


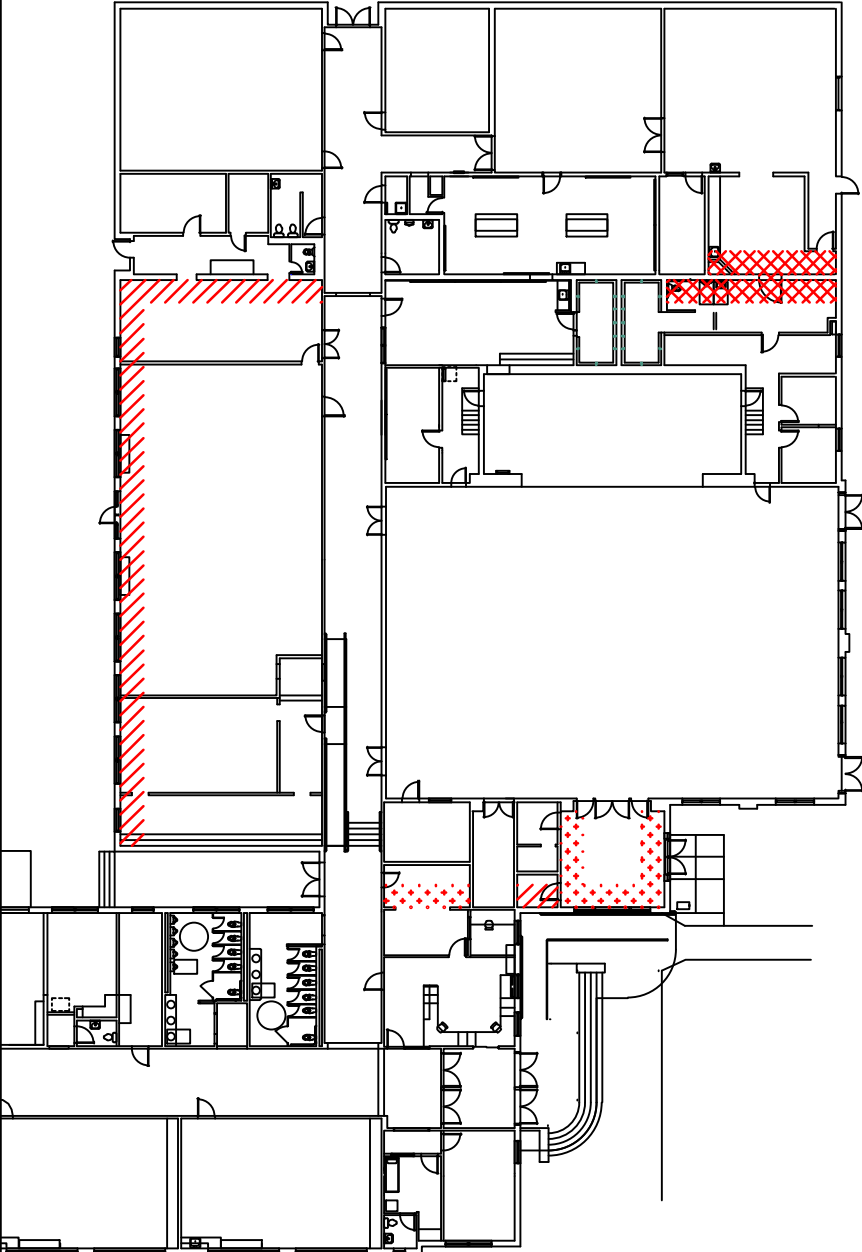


Abatement Scope of Work

-  Removal and disposal of various asbestos-containing floor tile and asbestos containing black mastic - 256 sq. ft.
-  Removal and disposal of various asbestos-containing floor tile and asbestos containing black mastic under carpet - 236 sq. ft.
-  Removal and disposal of asbestos-containing black mastic under non asbestos-containing floor tile - 128 sq. ft.



Abatement Notes

1. Actual flooring abatement is to consist of approximately 4' x 4' square areas to facilitate new seismic footers. Not all hatching depicted will actually be abated. Hatching indicates structural walls along which the 4' x 4' abatement squares will be located. The exact number and location of abatement squares will be determined and marked out prior to the start of abatement. Abatement quantities listed are total expected amount of flooring materials to be abated cumulatively across the various square abatement areas.
2. All floor tile in the scope of work is single layer on concrete slab, except for approximately 16 square feet in the work room off the cafeteria.
3. Any carpet tiles over flooring in the scope should be set aside for re-use, provided no asbestos-containing flooring materials come up with the carpet during removal. Broadloom carpet is to be cut to a clean edge and disposed of.
4. Various cove base and associated adhesives are non asbestos-containing. Contractor is to remove only cove base as necessary to access abatement areas against walls.
5. Contractor may be responsible to relocate contents and/or small fixtures such as toilets, in order to access work areas.

General Notes

1. If any asbestos-containing materials are to be impacted by the overall renovation activities, those materials must be removed by a licensed asbestos abatement contractor prior to any other work being performed in the area.
2. Not all known asbestos-containing materials in the building are depicted on these drawings. This abatement scope of work was developed in combination with the data from the asbestos survey conducted by G2 Consultants, as well as the overall renovation scope determined by the District and their design team. Additional asbestos-containing materials exist outside this abatement scope, in materials or areas not expected to be impacted by the renovation activities.
3. G2's survey report is available to the contractor(s) for their information. All contractors are required to review all available survey information, and it is each contractor's responsibility to avoid disturbing any identified asbestos or untested suspect asbestos-containing materials. Should questions arise between information found in the survey report and in the abatement scope of work, G2 should be consulted. Any suspect material not previously identified/tested that may be disturbed, should be presumed to be asbestos-containing until testing demonstrates otherwise.
4. This drawing is diagrammatic and should be used for general information only, and the locations depicted are approximate. Contractors should refer to the architectural design drawings and written specifications for this project to verify project-specific details. Abatement contractor is to field verify all material conditions, locations and quantities.
5. Asbestos-containing materials exist in both accessible and inaccessible locations. A limited level of destructive investigation was performed in order to access suspect materials in inaccessible areas, however, given the nature of the process, not all currently inaccessible areas were able to be inspected. Care should be taken when opening up interstitial spaces, wall cavities, etc. to avoid accidental impact to asbestos-containing materials.
6. Should changes in the overall renovation scope be required, G2 should be consulted as to the potential impact of asbestos-containing materials, prior to disturbing building materials or modifying the abatement scope requirements. The district, or their representatives, must authorize work outside the defined scope in writing before the work is performed.
7. Abatement contractor shall coordinate work with the District, or their representatives, including but not limited to; scheduling, access, security, staging, protect and salvage items, lockout tag out of utilities and demolition activities.
8. All abatement work shall be performed in accordance with the project specifications and local and federal regulations necessary to complete the work. All abatement activities are to be performed by qualified personnel licensed in the State of Oregon.
9. Any building components adjacent to the work area(s) shall be protected by the abatement contractor. Abatement contractor is responsible for repair or replacement of all damage that occurs as a result of the abatement contractor's activities at the abatement contractor's expense.
10. All substrates shall be returned to the District serviceable to the next trade following abatement.
11. All openings adjacent to the contained work area, including but not limited to doors, windows, ducts, vents, etc. should be closed/sealed prior to the start of abatement, and remain in place throughout abatement activities until the District or their consultant has approved the removal of engineering controls.
12. Abatement contractor to cover all critical barriers with a minimum of 4-mil poly. At least one air filtration machine is required per contained area. If air filtration machines are exhausted out windows, those windows left open should be boarded with plywood and secured to minimize risk of a break-in.
13. Smoke detectors to be covered before abatement work and uncovered at the end of each shift.
14. All painted, stained or varnished surfaces are to be considered lead-based paint, and managed per all state and federal regulations. In areas where the abatement contractor disturbs painted surfaces, abatement contractor is to comply with all applicable lead paint regulations in OAR 437-Division 3, 1926.62 Lead Construction Industry Standards and 40 CFR Part 745.82 Lead Renovation, Repair, and Painting program for child-occupied facilities when applicable.
15. Water and power provided at no cost to the contractor by the District at the school for the project.

NOTES:

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Client: Redmond School District
 Project: John Tuck Elementary School
 Location: 209 NW 10th Street
 Redmond, OR 97756
 G2 Project #: G24-8005

John Tuck Elementary School
 Main Level
 Flooring Abatement Scope of Work




17750 SW Upper Boonies
 Ferry Road, Suite #150
 Portland, OR 97224
 888-998-g2c1
 888-887-6422 fax
 www.g2c1.com

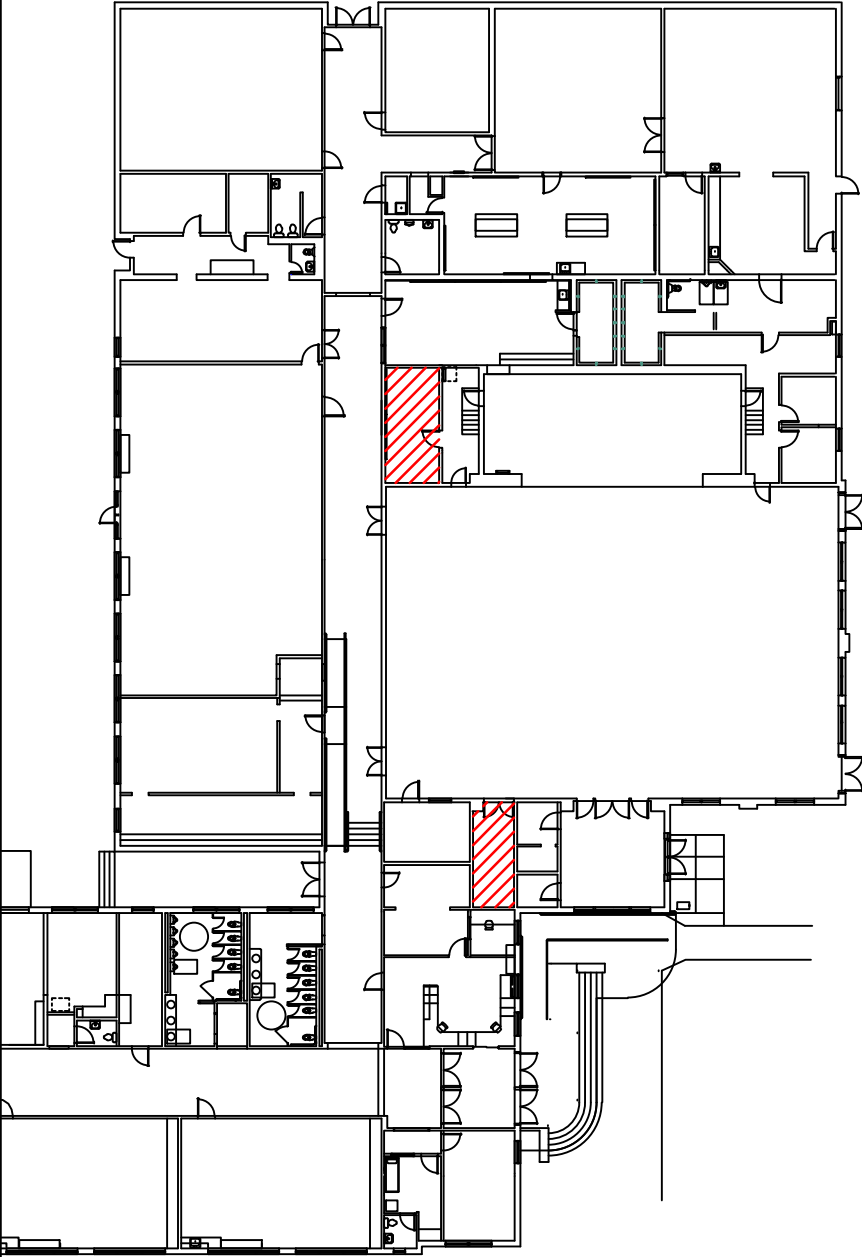


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Abatement Scope of Work

 Removal and disposal of drywall ceilings with asbestos-containing joint compound - 344 sq. ft.



Abatement Notes

1. The entire ceilings in the rooms hatched are included as part of the abatement scope of work..
2. Drywall removal should be cut to a clean edge around the perimeter walls to allow for re-installation.
3. Ceiling heights are 10'.
4. Ceiling removal will open up the contained area to the interstitial spaces above. Contractor is to clean ceiling joists (wet wipe and HEPA vacuum) and then cover with poly throughout the removal process to maintain negative pressure.
5. Fiberglass batt insulation may be present on the tops of drywall ceilings. Contractor is to remove and dispose of any insulation as part of the abatement process.

General Notes

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3. G2's survey report is available to the contractor(s) for their information. All contractors are required to review all available survey information, and it is each contractor's responsibility to avoid disturbing any identified asbestos or untested suspect asbestos-containing materials. Should questions arise between information found in the survey report and in the abatement scope of work, G2 should be consulted. Any suspect material not previously identified/tested that may be disturbed, should be presumed to be asbestos-containing until testing demonstrates otherwise.
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7. Abatement contractor shall coordinate work with the District, or their representatives, including but not limited to; scheduling, access, security, staging, protect and salvage items, lockout tag out of utilities and demolition activities.
8. All abatement work shall be performed in accordance with the project specifications and local and federal regulations necessary to complete the work. All abatement activities are to be performed by qualified personnel licensed in the State of Oregon.
9. Any building components adjacent to the work area(s) shall be protected by the abatement contractor. Abatement contractor is responsible for repair or replacement of all damage that occurs as a result of the abatement contractor's activities at the abatement contractor's expense.
10. All substrates shall be returned to the District serviceable to the next trade following abatement.
11. All openings adjacent to the contained work area, including but not limited to doors, windows, ducts, vents, etc. should be closed/sealed prior to the start of abatement, and remain in place throughout abatement activities until the District or their consultant has approved the removal of engineering controls.
12. Abatement contractor to cover all critical barriers with a minimum of 4-mil poly. At least one air filtration machine is required per contained area. If air filtration machines are exhausted out windows, those windows left open should be boarded with plywood and secured to minimize risk of a break-in.
13. Smoke detectors to be covered before abatement work and uncovered at the end of each shift.
14. All painted, stained or varnished surfaces are to be considered lead-based paint, and managed per all state and federal regulations. In areas where the abatement contractor disturbs painted surfaces, abatement contractor is to comply with all applicable lead paint regulations in OAR 437-Division 3, 1926.62 Lead Construction Industry Standards and 40 CFR Part 745.82 Lead Renovation, Repair, and Painting program for child-occupied facilities when applicable.
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Client: Redmond School District
Project: John Tuck Elementary School
Location: 209 NW 10th Street
Redmond, OR 97756
G2 Project #: G24-8005

John Tuck Elementary School
Main Level
Ceiling Abatement Scope of Work






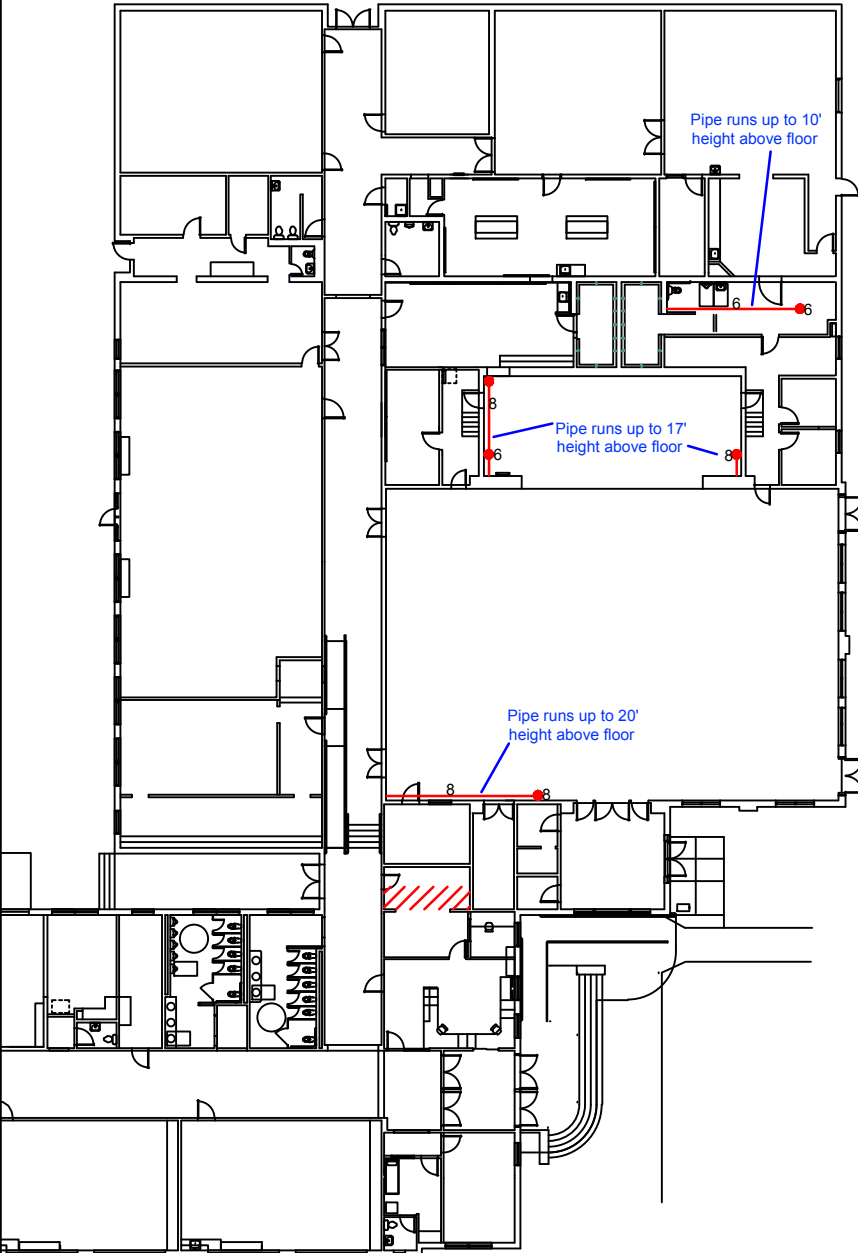
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Abatement Scope of Work

-  Removal and disposal of asbestos-containing pipe/fitting insulation (with approx. insulation outside diameter) - 6" OD - 35 lf
8" OD - 65 lf
-  Location for removal and disposal of vertical pipe run with asbestos-containing pipe/fitting insulation
-  Removal and disposal of all asbestos-containing pipe and fitting insulation and debris within a pipe chase - Up to 60 linear feet insulation, 60 sq. ft. area



Abatement Notes

1. Pipe insulation in the known scope of work have an insulation outside diameter of 6"-8".
2. Contractor is responsible for sufficient ladders/lifts to access pipe insulation in the scope of work. Pipe run heights above the floor are indicated on the drawing.
3. The flooring scope for the principal's office already includes abatement of up to 60 sq. ft. of asbestos-containing floor tile and black mastic under carpet. One flooring abatement is complete, the GC or their contractor are to saw cut up some of the concrete slab. The hatching indicated on this drawing indicates the removal of all pipe insulation in the chase below where the slab will be cut, and a full cleaning and decontamination of the chase. The contractor is to create a containment for the flooring abatement. After passing air clearance sampling, the GC or their contractor will cut the slab within the containment. Then the abatement contractor is to perform any necessary pipe insulation abatement or decontamination of the chase. The GC or their contractor will be responsible for bulk removal and disposal of the concrete slab cut out. Any rubble or concrete that falls into the chase and becomes contaminated, will need to be disposed of by the abatement contractor.

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Client: Redmond School District
 Project: John Tuck Elementary School
 Location: 209 NW 10th Street
 Redmond, OR 97756
 G2 Project #: G24-8005

John Tuck Elementary School
 Main Level
 TSI Abatement Scope of Work



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Date: 3-21-24

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SECTION 02 82 13.28
ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. This section covers the removal, patching, encapsulation, or enclosure of materials that contain or are suspected to contain asbestos at:
 - 1. John Tuck Elementary School; 209 NW 10th Street, Redmond, Oregon 97756
- B. Contractor shall provide all labor, materials, equipment, transportation, services, permits, DEQ notification amendments, and insurance required to complete asbestos abatement procedures as indicated in these Specifications and/or the drawings:
- C. The scope of work includes abatement of identified asbestos-containing materials from:
 - 1. John Tuck Elementary School; 209 NW 10th Street, Redmond, Oregon 97756
 - 2. Refer to Asbestos Abatement Drawings for asbestos abatement scope of work and additional details and conditions of work.
 - 3. Refer to G2 Consultants Asbestos Survey dated January 12, 2024, and Redmond School District Management Plan and records.

1.3 RELATED REQUIREMENTS

- A. Section 02 83 13 "Lead Handling Procedures"

1.4 DOCUMENTS INCORPORATED BY REFERENCE

- A. The current issue of each document shall govern. Where conflict among requirements or with these Specifications exists, the most stringent requirements shall apply.
 - 1. U.S. Department of Labor Occupational Safety and Health Administration (OSHA):
 - a. Title 29 Code of Federal Regulations Section 1910.1001--General Industry Standard for Asbestos.
 - b. Title 29 Code of Federal Regulations Section 1910.134--General Industry Standard for Respiratory Protection.
 - c. Title 29 Code of Federal Regulations Section 1910 et al.--Occupational Exposure to Asbestos; Final Rule.
 - d. Title 29 Code of Federal Regulations 1926.1101--Construction Standard for Asbestos.
 - e. Title 29 Code of Federal Regulations Section 1910.1020--Access to Employee Exposure and Medical Records.
 - f. Title 29 Code of Federal Regulations Section 1910.1200--Hazard Communication.
 - 2. U.S. Environmental Protection Agency National Emissions Standards for Hazardous Air Pollutants (NESHAPS). (Code of Federal Regulations Title 40, Part 61, Subparts A and M.).

3. U.S. Environmental Protection Agency Office of Toxic Substances Guidance Document, "Guidance for Controlling Friable Asbestos-Containing Materials in Buildings." EPA Report Number 560/5-85-024 ("Purple Book").
4. National Institute for Occupational Safety and Health (NIOSH), 42 CFR, Part 84, Respiratory Protective Devices.
5. American National Standards Institute (ANSI) NY; ANSI Standard Z 88.2-1980 "American National Standards Practice for Respiratory Protection," latest edition.
6. Oregon Administrative Rules Chapter 340, Division 248, Department of Environmental Quality; Chapter 340, Division 33, Licensing and Certification Requirements.
7. Oregon Administrative Rules Chapter 437, Divisions 2 and 3.
8. Oregon Revised Statutes (ORS), Chapters 279C, Certified Asbestos Contractors and Prevailing Wage; 656, Workers Compensation; and 701, Construction Contractors and Contracts.
9. Oregon Structural Specialty Code (O.S.S.C), latest edition, regulations as applicable.
10. All related electrical work shall be performed in accordance with the National Electrical Code.
11. All local ordinances, regulations, or rules pertaining to asbestos, including its storage, transportation, and disposal.
12. G2 Consultants Asbestos Survey document dated March 3, 2023.
13. Redmond School District Management Plan and records of past projects.

1.5 DEFINITIONS

- A. Abatement: Procedures to control fiber release from asbestos-containing building materials. Includes: encapsulation, enclosure, removal, repair and related activities.
- B. Aggressive Sampling: A method of air sampling that assures that the asbestos fibers remain airborne during the sampling time. All surfaces inside the work area will be agitated by the liberal use of compressed air. Fans will then be placed so as to keep all suspended fibers airborne, and run throughout the sampling period.
- C. AHERA: Asbestos Hazard Emergency Response Act, 40 CFR Part 763.
- D. Air Lock: A system for permitting ingress or egress without permitting air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways at least 3 feet apart.
- E. Air Monitoring: The process of measuring the asbestos fiber content of a specific volume of air in a stated period of time.
- F. Amended Water: Water containing a surfactant additive.
- G. Asbestos-containing Material (ACM): Any material containing more than one percent asbestos as defined under NESHAPS CFR 40, Part 61, OAR Chapter 340, Division 248, OR-OSHA 437, 1926.1101, and OSHA 29 CFR Part 1926.1101.
- H. Authorized Visitor: The Owner or designated representative, or a representative of any regulatory or other agency having jurisdiction over the project, and having required training, medical, fit test, etc.
- I. Certified Industrial Hygienist (CIH): An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.
- J. Class I Asbestos Work: Activities involving the removal of TSI and surfacing ACM and PACM.

- K. Class II Asbestos Work: Activities involving the removal of ACM, which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and mastics.
- L. Clean Room: An uncontaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of workers' street clothes and clean protective equipment.
- M. Clearance: A visual inspection and air clearance monitoring demonstrating that an area is free of asbestos containing fibers and ready to return back to the Owner.
- N. Competent Person: Means a person capable of identifying asbestos hazards, selecting appropriate control strategies and having the authority to take prompt corrective measures. Additionally, for Class I and Class II work, one who is specially trained in a training course meeting the criteria of EPA's Model Accreditation Plan (40 CFR 763) for project designer or supervisor, or its equivalent and, for Class II work, who is trained in an operations and Maintenance O & M Course developed by EPA (40 CFR 76392 (a) (2)).
- O. Contractor: Refers to the licensed Asbestos Abatement Contractor.
- P. Critical Barrier: Solid barrier constructed from minimum of 2-inch by 4-inch studs, 16-inch o.c.; ½-inch plywood or drywall sealed airtight and covered on both sides (where applicable) with two layers of 6-mil plastic.
- Q. Curtained Doorway: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing three overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway in a pleated fashion and securing one vertical side of each sheet on alternating sides of consecutive sheets. Two curtained doorways spaced a minimum of 3 feet apart to form an air lock.
- R. Decontamination Area: Means an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.
- S. Disposal: Procedures necessary to transport and deposit the asbestos-contaminated material in an approved waste disposal site in compliance with EPA and other applicable regulations.
- T. Encapsulant (Sealant): A liquid material which can be applied to asbestos-containing material and which controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant), or by penetrating into the material and binding its components together (penetrating encapsulant).
- U. Enclosure: Procedures necessary to completely seal all asbestos-containing material behind airtight, impermeable, permanent barriers, including PVC jackets.
- V. Equipment Room: A contaminated area or room, which is part of the worker decontamination enclosure system, with provisions for storage of contaminated clothing and equipment.
- W. Fitting: With regard to pipe insulation, a fitting is any elbow, offset, reducer, tee, etc.
- X. Friable Asbestos Containing Material: Means asbestos containing material that can be crumbled, pulverized or reduced to powder when dry, by hand pressure.
- Y. Fixed Object: Fixtures which are attached to the building or are too heavy or bulky to remove from the work area.
- Z. Glovebag: A manufactured device consisting of a transparent plastic bag with inward projecting sleeves, an internal tool pouch, provisions for fastening and sealing at the top and sides, and a receptacle in the bottom to hold asbestos waste. The glovebag is installed so as to surround the material to be removed and contain all fibers released during the process. Glovebags are used to remove insulation from small sections of pipe and fittings.

- AA. HEPA Filter: A High Efficiency Particulate Air (absolute) filter capable of trapping and retaining 99.97 percent of asbestos fibers greater than 0.3 microns in length.
- BB. HEPA Vacuum Equipment: High Efficiency Particulate Air (absolute) filtered vacuuming equipment with a filter system capable of collecting and retaining asbestos fibers. Filters of 99.97 percent efficiency for retaining fibers of 0.3 microns in length or larger shall be installed for filtering discharge air.
- CC. Independent Testing Laboratory: A laboratory financially independent from and hired by the Owner or Contractor which is either AIHA-accredited for asbestos with demonstrated proficiency via the AIHA PAT program, or has analysts proficient in the AIHA AAR program for air sample analysis.
- DD. Industrial Hygienist: The professional contracted or employed by the Building Owner and/or building operator to supervise and/or conduct air monitoring and analysis, perform inspections and act as the Owner/building operator representative.
- EE. Intact: ACM that has not crumbled, been pulverized, or otherwise deteriorated so that it's no longer likely to be bound within its matrix.
- FF. Isolated Work Area: A totally contained area of the facility where abatement activities are performed.
- GG. Movable Object: Furnishings which are not attached to the building structure and can be removed from the work area.
- HH. Negative-air Glovebag: A manufactured device consisting of a transparent plastic bag with inward projecting sleeves, an internal tool pouch, provisions for fastening and sealing it at the top and sides, and a receptacle in the bottom to hold asbestos waste. The glovebag is installed so as to surround the material to be removed and contain all fibers released through the process, with provisions for allowing continuous airflow through the bag while maintaining negative pressure inside.
- II. NPE: (Negative Pressure Enclosure).
- JJ. Owner: Representatives designated by the Owner, or designated employees of the Owner.
- KK. Owner's Consultant: Owner's Consultant specializing in asbestos abatement - G2 Consultants (G2), 6 Centerpointe Ave., Suite 440, Lake Oswego, Oregon, 97035, 888.887-4224 - or any subcontractor designated by G2.
- LL. PACM: Presumed asbestos-containing materials.
- MM. Pre-Abatement Samples: Air samples taken to determine the concentration of airborne asbestos in an area prior to abatement activities.
- NN. Pressure Differential Fan System: An air-purifying fan system located within or outside the isolated work area, which draws air out of the work area through a HEPA filter, thus keeping the static air pressure in the work area lower than in adjacent areas, and preventing escape of contaminated air from work area to adjacent areas.
- OO. Public Area: Any area outside the isolated work area. When work area isolation measures are removed, the work area becomes a public area.
- PP. Regulated Area: An area established by the Contractor to demarcate areas where Class I and Class II asbestos work is conducted and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit.
- QQ. Removal: All operations where ACM and/or PACM are taken out or stripped from structures or substrates, and include demolition activities.

- RR. Shower Room: A room between the clean room and the equipment room in the worker decontamination enclosure system, which is equipped with hot and cold running water controllable at the faucet and soap and shampoo, and which is suitably arranged for complete showering during decontamination. The shower room must be separated from the clean room and equipment room by air locks.
- SS. Special Fitting: With regard to pipe insulation, a special fitting is any valve, union, strainer, thermometer, flange, etc.
- TT. Surfacing Material: A material that is sprayed, troweled-on or otherwise applied to surfaces.
- UU. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.
- VV. Tack Coat: A coat of penetrating encapsulant applied to all surfaces from which asbestos-containing materials have been removed.
- WW. Thermal System Insulation (TSI): ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.
- XX. Wet Cleaning: The process of eliminating asbestos from building surfaces and objects by using cloths, mops, or other cleaning tools that have been dampened with water.
- YY. Worker Decontamination Enclosure System: A showering facility for workers, typically consisting of a clean room, a shower room, and an equipment room. Each of these rooms is separated from the others by air locks. The equipment room is separated from the work area by a curtained doorway. The clean room is separated from the public area by a curtained doorway.
- ZZ. Worksite Entry Logbook: A logbook kept in the clean room, which must be signed by everyone entering or leaving the work area. All pages of the logbook must be the same as the sample page bound into these Specifications.

1.6 GENERAL REQUIREMENTS

- A. All abatement activities shall be coordinated with the Owner and pursued in the manner described by the contractor's approved Work Plan.
- B. The Owner will be responsible for all DEQ and EPA required air monitoring. The Contractor will be required to perform all OSHA required air monitoring. (See Section 01 45 00 Air Monitoring Requirements for further reference).
- C. Contractors shall verify to their satisfaction the nature of the work described in this specification prior to bidding the work.
- D. The Asbestos Abatement Contractor is responsible for all regulatory notifications to the Department of Environmental Quality including all original notifications and amendments. Copies of all notifications shall be submitted to the Owner and Owner's Consultant prior to the start of the work on site.
- E. The Contractor may request asbestos abatement engineering control variances. All variance requests and approvals must be in writing from appropriate agencies and submitted with the work plan.
- F. All asbestos work will be completed in accordance with the latest interpretation of all applicable laws and regulations. Ignorance of any regulation does not relieve the Contractor of the responsibility to comply with those regulations.
- G. Whenever unknown or unusual conditions are discovered which may affect the project the Contractor shall immediately notify the Owner.
- H. If at any time the Owner determines that the Contractors practices are in violation of any section of this specification, or are endangering workers or the facility the Owner will notify the

contractor orally of the violation or danger. The contractor shall immediately correct the deficiency or the Owner may issue a stop-work order.

- I. On receipt of a stop work order, work cannot be restarted without written authorization of the Owner.
- J. All costs and/or delays associated with a stop work order are to be borne by the Contractor and cannot be used as a basis for an increase in the contract amount or extension of time to the schedule.
- K. All solvents used on this project shall be a No-Odor solvent. Odor emitting solvents may only be used if pre-approved by the Owner.

1.7 PROHIBITIONS

- A. The following work practices and engineering controls shall not be used for work related to asbestos or for work which disturbs ACM or PACM regardless of measured levels of asbestos exposure or the results of initial exposure assessments;
 - 1. High-speed abrasive disk saws that are not equipped with point of cut ventilator or enclosures with HEPA filtered exhaust air.
 - 2. Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air.
 - 3. Dry sweeping, shoveling or other dry clean-up of dust and debris containing ACM or PACM.
 - 4. Employee rotation as a means of reducing employee exposures to asbestos.

1.8 SUBMITTALS AND NOTICES

- A. Contractors shall submit electronic indexed copies of each submittal package as indicated below.
- B. Contractors shall submit to the project Architect, the following information prior to beginning work on the project.
 - 1. **CONTRACTOR'S LICENSE.** Submit proof that the Asbestos Abatement Contractor is currently and for the duration of the project licensed in the state of Oregon to perform asbestos abatement, per ORS Chapter 701, and OAR Chapter 340, Division 248.
 - 2. **ASBESTOS SUPERVISOR.** Submit the name and resume of experience of the assigned on-site foreman. At a minimum, the foreman shall have successfully completed the DEQ Asbestos Supervisor course as approved by the state of Oregon. Other criteria such as references and similar projects will also be reviewed. The Owner and the Owner's Consultant reserve the right to reject the foreman from the work at any time during the project. The Contractor shall then assign another on-site foreman for Owner and Owner's Consultant approval as described above.
 - 3. **INSURANCE CERTIFICATE.** Submit a copy of the certificate of asbestos-specific liability insurance policy.
 - 4. **WORKER CERTIFICATION.** Submit written proof indicating that all employees impacting asbestos-containing materials are Oregon state-certified asbestos workers. Proof shall include a signature from the Contractor's Principal indicating that all employees assigned to this project have completed such a program, and photocopies of certificates.
 - 5. **RESPIRATOR PROGRAM.** Submit written proof indicating respirator program is in compliance with all parts of OSHA Asbestos Regulations CFR Title 29, Part 1910.134 and 1926.1101, OR-OSHA Chapter 437, 1910.134 and 1926.1101.

6. MEDICAL PROGRAM. Submit written proof medical exam program is in compliance with OSHA Asbestos Regulations CFR Title 29, Section 1926.1101 and OR-OSHA Chapter 437, 1926.1101.
 7. EMERGENCY PLANS. Submit a written emergency control and cleanup plan to be followed by the Contractor in the event of an accidental breach in containment, power failure, and accidental disturbance of ACMs in non-isolated areas.
 8. NOTIFICATION. Submit copy of written notification to the Department of Environmental Quality (DEQ), of the proposed asbestos work not fewer than ten days before work commences on this project.
 9. DISPOSAL PLAN. Submit written proof that all required permits and arrangements regarding the transportation and disposal of asbestos-containing or contaminated materials, supplies, etc. have been obtained. The EPA and/or DEQ and other responsible agencies must approve the disposal site.
 10. WORK PLAN. Submit a written "work plan" satisfactory to the Owner describing the schedule for asbestos abatement, decontamination procedures, and plans for construction and location of decontamination enclosure systems, pressure differential exhaust fans, etc. in compliance with these Specifications and applicable regulations, including calculations for determining required number of negative-air filtration units. The plan shall schedule the systematic flow of work throughout the facility per Specifications on a day-by- day basis, outlining room-by-room, or area-by-area procedures and planned alternative control measures. The Contractor shall keep close coordination of his work with the Owner.
 11. AIR MONITORING. Submit information pertaining to the proposed Air Monitoring Program for this project, if appropriate. This information shall include the name(s) of the Certified Industrial Hygienist appointed, the name of the on-site Industrial Hygiene Technician working under his supervision, types of equipment, and sampling schedule, sampling procedures, calibration recordkeeping, and testing laboratory proposed.
 12. PRODUCT INFORMATION. Submit complete product information for any materials and products for which the Contractor requests approval for use on this job.
 13. EMERGENCY PHONE NUMBER. Submit a local phone number at which the Contractor or on-site foreman can be reached on a 24-hour basis during the course of the work.
- C. Contractor shall not begin work until submittals are reviewed and accepted by Owner and the Owner's Consultant. Allow a ten-day review period.
- D. During the work the Contractor shall submit to the Owner on a periodic basis as agreed to by the Owner, Owner's Consultant, and Contractor:
1. Waste shipment and disposal documentation.
 2. Air monitoring data.
 3. Notification updates.
- E. Contractor shall submit to the Owner's Consultant in writing all information required above regarding any new asbestos workers hired by or subcontracted to the Contractor before these new asbestos abatement workers begin work.
- F. Prior to removal of decontamination systems and isolation barriers, the Contractor shall obtain specific written permission from the Owner's Consultant.
- G. Prior to making final application for payment the Contractor shall:
1. Complete all work under this contract.

2. Submit to the Owner's Consultant all required submittals including all Waste Shipment Records completely filled out and signed.
 3. Submit to the Contractor all payroll reports for work on this contract and other information as described elsewhere in the Specifications, if appropriate under the contract.
 4. Submit to the Owner's Consultant "as-abated" drawings along with a signed affidavit stating that all asbestos-containing materials have been removed as indicated on the drawings.
- H. See other sections of these Specifications and EPA, OSHA and other standards referenced therein, for further information and requirements not included above.
- 1.9 BUILDING PROTECTION
- A. Building Security and Protection
1. The Contractor shall post adequate warning signs at all potential entrances to work areas as required by EPA and OSHA.
 2. Contractor shall protect all existing fixed equipment, building finishes that are to remain, and existing systems and functions from damage during the abatement process. Extra precautions are to be taken in protecting existing electrical panels, light fixtures, etc. The Contractor at his expense shall remedy any damage to existing building, services, and/or equipment.
 3. Contractor shall clean external surfaces of contaminated containers and equipment thoroughly by wet sponging and HEPA vacuum.
 4. Contractor shall maintain access and use of existing fire lanes.
 5. Contractor shall be responsible for securing all movable equipment and all possible accesses to regulated areas. In addition, Contractor shall ensure that all building openings used for Negative air machine exhaust are protected and do not allow access to regulated areas or building interior.
- 1.10 PERSONNEL PROTECTION
- A. All employees shall be trained in accordance with local and federal requirements.
1. Prior to commencement of work, Contractor shall ensure all workers have been trained as specified.
- B. Personnel Personal Protective Equipment for Asbestos Removal:
1. Work clothes shall consist of disposable full-body coveralls and head and foot covers ("Tyvek" or approved), boots, or sneakers. Eye, hearing, fall protection and hard hats should be available as appropriate.
 2. At a minimum, respiratory protection shall be approved by NIOSH/MSHA (National Institute for Occupational Safety and Health/Mine Safety and Health Administration), and be as listed below. Respiratory protection shall provide workers with a maximum calculated fiber level inside the mask of 0.01 f/cc.
 - a. Glovebag or modified glovebag: full-face mask, powered air-purifying respirator with disposable HEPA filter cartridges (magenta/purple color code). Protection factor: 100.
 - b. Demolition of walls and ceilings that may impact friable asbestos-containing material: half-face mask, negative-pressure respirator with disposable HEPA filter cartridges (magenta/purple color code). Protection factor: 10.

- c. Pre-abatement work in close proximity to friable asbestos-containing materials: half-face mask, negative-pressure respirator with disposable HEPA filter cartridges (magenta/purple color code). Protection factor: 10.
 - d. HEPA vacuuming and wet cleaning of surfaces: half-face mask, negative-pressure respirator with disposable HEPA filter cartridges (magenta/purple color code). Protection factor: 10.
 - e. Vinyl asbestos floor tile removal: half-face mask, negative-pressure respirator with disposable HEPA filter cartridges (magenta/purple color code). Protection factor: 10.
 - f. Handling of double-bagged asbestos-contaminated waste: half-face mask, negative-pressure respirator with disposable HEPA filter cartridges (magenta/purple color code). Protection factor: 10.
3. Additional respiratory protection shall be as required by CFR 29 1910.134 and 1926.1101, OR-OSHA Chapter 437, 1910.134 and 1926.1101.
 4. As part of the Contractor's Respiratory Protection Program, all workers shall be provided with a selection of brands and sizes of respirators to choose from. At a minimum, all workers shall be qualitatively fit-tested at the time of respirator selection per OR-OSHA Worker's Compensation Department Rule 22-069 (4)(e)(5)(i), and semiannually thereafter.
 5. All equipment and tools necessary to completion of the asbestos abatement work are to be supplied by the Contractor. The equipment must be maintained in good working condition and is subject to the Owner's review. Contractor shall supply replacement filter cartridges, as required. Cartridges that have become wet or clogged shall be replaced immediately.
- C. Worker Decontamination Enclosure System:
1. Decontamination areas: the Contractor shall establish and construct a decontamination facility that is adjacent and connected to the regulated area for decontamination of the Contractor's personnel. The decontamination area shall consist of an equipment room, shower area, and clean room in series. Air locks shall be installed between the clean room and shower and between the equipment room and shower. The Contractor shall ensure that employees enter and exit the regulated area through the decontamination area. The decontamination area shall remain under negative pressure for the duration of the project.
 - a. The equipment room shall consist of an air lock to the shower room, and a curtained doorway to the work area.
 - b. The shower room shall have two air locks, one to the equipment room and one to the clean room. All showers shall have hot and cold water controllable at the taps and shall be installed in this room. The Contractor shall supply and maintain soap, shampoo and towels at all times in the shower area. Shower wastewater shall be filtered to remove all fibers larger than 5 microns or as required by local regulations, before disposal in the municipal sewer system, or shall be collected and disposed of as asbestos-contaminated material. Obtain any permits as required by local municipalities as to water discharge and comply with all regulations. Water filters shall be disposed of as asbestos-contaminated material.
 - c. Where the Contractor can demonstrate that it is not feasible to locate the shower area adjacent to the clean room and equipment room, or where the work is being performed outdoors, the Contractor shall ensure that all employees:

- 1) Remove asbestos contamination from their work suits in the equipment room using a HEPA vacuum before proceeding to a shower that is not adjacent to the work area; or
 - 2) Remove their contaminated work suits in the equipment room then don clean work suits, and proceed to a shower that is not adjacent to the work area.
- d. The clean room shall consist of an air lock to the shower room and a curtained doorway to the adjacent building area. The clean room shall contain a first aid kit, storage for workers' and visitors' clothing and shoes, a place to sit down, and the Worksite Entry Logbook. Work, respirator and decontamination procedures, regulations and Prevailing Wage Rates shall be conspicuously posted. There shall be a supply of clean protective clothing, respirators and cartridges in the clean room at all times.
2. Contractor shall not begin asbestos abatement work unless this system is functional, in good repair, and has been found acceptable for specification compliance by the Owner's Consultant.
- D. Personnel Protection Procedures in Isolated Work Areas:
1. Each worker shall, upon entering the jobsite: remove street clothes in the clean change room, put on and fit-test his respirator, put on clean protective clothing and sign in on the Worksite Entry Logbook before entering the equipment room or the work area.
 2. Workers shall, each time they leave the work area: remove gross contamination from clothing before leaving the work area; proceed to the equipment room and remove and dispose of disposable work clothes; remove and store shoes, boots and other equipment except respirators; still wearing the respirator proceed to the showers; clean the outside of the respirator with soap and water while showering; remove the respirator; thoroughly shampoo and wash themselves; remove filters, dispose of filters in the container provided for the purpose; and wash and rinse the inside of the respirator.
 3. Following showering and drying off, each worker shall proceed directly to the clean change room and dress in clean clothes at the end of each day's work, or before eating, smoking, or drinking. Before reentering the work area from the clean change room, each worker shall put on his respirator with clean filters, dress in clean protective clothing, and sign in on the Worksite Entry Logbook.
 4. Contaminated work footwear and other equipment shall be stored in the equipment room when not in use in the work area. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from work area.
 5. Workers shall not eat, drink, or chew gum at the worksite except in the established clean room. Smoking or using other tobacco products is prohibited.
 6. Workers shall be fully protected with respirators and protective clothing immediately prior to the first disturbance of asbestos-containing or contaminated material and until final cleanup is completed.
- E. Access to Isolated Work Area by Others:
1. Except for emergency personnel, the Contractor shall limit access to the work area to authorized visitors.
 2. The Contractor shall provide protective clothing, respirators and equipment for all authorized visitors, as specified above.
 3. All authorized visitors shall be subject to the personnel protection provisions specified above, and shall sign in and out on the Worksite Entry Logbook.

- F. Personnel Personal Protection during Work in Non-Isolated Work Areas:
1. Work clothes per Section 1.10.
 2. Respiratory protection per Section 1.10.
 3. Worker protection procedures will differ from Section 1.10, in that two layers of coveralls shall be worn after removal of street clothes. Worker decontamination through a Worker Decontamination Enclosure is required. The first layer of coveralls must be removed when exiting the glovebag work area. The worker shall immediately proceed to the Worker Decontamination Unit. The remaining requirements of Section 1.10 still apply.
 4. Contractor to submit to the Owner's Consultant for approval, an emergency control and cleanup plan to be followed in the event of asbestos contamination during glovebag use. Contractor shall ensure all workers are thoroughly familiar with approved plan.
 5. Contractor shall promptly remove all bags as they are used to the bag-holding and decontamination enclosure system.
- G. Emergency Precautions:
1. The Contractor shall establish emergency and fire exits from the work area. Contractor shall ensure these exits are well marked and remain unobstructed.
 2. The Contractor shall be prepared to administer first aid to injured personnel after decontamination. Seriously injured personnel shall be treated immediately or evacuated without delay for decontamination.
 3. Contractor shall notify the local fire department of the asbestos abatement project prior to beginning work area preparation.

1.11 SAFETY

- A. With regard to the work of this contract, the safety of the Contractor's employees, the Owner's employees, and the public is the sole responsibility of the Contractor.

1.12 LIABILITY

- A. The Contractor is an independent contractor and not an employee of the Owner or of the Owner's Consultant. The Owner and Owner's Consultant shall have no liability to the Contractor or any third persons for Contractor's failure to faithfully perform and follow the provisions of these Specifications and the requirements of the governing agencies. Notwithstanding the failure of the Owner or the Owner's Consultant to discover a violation by the Contractor of any of the provisions of these Specifications, or to require the Contractor to fully perform and follow any of them, such failure shall not constitute a waiver of any of the requirements of these Specifications, which shall remain fully binding upon the Contractor.

1.13 DELIVERY

- A. Contractor shall deliver all materials to the worksite in the original packages, containers or bundles bearing the name of the manufacturer and the brand name.

1.14 STORAGE

- A. Contractor shall store all materials subject to damage off the ground, away from wet or damp surfaces, away from heat sources, and under cover sufficient to prevent damage, contamination or fire.

1.15 PROTECTION

- A. Damaged or deteriorating materials shall not be used and shall be removed from the premises by the Contractor. The Contractor shall dispose of materials that become contaminated with asbestos in accordance with the applicable regulations.

1.16 SUBCONTRACTORS

- A. Any Subcontractors employed by the Contractor shall be bound to all the work and safety standards specified elsewhere in this Specification. Subcontractor's personnel shall be fully trained and supervised by the Contractor during performance of this work.

PART 2 - PRODUCTS**2.1 MATERIALS**

- A. Plastic Sheet: Plastic sheet shall be flame-retardant polyethylene material sized in lengths and widths to minimize the frequency of joints. The minimum thickness shall be 6-mil.
- B. Plastic Bags: Plastic bags shall be 6-mil polyethylene printed with warning labels per OSHA and EPA regulations.
- C. Tape: Tape shall be capable of sealing joints of adjacent sheets of plastic and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under dry and wet conditions, including use of amended water. Minimum of 2-inch-wide tape must be used.
- D. Disposal Containers: Disposal containers shall be suitable to receive and retain any asbestos-containing or contaminated materials until disposal at an approved site. The containers shall be labeled in accordance with OSHA and EPA regulations. Containers must be both air- and watertight, and have hard top, bottom and sides.
- E. Warning Labels and Signs: Warning labels and signs shall be posted as required by OR-OSHA, ODOT, and DEQ regulations.
- F. Amended Water: Clean potable water containing a surfactant additive. The surfactant additive shall be 50 percent polyoxyethylene ether and 50 percent polyethylene ester, or equivalent, and shall be mixed with water at a concentration of one ounce surfactant to 5 gallons of water, or as recommended by the manufacturer in the case of an equivalent.
- G. Encapsulants (Sealants): Encapsulants shall be of the bridging or penetrating variety and shall be listed as "satisfactory" by the EPA. Encapsulants shall provide a suitable substrate-bonding agent for application of new material where appropriate.
- H. Rewettable Lagging Cloth: Twelve-ounce glass fabric lagging cloth saturated with dried lagging adhesive.
- I. Enclosure: Protective plastic jacketing systems, framed gypsum board enclosures, suspended ceilings or other materials as specified elsewhere.
- J. Other Materials: Provide all other materials such as lumber, nails and hardware, which may be required to construct and dismantle the decontamination area and the barriers that isolate the work area, and as required to complete the work as specified.

2.2 TOOLS AND EQUIPMENT

- A. Water Sprayer: The water sprayer shall be an airless or other low-pressure sprayer for amended water application.
- B. Air-Purifying Equipment: Air-purifying equipment shall consist of High-efficiency Particulate Air (HEPA) filtration systems. No air movement system or air equipment shall discharge asbestos

fibers outside the work area. Each unit shall be capable of variable volume from a minimum of 500 cubic feet per minute (CFM) to at least 1700 CFM under load and shall have at least two stages of pre-filtration ahead of the HEPA final filter.

- C. Pressure Differential Monitoring Equipment: A combination sensing, alarm and recording device shall be in operation at all times during use of the HEPA air-purifying equipment.
- D. Water-Purifying Equipment: Capable of removing all fibers longer than 5 microns or as required by local regulations from water used in abatement work and decontamination showers.
- E. Airless Sprayer: An airless sprayer, suitable for application of penetrating encapsulant material, shall be used.
- F. Vacuum Equipment: All vacuum equipment utilized in the work area shall be High-Efficiency Particulate Air (HEPA) equipment, and suitable for wet/dry usage.
- G. Scaffolding: Scaffolding, as required to accomplish the specified work, shall meet all applicable safety regulations. All special scaffolding shall have drawings and calculations stamped and signed by a civil or structural engineer registered in the State of Oregon.
- H. Transportation Equipment: Transportation equipment, as required, shall be suitable for loading, temporary storage, transit, and unloading of contaminated waste without exposure to persons or property. Equipment shall have a hard top, bottom and sides.
- I. Electrical: Electrical tools, equipment and lighting shall meet all applicable codes and regulations. Ground fault protection as required by OSHA, shall be in effect at all times. Contractor shall take all additional precautions and measures necessary to ensure a safe working environment during wet removal.
- J. Glovebags: Bags shall be clean poly bags, seamless at the bottom, with preprinted asbestos warning labels, 6-mil PVC with attached TYVEK arms and latex gloves.
- K. Other Tools and Equipment: Provide other suitable tools for the removal, enclosure, encapsulation, patching, and disposal activities including, but not limited to, hand-held scrapers, wire brushes, sponges, and rounded-edge shovels.

PART 3 - EXECUTION

3.1 FULL ISOLATION WORK AREA PREPARATION (NEGATIVE PRESSURE ENCLOSURE)

- A. Contractor shall perform the following isolation procedures in the order in which they are presented. Any alternative control measures considered for Class I work shall be performed in accordance with 29 CFR 1926.1101. Full isolation must also be utilized if mechanical means are used to remove asbestos, or if items prohibited in Section 1.7 must be used due to engineering restrictions. Any alternative means must be present to the Owner's representative by a competent person for approval.
 - 1. Shut down, remove filters and isolate HVAC systems to prevent contamination and fiber dispersal. Coordinate with building users and Owner prior to shutdown.
 - 2. Coordinate all electrical, safety and other service connections, requirements and equipment with the Owner. Use a journeyman electrician at a minimum. It is the Contractor's responsibility to verify operation of systems that will be shut off during abatement. If any system is found to be defective or not operating satisfactorily, the Contractor shall notify the Owner or Owner's Consultant in writing prior to shutoff.
 - 3. Install critical barriers as follows: seal off all openings, including, but not limited to, doorways, windows and other penetrations of the work area, with solid critical barriers, except openings left for HEPA air-purification system, which shall be properly HEPA-filtered. Where doors exist, sealing may be done by closing door, sealing with tape on both sides, and then covering both sides with two layers of plastic sheeting.

4. Pre-clean movable objects, such as furniture and equipment to be removed (and carpeting), within the proposed work areas using HEPA-filtered vacuum equipment and/or wet cleaning methods as appropriate, and remove such objects from work areas to a temporary location, or consolidate such objects away from removal work and enclose with critical barriers.
5. Pre-clean fixed objects within the proposed work areas, using HEPA-filtered vacuum equipment and/or wet cleaning methods as appropriate, and enclose with critical barriers. Equipment which must continue operating shall be enclosed and ventilated to avoid damage.
6. Fixed suspended lighting fixtures, motion sensors or similar controls, if present, shall be wrapped in plastic sheeting sealed with tape.
7. Set up the worker decontamination enclosure system (decon). Once this system is installed and abatement commences, it shall be utilized in the specified manner for the ingress and egress of all personnel and equipment, except in emergency situations. All personnel shall sign the Worksite Entry Logbook each time they pass in or out of the decontamination enclosure.
8. Install HEPA air-purifying equipment pressure differential fan system so as to ensure lower static pressure in the isolated work area than in surrounding areas, a flow of air through all parts of the isolated work area towards the air-purifying equipment, and minimum air contamination levels at abatement worker breathing zones. Discharge from air-purifying equipment shall be ducted outside the building. Use one or more units of capacity as recommended by the manufacturer for the volume of the isolated work area, but in no case shall airflow be less than four air changes every 60 minutes with a minimum pressure differential of 0.02 inches wg between the work area and the decon clean room.
9. A minimum of -0.02 column inches of water pressure differential, relative to outside pressure, shall be maintained within the NPE as evidenced by manometric measurements for the duration of the enclosure.
10. Negative pressure shall be maintained on the enclosure at all times until directed by the Owner's Consultant following clearance sample analytical results indicate it is clear to remove.
11. Air movement shall be directed away from employees performing asbestos work within the enclosure, and toward a HEPA filtration or collection device.
12. Cover floor and wall surfaces with plastic sheeting sealed with tape. Cover floors first so that plastic extends at least 12 inches up on walls, then cover walls with plastic sheeting to overlap floor plastic by a minimum of 24 inches, thus overlapping the horizontal floor material by a minimum of 12 inches. Install additional layer of plastic sheeting on floor and walls in similar manner. Plastic on walls shall be full height to ceiling. Contractor may use mechanical fastening techniques, such as tack strips, as necessary to secure wall plastic sheeting. Contractor shall repair any damage resulting from mechanical fasteners.
13. The Contractor shall provide and install a 24 inch by 24 inch clear plastic viewing port on all Negative Pressure Enclosures.
14. All portions of the containment, decontamination unit, bag-out units, negative pressure HEPA filtration units and HEPA exhaust tubing that are exposed to access by building staff, students, or the general public, are to be hard sided enclosures made secure from the possibility of tampering.
15. Emergency exits shall be marked on the inside of the containment to guide workers out in the event of an emergency.

16. Maintain emergency and fire exits from the work areas, or establish alternative exits satisfactory to the local building or fire department officials. Ensure that all exits remain unobstructed and well marked.
 17. Adequate portable fire extinguishing equipment shall be maintained within work area as defined by OSHA and/or local fire department officials.
- B. No asbestos abatement work shall occur unless the Owner's Consultant has found the work area isolation acceptable for Specification compliance and a pre-abatement visual inspection has been performed.
- C. Isolated work area enclosure system maintenance. The Contractor shall be responsible for daily documentation of the following:
1. Prior to the first use and at the beginning of each shift during abatement work, containments shall be given a complete visual inspection by the Contractor's shift foreman and Industrial Hygienist. This shall include inspection of the HEPA air-purification system and associated filters. A smoke tube test by the shift foreman shall then be made of the worker decontamination enclosure system and other critical areas to verify that the isolated area is under negative air pressure. Work shall not begin until all defects have been repaired.
 2. Periodic inspections shall be made as required during each shift to assure continued proper functioning of the containment and HEPA system.

3.2 NON-ISOLATED WORK AREA PREPARATION

- A. Contractor shall perform the following procedures in the order in which they are presented and describe procedures for glovebag work and other work in non-isolated work areas. Any alternative control measures considered for Class II work shall be performed in accordance with 29 CFR 1926.1101.
1. Shut down HVAC systems. Coordinate with building users and the Owner prior to shutdown.
 2. Restrict access to work area and post warning signs. Do not perform glovebag work or any abatement work in an occupied area.
 3. Completely pre-clean entire work area using HEPA vacuum equipment or wet cleaning methods.
 4. Set up the worker decontamination enclosure system. Once this system is installed and abatement commences, it shall be utilized in the specified manner for the ingress and egress of all personnel, except in emergency situations. All personnel shall sign the Worksite Entry Logbook each time they pass in or out of the decontamination enclosure.
 5. At the direction of the Owner's Consultant, install HEPA exhaust fan in work area. Duct fan intake to immediate area of work in such a manner that any fibers released will be drawn away from the worker and into intake duct.
 6. Cover floor and other surfaces below work area with 6-mil plastic sheeting. Seal openings and install curtained doorways and air locks as directed by the Owner's Consultant.
 7. Have emergency cleanup equipment and supplies, including HEPA vacuum, amended water, disposal bags, mop, buckets, towels and sponges, on hand prior to start of abatement work.
- B. No asbestos abatement work shall occur unless the Owner's Consultant or Industrial Hygienist has found the work area acceptable for Specification compliance.

3.3 REMOVAL OF ASBESTOS-CONTAINING MATERIALS IN FULL ISOLATION WORK AREAS

- A. Contractor shall isolate work area as specified.
- B. Contractor shall remove all asbestos-containing pipe insulation, surfacing material and other asbestos-containing materials as defined in the project-specific scope of work.
 - 1. Contractor shall spray the asbestos material with amended water. A fine spray of this solution shall be applied to prevent fiber disturbance preceding the removal of the asbestos material. The asbestos shall be sufficiently saturated to prevent emission of airborne fibers in excess of specified fiber levels.
 - 2. Contractor shall remove asbestos material while damp and pack in sealable plastic bags (6-mil minimum thickness). Move bags to bag load out facility or equipment room in the worker decontamination system. Wash outside surface and place inside a second plastic bag (6-mil minimum thickness) bearing DEQ warning label and name of waste generator and location from which waste was generated.
 - 3. After completion of stripping work, Contractor shall clean all surfaces from which asbestos has been removed by brushing and/or wet sponging or cleaning by an equivalent method to remove all visible material. During this work the surfaces being cleaned shall be kept wet. Avoid using wire brushes if possible.
 - 4. The Contractor will maintain the work areas free of accumulated asbestos materials at all times and will keep materials wet until they are enclosed in sealed plastic bags.
 - 5. Contractor shall collect all water used in the removal and cleaning process and dispose of as contaminated waste or filter to remove all fibers more than five microns in length before disposal in the municipal sewer system, or as required by local regulations. Water filters shall be disposed of as asbestos-contaminated material.
 - 6. Removal of non-friable materials such as floor tiles shall be accomplished by such manner as to minimize breakage and to maintain non-friability. Do not drop, throw, saw or scrape non-friable materials during removal, handling or disposal. The use of spud bars to remove floor tiles is an acceptable practice.
 - 7. Contractor shall maintain a safe and uncluttered work area, worker decontamination system, and bag load out facility on a daily basis.

3.4 REMOVAL OF ASBESTOS-CONTAINING MATERIALS IN NON-ISOLATED AREAS

- A. Contractor shall apply spray coat of amended water to material to be removed. Keep material damp during entire removal process.
- B. Glovebag work shall be as follows. All removal using the glovebag method shall be performed strictly according to regulations, manufacturer's printed instructions, and as demonstrated by the manufacturer's representative or as further specified in this section. Workers are not to smoke or wear hand or wrist jewelry while using glovebags.
 - 1. Contractor shall coordinate the shutoff of all sources of heat to objects to be worked on. Do not work on objects above 150 degrees Fahrenheit (°F).
 - 2. Contractor shall install port for hose of HEPA vacuum to create reduced pressure inside glovebag. Installing of fresh air intake and/or bridging to prevent collapse of bag are acceptable. Reduced pressure shall be maintained throughout entire abatement procedure.
 - 3. During the removal phase, Contractor shall utilize amended water to reduce potential for airborne fibers.

4. After completion of insulation removal and cleaning, but prior to removal of glovebag, Contractor shall apply a single "tack" coat of penetrating encapsulant to surface of pipe and any remaining non-asbestos insulation, within the glovebag.
 5. After the pipe has been sealed, but prior to removal of glovebag, Contractor shall thoroughly wash the upper chamber of the glovebag and seal the contents of the bag in the lower chamber.
 6. Contractor shall seal flap if used and, utilizing a HEPA vacuum, remove all contaminated air in the upper chamber.
 7. Follow procedures set forth in Section 01 45 00 in case of a spill or if air analysis indicates a fiber count in excess of limits.
 8. Contractor shall promptly double-bag the glovebag after removal is complete, place into a sealed container and remove to the bag holding enclosure.
 9. Contractor shall cover ends of remaining existing insulation with rewettable lagging cloth. Extend lagging cloth a minimum of 6 inches back along existing insulation.
- C. Wrap and cut method shall be as follows: at intervals determined by the Contractor, glovebag-remove 2 to 3 feet of asbestos-containing pipe insulation as specified. Seal remaining pipe, with asbestos-containing pipe insulation intact; in two separate layers of 6-mil plastic sheeting. Cut pipe wrap sections at ends, taking care to not damage adjacent wrapped or unwrapped insulated sections. Label double-wrapped pipe as specified for disposal. Obtain approval of landfill prior to utilizing this method. Dispose as contaminated waste in accordance with Specifications and approved landfill requirements.
- D. Removal of cement asbestos board and similar material shall be as follows: material shall be removed one sheet or piece at a time. Material shall be kept continuously wet. Cut or remove fasteners one at a time while running HEPA vacuum at the point where work is being done so as to collect all dislodged particles and fibers.
1. When all fasteners have been removed, carefully remove entire sheet or piece and wrap in 6-mil plastic sheeting while still wet. Contractors personnel shall not drop, throw, break, saw or scrape cement asbestos board during removal, handling or disposal.
 2. Label, transport, and dispose of wrapped sheets as specified in the Disposal section.
 3. Clean entire substrate with HEPA vacuum or wet cleaning methods and leave ready for application of replacement material.
- 3.5 CLEANUP IN FULL ISOLATION WORK AREAS
- A. At the conclusion of removal in the isolated work area, conduct cleanup in the sequence described below. Windows, doors, HVAC vents, etc. shall remain sealed and HEPA-filtered pressure differential fan systems shall remain in service.
1. Contractor shall remove visible accumulations of material and debris (including filters removed from HVAC equipment and HEPA air-purification equipment). Contractor shall include all sealed containers and equipment used in the work area in the cleanup and remove them from work area, after decontamination of outer surfaces.
 2. Contractor shall clean all surfaces in the work area and any other contaminated areas with water and/or with HEPA-filtered vacuum equipment.
 3. Following the first cleaning, wet-clean or clean with HEPA-filtered vacuum equipment all surfaces in the work area. After completion of the second cleaning operation, perform a complete visual inspection of the work area to ensure that the work area is free of visible debris.

4. Visual Inspection: Prior to application of post-removal encapsulant, contact the Owner's Consultant for a visual observation of the work area. The work area shall be free of visible debris. Observation by the Consultant does not alleviate the Contractor of responsibility to provide work in compliance with Specifications. Contractor shall contact Owner's Consultant at least 24 hours prior to desired inspection time.
5. After visual observation by the Consultant, Contractor shall apply a coat of approved encapsulant to all surfaces in the work area where asbestos has been removed and to disposable plastic sheeting as a post-removal encapsulant. Encapsulant application shall follow all applicable manufacturers' recommendations and shall provide a compatible bonding agent for application of new material.
6. Final Cleaning: After the encapsulation is complete, the Contractor shall remove all noncritical plastic and clean all floors, walls, fixtures and other surfaces within the work area with only critical barriers in place using wet methods or HEPA-filtered vacuum equipment. Plastic sheeting over carpets may remain in place.
7. Notification for Visual Inspection and Clearance: contact the Owner's Consultant for a visual observation of the work area. The work area shall be free of visible debris. Observation by the Consultant does not alleviate the Contractor of responsibility to provide work in compliance with Specifications. Contractor shall contact Owner's Consultant at least 24 hours prior to desired inspection time. Consultant shall conduct final air monitoring as specified after work area has been allowed sufficient time to dry.
8. Removal of Enclosures: when the final observation by the Owner's Consultant and air sampling test results are satisfactory, steam-clean and HEPA-vacuum carpet left in place during abatement. Contractor shall then remove the decontamination systems and remaining barriers.
9. Disposal: Contractor shall properly dispose of all waste materials. All polyethylene material, tape, cleaning material, and contaminated clothing shall be double-bagged, sealed and labeled as described above for asbestos waste material.

3.6 CLEANUP IN NON-ISOLATED WORK AREAS

- A. Contractor shall remove visible accumulations of asbestos material and debris. Clean all surfaces within the affected work area. Cleaning shall be with amended water and/or HEPA-filtered vacuum equipment. In a large open area, the affected work area shall include the immediate work area and an area that encompasses at least 6 feet in all directions or as defined by the Owner's Consultant. In small work areas, the affected work area shall include the entire room.
- B. The Owner's Consultant may further define the affected work area in the scope of work. During the work, high fiber levels as indicated by air monitoring results may increase the area to be cleaned. The increase in the affected area, due to high fiber levels or other indications of fiber dispersal, will be defined by the Owner and Owner's Consultant, and the Contractor shall bear all costs of additional cleaning.
- C. Final Visual Inspection: After completion of the cleaning operation, the Owner's Consultant shall perform a visual observation of the affected work area to ensure that the affected work area is free of visible dust and debris. Observation by the Consultant does not alleviate the Contractor of responsibility to provide work in compliance with Specifications. Contractor shall contact Owner's Consultant at least 24 hours prior to desired inspection time.
- D. Encapsulant (Lock-Down) After visual observation by the Owner's Consultant, Contractor shall spray-apply encapsulant to the material substrate, all temporary plastic sheeting and other temporary protective materials.
- E. Clearance Sampling: Post-abatement air sampling shall be at the discretion of the Owner's Consultant and will be determined by the ongoing sample results.

- F. Removal of Critical barriers and Protection: When the final observation by the Owner's Consultant and air sampling test results (if required) are satisfactory, the temporary plastic sheeting and other temporary protective materials shall be removed by the Contractor.
- G. Disposal: The Contractor shall properly dispose of all waste materials, all polyethylene material, tape, cleaning material, and contaminated clothing shall be double-bagged, sealed and labeled as described for asbestos waste material.

3.7 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS

- A. When cleanup is complete, Contractor shall:
 - 1. Relocate objects moved to temporary locations in the course of the work to their former positions. Coordinate with the Owner.
 - 2. Clean, repair and/or repaint all surfaces soiled, discolored or damaged by removal of tape, adhesive or other work of this contract to match existing surfaces. The Contractor shall bear all costs associated with damage incurred during the abatement, which includes, but is not limited to, gypsum board, windows, mullions, and elevator cars.
 - 3. If the Contractor uses caulking to seal cracks in concrete floor the caulking must be removed to Owner's satisfaction at completion of project.
 - 4. Return mechanical, electrical, and other systems shut down by the Contractor to complete and functional operation.
 - 5. Re-secure objects removed in the course of work in their former positions, including air dampers in plenums, and adjust for proper operation.
 - 6. Clean, repair and/or repaint all surfaces soiled, discolored or damaged by removal of tape, adhesive or other work of this contract to match adjacent surfaces.

3.8 DISPOSAL

- A. Contractor shall affix warning labels having waterproof print and permanent adhesive, to the lid and sides of all containers. Warning labels shall be conspicuous and legible, and contain the following words:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST
AUTHORIZED PERSONNEL ONLY

- B. The Contractor shall determine current waste handling, transportation, and disposal regulations for the work site and for each waste disposal landfill. The Contractor must comply with these regulations and all U.S. Department of Transportation, DEQ and EPA requirements. Double-bagged material in containers shall be delivered to the pre-designated disposal site for burial. Labels and all necessary signs shall be in accordance with DEQ and OSHA standards.
- C. Contractor shall remove decontaminated containers from site as soon as possible. Notify disposal site in advance of delivery of material to assure immediate burial of containers.
- D. If the bags are broken or damaged, or the container is contaminated, the Contractor shall clean and decontaminate the entire container for reuse.

- E. Contractor shall submit three copies of written proof of disposal at approved disposal site to the Owner's Consultant prior to completion of the abatement work specified in this section. Use copies of the DEQ Waste Shipment Record ASN-4, completely filled out and signed, and accompanied by tickets and/or receipts from disposal site.

END OF SECTION