labor and Employment/Conveyance Section and as amended by ASME International)

The current edition of the Rules and Regulations Governing the Sanitation of Food Service Establishments
(as adopted by the Department of Public Health and Environment/Colorado State Board of Health)

(as adopted by the Colorado General Assembly as follows: CRS 9-5-101, as amended, for accessible housing)

Note: Additional codes, standards and appendices may be adopted by the state agencies and institutions in addition to the minimum codes and standards herein adopted by State Buildings Programs.

1. The 2006 edition of the IBC became effective on July 1 of 2007. Consult the state electrical and plumbing boards and the state boiler inspector and conveyance administrator and the Division of Fire Safety for adoption of current editions and amendments to their codes.

2. Projects should be designed and plans and specifications should be reviewed based upon the approved codes at the time of A/E contract execution. If an agency prefers to design to a different code such as a newer edition of a code that State Buildings Programs has not yet adopted, the agency must contact SBP for approval and then amend the A/E contract with a revised Exhibit D, Approved State Building Codes. Please note that the state plumbing and electrical boards enforce the editions of their codes that are in effect at the time of permitting not design.

3. The state’s code review agents, or the State Buildings Programs approved agency building official, shall review all documents for compliance with the codes stipulated herein. Note: The Department of Public Health and Environment, Division of Consumer Protection will review drawings for food service related projects.
4. This policy does not prohibit the application of various life safety codes as established by each agency for specific building types and funding requirements. NFPA 101 and other standards notwithstanding, approved codes will supersede where their minimum requirements are the most restrictive in specific situations. If a conflict arises, contact State Buildings Programs for resolution.

5. It is anticipated that compliance with the federal Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG) and Colorado Revised Statutes Section 9-5-101 will be met by compliance with the 2006 International Building Code and ICC/ANSI A117.1. However, each project may have unique aspects that may require individual attention to these legislated mandates.

6. The 2003 edition of the International Building Code (IBC) is to be applied to factory-built nonresidential structures as established by the Division of Housing within the Department of Local Affairs.

A. Appendices

Appendices are provided to supplement the basic provisions of the codes. Approved IBC Appendices are as follows:

1. Mandatory
   IBC Appendix Chapter C - Agricultural Buildings
   IBC Appendix Chapter I - Patio Covers

2. Optional
   Any non-mandatory appendix published in the International Building Code may be utilized at the discretion of the agency. Use of an appendix shall be indicated in the project code approach.

B. Amendments

None

C. Referenced Codes

1. While not adopted in entirety, portions of the following codes are referenced in the International Building Code (IBC), the International Mechanical Code (IMC), the International Energy Conservation Code (IECC) the International Plumbing Code (IPC), and the International Fuel Gas Code (IFGC). These following codes would be applied as reference standards.

   2006 International Fire Code (IFC)
   2006 International Existing Building Code (IEBC)

D. Referenced Standards

The IBC, IMC, IECC, IPC and IFGC standards shall be utilized to provide specific, or prescriptive, requirements on how to achieve the requirements established in the code. These standards may be unique to the code or may be derived from other established industry standards. Recognized standards may also be used to show compliance with the standard of duty established by the code.
1.05 OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA):

A. The Contractor shall have sole responsibility for compliance on the job site to all applicable portions of the Occupational Safety and Health Act. The Contractor is responsible for other regulatory requirements as they relate to occupational Health and Safety requirements. For example, NIOSH, ANSI, and MSA.

B. Protection of life, health and public welfare as it relates to the execution of the construction contract is the responsibility of the Contractor. The Owner’s Representative may, at their discretion, observe, inspect, or comment on plans, procedures, or actions employed at the project as they relate to safety of life, health or public welfare. If conditions are imposed by the Owner which interfere with, or imply actions detrimental to safety, written notice shall be returned to the Owner for action prior to affecting any unsafe conditions.

C. Contractors shall use OSHA Lock Out / Tag Out procedures when working with energized equipment.

D. All contractors entering confined spaces owned by CU or while conducting work under contract with CU shall develop a written program and utilize procedures that, at a minimum, comply with all federal, state and local confined space standards and all applicable regulatory requirements. Contractors shall, independent of the University, monitor the space to obtain their own data to ensure a safe entry and exit. Any data generated by a contractor’s confined space entry, should be provided to the Facilities Management confined Space Program Manager.

E. When contractors perform work that may involve Facilities Management controlled permit required confined spaces, Facilities Management will:
   1. Inform contractors of permit required confined spaces and that entry is allowed only after compliance with the confined space entry standard;
   2. Require contractors planning to enter a confined space to provide the Facilities Management Confined Space Program Manager in charge of that space, 48-hour advance notice of such planned entry. The contractors entry will be in accordance with the current Occupational Safety and Health Administration confined space entry standard and a signed document stating such, shall be provided to the FM Confined Space Program Manager prior to entry.

F. The FM Confined Space Program Manager, following receipt of notice of contractor planned entry, will:
   1. Apprise contractor of the hazards identified in the confined space and of any prior experience that is documented on the space;
   2. Appraise the contractor of any precautions or procedures that CU has implemented for the protection of workers in or near the confined space;
   3. Coordinate entry operations with the contractor when both Facilities Management and contractor personnel are working in or around the confined space;
   4. Debrief the contractor at the end of the entry operations regarding hazards confronted or created.

1.06 HOT WORK PERMITS

A. All contractors shall be required to obtained a Hot Work Permit, three (3) working days in advance, for work that involves welding, heat treating, grinding, thawing pipe, hot riveting, soldering and brazing, power driven fasteners and similar activities involving spark, flame or heat. Compliance with the requirements of the applicable fire code, the International Building Code, and NFPA Standard 51B are mandatory and all contractors performing hot work activities shall read and understand these code requirements. To obtain a current Hot Work Permit, go to website:
http://fm.colorado.edu/firesafety/hotwork.html
B. Contractors shall read and comply with the procedures and requirements for Fire Watch, Fire Alarm Interruption and Fire Suppression Interruption as found on the following websites:

Fire Watch Procedures:
http://fm.colorado.edu/firesafety/firewatch.html

Fire Alarm and Detection System Interruption/Outage:
http://fm.colorado.edu/firesafety/firealarmdetectsys.html

Fire Suppression System Interruption/Outage:
http://fm.colorado.edu/firesafety/firesuppressionsystems.html

C. No hot work shall be conducted in any campus facility without a hot work permit. Any person or firm who conducts hot work without a permit shall be fined one thousand dollars ($1,000) for each occurrence and their non-permitted activities shall be stopped immediately until they obtain a hot work permit. Contractor shall be responsible for any damages caused as a result of improper hot work activities or the work stoppage.

D. Individuals or firms who obtain a permit shall fully read, understand and implement the requirements of the permit. Any person or firm who conducts hot work without the full implementation of the permit requirements shall be fined five hundred dollars ($500) the first time and one thousand dollars ($1,000) for subsequent occurrences. When the requirements of the hot work permit are not being implemented, the improper activities shall be stopped immediately until a hot work permit is obtained. Contractor shall be responsible for any damages caused as a result of improper hot work activities or the work stoppage. Any contractor who is found to be in non-compliance a third time, will not be allowed to work on campus until further notice by Facilities Management.

E. The campus inspectors, project managers and fire marshal shall have the authority to stop improper or non-permitted hot work activities.

F. The Contractor shall notify the CU Fire Alarm Supervisor to deactivate all smoke alarms in the vicinity of the work prior to any demolition and construction work activity. Failure of the Contractor to comply with the smoke alarm deactivation requirement and cause a false alarm and arrival of the Boulder Fire Department shall be a $400 fine per occurrence.

### 1.07 PERMITS

A. The contractor must obtain a no fee building permit prior to starting work from Office Manager, Facilities Management at (303) 492-2904 in the Planning, Design and Construction Office, Research Laboratory No. 2, 1540 30th Street, Boulder, Colorado. Building permits are required on all projects except the following:
1. Fences not over 6 feet high & general landscape work
2. Retaining walls which are not over 4 feet in height, unless supporting a surcharge of impounding Class I, II or III-A liquids
3. Platforms, walks and driveways not more than 30 inches above grade and not over any basement or story below.
4. Painting, papering, and similar finish work that meet the requirements of chapter 8 of UBC. (Uniform Building Code).
5. Temporary motion picture, television and theater stage sets and scenery. Review for fire-safety issues is required.

B. The contractor must obtain applicable permits from CDPHE for asbestos abatement and demolition.
C. The contractor must post the permit(s) in a prominent location at the jobsite including all inspection reports. The contractor shall have an updated set of contract documents available at the jobsite for all inspections.

1.08 INSPECTIONS

A. The Contractor must schedule all required inspections 48 hours in advance by calling (303) 492-2922. CU or their designated inspectors will complete these inspections within 48 hours with the exception of weekends and state holidays.

B. The contractor is required to arrange for the following inspections:
   1. Required inspections: General. Reinforcing steel or structural framework of any part of any building of structure shall not be covered or concealed without first obtaining the approval of the building official.
   2. Lath or gypsum board inspection: To be made after lathing and gypsum board, interior and exterior, is in place, but before any plastering is applied or before gypsum board joints and fasteners are taped and finished.
   3. Final inspection: To be made after finish grading and the building is completed and ready for occupancy.
   4. Special inspection: Special inspection may be required on special projects and special types of construction.
   5. Re-inspections: A re-inspection fee may be assessed for each inspection or reinspection when such portion of work for which inspection is called is not complete or when corrections called for are not made.

C. The Contractor will be responsible for all cost related to re-inspections and will be billed at a rate of $50.00 per hour for CU re-inspections and at the testing agency bill-out rate for other re-inspections.

1.09 UNIVERSITY OF COLORADO SEXUAL HARASSMENT POLICY

A. Contractors should be aware of and review the University of Colorado at Boulder’s policies that prohibit discrimination and harassment on the basis of race, color, national origin, sex, age, disability, creed, religion, sexual orientation or veteran status. These policies are located on the web at: http://www.colorado.edu/odh/ Contractor personnel must adhere to these policies and conduct themselves in a manner that does not discriminate or harass as a result of interacting with an around the University of Colorado faculty, staff and students and visitors.

1.10 FIRE ALARM INTERRUPTION

A. Contractor shall contact CU Fire Alarm Systems Supervisor at 303-492-0633 prior to all interruptions or shutdowns of fire alarm systems. Interruptions or shutdowns shall be scheduled three (3) working days in advance with CU Fire Alarm Systems Shop, CU Project Manager and building proctor. Contractor shall provide a fire watch as directed by CU Fire Alarm Systems Shop during interruption or shutdown.

B. The Contractor shall be responsible for preventing nuisance alarm due to activities at their work site. Common sources of nuisance alarms are:
   1. Smoke (soldering, welding, cooking, etc.)
   2. Grinding
3. Dust (drilling, sweeping, canister vacuums, sand blasting, etc.)
4. Water leaking (plumbing leaks, overflows)

C. Precautions to prevent nuisance alarms are:
1. During construction projects, treat all buildings, except totally new construction, as though they were occupied buildings with live systems.
2. Do not assume that all detectors are in plain sight. Contact University personnel for verification.
3. Maintain dust control measures per UCB Standards:
   a. Maintaining barriers
   b. Covering air returns
   c. Asking CU personnel to cap or disable smoke detectors (Note any capping or disabling of fire safety devices is to be done ONLY by CU personnel, not contractors.)
   d. Avoiding recirculation of dust or smoke through the building air handling system.
4. Follow campus hot work procedures. Refer to specification Section 01060, paragraph 1.06.
5. Do not expose fire alarm devices to water or extreme temperatures.
6. Contact Fire Systems Group for any actions that affect fire detection, alarm, and suppression systems.

1.11 STORMWATER MANAGEMENT PLAN (SWMP)

A. Stormwater Management Plan (SWMP): Prior to any construction activity disturbing one acre of land or more, an approved SWMP and a Stormwater Permit for Construction Activity application from the Colorado Department of Public Health and Environment (CDPHE) are required. The SWMP shall be prepared in accordance with the CDPHE requirements for “Contents of the Stormwater Management Plan” and the UDFCD’s Urban Storm Drainage Criteria Manual, Volume 3, “Best Management Practices” (UDFCD Drainage Criteria Manual). Stormwater quality management and erosion control measures are to be constructed and maintained in accordance with the SWMP and the UDFCD Drainage Criteria Manual.

1.12 UTILITY LOCATES

Contractor MUST CALL 811 (or 1-800-922-1987) for utility locates BEFORE DIGGING on any project at the University of Colorado at Boulder. This includes even small projects such as, but not limited to, planting trees or shrubs, sidewalk removal/installation or fence post installation. Digging without calling can disrupt service to the campus or surrounding neighborhoods and potentially result in fines and repair costs.

1.13 ENVIRONMENTAL CODES AND REGULATIONS:

General Applicability of Codes and Regulations, and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.
**Contractor Responsibility:** The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State, and local regulations pertaining to Work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable Federal, State, and local regulations. The Contractor shall hold the Owner and Owner's Representative harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or his subcontractors.

**Federal Requirements** which govern asbestos abatement Work or hauling and disposal of asbestos waste materials include but are not limited to the following:

**OSHA:** U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA), including but not limited to:

- Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules
  Title 29, Part 1910, Section 1001 and
  Part 1926, Section 1101 of the
  Code of Federal Regulations

- Respiratory Protection
  Title 29, Part 1910, Section 134 of the Code of Federal Regulations

- Hazard Communication
  Title 29, Part 1910, Section 1200 of the Code of Federal Regulations

- Construction Industry
  Title 29, Part 1926, of the Code of Federal Regulations

- Access to Employee Exposure and Medical Records
  Title 29, Part 1910, Section 2 of the Code of Federal Regulations

**DOT:** U.S. Department of Transportation, including but not limited to:

- Hazardous Substances
  Title 49, Part 171 and 172 of the
  Code of Federal Regulations

**EPA:** U.S. Environmental Protection Agency (EPA), including but not limited to:

- Asbestos Hazard Emergency Response Act (AHERA) Regulation
  Title 40, Part 763, Sub-part E of the Code of Federal Regulations

- Asbestos School Hazard Abatement Reauthorization Act (ASHARA)
  Title 40, Part 763, Revised Appendix C to Subpart E of the Code of Federal Regulations

- National Emission Standard for Hazardous Air Pollutants (NESHAPS)
  National Emission Standard for Asbestos
  Title 40, Part 61, Sub-part A, and Sub-part M (Revised Sub-part B) of the Code of Federal Regulations

**State Requirements** which govern asbestos abatement Work or hauling and disposal of asbestos waste materials include but are not limited to the following:

- Colorado Air Quality Control Commission
- Emission Standards for Asbestos
Local Requirements: Abide by all local requirements which govern asbestos abatement Work or hauling and disposal of asbestos waste materials.

STANDARDS:

General Applicability of Standards: Except to the extent that more explicit or more stringent requirements are written directly into the Contract Documents, all applicable standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies are bound herewith.

Contractor Responsibility: The Contractor shall assume full responsibility and liability for the compliance with all standards pertaining to Work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor shall hold the Owner and Owner's Representative harmless for failure to comply with any applicable standard on the part of himself, his employees, or his subcontractors.

Standards which apply to asbestos abatement Work or hauling and disposal of asbestos waste materials include but are not limited to the following:

American National Standards Institute (ANSI)
1430 Broadway
New York, New York 10018
(212)354-3300

Fundamentals Governing the Design and Operation of Local Exhaust Systems
Publication Z9.2-79

American Society for Testing and Materials (ASTM)
1916 Race Street
Philadelphia, PA 19103
(215)299-5400

Safety and Health Requirements Relating to Occupational Exposure to Asbestos - E 849-82
Standard Practice for Visual Inspection of Asbestos Abatement Projects - E 1368

NOTICES:

U.S. ENVIRONMENTAL PROTECTION AGENCY:

Send Written Notification as required by USEPA National Emission Standards for Hazardous Air Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61, Subpart M) to the regional Asbestos NESHAPS Contact at least 10 working days prior to beginning any Work on asbestos-containing materials. Send notification to the following address:

EPA, Region VIII (8ART-TS)
Asbestos Coordinator/NESHAPS Contact
1595 Wynkoop Street
Denver, CO 80202-1129

Notification: Include information in the notification as required by the NESHAPS contact.
STATE AND LOCAL AGENCIES:

Send written notification as required by State and local regulations prior to beginning any Work on asbestos-containing materials. Send notification to the following address:

Colorado Department of Public Health and Environment
Colorado Air Pollution Control Division (APCD-SS-B1)
4300 Cherry Creek Drive South
Denver, CO  80222-1530

PERMITS:

Permit: All asbestos containing waste is to be transported by an entity maintaining a current "Industrial waste hauler permit" specifically for asbestos containing materials to a disposal site. Colorado Department of Public Health and Environment Asbestos Abatement Permit shall be secured, signed by the Project Manager and on-site prior to start of asbestos abatement.

VARIANCES:

Variances: The Contractor may request a variance from the appropriate Federal, State, or local agency where as the Contractor may demonstrate to the satisfaction of the regulating agency and Owner’s Representative that compliance is not practical and feasible or that the proposed alternative procedures provide equivalent control of asbestos. The Contractor shall comply with all terms and conditions of any variance granted. The Owner's Representative must approve in writing any variance application before submission, or variance before the start of Work, and may require additional terms. Acceptance of a variance by a regulatory agency does not constitute approval by the Owner's Representative.

Effect on Contract Sum: The denial of a variance by the Owner's Representative or Regulatory Agency does not constitute a changed condition. There will be no increases in the contract sum or extension of completion dates based upon the Contractor's ability, or inability, to secure a variance.

LICENSES:

Licenses: Maintain current licenses as required by applicable State or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the Work of this Contract.

POSTING AND FILING OF REGULATIONS:

Posting and Filing of Regulations: Post all notices at the Project site as required by applicable Federal, State, and local regulations. Keep copies of all applicable Federal, State, and local regulations and standards on file in Contractor's office.

SUBMITTALS:

Before Start of Work: Submit the following to the Owner's Representative for review. No Work shall begin until these submittals are received by the Owner's Representative.

Permits, Licenses, and Certificates: For the Owner's records, submit copies of notices, permits, licenses, and certifications required by this Section.

   Notices: Submit notices required by Federal, State and local regulations together with proof of timely transmittal to agency requiring the notice.
Permits: Submit a copy of application for permit and current valid permit required by State regulations.

Variances: Submit copies of all variances and the corresponding response by regulatory agency.

Licenses: Submit copies of all State and local licenses necessary to carry out the Work of this Contract.

Certifications: Submit copies of all State and local certifications of the contractor and employees of the Contractor necessary to carry out the Work of this Contract.
PART 1 - GENERAL

1.01 SUMMARY

A. Work Included:
   1. Specification system format.
   2. Grammar (syntax) description.

1.02 DESCRIPTION

A. These specifications have been derived from automated specification systems, and include minor deviations from format and traditional writing forms. Such deviations must be recognized as a normal result of this production technique, and no other meaning will be implied or permitted.

B. Imperative language of the technical sections is directed to the Contractor. The term "provide" used repeatedly in the text is defined to mean..."furnish and install, complete, in place and ready for operation and use unless specifically indicated otherwise."

D. Specifications are of abbreviated, simplified or streamlined type and include incomplete sentences. Omissions of work or phrases such as "the Contractor shall", "in conformity therewith," "shall be," "as noted on the Drawings", "A", "The", are intentional. Supply omitted words or phrases by inference in same manner as they are when "Note" occurs on Drawings. Supply words "on the Drawings" by inference when "as indicated" is used with sentences or phrases.

E. Abatement General and Administrative Requirements are set forth in the following specification sections:

   01010 Summary of the Work
   01041 Project Coordination
   01091 Definitions and Standards - Asbestos Abatement

E. Abatement Work requirements are set forth in the following specification sections, listed here according to the sequence of the Work:

   01060 Regulatory Requirements sets forth governmental regulations and industry standards which are included and incorporated herein by reference and made a part of the specification. This Section also sets forth those notices and permits which are known to the Owner and which either must be applied for and received, or which must be given to governmental agencies before start of Work.

   01500 Temporary Facilities - Asbestos Abatement sets forth the support facilities needed such as electrical and plumbing connections for the decontamination unit.

   01526 Temporary Enclosures details the requirements for the sheet plastic barriers isolating the Work Area from the balance of the building.

   01410 Test Laboratory Services describes air monitoring by Owner so that the building beyond the Work Area will remain uncontaminated. Air monitoring to determine required respiratory protection is the responsibility of the Contractor.

   01563 Decontamination Units explains the setup and operation of the personnel and material decontamination units.
01513 Temporary Pressure Differential and Air Circulation System sets forth the procedures to set up pressure differential isolation and ventilation of the Work Area.

01560 Worker Protection - Asbestos Abatement describes the equipment and procedures for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.

01562 Respiratory Protection sets forth the procedures and equipment required for adequate protection against inhalation of airborne asbestos fibers.

F. Asbestos Removal Work Procedures are described in the following specification sections:

02062 Non-Asbestos Demolition
02081 Removal of Asbestos-Containing Materials
02084 Disposal of Asbestos-Containing Waste Materials
09805 Encapsulation of Abated Surfaces

G. Decontamination of the Work Area after completion of abatement work is described in the following sections:

01711 Project Decontamination describes the sequence of cleaning and decontamination procedures to be followed during removal of the sheet plastic barriers isolating a Work Area.

01714 Work Area Clearance describes the analytical methods used to determine if the Work Area has been successfully cleaned of contamination.

H. Specific Demolition requirements are set forth in the following specification sections, listed here according to the sequence of the Work:

01010 Summary of Work
01041 Project Coordination
01563 Dust Control
02060 Building Demolition
02065 Disposal of Waste Material

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION
PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General Conditions, Supplementary General Conditions, and other Division-1 Specification Sections, apply to this Section.

SUMMARY:

General Explanation: A substantial amount of specification language constitutes definitions for terms found in other contract documents, including the drawings. Certain terms used in Contract Documents are defined in this article.

General Requirements: The provisions or requirements of Division-1 sections apply to entire Work of Contract and, where so indicated, to other elements which are included in the Project.

DEFINITIONS:

General: Definitions contained in this Article are not necessarily comprehensive, but are general to the extent that they are not defined more explicitly elsewhere in the Contract Documents.

Directed: Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the Owner's Representative", "requested by the "Owner's Representative", and similar phrases. However, no implied meaning shall be interpreted to extend the Owner's Representative's responsibility into the Contractor's area of construction supervision.

Approve: The term "approved," where used in conjunction with the Owner's Representative's action on the Contractor's submittals, applications, and requests, is limited to the responsibilities and duties of the Owner's Representative stated in General and Supplementary General Conditions. Such approval shall not release the Contractor from responsibility to fulfill Contract Document requirements, unless otherwise provided in the Contract Documents.

Regulation: The term "Regulation" includes laws, statutes, ordinances and lawful orders issued by authorities having jurisdiction, as well as rules, conventions and agreements within the construction industry that control performance of the Work, whether they are lawfully imposed by authorities having jurisdiction or not.

Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."

Project Site is the space available to the Contractor for performance of the Work, either exclusively or in conjunction with others performing other construction as part of the Project. The extent of the Project site is shown on the Drawings or described in the Project Specifications.

Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests.

Owner's Representative: This is the entity described as the "Architect" in the General Conditions of the Contract. All references to Architect in the Contract Documents in all cases refer to the Owner's Representative. The Owner's Representative will represent the Owner during construction and until final payment is due. The Owner's Representative will advise and consult with the Owner. The Owner's instructions to the Contractor will be forwarded through the Owner's Representative.
General Superintendent: This is the Contractor's Representative at the Work site. This person will generally be the Competent Person required by OSHA in 29 CFR 1926.

GENERAL REQUIREMENTS
SECTION 01091  DEFINITIONS AND STANDARDS – ASBESTOS ABATEMENT

DEFINITIONS RELATIVE TO ASBESTOS ABATEMENT:

Accredited or Accreditation (when referring to a person or laboratory): A person or laboratory accredited in accordance with Section 206 of Title II of the Toxic Substances Control Act (TSCA).

Adequately Wet: This phrase, when used in describing asbestos containing materials, means that water will migrate from the material when put under hand pressure.

Air Monitoring: The process of measuring the fiber content of a specific volume of air.

Airlock: The term "Airlock" when used in describing the construction of decontamination units means a 3' x 3' minimum space between any two connected rooms or areas constructed as a temporary enclosure.

Amended Water: Water to which a surfactant has been added to decrease the surface tension to 35 or less dynes.

Asbestos: The asbestiform varieties of serpentine (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, amosite, and actinolite-tremolite. For purposes of determining respiratory and worker protection both the asbestiform and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.

Asbestos Containing Material (ACM): Any material containing more than 1% by weight of asbestos of any type or mixture of types.

Asbestos Containing Building Material (ACBM): Surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a building.

Asbestos Containing Waste Material (ACWM): Any material which is or is suspected of being or any material contaminated with an asbestos-containing material which is to be removed from a Work Area for disposal.

Asbestos Debris: Pieces of ACBM that can be identified by color, texture, or composition, or means dust, if the dust is determined by an accredited inspector to be ACM.

Authorized Visitor: The Owner, the Owner's Representative, testing lab personnel, the Architect/Engineer, emergency personnel or a representative of any Federal, State and local regulatory or other agency having authority over the Project.

Barrier: Any surface that seals off the Work Area to inhibit the movement of fibers.

Breathing Zone: A hemisphere forward of the shoulders with a radius of approximately six (6) to nine (9) inches.

Cleanable Surface: Any nonporous or sealed building surface or material.

Demolition: The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operations.

Encapsulant: A material that surrounds or embeds asbestos fibers in an adhesive matrix, to prevent release of fibers.
Bridging encapsulant: an encapsulant that is partially absorbed by the in situ asbestos matrix, but leaves a discrete surface layer.

Penetrating encapsulant: an encapsulant that is absorbed by the in situ asbestos matrix without leaving a discrete surface layer.


Encapsulation: Treatment of asbestos-containing materials, with an encapsulant.

Flapped Doorway: Means a doorway created with three (3) sheets of polyethylene sheeting that covers the same opening hung from a ceiling and attached on opposite walls for alternating sheets.

Friable Asbestos Material: Material that contains more than 1% asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.

Glovebag: A sack (constructed of 6 mil transparent polyethylene or polyvinylchloride plastic) with inward projecting long-sleeved gloves, which is designed to enclose an object from which an asbestos containing material is to be removed.

HEPA Filter: A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in diameter.

HEPA Filter Vacuum Collection Equipment: High efficiency particulate air filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers of 0.3 microns or larger.

Negative Pressure Respirator: A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

Personal Monitoring: Sampling of the asbestos fiber concentrations within the breathing zone of an employee.

Pressure Differential and Ventilation System: A local exhaust system, utilizing HEPA filtration capable of maintaining a pressure differential with the inside of the Work Area at a lower pressure than any adjacent area, and which cleans recirculated air or generates a constant air flow from adjacent areas into the Work Area.

Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.

Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

Visible Emissions: Any emissions containing particulate materials that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.

Work Area: The area where asbestos related Work or removal operations are performed which is defined and/or isolated to prevent the spread of asbestos dust, fibers or debris, and entry by unauthorized personnel. Work Area is a Regulated Area as defined by 29 CFR 1926.
INDUSTRY STANDARDS:

Applicability of Standards: Except where Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into Contract Documents. Such standards are made a part of the Contract Documents by reference. Individual Sections indicate which codes and standards the Contractor must keep available at the Project Site for reference.

Referenced industry standards take precedence over standards that are not referenced but recognized in the construction industry as applicable.

Unreferenced industry standards are not directly applicable to the Work, except as a general requirement of whether the Work complies with recognized construction industry standards.

Publication Dates: Where compliance with an industry standard is required, comply with standard in effect as of date of Contract Documents.

Conflicting Requirements: Where compliance with two or more standards is specified, and they establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced, unless the Contract Documents indicate otherwise.

Minimum Quantities or Quality Levels: In every instance the quantity or quality level shown or specified shall be the minimum to be provided or performed. The actual installation may comply exactly, within specified tolerances, with the minimum quantity or quality specified, or it may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum values, as noted, or appropriate for the context of the requirements.

Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entities’ construction activity. Copies of applicable standards are not bound with the Contract Documents.

Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations as referenced in Contract Documents are defined to mean the associated names. Names and addresses are subject to change, and are believed to be, but are not assured to be, accurate and up-to-date as of date of Contract Documents:

AIA American Institute of Architects
1735 New York Ave. NW
Washington, DC 20006
202/626-7474

CFR Code of Federal Regulations
Available from Government Printing Office;
Washington, DC 20402
(usually first published in Federal Register)
202/783-3238
PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Remodel Work scheduling.
   2. Construction sequence scheduling.

B. Related Sections:
   1. Section 01500 - Temporary Facilities and Controls.

1.02 SYSTEM DESCRIPTION

A. An essential condition of this Contract shall be the scheduling and conduct of all phases of construction operations in such a manner that the Owner's operations and use of the existing buildings and campus shall be uninterrupted at all times, except for such limited interruption as is required and approved by the owner.

B. Contractor shall repair at his own expense all damage done to Owner's property, unknown utilities and adjoining public property as a result of Contractor's construction activities.

1.03 PROJECT/SITE CONDITIONS

A. Access and use of site:
   1. Contractor shall use the designated site access for construction offices and material storage in such a manner that access to existing buildings and campus remain accessible at all times for use.
   2. Confine operations to as limited a use of the existing building and campus as possible. A route of access to and from the work for employees shall be agreed upon and it shall be the Contractor's responsibility to see that the agreed route is maintained in order to prevent unwarranted or unnecessary traffic through the existing buildings or site.

B. Owner notice and approval:
   1. All arrangements and scheduling in connection with the work of this Contract shall be made with and subject to the approval of the Consultant and the Owner.
   2. All work under this Contract which will require interruption of service of the existing building shall be scheduled to suit the need and convenience of the Owner's operation, and arrangements shall be made with the Owner and the Architect at least eight (8) working days in advance of the start of such work.

PART 2 - PRODUCTS

Not Used
PART 3 - EXECUTION

3.01 REMODELING

A. Construction activities of all areas to be constructed in existing facilities shall be completely separated from the rest of the building by dust-proof enclosures erected by Contractor.

B. All surfaces in existing facilities not indicated to be remodeled, or removal of existing items by any Contractor, shall be repaired by the responsible Contractor to match existing adjoining similar surfaces.

3.02 CLEAN-UP

A. All areas within existing facilities, which are not within enclosed areas to be constructed used for access to work areas shall be completely cleaned of all debris and made "broom-clean" at the end of each day's work.

B. Dust, which permeates areas of existing facilities because of improperly constructed dust-proof barriers, shall be the responsibility of the Contractor. The Contractor shall employ the services of a professional cleaning company to clean any area outside of the designated construction dust barriers that are contaminated by Contractor's operations. Completely clean all such areas to the satisfaction of the Owner at no additional cost.

3.03 SEQUENCE OF WORK – ABATEMENT AND DEMOLITION

A. The Owner, Contractor, and Owner's Representative shall perform various activities to complete this Project. The general Sequence of Work is stated below. The sequence may be altered with written approval by the Owner's Representative. Repeat steps as necessary for each and every work area in the facilities and accepted alternates.

1. The Contractor shall mobilize on-site, unload all equipment and supplies into an established staging area. Products and equipment requiring inspection by the Owner's Representative shall be done so at this time.

2. The Contractor shall construct all critical barriers applicable to the Work area. Surfaces on and around critical barrier locations shall be pre-cleaned to accommodate adhesion of barriers and duct tape. If temporary partitions or framing are required, these shall be installed prior to critical barrier installation.

3. The Contractor shall establish negative pressure in the Work area by installing and operating negative pressure differential equipment.

4. Perform non-asbestos demolition that is not likely to impact ACM after critical barriers and negative air pressure have been established. Establish additional critical barriers as required upon completion of non-asbestos demolition.

5. The Contractor shall build in place all temporary enclosures required for personnel decontamination unit and waste loadout unit. A view port (12”x 12” minimum) shall be installed in a location so that activities inside the work area can be viewed from outside the work area.

6. The Contractor shall perform pre-cleaning of surfaces where applicable and inspect those areas with the Owner’s Representative.
7. The Contractor shall cover all fixed objects where applicable.

8. The Contractor shall construct all containment barriers and engineering controls as specified and inspect those areas with the Owner's Representative. If permanent enclosures are required, install these enclosures at this time.

9. The Contractor shall begin abatement by removing and disposing of all non-ACM items (i.e. non-ACM ceilings, fiberglass pipe insulation, etc.) as asbestos contaminated waste. Items identified for decontamination and return to the Owner shall be removed and cleaned at this time. Decontaminated items shall be inspected by the Owner's Representative and stockpiled in a location acceptable to the Owner.

10. The Contractor shall complete asbestos abatement and Project Decontamination as specified.

11. The Contractor and Owner's Representative shall visually inspect all Work Area surfaces (Specification Section 01711).

12. The Contractor shall apply lockdown encapsulant to all Work area surfaces, as specified in Section 09805 of the Specification.

13. The Owner's Representative shall collect final clearance air samples as specified in Section 01714 of the Specification.

14. After acceptable clearance samples, the Contractor shall remove all temporary enclosures.

15. The Owner's Representative and Contractor shall visually inspect the area for punch out work items.

16. The Work includes the completion of a Post Abatement walk thru to identify incomplete and/or corrective action work. The Post Abatement inspection shall include representatives of the Contractor, Owner and Owner's Representative to identify the punch list and schedule for completion.

17. Contractor shall complete abatement punch list work and mobilize demolition equipment.

18. Contractor shall commence with structure demolition and site work.

END OF SECTION
1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 - Specification sections, apply to work of this section.

1.02 SUMMARY:

A. Section Includes:
   1. General administrative requirements and procedures for Hazardous Communication Program.

B. Related Sections:
   1. Summary of Work: Section 01010.

1.03 WORK BY OWNER:

A. Asbestos:
   1. The Owner has completed an Environmental Site Assessment to identify asbestos containing materials and other immediate Health and Safety items. Do not begin work until Form Exhibit A (copy following the Supplementary General Conditions) has been executed. Where asbestos materials or other hazardous conditions are known to exist in locations affected by this project, remediation measures will be taken by the Owner under separate contract. The Contractor shall coordinate his sequence and schedule with that of the environmental remediation work.
   2. In the event that the Contractor encounters any material on the site which is reasonably believed hazardous, which has not been rendered harmless, the Contractor shall:
      a. Stop work immediately in affected areas.
      b. Report the condition in writing to the Department of Facilities Management Project Administrator.
      c. Report the condition in writing to the Architect.
      d. Resume work only under the provisions of this section.
   3. The following asbestos-containing materials are known to be present at the Work site. If any other materials are found, which are suspected of containing asbestos, notify Owner's Representative immediately. NOTE – Depending upon acceptance of Base Bid and/or Alternates, not all of the materials noted below may be included in this asbestos abatement scope of work.

<table>
<thead>
<tr>
<th>Material</th>
<th>Asbestos Content</th>
<th>Other Components</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Avg.)</td>
<td></td>
</tr>
<tr>
<td>1220 Grandview</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plaster (patch)</td>
<td>3-4% Chrysotile</td>
<td>96-97% Non-fibrous</td>
</tr>
<tr>
<td>Furnace Gasket</td>
<td>70% Chrysotile</td>
<td>20% Non-Asb. Fib.</td>
</tr>
<tr>
<td>Cement Board</td>
<td>30-35% Chrysotile</td>
<td>65-70% Non-fibrous</td>
</tr>
<tr>
<td>Metal Hood Cement</td>
<td>5-6% Chrysotile</td>
<td>94-95% Non-fibrous</td>
</tr>
<tr>
<td>Duct Wrap</td>
<td>85% Chrysotile</td>
<td>Unknown</td>
</tr>
<tr>
<td>1243 Grandview</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor Tile</td>
<td>17% Chrysotile</td>
<td>97-98% Non-fibrous</td>
</tr>
<tr>
<td>Joint Compound</td>
<td>2-3% Chrysotile</td>
<td>97-98% Non-fibrous</td>
</tr>
<tr>
<td>Plaster (patch)</td>
<td>2-3% Chrysotile</td>
<td>97-98% Non-fibrous</td>
</tr>
<tr>
<td>Furnace Gasket</td>
<td>35% Chrysotile</td>
<td>20% Non-Asb. Fib.</td>
</tr>
</tbody>
</table>
Window Glazing Compound  3% Chrysotile  45% Non-fibrous  97% Non-fibrous

Material Asbestos Content Other Components (Avg.)

Caulking  2-4% Chrysotile  96-98% Non-fibrous

1244 Grandview

Flooring Adhesive  2% Chrysotile  98% Non-fibrous
Floor Tile  2% Chrysotile  98% Non-fibrous
Duct Wrap  85% Chrysotile  15% Non-fibrous
Duct Tape  65% Chrysotile  35% Non-fibrous
Furnace Gasket  75% Chrysotile  25% Non-fibrous
Window Glazing Compound  2% Chrysotile  Unknown

1.04 SUBMITTALS:
A. Material Safety Data Sheets (MSDS):
   1. Copies of all material safety data sheets for all applicable products, including but not limited to; paint, adhesives, mastics, solvents, and finishes, etc., shall be retained on site by the Contractor for all applicable products used during the construction and/or remodeling work. Furnish copies of all MSDS’s to the Owner and Architect and include in the Project Record Document submittal.

1.05 QUALITY ASSURANCE:
A. Asbestos containing materials may exist within the general project area where such materials are not expected to be disturbed during the work. The Contractor shall review the Environmental Health and Safety Environmental Site Assessment Form at the project site and become familiar with known asbestos and hazardous containing materials in the work areas.

1.06 PROJECT/SITE CONDITIONS:
A. Hazard Communication Requirements:
   1. All Contractors are responsible for compliance with mandatory federal rules and regulations concerning Hazard Communication, including, but not limited to those regulations contained in 29 CFR 1910.1200 Hazard Communication, 1910.146 Confined Space, 1910.147 Lock-out Tag-out, 1910.1101 Asbestos, and 1926.62 Lead. Contractor and all subcontractors working at sites under the control of the Owner shall make available to the Architect, upon request, copies of the Hazard Communication Program used by their firm. In addition to this requirement, all regulations related to Multi-employer workplaces shall be adhered to. These regulations are found in 29 CFR 1910.1200, (e) (2) (I) through (e) (4) specifically:

   (e) (2) Multi-employer workplaces. Employers who produce, use, or store hazardous chemicals at workplace in such a way that employees of other employer(s) may be exposed (for example, employees of a construction contractor working on site) shall additionally ensure that the hazard communication programs developed and implemented under paragraph (e) include the following:
(e) (2) (i) The methods the employer will use to provide the other employer(s) with a copy of the material safety data sheet, or to make it available at a central location in the workplace, for each hazardous chemical the other employer(s)’ employees may be exposed to while working;

(e) (2) (ii) The methods the employer will use to inform the other employer(s) of any precautionary measures that need to be taken to protect employees during the workplace’s normal operating conditions and in foreseeable emergencies; and,

(e) (2) (iii) The methods the employer will use to inform the other employer(s) of the labeling system used in the workplace

(e) (3) The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this paragraph (e).

(e) (4) The employer shall make the written hazard communication program available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with requirements of 29 CFR 1910.20 (e).

2. The referenced regulations were excerpted from 29 CFR 1910.1200. This excerpt shall not be relied upon for compliance with mandatory federal, state and local regulations. The Contractor shall comply with all such regulations and shall be solely liable for insuring that all requirements under applicable regulations are met.

PART 2 - PRODUCTS    (Not applicable)

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Asbestos and Hazardous Materials Discovery:
   1. The Contractor is cautioned to be alert to the possibility that his work may uncover asbestos- containing or hazardous materials. If suspected materials are found, the Contractor shall notify the Owner and stop all work in the area immediately. If the suspected materials prove to contain asbestos or hazardous materials, the Owner will arrange to have the materials abated in a timely manner.

3.02 HAZARDOUS MATERIALS/EQUIPMENT REMOVAL:

A. Definition:
   1. Removal of hazardous materials/equipment is extremely dangerous. Hazardous materials/equipment is defined to include, but not limited to the following:
      a. Fume hoods
      b. Hood exhaust duct work
      c. Exhaust fans
      d. Laboratory casework and equipment
      e. PCB ballast’s
      f. Mercury and Sodium Vapor Lights
      g. Adjacent material that could come in contact with workers or public.

B. Protection:
1. Hazardous materials/equipment removal shall include the protection of personnel, material, environment and safe legal disposal of the equipment; and further includes the following:

**GENERAL REQUIREMENTS**

**SECTION 01121**

**HAZARDOUS MATERIALS/EQUIPMENT PROCEDURES**

a. Notification of Project Administrator and appropriate Environmental Health and Safety Unit
b. Proper protective clothing for personnel involved in the removal.
c. Appropriate emergency and first aid facilities.
d. Removal procedures shall be accomplished during minimal occupancy of the remainder of the building on the weekends or at night.

C. Disposal:
1. All equipment related to the use, storage or processing of hazardous materials/equipment shall be removed and properly disposed of under the direct, full-time supervision of a qualified Laboratory Specialist fully conversant with the chemistry and properties of the material/equipment involved. Certification is required. Contractors are responsible for the removal of all hazardous materials/equipment and chemicals from the work site as well as proper disposal of all hazardous waste generated by their project.

2. Hazardous waste disposal must include prior notification to the Department of Environmental Health and Safety in order to verify that the appropriate procedures and documentation are used. Copies of all paper work for shipping and disposing of these materials (hazardous waste manifests, land disposal restrictions, etc.) will be provided by the Contractor to the Department of Environmental Health & Safety (303) 492-6025. Where appropriate, the Main Campus EPF ID COD007431505 will be used for these shipments.

3. Hazardous chemicals, waste, and other pollutants may not be discharged to the sanitary or storm sewer systems at anytime. Releases to the environment must be reported to CUPD/EH&S immediately.

3.03 ENVIRONMENTAL RESPONSIBILITIES

A. Environmental and Safety Issues and Practices.

Contractors working on the UCB campus are required to comply with all applicable University, City, State and Federal environmental regulations and safety standards. Hazardous and regulated materials must be managed and disposed of properly. Work sites must control dust, debris and run-off, and pay special attention to preventing any pollutants from entering the storm sewer or surface water collection systems. These systems ultimately drain into our creeks and waterways.

B. Contractor will be required to sign an Environmental Responsibilities form. The contractor is responsible for notifying all subcontractors of the responsibilities identified on the form. A copy of this form must be posted, throughout the duration of the project, in a visible area for all workers to see.

END OF SECTION
PART 1 - GENERAL

1.01 REQUIREMENTS

A. The types and minimum requirements for project meetings are included but are not necessarily limited to the following categories:

   Pre-construction meeting
   Progress and Coordination meetings
   Specially called meetings

B. The pre-construction meeting will be scheduled within fifteen days after date of Notice to Proceed, at a central site location designated by the Owner and convenient for all parties.

1. Attendance:
   a. Owner's Representative
   b. Consultant and his sub-consultants, as applicable
   c. Contractor's Superintendent
   d. Major Subcontractor(s)
   e. Others as appropriate

2. Suggested Agenda:
   a. Distribution and discussion of:
      List of major subcontractors and suppliers
      Projected construction schedules
      Critical work sequencing
      Major equipment deliveries and priorities
      Project Coordination
      Designation of responsible personnel
   b. Procedures and processing of:
      Field decisions
      Proposal requests
      Submittals
      Change Orders
      Applications for Payment
   c. Adequacy of Distribution of Contract Documents
   d. Procedure for Maintaining Record Documents
   e. Inspections
   f. Stormwater Management Plan (SWMP)

C. The Architect/Engineer will: Record the minutes; including significant proceedings and decisions.

D. The Contractor shall schedule and administer subcontractor and vendor pre-construction meetings throughout progress of the work. He will:
   1. Prepare agenda for meetings.
   2. Distribute written notice of each meeting four days in advance of meeting date.
   3. Make physical arrangements for meetings.
   4. Preside at meeting.
   5. Record the minutes; including significant proceedings and decisions.
   6. Representatives of Contractors, Subcontractors, and Suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.
7. Use of Premises:
   Office, work, staging and storage areas
   Owner's requirements

8. Temporary construction Facilities, Utilities, Controls and Construction Aids

9. Safety, First-aid, Security and Housekeeping Procedures

10. Administrative Procedures and Documents as Required by Owner

1.02 PROGRESS AND COORDINATION MEETING

The Contractor will schedule and administer job progress and coordination meeting at the site.

A. Attendance:
   1. Owner as needed
   2. Consultant and his sub-consultants as needed
   3. Subcontractor as appropriate to the agenda
   4. Suppliers as appropriate to the agenda
   5. Others

B. Suggested Agenda:
   1. Review of work progress since previous meeting.
   2. Field observations, problems and conflicts.
   3. Problems which impede Construction Schedule.
   4. Review of off-site fabrication and delivery schedules.
   5. Corrective measures and procedures to regain projected schedule.
   6. Revisions to Construction Schedule.
   7. Coordination of schedules.
   8. Progress and schedule during succeeding work period.
   9. Review submittal schedules and expedite as required.
   11. Pending changes and substitutions.
   12. Review proposed changes for:
       a. Effect on Construction Schedule and on completion date.
       b. Effect on other contracts of the Project.

C. The Architect/Engineer shall record and distribute the minutes of all progress meetings throughout the construction period and shall visit the site a minimum of once every two weeks. The Architect/Engineer shall average one visit per week during construction.

The structural engineer shall visit the site immediately prior to every major structural concrete slab pour; every major foundation wall pour; at least twice for each major segment of work [i.e., caissons, columns, steel roof joists, etc].

END OF SECTION
PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Submit shop drawings, product data and samples as required by various sections of the specifications.

1.02 QUALITY ASSURANCE

A. Shop Drawings:
   1. Drawings shall be presented in a clear and thorough manner.
   2. Details shall be identified by reference to sheet, detail, schedule, or room numbers shown on drawings.

B. Product Data:
   1. Preparation:
      a. Clearly mark each copy to identify pertinent products or models.
      b. Show performance characteristics and capabilities.
      c. Show dimensions and clearances required.
      d. Show wiring or piping diagrams and controls.
   2. Manufacturer's standard schematic drawings and diagrams:
      a. Modify drawings and diagrams to delete information that is not applicable to the work.
      b. Supplement Standard information to provide information specifically applicable to the work.

C. Samples:
   1. Office samples shall be of sufficient size and quantity to clearly illustrate:
      a. Functional characteristics of the product with integrally related parts and attachment devices.
      b. Full range of color, texture and pattern

D. Mock-ups:
   1. Provide complete mock-up of exterior materials to be incorporated into the work.
      a. Mock-up shall include a sample of all materials used in exterior construction, whether specified elsewhere or not in these documents, including but not limited to, masonry, stone, window systems, precast concrete, roof systems, flashing, sealants, masonry paving, paint and other readily visible materials.
      b. Secure Owner approval of mock-ups prior to ordering and placement of materials. Modify mock-ups as directed by the Architect or Owner until acceptable.
      c. Confirm exact mock-up(s) required by Owner prior to fabrication of mock-up(s).
   2. Remove mock-up at the conclusion of the project or when directed by the Architect.
      a. Restore or finish site to finish condition indicated on the Drawings.

E. Responsibilities of the Contractor:
   1. Review shop drawings, product data, samples and project record drawings for specification performance prior to submission.
2. Determine and Verify:
   a. Field measurements
   b. Field construction criteria
   c. Catalog numbers and similar data
   d. Conformance with specifications
3. Coordinate each submittal with requirements of the work and of the Contract Documents.
4. Notify the Consultant in writing, at the time of submission, of any deviations in the submittals for requirements of the Contract Documents.
5. Begin no fabrication or work that requires submittals until return of submittals with Consultant's acceptance.
6. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Consultant's review of submittals.
7. Contractor shall stamp, sign or initial, and date each submittal to show compliance with the Contract Documents prior to submittal to the Consultant.

1.03 SUBMITTALS

A. Make submittals promptly in accordance with approved schedule and in such sequence as to cause no delay in the work.

B. Number of Submittals Required:
   1. Shop Drawings: Submit one reproducible transparency and four opaque reproductions. Three copies will be retained by the Consultant.
   2. Product Data: Submit seven copies, three of which will be retained by the Consultant.
   3. Samples: Submit the number stated in each specification section.

C. Submittals shall contain:
   1. Date of the submission and dates of any previous submissions.
   2. Project title and number.
   4. Names of:
      a. Contractor and Subcontractor(s), if applicable.
      b. Supplier
      c. Manufacturer
   5. Identification of product with the specification section number.
   6. Field dimensions, clearly identified as such.
   7. Relation to adjacent or critical features of the work or materials.
   8. Applicable standards, such as ASTM or Federal specification numbers.
   10. Identification of revisions on resubmittals.
   11. An 8"x3" blank space in lower right-hand corner for review stamps.

D. Resubmission Requirements:
   1. Make any corrections or changes in the submittals required by the Consultant and resubmit until accepted.
   2. Shop drawings and product data:
      a. Revise initial drawings or data and resubmit as specified for initial submittal.
b. Indicate any changes that have been made, other than those requested by the Consultant.
3. **Samples**: Submit new samples as required for initial submittal.

**E. Distribution:**
1. Distribute reproductions of approved shop drawings and copies of product data to affected subcontractors and retain one copy for use at the job-site.
2. Distribute approved samples as directed.

**F. Consultant's Duties:**
1. Review submittals with reasonable promptness and in accordance with schedule.
2. Review of separate item does not constitute review of an assembly in which item functions.
3. Affix stamp and initials or signature, and indicate requirements for resubmittal or acceptance of submittal.
4. Return submittals to the Contractor for distribution or for resubmission.

**G. Schedule of Values and pay applications:**
1. Submit typed schedule on State Form SC7.2; Contractor's standard form or media-driven printout will be considered on request.
2. Format: Table of Contents of this Project Manual.
3. Include in each line item a directly proportional amount of Contractor's overhead and profit.

**H. Schedule of Submittals**: The Contractor shall submit the submittals required by the specifications. The Contractor shall develop a submittal schedule that confirms the submittals and the time frame for review by the consultants.

**I. Construction Schedule:**
1. The Contractor shall submit a critical-path method (CPM) construction schedule prior to start of construction activities. The CPM schedule shall include notice to proceed, submittal activities, construction activities, change order work (when applicable), close-out, testing, demonstration, and acceptance. The CPM shall correlate specifically to the schedule of values line items and be cost loaded.

Float, slack time, or contingency within the schedule (i.e., the difference in time between the project's early completion date and the required contract completion date), and total float within the overall schedule, is not for the exclusive use of either the principal representative or the Contractor, but is jointly owned by both and is a resource available to and shared by both parties as needed to meet contract milestones and the contract completion date.

The Contractor will be required to submit an as-built progress CPM schedule with each progress billing. This CPM schedule will be the basis for making progress payments. The level of detail and quantity of work activities in the CPM schedule should be negotiated with the principal representative prior to starting construction.

**J. Progress Photos**
1. The Contractor shall submit up to 12 - 3x4 inch progress photos with each progress payment. The photos should demonstrate the work in place and be dated with a short description of the photographed item.
K. Coordination Drawings:
   1. The Contractor shall submit coordination drawings with all mechanical, electrical, fire protection, and building monitoring systems prior to the Consultant review of any shop drawings or submittals for work in those trades. Approval of required shops and submittals must be obtained prior to starting work, and must be obtained prior to approval of pay applications of the work. The drawings shall be created to include all trades on a particular level of the building on one drawing. Identify conflicts between the systems or between the systems and architectural elements such as ceiling heights, ceiling types, or walls. Conduit routing for electrical, mechanical, energy management system, and security trades shall be included. Identify potential solutions to the conflicts for the Consultant and Owner to review during the submittal process. Revise the coordination drawings to show any comments made during the submittal review process, and reissue for use by all affected trades, Owner and Consultant.
   2. The Coordination drawings shall include sectional coordination documents. Identify elevations of systems A.F.F. (above finish floor) and component dimensions. Show elevations whenever component changes height.

L. Daily Reports
   1. The contractor shall submit daily reports, due by 5 p.m. the following day. The report should include weather, equipment, manpower count, subcontractors on site, short description of work for that day, inspections, visitors, items that may affect progress or quality of project.

M. Request for Information (RFI):
   1. The Contractor will be responsible for submitting RFIs on AIA form G716 or similar. The RFI should identify in writing any unclear, inconsistent, or conflicting item in the documents that could not be answered by thorough review by the Contractor or subcontractors. The RFI should include a description of the item and a proposed solution. The RFI should indicate schedule or cost impact, if any. Contractor shall be required to submit cost or schedule impact within seven days of receipt of the RFI response. Each RFI shall be numbered in sequence.

N. Weekly Logs:
   1. The Contractor shall provide an updated RFI, change request, and submittal logs at weekly construction meetings. Contractor shall provide a 2-week detailed construction schedule at the weekly construction meeting.

PART 2 - MATERIALS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION
PART 1 - GENERAL

1.01 SUPPLEMENTAL TESTING

If required, the following testing shall be performed at the expense of the contractor installing the material being tested:

A. Material Substitution: Any tests of basic material or fabrication equipment offered as a substitute for specified items on which a test may be required in order to prove its compliance with specifications.

B. Mechanical/Electrical: Tests on mechanical and electrical systems required to ensure their proper installation and operation.

C. Any test that fails shall be paid for by the installing contractor subject to the following conditions:
   1. Quantity and nature of tests will be determined by the Consultant.
   2. All test shall be done in the presence of the Owner or his representative.
   3. Proof of noncompliance will make the installing contractor liable for any corrective action which the Owner feels is prudent including complete removal and replacement of defective material.

Nothing contained herein is intended to imply that the installing contractor does not have the right to have tests performed on any material at any time for his own information and job control so long as the Consultant or Owner does not assume responsibility for costs or for giving them consideration when appraising quality of materials.

D. The Consultant shall determine the type and number of tests to be performed on the project.

1.02 TEST REPORTS

Reports of all tests made by testing laboratories shall be distributed by the testing laboratory as follows:
1 copy - Contractor
1 copy - Applicable supplier or subcontractor
1 copy - Owner
1 copy - Consultant
Other copies - as directed

1.03 QUALITY CONTROL SYSTEM

A. General: The contractor shall establish a quality control system to perform sufficient inspection and tests of all items of work, including that of all subcontractors, to ensure conformance to the Contract Documents for materials, workmanship, construction, finish, functional performance and identification. This control shall be established for all construction except where the Contract Documents provide for specific compliance tests by testing laboratories or Consultants employed by the Owner.

The quality control system is the means by which the Contractor assures that construction complies with the requirements of the Contract Documents. Controls shall be adequate to cover all construction operations and should be keyed to the proposed construction schedule.
B. The Contractor shall designate a quality control representative on staff to review the work to insure compliance with the contract documents by weekly jobsite visits for observation. The designated employee shall not be involved in the performance of the work. The quality control representative shall review the work and make necessary corrections to bring the work into compliance prior to scheduling the Architect for the final punchlist review.

C. Records: The Contractor shall maintain correct records on an appropriate form for all inspections and tests performed, instruction received from the Owner and actions taken as a result of those instructions. These records shall include evidence that the required inspections or tests have been performed (including type and number of inspections or tests, nature of defects, causes for rejection, etc.) proposed or directed remedial action, and corrective action taken. The Contractor shall document inspections and tests as required by each Section of the Specifications.

1.04 INDEPENDENT TESTING AGENCY SERVICES

A. The Owner will employ and pay for the services of an independent Testing Agency to perform the Inspections, special inspections, tests and other services when required by sections of the specification. Services shall be performed in accordance with requirements of governing authorities and with specified standards.

1. Contractor shall cooperate with Testing Agency personnel and shall furnish tools, sample of materials, design mixes, equipment and assistance as requested.

2. Contractor shall provide and maintain, for the sole use of the Testing Agency, adequate facilities for the safe storage and proper curing of concrete testing cylinders on the project site for the first 24 hours after casting as required by ASTM C 31, Method of Making and Curing Concrete Test Specimens in the field.

3. Contractor shall notify Testing Agency sufficiently in advance of operations to allow for completion of initial tests and proper assignment of inspection personnel.

4. Contractor shall notify the testing agency sufficiently in advance of cancellation of required testing operations. The Contractor shall assume responsibility for costs incurred due to the failure to provide such notice.

END OF SECTION
PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General Conditions, Supplementary General Conditions, and other Division - 1 Specification Sections, apply to Work of this Section.

Air Monitoring during Work Area Clearance is described in Section 01714 Work Area Clearance.

DESCRIPTION OF THE WORK:

Not in Contract Sum: This Section describes Work being performed by the Owner. This Work is not in the Contract Sum.

This Section describes air monitoring carried out by the Owner to verify that the building beyond the Work Area and the outside environment remains uncontaminated. This Section also sets forth airborne fiber levels both inside and outside the Work Area as action levels, and describes the action required by the Contractor if an action level is met or exceeded.

Air monitoring required by OSHA is Work of the Contractor and is not covered in this Section.

AIR MONITORING:

Work Area Isolation: The purpose of the Owner's air monitoring is to detect faults in the Work Area isolation such as:

- Contamination of the building outside of the Work Area with airborne asbestos fibers,
- Failure of filtration or rupture in the differential pressure system,
- Contamination of air outside the building envelope with airborne asbestos fibers.

Should any of the above occur immediately cease asbestos abatement activities until the fault is corrected. Do not recommence Work until authorized by the Owner's Representative in writing.

Work Area Airborne Fiber Count: The Owner's Representative will monitor airborne fiber counts in the Work Area. The purpose of this air monitoring will be to detect airborne asbestos concentrations which may challenge the ability of the Work Area engineering controls to protect the balance of the building or outside of the building from contamination by airborne fibers.

Work Area Clearance: To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to an acceptable level, the Owner will sample and analyze air per Section 01714 Work Area Clearance.

STOP ACTION LEVELS:

Inside Work Area: Maintain an average airborne count in the Work Area of less than 0.5 fibers per cubic centimeter. If the fiber counts rise above this figure for any sample taken, revise Work procedures to lower fiber counts. If the Time Weighted Average (TWA) fiber count for any Work shift or 8 hour period exceeds 0.5 fibers per cubic centimeter, stop all Work, leave Pressure Differential System in operation and notify Owner's Representative. After correcting cause of high fiber levels, do not recommence Work until authorized in writing, by Owner's Representative.

If airborne fiber counts exceed 2.0 fibers per cubic centimeter for any period of time cease all Work except corrective action until fiber counts fall below 0.5 fibers per cubic centimeter and notify Owner's
Representative. After correcting cause of high fiber levels, do not recommence Work until authorized in writing, by Owner's Representative.

**Outside Work Area:** If any air sample taken outside of the Work Area exceeds the base line established below, immediately and automatically stop all Work except corrective action. The Owner's Representative will determine the source of the high reading and so notify the Contractor in writing.

If the high reading was the result of a failure of Work Area isolation measures initiate the following actions:

- Restrict access to the effected area and post warning signs to prevent entry to the area by persons other than those necessary to respond to the incident. Posting requirements are set forth in Section 01526 - Temporary Enclosures.
- Shut off or modify air handling systems to prevent the distribution of airborne fibers. Establish negative air flow using HEPA equipped negative pressure differential equipment to prevent the spread of airborne contamination to other areas of the project site. Refer to Section 01513 Temporary Pressure Differential and Air Circulation System for construction details.
- Immediately erect new critical barriers as set forth in Section 01526 Temporary Enclosures to isolate the affected area from the balance of the building. Erect Critical Barriers at the next existing structural isolation of the involved space (eg. wall, ceiling, floor).
- Decontaminate the affected area in accordance with Section 01711 Project Decontamination.
- Require that respiratory protection as set forth in Section 01562 Respiratory Protection be worn in affected area until area is cleared for re-occupancy in accordance with Section 01714 Work Area Clearance.
- 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.
- If the exit from the Clean Room of the personnel decontamination unit enters the affected area, establish a new decontamination facility consisting of a Shower Room and Changing Room as set forth in Section 01563 Decontamination Units at entry point to the affected area. The original Clean Room may be considered the new Equipment Room for the duration of the Work.
- 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 as set forth in Section 01714 Work Area Clearance.

If the high reading was the result of other causes initiate corrective action as determined by the Owner's Representative.

**Effect on Contract Sum:** Complete corrective Work with no change in the Contract Sum if high airborne fiber counts were caused by Contractor's activities. If the cause of the elevated fiber counts was a result of Contractor error, the Contractor may be held accountable for any additional air sampling and analysis costs. The Contract Sum and schedule will be adjusted for additional Work caused by high airborne fiber counts beyond the Contractor's control.

**ANALYTICAL METHODS:**

The following methods will be used by the Owner in analyzing filters used to collect air samples. Sampling rates may be varied from printed standards to allow for high volume sampling.
Phase Contrast Microscopy (PCM) will be performed using the NIOSH 7400A method. This analysis will be carried out at the job site, or at a laboratory located off the job site.

Transmission Electron Microscopy will be performed using the analysis method set forth in the AHERA regulation 40 CFR Part 763 Appendix A.

SAMPLE VOLUMES:

General: The number and volume of air samples taken by the Owner will be in accordance with the following schedule and of sufficient volume to confidently analyze 0.010 f/cc whenever possible. Sample volumes given may vary depending upon the analytical method used.

SCHEDULE OF AIR SAMPLES:

Before Start of Work:
The Owner will secure the following Air Samples to establish a base line before Start of Work.

Sample cassettes: Samples will be collected on 25 mm. cassettes as follows:

- PCM: 0.8 and/or 0.45 micrometer mixed cellulose ester.
- TEM: 0.45 micrometer mixed cellulose ester with 5.0 micron mixed cellulose ester backing filter.

Sampling sensitivity in the table below refers to:

- Detection Limit for PCM analysis as set forth in the analytical method used
- Analytical Sensitivity for TEM analysis as set forth in the analytical method used or the AHERA regulation

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Analysis Method</th>
<th>Sampling Sensitivity Fibers/cc.</th>
<th>Minimum Volume (Liters)</th>
<th>Rate LPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Work Area</td>
<td>1</td>
<td>PCM and Hold for TEM</td>
<td>0.01</td>
<td>1,300</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Each Work Area</td>
<td>4</td>
<td>PCM and Hold for TEM</td>
<td>0.01</td>
<td>1,300</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Building Work Area</td>
<td>1</td>
<td>PCM and Hold for TEM</td>
<td>0.005</td>
<td>1,300</td>
<td>1-10</td>
</tr>
</tbody>
</table>

Base Line is an action level expressed in fibers per cubic centimeter which is greater than the largest of the following:

- Average of the PCM samples collected inside the Work Areas
- Average of the PCM samples collected outside each Work Area
- Average of the PCM samples collected outside the building
- 0.01 fibers per cubic centimeter

Samples collected for TEM analysis will be held without analysis. These samples may be analyzed as needed to verify PCM analysis or for quality assurance on the Work.
From start of Work of Section 01526 Temporary Enclosures through the Work of Section 01711 Project Decontamination, the Owner may be taking the following samples on a daily basis.

### GENERAL REQUIREMENTS

**SECTION 01410** TEST LAB SERVICES – ASBESTOS ABATEMENT

Samples will be collected on 25 mm. cassettes with the following filter media:

- **PCM**: 0.8 and or 0.45 micrometer mixed cellulose ester.
- **TEM**: 0.45 micrometer mixed cellulose ester with 5.0 micron mixed cellulose ester backing filter.

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Analysis Method</th>
<th>Sensitivity</th>
<th>Minimum Volume (Liters)</th>
<th>Rate LPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Work Area</td>
<td>1</td>
<td>PCM</td>
<td>0.01</td>
<td>1,200</td>
<td>1-10</td>
</tr>
<tr>
<td>OR AS REQUIRED BY CONDITIONS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Outside Each Work Area at Critical Barrier

- Clean Room: 1 PCM 0.01 1,200 1-10
- Equip Decon: 1 PCM 0.01 1,200 1-10
- Outside Building: 1 PCM 0.01 1,200 1-10
- Output Pressure Differential Sys: 1 PCM 0.01 1,200 1-10

Additional samples may be taken at Owner's or Owner's Representatives discretion. If airborne fiber counts exceed allowed limits additional samples will be taken as necessary to determine the source of fiber counts and to monitor fiber levels.

**LABORATORY TESTING:**

The services of a testing laboratory will be employed by the Owner to perform laboratory analyses of clearance air samples. A microscope equipped technician will set up at the job site, or samples will be sent overnight on a daily basis, so that verbal reports on air samples can be obtained within 24 hours. The Contractor will have access to all air monitoring tests and results.

A complete record of all air monitoring and results will be furnished to the Owner's Representative, the Owner, and the Contractor upon request.

Written Reports of all air monitoring tests will be posted at the job site on a daily basis.

**PART 2 - PRODUCTS**

Not Applicable

**PART 3 - EXECUTION**

**PERSONNEL MONITORING:**
The Owner and Owner’s Representative will not perform air monitoring to meet Contractor's OSHA requirements for personnel sampling or any other purpose.

ADDITIONAL TESTING:

The Contractor may conduct his own air monitoring and laboratory testing. If he elects to conduct his own air monitoring, cost of such air monitoring and laboratory analysis shall be at no additional cost to the Owner.

END OF SECTION
PART 1 - GENERAL

1.01 RELATED DOCUMENTS
   A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF REQUIREMENTS
   A. This section of the General Requirements outlines the basic requirements for temporary services, utilities, and facilities which will indirectly enable adequate construction progress and processes, and will accommodate other necessary activities at the project site except as otherwise indicated, the costs of providing and using temporary services are included in the Contract Sum.

1.03 QUALITY ASSURANCE
   A. Comply with governing regulations and utility company regulations and recommendations for the construction of temporary facilities, including but not necessarily limited to, code compliance, permits, inspections, testing, and health and safety compliance.

1.04 SITE CONDITIONS
   A. Provide Temporary facilities and services at the time first needed at the site and maintain, expand, and modify the facilities as needed throughout the construction period and do not remove until no longer needed.

PART 2 - EXECUTION

2.01 GENERAL
   A. Use qualified tradesmen for the installation of temporary facilities. Locate facilities where they will serve the total project construction work adequately and result in minimum interference with performance of the work. Relocate, modify, and extend facilities as required during the course of the work to properly accommodate the entire work of the project.

2.02 TEMPORARY FACILITIES
   A. Temporary Water: Connect to existing water source as designated by the Owner for construction operations.

   The Contractor shall provide a suitable backflow protection device (if required by Owner) and any other valves deemed necessary by the Contractor and/or Owner’s Representative. Valves shall be temperature and pressure rated for operation of the temperatures and pressures encountered. After completion of use, the Contractor’s equipment and fittings shall be removed without damage or alteration to Owner’s water
piping and equipment. Hoses shall be provided by the Contractor and shall be commercial grade, or better, and rated for the temperatures and pressures encountered.

**Hot Water:** The Contractor shall provide a hot water heater capable of providing enough hot water for all workers and authorized visitors to the site. Any combustible heating system shall be securely placed outside the building with warning signs posted.

### GENERAL REQUIREMENTS

#### DIVISION 1 - PAGE 2

#### SECTION 01500 - TEMPORARY FACILITIES

**B. Temporary Telephone:** Provide, maintain and pay for telephone service to field office at time of project mobilization. If a mobile phone is designated as the field office phone then it shall be a local number.

**C. Sanitary Facilities:** Comply with governing regulations, including safety and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install sanitary facilities in available locations which will best serve the needs of personnel at the project site. Toilet rooms in existing buildings or in new construction may not be used without written approval of the Owner.

**D. Temporary Heat and Ventilation:** Provide such OSHA approved heat and fuel, heating units, equipment as necessary to provide the required environmental conditions and to protect the work from damage due to cold. Maintain equipment in a clean, safe condition.

**E. Fire Extinguisher:**
1. Except as otherwise indicated or required, comply with the applicable recommendations of NFPA No. 10 "Portable Fire Extinguisher" for each area of each construction activity whenever combustible materials, flammable liquids, and similar exposures to possible fires are present.
2. Locate extinguisher where most convenient and effective for the intended purposes. Store combustible materials in recognized fire-safe locations and containers.

**F. Protection**
1. Barricades, Warning Signs, and lights: Comply with recognized standards and code requirements for the erection of substantial and structurally adequate barricades wherever needed to prevent accidents and losses. Paint with appropriate colors, graphics and warning signs to inform personnel at the site and the general public where exposure exists of the hazard being protected. Provide lighting where appropriate and needed for the recognition of the facility, including flashing red lights where appropriate.

**G. Temporary Enclosure:** Wherever required, provide temporary enclosure of materials, equipment, work in progress, and completed portions of work, so as to afford protection for both the work and employees.

**H. Miscellaneous Facilities:**
1. Provide ladders, ramps, and temporary stairs for access to all levels of the construction for general access by all trades. Individual contractors and subcontractors shall furnish their own stepladders, scaffolds, staging, work platforms, and other facilities for use of their workmen and as necessary for safety of all personnel.

**I. Field Office:**
1. The Contractor shall provide and maintain a suitable temporary field office for his own use. Offices and all other temporary structures shall be removed from the site upon completion of the work.
2. Temporary structures or storage used for storage and offices for contractors shall be located on the site in an orderly manner as determined by the Owner.

J. Electrical Service:

**General:** Comply with applicable NEMA, NECA, OSHA and UL standards and governing regulations for materials and layout of temporary electric service.

**TEMPORARY FACILITIES**

**Temporary Power:** The Contractor shall provide a temporary electrical panel with "pigtail", up to 200 feet in length, for connection to the Owner's electrical system. The Contractor shall provide their own electrical subcontractor to test, connect, and disconnect the Contractor's temporary electrical panel. The Contractor shall provide all other electrical devices and equipment to hook up to the pigtail and properly conduct the Work. Pigtail, sub-panel, and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the Work. The Contractor must deliver temporary panels with "pigtail" to the job site a minimum of 48 hours in advance of intended use.

The Contractor shall coordinate all electrical connection work with the Owner's Electrical Shop.

**Ground Fault Protection:** Equip all circuits for any purpose entering Work Area with ground fault circuit interrupters (GFCI). Locate GFCIs exterior to Work Area, if possible, so that all circuits are protected prior to entry to Work Area.

**Lamps and Light Fixtures:** Provide general service incandescent lamps or fluorescent lamps of wattage required for adequate illumination as required by the Work of this Section. Protect lamps with guard cages or tempered glass enclosures where fixtures are exposed to breakage by construction operations.

**Lockout:** Lockout all existing power to or through the Work Area as described below. Unless specifically noted otherwise, existing power and lighting circuits to the Work Area are not to be used. All power and lighting to the Work Area and Decontamination facilities are to be provided from temporary electrical panel described below.

**Lockout power to Work Area** by switching off all breakers serving power or lighting circuits in Work Area.

**Lockout power to circuits running through Work Area** wherever possible by switching off all breakers serving these circuits. If circuits cannot be shut down for any reason, label these lines and then inform all workers of the hazard.

**Power Distribution System:** Provide ground fault circuit interrupter (GFCI) protected circuits of adequate size and proper characteristics for each use.

**TEMPORARY LIGHTING:**

All lighting to the Work Area and Decontamination facilities is to be provided from temporary electrical panel described above.

Provide adequate lighting throughout areas where Work is being performed. Any string lights used shall be heavy duty and designed specifically for wet locations.

The Contractor shall arrange lighting and cords in the Work Area to prevent electrical and trip hazards.
The Contractor shall provide temporary lighting for visual inspections by the Owner's Representative.

2.03 OPERATIONS AND TERMINATIONS

A. Supervision: Enforce strict discipline in the use of temporary facilities at the project site. Limit availability of facilities to essential and intended uses, so as to minimize waste and possibility of abuses and the resulting unsanitary and hazardous or dangerous conditions.
B. Maintenance: Operate and maintain temporary facilities in good operating condition through the
time of use and until removal is authorized. Protect from damage by freezing temperatures and
similar elements at the site.

C. Termination and removal: At the time the need has ended for each temporary facility, or when it
has been replaced by authorized use of a permanent facility, or at the time of Substantial
completion, promptly remove the facility unless requested by the Consultant to be retained for a
longer period of time. Complete or restore permanent work which may have been delayed or
otherwise affected by the temporary facility. Replace work which cannot be satisfactorily
restored. Except as otherwise indicated, the materials and equipment of temporary facilities
remain the property of the contractors.

END OF SECTION
PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General Conditions, Supplementary General Conditions, and other Division-1 Specification Sections, apply to Work of this Section.

MONITORING:

Continuously monitor and record the pressure differential between the Work Area and the building outside of the Work Area with a monitoring device incorporating a continuous recorder (e.g. strip chart).

SUBMITTALS:

Before Start of Work: Submit design of pressure differential system to the Owner's Representative for review. Include in the submittal at a minimum:

- Number of HEPA filtered fan units required and the calculations necessary to determine the number of machines
- Description of projected air flow within Work Area and methods required to provide adequate air flow in all portions of the Work Area
- Anticipated pressure differential across Work Area enclosures
- Location of the machines in the Work Area
- Location of differential pressure meter with continuous recorder (strip chart)

QUALITY ASSURANCE:

Monitor pressure differential at Personnel and Equipment Decontamination Units with a differential pressure meter equipped with a continuous recorder. Meter shall be equipped with a warning buzzer which will sound if pressure differential drops below 0.025” of water.

PART 2 - PRODUCTS

HEPA FILTERED FAN UNITS:

General: Supply the required number of HEPA filtered fan units to the site in accordance with these specifications. Provide filters that are in good condition, immediately replace damaged or grossly contaminated filters.

Disposable Duct: Provide new wire-reinforced plastic disposable duct for ducting exhaust from HEPA filtered fan units. Reuse of disposable duct from other projects is strictly prohibited. Use of “lay-flat” polyethylene duct is prohibited, with the exception of use as a protective poly layer over wire reinforced duct, to protect wire-reinforced duct from gross asbestos removal operations. Use of “lay-flat” polyethylene duct as primary exhaust duct is strictly prohibited.
HEPA Equipped vacuums are not considered acceptable substitutes, and are prohibited for use as negative pressure differential equipment.

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.

Provide HEPA filters 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.

Prefilters, which protect the final filter by removing the larger particles, are required to prolong the operating life of the HEPA filter. Two stages of prefiltration are required.

First-stage prefilter for particles 100 um and larger

Second-stage (or intermediate) filter for particles down to 5 um

Safety and Warning Devices: Provide units with the following safety and warning devices:

- Electrical (or mechanical) lockout to prevent fan from operating without a HEPA filter
- Automatic shutdown system to stop fan in the event of a rupture in the HEPA filter or blocked air discharge
- Warning lights to indicate normal operation (green), too high a pressure drop across the filters (i.e., filter overloading) (yellow), and too low of a pressure drop (i.e., rupture in HEPA filter or obstructed discharge) (red)
- Audible alarm if unit shuts down due to operation of safety systems

PART 3 - EXECUTION

PRESSURE DIFFERENTIAL ISOLATION:

This specification details the requirements for the negative pressure differential system. The Contractor will be allowed to deviate from specific system requirements if an alternate pressure differential system is used and is approved by the Owner's Representative. However, the intent of the specification to provide adequate pressure differential must be met regardless of the type of system actually used.

Isolate the Work Area from all adjacent areas or systems of the building with a Pressure Differential that will cause a movement of air from outside to inside at any breach in the physical isolation of the Work Area.

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:

-0.025 inches of water
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. The number of units will increase with increased make-up air or leaks into the Work Area. Determine the number of units required for pressure isolation by the following procedure:

1. Establish required air circulation in the Work Area, personnel, and equipment decontamination units.
2. Establish isolation by increased pressure in adjacent areas or as part of seals where required.
3. Exhaust a sufficient number of units from the Work Area to develop the required pressure differential.

The required number of units is the number determined above plus one additional unit.

Vent HEPA filtered fan units to outside of building unless authorized in writing by Owner's Representative.

Mount units to exhaust directly or through disposable ductwork.

Use wire reinforced disposable plastic or metallic ductwork in lengths not greater than 100 feet. No “lay flat” is to be used in place of wire reinforced ductwork.

Use “lay flat”, or a single sheet of 6 mil poly, to cover the reinforced ductwork from start of project through decontamination in areas where exhaust ductwork is exposed to abatement operations. Replace when visibly damaged or grossly contaminated.

At point where exhaust duct exits the Work Area/building, provide a pressure-fit wood framing materials and ½” plywood barrier, with holes sized to fit ductwork. Use plywood in place of existing window/door. Provide an additional ½” gap welded steel mesh over the exhaust duct hole secured to prevent access through the exhaust duct. Install plywood to maintain building security.

AIR CIRCULATION IN THE WORK AREA:

Air Circulation: For purposes of this section, air circulation refers to either the introduction of outside air to the Work Area or the circulation and cleaning of air within the Work Area.

Air circulation in the Work Area is a minimum requirement intended to help maintain airborne fiber counts at a level that does not significantly challenge the Work Area isolation measures. The Contractor may also use this air circulation as part of the engineering controls in his worker protection program.
Determining the Air Circulation Requirements: Provide a fully operational air circulation system supplying a minimum of the following air circulation rate:

4 air changes per hour

EXHAUST SYSTEM:

Pressure differential isolation and air circulation in the Work Area are to be accomplished by an exhaust system as described below.

Exhaust all units from the Work Area to meet air circulation requirement of this Section.

Location of HEPA Filtered Fan Units: Locate fan unit(s) so that makeup air enters Work Area primarily through decontamination facilities and traverses Work Area as much as possible. This may be accomplished by positioning the HEPA filtered fan unit(s) at a maximum distance from the worker access opening or other makeup air sources.

Place End of Unit at intake duct or its exhaust duct through an opening in the plastic barrier or wall covering. Seal plastic around the unit with duct tape.

Vent to Outside of Building, unless authorized in writing by the Owner's Representative.

Decontamination Units: Arrange Work Area and Decontamination Units so that the majority of makeup air comes through the Decontamination Units. Do not use both the personnel and equipment Decontamination Units simultaneously. While using one Decontamination Unit seal the other so that makeup air passes through the unit in use.

Supplemental Makeup Air Inlets: Provide, where required for proper air flow through the Work Area, in location approved by the Owner's Representative, supplemental makeup air inlets by making openings in the plastic sheeting that allow air from outside the building into the Work Area. Seal openings with 5 um prefilters secured to the plastic sheeting with duct tape. Locate auxiliary makeup air inlets as far as possible from the fan unit(s) (e.g., on an opposite wall), off the floor (preferably near the ceiling), and away from barriers that separate the Work Area from occupied clean areas. Cover with flaps to reseal automatically if the pressure differential system should shut down for any reason.

Scrubber Fan Units: Where required, provide HEPA filtered scrubber fan units to maintain proper air flow through the Work Area, in locations approved by Owner’s Representative. Direct exhaust from scrubber fan units away from any critical barriers. Scrubber fan units shall be operational during all active gross removal work.

AIR CIRCULATION IN DECONTAMINATION UNITS:
Pressure Differential Isolation: Continuously maintain the pressure differential required for the Work Area in the:

Personnel Decontamination Unit: Across the Shower Room with the Equipment Room at a lower pressure than the Clean Room.

Equipment Decontamination Unit: Across the Holding Room with the Wash Room at a lower pressure than the Clean Room.

Air Circulation: Continuously maintain air circulation in Decontamination Units at same level as required for Work Area.

Air Movement: Arrange air circulation through the Personnel Decontamination Unit so that it produces a movement of air from the Clean Room through the Shower Room into the Equipment Room.

USE OF THE PRESSURE DIFFERENTIAL AND AIR CIRCULATION SYSTEM:

General: Each unit shall be serviced by a dedicated circuit with ground fault circuit interrupter (GFCI) supplied from temporary power supply installed under requirements of Section 01503 "Temporary Facilities."

Testing the System: Test pressure differential system after critical barriers are in place but prior to the construction of primary and secondary barriers. After critical barriers are in place, the decontamination facility set up, and the fan unit(s) installed, start the unit(s) (one at a time). Demonstrate operation and testing of pressure differential system (minimum 0.025" water) to Owner's Representative before proceeding.

Demonstrate Operation of the pressure differential system to the Owner's Representative including, but not be limited to, the following:

- Plastic barriers and sheeting move lightly in toward Work Area,
- Curtain of decontamination units move lightly in toward Work Area,
- There is a noticeable movement of air through the Decontamination Unit,
- Smoke test the containment to confirm air flow from the balance of the building into the Work Area.

Modify the Pressure Differential System as necessary to demonstrate successfully the above.

Use of System During Abatement Operations:

Start fan units before beginning Work. After abatement Work has begun, run units continuously to maintain a constant pressure differential and air circulation until decontamination and final air testing of
the Work Area is complete. Do not turn off units at the end of the Work shift or when abatement operations temporarily stop.

Do not shut down air pressure differential system during lockdown procedures, unless authorized by the Owner's Representative in writing. Supply sufficient pre-filters to allow frequent changes during lockdown.

Start abatement Work at a location farthest from the fan units and proceed toward them. If an electric power failure occurs, immediately stop all abatement Work and do not resume until power is restored and fan units are operating again.

At completion of abatement Work, allow fan units to run as specified under Section 01711, to remove airborne fibers that may have been generated during abatement and final clean and to purge the Work Area with clean makeup air. The units may be required to run for a longer time after decontamination, if dry or only partially wetted asbestos material was encountered during any abatement Work.

Dismantling the Scrubber Fan Unit System: As part of the final cleaning process, the Contractor shall dispose of contaminated filters from scrubber units and decontaminate the unit motor, housing, and frame. Exhaust from scrubber units is considered contaminated until a thorough cleaning and inspection of the unit has been performed, including the installation of new HEPA filters.

Dismantling the System: When a final inspection and the results of final air tests indicate that the area has been decontaminated, fan units may be removed from the Work Area. Before removal from the Work Area, remove and properly dispose of pre-filters, decontaminate exterior of machine and seal intake to the machine with 6 mil polyethylene to prevent environmental contamination from the filters.

Pressure Differential Unit Shutdown procedure:

1. Disconnect the exhaust duct from Pressure Differential Unit, allowing the Pressure Differential Unit to momentarily exhaust into abatement Work Area.

2. Mist the Pressure Differential Unit HEPA filter inlet surface with penetrating encapsulant.

3. Turn off the Pressure Differential Unit and disconnect from the electrical power source and immediately seal inlet port with pre-cut 6 mil sheet poly and duct tape.

4. Wet wipe the Pressure Differential Unit and cover the inlet port with a second layer of 6 mil sheet poly and duct tape.

Transport of Fan Units:

At all times, the filter side of all pressure differential units shall be completely sealed with at least two layers of 6 mil poly when not in use.

END OF SECTION 01513
PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General Conditions, Supplementary General Conditions, and other Division-1 Specification Sections, apply to Work of this Section.

PART 2 - PRODUCTS

SHEET PLASTIC:

Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6 mil thick, clear, or black as needed.

STRIPPABLE COATINGS:

Provide strippable coatings premixed for spray application formulated to adhere gently to surfaces and remove cleanly by peeling off at the completion of the Work.

Provide only water-based latex materials.

Provide materials manufactured for the specific application required.

Wall coating: designed to be easy to remove.

Fire Safety - Provide materials meeting the following requirements:

When wet or while being installed:
1. Do not create combustible vapors,
2. Have no flash point
3. Are not noxious
4. Department of Transportation category of non-flammable.

When dry, material must have a Class A rating as a building material and meet the following requirements when tested in accordance with ASTM E-84:
1. Flame Spread no greater than 20
2. Fuel Contributed 0
3. Smoke Developed no more than 110

Deliver materials to the job site in unopened, factory-labeled containers.

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the Work include, but are not limited to, the following:

Foster Products Corporation
2900 Granada Lane
MISCELLANEOUS MATERIALS:

Duct Tape: Provide duct tape in 2" or 3" widths with an adhesive which is formulated to stick aggressively to sheet polyethylene.

Gypsum Board (Drywall): Where the use of combustible enclosure materials is a concern, or where specified, provide Type X 5/8" Gypsum Board.

Metal Framing: Where use of combustible framing materials is a concern, or where specified, provide new metal framing materials. Studs shall be C-shaped, with stiffened flanges, and dimensions of web and flanges as indicated. Steel track shall be U-shaped, with straight flanges, and dimensions of web and flanges as indicated.

Plywood Sheeting/Wood Framing: provide new materials in the dimension and thickness specified.

Rigid Foam Board Insulation: provide closed cell foam board insulation with a minimum thickness of 1" for filling voids in ceiling plenums or as otherwise specified.

Spray Cement: (Spray Adhesive) is not to be used to attach polyethylene sheets to existing finishes (walls, floors, ceilings) within the building. It may be used to secure overlapping sheets of polyethylene sheets.

Spray Foam: Spray foam may be used to seal small cracks/gaps in the wall and ceiling structure. At the completion of the Work the Contractor shall be responsible for either removing the foam or trimming it flush with building surfaces.

PART 3 - EXECUTION

SEQUENCE OF WORK:

 Carry out Work of this Section sequentially. Complete each activity before proceeding to the next.

GENERAL:

Work Area: A "Work Area" is considered contaminated during the Work, must be isolated from the balance of the building, and decontaminated at the completion of the asbestos abatement Work.

Completely isolate the Work Area from other parts of the building so as to prevent asbestos-containing dust or debris from passing beyond the isolated area. Should the area beyond the Work Area(s) become contaminated with asbestos-containing dust or debris as a consequence of the Work, isolate those areas as per this Section and clean in accordance with the procedures detailed in Section 01711. Perform all such required cleaning or decontamination at no additional cost to Owner.

Place all tools, scaffolding, staging, etc. necessary for the Work in the area prior to completion of Work Area isolation.
Cover equipment and fixed furnishings with two (2) layers of polyethylene sheeting, at least 6 mil in thickness, securely taped with duct tape. Such furnishings and equipment shall be considered outside the Work Area unless covering plastic or seal is breached.

Disable ventilating systems or any other system bringing air into or out of the Work Area. Disable system by disconnecting wires, removing circuit breakers, by lockable switch or other positive means that will prevent accidental premature restarting of equipment.

Lockout power to Work Area by switching off all breakers serving power or lighting circuits in Work Area. Lock panel and have all keys under control of Contractor's Superintendent and Owner's Representative.

Lockout power to circuits running through Work Area wherever possible by switching off all breakers or removing fuses serving these circuits. Lock panel and have all keys under control of Contractor's Superintendent and Owner's Representative.

**EMERGENCY EXITS:**

Provide emergency exits and emergency lighting as set forth below:

**Emergency Exits:** At each existing exit door from the Work Area provide the following means for emergency exiting:

- Arrange exit door so that it is secure from outside the Work Area but permits exiting from the Work Area.

- Mark outline of door on Primary and Critical Barriers with luminescent paint. Hang a razor knife on a string beside outline. Arrange Critical and Primary barriers so that they can be easily cut with one pass of razor knife. Paint words "EMERGENCY EXIT" inside outline with luminescent paint in letters at least one foot high and 2" wide.

**CONTROL ACCESS:**

Isolate the Work Area to prevent entry by building occupants into Work Area or surrounding controlled areas. Accomplish isolation by the following:

Submit to Owner's Representative a list of doors and other openings that must be secured to isolate Work Area. Include on list notation if door or opening is in an indicated exit route.

- After reviewing the list with the Owner's Representative, lock all doors into Work Area. Cover any signs that direct emergency exiting, either outside or inside of Work Area, to locked doors.

- In locations where work of this project impacts existing exit routes furnish and install temporary exit signage to direct building occupants to emergency exits.

- Do not obstruct doors required for emergency exits from Work Area or from building.
Construct temporary partitions as required on the Drawings to restrict access between the Work Area and other parts of the building. Do not construct partitions obstructing or prohibiting emergency exiting from the building.

**Locked Access:** Arrange Work Area so that the only access into Work Area is through lockable doors to personnel and equipment decontamination units.

Provide one key for each door to Owner and Owner's Representative and maintain one key in Clean Room of decontamination unit (3 total).

**Visual Barrier:** Where the Work Area is immediately adjacent to, within view of occupied areas, or outside the building, provide a visual barrier of opaque polyethylene sheeting at least 6 mil in thickness so that the Work procedures are not visible to building occupants.

**View Ports:** Construct a clear view port with a minimum size of 12”x 12” installed to allow a view of the interior of the Work Area. Install view ports in all feasible locations in order to give a clear view of abatement Work operations.

Provide Warning Signs with approximately 2” high lettering at each locked door leading to Work Area reading as follows:

**LEGEND:**

KEEP OUT
BEYOND THIS POINT
ASBESTOS ABATEMENT WORK
IN PROGRESS
BREATHING ASBESTOS DUST MAY BE HAZARDOUS TO YOUR HEALTH

Immediately inside door and outside critical barriers post an approximately 20 inch by 14 inch manufactured caution sign displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926:

**LEGEND:**

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

**RESPIRATORY AND WORKER PROTECTION:**

Before proceeding beyond this point in providing Temporary Enclosures:

Provide Worker Protection per Section 01560
Provide Respiratory Protection per Section 01562
Provide Personnel Decontamination Unit per Section 01563
CRITICAL BARRIERS:

 Completely Separate the Work Area from other portions of the building, and the outside by sealing all openings with sheet plastic barriers at least 6 mil in thickness, or by sealing cracks leading out of Work Area with duct tape.

 GENERAL REQUIREMENTS

 SECTION 01526

 TEMPORARY ENCLOSURES

 Individually seal all ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, convectors and speakers, electrical outlets, switches and other openings into the Work Area with duct tape alone or with polyethylene sheeting at least 6 mil in thickness, taped securely in place with duct tape. Maintain seal until all Work including Project Decontamination is completed. Take care in sealing of lighting fixtures to avoid melting or burning of sheeting/duct tape.

 Mechanically Support sheet plastic independently of duct tape or seals as necessary so that seals do not open due to the weight of the plastic. As a minimum, freestanding sheet poly over 8' tall shall be frame supported on 6' centers.

 Provide Pressure Differential System per Section 01513.

 Permanent/Temporary Partitions: Install permanent or temporary framed/sheeted enclosure partitions, necessary for maintaining negative air pressure differential in the work area.

 PREPARE AREA:

 Scaffolding: If fixed scaffolding is to be used, HEPA vacuum and wet clean area prior to scaffolding installation.

 Remove all electrical and mechanical items, such as lighting fixtures, diffusers, registers, escutcheon plates, etc. which cover any part of the surface of the Work, or are necessarily disassembled with the ceiling system.

 Clean all surfaces in Work Area with a HEPA filtered vacuum cleaner and by wet wiping prior to the installation of primary barrier.

 SECONDARY ENCLOSURE:

 Construct the following containment if the Work is to be performed within a secondary enclosure. Containment requirements are listed in Section 02081 per material.

 Cleanable building surfaces may be used as barriers for secondary enclosures. Non-cleanable building surfaces shall be isolated from the Work Area with 1 layer minimum 6 mil polyethylene sheeting and duct tape mechanically supported if necessary.

 Perform all Work as described within Section 01526 up to this paragraph, including critical barriers, preparing area, isolating Work Area, worker protection, and respiratory protection.

 The Contractor shall install temporary pressure differential equipment, as described in Section 01513, to demonstrate negative air flow into the Work Area.

 The Contractor may substitute a 3’x 3’ Change Room used in conjunction with remote shower procedures in the place of Personnel Decontamination Unit specified in Sections 01560 and 01563.
Work described as Full Enclosure/Primary Barrier does not apply to Secondary Enclosures.

FULL ENCLOSURE:

Construct the following containment if the Work is to be performed within a full enclosure. Containment requirements are listed in Section 02081 per material.

GENERAL REQUIREMENTS                     DIVISION 1 - PAGE 6
SECTION 01526                      TEMPORARY ENCLOSURES

PRIMARY BARRIER:

Protect building and other surfaces in the Work Area from damage from water and high humidity or from contamination from asbestos containing debris, slurry or high airborne fiber levels by covering with a primary barrier as described below. The primary barrier shall be constructed from sheet plastic as described below.

Strippable Coating: Protect surfaces in the Work Area with a strippable coating. Perform all Work in strict compliance with manufacturer's instructions. Carry out Work in the following sequence.

- **Inspect**: Before start of coating Work inspect all surfaces to be coated. Report on any surfaces that may be damaged by the material or any condition that may interfere with adhesion of the coating to a surface to the Owner's Representative before application of coating.

- **Photograph or videotape existing damage to affected surfaces and submit documentation to Owner's Representation.**

- **Test Patches**: Apply test patches as directed by Owner or Owner's Representative. Apply a small area of strippable coating to a hidden or obscure area of each surface in the Work Area to be coated. Allow to dry and peel off. Demonstrate results to Owner's Representative prior to coating entire area. Commence coating of area only after receiving written authorization from the Owner's Representative.

- **Cover surfaces and equipment** in Work Area from which coating may not strip cleanly.

  - Cover shelving, clocks, light fixtures and other equipment with one layer of 6 mil sheet plastic.

  - Cover fabric, paper, or cork wall coverings with one layer of 6 mil sheet plastic.

  - Tape over any cracks that are larger than 1/16”.

  - Tape over electrical outlets, switches, door locks, etc.

- **Protect critical barriers**: Install strippable coating so that it will not remove critical barriers during stripping of coating. Cover critical barriers comprised of sheet plastic with a second layer of sheet plastic configured to be removed with strippable coating. Protect critical barriers made from tape with a protective layer of sheet plastic or duct tape.

- **Coat all surfaces** in Work Area with strippable coating in following order.
Walls: Coat seams, corners, and junctions vertically. Coat balance of walls horizontally lapping over vertical sprayed areas by 50%.

Use straight edge to shield asbestos containing materials from coating during spray application.

Apply: to the minimum thicknesses as recommended by the manufacturer. Thickness is to be measured when material is wet using a wet film thickness gauge.

Do not apply over tacky or chalky adhesives remaining from carpet or other floor covering removal.

Respiratory protection: Require that all workers in Work Area, from start of spray operation until all surfaces are dry, use as a minimum requirement; a full-face negative pressure respirator equipped with combination ammonia and HEPA type filter cartridges. Details on Respiratory Protection are specified in Section 01562, Respiratory Protection.

Worker protection: Equip all workers in Work Area during spray operation with eye protection, disposable gloves, and disposable paper suits.

Ventilation: During spraying operation maintain a minimum of four (4) air changes per hour in the entire Work Area. Operate one additional HEPA filtered fan unit per spray operator in area while spraying is taking place.

Charcoal Filters: Provide charcoal pre-filters for the HEPA filtered fan units during all spray poly application and drying periods.

Sheet Plastic: Protect surfaces in the Work Area with two (2) layers of plastic sheeting on floor and walls, or as otherwise directed on the Contract Drawings or in writing by the Owner's Representative. The first layer of plastic sheeting, floors and walls, shall be installed prior to beginning installation of the second layer. Perform work in the following sequence.

Cover Floor of Work Area with two (2) individual layers of clear polyethylene sheeting, each at least 6 mil in thickness, turned up walls at least 12 inches. Form a sharp right angle bend at junction of floor and wall so that there is no radius which could be stepped on causing the wall attachment to be pulled loose. Both spray-glue and duct tape all seams in floor covering. Locate seams in top layer six feet from, or at right angles to, seams in bottom layer. Install sheeting so that top layer can be removed independently of bottom layer. If the flooring is to be abated, disregard this paragraph.

Cover Carpeting with three (3) layers of polyethylene sheeting at least 6 mil in thickness. Place corrugated cardboard sheets between the top and middle layers of polyethylene. If the flooring is to be abated, disregard this paragraph.

Cover all walls in Work Area including "Critical Barrier" sheet plastic barriers with two (2) layers of polyethylene sheeting, each at least 6 mil in thickness, turned out at floors at least 12 inches, mechanically supported and sealed with duct tape in the same manner as "Critical Barrier" sheet plastic barriers. Tape all joints including the joining with the floor covering with duct tape. Each
layer of wall poly will be hung independent from the other. As a maximum, the first layer shall be hung within 6" of the ceiling, the second layer shall be hung within 2" of the ceiling.

Cover all Ceilings in Work Area including "Critical Barrier" sheet plastic barriers with one (1) layer of polyethylene sheeting unless the ceiling surface is to be abated. Tape all joints including the joining with the wall covering with duct tape. If ceiling is to be abated disregard this paragraph.

Repair of Damaged Polyethylene Sheeting: Remove and replace plastic sheeting which has been damaged by removal operations or where seal has failed allowing water to seep between layers.

GENERAL REQUIREMENTS
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TEMPORARY ENCLOSURES

Remove affected sheeting and wipe down entire area. Install new sheet plastic only when area is completely dry.

Tack Block: Upon repeated failure of critical, primary or secondary barriers, tack block shall be used to hold up polyethylene barriers as directed by the Owners Representative. The Contractor shall place all tack block in mortar joints at intervals necessary to keep the barriers in place. The Contractor shall repair all tack block holes at the completion of the project.

STOP WORK:
If the Critical or Primary barriers fall or are breached in any manner stop Work immediately. Do not start Work until repaired and authorized in writing by the Owner's Representative.

EXTENSION OF WORK AREA:
Extension of Work Area: If the Critical Barrier is breached in any manner that could allow the passage of asbestos debris or airborne fibers, then add affected area to the Work Area, enclose it as required by this Section of the specification and decontaminate it as described in Section 01711 Project Decontamination.

DROP CLOTH:
Provide an additional layer of 6 mil plastic as a drop cloth to protect the primary and secondary layers on floors from debris generated by the asbestos abatement Work.

END OF SECTION
PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General Conditions, Supplementary General Conditions, and other Division-1 Specification Sections, apply to Work of this Section.

DESCRIPTION OF WORK:

This Section describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.

RELATED WORK SPECIFIED ELSEWHERE:

Respiratory Protection: is specified in Section 01562.

WORKER TRAINING:

AHERA Accreditation: All workers are to be accredited as Abatement Workers as required by the AHERA regulation 40 CFR 763 Appendix C to Subpart E, April 30, 1987.

State and Local License: All workers are to be trained, certified and licensed to do abatement Work in the State of Colorado and must have current certificates as evidence of this training.

Train all workers in the dangers inherent in handling asbestos and breathing asbestos dust and in proper Work procedures and personal and area protective measures in accordance with 29 CFR 1926.

MEDICAL EXAMINATIONS:

Provide medical examinations for all workers who may encounter an airborne fiber level of 0.1 f/cc or greater for an 8 hour Time Weighted Average. In the absence of specific airborne fiber data provide medical examinations for all workers who will enter the Work Area for any reason. Examination shall as a minimum meet OSHA requirements as set forth in 29 CFR 1926. In addition, provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.

SUBMITTALS:

Before Start of Work: Submit the following to the Owner's Representative for review.

AHERA Accreditation: Submit copies of certificates from an EPA-approved AHERA Abatement Workers course for each worker as evidence that each asbestos Abatement Worker is accredited as required by the AHERA Regulation 40 CFR 763 Appendix C to Subpart E, April 30, 1987.

State and Local License: Submit evidence that all workers have been trained, certified and licensed to do abatement Work in the State of Colorado.

Report from Medical Examination conducted within last 12 months as part of compliance with OSHA medical surveillance requirements for each worker who is to enter the Work Area. Submit, at a minimum, for each worker the following:
Name and Social Security Number

Physicians Written Opinion from examining physician including at a minimum the following:

- Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
- Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.
- Statement that worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat stress in the worker.
- Provide to the Owner's Representative an alphabetical listing of all workers on the job site including their name, expiration date of certificates, training, and physical examinations.

PART 2 - EQUIPMENT

PROTECTIVE CLOTHING:

Coveralls: Provide disposable full-body coveralls and disposable head covers, and require that they be worn by all workers in the Work Area. Provide a sufficient number for all required changes, for all workers in the Work Area.

Boots: Provide work boots with non-skid soles, and where required by OSHA, foot protection for all workers. Do not allow boots to be removed from the Work Area for any reason, after being contaminated with asbestos containing material. Dispose of boots as asbestos contaminated waste at the end of the Work, or thoroughly clean and decontaminate the boots and seal in 6 mil plastic bags prior to removing from the Work Area.

Goggles: Provide eye protection (goggles) as required by OSHA for all workers involved in scraping, spraying, or any other activity which may potentially cause eye injury. Thoroughly clean, decontaminate and bag goggles before removing them from Work Area at the end of the Work.

Gloves: Provide work gloves to all workers and require that they be worn at all times in the Work Area. Do not remove gloves from Work Area. Dispose of gloves as asbestos contaminated waste at the end of the Work.

Hardhats: Provide hardhats to all workers and require that they be worn at all times in the Work Area and on the job site.

ADDITIONAL PROTECTIVE EQUIPMENT:

Respirators, disposable coveralls, head covers, and footwear covers shall be provided by the Contractor for the Owner, Owner's Representative, and other authorized representatives who may inspect the job site.
PART 3 - EXECUTION

GENERAL:

Provide worker protection as required by the most stringent OSHA and/or EPA standards applicable to the Work. The following procedures are minimums to be adhered to regardless of fiber count in the Work Area.

Each time Work Area is entered remove all street clothes in the Changing Room of the Personnel Decontamination Unit and put on new disposable coverall, new head cover, and a clean respirator. Proceed through shower room to equipment room and put on work boots and hard hat.

DECONTAMINATION PROCEDURES:

Require all workers to adhere to the following personal decontamination procedures whenever they leave the Work Area.

Type C Supplied Air or Powered Air-Purifying Respirators: Require that all workers use the following decontamination procedure as a minimum requirement whenever leaving the Work Area.

When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the Equipment Room.

Still wearing respirators, proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator to avoid asbestos exposure while showering. The following procedure is required as a minimum:

- Thoroughly wet body including hair and face. If using a Powered Air-Purifying Respirator (PAPR) hold blower unit above head to keep canisters dry.
- With respirator still in place thoroughly wash body, hair, respirator face piece, and all parts of the respirator except the blower unit and battery pack on a PAPR. Pay particular attention to seal between face and respirator and under straps.
- Take a deep breath, hold it and/or exhale slowly, completely wet hair, face, and respirator. While still holding breath, remove respirator and hold it away from face before starting to breathe. Carefully wash face piece of respirator inside and out.
- If using PAPR: shut down in the following sequence, first cap inlets to filter cartridges, then turn off blower unit (this sequence will help keep debris which has collected on the inlet side of filter from dislodging and contaminating the outside of the unit). Thoroughly wash blower unit and hoses. Carefully wash battery pack with wet rag.
- Shower completely with soap and water.
- Rinse thoroughly.
- Rinse shower room walls and floor prior to exit.
Proceed from shower to Changing Room and change into street clothes or into new disposable work items.

**General Requirements**

**Section 01560**

**Worker Protection**

**Air Purifying-Negative Pressure Respirators:** Require that all workers use the following decontamination procedure as a minimum requirement whenever leaving the Work Area with a half or full face cartridge type respirator:

- When exiting area, remove disposable coveralls, disposable headcovers, and disposable footwear covers or boots in the Equipment Room.

- Still wearing respirators, proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator and filters to avoid asbestos exposure while showering. The following procedure is required as a minimum:
  
  Thoroughly wet body from neck down. Wet hair as thoroughly as possible without wetting the respirator filter if using an air purifying type respirator.

  Take a deep breath, hold it and/or exhale slowly, complete wetting of hair, thoroughly wetting face, respirator and filter (air purifying respirator). While still holding breath, remove respirator and hold it away from face before starting to breathe.

  Dispose of wet filters from air purifying respirator.

  Carefully wash face piece of respirator inside and out.

  Shower completely with soap and water.

  Rinse thoroughly.

  Rinse shower room walls and floor prior to exit.

- Proceed from shower to Changing Room and change into street clothes or into new disposable work items.

**Remote Shower:** The procedures above are to be used if the decontamination facility is used as a remote shower. If a worker cannot gain direct access to the Equipment Room require that he enter Decontamination Unit and proceed directly through Shower Room to Equipment Room. Decontamination procedures are then completed as required above.

**Within Work Area:**

Require that workers NOT eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the Work Area or Clean Room. To eat, chew, or drink, workers shall follow the procedure described above, then dress in street clothes before entering the non-Work Areas of the building. Use of tobacco products is prohibited on all school property.

**End of Section 01560**
PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General Conditions, Supplementary General Conditions, and other Division-1 Specification Sections, apply to Work of this Section.

DESCRIPTION OF WORK:

Instruct and train each worker involved in abatement of friable asbestos containing materials in proper respiratory use and require that each worker always wear a respirator, properly fitted on the face in the Work Area from the 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 workplace or as required for other toxic or oxygen-deficient situations encountered.

STANDARDS:

Except to the extent that more stringent requirements are written directly into the Contract Documents, the following regulations and standards have the same force and effect (and are made a 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.

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 1926.1101.

NIOSH - National Institute for Occupational Safety and Health

MSHA - Mine Safety and Health Administration

SUBMITTALS:

System Diagram: When a Type "C" supplied air respiratory system is required by the Work, submit drawing showing assembly of components into a complete supplied air respiratory system. Include diagram showing location of compressor, filter banks, backup air supply tanks, hose line connections in Work Area(s), routing of air lines to Work Area(s) from compressor. This diagram shall be part of the Contractor's Action Plan.

Respiratory Protection Program: Submit Contractor's written respiratory protection program as required by OSHA.

Product Data: Submit manufacturer's product information for each component used, including NIOSH and MSHA Certifications for each component in an assembly and/or for entire assembly.

AIR QUALITY FOR SUPPLIED AIR RESPIRATORY SYSTEMS:

Provide air used for breathing in Type "C" supplied air respiratory systems that meets or exceeds standards set for C.G.A. Type 1 (Gaseous Air) Grade D.
ALLOWABLE CONTAMINANTS:

Supply air that has an asbestos concentration no greater than outside ambient conditions.

PART 2 - EQUIPMENT

AIR PURIFYING RESPIRATORS:

Respirator Bodies: Provide half face or full face type respirators.

Filter Cartridges: Provide, at a minimum, HEPA type filters labeled with NIOSH and MSHA Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mistis including Asbestos-Containing Dusts and Mists" and color coded in accordance with industry standards.

Non-permitted respirators: Do not use single use, disposable or quarter face respirators.

Air Quality for Air Purifying Respirators: If air-purifying respirators are used by anyone in the Work Area, the Contractor must ensure that the oxygen content in the air meets or exceeds standards set forth in C.G.A. Type 1 (Gaseous Air) Grade D.

SUPPLIED AIR RESPIRATOR SYSTEMS:

Provide equipment capable of producing air of the quality and volume required by the above reference standards applied to the job site conditions and crew size. Comply with provisions of this specification if more stringent than the governing standard.

Face Piece and Hose: Provide full face piece and hose by same manufacturer that has been certified by NIOSH/MSHA as an approved Type "C" respirator assembly operating in pressure demand mode with a positive pressure face piece.

Auxiliary backup system: In atmospheres which contain sufficient oxygen (greater than or equal to 19.5% oxygen) provide a pressure-demand full face piece supplied air respirator equipped with an emergency back up HEPA filter.

Warning device: Provide a warning device that will operate independently of the building's power supply. Locate so that alarm is clearly audible above the noise level produced by equipment and Work procedures in use, in all parts of the Work Area and at the compressor. Connect alarm to warn of compressor shut down or other fault requiring use of backup air supply.

Compressor Motor: Provide a compressor driven by an electric motor. Do not use gas or diesel engines to drive compressor. Insure that electrical supply available at the Work site is adequate to energize motor.

Compressor Location: Locate compressor outside of building in location that will not impede access to the building, and that will not cause a nuisance by virtue of noise or fumes to occupied portions of the building.

Air Intake: Locate air intake remotely from any source of automobile exhaust or any exhaust from engines, motors, auxiliary generator or buildings.
After-Cooler: Provide an after-cooler at entry to filter system which is capable of reducing temperatures to outside ambient air temperatures.

PART 3 - EXECUTION

GENERAL:


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 in accordance with Section 01714. Failure to comply with this provision will constitute grounds to deny the employee access to the site of the work.

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

FIT TESTING:

Initial Fitting: Provide initial fitting of respiratory protection during a respiratory protection training course. Fit types of respirator to be actually worn by each individual. Allow an individual to use only those respirators for which training and fit testing have been provided. Provide documentation of qualitative fit testing as required by OSHA 29 CFR 1910 and 1926.

Upon Each Wearing, require that each time an air-purifying respirator is put on it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions. This requirement includes supplied air systems which employ negative pressure emergency systems.

NOTE: Qualitative fit test shall be performed for both negative pressure and supplied air systems which use a negative pressure emergency backup system.

TYPE OF RESPIRATORY PROTECTION REQUIRED:

Provide Respiratory Protection suitable for the conditions expected or encountered on the Project. The Contractor is responsible to select and provide respiratory protection systems which will adequately protect workers for the exposure levels encountered. The Contractor shall be prepared at all times to show the Owner's Representative that the type of respiratory protection is appropriate for asbestos fiber levels in all parts of the Work Area.

PERMISSIBLE EXPOSURE LIMIT (PEL):

8-Hour Time Weighted Average (TWA) of asbestos fibers to which any worker may be exposed shall not exceed the following.

Fibers: For purposes of this Section, fibers are defined as all fibers regardless of composition as counted in NIOSH 7400 procedure.

Time Weighted Average (TWA) - 0.1 fibers/cubic centimeter

AIR PURIFYING RESPIRATORS:
**Negative pressure - half or full face mask:** Supply a sufficient quantity of respirator filters approved for asbestos, so that workers can change filters during the work day. Require that respirators be wet-rinsed, and filters discarded, each time a worker leaves the Work Area. Require that new filters be installed each time a worker re-enters the Work Area. Store respirators and filters at the job site in the Changing Room and protect totally from exposure to asbestos prior to their use.

**Powered air purifying - full face mask:** Supply a sufficient quantity of high efficiency respirator filters approved for asbestos so that workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement. Require that regardless of flow, filter cartridges be replaced after 40 hours of use. Require that HEPA elements in filter cartridges be protected from wetting during showering. Require entire exterior housing of respirator, including blower unit, filter cartridges, hoses, battery pack, face mask, belt, and cords, are washed each time a worker leaves the Work Area.

**TYPE "C" RESPIRATOR:**

**Air Systems Monitor:** Continuously monitor the air system operation including compressor operation, filter system operation, backup air capacity and all warning and monitoring devices at all times that system is in operation.

**END OF SECTION 01562**
PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General Conditions, Supplementary General Conditions, and other Division-1 Specification sections, apply to Work of this Section.

DESCRIPTION OF WORK:

Provide separate Personnel and Equipment Decontamination facilities. Require that the Personnel Decontamination Unit be the only means of ingress and egress for the Work Area. Require that all materials exit the Work Area through the Equipment Decontamination Unit.

RELATED WORK SPECIFIED ELSEWHERE:

Refer to Section 01503 Temporary Facilities for requirements relative to connection of decontamination facilities to building systems such as water, sewer, and electrical.

SUBMITTALS:

Before the Start of Work: Submit the following to the Owner's Representative for review. Do not begin Work until these submittals are reviewed by Owner's Representative.

Personnel Decontamination Unit: Provide a drawing showing location and assembly of personnel decontamination units.

Equipment Decontamination Unit: Provide a drawing showing location and assembly of equipment decontamination units.

PART 2 - PRODUCTS

Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6 mil thick, clear, frosted, or black as required by job conditions.

Duct Tape: Provide duct tape in 2" or 3" widths.

Filters: Provide cascaded filter units on drain lines from showers or any other water source carrying asbestos contaminated water from the Work Area. Provide units with disposable filter elements as indicated below. Connect so that discharged water passes primary filter and output of primary filter passes through secondary filter. Provide a written log posted by the shower pump and record every filter change. Submit a copy of log to the Owner's Representative at the completion of the project.

Primary Filter - Passes particles 20 microns and smaller
Secondary Filter - Passes particles 5 microns and smaller

Decon/Airlock Doors: Construct flaps of three (3) layers of alternately attached 6 mil poly sheeting. Hard wood or metal doors that restrict air flow through the decon unit are prohibited.

Shower Stall: Provide leak tight shower enclosure with integrated drain pan fabricated from fiberglass or other durable waterproof material, approximately 3'x 3' square with minimum 6' high sides and back. Structurally support as necessary for stability. Connect drain to a reservoir, pump water from reservoir through filters before releasing to a sanitary sewer drain.

Disposable Towels: Supply a sufficient amount of disposable paper towels for drying during the showering/decontamination sequence.
Disposable Pop-up Chambers: Pre-manufactured 3’x3’ disposable pop-up decon chambers may be used in place of field constructed decon chambers, under the following provisions:

- Provide only new pre-manufactured disposable decon chambers. Reuse of disposable pre-manufactured decon chambers from other projects is strictly prohibited.

- Factory supplied airlock flaps shall be removed and replaced, or modified, to meet the requirements for Airlock Doors in this specification.

PART 3 - EXECUTION

PERSONNEL DECONTAMINATION UNIT:

Provide a Personnel Decontamination Unit consisting of a serial arrangement of connected rooms or spaces, Change Room, Airlock, Shower Room, Airlock, Equipment Room. Require all persons without exception to pass through this Decontamination Unit for entry into and exiting from the Work Area for any purpose. Do not allow parallel routes for entry or exit. Do not remove equipment or materials through Personnel Decontamination Unit.

Provide temporary lighting within Decontamination Units as necessary.

Changing Room (Clean Room): Provide a room that is physically and visually separated from the rest of the building for the purpose of changing into protective clothing.

- Construct using polyethylene sheeting at least 6 mil in thickness to provide an airtight seal between the Changing Room and the rest of the building.

- Locate so that access to Work Area from Changing Room is through Shower Room.

- Separate Changing Room from the building by a sheet plastic flapped doorway.

- Require workers to remove all street clothes in this room, dress in clean, disposable coveralls, and don respiratory protection equipment. Do not allow asbestos contaminated items to enter this room.

- An existing room may be utilized as the Changing Room if it is suitably located and of a configuration whereby workers may enter the Changing Room directly from the Shower Room.

- Protect all surfaces of room with sheet plastic as set forth in Section 01526 Temporary Enclosures.

- Maintain floor of Changing Room dry and clean at all times. Do not allow overflow water from shower to wet floor in airlocks or Changing Room.

- Damp wipe all surfaces twice after each shift change with a disinfectant solution.

- Provide posted information for all emergency phone numbers and procedures.

Airlock: Provide an airlock between Shower Room and Changing Room. This is a transit area for workers. Airlock must be a minimum of three (3) feet wide between the doorway of the Changing Room and doorway of the Shower Room.

- Separate the Shower Room and Changing Room by 6 mil sheet plastic flapped doorways. Arrange so that there is a sensible movement of air from the Clean Room, through the breathing zone of workers in the shower, into the Equipment Room.
Shower Room: Provide a completely watertight operational shower to be used for transit by cleanly dressed workers heading for the Work Area from the Changing Room, or for showering by workers headed out of the Work Area after undressing in the Equipment Room.

GENERAL REQUIREMENTS                     DIVISION 1 - PAGE 3
SECTION 01563                       DECONTAMINATION UNITS

Construct a catch basin, a minimum 2" taller and wider than the shower basin to catch overflow and spills from the shower.

Construct room by providing a shower pan and two (2) shower walls in a configuration that will cause water running down walls to drip into pan.

Separate this room from the rest of the building with airtight walls fabricated of 6 mil polyethylene.

Provide splash-proof entrances to Changing Room and Equipment Room with self-closing doors at each location.

Provide shower head and controls.

Provide temporary extensions of existing hot and cold water and drainage, as necessary for a complete and operable shower.

Provide a soap dish and a continuously adequate supply of soap and maintain in sanitary condition.

Arrange water shut off and drain pump operation controls so that a single individual can shower without assistance from either inside or outside of the Work Area and locate switch five (5) feet above the floor within reach of the shower on the Clean Room side and protected by GFI.

Pump waste water to sanitary sewer drain and provide 20 micron and 5 micron waste water filters in line to drain. Change filters daily or more often if necessary.

Airlock: Provide an airlock between Shower Room and Equipment Room. This is a transit area for workers. Airlock must be a minimum of three (3) feet wide between the shower doorway and the Equipment Room doorway.

Equipment Room (contaminated area): Require work equipment, footwear and additional contaminated work clothing to be left here. This is a change and transit area for workers.

Separate this room from the Work Area by a 6 mil sheet plastic flapped doorway.
Separate this room from the rest of the building with airtight walls fabricated of 6 mil polyethylene.

Separate this room from the Shower Room and Work Area with airtight walls fabricated of 6 mil polyethylene.

Provide a drop cloth layer of sheet plastic on floor in the Equipment Room for every shift change expected. Roll drop cloth layer of plastic from Equipment Room into Work Area after each shift change. Replace before next shift change. Use only clear plastic to cover floors.

Separate the Equipment Room and Work Area by 6 mil sheet plastic flapped doorway. Arrange so that air movement is through the Equipment Room into the Work Area.

Decontamination Sequence: Require that all workers adhere to the following sequence when entering or leaving the Work Area.

Entering Work Area: Worker enters Changing Room and removes street clothing, puts on clean disposable overalls and respirator, and passes through the Shower Room into the Equipment Room.
Any additional clothing and equipment left in Equipment Room needed by the worker are put on in the Equipment Room.

Worker proceeds to Work Area.

**Exiting Work Area:**

Before leaving the Work Area, require the worker to remove all gross contamination and debris from overalls and feet.

The worker then proceeds to the Equipment Room and removes all clothing except respiratory protection equipment.

Extra work clothing such as boots, goggles, and gloves are to be stored in contaminated end of the Equipment Room.

Disposable coveralls are placed in a bag for disposal with other material.

Require that Decontamination procedures found in Section 01560 be followed by all individuals leaving the Work Area.

After showering, the worker moves to the Changing Room and dresses in either new coveralls for another entry or street clothes if leaving.

**Decontamination Sequence for Mini-Enclosure/Remote Shower:** Require that all workers adhere to the following sequence when using a remote shower for entering or leaving the Work Area.

1. Maintain a bucket of clean potable water in the Work Area. Do not amend with a wetting agent.
2. Remove contaminated suit inside the Work Area. Leave respirator in place.
3. Wash hands, face, and surface of respirator with water and wet paper towels. Use caution to avoid breaking seal between respirator face piece and face.
4. Proceed with respirator in place to Change Room.
5. In Change Room don clean disposable suit leaving respirator in place.
6. Exit Change Room being sure that the entry to the Change Room is completely closed. Proceed to next mini-enclosure or remote shower.
7. At end of shift, or when proceeding to shower, decontaminate fully in accordance with the procedures outlined in Section 01560 - Worker Protection of the Specifications.

**EQUIPMENT DECONTAMINATION UNIT:**

Provide an Equipment Decontamination Unit consisting of a serial arrangement of rooms, Clean Room, Holding Room, and Wash Room for removal of equipment and material from Work Area. Do not allow personnel to enter or exit Work Area through Equipment Decontamination Unit.

Arrange with airlocks between rooms as required below.

**Washdown Station:** Provide a Washdown Station in the Work Area near the Wash Room to wash gross contamination from all items which will pass through the Equipment Decontamination Unit.
Wash Room: provide wash room for cleaning of bagged or containerized asbestos-containing waste materials exiting the Work Area.

Construct wash room of nominal 2”x 2” wood framing and polyethylene sheeting at least 6 mil in thickness and located so that packaged materials, after being wiped clean, can be passed to the Holding Room or Clean Room.

GENERAL REQUIREMENTS DIVISION 1 - PAGE 5
SECTION 01563 DECONTAMINATION UNITS

Separate this room from the Work Area by flapped doors of 6 mil polyethylene sheeting.

Airlock: Provide an airlock between Wash Room and Holding Room or Clean Room. This is a transit area. The airlock shall be 6 mil sheet plastic flapped doorway arranged so that there is movement of air from the Clean Room into the Wash Room.

Holding Room (optional): Provide Holding Room as a drop location for bagged asbestos-containing materials passed from the Wash Room. Construct Holding Room of nominal 2”x 2” wood framing and polyethylene sheeting at least 6 mil in thickness.

Separate this room from the adjacent rooms by flap doors fabricated from 6 mil sheet plastic.

Airlock: Provide an airlock between Holding Room and Clean Room. This is a transit area. The airlock shall be a 6 mil plastic flapped doorway.

Clean Room: Provide Clean Room to isolate the Wash Room from the building.

Erect Critical and Primary Barriers as described in Section 01526 "Temporary Enclosures" in an existing space. If no space exists construct Clean Room of nominal 2”x 2” wood framing and polyethylene sheeting at least 6 mil in thickness.

Separate this room by flapped doorway of 6 mil polyethylene sheeting.

Loadout Area: The loadout area is the transfer area from the building to a truck or dumpster. It may be the Clean Room of the Equipment Decontamination unit or a separate room or loading dock area. Asbestos containing waste material shall not be stored within the building outside of the Work Area.

Decontamination Sequence: Take all equipment or material from the Work Area through the Equipment Decontamination Unit according to the following procedure. If the Work is to be performed within a secondary enclosure/mini-enclosure, substitute the 3’x 3’ Change Room for the Wash Room described below.

At Washdown Station, thoroughly wet clean contaminated equipment or sealed polyethylene bags and pass into Wash Room.

When passing equipment or containers into the Wash Room, close all doorways of the Equipment Decontamination Unit other than the doorway between the Washdown Station and the Wash Room. Keep all outside personnel clear of the Equipment Decontamination Unit.

Once inside the washroom, wet wipe the bags and/or equipment. Following a thorough wet wipe of the bags immediately place bag in a second bag and seal with duct tape.

When cleaning is complete pass items into Holding Room or Clean Room. Close all doorways except the doorway between the Wash Room and the Clean Room.

Workers from the building exterior enter Holding Area and remove decontaminated equipment and/or containers for disposal.
Asbestos containing waste material to be moved distances greater than 50 feet (from waste loadout to dumpster/sealed truck) shall be transported in a covered cart.

CONSTRUCTION OF THE DECONTAMINATION UNITS:

For Decontamination Units that are to be constructed outside of a building, or otherwise in an un-secure location, construct Decontamination Units inside temporary enclosures, constructed of wood framing and sheathing material (1/2” minimum thickness). Framing and sheathing shall be constructed in a workman-like manner. Provide a hinged door, with hinges mounted inside of the temporary enclosure, and a secure padlock hasp and padlock. Temporary enclosures shall be protected from weather by securing 10 mil reinforced poly sheeting on the roof of the temporary enclosure.

Walls and Ceiling: Construct airtight walls and ceiling using polyethylene sheeting at least 6 mil in thickness. Attach to existing building components or a temporary framework.

Floors: Use two (2) layers (minimum) of 6 mil polyethylene sheeting to cover floors in all areas of the Decontamination Units. Use only clear plastic to cover floors. Protect wood floors with cardboard or Masonite sheeting.

Flap Doors: Fabricated from three (3) overlapping sheets with openings a minimum of three feet (3') wide. Configure so that sheeting overlaps adjacent surfaces. Weight sheets at bottoms as required so that they quickly close after being released. Put arrows on sheets to indicate direction of overlap and/or travel. Provide a minimum of three feet (3') between entrance and exit of any room. Hard wood or metal doors that restrict air flow through the decon are prohibited.

Visual Barrier: Where the Decontamination area is immediately adjacent to, and within view of, occupied areas, provide a visual barrier of opaque polyethylene sheeting at least 6 mil in thickness so that worker privacy is maintained and Work procedures are not visible to building occupants.

Alternate methods of providing Decontamination facilities may be submitted to the Owner's Representative for approval. Do not proceed with any such method(s) without written authorization of the Owner's Representative.

Electrical: Connect all electrical branch circuits in Decontamination unit and particularly any pumps in Shower Room to a ground-fault circuit protection device.

CLEANING OF DECONTAMINATION UNITS:

Clean debris and residue from inside of Decontamination Units on a daily basis. Damp wipe or hose down all surfaces after each shift change. Clean debris from shower pans on a daily basis.

If the Changing Room of the Personnel Decontamination Unit becomes contaminated with asbestos-containing debris, abandon the entire Decontamination Unit and erect a new Decontamination Unit. Use the former Changing Room as the new Equipment Room.

SIGNS:

Post approximately 20 inch by 14 inch manufactured caution sign at each entrance to the Work Area displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926.

LEGEND:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA
PART 1 - GENERAL

1.0 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 sections, apply to work of this section.

1.2 SUMMARY

1.2.1 Section Includes:

Application of either water or dust palliative, or both, for the alleviation or prevention of dust nuisance.

Control dust resulting from the Contractor’s performance of the work either on or off the jobsite.

PART 2 - PRODUCTS

2.0 MATERIAL AND EQUIPMENT

2.0.1 Water:

Fire hydrants near the project site may be utilized for application of water by fire hose to demolition debris. The Contractor shall obtain metering devices from the local municipality or owner of the fire hydrants. The Contractor is responsible for all costs associated with the use of fire hydrants, including but not limited to fees for meter rental, water consumption, and/or special tools. Contractor to provide adequate lengths and sizes of hoses, nozzles, and other devices related to the application of water to demolition debris.

2.0.2 Dust Palliative:

Binder: Either miscible in water, or some form of material that is directly applied to the surface without water.

For binders miscible in water, use either a resin emulsion, an SSI type asphaltic emulsion, materials composed essentially of lignin sulfonate or other binder miscible in water and which is non-corrosive and effective as a dust palliative.

PART 3 - EXECUTION

3.0 APPLICATION

3.0.1 Water Method:

Unless otherwise permitted by the Owner’s Representative, apply water by means of pipelines and sprinklers.

Apply water for compacting embankment material, fill materials, sub-base, base or surfacing material and for controlling dust by means of pressure type distributors or pipe lines with a spray system, or hoses with nozzles that will insure a uniform application of water.
1.01 SUBSTANTIAL COMPLETION AND FINAL INSPECTION

A. The Contractor shall comply with procedures stated in the General Conditions of the Contract for Notice of Completion, Final Inspection, Notice of Substantial Completion and Notice of Acceptance.

B. Should the Architect/Engineer or the Principle Representative determine that the work is not substantially complete, or the punch list items exceed 25, he will immediately notify the Contractor, in writing, stating reasons. After Contractor completes work, he shall resubmit certification and request for final inspection. The Contractor will be responsible for all costs beyond two Architect/Engineer walk-throughs.

C. Owner may occupy designated portions of the Project under provisions stated in the General Conditions of the Contract.

1.02 CLOSE-OUT FORMS

The Architect/Engineer will complete the Notice of Approval of Beneficial Occupancy, Closing-out Checklist and Contract Close-out forms and forward them to the Contractor. Comply with procedures stated in General Conditions of the Contract.

The Contractor will complete the CUB EHS General Abatement Contractor Closeout form and forward, with applicable closeout documents, to the Architect/Engineer.

1.03 FINAL SETTLEMENT AND PAYMENT

A. Contractor shall comply with procedures stated in the General Conditions of the Contract before final settlement and payment are made.

B. The Contractor shall also submit the following prior to the final application for payment:
   1. Contractor’s Affidavit of Payment of Debit and Claims: AIA G706.
   2. Contractor’s Affidavit of Release of Liens (claims): AIA G706A, with:
      a. Consent of Surety to final payment: AIA G707
      b. Contractor’s release of waivers of claims.
      c. Separate release of waivers of claims for subcontractors, suppliers and others with claim rights, against property of owner, together with list of those parties.

1.04 GUARANTEE INSPECTION

A. The Contractor shall comply with procedures stated in the General Conditions of the Contract for Guarantee Inspections after completion of the work.

1.05 WARRANTIES AND SPECIAL GUARANTEES

The Contractor shall comply with procedures and criteria outlined in the General Conditions of the Contract for all warranties and special guarantees of the work.
1.06 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, and maintenance materials in quantities specified in each Section, in addition to that used for construction of work. Coordinate with Owner, deliver to Project site and obtain receipt prior to final payment.

B. At the completion of the project, all loose keys for hose bibs; adjustment keys and wrenches for door closers and panic hardware; and keys for electric switches, electrical panels, etc., shall be accounted for by the Contractor and turned over to the Owner.

END OF SECTION
PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General Conditions, Supplementary General Conditions, and other Division-1 Specification Sections, apply to Work of this Section.

DESCRIPTION OF REQUIREMENTS:

General: Decontamination of the Work Area following asbestos abatement.

The decontamination Work is a multi-step procedure requiring two cleanings of the Primary Barrier plastic, visual inspection of the Work Area, lockdown, and cleaning of the room surfaces to remove any new or existing contamination.

   The pressure differential system is used to remove airborne fibers generated by the abatement Work at all times during Project Decontamination.

RELATED WORK SPECIFIED ELSEWHERE:

Removal of Gross Debris is integral with the performance of abatement work and as such is specified in Section 02081 Removal of Asbestos Containing Materials.

Work Area Clearance: Air testing and other requirements which must be met before release of Contractor and re-occupancy of the Work Area are specified in Section 01714 Work Area Clearance.

PART 2 - PRODUCTS

Cleaning Rags: Cloth rags are to be used during the project decontamination sequence. Paper towels are prohibited for Project Decontamination.

PART 3 - EXECUTION

GENERAL:

Work of This Section includes the decontamination of 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 in the space.

Work of This Section includes the cleaning, decontamination, and removal of temporary facilities installed prior to abatement work, including:

   Primary and Critical Barriers erected by Work of Section 01526
   Decontamination Unit erected by Work of Section 01563
   Pressure Differential System installed by Work of Section 01513

Work of This Section includes the cleaning, and decontamination of all surfaces (ceiling, walls, and floors) of the Work Area, and any other surfaces or equipment in the Work Area.
START OF WORK:

Previous Work: During completion of the asbestos abatement work specified in other sections, the Secondary Barrier of polyethylene sheeting will have been removed and disposed of along with any gross debris generated by the asbestos abatement work.

Start of Work: Work of this Section begins with the cleaning of the Primary Barrier. At start of Work the following will be in place:

- **Primary Barrier**: One (1) layer of polyethylene sheeting on floor and one (1) layer on walls and ceiling.
- **Critical Barrier**: An airtight barrier between the Work Area and other portions of the building or the outside.
- **Critical Barrier Sheeting**: Over lighting fixtures and clocks, ventilation openings, doorways, convectors, speakers, light switches, cabinets, and other openings.
- **Decontamination Units**: For personnel and equipment in operating condition.
- **Pressure Differential System**: In operation.

**FIRST CLEANING:**

First Cleaning: Carry out a first cleaning of all surfaces of the Work Area including items of remaining sheeting, tools, scaffolding and/or staging by use of damp-cleaning and mopping, and/or a High Efficiency Particulate Air (HEPA) filtered vacuum. Continue this cleaning until there is no visible debris from removed materials or residue on plastic sheeting or other surfaces. WD-40, petroleum, or paraffin based solutions are prohibited for cleaning any surface in the Work Area.

Remove All Filters in Air Handling System(s) and dispose of as asbestos containing waste in accordance with requirements of Section 02084 Disposal of Asbestos Containing Waste Material. Thoroughly HEPA vacuum all non-disposable filters.

**VISUAL INSPECTION:**

After the first cleaning the Contractor, accompanied by the Owner’s Representative, shall perform a complete 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 sources, residue on surfaces, dust or other matter. If any debris, residue, dust or other matter is found, repeat first cleaning and continue decontamination procedure from that point.

As a part of the visual inspection, sweep entire Work Area including walls, ceilings, ledges, floors and other surfaces in the Work Area with exhaust from forced air equipment (leaf blower with approximately 1 horse power electric motor or equivalent). Do not direct forced air equipment at any seal or critical barrier. If any debris or dust is found, repeat the cleaning in the affected area. The leaf blower is used to aid in the visual inspection process. The leaf blower must be supplied by the Contractor and will not be the same blower used for Work Area clearance.

**Temporary lighting**: Provide adequate lighting on all surfaces in the areas to be subjected to visual inspection.
**Lifts:** Provide ladders, scaffolding and lifts as required to provide access to all surfaces in the area to be subjected to visual inspection.

**Certificate of Final Visual Inspections:**
The first visual inspection process is not complete until relevant portions of the certificate at the end of this section are filled out by the Contractor and signed by the Owner's Representative.

**AIRBORNE FIBER CONCENTRATION:**

Airborne fiber concentrations will be closely monitored during the time leading up to the visual inspection. If the daily area and personnel monitoring show the fiber concentration to be at or below established baseline or background level, as determined in Section 01410 of this specification, project decontamination can proceed.

**LOCKDOWN:**

Encapsulation of substrate (Lockdown): Perform encapsulation of substrate at this time. Maintain Pressure Differential System in operation during encapsulation work. Perform Work only after meeting the following requirements:

1. Surfaces to be covered have passed the requirements of a visual inspection and Airborne Fiber Concentrations from this Section.
2. The Certification of Visual Inspection form included in the back of this section has been signed by all parties.
3. Follow the Lockdown procedures outlined in Section 09805 of this Specification - Encapsulation of Abated Surfaces.

After the Lockdown has dried, remove all primary barrier sheeting from the Work Area, leaving only:

- **Critical Barrier:** forms the sole barrier between the Work Area and other portions of the building or the outside.
- **Critical Barrier Sheeting:** Over lighting fixtures and clocks ventilation openings, doorways, convectors, speaker, and other openings.
- **Decontamination Unit:** For personnel, in operating condition and waste loadout unit.
- **Pressure Differential System:** Maintain in continuous operation.
- **Disposal of Asbestos Containing Waste:** Ensure all asbestos containing waste is properly packaged for disposal and removed from the Work Area to the waste trailer.

**FINAL CLEANING:**

**Final Cleaning:** Carry out a final cleaning of all surfaces in the Work Area in the same manner as the previous cleaning. This cleaning is now being applied to existing room surfaces. Take care to avoid damage to existing surfaces.

**Final Visual Inspection:** After the final cleaning, conduct a final visual inspection of the Work Area using the same procedures as outlined under Visual Inspection. The primary focus of this inspection will be areas which were concealed by the Primary Barriers.
Certificate of Final Visual Inspections: The final visual inspection process is not complete until relevant portions of the certificate at the end of this section are filled out by the Contractor and signed by the Owner's Representative.

Contractor's Testing: At completion of this inspection sweep entire Work Area including walls, ceilings, ledges, floors and other surfaces in the Work Area with exhaust from forced air equipment (leaf blower with approximately 1 horsepower electric motor or equivalent). Do not direct forced air equipment at any seal or critical barrier. If any debris or dust is found repeat the final cleaning. Continue this process until no debris dust or other material is found while sweeping of all surfaces with forced air equipment.

Wait 96 Air Changes to allow HEPA filtered fan units to clean air of airborne asbestos fibers. Use oscillating fans as necessary to assure circulation of air in all parts of Work Areas during this period. Maintain Pressure Differential System in operation for the entire 96 air change period.

FINAL AIR SAMPLING TEM:

Transmission Electron Microscopy (TEM): After the Work Area is found to be visually clean, TEM air samples will be collected and analyzed in accordance with the procedure for Transmission Electron Microscopy set forth in Section 01714 Work Area Clearance.

If Release Criteria are not met, repeat Final Cleaning and continue Decontamination procedure from that point.

If Release Criteria are met, proceed with Removal of Work Area Isolation.

FINAL AIR SAMPLING PCM:

Phase Contrast Microscopy (PCM): After the Work Area is found to be visually clean, air samples will be taken and analyzed in accordance with the procedure for Phase Contrast Microscopy set forth in Section 01714 Work Area Clearance:

If Release Criteria are not met, repeat Final Cleaning and continue Decontamination Procedure from that point.

If Release Criteria are met, proceed with Removal of Work Area Isolation.

REMOVAL OF WORK AREA ISOLATION:

After all requirements of this Section and Section 01714 Work Area Clearance have been met:

Shut down and remove the Pressure Differential System. Seal HEPA filtered fan units, HEPA vacuums and similar equipment with 6 mil polyethylene sheet and duct tape to form a tight seal at intake end before being moved from Work Area. Refer to Section 01513.

Remove Personnel Decontamination Unit.

Remove the Critical Barriers separating the Work Area from the rest of the building. Remove any small quantities of residual material found upon removal of the plastic sheeting with wet wiping, HEPA filtered vacuum cleaners and local area protection.

Remove all equipment, materials, debris from the Work site.
Dispose of all asbestos containing waste material as specified in Section 02084 Disposal of Asbestos Containing Waste Material.

COMPLETION OF ABATEMENT WORK:

Asbestos Abatement Work is Complete upon meeting the requirements of this Section and Section 01714 Work Area Clearance, including submission of:

- Certificate of Final Visual Inspection
- Receipts Documenting proper disposal as required by Section 02084 Disposal of Asbestos Containing Waste Material.
- Punch list detailing repairs to be made and incomplete items.

CERTIFICATE OF FINAL VISUAL INSPECTIONS:

Following this Section is a "Certificate of Final Visual Inspections". This certification is to be completed by the Contractor and certified by the Owner's Representative and Air Sampling Professional, if a similar document is not provided by the Owner. Final payment will not be approved until this Certification is executed for each Work Area/containment.

END OF SECTION
CERTIFICATION OF FINAL VISUAL INSPECTIONS

Project Name: ________________________________
Project Address: ______________________________
RLH Engineering Project Number: ________________
Work Area: _________________________________
Date of First Visual Inspection: __/__/__
(Criticals and Primary Barrier Intact)
Date of Final Visual Inspection: __/__/__
(Criticals and Work Area Surfaces)

CONTRACTOR’S CERTIFICATION

In accordance with Section 01711 "Project Decontamination" the Contractor hereby certifies that he has visually inspected the Work Area (all surfaces including pipes, beams, ledges, walls, ceiling and floor, Decontamination Unit, sheet plastic, etc.) and has found no dust, debris or residue.

by: (Signature) ________________________________

(Print Name) ________________________________

(Print Title) ________________________________

AIR SAMPLING PROFESSIONAL’S CERTIFICATION

The Air Sampling Professional hereby certifies that he has accompanied the Contractor on his visual inspection and verifies that this inspection has been thorough and to the best of his knowledge and belief, the Contractor’s Certification above is a true and honest one.

by: (Signature) ________________________________

(Print Name) ________________________________

(Print Title) ________________________________
PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General Conditions, Supplementary General Conditions, and other Division - 1 Specification Sections, apply to Work of this Section.

Visual Inspection: required as a prerequisite of air testing, is set forth in Section 01711 Project Decontamination.

Air Monitoring: performed by the Owner during abatement work, is described in Section 01410 Test Laboratory Services.

SUMMARY:

Not in Contract Sum: This Section describes Work being performed by the Owner. This Work is not in the Contract Sum.

This Section sets forth required post-abatement airborne asbestos concentrations in the Work Area and describes testing procedures the Owner will use to measure these levels.

CONTRACTOR RELEASE CRITERIA:

The Asbestos Abatement Work Area is Cleared when the Work Area is visually clean and airborne asbestos structure concentrations have been reduced to the level specified below.

VISUAL INSPECTION:

Work of this Section will not begin until the visual inspection described in Section 01711 Project Decontamination is complete and has been certified by the Owner's Representative.

AIR MONITORING:

To determine if the elevated airborne asbestos structure concentration encountered during abatement operations has been reduced to the specified level, the Owner will secure samples and analyze them according to PCM or TEM protocols as described in this Section.

Work Area Clearance: Upon meeting the Clearance requirements, the Work of Section 01711 Project Decontamination can continue.

AGGRESSIVE SAMPLING:

All Air Samples will be taken using aggressive sampling techniques as follows:

Before sampling pumps are started the exhaust from forced-air equipment (leaf blower with an approximately 1 horsepower electric motor) will be swept against all walls, ceilings, floors, ledges and other surfaces in the room. This procedure will be continued for five (5) minutes per 10,000 cubic feet of room volume.

One 20 inch diameter fan per 10,000 cubic feet of room volume will be mounted in a central location at approximately two (2) meters above floor, directed toward ceiling and operated at low speed for the entire period of sample collection.

Air samples will be collected in areas subject to normal air circulation away from room corners, obstructed locations, and sites near windows, doors, and vents.
After air sampling pumps have been shut off, fans will be shut off.

**SCHEDULE OF AIR SAMPLES:**

**General:** The number and volume of air samples taken and analytical methods used by the Owner will be in accordance with the following schedule. Sample volumes given may vary depending upon the analytical instruments used.

**PHASE CONTRAST MICROSCOPY:**

In each homogeneous Work Area after completion of all cleaning Work, a minimum of five (5) samples will be taken and analyzed as follows:

Samples will be collected on 25 mm. cassettes with the following filter media:

- **PCM:** 0.8 mixed cellulose ester in a cassette with a conductive extension cowl.

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Analysis Method</th>
<th>Detection Limit</th>
<th>Minimum Volume (Liters)</th>
<th>Rate LPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Work Area or Each Room of Work Area (5 min.)</td>
<td>5</td>
<td>PCM</td>
<td>0.01</td>
<td>1,200</td>
<td>1-10</td>
</tr>
<tr>
<td>Work Area Blank</td>
<td>1</td>
<td>PCM</td>
<td>0.01</td>
<td>0</td>
<td>Open for 30 seconds</td>
</tr>
<tr>
<td>Laboratory Blank</td>
<td>1</td>
<td>PCM</td>
<td>0.01</td>
<td>0</td>
<td>Do Not Open</td>
</tr>
</tbody>
</table>

**Analysis:** Fibers on each filter will be measured using the NIOSH Method 7400 entitled "Fibers" published in the NIOSH Manual of Analytical Methods, 3rd Edition, Second Supplement, August 1987.

Fibers referred to in this Section include fibers regardless of composition as counted by the phase contrast microscopy method used.

**Split Sample:** One Work Area sample will be split and both halves analyzed separately for duplicate analysis.

**Release Criteria:** Decontamination of the Work site is complete when every Work Area sample is at or below the Detection Limit above. If these conditions are not met then the decontamination is incomplete and the cleaning procedures of Section 01711 shall be repeated. The Owner shall pay for the first set of PCM sample collection and analysis. The Contractor shall be required to pay all costs for sample collection and analysis of subsequent PCM samples if the first set of PCM samples fails to meet the clearance requirements specified above in each Work Area.

**TRANSMISSION ELECTRON MICROSCOPY:**

In each homogeneous Work Area after completion of all cleaning Work, a minimum of 13 samples will be taken and analyzed as follows:

Samples will be collected on 25 mm. cassettes with the following filter media:
TEM: 0.45 micrometer mixed cellulose ester with 5.0 micron mixed cellulose ester backing filter in a cassette with a conductive extension cowl.

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Analysis Method</th>
<th>Analytical Sensitivity Fibers/cc.</th>
<th>Recommended Volume (Liters)</th>
<th>Rate LPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Work Area</td>
<td>5</td>
<td>TEM</td>
<td>0.005</td>
<td>1,300-1,800</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Each Work Area</td>
<td>5</td>
<td>TEM</td>
<td>0.005</td>
<td>1,300-1,800</td>
<td>1-10</td>
</tr>
<tr>
<td>Work Area Blank</td>
<td>1</td>
<td>TEM</td>
<td>0.005</td>
<td>0</td>
<td>Open</td>
</tr>
<tr>
<td>Outside Blank</td>
<td>1</td>
<td>TEM</td>
<td>0.005</td>
<td>0</td>
<td>Open</td>
</tr>
<tr>
<td>Laboratory Blank</td>
<td>1</td>
<td>TEM</td>
<td>0.005</td>
<td>0</td>
<td>Do Not Open</td>
</tr>
</tbody>
</table>

Analysis will be performed using the analysis method set forth in the AHERA Regulation 40 CFR Part 763 Appendix A.

Asbestos Structures referred to in this Section include asbestos fibers, bundles, clusters or matrices, as defined by method of analysis.

Release Criteria: Decontamination of the Work Site is complete when the following conditions are met:

**Work Area Samples are below filter background levels**

- All Work Area sample volumes are greater than 1,199 liters for a 25 mm. sampling cassette.
- The concentration of asbestos on every Work Area Sample does not exceed the filter background level of 70 structures per square millimeter of filter area.

If these conditions are not met then the decontamination is incomplete and the cleaning procedures of Section 01711 shall be repeated. The Owner shall pay for the first set of TEM sample collection and analysis. The Contractor shall be required to pay all costs for sample collection and analysis of subsequent TEM samples if the first set of TEM samples fails to meet the clearance requirements specified above in each Work Area.

**Termination of Analysis:** If the arithmetic mean (average) asbestos concentration on the blank filters exceeds 70 structures per square millimeter of filter area the analysis will cease and new samples collected.

**LABORATORY TESTING:**

**PHASE CONTRAST MICROSCOPY:**
The services of a testing laboratory will be employed by the Owner to perform laboratory analysis of the air samples. A microscope and technician will be set up at the job site, or samples will be sent daily by courier so that verbal reports on air samples can be obtained within 24 hours. A complete record, certified by the testing laboratory, of all air monitoring tests and results will be furnished to the Owner’s Representative, the Owner and the Contractor upon request.

TRANSMISSION ELECTRON MICROSCOPY:

Samples will be sent by courier for analysis by Transmission Electron Microscopy. Verbal results will normally be available within 24 hours after receipt of samples by the laboratory. The laboratory is capable of analyzing a maximum of 13 such samples from this Project at any one time. All Transmission Electron Microscopy results will be available to the Contractor upon request.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION
PART 1 – GENERAL

1.01 SUMMARY

A. Section includes:
   1. Construction Storm Water Requirements
   2. Post-Construction Storm Water Requirements

B. Related Sections
   1. Section 02200 - Earthwork
   2. Section 02221 – Trenching, Backfilling, Compaction

1.02 QUALITY ASSURANCE

A. All construction sites
   1. All construction sites that disturb any land must take appropriate erosion control and
      stormwater detention measures to contain water runoff from site.

B. Construction sites – one acre and larger
   1. All construction sites that are one acre and larger must prepare and submit a Storm
      Water Management Plan (SWMP) for approval before any work begins. The SWMP
      must conform to all the requirements contained herein.

1.03 SUBMITTALS

A. Storm Water Management Plan (SWMP)

   Storm Water Management Plan (SWMP): Prior to any construction activity disturbing one acre of
   land or more, an approved SWMP and a Stormwater Permit for Construction Activity application
   from the Colorado Department of Public Health and Environment (CDPHE) are required. The
   SWMP shall be prepared in accordance with the CDPHE requirements for “Contents of the
   Stormwater Management Plan” and the UDFCD’s Urban Storm Drainage Criteria Manual,
   management and erosion control measures are to be constructed and maintained in accordance
   with the SWMP and the UDFCD Drainage Criteria Manual.

PART 2 – MATERIALS

2.01 Storm Water Management Plan

A. Preparation Standards: Design of the SWMP and the Storm Water Quality and Erosion Control
   Plan shall include the following elements:
   1. Protection for adjacent properties (including public right-of-way) from erosion and/or
      sediment deposition.
   2. Protection for public streets from the deposit of sediment from run-off or vehicles tracking
      mud at construction access routes.
   3. Stabilization for all disturbed areas as defined in the UDFCD Drainage Criteria Manual.
4. Protection for all storm sewer inlets from the entry of sediment-laden water.
5. Long-term stability of cut and fill slopes and the successful establishment of permanent vegetative cover on exposed soil.
6. The following standard notes:
   a. “All temporary erosion control facilities shall be installed before any construction activities take place”.
   b. “Solid waste, industrial waste, yard waste and any other pollutants or waste on any construction site shall be controlled through the use of BMP’s. Waste and/or recycling containers shall be provided and maintained by the owner or contractor on construction sites where there is the potential for release of waste. Uncontained waster that may blow, wash or otherwise be released from the site is prohibited. Sanitary waste facilitates shall be provided and maintained by the owner or contractor”.
   c. “Ready-mixed concrete, or any materials resulting from the cleaning of vehicles or equipment containing or used in transporting or applying it, shall be contained on construction sites for proper disposal. Release of these materials is prohibited”.
   d. “Cover shall be applied within 14 days to inactive soil stockpiles, and shall be maintained for stockpiles that are proposed to remain in place longer than 30 calendar days”.
   e. “BMP’s shall be implemented to prevent the release of sediment from construction sites. Vehicle tracking of mud shall not be allowed to enter the MS4 or waters of the State. Sediment tracked onto public streets shall be removed immediately”.
   f. “Techniques shall be used to prevent dust, sediment or debris blowing from the site”.
   g. “Stormwater discharges from construction activities shall not cause or threaten to cause pollution, contamination or degradation of waters of the State”.
   h. “All earth disturbances shall be designed, constructed and completed to limit the exposed area of any disturbed land to the shortest possible period of time”.
   i. “Bulk storage structures for petroleum products and other chemicals shall have adequate protection so as to contain all spills and prevent any spilled material from entering the MS4 or waters of the State”.
   j. Any disturbance to temporary and permanent BMP’s resulting from construction activity shall be repaired or replaced within 48 hours.

PART 3 – EXECUTION

3.1 PERMITTING

A. Contractor shall develop the SWMP in accordance with all of the requirements herein and utilizing the most recent SWMP guidance document prepared by the CDPHE and good engineering hydrologic and pollution control practices and submit to the University for approval.
B. Contractor shall apply for and obtain a CDPHE storm water general permit for construction activities. Provide copies of the permit to the University prior to the start of construction operations.
3.2 CONSTRUCTION

A. The Contractor will be required to have the SWMP on site at all times and shall be prepared to respond to maintenance of specific BMP’s.

B. The Contractor shall inspect all BMP’s at least every 14 days and within 24 hours after any precipitation or snow melt event that causes surface run-off. Inspections of BMP’s shall be conducted by an individual who has successfully completed formal training in erosion and sediment control by an organization acceptable to the University. A certification of successful completion of such training shall be provided upon request.

C. The Contractor shall amend the SWMP whenever there is a change in design, construction, operation, or maintenance, which has an effect on the potential for discharge of pollutants to the MS4 or receiving waters, or if the SWMP proves to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with construction activities.

D. Records of inspection are to be maintained on site with the SWMP. Inspection records are to be available at the project site at all times and shall be made available to the University upon request.

E. Prior to commencement of work, all general contractors, subcontractors and utility agencies shall obtain and comply with the approved, current SWMP for the project.

3.3 POST CONSTRUCTION

At the conclusion of all construction activities and as a part of construction close-out, contractor shall remove all temporary BMP’s and inactivate the stormwater permit.

END OF SECTION
1.0 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General Conditions, Supplementary General Conditions, and Division-1 Specification Sections, apply to Work of this Section.

1.1 SUMMARY

1.1.1 Section includes:

Description of removal of existing structures, removal and disposal of existing site elements, clean up and preparation of site for new construction, and disposal of debris off site.

1.1.2 Related Sections:

Section 01010 Summary of Work
Section 01565 Dust Control

1.2 QUALITY ASSURANCE

Contractor Qualifications: Minimum of five years experience in demolition of similar structures.

Special Regulatory Requirements: Comply with local codes and ordinances.

1.2 PROJECT CONDITIONS

The Contractor shall examine the site and available documents to verify existing conditions affecting the Work.

1.2.1 Site Tour:

Prior to commencing work, the Contractor, Owner and Owner’s Representative shall tour the site and identify areas to be protected in place and record pre-existing damage. This record shall serve as documentation for determination of necessary repairs following demolition and shall be signed by all parties attending the tour. Repair of items damaged during demolition and not identified as previously damaged shall be repaired by the Contractor at no cost to the Owner.

1.2.2 Adjacent Facilities and Properties:

Conduct demolition in a manner that minimizes interference of adjacent facilities. Damage to adjacent facilities or safety hazards that affect adjacent properties are the responsibility of the Contractor. Contractor is responsible for obtaining authorization from the Owner or adjacent Owner’s prior to performing activities that affect adjacent facilities or properties.

1.2.3 Public Thoroughfares:
Conduct operations with minimum interference to public and private streets, sidewalks, and driveways. Do not close or obstruct roadways, sidewalks, or other travel routes without prior written approval of the Owner.

1.3.4 Existing Utilities:
Underground utilities located on site may include, but are not limited to, water, sanitary sewer, storm sewer, electric, natural gas, telephone, television cable and fiber-optics. Overhead utilities on site may include, but are not limited to, electric, telephone, and fiber-optics.

1.3.5 Environmental Requirements:
Execute demolition in a manner that will limit unnecessary dust and noise. Burning of materials on site is not permitted.

1.4 SCHEDULING
Schedule building demolition under the provisions of the Contract Documents.

1.5 CODES AND REGULATIONS
1.5.1 Applicable Regulations:
The Contractor shall perform the Work in accordance with all applicable agency regulations, including but not limited to:

- EPA - Environmental Protection Agency
- NEC – National Electric Code
- RCRA – Resource Conservation Recovery Act
- TSCA – Toxic Substances And Control act
- DOT – Department of Transportation
- CDPHE – Colorado Dept. of Public Health
- All other applicable Federal, State, county and city codes, standards and regulations

PART 2 - PRODUCTS
(Not Applicable)

PART 3 - EXECUTION
3.1 PREPARATION
3.1.1 Utility Locations:
The Contractor shall have all site utilities identified, as specified in Section 01105.

3.1.2 Utility Services:
Coordinate temporary or permanent termination or isolation of utility services with local utility companies. The Contractor shall protect in place overhead electric, telephone and
fiber-optics wires conflicting with the Work. Contractor shall coordinate utilities isolations with appropriate utility owner and the Owner’s Representative.

Document capped location of isolated utilities on Project Record Documents, per Section 01720.

3.1.3 Permits

Contractor shall secure the proper demolition permit from CDPHE and local municipality prior to any building demolition. Other permits, including but not limited to, storm water pollution and prevention, public works/right-of-way, traffic/pedestrian control may also be required by the local municipality.

3.2 BUILDING DEMOLITION

3.2.1 Safety

Demolish in an orderly and careful manner. Contractor shall ensure that all personnel on site maintain a distance from the building equal to twice the height of the nearest free-standing wall.

3.2.2 Structure Demolition

Begin demolition at top of structures and proceed to lowest level. Do not use explosives.

Break concrete and masonry into sections less than 3’ in any dimension. Remove walls, foundations, and slabs leaving a clean excavation.

3.2.3 Dust Control

Spray debris with water as necessary, from a charged hose, to limit dust to lowest practicable level. Do not use water to extent of causing flooding, contaminated runoff or icing.

3.3 SITE DEMOLITION

Remove existing concrete walkways, asphalt parking area, miscellaneous mechanical and electrical equipment, and other site improvements as indicated.

3.4 CLEANING

At all times during the demolition, keep the premises free from accumulations of waste material or rubbish, and at the completion of the work, remove rubbish, tools, and surplus materials and leave the premises clean and ready for subsequent work. Promptly remove waste, rubbish or debris from the site.

3.5 POST-DEMOLITION SITE PLAN

Document location of all remaining site features and contours on Project Record Documents, per Section 01720.
PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General Conditions, Supplementary General Conditions, and Division-1 Specification Sections, apply to Work of this Section.

DESCRIPTION OF WORK:

Decontaminated Materials:

The following non-asbestos containing materials are to be removed, decontaminated, and reinstalled, as work of this Section. The Contractor may elect to protect these items in place if feasible.

Not applicable

The following non-asbestos containing materials are to be protected in place, as work of this Section.

All items and building features not scheduled for demolition or removal

The following non-asbestos containing materials are to be removed, cleaned, and returned to the Owner in good Condition:

Not applicable

The following non-asbestos containing materials are to be removed and disposed of, as work of this Section.

Not Applicable

JOB CONDITIONS:

Occupancy: Other Contractors will be occupying areas of the building immediately adjacent to areas of selective demolition. Conduct selective demolition work in manner that will minimize need for disruption of other construction activities.

Protection: Provide temporary barricades and other forms of protection as required to protect Owner's personnel and general public from injury due to selective demolition work.

Protect from damage existing finish Work that is to remain in place and becomes exposed during demolition operations.

Protect floors with suitable coverings where necessary.

Remove protection at completion of Work, unless otherwise specified.

Shoring and Bracing: Provide necessary temporary shoring and bracing to support and protect portions of the existing building during demolition and abatement operations. Such shoring shall be left in place until

END OF SECTION
permanent supports have been installed. The Contractor shall be solely responsible for the design, safety, and adequacy of temporary shoring and bracing and its ability to carry the load for which intended.

Cease operations and notify Owner’s Representative immediately if safety of structure appears to be endangered. Take precautions to support structure. Do not remove supports until safety of structure is restored.

**SITE WORK**

**DIVISION 2 - PAGE 2**

**SECTION 02062**

**NON-ASBESTOS DEMOLITION**

**Damages:** Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner. The Owner or Owner’s Representative reserves the right to solicit other contractors to perform repair work.

**Explosives:** Use of explosives will not be permitted.

**Heavy Machinery:** Use of Bobcats, jack hammers, heavy demolition equipment will not be permitted.

**Utility Services:** Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.

**Salvage:** All items within the facility and at the project remain the property of the Owner, unless specifically identified for demolition or abatement. Removal or salvage of materials not identified for abatement or demolition is strictly prohibited. In the event salvageable items, furnishings or other building features are removed by the Contractor, the Contractor may be held responsible to the Owner for the replacement costs of these materials.

**Disposal:** All hazardous, universal and special waste disposal shall be coordinated with UCB EH&S Department. All waste manifests shall be provided as part of the project closeout documentation. Contact UCB EH&S Dept. to obtain appropriate regulatory agency generator number(s) before shipping/transporting any waste materials.

**PART 2 - PRODUCTS**

**MATERIALS TO BE REUSED:**

Materials, specialty items, equipment, casework, systems, light fixtures, and components scheduled or noted to be reused, shall be carefully removed, cleaned, and stored at the site for later reinstallation. Damage caused during removal, storage, or reinstallation shall be repaired to the satisfaction of the Owner’s Representative, at no cost to the Owner. The Owner or Owner’s Representative reserves the right to solicit other contractors to perform repair work.

**ITEMS TO BE REMOVED BY THE OWNER:**

Items that are removed prior to the start of demolition/abatement will remain the property of the Owner. The following items are to be removed by the Owner prior to abatement procedures:

Not applicable

**DISPOSITION OF REMOVED ITEMS:**

Items to be removed and not indicated to be reused shall become the property of the Contractor unless otherwise identified by the Owner for reuse.
PART 3 - EXECUTION

INSPECTION:

Prior to commencement of selective demolition work, inspect all areas in which Work will be performed. Photograph and document existing conditions of structure, surfaces, equipment or of surrounding properties which could be misconstrued as damage resulting from selective demolition work. Submit copies of photographs to Owner’s Representative prior to starting Work. Verify the working condition of all systems within the work area. Document all working and non-working systems and components.

PREPARATION:

Competent Person: Work of this Section is to be supervised by an OSHA Competent Person as described in Section 01043 Project Coordination.

Work Site Isolation: Isolate the site of selective demolition work from occupied portions of the building prior to start of demolition activities. Work site isolation includes:

- Erection of Critical Barriers as described in Section 01526 Temporary Enclosures
- Installation and operation of Pressure Differential and Ventilation System as described in Section 01513

Decontamination Unit: Prior to beginning Work of this Section complete installation of a Personnel Decontamination Unit as described in Section 01563 Decontamination Units.

PCB Suspect Light Ballasts - Package light ballasts suspected of containing Polychlorinated Biphenyls (PCB’s) according to, but not limited to, 40 CFR 761.65. Provide logs as to the number of PCB ballasts packaged for disposal. All disposal coordination and costs shall be the responsibility of the Contractor.

Fluorescent Tubes with Mercury Vapor Contamination - Package fluorescent light tubes with mercury vapor according to all applicable Federal, State, and local regulations. Provide logs as to the number of bulbs packaged for disposal. All disposal coordination and costs shall be the responsibility of the Contractor.

Collection of Fire/Smoke Detection Devices

Carefully remove Smoke Detection Devices and place in secure packaging to prevent breakage. Provide soft packing material to prevent damage during packaging, handling, and transport. Disposal shall be coordinated by the Contractor.

Collection of Mercury-containing Glass Ampules

Carefully remove glass ampules containing mercury from thermostats and other mechanical devices. Provide soft packing material to prevent damage during packaging, handling, and transport. Deliver packaged mercury ampules to the Owner at a pre-arranged drop-off location. Disposal shall be coordinated by the Contractor.

Collection of Batteries, Circuit Boards and Other Electronics Waste

Package fluorescent light tubes with mercury vapor according to all applicable Federal, State, and local regulations. Provide logs as to the number of bulbs packaged for disposal. All disposal coordination and costs shall be the responsibility of the Contractor.
Evacuation of Refrigerants

Properly recover refrigerants from refrigerating and air conditioning devices, in accordance with CO AQCC Regulation 15. Once completed, provide identification tag on devices indicating refrigerant recovery is complete.

CLEAN-UP AND REPAIR:

Cleaning: The Contractor shall at all times during the demolition keep the premises free from accumulations of waste material or rubbish caused by his employees or work. At the completion of the work, the Contractor shall remove rubbish, tools, and demolished materials from site.

Upon completion of demolition work, remove tools, equipment and demolished materials from site.

In areas where asbestos abatement work is to occur, leave protection in place as required by abatement work. Additional cleaning as required for abatement work is not in Work of this Section. Pre-clean area as per Section 01526, Temporary Enclosures.

HVAC Controls Demolition/Repair:

Immediately report to Owner’s Representative any pneumatic lines, HVAC controls, thermostats, conduits, etc. that are cut or damaged. Crimp and seal any pneumatic lines to maintain system pressure. The Abatement Contractor shall repair the damaged lines at no cost to the Owner. The Owner or Owner’s Representative reserves the right to solicit other contractors to perform repair work, at the cost of the Abatement Contractor.

Electrical Demolition/Repair:

Work requiring the disconnect of light fixtures, speakers, fire alarm devices, security sensors, clocks or bells shall be performed with the circuit de-energized or by turning off the appropriate equipment.

Wiring (including grounds) scheduled for demolition from a junction box that supplies a device or flexible conduit shall be disconnected at the junction box and capped off with appropriately sized wire nuts.

Wiring to be cut shall be traced out before cutting and identified on both ends with a number tag.

Support all loose or unsupported conduits within the Work Area to ensure electrical safety.

Identify poorly supported conduit to Owner’s Representative. The Owner will be responsible to permanently support conduit following abatement unless otherwise specified.

Electrical work shall be performed by an electrician trained and licensed to perform such work in the State of Colorado and installed according to National Electric Code.

Electrical components, including data and other low voltage wiring, found not to be in working order (and not previously identified) shall be repaired at no cost to the Owner. The Owner or Owner’s Representative reserves the right to solicit other contractors to perform repair work, at the cost of the Abatement Contractor.
Telephone/Data and Other Low-Voltage Wiring

Protect in place all low voltage wiring. Low voltage wiring found to be poorly supported shall be pre-cleaned as per Section 01526 and supported/suspended above work surfaces.

END OF SECTION
Removal Encapsulant: Provide a penetrating type encapsulant designed specifically for removal of Asbestos Containing Material.

Mastic Removal Solvents: The following are approved solvents for the removal of floor tile mastic:

   Neugenic 4175  
   Sentinel 747

Airless sprayer: Provide an airless sprayer for the application of amended water or removal encapsulants. A water hose and nozzle may not be substituted for an airless sprayer. The airless sprayer shall not be utilized as a cleaning device.

SITE WORK DIVISION 2 - PAGE 2
SECTION 02081 REMOVAL OF ASB. CONT. MAT’L.

Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6 mil thick, clear, frosted, or black as required by conditions.

Duct Tape: Provide duct tape in 2” or 3” widths.

Spray Cement is not to be used on existing wall finishes.

Disposal Bags: Provide 6 mil thick leak-tight polyethylene bags labeled as required by Section 02084 Disposal of Asbestos Containing Waste Material.

Glovebag: Provide minimum 6 mil polyethylene, polyvinylchloride or equivalent plastic sack, with two sealed inward projecting long-sleeved gloves or mittens, pre-printed with same warning notice as a disposal bag.

Amended Water Sprayer: Provide a hand pump type pressure-can water sprayer for use with glovebag removal.

PART 3 - EXECUTION

DROP CLOTH: Over the two (2) sheets of the Primary Barrier on floors, install as a drop cloth a clear 6 mil sheet plastic in all areas where asbestos removal work is to be carried out.

Install Drop Cloth at the beginning of each work shift. Install only sufficient plastic for Work of that shift.

Remove Drop Cloth at end of each Work shift or as Work in an area is completed. Fold plastic toward center of sheet and pack in disposal bags. Keep material on sheet continuously wet until bagged.

WORKER PROTECTION:

Require that appropriate protective equipment be used at all times. Worker Protection is described in Sections 01560 and 01562 of this Specification.

WET REMOVAL:

Thoroughly wet to satisfaction of Owner's Representative Asbestos Containing Materials to be removed prior to stripping to reduce fiber dispersal into the air. Accomplish wetting by a fine spray (mist) of amended water or removal encapsulant. Saturate material sufficiently to wet throughout without causing excess dripping. Allow time for amended water or removal encapsulant to penetrate material thoroughly.
Mist Work Area continuously with amended water to reduce airborne fiber levels.

Remove saturated Asbestos Containing Material in small sections from all areas. Do not allow materials to dry out. As it is removed, simultaneously pack material while still wet into disposal bags, gooseneck bags, and seal with minimum three wraps of duct tape. Clean outside and move to Wash Down Station adjacent to Material Decontamination Unit.

Architectural/Acoustical Finish on Plaster/Wire or Wood Lath:

Construct a Full Enclosure according to Section 01526 Temporary Enclosures.

Spray asbestos-containing architectural acoustic finish with a fine mist of amended water or removal encapsulant. Do not over-saturate to cause excess dripping.

SITE WORK DIVISION 2 - PAGE 3
SECTION 02081 REMOVAL OF ASB. CONT. MAT'L.

Allow time for amended water or removal encapsulant to saturate materials to substrate. If surface of material has been painted or otherwise coated, cut small holes as required and apply amended water or removal encapsulant from above.

Cut wire or wood lath into manageable sections, cut hanger wires and remove all nails or other fasteners.

Roll or fold up complete with Asbestos-Containing Material, wrap in 6 mil plastic, and hand place in container.

After removal of lath and Asbestos-Containing Material, remove and overspray on framing, decking and structure above and behind plaster finish using stiff bristled brush.

HVAC Duct Insulation:

Construct a Full Enclosure according to Section 01526 Temporary Enclosures.

Spray with a mist of amended water or removal encapsulant. Allow amended water or removal encapsulant to saturate material to substrate.

Where sections of duct and Insulation/Wrap are being removed, remove duct in manageable sections.

Cut canvas jacket and remove insulation and hand place in a disposal bag. Minimize the amount of cuts at seams and corners where ACM mud and tape are likely to be found.

Do not drop insulation to the floor.

Remove any tacks/glue from the duct work that may cause a puncture hazard or interfere with final cleaning.

Remove any residue from substrate with a stiff bristle nylon brush.

Clean all surfaces in the Work Area using disposable cloths wetted with water which has surfactant or removal encapsulant added. When these surfaces have dried, clean with a HEPA filtered vacuum.

Boiler/Breeching - Facility Component Removal:

Construct a Secondary Enclosure as described in Section 01526 Temporary Enclosures.

Remove facility components according to the following procedures:
Components must be removed as units or in sections.

Thoroughly wet material allowing sufficient time for amended water or removal encapsulant to penetrate material.

Double wrap component in two (2) layers of 6 mil polyethylene and duct tape.

Remove facility component taking care not to disturb the asbestos containing material.

Dispose of facility component according to Section 02084 Disposal of Asbestos-Containing Waste Material.

Once the facility components are removed they may not be stripped.

Windows with Non-friable ACM Glazing:

Establish a Regulated Area for OSHA compliance, with drop cloth beneath Work Area.

If the windows, including frames, can be removed substantially intact, the Contractor may substitute a regulated area with drop cloth for secondary enclosure requirements.

Components must be removed as units or in sections.

Thoroughly wet material allowing sufficient time for amended water or removal encapsulant to penetrate material.

Cover window glazing with one (1) layer of duct tape.

Carefully remove window unit and double wrap component in two (2) layers of 6 mil polyethylene and duct tape.

Label and dispose of facility component according to Section 02084 Disposal of Asbestos Containing Waste Material.

Non-friable ACM Caulking:

Establish a Regulated Area for OSHA compliance, with drop cloth beneath Work Area.

Thoroughly wet material allowing sufficient time for amended water or removal encapsulant to penetrate material.

Remove materials in manageable quantities and immediately bag up debris.

Remove residue remaining on concrete substrate after scraping by using a stiff nylon bristled hand brush.

Pay particular attention to areas where caulking may be located in corners and seams.

Cutting, grinding, sanding, or other removal procedures that would render the caulking friable are not permitted.

Transite Panel Removal:

Establish a Regulated Area for OSHA compliance, with drop cloth beneath Work Area.
If the transite panels can be removed substantially intact, the Contractor may substitute a regulated area with drop cloth for secondary enclosure requirements.

Adequately wet the surface areas of the transite to prevent dust emissions throughout the removal process.

Demolish trim using hand methods.

Remove the transite using hand removal methods. No cutting or grinding of the transite is allowed.

Remove the material carefully with minimal breakage and disturbance. Carefully place material into disposal bag.

Seal material in two layers of 6 mil polyethylene disposal bags or sheeting.

Dispose of transite according to Section 02084 Disposal of Asbestos Containing Waste Material.

**Floor Tile and Mastic:**

Construct a Secondary Enclosure according to Section 01526 Temporary Enclosures. If the Work exceeds 160 SF and mechanical floor buffing equipment will be utilized to remove mastic adhesive, construct a Full Enclosure according to Section 01526, except that two layers of 6 mil poly sheeting on cleanable wall surfaces will not be required. Install 6 mil poly splash gaurds to height of 4’ above floor.

In locations where the amount of floor tile and mastic to be removed is less than 32 square feet, the Contractor may restrict access to the Work Area in place of Secondary Enclosure requirements as described in Section 01526, and perform removal per Appendix B removal methods. Where Appendix B removal methods are proposed to be used in areas where removal quantity exceeds 32 SF, review use of the Appendix B method with Owner’s Representative.

Wet and remove carpet, if applicable, and dispose of as asbestos contaminated waste material. The Contractor, with approval of the Owner’s Representative, may dispose of carpet as non-asbestos contaminated waste if the floor tile is left substantially intact during carpet removal.

Wet floor tile with amended water or removal encapsulant.

Loosen floor tiles with a spade or other appropriate tools or methods. Remove tiles with minimal breakage.

Remove cove base, if applicable, and dispose of as asbestos contaminated waste material.

Remove mastic to bare concrete using hand scrapers and solvents approved within this Section.

Contractor shall remove all residual mastic solvent with appropriate solvent wash.

A floor tile buffer may be used for removing mastic if a three feet (3') high 6 mil layer of polyethylene sheeting is placed at the base of the walls in all affected areas.

Mechanical chippers and/or grinding are not approved methods for floor tile and mastic removal.

The Contractor shall be responsible for restoring the existing substrate to acceptable condition to accept new floor finishes if damaged due to abatement operations.
The Contractor shall be responsible for conducting final wash procedures, per the manufacturer’s recommendations.

The Contractor may use a "Scrape-Away Blade", or similar buffer plate attachment for the removal of mastic from concrete substrate while under full containment conditions only.

Sheet Vinyl Flooring Removal:

Construct a Full Enclosure as described in Section 01526.

Wet and remove carpet, if applicable, and dispose of as asbestos contaminated waste material. The Contractor, with approval of the Owner’s Representative, may dispose of carpet as non-asbestos contaminated waste if the sheet vinyl is left substantially intact during carpet removal.

Wet sheet vinyl with amended water or removal encapsulant.

Loosen flooring with a spade or other appropriate tools or methods. Remove sheet vinyl with minimal tearing. Score sheet vinyl with razor knife to minimize tearing.

Remove covebase, if applicable, and dispose of as asbestos contaminated waste material. Remove backing and mastic to bare concrete using hand scrapers and solvents approved within this Section.

The Contractor shall be responsible for restoring the existing substrate to acceptable condition to accept new floor finishes if damaged due to abatement operations.

The Contractor may use a "Starfire Bit", "Scrape Away Blade", or similar buffer plate attachment for the removal of backing and mastic from concrete substrate.

Asbestos Contaminated Soil and Debris

Construct a Full Enclosure as described in Section 01526. If placement of poly sheeting on walls and ceiling are not feasible due to crawlspace configuration and/or access, the Contractor may pursue a Variance for these installations through CDPHE. The inability to secure a Variance shall not be cause for consideration in change of scope of work or contract value.

Piping, conduit and wiring shall be protected from damage by removal operation. Decontaminate this equipment as other crawlspace surfaces are decontaminated.

Start removal at the point of Work farthest from the entrance and proceed toward the entrance. Spray materials with amended water or removal encapsulant to saturate to depth of 2" or more.

Collect all surface debris and dispose as asbestos containing waste. Soils removal shall not start until all trash and debris has been removed. Rocks, concrete or masonry items larger than 1 cubic foot may be pre-cleaned and stacked in one corner of the Work Area. Continue to wet debris and soil during removal of surface debris to maintain moist condition of the materials.

Remove non-ACM insulation and dispose of as asbestos containing waste.
Remove wetted soils to a 2-4 inch depth as specified in areas of crawlspaces. Start removal at locations away from the entrance to the Work Area and work toward the entrance. Use care to prevent re-contamination of abated areas. Adequately wet for contaminated soils is achieved when a handful of loose soil when compressed under hand pressure and released maintains its compressed form.

HEPA vacuum and wet wipe all crawl space surfaces following soils removal. Surfaces to decontaminate include walls, beams, deck, columns, pipes, and any other surfaces which are present in the crawlspaces.

Lockdown all crawl space surfaces after passing visual inspection by the Owner's Representative.

END OF SECTION
Waste Trailer Bags: Provide a pre-manufactured waste disposal bag specifically designed for use in direct waste load out. The bag shall be approximately 29’ long x 7’ tall x 7’ wide and open on one end only. Support loops shall be integrated into the bag on minimum 4’ centers along the top of the bag. The bag will be constructed of seamless polyethylene sheeting, taped polyethylene will not be permitted. The bag will be constructed as follows:

- Outer Bag - constructed of 3 ounce un-coated woven polypropylene
- Primary Bag - 6 mil thick sheet polyethylene film
- Secondary Bag - 6 mil thick sheet polyethylene film

Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6 mil thick, clear, frosted, or black as required by job conditions.

Duct Tape: Provide duct tape in 2” or 3” widths.

Plywood: Provide full sheets of ½” thick CDX plywood in good condition for the construction of the transfer chamber.

Framing: Provide 2”x 4” wood framing member for the construction of the transfer chamber.

Flooring Protection: Provide new sheets of cardboard or Masonite sheeting in the largest size possible to protect the sheet polyethylene floor in the transfer chamber and waste trailer bag.

Rope: Provide solid braid nylon rope minimum 1/4” diameter with a minimum tensile strength of 1,250 lbs.

Airless sprayer: Provide an airless sprayer for the application of amended water or removal encapsulants. A water hose and nozzle may not be substituted for an airless sprayer.

PART 3 - EXECUTION

TRANSFER CHAMBER:

Provide a transfer chamber to directly connect the waste trailer and Work Area. The transfer chamber shall be a minimum of 6’ long x 6’8” wide x 6’8” tall. The opening of the transfer chamber shall not exceed the dimensions of the opening of the waste trailer bag.

Construct the transfer chamber of 2”x 4” wood framing and ½” thick plywood sheeting. Construct the chamber weather tight and in a manner that maintains building security independent of the waste trailer. Install hinged doors that will swing 180 degrees to close the opening at the connection point with the waste trailer during separation.

Install critical, primary, and secondary barriers in the transfer chamber as described in Section 01526 Temporary Enclosures, Full Enclosure.

At opening of transfer chamber and Work Area install a flapped doorway consisting of two (2) layers of alternating polyethylene sheets. This flapped doorway may be taped open during periods of active waste load out.
At opening of transfer chamber and Waste trailer, install 2 layers of sheet poly. These poly barriers are to be rolled up at all times except for periods when the waste trailer is separated from the transfer chamber. Refer to the Separation and Tie-In Sequences in this Section for Details.

At the floor opening of the transfer chamber at the waste trailer install a threshold constructed from 2"x 4" wood framing.

Protect the polyethylene floor sheeting in the transfer chamber during load out operations with cardboard/masonite.

**WASTE TRAILER and WASTE TRAILER BAG:**

Erect 6 mil polyethylene sheeting in the waste trailer prior to installing waste trailer bag.

Attach rope through closed end of dumpster and run through loops in waste trailer bag. Pull rope tight to support waste trailer bag and tie off to the transfer chamber.

Install masonite/cardboard sheeting on the floor of the waste trailer bag to protect during waste load out.

**WASTE TRAILER BAG TO TRANSFER CHAMBER TIE-IN PROCEDURE:**

Open hinged doors to transfer chamber and direct waste trailer driver to backup and deposit the opening of the waste trailer to within 2' of the opening of the transfer chamber.

From the outside attach the 3 ounce un-coated woven polypropylene outer bag to the opening of the transfer chamber. Secure using staples and duct tape.

Enter the Work Area and proceed into the transfer chamber. Roll-up and secure the two (2) layer, 6 mil curtain at the opening of the transfer chamber/waste trailer. When complete, the curtain should be rolled up between the outer bag and primary bag of the waste trailer bag.

Attach the primary bag to the primary layer of polyethylene sheeting in the transfer chamber with a minimum overlap of 12". Seal this joint with spray glue and duct tape. Install layers so that the primary bag is the innermost layer in the transfer chamber.

Attach the secondary bag to the secondary layer of polyethylene sheeting in the transfer chamber with a minimum overlap of 12". Seal this joint with spray glue and duct tape. Install layers so that the secondary bag is the innermost layer in the transfer chamber.

Install a plywood ramp to bridge the opening between the transfer chamber and the waste trailer. Use caution to not damage the poly sheeting and immediately repair any damage.

**WASTE HANDLING PROCEDURES:**

Remove asbestos containing material according to Section 02081 - Removal of Asbestos Containing Materials.

In lieu of immediately bagging the material as described in Section 02081, the Contractor shall immediately place the material into a cart, wheelbarrow, or similar, and transport to the waste trailer bag via the transfer chamber.

Deposit the material into the waste trailer bag. At all times the debris in the waste trailer bag shall be maintained adequately wet.

Continue the process until the waste trailer bag is full, then proceed with Waste Trailer Separation as described below.
WASTE TRAILER SEPARATION PROCEDURES:

Close flapped doorway between Work Area and Transfer Chamber.

Remove plywood ramp, cardboard sheeting, and all gross debris from the transfer chamber.

Confirm that the debris in the waste trailer bag is adequately wet and continuously mist the air in the transfer chamber during the separation sequence.

Wet wipe and HEPA vacuum all debris from the secondary layer of the transfer chamber.

Remove the secondary bag from the transfer chamber, wrap and seal using the metal strapping. Seal with duct tape and fold the secondary bag into the waste trailer.

Remove the secondary barrier layer from the transfer chamber and pass back into the Work Area through the flapped doorway.

Wet wipe and HEPA vacuum all debris from the primary layer of the transfer chamber.

Remove the primary bag from the transfer chamber, wrap and seal using the metal strapping. Seal with duct tape and fold the primary bag into the waste trailer.

Unroll the two (2) layer 6 mil curtain and seal to the opening of the transfer chamber.

From outside the Work Area, open the plywood hinged doors of the transfer chamber and disconnect the outer bag from the transfer chamber, wrap and seal using the metal strapping. Seal with duct tape and fold the outer bag into the waste trailer.

Label the outside bag with the four labels identified in Part 2 of Section 02084 - Disposal of Asbestos Containing Waste Materials.

Remove the rope supporting the bag from the transfer chamber and from within the waste trailer.

Attach the waste trailer to the waste hauler’s truck and carefully pull away from the transfer chamber and building.

Close the plywood doors to the transfer chamber and lock until beginning a new tie-in sequence.

The transfer chamber shall be final cleaned, visually inspected, and cleared as part of the final decontamination sequence identified in Section 01711 - Project Decontamination.
PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General Conditions, Supplementary General
Conditions, and other Division-1 Specification Sections, apply to Work of this Section.

Section 01092 Codes and Regulations - Asbestos Abatement describes applicable Federal, State and
local regulations.

DESCRIPTION OF THE WORK:

This Section describes the disposal of Asbestos Containing/ Contaminated Waste Materials. Disposal
includes packaging of asbestos containing waste materials. Disposal is to be accomplished by land fil-
ing.

PART 2 - PRODUCTS

Disposal Bags: Provide 6 mil thick leak-tight polyethylene bags labeled with four labels with text as
follows:
First Label:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID OPENING OR BREAKING CONTAINER
BREATHING ASPBESTOS IS HAZARDOUS TO YOUR HEALTH
Second Label: Provide in accordance with 29 CFR 1910.1200(f) of the OSHA Hazard Communication Standard:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
BREATHING AIRBORNE ASBESTOS, TREMOLITE, ANTHOPHYLLITE, OR ACTINOLITE FIBERS IS HAZARDOUS TO YOUR HEALTH


RQ HAZARDOUS
SUBSTANCE,
SOLID, NOS,
CLASS 9
(ASBESTOS)

Fourth Label: Provide the name of the Owner, building location, name of the Contractor and sequential number for each disposal bag. This label must be pre-printed.

PART 3 - EXECUTION

GENERAL:

Load all asbestos containing waste material in two (2) 6 mil plastic disposal bags and leak-tight drums. Drums are not required if the landfill will accept other forms of containers.

Place in a third 6 mil plastic disposal bag any bags with breaches, cuts, or tears.

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

Asbestos containing waste material to be moved distances greater than 50 feet, (from waste loadout to dumpster/sealed truck) shall be transported in a covered cart.

All waste loadout Work, as detailed in Sections 01563 and 02084, shall be performed in the presence of the Owner's Representative during approved working hours.

END OF SECTION
PART 1 - GENERAL

1.0 RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General Conditions, Supplementary General Conditions, and Division-1 Specification Sections, apply to Work of this Section.

1.1 DESCRIPTION OF WORK

1.1.1 Section includes:

General description of transport and disposal of non-hazardous materials generated during demolition.

1.1.2 Related Sections

Section 01010 Summary of Work
Section 01562 Dust Control

1.3 NOTICES AND PERMITS

The Contractor shall notify and obtain necessary Permits from all applicable Federal, State and local agencies.

1.4 SUBMITTALS

Provide the Owner with the following submittals:

Copies of all notices and Permits from all applicable Federal, State and local agencies.
Proposed landfill and certifications prior to transport. Include statement that landfill will accept demolition debris containing non-friable asbestos waste.

Proposed recycler, if any, prior to transport.

Evidence of weigh tickets as evidence of tonnage or volume of materials transported.

PART 2 - PRODUCTS
(Not Applicable)

PART 3 - EXECUTION

3.0 TRANSPORT

All demolition debris shall be loaded onto trucks within the limit of the fenced work area. Once loaded, trucks shall proceed off the site to the disposal or recycling site.

Load and transport debris in a manner that will prevent spillage on streets and adjacent properties. Contractor shall be responsible for removal of debris and cleaning of streets dirtied by demolition activities.

The Contractor shall ensure that all appropriate transporter placards are in place and in accordance with USDOT regulations, 49 CFR, Part 172, Subpart F.

3.2 DISPOSAL OF NON-HAZARDOUS WASTE

3.2.1 Solid Waste:

Comply with all applicable Federal, State and local regulations.

Disposal may include recycling of non-asbestos or non-hazardous materials.

Advise the disposal site, at least 24 hours prior to shipment.

Stabilization of waste shall be at the Contractor’s expense.

3.2.2 Liquid Waste:

All liquid non-hazardous waste shall be treated and disposed of. Treatment shall not contaminate air, soil, surface water, or groundwater. Treatment shall not create a threat of fire, explosion, or hazard exposure.

END OF SECTION
PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General Conditions, Supplementary General Conditions, and other Division - 1 Specification Sections, apply to Work of this Section.

DESCRIPTION OF WORK:

The Extent of encapsulation work is shown on the drawings and as herein specified.

The Work includes the sealing of floor, wall, and ceiling system structural materials that have been in contact with or near asbestos containing materials, and cannot be removed for structural or other reasons; with one (1) coat of penetrating encapsulant.

SUBMITTALS:

Product Data: Submit manufacturer's technical information including label analysis, material data safety sheet, and application instructions for each material proposed for use.

JOB CONDITIONS:

Apply encapsulating materials only when environmental conditions in the Work Area are as required by the manufacturer's instructions.

PART 2 - PRODUCTS
Lockdown Encapsulants: Provide encapsulants specifically designed for application as lockdown after asbestos abatement. Approved products include Fiberlock Fiberset PM (7475 Clear), or approved equal. Use color tinted encapsulant if required.

Penetrating Encapsulants: Provide encapsulants specifically designed for application to remaining asbestos containing materials after asbestos abatement. Approved products include Fiberlock A-B-C Asbestos Binding Compound (6422 Clear), or approved equal. Use color tinted encapsulant if required. Use in accordance with manufacturer's directions, in water-diluted form, to achieve penetrant qualities of product.

Bridging Encapsulants: Provide encapsulants specifically designed for application to remaining asbestos containing materials after asbestos abatement. Approved products include Fiberlock A-B-C Asbestos Binding Compound (6422 Clear), or approved equal. Use color tinted encapsulant if required. Use in accordance with manufacturer's directions, in undiluted form, to achieve bridging qualities of product.

Fosters F-100 is prohibited without written approval from the Owner's Representative.

PART 3 - EXECUTION

GENERAL:

Do Not Commence Application of encapsulating materials until all removal work within the Work Area has been completed, and Certificate of Final Visual Inspection has been signed.

WORKER PROTECTION:

Before beginning Work with any material for which a Material Safety Data Sheet has been submitted provide workers with the required protective equipment. Require that appropriate protective equipment be used at all times.

Before Start of Encapsulation:

Prior to applying encapsulant the project decontamination process must be complete through the Visual Inspection and the Certification of Final Visual Inspection. The following will be in place during encapsulation:

- Primary layer of polyethylene
- Decontamination unit fully operational
- Pressure differential system running continually

Prepare the airless sprayer equipment and encapsulant. Use the exhaust from a clean one horsepower leaf blower to sweep all surfaces in the Work Area. Do not direct forced air equipment at any seal or critical barrier. Apply the encapsulant to all Work Area surfaces according to the manufacturer's instructions.

Wait at least thirty (30) minutes and then sweep the area with the exhaust from the leaf blower a second time.
Apply encapsulant with an airless spray gun pressure and nozzle orifice as recommended by the encapsulant manufacturer.

END OF SECTION