From "Hlava, Alyssa" <alyssa.hlava@accenture.com>
Subject **BCSIS Abatement Project Manual**
To Stephen Henry <stephen.henry@bvsd.org>, Kris Stoppenhagen <kris.stoppenhagen@bvsd.org>
Cc "Henson, Matthew" <matthew.henson@accenture.com>, "derrell.walton@bvsd.org" <derrell.walton@bvsd.org>
Date March 6, 2026 11:51:40 AM MST

Stephen and Kris,

Attached is a draft of the project manual for BCSIS High Peaks. This includes tentative dates for the bidding process, please let me know if these do not work for you.

I wanted to point out alternate #2. The exterior wood soffit is called out in the CD to be replaced. It is possible there is an adhesive on the wood panels that we could not see. We were not able to investigate/sample without causing damage to the soffit. I included this an alternate, in the case that an ACM adhesive exists. I am happy to sample that material at the start of construction, or anytime time prior to if you prefer, to verify.

Please let me know if you have any questions or concerns.

Thank you,

Alyssa Hlava
Assistant Project Manager | US Central Region
Windsor, CO | Mobile: +1 (951) 595-9410
Accenture Industry X
Infrastructure & Capital Projects (I&CP)

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Attachments:

- DRAFT - Asbestos Abatement Project Manual- BCSIS High Peaks 26007.pdf

BCSIS High Peaks Elementary School - Asbestos Abatement Project Manual

Boulder Valley School District
6500 Arapahoe Road
Boulder, CO 80303

accenture
Infrastructure & Capital Projects

Owner's Representative:

Accenture I&CP
601 Gyrfalcon Court Unit A
Windsor, CO 80550
970.686.5695

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Accenture
601 Gyrfalcon Court Ste. A
Windsor, CO | 80550 | USA

INVITATION TO BID - ASBESTOS ABATEMENT

Proposals (single copy) will be received electronically by Accenture on behalf of Boulder Valley School District at the following email addresses: alyssa.hlava@accenture.com , matthew.henson@accenture.com, & Derrell.walton@bvsd.org until March 31, 2026 at 4:00pm from the following pre-qualified abatement contractors:

Earth Services and Abatement
6700 E 50th Ave
Commerce City, CO 80022

Element Environmental Services
3508 Peoria St. Ste 103
Aurora, CO 80010

Environmental Demolition Insight
6401 Broadway Unit A
Denver, CO 80221

Peak Environmental Inc.
465 Santa Fe Drive
Denver, CO 80204

JKS Industries LLC
5200 DTC Pkwy #100
Greenwood Village, CO 80111

For Asbestos Abatement at the following Facilities:

BCSIS High Peaks Elementary School
3995 Aurora Avenue
Boulder, CO 80303

Any Bid received after the above Closing Time shall be returned unopened. Immediately after said closing time, all bids received will be publicly opened and read aloud in the presence of all interested parties.

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Bidding Documents, including Bid Bonds, the Project Specifications, Information for Bidders, sample Proposal Forms, and other information available for Bidders will be available to Pre-Qualified Bidders at the following location:

Alyssa Hlava
Accenture I&CP
601 Gyrfalcon Ct., Unit A
Windsor, CO 80550
(951) 595-9410
Alyssa.hlava@accenture.com

Inquiries or requests for clarification shall be in writing. No questions will be accepted after 4:00 p.m., March 25, 2026. Response to requests for additional information and questions shall be in writing and furnished to all parties receiving bid documents. The Owner reserves the right to contact anyone submitting a bid for clarifications or explanations of its Bid Proposal

Each proposal must be submitted on the Bid Forms supplied by the Owner, which is enclosed in the documents. If the total proposed value is over $50,000, each bid must be accompanied by a Proposal Guarantee in the amount not less than ten (10%) percent of the total bid price in the form of a bid surety bond issued by a company rated no lower than A in Best's Insurance guide, latest edition, or have a Best's Financial Rating of A or better, cashier's check, or certified check drawn on an acceptable bank and payable without qualification to the Owner.

All bids must be sealed in the manner prescribed in the documents. The Owner reserves the right to reject any or all bids, to waive all irregularities, and to accept any bid deemed to be in its best interest.

A MANDATORY pre-bid conference and project walk-through of interested pre-qualified bidders will start at 4:00 p.m. on Monday, March 23, 2026 at:

- **BCSIS High Peaks Elementary School** 3995 Aurora Avenue, Boulder, CO 80303

Bidders will be allowed to re-visit the facility for further field inspections, providing the visit is scheduled through the Owner.

Further information will be found in the "Instructions to Bidders" in the Contract Documents.

END OF DOCUMENT

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INSTRUCTIONS TO BIDDERS

OWNER:	Boulder Valley School District 6500 Arapahoe Rd Boulder, CO 80303
PROJECT:	BCSIS High Peaks Elementary School - Asbestos Abatement Project
PROJECT NUMBER:	Accenture Project Number 26007
OWNER'S REPRESENTATIVE:	Accenture (I&CP) 601 Gyrfalcon Court, Unit A Windsor, CO 80550 970-686-5695 – office

BIDDING DOCUMENTS:

Bids, to be entitled to consideration by the Owner, must be submitted in accordance with the Bidding Documents for the Project which include the Invitation to Bid, Instructions to Bidders, Form of Proposal, Form of Bond for Performance & Payment, Form of Agreement Between the Owner & Contractor, General Conditions of the Contract, Supplementary Conditions, Project Specifications and the Contract Documents as defined herein, and all Addenda which may be issued by the Owner's Representative prior to the Award of the Contract. Information not contained in the Bidding Documents shall not be relied on by any Bidder and shall not be binding on the Owner.

CONTRACT:

The Owner intends to enter into contract for the following Bid Package:

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BID PACKAGE NO. 1	**DESCRIPTION – SCOPE**
26007	BVSD – **BCSIS High Peaks Elementary School** Asbestos Abatement Project

TIME OF COMPLETION:

Should the School District enter into a Contract with any Bidder, the Work must be complete on or before the final date as identified in the Specifications Section 01013.

PREPARATION AND SUBMITTAL OF BIDS:

All Bids are to be made only on the original Proposal Form furnished to pre-qualified Bidders. If more than one price for each package is designated, all blank spaces for Bid prices must be filled in, or it will be presumed that such omitted entry is intentional, and the corresponding item is Bid at no cost.

The Form of Proposal shall not contain any supplemental material or any recapitulation of the Work to be done, and shall be completed without interlineation, or erasure.

The Proposal shall be executed manually by the Principal (if an individual), by a General Partner (if a partnership), or by the President or duly authorized Vice President (if the Bidder is a corporation), and submitted in singular form enclosed in a sealed envelope. Provide information as requested on the bid envelope.

If forwarded by mail, the sealed envelope containing the Bid must be enclosed in another envelope addressed to the Owner's Representative at the address identified above. No Bidder may withdraw a Bid after the Closing Time until thirty (30) days after the date of the Bid Opening. Only written modifications received by the Owner's Representative at the address above designated prior to the Closing Time will be considered.

BID, PERFORMANCE, AND PAYMENT BOND:

Bid Security, as designated in the Invitation to Bid, shall be included with each Bid in the Bid Envelope. Bid Security will be returned to all Bidders on each Bid Package upon execution of an Owner-Contractor Agreement by the successful Bidder, or if no such Agreement has been executed within thirty (30) days after the opening of Bids, upon the demand of any Bidder who has not been notified of the acceptance of his Bid.

1. A bid bond, issued by lawfully authorized agent, in the amount of ten percent (10% of the base bid Contract amount shall accompany each bid, unless noted otherwise below.

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If total project value is over $50,000, then:

BID SECURITY REQUESTED FOR THIS PROJECT:

YES _X_ NO __

Cash, cashier's check, non-terminable prepaid check, certificate of deposit signed over to Poudre School District, acceptable in lieu of bond as described above:

YES _X_ NO __

Bid security will be returned when Contract is awarded. The successful bidder's security will be returned upon receipt of performance bond as described below.

2. Before entering upon the performance of any such work included in said Contract, the Abatement contractor shall, at his own expense, provide a performance bond, issued by a surety company licensed in the State of Colorado and listed on the U.S. Treasury bond list, in an amount no less than one hundred percent (100%) of the total Contract price, which shall assure due compensation for all parties who may become entitled to liens under said Contract in accordance with the applicable provisions of Colorado State Law.

If total project value is over $50,000, then:

PERFORMANCE BOND REQUIRED FOR THIS PROJECT:

YES _X_ NO ___

PAYMENT BOND REQUIRED FOR THIS PROJECT:

YES _X_ NO ___

EXECUTION OF CONTRACT:

The Bidder to whom a Contract is awarded will be required, within ten (10) calendar days thereafter, to execute the Owner-Contractor Agreement, in multiple originals as the Owner may require, and to furnish Insurance Certificates and Performance and Payment Bonds, in the form contained in the Bidding Documents, as security for faithful performance of the Agreement and for the payment of all persons performing labor under the Agreement and furnishing materials in connection with the Work. The bonds shall have such corporate surety thereon as the Owner in its sole discretion may deem to be satisfactory. Attorneys, in fact, who execute any documents in connection with the Bidding process or the Contract, must present an effective and manually executed copy of their power of attorney.

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CONDITIONS OF WORK:

Each Bidder assumes the responsibility of informing himself fully of the physical, legal, and regulatory conditions related to the performance of the Work involved in the Project and the employment of the labor required for such performance. Failure to do so will not relieve a successful Bidder of the obligation to furnish all labor and material necessary for the performance of the Work and to otherwise perform the Contract.

Bidders are required to visit the Project Site and inform themselves of all conditions, including other work, if any, being or to be performed at the site. The Bidder is deemed to have knowledge of local conditions including, but not limited to climatic conditions, codes, licensing and regulatory requirements, labor conditions, and transportation limitations. Insofar as possible, the Contractor must employ such methods or means as will not cause any interruption of the activities of the Owner or any other contractor for the Owner.

Each Bidder's attention is specifically called to the Completion Schedule to complete the Project included in the Bidding Documents. By submitting its Bid, each Bidder represents that he has reviewed the schedule and has the capability, resources and management available, and all costs associated with making those resources available to complete the Work upon which he is Bidding within the applicable milestone dates, or within the number of days designated if the commencement of the Project should be delayed for any reason. The Bidder recognizes that failure to do so will disrupt the activities of the Owner and of the Project as a whole, and may subject the Bidder to damages for such disruption.

A Contractor will not be granted an extension of time for causes other than a change in the Scope of the Work, unless they can demonstrate that the cause was directly attributable to factors beyond his control and unforeseeable in addition to any other requirements imposed by the Contract Documents.

PRE-BID CONFERENCE:

Attendance at the Pre-Bid Conference is required for all pre-qualified Bidders. The Pre-Bid Conference will be held starting at the following time and location to answer questions about the Bidding process and the Work Area.

BCSIS High Peaks Elementary School – Monday, March 23rd at 4:00 p.m.

END OF DOCUMENT

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Windsor, CO | 80550 | USA

FORM OF PROPOSAL

OWNER:	Boulder Valley School District 6500 Arapahoe Rd Boulder, CO 80303
PROJECT:	BCSIS High Peaks Elementary School – Asbestos Abatement Project
PROJECT NUMBER:	Accenture I&CP Project Number 26007
OWNER'S REPRESENTATIVE:	Accenture I&CP 601 Gyrfalcon Court, Unit A Windsor, CO 80550 970-686-5695 – office

The undersigned, having carefully examined all of the Bidding Documents pertaining to the subject Project (including the plans, specifications, form of construction agreement, general conditions, and supplementary general conditions), hereby proposes to furnish all required labor, material, equipment, tools, insurance, and taxes to complete the Work of this Bid Package in strict accordance with the Project Documents for the price set forth herein.

The undersigned acknowledges receipt of the following Addenda prior to Closing Time:

Addenda # _____

Addenda # _____

Base Bid: BCSIS High Peaks ES – Asbestos Abatement Project

The total price for all work as specified in the Base Bid for the BCSIS High Peaks Elementary School Asbestos Abatement Project Work is:

$_____

(_____DOLLARS)

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Alternate #1: BCSIS High Peaks ES – Asbestos Abatement Project

The total price for all work as specified in Alternate #1 for the BCSIS High Peaks ES Asbestos Abatement Project Work is:

$_____

(_____ DOLLARS)

Alternate #2: BCSIS High Peaks ES – Asbestos Abatement Project

The total price for all work as specified in Alternate #2 for the BCSIS High Peaks ES Asbestos Abatement Project Work is:

$_____

(_____ DOLLARS)

UNIT PRICES

The Contractor shall provide an all-inclusive unit cost for the following Work:

UP-1: The unit price, per square foot, for removal of Trace (<1%) ACM drywall system, within a secondary enclosure.

$_____/SF

UP-2: The unit price, per each, for removal of ACM pipe fittings, within a secondary containment, utilizing glove bags.

$_____/EA

UP-3: The unit price, per linear foot, for removal of ACM pipe insulation, within a secondary containment, utilizing glove bags.

$_____/LF

UP-4: The unit price, per square foot, for removal of ACM wood paneling adhesive, within a regulated area.

$_____/SF

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UP-5: Worker – Weekday 6AM – 6PM (Normal Hours)

$_____/HR

UP-6: Worker – Nights/Weekend (After-hours)

$_____/HR

UP-7: Supervisor – Weekday 6AM – 6PM (Normal Hours)

$_____/HR

UP-8: Supervisor – Nights/Weekend (After-hours)

$_____/HR

The undersigned also certifies that the Project Manager waiver requirements have been met according to the Colorado Air Quality Control Commission, Regulation Number 8, Part B, Section III 9.a. (iii)(A).

The undersigned certifies that he has carefully reviewed the Project Documents and all Addenda thereto as of this date, that he understands that he must also review subsequently issued Addenda, if any, and that his Proposal, unless withdrawn prior to the Closing Time, shall pertain to the Bid Package as described in the original Project Documents and all Addenda thereto issued prior to the Closing Time. Form of Proposal must be imprinted with Corporate Seal.

_____
Corporate or Partnership Name

_____
Signature

_____
Title

_____
Typed Name and Date

Affix Corporate Seal

END OF FORM OF PROPOSAL

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SECTION 01013 - SUMMARY OF THE WORK – ASBESTOS ABATEMENT

PART 1 - GENERAL

RELATED DOCUMENTS:

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

PROJECT/WORK IDENTIFICATION:

General: The Project name is BCSIS High Peaks Elementary School Asbestos Abatement, as shown on Contract Documents prepared by Owner's Representative, Accenture I&CP. Drawings and Specifications are dated February 2026.

SCOPE OF WORK:

The Contractor shall provide pressure differential systems and decontamination units, contain the Work Area, all labor, materials, equipment, insurance, bonds and permits to complete the Project as specified in the Contract Documents. Drawing Sheets supplied provide additional information about the limits of the Work Areas and required procedures. The Contractor shall be responsible to verify the accuracy of material quantities to be included in his bid.

Base Bid- BCSIS High Peaks Elementary School

1. The work includes the demolition and removal of approximately 2,560 SF of trace (<1%) asbestos containing drywall system. Prior to commencement of work, the Contractor is responsible to determine extents above hard lid, behind walls, and below floor. The Contractor shall remove entire system of walls indicated, including all paint, fasteners, skim coats, textures, adhesives, and associated covebase to a clean substrate. The Contractor shall be responsible to remove existing finishes and wall systems obstructing identified areas of Work (i.e. wood paneling). During OSHA-regulated demolition, all work shall be performed under secondary engineering controls, as described in section 02081. Demolition debris may be disposed of as non-ACWM, as long as the material is removed as a separate action from asbestos abatement. Contractor to coordinate OSHA removal with Owner’s Representative prior to start of work. Removal will not be considered complete until it passes final visual inspection by Owner’s Representative.

2. The Work includes the removal and disposal of approximately 76 EA of asbestos containing pipe fittings, to be removed by glove bag method in secondary containment(s), as described in Section 02081. All materials shall be removed and disposed of as ACWM.

3. The Work includes clean demolition necessary to access underground plumbing. The Contractor shall perform all demolition in strict accordance with the General Contractor’s specifications and project requirements. Concrete slab cutting shall be performed using wet methods. Saws shall be equipped with integrated water delivery systems to suppress dust generation. Dry cutting is prohibited. The Contractor shall maintain strict slab depth control to prevent cutting deeper than required and to avoid damage to existing underground

utilities, including piping, as well as potential asbestos-containing materials (ACM). Where sub-slab ACM is known or suspected, the Contractor shall utilize hand tools where feasible to expose underlying conditions, and avoid impact demolition methods (including, but not limited to, jackhammers) until the area has been verified to be free of suspect ACM. If asbestos-containing material is identified below the slab, work shall stop immediately, the area shall be secured, and Alternate #1 shall be implemented in accordance with the Contract Documents.

4. The Work includes the cleaning of all surfaces in Work Areas following the completion of gross debris removal.

Alternate #1

1. The Work includes the removal and disposal of approximately 3 LF of friable thermal system insulation (TSI) to a clean substrate. The Contractor shall remove all associated jackets, insulation materials, and pipe sealants in their entirety. If asbestos-containing material (ACM) is identified within soil, the Contractor shall remove contaminated soil to a minimum of two (2) inches beyond the last observable ACM in all directions, or further as required to achieve visual clearance. The Work shall be completed as described in Section 02081. Dispose of all materials as ACWM.

Alternate #2

1. The Work includes the removal and disposal of approximately 2,655 SF of assumed asbestos containing adhesive on wood paneling on to be removed. Material quantities and locations on drawings are approximate. The work includes removal and disposal of wood paneling, adhesive, fasteners, paint, and insulation to a clean substrate; all material shall be disposed of as ACWM. The Work shall be performed as specified in Section 02081.

Sequence of Work

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.

1. The Contractor shall prepare and submit all notices, permit applications, and project submittals prior to the start of the Work. If required by regulation, a Project Design (as described in AQCC Regulation No. 8 Part B Asbestos, III.C.) shall be developed by the Contractor and submitted as part of the project submittals.

2. The Contractor shall mobilize on-site, post Project Design (if applicable), and 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 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 containments required for personnel decontamination unit and waste load out 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, as specified, 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, including fiberglass insulation on pipes, as asbestos contaminated waste. Items identified for decontamination and return to the Owner shall be removed at this time.

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. After lockdown encapsulant has sufficiently dried, remove primary poly barrier and clean all surfaces. Critical barriers, Negative Air Pressure Differential Equipment, and Decontamination Units shall all remain in place and remain functional.

13. The Contractor and Owner's Representative shall visually inspect all surfaces in the work area.

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

15. After acceptable clearance samples, the Contractor shall remove all temporary and dis.

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 punch list work and demobilize. Contractor shall be responsible for completing punchlist items one (1) week after completion of each individual phase.

Completion Schedule

The Contractor shall have access to the Work Areas to perform work of this Contract as specified below. Deviations from the specified schedule must be approved by the Owner's Representative at least 48 hours in advance in writing. Work of this Project shall be coordinated with renovation and education activities being conducted by the Owner.

Base Bid

Phase I
Start Project: May 26, 2026
Complete Project: June 03, 2026

Phase II
Start Project: June 03, 2026
Complete Project: June 19, 2026

Phase III
Start Project: June 08, 2026
Complete Project: June 19, 2026

Alternate #1

Start Project: June 08, 2026
Complete Project: June 12, 2026

Alternate #2

Start Project: June 22, 2026
Complete Project: July 03, 2026

Liquidated Damages for Late Completion

Failure to complete the Work within the specified schedule shall entitle the Owner to collect from the Contractor liquidated damages of One Thousand and 00/11 Dollars ($1,000.00) per calendar day for late completion per phase.

In addition, the Contractor may be held responsible to the Owner for Owner's Representative fees beyond the original dates of completion.

The liquidated damages specified above are considered separate from costs associated with any final clearance air tests that fail to meet the release criteria specified in Section 01714.

The Work includes the removal of asbestos-containing materials according to the requirements of the following specification sections in the sequence indicated:
General and Administrative Requirements are set forth in the following specification sections:

01013 Summary of the Work - Asbestos Abatement
01043 Project Coordination - Asbestos Abatement
01091 Definitions and Standards - Asbestos Abatement

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

01092 Codes, Regulations and Standards - Asbestos Abatement 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.

01503 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.

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

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.

PLAN OF ACTION:
Submit a detailed plan of the procedures proposed for use in complying with the requirements of this specification. Include in the plan the location and layout of decontamination areas, the sequencing of asbestos work, methods to be used to assure the safety of building occupants and visitors to the site, and a disposal plan including location of approved disposal site. If a Project Design is required for the project, the Plan of Action shall include the information described above and the information required by regulation for a complete Project Design.

INSPECTION:

Prior to commencement of Work, inspect areas in which Work will be performed. Prepare a listing of damage to structure, surfaces, equipment or of surrounding properties which could be misconstrued as damage resulting from the Work. Photograph or videotape as necessary to document existing conditions. Submit to Owner's Representative prior to starting Work.

STOP WORK:
If the Owner, or the Owner's Representative, presents a written stop work order immediately stop all Work. Do not recommence Work until authorized in writing by Owner's Representative.

ASBESTOS-CONTAINING MATERIALS:
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.

Item	Asbestos Content	Other Components
Drywall Joint Compound- 1963 (Composite)	<1% chrysotile 1% chrysotile	99% non-fib. components
Drywall Joint Compound- 1966 (Point Count)	<1% chrysotile 0.9% chrysotile	99% non-fib. components
Pipe Fittings	5-10% chrysotile 1.5% amosite	90-95% non-fib. components
Pipe Insulation	Assumed ACM	
Wood Panel Adhesive	Assumed ACM	

CONTRACTOR USE OF PREMISES:

General: The Contractor shall limit his use of the premises to the Work indicated, so as to allow for Owner occupancy and use by the public.

Parking: Parking available at the Owner's facility may be limited and regulated. Contractor shall coordinate parking for service vehicles, trailers, personnel vehicles, etc. with the Owner and shall comply with all vehicle and parking regulations maintained by the Owner.

Building Access/Keys: Keys will be made available to the contractor for specific work areas within the facility. If keys are not available, or access to a particular area is sensitive, the Owner shall arrange to provide access to the work area at specific times.

SUBMITTALS:

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

Plan of Action: Submit a detailed plan of the procedures proposed for use in complying with the requirements of this specification. Include in the plan the location and layout of decontamination areas, the sequencing of asbestos work, methods to be used to assure the safety of building occupants and visitors to the site, and a disposal plan including location of approved disposal site. If the project requires a Project Design, per state or federal regulation, the Plan of Action shall include all components required by regulations, and shall be developed by an individual with current and valid Project Designer accreditation and certification.

Inspection: Prior to commencement of Work, inspect areas in which Work will be performed. Prepare a listing of damage to structure, surfaces, equipment or of surrounding properties which could be misconstrued as damage resulting from the Work. Photograph or videotape existing conditions as necessary to document conditions. Submit to Owner's Representative prior to starting Work.

Schedule: Shall include specific dates for mobilization, set-up, pre-abatement visual inspection, removal, final visual inspection, and clearances, for each Phase of Work.

Schedule of Values: Submit a detailed schedule of values for the performance of the work as required by this Section. Submit the Schedule of Values on a Payment Application Continuation Sheet, on a form acceptable to the Owner and Owner's Representative. The Schedule of Values shall include the following breakdown:

Project Start-up:
- Insurance, Permits, Notifications, and Bonds

For Each Phase of Work:
- Mobilization
- Set-up

For Each Scope of Work Item:

Removal
Final Clean
Tear down
Disposal

Permit: The Contractor shall submit a draft permit application to the Owner's Representative prior to submitting the permit to CDPHE.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION 01013

SECTION 01043 - PROJECT COORDINATION - ASBESTOS ABATEMENT/DEMOLITION

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:

This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:

Administrative and supervisory personnel
Progress Meetings
Request for Instruction Form
Daily Log
Contingency Plans
Notifications to other entities at job site
On-Site Coordination

ADMINISTRATIVE AND SUPERVISORY PERSONNEL:

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.

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.

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

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.

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.

PROGRESS MEETINGS:

General: In addition to specific coordination meetings, the Contractor shall hold general progress meetings weekly. Each entity then involved in planning, coordination, or performance of Work shall be properly represented at each meeting. The Contractor shall record minutes for each meeting and provide copies to each entity prior to the next regularly scheduled meeting. Meeting minutes shall be generated on the Owner's forms and include such topics as - change orders, schedule, work practices/quality assurance, manpower, and site safety.

REQUEST FOR INSTRUCTIONS FORM:

Accenture will provide blank RFI Forms to all parties involved. This form is provided in order to properly document any claim, question, or conflict that arises during the abatement project. This form should be used for any concern that will not be sufficiently documented through progress meetings and daily logs. All RFI Forms should be submitted to Accenture to be assigned a chronological number and recorded in the RFI project log. A sample RFI Form is included at the end of this Specification.

PRE-CONSTRUCTION CONFERENCE:

An initial meeting, recognized as "Pre-Construction Conference" will be convened by the Owner. Meet at Project Site, or as otherwise directed. The meeting shall be arranged by the Owner's Representative and shall include at minimum, the General Superintendent, Owner, and Owner's Representative.

This is an organizational meeting, to review responsibilities, submittals, lines of communication, billing procedures, personnel assignments, and to identify specific project coordination. A separate on-site preconstruction conference will be scheduled to locate containment and decontamination areas, temporary facilities, and to review site conditions.

DAILY LOG:

Daily Log: Maintain within the Decontamination Unit a daily log documenting the dates and time of the following items:

Visitations; 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.

Contractor’s final inspection/final air test analysis.

Submit a copy of this log at final closeout of Project as a project closeout submittal.

CONTINGENCY PLAN:

Contingency Plan: Prepare a contingency plan for emergencies including fire, accident, power failure, pressure differential system failure, supplied air system failure, or any other event that may require modification or abridgement of decontamination or Work Area isolation procedures. Include in plan specific procedures for decontamination or Work Area isolation. Note that nothing in this specification should impede safe exiting or providing of adequate medical attention in the event of an emergency. The Contractor's contingency plan must address any possible oxygen deficiency problems.

Post in Clean Room of Personnel Decontamination Unit telephone numbers and locations of emergency services including but not limited to fire, ambulance, doctor, hospital, police, power company, telephone company, and Owner contacts.

NOTIFICATIONS:

Notify emergency service agencies in writing including fire, ambulance, police or other agency that may service the abatement Work site in case of an emergency. Notification is to include methods of entering Work Area, emergency entry and exit locations, modifications to fire notification or fire fighting equipment, and other information needed by agencies providing emergency services.

Notifications of Emergency: Any individual at the job site may notify emergency service agencies if necessary without effect on this Contract or the Contract Sum.

SUBMITTALS:

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

Contingency Plans for emergency actions.

Telephone Numbers and location of emergency services.

Notifications sent to emergency service agencies.

Accreditation: Submit current resume and evidence in form of training course certificate of accreditation of General Superintendent as an asbestos abatement supervisor.

Schedule of Values

ON-SITE COORDINATION:

Communication Radios: The Contractor shall furnish and use, professional hand held FM communication radios capable of allowing the Contractor's employees to communicate from inside the Work Area to a designated person outside the Work Area. Provide one additional radio for use by the Owner's Representative.

Sign-In Sheet: The Contractor shall maintain a daily sign-in/sign-out sheet for all workers on the project. The Contractor shall supply a copy of these documents to the Owner's Representative at the completion of the project.

Emergency Response: The Contractor shall maintain a maximum one hour response time for supervisory personnel.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION 01043

SECTION 01091 - DEFINITIONS AND STANDARDS - ASBESTOS ABATEMENT

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:

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.

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.

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.

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.

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.

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.

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

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.

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.

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: 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.

Lockdown encapsulant: an encapsulant specifically designed for application after decontamination of the work area is complete, for the purpose of locking down remaining airborne asbestos fibers that cannot be detected by the human eye.

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

Removal encapsulant: a penetrating encapsulant specifically designed to minimize fiber release during removal of asbestos-containing materials rather than for in situ encapsulation.

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 sleeve 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.

SPECIFICATION FORMAT AND CONTENT EXPLANATION:

This Article is provided to help the user of these Specifications understand the format, language, implied requirements, and similar conventions. None of the explanations shall be interpreted to modify the substance of Contract requirements.

Specification Format: These Specifications are organized into Divisions, Sections or Trade Headings based on the Construction Specifications Institute's 16-Division format and the

MASTERFORMAT numbering system. This organization conforms generally to recognized construction industry practice.

Specification Content: This Specification has been produced employing conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

Language used in the Specifications and other Contract Documents is the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and where the full context of the Contract Documents so indicates.

Imperative Language is used generally in the Specifications. Requirements expressed imperatively are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities which must be fulfilled indirectly by the Contractor, or by others when so noted.

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
DOT	Department of Transportation 400 Seventh St., SW Washington, DC 20590 202/426-4000
EPA	Environmental Protection Agency 401 M St.,SW Washington, DC 20460 202/382-3949
OSHA	Occupational Safety & Health Administration (U.S. Dept. of Labor) Government Printing Office Washington, DC 20402 202/783-3238
UL	Underwriters Laboratories 333 Pfingsten Rd. Northbrook, IL 60062 312/272-8800

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION 01091

SECTION 01092 - CODES, REGULATIONS, AND STANDARDS - ASBESTOS ABATEMENT

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:

This Section 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.

Requirements include adherence to Work practices and procedures set forth in applicable codes, regulations and standards.

Requirements include obtaining permits, licenses, inspections, releases and similar documentation, as well as payments, statements and similar requirements associated with codes, regulations, and standards.

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 ss.

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
Asbestos Containing Materials in Schools Final Rule & Notice
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
Regulation No. 8 "The Control of Hazardous Air Pollutants"
Part B - 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 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION 01092

SECTION 01410 - AIR MONITORING - TEST LABORATORY SERVICES

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

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

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.

Daily:
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.

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.

Location Sampled	Number of Samples	Analysis Method Fibers/cc.	Sampling Sensitivity	Minimum Volume (Liters)	Rate LPM
Each Work Area	1	PCM	0.01	1,200	1-10
	OR AS REQUIRED BY CONDITIONS				
Outside Each Work Area at Critical Barrier	1	PCM	0.01	1,200	1-10
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 01410

SECTION 01503 - TEMPORARY FACILITIES - ASBESTOS ABATEMENT

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF REQUIREMENTS:

General: Provide temporary connection to existing building utilities or provide temporary facilities as required herein or as necessary to carry out the Work.

PART 2 - PRODUCTS

MATERIALS AND EQUIPMENT:

General: Provide new or used materials and equipment that are undamaged and in serviceable condition. Provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards.

Scaffold: Provide new or used scaffold equipment that is in good condition and clean of debris, dirt, or mortar. Provide scaffolding equipment and design complying with CFR 29 Part 1926 Subpart L, M, and X.

WATER SERVICE:

Temporary Water Service Connection: The Contractor shall provide a suitable backflow protection device 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 of 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.

ELECTRICAL SERVICE:

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

Temporary Power: The Contractor shall provide temporary electrical panel(s) with appropriately sized conductor cord (i.e. "pigtail"), up to 200 feet in length, for connection to the Owner's electrical system. The Contractor shall arrange for test, connect, and disconnect of the Contractor's temporary electrical panel(s). 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.

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.

TEMPORARY HEAT:

Heating Units: Provide temporary heating units as needed to maintain comfortable temperatures in the Work Area. Use only heaters that are AGA certified to meet ANSI and OSHA safety requirements.

TEMPORARY COOLING:

Cooling Units: Provide temporary cooling units as needed to maintain a comfortable temperature in the Work Area.

FIRST AID:

First Aid Supplies: Comply with governing regulations and recognized recommendations within the construction industry.

FIRE EXTINGUISHERS:

Fire Extinguishers: Provide Type "A" fire extinguishers for temporary offices and similar spaces where there is minimal danger of electrical or grease-oil-flammable liquid fires. In other locations provide Type "ABC" dry chemical extinguishers, or a combination of several extinguishers of NFPA recommended types for the exposures in each case.
Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher in each Work Area, and one outside Work Area in Staging Area.

TEMPORARY PARTITIONS:

General: Provide temporary partitions, where called for, for the purpose of separating the abatement work area from non-work areas, creation of buffer zones, or generally to prevent the general public from entering a work area. These partitions are separate from temporary

partitions for construction of abatement enclosures. Partitions shall be installed in a workmanlike manner.

Framing Materials: Provide non-combustible metal framing materials, in widths, depths, and gauges specified. 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. Studs and plates shall be fastened together with self-tapping screws. Do not fasten studs or plates to existing building surfaces. Partitions shall be held in place by pressure-fitting or bracing.

Sheathing Materials: Provide Type X 5/8" Gypsum Board and fasten to metal framing with appropriate drywall screws. Apply joint compound to all sheetrock seams. Where acceptable, use of plywood or oriented strand board (OSB) sheathing may be used in place of drywall.

Doors: Where necessary for access into the work area or other areas of the facility, install pre-hung doors with lockable hardware (keyed lockset, padlocked hasp, etc.) and fixed hinge pins. Provide a copy of each key for doors to the Owner and Owner's Representative.

PART 3 - EXECUTION

ELECTRICAL SERVICE:

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.

SANITARY FACILITIES: Contractor shall provide and maintain, in a neat and sanitary condition, adequate chemical toilet facilities for the use of employees engaged in the work. Toilets in the existing buildings may not be used.

TEMPORARY PARTITIONS: The Contractor shall erect temporary partitions, where directed or as necessary, to separate the work area from non-work areas. Use framing materials, with studs at a minimum of 16” on center. Do not fasten studs or plates to existing building surfaces if these surfaces are to be protected in place. Partitions shall be held in place by pressure-fitting or bracing. Install sheathing to non-work area side of framing. Apply joint compound to all gypsum board seams. All components of the temporary partition shall be installed in a workmanlike manner. Where necessary for access into the work area or other areas of the facility, install pre-hung doors with lockable hardware (keyed lockset, padlocked hasp, etc.) and fixed hinge pins. Provide keys to the Owner and Owner’s Representative.

CONSTRUCTION FENCE: The Contractor shall erect temporary construction fence around outdoor staging areas, vacuum equipment, or dumpsters, for security and protection of students, faculty, and the public. Fences shall be 6'0" high, constructed of chain link with steel posts 8'0" on centers with gates as required. Gates closed and locked after working hours.

END OF SECTION 01503

SECTION 01513 - TEMPORARY PRESSURE DIFFERENTIAL AND AIR CIRCULATION SYSTEM

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 elevates beyond -0.025".

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:

Establish required air circulation in the Work Area, personnel, and equipment decontamination units.

Establish isolation by increased pressure in adjacent areas or as part of seals where required.

Exhaust a sufficient number of units from the Work Area to develop the required pressure differential. Each unit shall be individually exhausted to an exhaust outlet. Temporary ducts shall not be connected at a manifold junction to reduce the number of exhaust ducts and outlets.

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.

Connect and secure exhaust duct to the fan unit exhaust port with duct tape. As additional reinforcement of connection, cinch exhaust duct on fan exhaust port with appropriately sized pipe clamp or plastic zip-tie.

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 plywood barrier (in thickness specified), 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

The number of fan units required to meet air circulation rate can be determined by the following equations:

First, determine the volume of each air change:

$$\text{Total Cubic Feet/Minute (CFM)} = \frac{\text{Volume of the Work Area (in Cubic Feet)}}{\text{(60 minutes/hour) / (4 air changes/hour)}}$$

Second, determine the required number of fan units:

$$\text{Number of fan units} = \frac{\text{CFM (as determined above)}}{\text{Capacity of fan unit (CFM)}}$$

The required number of units is the number determined above, rounded up to the nearest whole number. Use one additional unit, for the purpose of replacing a fan unit that fails during the work.

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

SECTION 01526 - TEMPORARY ENCLOSURES

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

HEPA-Filtered Vacuums:

Provide Vacuums that are manufactured and intended for use during asbestos abatement, which accommodate the installation of HEPA Filters. All vacuums shall be clean of all other dust and debris when delivered to the project site, and shall not have HEPA filters installed. HEPA filters shall be new in the manufacturer's original packaging when delivered to the project site, and installed in the HEPA Vacuums in the presence of the Owner's Representative. Use of HEPA Filtered Vacuums that have been brought directly to the project site from other asbestos abatement projects is prohibited.

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
Oakdale, MN 55128

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.

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.

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. 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 01526

SECTION 01560 - WORKER PROTECTION - ASBESTOS ABATEMENT

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.

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 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 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

SECTION 01562 - RESPIRATORY PROTECTION

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, Mists 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:

Respiratory Protection Program: Comply with OSHA 29 CFR 1910 and 1926.

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

SECTION 01563 - DECONTAMINATION UNITS

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 Flapped Doorways 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, and 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.

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.

Maintain a bucket of clean potable water in the Work Area. Do not amend with a wetting agent.

Remove contaminated suit inside the Work Area. Leave respirator in place.

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.

Proceed with respirator in place to Change Room.

In Change Room don clean disposable suit leaving respirator in place.

Exit Change Room being sure that the entry to the Change Room is completely closed. Proceed to next mini-enclosure or remote shower.

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.

Wash down Station: Provide a Wash down 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.

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 Wash down 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 Wash down 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

END OF SECTION 01563

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.

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

Airless Sprayer: Provide an airless sprayer for the application of amended water, removal encapsulant, or lockdown encapsulant. A water hose and nozzle may not be substituted for an airless sprayer. The airless sprayer shall not be utilized as a cleaning device.

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.

Equipment Decontamination: Remove all dust and debris from tools, equipment, ladders, scaffold, and any other items used during the course of abatement. Do not remove items from the work area until they have been thoroughly cleaned.
If necessary, provide an equipment decontamination area, in which a catch basin is created in which to capture water generated in the equipment decontamination process. This catch basin shall be equipped with a dedicated water pump and filtration system for removing filtered

wastewater from the work area. Wastewater from this basin shall not be placed in the personnel decontamination unit, for disposal through this pump and filtration system. This practice is strictly prohibited.

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 base line or background level, as determined in Section 01410 of this specification, project decontamination can proceed.

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.

Punchlist 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. Final payment will not be made until this Certification is executed.

END OF SECTION 01711

CERTIFICATION OF FINAL VISUAL INSPECTIONS

Project Name:_____
Project Address:_____
Accenture Project Number:_____
Work Area:_____
Date of First Visual Inspection: ___/___/____
(Critical Barriers and Primary Barrier Intact)
Date of Final Visual Inspection: ___/___/____
(Critical Barriers 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)_____

AGGRESSIVE AIR CLEARANCE SAMPLING – WORK AREA CALCULATIONS

Box Fans (Quantity) - 1 Box Fan req./10,000 CF Work Area Volume = L x W x H

Work Area Volume = _____ (L) x _____ (W) x _____ (H) = _____ CF

Req. Box Fans = _____ CF/10,000 CF = _____**Box Fans**
(Round answer up to nearest Whole Number)

Leaf Blower (Time) **–** Leaf Blow 5 Mins./1,000 SF Work Area

Work Area = _____ (L) x _____ (W) = _____ SF

Leaf Blow Time = _____ SF x 5 mins/1,000SF = _____**Mins.**
(Round answer up to nearest Whole Number)

SECTION 01714 - WORK AREA CLEARANCE

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 placed in a central location, directed toward ceiling, and operated at low speed for the entire period of sample collection, to aid in complete containment circulation.

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.

Location Sampled	Number of Samples	Analysis Method	Detection Limit Fibers/cc.	Minimum Volume (Liters)	Rate LPM
Each Work Area or	5	PCM	0.01	1,200	1-10
Each Room of Work Area	1 (5 min.)	PCM	0.01	1,200	1-10
Work Area Blank	2	PCM	0.01	0	Open for 30 seconds
Laboratory Blank	1	PCM	0.01	0	Do Not Open

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.

Location Sampled	Number of Samples	Analysis Method	Analytical Sensitivity Fibers/cc.	Recommended Volume (Liters)	Rate LPM
Each Work Area	5	TEM	0.005	1,300-1,800	1-10
Outside Each Work Area	5	TEM	0.005	1,300-1,800	1-10
Work Area Blank	1	TEM	0.005	0	Open For 30 Sec.
Outside Blank	1	TEM	0.005	0	Open For 30 Sec.
Laboratory Blank	1	TEM	0.005	0	Do Not Open

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 01714

SECTION 02062 - NON-ASBESTOS DEMOLITION

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.

N/A

The following non-asbestos containing materials are to be protected in place, as work of this Section.

All floor, ceiling and wall finishes not identified for removal; Casework, wall-mounted shelves, chalkboards, tack boards, dry-erase boards; all electrical and low-voltage wiring, electrical conduit and panels, communications panel and cabling, network equipment and cabling, security system components, fire detection cabling and detection heads, fire detection system/controls and main panel, temperature controls, pneumatic tubing, thermostats; exit signs, speaker systems, clocks; HVAC equipment, ductwork, piping, piping insulation, supports, and any other ceiling and wall mounted items not identified for removal. Contractor shall properly clean and leave in place unless otherwise identified. Contractor shall be held responsible for cost accrued to the Owner for the repair and / or replacement of such items.

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 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.

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.

PART 2 - PRODUCTS

MATERIALS TO BE REUSED:

N/A

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:

N/A

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.

Disposal of PCB Suspect Ballasts and Fluorescent Tubes:

PCB Suspect Light Ballasts – All General Contractors and/or Subcontractors performing work at sites owned and occupied by the Owner shall comply with Environmental Protection Agency (EPA), CDPHE, and the Toxic Substance Control Act (TSCA) when removing and disposing of PCB containing lighting ballasts.

Fluorescent Tubes with Mercury Vapor Contamination – All General Contractors and/or Subcontractors performing work at sites owned and occupied by the Owner shall comply with Environmental Protection Agency (EPA), CDPHE, and the Toxic Substance Control Act (TSCA) regulations when removing and disposing of mercury containing lighting lamps.

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 Demolition/Repair:

Remove only HVAC equipment, ductwork, diffusers, etc. specifically identified for demolition.

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.

Where HVAC/R equipment or devices containing refrigerants are to be removed or demolished, evacuate refrigerants in accordance with CO Reg. 15.

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 de-energizing 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.

Where exit signs, emergency lights and other devices with battery back-up systems are installed, remove and dispose of batteries in accordance with state and federal hazardous waste regulations.

Where self-luminous exit signs are to be removed, collect all devices and deliver to Owner. Owner to arrange for disposal of devices with low-grade radiation sources.

Communications/Data and Other Low-Voltage Wiring

Protect in place all low voltage wiring. Low voltage wiring found to be poorly supported shall be decontaminated as part of the Work and supported/suspended above work surfaces.

The Owner or Owner's Representative reserves the right to solicit other contractors to perform repair work, at the cost of the Abatement Contractor.

Where smoke detectors are to be removed, collect all devices and deliver to Owner. Owner to arrange for disposal of devices with low-grade radiation sources.

Where thermostats and gauges with mercury-containing glass ampules are to be removed or demolished, remove and dispose of mercury-containing glass ampules in accordance with state and federal hazardous waste regulations.

END OF SECTION 02062

SECTION 02081 - REMOVAL OF ASBESTOS-CONTAINING MATERIALS

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.

RELATED WORK SPECIFIED ELSEWHERE:

Installation of Critical and Primary Barriers, and Work Area Isolation Procedures are set forth in Section 01526 Temporary Enclosures.

Construction of Secondary Enclosure or Full Enclosure as set forth in Section 01526 Temporary Enclosures.

Project Decontamination procedures are specified in Section 01711 Project Decontamination.

Disposal of asbestos-containing waste is specified in Section 02084 Disposal of Asbestos Containing Waste Material.

SUBMITTALS:

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

Surfactant: Submit product data, material data safety sheet, use instructions and recommendations from manufacturer of surfactant intended for use.

Removal Encapsulant: Submit product data, material data safety sheet, use instructions and recommendations from manufacturer of removal encapsulant intended for use.

Material Safety Data Sheet: Submit Material Safety Data Sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910,1200) for each material proposed for use.

Glovebags: Submit product data.

PART 2 - PRODUCTS

Wetting Materials: For wetting prior to disturbance of Asbestos Containing Materials use either amended water or a removal encapsulant:

Amended Water: Provide water to which a surfactant has been added.

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:

Control Green Low Odor Mastic Remover

Or approved substitution

Adhesive Removal Solvents: The following are approved solvents for the removal of floor tile mastic:

Sentinel 626 Low Odor Carpet Adhesive Remover

Or approved substitution

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.

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 sleeve 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

GENERAL:

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.

WALLS/CEILING MATERIAL ABATEMENT

Non-friable ACM Adhesive Associated with Wood Paneling:

Construct a Secondary Enclosure as described in Section 01526.

If the adhesive can be removed substantially intact, the Contractor may substitute a regulated area with drop cloth for secondary enclosure requirements.

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 substrate after scraping by using a stiff nylon bristled hand brush.

Pay particular attention to areas where adhesive may be located in corners and seams.

Cutting, grinding, sanding, or other removal procedures that would render the adhesive friable are not permitted.

Drywall (Trace Joint Compound):

Construct a full enclosure as described in Section 01526. If drywall to be removed only contains ACM joint compound (OSHA regulated), removal may be conducted in a Secondary Enclosure or regulated area.

Remove drywall according to the following procedures:

Thoroughly wet the material with a fine mist of amended water or removal encapsulant. Allow adequate time for amended water or removal encapsulant to saturate material to the substrate.

Remove/demolish all escutcheons, grilles, trim, and skylights from the Work Area as identified.

Remove drywall in manageable quantities and control the descent to the staging or the floor below. Immediately bag up debris.

Remove all nails and fasteners.

The drywall debris shall be disposed of in an enclosed, secured dumpster.

THERMAL SYSTEM INSULATION AND OTHER MISCELLANEOUS MATERIALS ABATEMENT:

Pipe Insulation/Fittings:

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.

Cut bands holding preformed pipe insulation, slit jackets at seams, remove and hand place in a disposal bag.

Remove job-molded fitting insulation in chunks and hand place in a disposal bag. Do not drop to floor.

Remove any residue on pipe or fitting with stiff bristle nylon hand brush.

Remove non-ACM insulation on straight runs 6" from the point where it contacts the asbestos-containing insulation. Cover exposed end of remaining insulation with lag cloth and/or non-ACM insulation coating.

Pipe Insulation/Fittings - GLOVEBAG Removal:

Construct a Secondary Enclosure according to Section 01526 Temporary Enclosures.

Remove asbestos containing material inside a glovebag according to the following procedure:

Place one layer of duct tape around undamaged pipe at each end where the glovebag will be attached.

Slit top of the glovebag open (if necessary) and cut down the sides to accommodate the size of the pipe (about two inches longer than the pipe diameter).

Place a strip of duct tape along the bottom seam of the glovebag.

Place necessary tools into pouch located inside glovebag.

Place one strip of duct tape along the edge of the open top slit of glovebag for reinforcement.

Place the glovebag around section of pipe to be worked on and staple top together through reinforcing duct tape. Place duct tape over reinforcing seam after stapling.

Duct tape the ends of glovebag to pipe itself, where previously covered with plastic or duct tape.

Insert wand from garden sprayer through water sleeve. Duct tape water sleeve tightly around the wand to prevent leakage.

Make small slit and insert the HEPA vacuum nozzle into the glovebag. Duct tape the slit and nozzle to prevent leakage.

Thoroughly wet material to be worked on with amended water or removal encapsulant and allow to soak in. Wet adequately to penetrate and soak material through to substrate.

Use bone saw, if required, to cut insulation at each end of the section to be removed. Throughout this process, spray amended water or removal encapsulant on the cutting area to keep dust to a minimum.

Remove insulation using putty knives or other tools. Place pieces in bottom of bag without dropping.

Using scrub brush, rags and water, scrub and wipe down the exposed pipe.

Turn on the vacuum only briefly to collapse the bag.

Remove the water wand and vacuum nozzle, twist water sleeve closed and seal all holes with duct tape.
With removed insulation in the bottom of the bag, twist the bag several times and tape it to keep the material in the bottom during removal of the glovebag from the pipe.

Visually inspect the pipe and glovebag with Owner's Representative. If any dust, debris, residue, or other matter is found, untwist glovebag and repeat cleaning.

Slip a 6 mil disposal bag over the glovebag (still attached to the pipe). Remove tape or cut bag and open the top of the glovebag and fold it down into disposal bag.

Clean all surfaces in the Work Area using disposable cloths wetted with amended water. When these surfaces have dried, clean with a HEPA filtered vacuum and seal exposed edges of pipe insulation.

END OF SECTION 02081

SECTION 02082 - REMOVAL OF ASBESTOS-CONTAINING DEBRIS AND ASBESTOS-CONTAMINATED SOIL

PART 1 - GENERAL

RELATED DOCUMENTS:

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

SUBMITTALS:

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

If applicable, Specifications and operation procedures of vacuum loading equipment, as identified by the equipment manufacturer.

If applicable, Drawing showing the location, size, and placement of the vacuum loading equipment and enclosure in relation to the Work Area.

If applicable, Product data identifying the dimensions and construction of the waste trailer bag.

PART 2 - PRODUCTS

Waste Trailer Bags (‘bladder bag’): Provide a pre-manufactured waste disposal bag specifically designed for use with vacuum loading equipment. 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 plywood in good condition for the construction of the enclosure.

Framing: Provide 2"x 4" wood framing member for the construction of the enclosure.
Rope: Provide solid braid nylon rope minimum 1/4" diameter with a minimum tensile strength of 1,250 lbs.
Waste Trailer: Provide a clean enclosed roll-off type waste trailer sized to accommodate the waste trailer bag described above.

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.

Amended water and removal encapsulant are specified in Section 02081 Removal of Asbestos-Containing Materials.

PART 3 - EXECUTION

GENERAL:

The Work includes abatement of asbestos contaminated soil on the floor of the crawlspaces. These materials shall be removed during abatement.

The General Abatement Contractor shall be responsible for painting the perimeter of the crawlspace with a visible fluorescent paint and installing stakes to establish starting grade prior to the start of asbestos abatement in locations approved by the Owner's Representative.

Protect Equipment: Piping, conduit and wiring shall be protected from damage by removal operation. Decontaminate this equipment as other crawlspace surfaces are decontaminated.

Wet Debris and Soils: 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.

Remove Surface Debris: Collect all surface debris and dispose as asbestos containing waste. Soils removal shall not start until all trash and debris has been removed. Rocks, 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 pipe insulation: Remove non-ACM insulation and dispose of as asbestos containing waste.

Remove soils: Remove wetted soils to a 6 inch depth (or hard-pack, whichever comes first) 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.

Decontaminate Surfaces: HEPA vacuum and wet wipe all crawlspace surfaces following soils removal. Surfaces to decontaminate include walls, beams, deck, columns, pipes, and any other surfaces which are present in the crawlspaces.

Lockdown: Lockdown all crawlspace surfaces after passing visual inspection by the Owner's Representative.

VACUUM LOADING EQUIPMENT

If vacuum loading equipment is used to complete soil removal, the following sequence shall precede operation of the equipment.

Mobilize on the Project site and position vacuum loading equipment where it will be operated.

Enclosure

Construct a secondary enclosure around the vacuum loading equipment that will contain potential breaches in the equipment.

The enclosure shall be constructed, at a minimum, of 6-mil reinforced polyethylene sheeting, supported by 2x4 wood framing material. The enclosure shall be constructed around all portions of the vacuum equipment, including the waste chute arm above the dumpster. If the waste chute arm is hinged and movable, the enclosure shall be constructed to accommodate the radius of the arm. The gasoline engine and exhaust muffler/pipe shall not be contained within the enclosure.

Install a frame supported 5/8" plywood deck next to the vacuum loading equipment, above the area where the waste dumpster will be placed. The deck shall be supported independently from the dumpster to allow dumpster transfer. The plywood deck will be framed at a maximum of four inches above the top of the dumpster, to prohibit entry into the dumpster from outside of the enclosure. Create 12"x 12" penetrations in the deck, where appropriate, to allow connection of the vacuum waste chute to the bladder bag fill port(s).

Install temporary pressure differential equipment, as described in Section 01513, to demonstrate negative air flow into the enclosure.

In place of a 3'x 3' change room, install a shower unit, as described in Section 01563 of the Specification. A full decontamination unit is not required. The Contractor may add additional 3'x 3' chambers to allow for changing areas.

Install 8' temporary chain link fence around the perimeter of the vacuum loading equipment and dumpster. Install temporary chain link fence in a manner that, when needed, will allow access to the dumpster for dumpster transfer.

Waste Dumpster

Line dumpster with ‘bladder bag’ and place dumpster under plywood deck. From inside the enclosure, pull the ‘bladder bag’ fill port(s) through the penetrations in the deck. Attach the fill port to the vacuum loading chute and seal the penetration with poly and duct tape. Attachment of the fill port shall be done in a manner that allows tie-in, tie-out and dumpster movement without breaching the enclosure.

Operation

Once the dumpster is in place begin removal procedures. Workers performing tasks within the vacuum equipment enclosure are subject to all work practices, procedures, PPE requirements, etc. as identified in the Specification.

Clearance

Upon completion of vacuum operations in the Work area, discontinue operation of the vacuum loading equipment. Remove final waste dumpster.

Decontaminate the vacuum equipment and enclosure interior as described in Section 01563 of the Specification.

Upon completion of decontamination procedures, the Owner's Representative will perform a final visual inspection of all surfaces within the enclosure.

Upon acceptance of the visual inspection, Work Area Clearance will be performed by the Owner's Representative as described in Section 01714 of the Specification.

Do not demobilize enclosure and vacuum equipment until clearance protocol has been met.

END OF SECTION 02082

SECTION 02083 - DIRECT WASTE LOAD OUT OF ASBESTOS-CONTAINING WASTE MATERIALS

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.

RELATED WORK SPECIFIED ELSEWHERE:

Installation of negative pressure differential system as described in Section 01513 Temporary Pressure Differential and Air Circulation System.

Construction of Critical and Primary Barriers, and Work Area Isolation as set forth in Section 01526 Temporary Enclosures.

Project Decontamination procedures are specified in Section 01711 - Project Decontamination.

Disposal of asbestos-containing waste is specified in Section 02084 -Disposal of Asbestos Containing Waste Material.

SUBMITTALS:

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

Drawing showing the location, size, and placement of the transfer chamber and waste trailer in relation to the Work Area.

Product data identifying the dimensions and construction of the waste trailer bag.

PART 2 - PRODUCTS

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 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.

Waste Trailer: Provide a clean enclosed roll-off type waste trailer sized to accommodate the waste trailer bag described above.

Steel Strapping: Provide minimum 5/8" x .017" cold-rolled, medium carbon steel strapping with a break strength of 1,630 lbs for sealing the ends of the waste trailer bags when full. Use seals, sealing tools, and strapping tensioner compatible with the specified steel strapping.

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.

Notify the Owner's Representative when Transfer Chamber is constructed and Enclosure Barriers are to be installed. Install Enclosure Barriers only in the presence of the Owner's Representative.

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:

Notify the Owner's Representative when Transfer Chamber Tie-In Procedure is to be conducted. Conduct Tie-In sequence only in the presence of the Owner's Representative.

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:

Notify the Owner's Representative when Separation Procedure is to be conducted. Conduct Separation Sequence only in the presence of the Owner's Representative.

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.

END OF SECTION 02083

SECTION 02084 - DISPOSAL OF ASBESTOS-CONTAINING WASTE MATERIAL

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 filling.

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 ASBESTOS 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

Third Label: Provide in accordance with U. S. Department of Transportation regulation on hazardous waste marking. 49 CFR parts 171 and 172. Hazardous Substances: Final Rule. Published November 21, 1986. Comply with latest revision.

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 02084

SECTION 09805 - ENCAPSULATION OF ABATED SURFACES

PART 1 - GENERAL

RELATED DOCUMENTS:

Not Applicable

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION 09805

GENERAL NOTES

ASBESTOS ABATEMENT WORK IS IDENTIFIED BY THE CONSTRUCTION DOCUMENTS FOR ASBESTOS ABATEMENT, GENERAL ASBESTOS ABATEMENT NOTES, THE ASBESTOS ABATEMENT LEGEND AND KEYED NOTES.

THE ASBESTOS ABATEMENT WORK FOR BCSIS HIGH PEAKS ELEMENTARY SCHOOL IS SHOWN ON DRAWING SHEETS 1-2, DATED FEBRUARY, 2026. THE WORK DESCRIBED IS THE SCOPE OF WORK FOR THE BASE BID THE CONTRACTOR SHALL PERFORM ONLY THOSE ITEMS WHICH ARE SHOWN TO BE PART OF THE ASBESTOS ABATEMENT SCOPE OF WORK.

1. WORK OF THIS ABATEMENT PROJECT IS SCHEDULED TO ACCOMMODATE EDUCATIONAL ACTIVITIES AND WORK BY OTHER CONTRACTORS. THE CONTRACTOR SHALL COOPERATE WITH THE OWNER, OWNER 'S GENERAL CONTRACTOR, OTHER CONTRACTORS AND BUILDING OCCUPANTS TO ALLOW OTHER SCHEDULED ACTIVITIES WHILE THE WORK OF THIS CONTRACT IS BEING PERFORMED. THE GENERAL SEQUENCE OF THE WORK IS DESCRIBED IN SECTION 01013 OF THE SPECIFICATIONS.

2. WATER, POWER, AND DRAINAGE FACILITIES ARE AVAILABLE AT OR NEAR THE LOCATIONS APPROVED FOR THE PERSONNEL DECONTAMINATION UNITS. WATER SUPPLY AND DRAINAGE HOSES THAT MUST BE ROUTED THROUGH OCCUPIED SPACES OR PEDESTRIAN AREAS SHALL BE PROPERLY DRAINED AND REMOVED FROM THESE AREAS AT THE END OF EACH SHIFT. POWER SUPPLY CORDS SHALL BE ROUTED OR SUSPENDED SUCH THAT THEY DO NOT PRESENT A TRIP HAZARD IN PEDESTRIAN AREAS.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT ALL QUANTITIES AND EXISTING CONDITIONS ARE ACCURATELY REFLECTED IN THE DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER 'S REPRESENTATIVE OF ANY DISCREPANCIES BETWEEN SITE CONDITIONS, DRAWINGS, AND SPECIFICATIONS.

4. ALL HEPA-FILTERED VACUUMS DELIVERED TO THE SITE FOR USE ON THE PROJECT SHALL BE DELIVERED CLEAN AND FREE OF ASBESTOS WASTE AND DEBRIS. HEPA-FILTERED VACUUMS SHALL BE FITTED WITH A NEW HEPA FILTER AT THE PROJECT SITE, IN THE PRESENCE OF THE OWNER 'S REPRESENTATIVE.

5. THE CONTRACTOR SHALL SUPPLY, ON A WEEKLY BASIS, AN UPDATED SCHEDULE SHOWING PROGRESS FOR COMPLETION DATES. THE CONTRACTOR SHALL HOLD WEEKLY PROGRESS MEETINGS, PROVIDE MEETING MINUTES, AND DISTRIBUTE AT A MINIMUM TWO DAYS PRIOR TO THE NEXT MEETING.

6. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY EQUIPMENT FOR ALL ELECTRICAL POWER AT THE PROJECT SITE. THE ELECTRICAL EQUIPMENT TO BE PROVIDED MUST MEET THE WORK REQUIREMENTS. THE CONTRACTOR SHALL ARRANGE TO HAVE THE ELECTRICAL EQUIPMENT ON SITE IN A TIMELY FASHION FOR CONNECTION TO THE OWNER'S ELECTRICAL SYSTEM BY THE GENERAL CONTRACTOR'S ELECTRICAL SUBCONTRACTOR. THE CONTRACTOR/SUBCONTRACTOR SHALL COORDINATE CONNECTION WITH THE OWNER'S ELECTRICAL TRADE SHOP.

7. THE CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR FOR DE-ENERGIZING ELECTRICAL CIRCUITS WITHIN ABATEMENT WORK AREAS. ALL ELECTRICAL LOCK-OUT/TAG-OUT IS THE RESPONSIBILITY OF THE ABATEMENT CONTRACTOR, BUT SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR. NO ELECTRICAL DEMOLITION SHALL COMMENCE UNTIL PROPER LOCK-OUT/TAG-OUT PROCEDURES ARE CONDUCTED.

8. THE CONTRACTOR'S ACM DISPOSAL TRAILER SHALL BE EMPTY OF ASBESTOS CONTAINING WASTE MATERIAL (ACWM) AND NON-ACM DEBRIS FROM ANY OTHER PROJECT AND MUST BE LINED WITH 6-MIL POLY BEFORE STARTING WASTE LOAD-OUT. WITH THE EXCEPTION OF ACTIVE WASTE LOAD-OUT, THE CONTRACTOR 'S DISPOSAL TRAILER SHALL REMAIN CLOSED AND LOCKED AT ALL TIMES. PROPER WARNING PLACARDS SHALL BE DISPLAYED ON ASBESTOS WASTE DUMPSTERS AT ALL TIMES.

9. THE OWNER SHALL BE RESPONSIBLE FOR MOVING ALL LOOSE ITEMS, INCLUDING SOME ITEMS ATTACHED TO THE WALLS, AND LOOSE FURNISHINGS, FROM THE WORK AREAS PRIOR TO THE START OF ANY ABATEMENT WORK. ITEMS REMAINING AT THE START OF ABATEMENT AND NOT SPECIFICALLY IDENTIFIED FOR SALVAGE SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF AS GENERAL CONSTRUCTION DEBRIS. VERIFY WITH OWNER 'S REPRESENTATIVE PRIOR TO REMOVAL/DISPOSAL.

10. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT EXISTING FINISHES FROM ABATEMENT AND DEMOLITION OPERATIONS. THE CONTRACTOR WILL BE RESPONSIBLE TO REPAIR AND REPAINT FINISHES IF DAMAGE OCCURS AS A RESULT OF WORK PERFORMED UNDER THIS PROJECT. THE CONTRACTOR SHALL PATCH DAMAGED WALLS AS SPECIFIED. ALL REPAIRS WILL BE COMPLETED WITH WITHIN SEVEN DAYS OF EACH PHASE COMPLETION DATE. THE OWNER WILL SUPPLY THE CONTRACTOR WITH PAINT CODES FOR EXISTING FINISHES.

11. THE CONTRACTOR SHALL PROTECT IN PLACE ALL WIRING, ELECTRICAL CONDUIT, TELEPHONE, COMPUTER, DATA, SECURITY, SECURITY POPITS, FIRE DETECTION CABLES, PIPING, DUCTING, BOILERS, CHILLERS, AND MECHANICAL CONTROLS, NOT IDENTIFIED FOR REMOVAL, DURING ABATEMENT. CONTRACTOR SHALL PROPERLY CLEAN AND LEAVE IN PLACE UNLESS OTHERWISE IDENTIFIED. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR COST ACCRUED TO THE OWNER FOR THE REPAIR/REPLACEMENT OF SUCH ITEMS. ALL EXISTING ITEMS/SYSTEMS MENTIONED ABOVE ARE CURRENTLY IN GOOD WORKING CONDITION AND WILL BE RETURNED TO THE OWNER IN THE SAME CONDITION.

12. THE CONTRACTOR SHALL PROTECT IN PLACE ALL CASEWORK, CABINETS, SINKS, EXHAUST HOODS, CHALKBOARDS, COAT RACKS, TV 'S, TV BRACKETS, FLAG HOLDERS OR ANY OTHER ITEMS NOT SPECIFICALLY ADDRESSED AS DEMOLITION ITEMS IN THE WORK AREA. THE CONTRACTOR SHALL BE RESPONSIBLE TO REPLACE MATERIALS OR ITEMS THAT ARE DAMAGED OR MISSING AS A RESULT OF WORK OF THIS CONTRACT.

13. UNLESS OTHERWISE IDENTIFIED, THE CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT IN PLACE ALL FLOOR FINISHES FROM ABATEMENT AND DEMOLITION OPERATIONS. THE CONTRACTOR WILL BE RESPONSIBLE TO REPLACE/REPAIR FLOORING THAT IS DAMAGED AS A RESULT OF WORK PERFORMED UNDER THIS PROJECT. REPAIRS/REPLACEMENT MUST BE COMPLETE PRIOR TO THE OWNER RE-OCCUPYING THE BUILDING.

14. THE CONTRACTOR SHALL PROVIDE PROTECTION FOR AND/OR REPLACE PAVEMENT, CONCRETE, IRRIGATION SYSTEM, AND SOD DAMAGED FROM WORK OF THIS CONTRACT. CONTRACTOR SHALL VERIFY TO OWNER ANY EXISTING DAMAGE PRIOR TO MOBILIZATION AND START OF WORK.

15. FOR ITEMS AND DEVICES NOTED IN THE ABATEMENT SCOPE TO BE DECONTAMINATED AND RETURNED TO THE OWNER/GENERAL CONTRACTOR FOR SALVAGE, THESE ITEMS SHALL BE DECONTAMINATED AND REMAIN IN THE ABATEMENT WORK AREA FOR VISUAL INSPECTION AND FINAL AIR CLEARANCES. ALTERNATIVELY, THE ITEMS MAY BE DECONTAMINATED AND TRANSPORTED TO A STAGING AREA THAT IS ESTABLISHED UNDER SECONDARY ENCLOSURE CONTROLS, WHERE A FINAL VISUAL INSPECTION AND FINAL AIR CLEARANCE WILL BE CONDUCTED. ALL ITEMS SHALL BE PROTECTED FROM VISIBLE AND FUNCTIONAL DAMAGE.

KEYED NOTES

A. THIS LOCATION HAS BEEN APPROVED FOR THE CONSTRUCTION OF A PERSONNEL DECONTAMINATION UNIT.

B. THIS LOCATION HAS BEEN IDENTIFIED FOR THE CONSTRUCTION OF A WASTE LOADOUT UNIT.

C. THIS LOCATION HAS BEEN IDENTIFIED AS A 12"X 12" VIEW PORT TO BE INSTALLED.

D. THIS LOCATION HAS BEEN IDENTIFIED FOR THE NEGATIVE PRESSURE DIFFERENTIAL SYSTEM EXHAUST DUCT TO EXIT THE WORK AREA/BUILDING. TO MAINTAIN BUILDING SECURITY, INSTALL 2" X 4" WOOD FRAME SYSTEM INSIDE THE EXISTING DOORFRAME OR WINDOW FRAME AND ATTACH 3/4" PLYWOOD USING 9" ROUND HEAD CARRIAGE BOLTS. TIGHTEN THE CARRIAGE BOLTS FROM THE INSIDE TO "SANDWICH" THE DOORFRAME OR WINDOW FRAME BETWEEN THE PLYWOOD AND FRAME. PROVIDE AN ADDITIONAL ½" GAP WELDED STEEL MESH OVER THE EXHAUST DUCT HOLE TO PREVENT ACCESS. DOORS SHALL BE REPLACED AT THE COMPLETION OF THE PROJECT.

E. THIS LOCATION HAS BEEN IDENTIFIED FOR A DUMPSTER OR DIRECT WASTE LOAD OUT DUMPSTER PLACEMENT.

F. THIS LOCATION HAS BEEN IDENTIFIED FOR THE LOCATION OF A NEGATIVE AIR PRESSURE DIFFERENTIAL FAN UNIT.

G. THIS LOCATION HAS BEEN IDENTIFIED AS THE LOCATION FOR A (MINIMUM) 3' X 3' X 6' CHANGE ROOM/AIR LOCK CHAMBER ADJACENT TO A SECONDARY ABATEMENT ENCLOSURE.

H. THIS LOCATION HAS BEEN IDENTIFIED AS ACCESS TO WATER SUPPLY OR SANITARY SEWER DRAINAGE.

I. THIS LOCATION HAS BEEN IDENTIFIED AS ACCESS TO ELECTRIC SERVICE FOR CONNECTION OF THE CONTRACTOR'S TEMPORARY ELECTRIC PANEL(S).

LEGEND

THIS SYMBOL INDICATES THE APPROXIMATE LOCATION OF TRACE (<1%) ASBESTOS CONTAINING DRYWALL SYSTEM TO BE REMOVED AND PROPERLY DISPOSED OF

THIS SYMBOL INDICATES THE APPROXIMATE LOCATION OF FLOOR SLAB CUTS TO BE MADE

THIS SYMBOL INDICATES THE APPROXIMATE LOCATION AND QUANTITY OF ASBESTOS CONTAINING PIPE FITTINGS TO BE REMOVED AND DISPOSED OF AS ACWM

THIS SYMBOL INDICATES THE APPROXIMATE LOCATION OF ASBESTOS CONTAINING PIPE INSULATION TO BE REMOVED AND DISPOSED OF AS ACWM

THIS SYMBOL INDICATES THE APPROXIMATE LOCATION OF ASSUMED ASBESTOS CONTAINING WOOD PANELING ADHESIVE

DRAWING INDEX

SHEET NO.	TITLE
1	COVER SHEET
2	MAIN FLOOR PLAN
3	ALTERNATE #1

PROJECT DIRECTORY

OWNER:
BOULDER VALLEY SCHOOL DISTRICT
6500 ARAPAHOE ROAD
BOULDER, COLORADO 80303

OWNER'S REPRESENTATIVE:
ACCENTURE I&CP
601 GYRFALCON CT., UNIT A
WINDSOR, COLORADO 80550
MATTHEW HENSON, PROJECT MANAGER II
ALYSSA HLAVA, ASSISTANT PROJECT MANAGER

PROJECT SITES:
BCSIS HIGH PEAKS ELEMENTARY SCHOOL
3995 AURORA AVENUE
BOULDER, COLORADO 80303

NOTE: THIS DRAWING MUST BE PRINTED IN COLOR TO SHOW ALL INFORMATION ACCURATELY.

601 Gyrfalcon Court, Unit A
Windsor, Colorado 80550
Office (970) 686-5695
Fax (970) 686-5696

accenture

BOULDER VALLEY SCHOOL DISTRICT
BCSIS HIGH PEAKS ELEMENTARY SCHOOL
ASBESTOS ABATEMENT CONSTRUCTION DOCUMENTS
3995 AURORA AVE
BOULDER, CO 80303

DRAWING #: 1
SHEET TITLE:
COVER SHEET
Project #: 26007
DATE: FEBRUARY 2026
CAD File: \...\26007\CAD\
Checker