

Health and Safety Requirements / Special Procedures

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1.01 CONTRACTOR NOTIFICATIONS

- A. Asbestos: In accordance with California Health and Safety Code Section 25915 (Connelly Act) and the Cal/OSHA Asbestos Standard, 8 CCR Section 1529, Contractor is hereby notified that in University facilities there are construction materials that are known to contain asbestos. In some areas, asbestos has been identified in one or more of the following construction products: spray-applied fireproofing; pipe, boiler, tank and air duct insulation; air duct seam tape; gaskets; roofing tar, felt and mastic; asbestos-cement pipe, wallboard, and shingles; plaster and acoustical treatments; gypsum board taping compound; vinyl and asphalt floor tile; vinyl sheet flooring; vinyl flooring, basecove, and ceiling tile adhesive; caulking and glazing compound; acoustic ceiling and wall tile; lab fumehood liners, exhaust ducts and counter tops; and fire-rated door core insulation.

Contractor shall review the hazardous materials survey report prepared by the University's Department of Environmental Health & Safety (EH&S) to determine the location and condition of asbestos-containing materials on the project site prior to disturbance of any building material. Contractor shall distribute a copy of the survey report to all subcontractors and shall maintain a list of subcontractors who have received the report. Contractor shall take all necessary precautions, including the use of labels and signage, to protect Contractor's employees, subcontractors, vendors, students, visitors and University employees from contact with asbestos-containing materials and, unless otherwise specified, shall not disturb asbestos-containing materials at any time.

- B. Proposition 65 Notice: Under California Health and Safety Code Sections 25249.5 through 25249.13, asbestos, lead, mercury and

polychlorinated biphenyls have been listed as chemicals known to the State of California to cause cancer or reproductive harm. Contractor will be working in areas in which some or all of these materials may be present. This notice constitutes the warning of the presence of a chemical known to cause cancer or reproductive harm required by Proposition 65. It is Contractor's duty to follow all requirements of Proposition 65.

1.02 PRODUCT BANS

- A. Asbestos: All construction materials, products, equipment and furnishings installed in University facilities or property shall not contain any detectable quantity of asbestos. Contractor shall indemnify the University for all costs related to regulatory agency citations or litigation and court ordered settlements arising from asbestos exposure lawsuits where the source of asbestos is directly attributed to products installed by Contractor or subcontractors.
- B. Lead-Containing Paints and Surface Coatings: All paints, finishes and protective coatings, including coatings designed for residential, commercial, industrial or highway use, applied to University facilities or property shall contain less than 90 parts per million total lead content by weight.
- C. Lead in Plumbing Components: Contractor shall not use any pipe, pipe fitting, fixture, solder, or flux that is not lead free in the installation or repair of any water system or any plumbing in a facility providing potable water, except when necessary for the repair of leaded joints of cast iron pipes. For the purposes of this section, the definition of "lead free" in California Health & Safety Code Section 116875 shall apply.
- D. Urea-Formaldehyde Products: All construction products and furnishings installed in University facilities shall be free of urea-formaldehyde.
- E. Contractor shall be responsible for all costs associated with removal, disposal and replacement of materials installed by Contractor or subcontractors and found to be in violation of this subsection.

1.03 INDOOR AIR QUALITY REQUIREMENTS

- A. Contractor shall ensure that all construction materials, interior finishes and furnishings installed at the University comply with the most recent industry or regulatory agency Volatile Organic Compound (VOC) emission standards. All architectural coatings shall comply with

organic compound emission limits as set forth in BAAQMD Regulation 8, Rule 3.

1. Hardwood, plywood, particleboard, and medium density fiberboard composite wood products shall meet requirements for formaldehyde as specified by California Air Resources Board (ARB) including no-added formaldehyde (NAF) based resins and ultra-low-emitting formaldehyde (ULEF) resins.
 2. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with BAAQMD regulations.
- B. Unless otherwise specified, carpet, carpet cushion, and carpet mastic installed by Contractor shall comply with the most recent emission standards developed by the United States Carpet and Rug Institute's (CRI) Carpet Labeling Program and shall carry the CRI "Green Label" or "Green Label Plus" designation.
- C. Odor Control: Contractor shall take all means necessary to prevent the migration of odors to public or occupied areas adjacent to the project site. Odor controls may include, but are not limited to: installation of construction barriers; sealing air intakes; shutting down or adjusting ventilation systems; keeping doors and windows closed; installing fans or filtered air machines; product substitution; and performing work during off-hours.
- D. Material Conditioning:
1. All "dry" products (e.g., floor coverings, composite wood products, etc.) and "porous" products (e.g., fabric upholstery, carpets, insulation, etc.) shall be stored in a dry, well-ventilated location, away from other VOC sources, and allowed to air out prior to installation.
 2. Material conditioning (airing-out) may be conducted at the manufacturing site or at a bonded warehouse before delivery to the construction site.
 3. Unless otherwise specified, minimum material conditioning time shall be seven calendar days.
- E. Where feasible, Contractor shall ensure that wet products (e.g., paints, adhesives, sealants, waterproofing) are allowed adequate drying time prior to the installation of porous products such as furnishings,

carpet, etc., in order to minimize the absorption of VOCs by the porous products.

- F. Contractor shall take whatever means necessary, including the use of wet methods where feasible, to reduce dust emissions in occupied buildings during old carpet removal or other dust generating activities. General good housekeeping practices shall be followed at all times to minimize dust generation.
- G. HVAC Requirements:
 - 1. To dilute the impacts of particle and VOC emissions, Contractor shall ventilate the building during and after installation of new materials and prior to occupant move-in (after all interior finishes are installed) in accordance with California Green Building Code (Part 11 of Title 24, California Code of Regulations; A5.504.2). Although building occupancy may begin 4 days after flushing initiates, EH&S recommends occupancy after flushing concludes.
 - a. The building shall be “flushed-out” with 100% fresh outdoor air supplying continuously with all air handling units at their maximum outdoor rate and all supplying fans at their maximum position and rate for at least 14 days.
 - b. Building shall maintain an internal temperature of at least 60°F and relative humidity no higher than 60%.
 - c. For buildings relying on natural ventilation, exhaust fans and floor fans must be used to improve air mixing and removal for at least 14 days, and windows should remain open.
 - 2. Contractor shall not use “bake-out” procedures (i.e., elevating building temperatures to between 95 and 102 degrees F) as a means to remove VOCs.
 - 3. For renovation projects conducted within occupied buildings, Contractor shall ensure that HVAC systems are isolated between the work site and the occupied areas.

1.04 ERGONOMIC RELATED REQUIREMENTS

- A. Office workstations should meet the guidelines listed below. Consult the Americans with Disabilities Act regulations to ensure compliance

with facilities designs (i.e. number of ADA workstations per building, dimensions of ADA workstations, etc.).

1. Office task chairs should have all of the following features:
 - a. Adjustable seat height (15 – 22 inches [can be accommodated with alternative height pistons]);
 - b. Lumbar support height adjustment;
 - c. Adjustable, lockable seat back tilt;
 - d. Adjustable seat pan depth;
 - e. Adjustable armrest height;
 - f. Adjustable armrest width;
 - g. Ability to remove the armrests;
 - h. Waterfall contour of seat pan; and
 - i. Minimum five-star base.

2. Keyboard trays should have the following features:
 - a. Functional width of tray should be a minimum of 26 inches;
 - b. Depth of tray should be a minimum of 11 inches;
 - c. Trays should have adjustable and lockable height settings (minimal range of 6 in);
 - d. Trays should have an adjustable and lockable tray tilt feature with ability to negatively tilt; and
 - e. Trays should accommodate pointing device use on the left or right side.

3. Computer Workstations (used continuously for more than one hour by the same employee) should have the following features:
 - a. Surface heights of multi-user stations: Bi-level units should allow the user to easily adjust both keyboard/mouse height and monitor height to proper and comfortable levels. Monitor surface of bi-level workstations should be adjustable down to a height of 27 inches and up to a height of 36 inches; the keyboard/mouse surface should be adjustable down to 22 inches and up to 30 inches. The keyboard/mouse surface height of standing workstations should be adjustable within a range of 37 to 46 in. The keyboard/mouse surface of bi-level stations should have a functional width of at least 26 in and be at least 11 inches deep.

- b. Surface height of single-user stations: Single surface workstations and the keyboard/mouse surface of bi-level workstations should be adjustable down to a height of 22 inches, and up to a height of 30 inches. The keyboard/mouse surface of standing workstations should be adjustable within a range of 37 to 46 inches. The keyboard/mouse surface of bi-level stations should have a functional width of at least 26 in and be at least 11 in deep.
 - c. Table width should be a minimum of 27 inches to allow the mouse to sit beside the keyboard.
 - d. Functional work depth should be at least 30 inches. This may be accomplished with the installation of a keyboard tray. Table depth (without a keyboard tray) should be at least 30 inches deep to allow adequate monitor viewing distance.
 - e. Leg/ Knee clearance (OSHA recommendation): There should be a minimum under-table depth of 17 inches at knee level and 24 inches at foot level. The knee space width should be at least 20 inches.
 - f. Work surface should be no thicker than 2 inches.
 - g. Designs that force the keyboard and mouse to be at different heights (e.g. keyboard cutouts) are not allowed.
 - h. Workstations that are designed for using laptop computers should follow the functional dimensions above. The work surface should provide room to accommodate a separate keyboard, mouse, and monitor (or laptop riser).
 - i. The work surface should have a matte finish to minimize reflections.
4. Lighting Recommendations
- a. Windows that are adjacent to workstations should have blinds/shades installed to control outside light sources.
 - b. The Illuminating Engineering Society of North America recommends that lighting intensities (at the horizontal

work plane) not exceed 500 lx (50 fc) for computer workstations (IESNA, 2000).

Reference: Illuminating Engineering Society of North America (2000). *IESNA lighting handbook* (9th ed.). New York: IESNA.

- B. Laboratory workstations should meet the guidelines listed below. Consult the Americans with Disabilities Act regulations to ensure compliance with facilities designs (i.e. number of ADA workstations per building, dimensions of ADA workstations, etc.).
 - 1. Laboratory stools should have all of the following features:
 - a. Adjustable seat height (21 – 28")
 - b. Independently adjustable seat back height;
 - c. Adjustable, lockable seat back tilt;
 - d. Adjustable armrest height;
 - e. Adjustable armrest width;
 - f. Ability to remove the armrests;
 - g. Waterfall contour of seat pan;
 - h. Minimum five star base; and
 - i. Chair fabric that resists the absorption of liquids and the effects of cleaning agents (e.g. vinyl).
 - 2. Laboratory Workstations:
 - a. Leg/ Knee clearance: There should be a minimum under-table depth of 17 inches at knee level and 24 in at foot level (OSHA). The knee space width should be at least 20 in. Storage areas should be considered when designing labs to prevent equipment storage under seated workstations.
 - b. The work surface should have a matte finish to minimize reflections.
 - c. Ergonomic considerations should be made when designing specialized laboratory workstations (e.g. microscope stations) to decrease exposure to awkward postures and compressive forces. Consultation with EH&S is recommended.
 - 3. Computer workstations located in a laboratory:

- a. Task chairs should have the same features as office task chairs (Section A.1) as well as chair fabric that resists the absorption of liquids and the effects of cleaning agents (e.g. vinyl).
- b. Workstations should follow the standards for computer workstations (Section A.2, A.3) and should comply with the Stanford University Laboratory Standard and Design Guide (<http://www.stanford.edu/dept/EHS/prod/mainrencia/Labdesign.html>).

1.05 EH&S SAFETY REVIEW OF PROJECTS

- A. SDS Review: Contractor shall submit, for review and approval by University, product Safety Data Sheets (SDSs) under the following conditions:
 1. Prior to construction for projects that require large scale use of potentially toxic or odor producing products, e.g., roofing material, paint, epoxy, insecticide, etc., or projects conducted in close proximity to occupied areas.
 2. During construction for large scale use of new, potentially toxic or odor producing products introduced at the project site.
 3. For any product that, when used, will result in the generation of a hazardous waste, e.g., paint strippers, degreasers, etc.
 4. University reserves the right to require substitution of toxic or odor producing products with similar products of lesser toxicity or volatility.
- B. Injury and Illness Program Document Review: Contractor shall have available at the project site for review by the University a written Injury and Illness Prevention Program as required by 8 CCR Section 1509 and described in the following Section 1.06.
- C. Lead Work Plan: If work requires stripping, demolition, abrasive blasting or other means of lead-containing surface coating removal, Contractor shall submit to the University for review and approval a Work Plan that includes a description of the removal method, SDS for all chemical stripping agents, and a description of the control measures that will be used to protect Contractor employees, other individuals in the vicinity of the work and the environment.

- D. Fire Alarm and Suppression System Shop Drawing Review: Contractor shall submit all fire alarm and suppression system shop drawings to the University Fire Marshal's Office for review and approval prior to submitting to the County Fire Marshal for review and permitting. Contractor shall comply with all applicable codes and University Facility Design Standards, including those listed below:
 - 1. 10 44 00 - Fire Extinguishers
 - 2. 21 30 00 - Motor-Driven Fire Pumps and Controllers
 - 3. 21 13 00 - Automatic Sprinkler Systems
 - 4. 28 31 00 - Fire Alarm and Detection Systems
- E. Architectural Drawings Review: Project Manager or architect shall submit architectural drawings to the University Fire Marshal's Office for California Code compliance review and comments.
- F. Playgrounds: All playgrounds and playground equipment constructed or furnished by Contractor shall be fully compliant with California Health & Safety Code Section 115725 and Contractor shall provide a written guarantee to that effect.

1.06 INJURY AND ILLNESS PREVENTION PROGRAM

- A. Contractor shall keep on the project site at all times a written Injury and Illness Prevention Program (IIPP) that fulfills the requirements set forth in 8 CCR Section 1509.
- B. The IIPP shall address all site specific topics pertinent to maintaining a safe and healthy work environment which may include, but is not limited to: safety organization and responsibilities; meetings and inspections; emergency and evacuation plans; hazardous material spill response; incident investigation, reporting and record keeping; training; first aid; hazard communication; housekeeping; noise; personal protective equipment; fire prevention and protection; confined space entry; electrical safety and lockout/tagout; welding, torch cutting and hot work permitting; hand and portable power tools; cranes, heavy equipment, forklifts and motor vehicles; ladders, scaffolds and elevated platforms; guarding of floor and wall openings; fall protection; excavation and trenching; pressurized cylinders; material handling and storage; ventilation; personal hygiene, sanitation and chemical toilets.

- C. The IIPP must include an SDS for each product used at the project site by Contractor and subcontractors.
- D. The IIPP shall include a written Code of Safe Practices as required by 8 CCR Section 1509(b). The Code of Safe Practices shall be posted in a conspicuous location at the project site in accordance with 8 CCR Section 1509(c).
- E. The IIPP must describe measures that the Contractor will implement to ensure the safety of students, faculty, staff, and visitors who are in adjacent occupied building spaces, on public thoroughfares, or who are otherwise in close proximity to the construction activities. The IIPP must also address security measures that will be used to prevent unauthorized entry to the site.
- F. Contractor shall ensure that all Contractor employees, subcontractors, vendors, visitors or others entering or working at the project site comply with applicable IIPP provisions.
- G. Contractor shall comply with Title 87 of the California Fire Code for fire safety during construction, alteration or demolition of a building.

1.07 GENERAL SAFETY REQUIREMENTS

- A. Compliance and Enforcement: Contractor shall comply with all federal, state and local laws and regulations pertaining to employee health and safety at its work sites. As a Prime Contractor on a multi-employer work site, Contractor is also charged with certain compliance obligations under Cal/OSHA regulations, 8 CCR Section 336.10, to ensure subcontractors follow safe work practices. The University will enforce contractual obligations contained herein including, but not limited to, the following actions:
 - 1. Any Contractor who does not provide safe working conditions or does not follow safe work practices shall be removed from University's approved bidder list and shall not be considered for further work.
 - 2. Any hazardous condition, as defined by Cal/OSHA, that is created by the Contractor and is allowed to persist on the project site shall be considered a breach of contract.
 - 3. Contractor shall be required to remove and replace any employee who allows an unsafe condition to exist on, or adjacent to, the project site.

4. Contractor shall be required to remove and replace any unsafe equipment used on the project site.
 5. If, after due notice, Contractor permits an unsafe, life-threatening condition to exist on the project site and does not correct it in a timely manner, the University will take whatever action is necessary to remedy the condition, including stopping the work or using other forces as may be necessary to complete the work. Contractor shall be responsible for both direct and indirect costs incurred by the University to remedy the unsafe condition.
- B. Noise and Vibration Control: Contractor shall take all means necessary to minimize the amount of noise and vibration generated from the project site and shall comply with Santa Clara County Ordinance Sec. B11-190 et seq. Additional project-specific noise reduction measures or restriction of work hours for noisy work may be required by the University.
 - C. Dust Control: Contractor shall take all means necessary to minimize the amount of dust generated at the project site and shall use water spray or other means to control visible airborne emissions.
 - D. Traffic Control: Contractor shall comply with all provisions of the Cal/OSHA construction standard for Traffic Control for Public Streets and Highways, 8 CCR Section 1598. Stanford University Department of Public Safety must also review and approve a Traffic Control Plan.
 - E. Pest Control: Contractor shall ensure that the quality of work is such that rats and other vermin generally will not have access to the building. New and renovated structures shall be inspected for adequate pest-proofing prior to final acceptance of the work. Particular attention shall be given to floor, wall, ceiling and roof penetrations for piping, vents, etc., to ensure proper finishing.
 - F. Chemical Toilets: If applicable, Contractor shall supply chemical toilets in sufficient numbers on the Project site. Toilets shall comply with County requirements and shall be cleaned at least weekly by an approved septic tank pumper.
 - G. Explosives: With the exception of powder-actuated tools and, unless otherwise specified, explosives shall not be used.
 - H. Hazardous and Flammable Material Storage: All hazardous or flammable chemicals, liquids or gases brought onto the project site shall be used and stored in approved containers conforming to

applicable federal, state and local codes. Contractor is responsible for securing permits, if applicable, for the temporary storage of hazardous materials on the project site. Hazardous materials shall be used and stored in a manner that will prevent their accidental release. Liquid hazardous materials, including stationary fuel tanks, shall have a secondary containment equal to 110% of the liquid volume. Additional provisions for use and storage of hazardous materials are addressed in the Storm Water Pollution Prevention Plan requirements enclosed in contract documents.

- I. Hazardous Material Spill Clean-up and Reporting: Contractor shall ensure that spills and releases of hazardous materials are contained and cleaned-up immediately and that all necessary means and materials are maintained at the project site to accomplish this task. If the release contains a fire, explosion or otherwise threatens the health of any person, Contractor shall immediately request emergency response by calling 911. Any potential or actual non-health threatening releases which may impact the environment such as to soils, creeks or storm drains must be reported to EH&S at 725-9999. Contractor shall clean up all small spills that do not threaten the environment and notify the University as soon as possible. The University reserves the right to require Contractor to provide additional remediation of soils or other porous surfaces found to be contaminated as a result of hazardous material spills. All spill cleanup materials must be properly contained by the contractor and managed as hazardous waste in accordance with Section 1.08. Follow Stanford University's Emergency and Spill Response Notifications for Constructions Projects:

Stanford University Emergency and Spill Response Notifications For Construction Projects

IF: Health Threatening Situation - In the event of an imminent or actual emergency that threatens local or public health or safety; or the environment outside the immediate area:

- 1) **CALL 911 (9--911 –campus phone)**
FOR THE FIRE DEPARTMENT.
 - IF CALLING FROM CELL PHONE, PROVIDE YOUR LOCATION.
 - REMAIN IN THE AREA.
- 2) **ACTIVATE LOCAL ALARM SYSTEM**
- 3) Once personal safety is established, proceed with non--health threatening actions and notifications, below.
- 4) **CALL Stanford’s Maintenance Customer Service at 650--723--2281.**

IF: Release to Environment, Non-Health Threatening Situation – In the event of a spill or release to the environment (storm drain, soil) or spill or release greater than one quart of diesel/fuel/oil * see note below:

- 1) **Contain spill with kitty litter or other absorbent material.**
- 2) **Look in storm catchment basins, drains, gutters to determine if spilled material was released to storm/drain.**
- 3) **Protect storm drains from spilled material. Use “Drain Blocker” pad or similar to cover any threatened storm drain.**
- 4) **Notify Stanford EH&S as soon as situation allows 650-725-9999**
 - State what happened, estimate how much was spilled
 - Your name
 - Location and time of incident
 - What is needed to clean up spill
 - Request containers for waste
- 5) **Notify: Stanford’s Maintenance Customer Service at 650-723-2281.**

Summary Emergency Phone Numbers

Emergency Off Campus	911
Emergency On Campus	9-911
Emergency From Cell Phone	
Stanford Environmental Health and Safety	650-725-9999
Stanford Maintenance Customer Service	650-723-2281

- A. All spills of any other hazardous materials must be reported to EH&S (650-725-9999)

IF: Small Fuel or Oil Spill, No Release to Environment

- 1) Clean up drips and small spills with absorbent material.
- 2) Put contaminated absorbent materials in a labeled hazardous waste container.
- 3) Call EH&S at 650-725-9999 to log any fuel/oil spills greater than 1 quart.
- 4) Replenish absorbent materials for next use.

1.08 HAZARDOUS MATERIALS HANDLING AND DISPOSAL

A. Hazardous Waste – General

1. Contractor shall make every effort to minimize the amount of hazardous waste generated from construction activities. The University reserves the right to require substitution of products that generate toxic waste, (e.g., paint strippers, degreasers, etc.) with products of lesser toxicity.
2. Unless otherwise specified, all generated hazardous waste shall be disposed of through the EH&S Environmental Protection Program (EPP). Contractor shall properly contain and label such waste as it is generated. Contractor shall notify the Project Manager at least one week in advance to request waste containers and/or labels if necessary. Contractor shall not begin generating hazardous waste until proper waste containers and labels are on site. Contractor shall store waste containers in a secure location on the job site with lids closed. Contractor shall notify the Project Manager to request pickup of hazardous wastes.

B. Universal Waste Recycling

1. Contractor shall comply with California DTSC regulations pertaining to universal waste, 22 CCR §66273.10 et seq. Unless otherwise specified, Contractor shall carefully remove regulated devices and building components scheduled for demolition intact and segregate them from other construction debris. Contractor shall arrange for packaging, labeling, pickup, transport, and recycling of all universal wastes identified in this subsection and shall submit to the University receipt(s) that document compliance with this provision. Contractor shall only use recycling vendors that have been pre-approved by the University.
2. Light Tubes, Bulbs and Lamps: Fluorescent light tubes and bulbs, high intensity discharge (H.I.D.), metal halide, sodium and neon bulbs contain mercury vapor. Such lamps scheduled for demolition shall be removed from their fixtures unbroken and recycled through a University pre-approved vendor.
3. Other Mercury-Containing Devices: Thermostats, fire alarm pull stations, switches, thermometers and pressure and vacuum gauges may contain mercury. All mercury-containing devices scheduled for demolition shall be removed intact,

segregated from other construction debris and recycled through a University pre-approved vendor.

4. Batteries: Batteries may contain lead, mercury, lithium, cadmium and other toxic metals. Contractor shall remove batteries from devices scheduled for demolition including, but not limited to, emergency lighting and alarms, communication systems, security systems, etc. Batteries shall be removed intact, segregated from other construction debris and recycled through a University pre-approved vendor.
 5. Electronic Devices (E-Waste): Electronic devices and components including, but not limited to, televisions and computer monitors, computers, printers, VCRs, CD and DVD players, telephones, radios, microwave ovens, smoke detectors, communication, security, fire protection, lighting and mechanical system components may contain heavy metals such as lead, mercury, chromium and cadmium. Electronic devices and components scheduled for demolition shall be removed intact and recycled through a University pre-approved vendor.
- C. Treated Wood Waste (TWW)
1. “Treated wood” means wood that has been treated with a chemical preservative for purposes of protecting the wood against attacks from insects, microorganisms, fungi, and other environmental conditions that can lead to decay of the wood and the chemical preservative is registered pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. § 136 et seq.). Treated wood includes, but is not limited to, wood treated with alkaline copper quaternary (ACQ); copper azole (CA-B); copper boron azole (CBAA); chromated copper arsenate (CCA); ammoniacal copper zinc arsenate (ACZA); creosote; pentachlorophenol and copper naphthenate.
 2. Contractor shall manage, handle, store, label, transport, track and dispose of treated wood waste (TWW) in accordance with DTSC requirements as specified in 22 CCR §67386.1 et seq.
 3. Contractor shall not reuse TWW and shall use one of the following methods for on-site storage: 1) covered and off of the ground in a secured area; 2) in closed, water resistant containers; 3) inside a weather tight structure; 4) covered on a pad that is protected from run-off.

4. Contractor shall ensure that any size reduction of TWW is conducted in a manner that prevents the uncontrolled release of hazardous constituents to the environment, and that conforms to applicable Cal/OSHA worker health and safety requirements. All sawdust and other particles generated during size reduction shall be captured and managed as TWW.
5. Disposal of TWW is restricted to landfill(s) pre-approved by the university and California Department of Toxic Substances Control. A list of approved landfills is available at: <http://www.dtsc.ca.gov/HazardousWaste/upload/lanfillapr11pdated1.pdf>. Contractor shall provide to University a bill of lading or other documentation with an acceptance signature by the landfill for all TWW shipments.

D. Asbestos-Containing Materials

1. To the extent feasible, University will notify Contractor of the location and quantity of asbestos-containing materials (ACMs) known to be present at the work site.
2. ACMs that are likely to be disturbed by renovation or demolition shall be removed or protected prior to commencement of other construction activities. No one shall remove, repair, disturb or transport any asbestos-containing materials except University approved, DOSH registered Asbestos Abatement Contractors working in compliance with the University's Asbestos Abatement Specification.
3. Contractor may encounter hidden ACMs during demolition activities, e.g., asbestos insulated pipes or ducts inside wall cavities, etc. If Contractor observes such ACMs in poor or damaged condition, or if Contractor inadvertently damages or disturbs previously identified ACMs or suspected ACMs, the Project Manager and EH&S shall be notified immediately. Contractor shall post asbestos warning signs/labels that comply with 8 CCR Section 1529 (k) upon discovery of hidden ACMs. Contractor may request assistance with posting asbestos warning signs or labels from the University.

E. Polychlorinated Biphenyls (PCBs)

1. Fluorescent Light Ballasts: All fluorescent light fixture ballasts manufactured prior to 1978 are assumed to contain PCBs and shall be disposed of as hazardous waste in accordance in Section 1.07(A)(2). With the exception of electronic ballasts, all

ballasts manufactured after January 1, 1978 and specifically labeled "No PCBs" may be disposed of as non-hazardous construction debris. All ballasts that do not contain a "No PCBs" label shall be removed from light fixtures, segregated from other construction debris and disposed of as hazardous waste.

2. Equipment: Pre-1978 insulating oils associated with high voltage equipment, such as transformers and capacitors, and elevator hydraulic fluid may contain PCBs. Equipment containing PCB shall be decontaminated prior to demolition. Extraction of PCB-containing oils and decontamination of equipment shall be performed in accordance with Cal/OSHA worker protection requirements. Recovered oil containing PCB shall be disposed of as hazardous waste.
3. Caulking: Exterior caulking applied to building surfaces and seams prior to 1978 may contain PCBs. Caulking found to contain more than 50 ppm PCB shall be removed, contained and disposed as hazardous waste in accordance with applicable U.S. EPA and Stanford EH&S requirements.

F. Lead

1. Paint and Other Surface Coatings
 - a. Unless otherwise determined by approved testing methods, all paints and surface coatings, e.g., varnish, shellac, stain, lacquer, etc., applied to University structures are presumed to contain some amount of lead.
 - b. Contractor shall take all necessary precautions to protect Contractor employees, subcontractors, students, visitors, University employees and the environment from exposure to lead-containing dust and debris. Contractor shall comply with the Cal/OSHA lead standard for the construction industry, 8 CCR Section 1532.1, which applies to any construction activity that may release lead dust or fume including, but not limited to, manual demolition, manual scraping, manual sanding, heat gun applications, power tool cleaning, rivet busting, abrasive blasting, welding, cutting or torch burning of lead-based coatings.

- c. If Work includes residential buildings, child care facilities or pre-schools constructed prior to 1978, Contractor shall comply with the Federal EPA Renovation, Repair and Painting Rule (RRP Rule, 40 CFR 745, Subpart E). Contractor shall provide proof of current lead certification that meets EPA requirements. A copy of the certificate shall be included in the Lead Work Plan submission as required by Section 104(C).
 - d. The University shall provide existing lead analysis data of surface coatings where available. However, these data are not intended, and do not represent, an evaluation of all potential lead-containing coatings at the project site and Contractor is solely responsible for determining lead content for Cal/OSHA compliance purposes.
 - e. Painted Construction and Demolition (C&D) debris from pre-1978 structures shall not be disposed or recycled until a hazardous waste characterization has been performed by EH&S. Contractor shall properly package, label and transfer to EH&S for disposal designated C&D debris found to qualify as hazardous waste.
 - f. Where feasible, Contractor shall clean sheet plastic used for regulated work area isolation (containment) or drop cloths and discard as non-hazardous waste.
 - g. Pressure Washing: Contractor shall not pressure wash the exterior of any pre-1978 structure where peeling paint or damaged substrate could result in the release of paint chips. Contractor shall be responsible for all direct and indirect costs associated with remediation of soils found to be contaminated with lead-containing paint chips resulting from noncompliance with this provision.
2. Elemental Lead: Products containing lead metal such as plumbing components, lead bricks, counterweights, and sheet goods (e.g., roof flashing, X-ray shielding, drain pans, etc.) may be encountered during demolition. Unless otherwise specified, Contractor shall remove and segregate lead metal scheduled for demolition from other construction debris and transport it to a scrap metal recycling facility pre-approved by the University.

G. Mechanical System Fluid

1. All fluids associated with mechanical systems and equipment scheduled for demolition or retrofit shall be removed and recycled or disposed as hazardous waste. Contractor shall arrange for recycling of petroleum containing fluids such as hydraulic fluids, lubricating oils, and non-PCB-containing insulating oils through a University pre-approved vendor.
2. Refrigerants shall be removed from equipment and managed by a certified refrigerant technician pursuant to 40 CFR 82.161 (Type I for small appliances, Type II for high-pressure equipment). Venting of refrigerant to the atmosphere is not allowed. All refrigerant removed must be reclaimed, recovered, or recycled in accordance with 40 CFR 82.150-166 and Appendices.

H. Laboratory Decommissioning and Closure

1. The University's laboratory decommissioning protocols require removal of all hazardous chemical, radioactive and biohazardous materials and associated wastes followed by decontamination of surfaces and equipment prior to transfer of such project areas to Contractor. Facilities that have housed radioactive material, or that contain materials activated by radiation beams must be surveyed and cleared by the University prior to release to Contractor.
2. Laboratory Sink P-Traps: Laboratory sink p-traps are presumed to contain mercury contamination as a result of thermometer breakage. P-traps scheduled for demolition shall be removed by Contractor, placed in leak-tight containers and transferred to the University for disposal in accordance with Section 1.07(A)(2).
3. Unless otherwise specified, Contractor shall not demolish or disturb building components used for chemical transport, treatment or storage unless such systems have been inspected and released by EH&S. Such building components may include, but are not limited to, fumehood and local chemical exhaust systems, lab vacuum systems, acid vent and neutralization piping, lab waste piping, toxic gas system equipment and piping, and chemical or chemical waste storage tanks. If Contractor encounters on the project site potentially hazardous materials such as abandoned chemical reagents, containers or equipment with radioactive labels, biohazard

(red) disposal containers or syringes, Contractor shall contact the Project Manager immediately.

I. Radioactive Building Materials

1. Non-powered emergency exit signs scheduled for demolition may contain tritium, a radioactive material. Contractor shall carefully remove such signs intact and transfer them to the University for disposal. A label on the lower edge of the sign that features a radiation symbol can be used to identify tritium exit signs.
2. Ionization smoke detectors may contain small amounts of Americium, a radioactive element. Contractor shall carefully remove smoke detectors scheduled for demolition intact and transfer to the University for disposal.

J. Mold

1. Unless otherwise specified, if Contractor encounters on the project site significant quantities (> 10 square feet) of mold growth, Contractor shall report such condition to the Project Manager.
2. Contractor shall protect the project site and new construction products from exposure to excess moisture and shall ensure that construction products are adequately dry prior to installation. Contractor shall remove and replace all porous building materials and replace or disinfect all non-porous building materials that display visible mold growth resulting from moisture intrusion, unless such moisture intrusion was caused by circumstances outside of Contractor's control.

K. Miscellaneous Hazardous Materials

1. If Contractor encounters potentially hazardous materials or waste on the project site not previously addressed under this section such as abandoned paint containers, pesticides, compressed gas cylinders, etc., or if Contractor encounters any unusual odors or colors (staining) during drilling or excavation of soils, Contractor shall report such conditions to the Project Manager.

1.09 LABORATORY STANDARDS & DESIGN GUIDE

- A. Stanford University has a continuing need to modernize and upgrade its facilities. The resulting construction projects often have significant health and safety requirements due to regulatory oversight. Since these requirements can impact the design of a project, Environmental Health and Safety (EH&S) prepared this EH&S Laboratory Standard & Design Guide to aid the campus community with planning and design issues. EH&S believes that the Guide, in conjunction with EH&S's plan review and consultation, improves design efficiency and minimizes changes.

The Laboratory Standard & Design Guide is available at:

<https://ehs.stanford.edu/manual/laboratory-standard-design-guidelines>