

PART 1 - GENERAL

1.1 RELATED WORK

- A. The provisions and intent of the Contract, including the General Conditions, Supplementary Conditions and General Requirements, apply to this Work as if specified in this Section. Work related to this Section is described in:
1. Section 01 11 01 "Summary of Work – Regulated Materials"
 2. Section 02 82 00 "Asbestos Removal"
 3. Section 02 83 00 "Heavy Metal-Related Activities"
 4. Section 02 84 00 "Polychlorinated Biphenyl Remediation"
 5. Section 02 87 00 "Water Loss Response"
 6. Section 02 88 00 "Biological Contaminants"
 7. Section 02 90 00 "Environmental Procedures"
 8. JOC Abatement Design Scope for this Work Order

1.2 DESCRIPTION OF WORK

- A. The Contractor shall supply all labor, materials, services, insurance, special permits and equipment necessary for the following hazardous materials:
1. Mercury-containing fluorescent light tubes, mercury-containing thermostats, mercury-containing switches, mercury in P-traps, and high intensity discharge (HID) lamps – removal, handling, and packaging of mercury-containing components and HID lamps.
 2. Animal droppings – handling of contaminated materials, clean-up of all items and interior surfaces within the Work Area described on the Work Order, and disposal in accordance with these specifications.
 3. Refrigerants – handling and disposal of refrigerants within the Work Area described on the Work Order in accordance with these specifications.
 4. Silica and fugitive dust – handling of silica-containing materials and fugitive dust within the work area described on the Work Order in accordance with these specifications.
 5. Polychlorinated biphenyl (PCB)-containing equipment oils – handling and disposal of PCB oils within the work area described on the Work Order in accordance with these specifications.
 6. Contaminated Ductwork – clean-up of contaminated ductwork within the Work Area described on the Work Order and disposal in accordance with these specifications.
 7. Laboratory drain piping – cleaning, removal and disposal of laboratory drain piping in accordance with worker protection and environmental protection requirements and best practices. Additional specifications or project-specific requirements may apply depending upon the potential hazards associated with the historic use of the drain. At a minimum, prior to removal, the piping shall be thoroughly flushed with clean water. Flushed and removed piping shall be disposed of at an Owner-audited and -approved disposal facility.

Approved facilities can be viewed online at:

<http://www.ehs.washington.edu/epowaste/disposalfacilist.pdf>

8. Hydraulic oil – work with hydraulic oils shall be conducted in accordance with the UW policies for working with hydraulic oils.
 9. Mountlake landfill area – work in the designated area of the Mountlake landfill shall be conducted in accordance with the Mountlake landfill guidance document. The designated regions of the Mountlake landfill and associated procedures can be obtained at:
<https://www.ehs.washington.edu/epositeremed/methaneactionplanfinal.pdf>.
- B. Damages caused during the performance of remediation activities shall be repaired by the Contractor (including, but not limited to, paint peeled off by barrier tape, nail holes, water damage, broken glass) at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Polyethylene Sheet: Provide flame-retardant polyethylene film that conforms to requirements set forth by the NFPA Standard 701 (Standard Methods of Fire Tests for Flame Propagation of Textiles). Provide 6-mil thick, frosted or black TRM Manufacturing Brand, or equivalent, polyethylene of the largest size practicable to minimize seams.
- B. Reinforced Polyethylene Sheet: Provide translucent, nylon reinforced, laminated, flame-retardant polyethylene film that conforms to requirements set forth by NFPA Standard 701. Provide 6-mil thick Permalon Brand, or equivalent, polyethylene of the largest size practicable to minimize seams.
- C. Duct Tape: Provide duct tape with an adhesive that is formulated to stick securely to sheet polyethylene, Nashua Brand or equivalent. Do not use polyethylene tape.
- D. Painters Tape: Provide painters tape, Shurtape brand or 3M Scotch or equivalent. Painters tape is to be used in locations where there may be damage to wall finishes.
- E. Spray Cement: Provide spray adhesive in aerosol cans that is specifically formulated to stick securely to sheet polyethylene, Abatement Technologies, AS-100, or equivalent. The Contractor shall not use spray cement containing methylene chloride.
- F. Lumber: Provide kiln dried, fire-retardant lumber and plywood, in accordance with ASTM D245.
- G. Other Materials: Provide all other materials, such as lumber, nails, and hardware that may be required to construct work platforms, decontamination units and the barriers that isolate the Work Areas(s).

2.2 EQUIPMENT

- A. Vacuum Cleaners shall be equipped with HEPA filtration and operated in accordance with ANSI Z9.2-2012 (local exhaust ventilation requirements) and EPA guidance document EPA 560/5-83-002 Guidance for Controlling Friable Asbestos-Containing Materials in Buildings Appendix F.

- B. Negative air machines shall be equipped with HEPA filtration and operated in accordance with ANSI Z9.2-2012 (local exhaust ventilation requirements) and EPA guidance document EPA 560/5-83-002 Guidance for Controlling Friable Asbestos-Containing Materials in Buildings Appendix F.
- C. Manometer: Provide a manometer with a built-in alarm and continuous hard copy readout to continuously monitor pressure differential between the Work Area and outside areas. This shall be a non-mercury device. This device shall be accurate to the nearest 0.005 inches of water.
- D. Scaffolding: Provide all scaffolding, ladders and staging, etc., as necessary to accomplish the Work Order. The type, erection and use of all scaffolding shall comply with all applicable Washington State Department of Labor & Industries (L&I) and U.S. Occupational Safety and Health Administration (OSHA) regulations. No workers shall remain on rolling scaffolding as it is being moved; the wheels shall be locked when workers are climbing the scaffolding or working from the platform.
- E. Lifts and elevating work platforms: Provide all aerial lifts including manually propelled elevating work platforms that have a platform that cannot be positioned completely beyond the base, self-propelled elevating work platforms that have a platform that cannot be positioned completely beyond the base, and boom-supported elevating work platforms that have a boom-supported platform that can be positioned completely beyond the base etc., as necessary to accomplish the Work Order. The type and operation of all aerial lifts shall comply with all applicable Washington State Department of Labor & Industries (L&I) and U.S. Occupational Safety and Health Administration (OSHA) regulations. No workers shall remain on the extended lift platform while the lift is in motion.
- F. Provide communication equipment suitable for inter-room communications, if required.
- G. Holding Carts: Provide watertight wheeled carts with doors or tops that can be closed and secured.

PART 3 - EXECUTION

3.1 MERCURY

- A. Mercury-Containing Light Tubes:
 - 1. The following also applies to mercury-containing thermostats and switches, and high intensity discharge (HID) lamps/bulbs.
 - 2. The Contractor shall supply all labor, materials, vehicles, services, insurance, special permits, and equipment necessary to remove fluorescent light tubes. The Contractor shall conduct the work in accordance with all applicable federal, state, and local regulations and these specifications.
 - 3. The Owner will provide packaging for the tubes and will be responsible for disposal or recycling.
 - 4. All required permits, certificates, registrations, or licenses shall be kept valid for the duration of the work addressed by the permit.
 - 5. All shipping/receiving logs shall be legibly filled out in ink.
 - 6. Removal and Packaging of Fluorescent Light Tubes:
 - a. Tubes shall be removed in a manner to prevent breakage. If a tube breaks, the Contractor shall immediately clean-up debris and place in a box specified for broken tubes.

- b. Tubes shall be placed in owner-provided boxes or fiberglass drums in a manner to prevent breakage.
 - c. Tubes shall not be taped together.
- 7. Clean-up Procedures for Broken Fluorescent Light Tubes:
 - a. The Contractor shall have a cleanup kit on site prior to removing/dismantling light fixtures.
 - b. Broken tubes shall be cleaned-up immediately.
 - c. Use calcium polysulfide wetting solution on spilled lamp material to inhibit vaporization.
 - d. Following removal of broken glass, clean the floor with diluted trisodium phosphate solution according to the manufacturer's recommendations.
 - e. Identify, seal, and mark all containers with broken bulbs for special handling.
 - f. Mark and seal all drums of collected phosphate powder.
 - g. Store tubes in a secure area and coordinate with the Owner for disposal or recycling. Contractor will deliver packaged boxes and drums to the Owner.
- B. Mercury P-Traps:
 - 1. Use the following procedure for removal of P-traps in the project area:
 - a. Coordinate with the Owner's Construction Manager prior to the start of work to obtain appropriate waste containers and to determine the proper labeling of waste containers (as per UW waste labelling requirements).
 - b. Prepare the work area; place absorbent pad on the floor below the plumbing pipe to prevent spilled material from spreading to the unprotected floor. Protect nearby equipment and fixtures by covering with polyethylene sheeting.
 - c. Place necessary tools close to the work area. Place a labeled white bucket directly under areas where pipe is to be separated to collect any liquid, sludge, or objects that may be in the pipe.
 - d. Avoid spilling the contents of the pipe in case elemental mercury and mercury laden debris are present.
 - e. Carefully remove the P-trap. Make sure that plumbing stubs are short enough to completely fit into the designated waste container with the lid secured.
 - f. Place a 5-gallon pail under the area where the trap was removed.
 - g. Store properly sealed and labeled waste containers at a secure, UW-approved location on site.
 - h. Transportation and disposal will be conducted by UW. Coordinate with the Owner's Construction Manager for pick-up and disposal.

3.2 ANIMAL DROPPINGS

- A. The Contractor shall post warning signs at all entrances or openings to the enclosed Work Areas. Warning signs may be in the form of continuous plastic tape. The warning signs shall have black characters on a yellow background as follows:

WARNING – DO NOT ENTER
Remediation Work in Progress

- B. Alternate wording for the warning signs shall require approval by the Owner. Warning signs shall be posted every 10 feet of perimeter barrier.
- C. If there are bird droppings and rodent droppings indicated on the Work Order or in the Regulated Materials Survey Report provided for the Work Order, the Contractor shall exercise caution in these areas and wear appropriate personnel protective equipment such as respirators, disposable gloves, and eye shields.
- D. A Work Plan and Health and Safety Plan shall be submitted for review by the Owner. The submittals may be submitted and reviewed electronically. Following receipt of review comments from the Owner, the Contractor shall submit additional versions of revised submittals to the Owner until each submittal is accepted by the Owner. No Work that will impact animal droppings will be permitted prior to submittals being reviewed and accepted by the Owner.
- E. At a minimum, dust control techniques (e.g., using water, HEPA vacuums and negative air machines) shall be employed.
- F. Disposal: Bag the waste in leak-tight containers and dispose of as general construction waste.

3.3 REFRIGERANTS

- A. The following equipment may contain ozone-depleting substances: refrigerators, freezers, water coolers, air-conditioning units, spot coolers, and cold rooms.
- B. Prior to executing the Work Order, the Contractor must complete and submit the Contractor and Technician Input Forms to the Owner. These forms shall be obtained at <https://www.washington.edu/facilities/fstech/node/609> under “Refrigeration Compliance Forms.” These forms shall be reviewed and approved by the Owner. The review and approval process will take 10 working days.
- C. Upon approval of the submitted forms, the ozone-depleting refrigerants shall be recovered from equipment in accordance with 40 CFR Part 82 (Protection of Stratospheric Ozone) and state regulations. Contractors performing this activity must use an EPA-certified technician. Total Reclaim is a UW-approved vendor that can perform this Work. The equipment may be recycled once the ozone-depleting refrigerants have been removed.
- D. Ozone depleting refrigerants recovered from equipment shall be disposed of by the Contractor at an Owner-audited and -approved disposal facility. Approved facilities can be viewed online at: <http://www.ehs.washington.edu/epowaste/disposalfacility.pdf>.
- E. If the above equipment is disposed of, a letter documenting that the refrigerant has been recovered shall be provided to the disposal site in accordance with 40 CFR Part 82. Furthermore, this documentation shall be provided to the Owner.

- F. In addition, the following documentation shall be provided to the Owner: refrigerant removal date, amount of refrigerant removal, and listing of equipment removed from.

3.4 POLYCHLORINATED BIPHENYL (PCB)-CONTAINING EQUIPMENT OIL

- A. Hydraulic Elevator Oil: For the purposes of this Specification Section, the oil associated with hydraulic elevator equipment is assumed to contain PCBs. Contractors performing removal of these materials or recycling of equipment must use appropriately trained technicians. Total Reclaim is an Owner-approved vendor that can perform this Work. The equipment may be recycled once the PCB oils have been completely removed.
- B. Pump or other Machine Oil: For the purposes of this Specification Section, the oil associated with pumps, compressors and vacuum equipment is assumed to contain PCBs. Contractors performing removal of these materials or recycling of equipment must use appropriately trained technicians. Total Reclaim is an Owner-approved vendor that can perform this Work. The equipment may be recycled once the PCB oils have been completely removed.
- C. Removal of PCB-containing oils and recycling/disposal of the equipment that contained them shall be performed in accordance with Specification Section 02 84 00 "Polychlorinated Biphenyl Remediation."

3.5 SILICA AND FUGITIVE DUST

- A. All Construction work will potentially generate fugitive dust. It is the responsibility of the Contractor to control the release of all fugitive dust.
- B. Construction site work that requires control of silica and fugitive dust shall include but is not limited to, chipping, sanding, sawing, jack hammering, drilling, and grinding on concrete and masonry building materials associated with this work.
- C. Furnish all labor, materials, facilities, equipment, services, employee training and testing, and agreements necessary to perform the work required for fugitive dust and potential silica-generating construction dust control activities in accordance with the latest regulations from the State of Washington Department of Labor and Industries (WISHA), Puget Sound Clean Air Agency (PSCAA) and any other applicable federal, state, and local government regulations.
- D. Competent persons, trained, knowledgeable and qualified in both fugitive and silica dust evaluation and control methods, shall perform the Work specified herein.
- E. In all cases where potential silica dust exposures may occur, the Contractor shall use any and all feasible engineering and work practice controls to reduce and maintain employee exposure below the Washington State Permissible Exposure Level. It shall be assumed that the workers generating the silica dust are exposed above the Permissible Exposure Level until Contractor air monitoring data demonstrates silica concentrations below the Permissible Exposure Level.
- F. Controls shall be implemented to contain dust generated during demolition of walls, concrete sawing, coring, chipping, etc. At no time will any dust from the work area be permitted beyond the "Limit of the Work Area" as stated in the contract and/or as established by the Contractor. Visible emissions will be grounds for the Owner to request that work practices be stopped and revised.
- G. When wet sawing or coring concrete, the water shall be cleaned and vacuumed prior to drying. If dust remains after the area dries, the Contractor shall use wet methods to clean residual dust.
- H. If visible fugitive dust emissions or respirable crystalline silica dust concentrations exceed 0.05 mg/m³ beyond the perimeter of the work area, the Owner is authorized to stop work. The

Contractor shall perform all necessary corrective actions to eliminate visible dust and reduce respirable crystalline silica concentrations to less than 0.05 mg/m³ before resuming work. The Owner may visually monitor for fugitive dust and collect air samples for silica at any time.

- I. Disposal: The Contractor is responsible for disposal of silica debris and fugitive dust.

3.6 CONTAMINATED FUME HOODS AND DUCTWORK

- A. Fume hoods and associated ductwork are considered contaminated with the materials that were historically used under the hood.
- B. Perform Work using proper worker protection with personal protective equipment that addresses the specific hazards of impacting the fume hoods and ductwork.
- C. A Work Plan and Health and Safety Plan shall be submitted for review by the Owner. The submittals may be submitted and reviewed electronically. Following receipt of review comments from the Owner, the Contractor shall submit additional versions of revised submittals to the Owner until each submittal is accepted by the Owner. No Work that will impact fume hoods and ductwork will be permitted prior to submittals being reviewed and accepted by the Owner.
- D. Suggested techniques are as follows:
 - 1. Dust control techniques (e.g., using water, HEPA vacuums).
 - 2. Wipe down the interior and exterior surfaces of the fume hood and ductwork with rags using a spray bottle containing soap and water solution. For interior of ductwork, use respiratory protection as necessary due to the restricted workspace environment.
 - 3. Reusable cloth rags should be bagged and sent to a commercial laundry operation for washing and reuse. Disposable rags shall be double bagged and disposed as solid waste.
 - 4. Minimize liquid wastes.
- E. Once fume hoods and ductwork are cleaned they can be disposed of or recycled as general construction debris.

END OF SECTION