



West Virginia University®

ENVIRONMENTAL HEALTH & SAFETY

SAFETY REQUIREMENTS
FOR
CONTRACTORS
AND SUBCONTRACTORS

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WEST VIRGINIA UNIVERSITY

**SAFETY REQUIREMENTS FOR CONTRACTORS AND
SUBCONTRACTORS**

VARIOUS SUBPARTS OF OSHA 29 CFR 1910 and 1926

TABLE OF CONTENTS

1. INTRODUCTION	3	10. BARRICADING AND FENCING	8
2. PURPOSE	3	11. CONFINED SPACE ENTRY	9
3. OBJECTIVES	3	12. LOCKOUT/TAGOUT	10
4. DEFINITIONS	3	13. FALL PROTECTION	11
5. RESPONSIBILITIES	4	14. HOT WORK	12
5.1. Contractor Responsibilities.....	4	15. MOLD	12
5.2. Project Manager Responsibilities...	4	16. SCAFFOLDING	13
5.3 Environmental Health and Safety		17. PERSONAL PROTECTIVE EQUIPMENT .	14
Responsibilities	5	18. HAZARD COMMUNICATION	15
6. ACCOUNTABILITY	5	19. TRENCHING AND EXCAVATING	16
7. GENERAL INFORMATION	5	20. HAND AND POWER TOOLS	17
7.1. Accidental Spills and Releases	5	21. HAZARDOUS WASTE	18
7.2. Emergency Notification System	5	22. MERCURY-CONTAINING LAMPS	19
7.3. Means of Egress.....	5	23. FLUORESCENT LIGHT AND BALLAST	
7.4. Fire Protection and Suppression		DISPOSAL	20
Systems.....	6	24. ELECTRICAL SAFETY	21
7.5. Building Alarms	6	25. BLOODBORNE PATHOGENS	21
7.6. Compressed Gas	6	26. POWERED INDUSTRIAL TRUCKS	22
7.7. Temporary Structures	6	27. NOISE	23
7.8. Temporary Traffic Control	6	28. STORMWATER MANAGEMENT	23
7.9. University Equipment.....	6	29. MOBILE CRANES	24
7.10. Utilities	6	30. LEAD CONTAINING BUILDING MATERIAL	
7.11. Flammable and Combustible		25
Liquid Storage	6	31. ROOF ACCESS	26
8. ASBESTOS AND SUSPECT ASBESTOS		32. SILICA (RESPIRABLE CRYSTALLINE)	26
CONTAINING MATERIALS	7	33. BIOLOGICAL SAFETY HAZARDS	27
9. INDOOR AIR QUALITY	7	34. HEAVY EQUIPMENT	28

1. INTRODUCTION

For each project, the Contractor has the primary and ultimate responsibility for safety. Neither this Guidebook nor any other communications from representatives of the University reduces the Contractor's responsibility to create and maintain a safe project. West Virginia University believes that effective contractor safety programs enhance projects by assisting Contractors in systematically identifying and evaluating anticipated hazards and establish controls in advance of actual work.

2. PURPOSE

The purpose of this document is to promote a culture of safety and to facilitate a safe working environment for West Virginia University (WVU), staff, employees, public, and all workers including contractors and subcontractors on WVU renovation, construction, demolition, installation, and maintenance projects.

3. OBJECTIVES

To provide contractors with a clear and concise understanding of the safety requirements and responsibilities while working on WVU property, as well as, to reduce exposures that cause personal injury, property damage, and liability losses due to construction, renovation and demolition of WVU owned buildings and facilities.

4. DEFINITIONS

Competent Person: As related to excavation, trenching or shoring work, the Contractor's "competent person" means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Confined Space: A confined space is a space that is large enough for a person to enter, that has limited means for entry or exit, and that is not designed for continuous occupancy. Examples include tanks, silos, storage bins or hoppers, utility vaults, and pits.

Contracting Department: The department at WVU that has contracted for work to be performed by a Contractor. In regard to agencies/firms conducting work on WVU property, where no formal contractual relationship exists between WVU and the agency/firm, the department that is coordinating or approving the work of the agency/firm is the Contracting Department.

Contractor: An entity or agency employed by WVU to perform the installation or maintenance of equipment, or the renovation or construction of a building, room or space on university property, or that provides services to WVU on WVU property including, but not limited to, vending and the supply and erection of tents.

Friable Asbestos: Any material containing greater than 1% asbestos that is capable of being reduced to powder by hand pressure when dry, or a non-friable asbestos material that is subject to grinding, sanding, cutting or abrading or that is otherwise rendered friable by other means.

Lockout/Tagout: A program used to ensure that employees are protected from sources of potentially hazardous energy. The program requires that hazardous energy sources be identified and locked and/or tagged-out before service and/or maintenance is performed on the system(s).

Permit-required confined space: A permit-required confined space is a confined space that contains potential or known safety hazards that must be dealt with prior to or during entry to assure the safety of those employees performing the work.

Regulated Asbestos-Containing Material (RACM): Means (a) friable asbestos containing material (ACM), (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be, or has been, subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming, or has become, crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

Serious, willful safety violation: "Serious, willful safety violation" is defined, for the purposes of this program, as a work activity with a substantial probability that death or serious physical harm could result and where the hazard was known or should have been known, but where the work activity was continued regardless of the existence of the safety hazard.

WVU Project Manager: The representative from WVU that coordinates the work of the architect/engineer related to capital construction and/or renovation projects.

5. RESPONSIBILITIES

5.1. Contractor Responsibilities

- Contractors are expected to implement their own environmental, health and safety programs.
- Prior to starting a project, each contractor is required to review the work site and identify hazards that may occur while performing the job.
- The contractor shall ensure proper environmental, health and safety precautions are followed in accordance with the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA) Code of Federal Regulations (CFR).
- The contractor shall ensure individuals working at the site are trained and are aware of potential hazards. Contractors shall also ensure that these individuals are provided with proper safety equipment to prevent accidental injury in accordance with the OSHA CFR.
- The contractor shall ensure all personnel follow the guidelines and policies of OSHA, EPA, and WVU in addition to any guidelines of the jurisdiction(s) in which the operations will be performed.
- Prior to the start of the project, the contractor shall contact Facilities Management, Planning Design and Construction, and/or the WVU Project Manager to ensure that they have received pertinent information for the project including permits, floor plans, and utility information.

5.2 WVU Project Manager Responsibilities

- Ensure contractors are aware of their responsibilities and follow WVU Environmental Health and Safety (EHS) guidelines.
- Ensure contractors have their own environmental, health and safety programs in place in accordance with federal and local regulations.

- Ensure all potential work-site hazards are addressed in the pre-construction planning process.
- Notify WVU EHS of any new developments in the project potentially affecting site environmental health and safety hazards.

5.3 WVU Environmental Health & Safety Department (EHS)

Environmental Health and Safety's (EHS) mission is to promote and advance a culture of commitment to protecting people, property and the environment through innovation, leadership and customer service. EHS supports contractors by:

- Helping individuals and departments achieve compliance with all environmental, health and safety regulations and university polices as economically as possible,
- Acting as a liaison with external regulatory agencies, and
- Monitoring university compliance with mandatory environmental, health and safety design standards where necessary.

6. ACCOUNTABILITY

All contractors performing inspections, construction, and repairs at WVU are to comply with the requirements of this manual including all applicable laws and regulations and for communicating the information to their employees and subcontractors. Failure to adhere to these requirements may result in an immediate shutdown of the work site and a breach of contract with WVU.

7. GENERAL INFORMATION

7.1 Accidental Spills and Releases

- In the event of an accidental release or spill of chemicals or other hazardous materials by the contractor, the contractor shall:
 - Immediately take appropriate action to contain the spill if this action can be taken without jeopardizing the health or safety of employees.
 - Contacts EHS at 304-293-3792 or call the University Police Department (UPD) at 304-293-3136 after hours.
 - Contact the WVU Project Manager.
 - Costs associated with responding to or remediation of a chemical or hazardous material spill or release may be assessed to the contractor.

7.2 Emergency Notification System

- In the event of a campus emergency please visit WVU Emergency Information Page to receive up-to-date information on emergencies occurring on the Morgantown campus.

7.3 Means of Egress

- The contractor shall not conduct work that obstruct exits or means of egress from an occupied building without prior approval of EHS and the WVU Project Manager.
- Equipment and materials are not to be stored in exits or exit stairwells at any time and may not be stored in the means of egress without prior approval.
- Fire-rated doors shall not be chocked or blocked open, except temporarily and while constantly supervised.

- Chocks and blocked doors must be immediately removed in the event of a building fire alarm or similar emergency.
- Structures undergoing construction, alteration or demolition operations shall comply with NFPA 241.
- Contact EHS at 304-293-3792 or visit WVU EHS website for more information.

7.4 Fire Protection and Suppression Systems

- The contractor shall not conduct any work that disables or alters the functionality of the fire protection and suppression systems without prior approval of the WVU Project Manager. EHS must be notified and will secure any external approvals as required.
- These systems include, but are not limited to, fire-rated assemblies and enclosures, smoke barriers and partitions, fire alarm panels, exit signs and emergency lighting, sprinkler, and other suppression systems, heat and smoke detection, fire hydrants, fire department access, and fire pumps.
- Structures undergoing construction, alteration or demolition operations shall comply with NFPA 241.
- Contact EHS at 304-293-3792 or visit WVU EHS website for more information.

7.5 Building Alarms

- In the event of a fire, sound the alarm and call 911 to report important information to the dispatcher.
- Contractors shall respond quickly and safely to all alarms by exiting the building immediately and remaining at least fifty (50) feet from the building.

7.6 Compressed Gases

- Use and storage of compressed gas shall comply with NFPA 55.
- Use and storage of liquid petroleum (LP) gas shall comply with NFPA 58.

7.7 Temporary Structures

- All temporary structures and tents shall comply with 2015 NFPA 101 Section 11.10 and 11.11.

7.8 Temporary Traffic Control

- Traffic control measures shall be followed per the WV Division of Transportation and Highways.

7.9 WVU Equipment

- If WVU loans equipment such as forklifts, aerial lifts and ladders to a contractor, the contractor is responsible for providing proper safety training and assuring the competence of the operator to use the equipment safely and is accepting the liability for all damages to the equipment that may occur while in his or her possession.

7.10 Utilities

- Prior to work, call Miss Utility at 811 or 1-800-245-4848 and WVU Facilities to have all utilities marked and mapped out prior to the beginning of work.

7.11 Flammable and Combustible Liquid Storage

- All flammable and combustible liquid storage shall comply with NFPA 30 and OSHA 29 CFR 1926.152.

8. ASBESTOS and SUSPECT ASBESTOS CONTAINING MATERIAL

8.1 General

- WVU buildings built pre-1980 are assumed to contain asbestos until proven otherwise by EHS. Types of asbestos containing material (ACM) found in WVU buildings include, but are not limited to:
 - Thermal system insulation (pipe, boiler, breaching, fume hoods)
 - Fireproofing (spray-applied insulation, fire doors)
 - Compounds (caulking, mastics, adhesives, plaster, joint compound)
 - Flooring (vinyl floor tile, sheet goods, resilient)
 - Textiles (cloth, rope, fire curtains)
 - Cementitious (countertops, chalk boards, roofing and siding shingles)
 - Acoustical (ceiling and wall tile)

8.2 Responsibilities

- Before undertaking any projects of repair, renovation or construction that may impact asbestos, contractors shall:
 - Request the location of asbestos containing building materials in the work area from the WVU Project Manager.
 - Ensure all work is compliant with all applicable federal and local regulations.
 - Understand if a suspect material is encountered, they should immediately stop work and notify WVU EHS.
 - In the event that asbestos is impacted, take all necessary precautions to protect WVU employees, students and visitors from the exposure to asbestos fibers or contamination.
 - Make certain that their employees and subcontractors have had the appropriate level of awareness training as required by OSHA.
 - If negative exposure assessments are mutually agreed upon, the contractor will perform the evaluation and provide their employees with the appropriate personal protection.
 - Contact the WVU Project Manager and/or WVU EHS 304-293-3792 with any questions regarding asbestos.

8.3 Regulations

- OSHA 29 CFR 1910.1001, Toxic and Hazardous Substances;
- OSHA 29 CFR 1926.1101, WV Title 64-Series 63, Asbestos Construction;
- DOT 49 CFR 171-172, Hazardous Materials Transportation Regulation; and
- EPA 40 CFR 61, Subpart M, National Emissions Standards for Hazardous Air Pollutants

9. INDOOR AIR QUALITY

9.1 General

- Many construction-related activities generate and disperse contaminants that adversely impact indoor environmental quality include, but not limited to:

<u>Activity</u>	<u>Contaminant/Physical Agent</u>
Sanding and grinding	Dust, fibers & particulates
Roofing and flooring	Noise, Vibration
Demolition	Volatile organic compounds
Welding and cutting	Lead, carbon monoxide, ozone

9.2 Responsibilities

- Prior to performing construction-related activities including repair projects, contractors shall eliminate or minimize any potential contaminant/physical agent exposures by implementing the following procedures:
 - Maintain good housekeeping habits to contain dust and construction debris. Use a HEPA filtered vacuum to minimize recirculation of contaminants.
 - Implement engineering controls, such as dilution or local exhaust ventilation and isolation of mechanical systems.
 - Install critical barriers made of polyethylene sheeting on doors, windows, vents, etc. to isolate the specific work area.
 - To minimize dust, use wet methods when appropriate.
 - Have trained employees and approved equipment on site prior to performing work.
 - Conduct work activities in a safe manner.
 - Use the least toxic material suitable for the application (for example, latex paint rather than oil-based paint).
 - Communicate with WVU Project Manager to implement effective strategies (for example, working off hours) to minimize occupant exposure.
 - Relocate sources of contamination (for example, a diesel generator or tar kettle) away from the building air intake.

9.3 Regulations

- Current OSHA permissible exposure limits (PELs) and any other applicable regulations.

10. BARRICADING AND FENCING

10.1 General

- While a barricade shall be used wherever necessary for the physical protection of people or property, the following is a list of activities where one may be required:
 - Wherever construction debris has the potential to be dropped without the use of an enclosed chute.
 - Areas with temporary wiring operating at more than 600 volts.
 - Work areas for electrical equipment with exposed, energized parts.
 - The swing radius of the rotating superstructure of cranes or other equipment.
 - Wherever equipment is left unattended near a roadway at night.
 - Excavations.
 - Areas used for the preparation of explosive charges or blasting operations.
 - Street openings, such as manholes.
 - Construction areas in energized electrical substations.

10.2 Responsibilities

- The contractor shall:
 - Erect and maintain for the duration of the contract proper barricades including fencing material, traffic cones, A-frames, caution tape and temporary curb ramps complying with all access codes and regulations at all closed crosswalks and existing closed curb ramps.
 - Obtain all applicable permits required by the regulations.
 - Furnish, erect, and maintain all necessary signs, barricades, lighting, fencing, bridging, and flaggers that conform to the requirements set forth by OSHA.

- Ensure that no construction materials be stored and/or placed on the path-of travel.
- Maintain the construction barriers in a sound, neat, and clean condition.
- Not occupy public sidewalks except where pedestrian protection is provided. The contractor shall not obstruct free and convenient approach to any fire hydrant, alarm box or utility box.
- Remove barriers and enclosures upon completion of the work in accordance with applicable regulatory requirements and to the satisfaction of WVU.
- Provide protection for pedestrians consistent with all local and federal requirements, including the Americans with Disabilities Act.

10.3 Regulations

- OSHA 29 CFR 1926 Subpart G – Signs, Signals, and Barricades;
- OSHA 29 CFR 1926 Subpart T – Demolition;
- OSHA 29 CFR 1926 Subpart K – Electrical;
- OSHA 29 CFR 1926 Subpart N – Cranes, Derricks, Hoists, Elevators, and Conveyors;
- OSHA 29 CFR 1926 Subpart O – Motor Vehicles, Mechanized Equipment, and Marine Operations;
- OSHA 29 CFR 1926 Subpart P – Excavations;
- OSHA 29 CFR 1926 Subpart U – Blasting and Use of Explosives;
- OSHA 29 CFR 1910 General Industry, and
- Any other applicable regulations.

11. CONFINED SPACE ENTRY

11.1 General

- Types of confined space entries include, but are not limited to: manholes (telecommunication, steam, water-meter, etc.), Heating, Ventilation, and Air Conditioning (HVAC) systems, crawlspaces, boilers, injector pits and tanks.

11.2 Responsibilities

- The contractor shall:
 - Identify permit-required confined spaces.
 - Evaluate each confined space for the following:
 - Presence of explosive gases equal to or greater than 10% of lower explosive limit (LEL),
 - Oxygen Deficiency and Oxygen Enriched Atmospheres,
 - Concentrations of Carbon Monoxide and Hydrogen Sulfide, and
 - Electric shock, burns, walking/working surfaces, heat stress, noise hazards, and/or any other recognized hazard.
- Control potential hazards with the following measures:
 - Mechanical – Use proper lockout/tagout procedures when needed to prevent hazards within the confined space.
 - Ventilation – If exposed to harmful vapors or an oxygen deficient atmosphere exists, a ventilation fan shall be used for the duration of the job.
 - Slips and Falls – Use caution if shoes and/or ladders are wet or oily. Inspect shoes prior to entry.

- Burns and Heat Stress – The use of a ventilation fan will provide cooler temperatures. Use caution around hot equipment and avoid overexertion within the space. Take frequent breaks if needed.
- To prevent an explosion, do not use equipment that may cause flame or sparks in an oxygen-enriched atmosphere.
- Personal protective equipment (goggles, gloves, dust mask, respirator) shall be worn when a potential hazard exists.
- Obtain any available information about permit space hazards and entry operations from the WVU Project Manager or EHS.
- Evaluate and monitor confined space hazards.
- Coordinate entry operations when employees are working in or near the area.
- Inform the project coordinator of entry procedures that will be followed and of any hazards identified or created.
- Provide documentation of the contractor’s entry procedures to EHS upon request.

11.3 Emergencies

- In the event of an emergency requiring entry rescue services, the attendant shall immediately CALL 911. Only a trained rescue team can perform emergency rescues.

11.4 Regulations

- OSHA 29 CFR 1910.146, Permit Required Confined Spaces;
- OSHA 29 CFR 1926.353(b) Ventilation for Welding, Cutting, and Heating; and
- Any other applicable regulations.

12. LOCKOUT/TAGOUT

12.1 General

- Hazardous energy must be isolated or “locked and tagged out” before servicing and/or maintenance activities are performed. The following types of hazardous energies typically found at WVU including, but not limited to:
 - Electrical
 - Pneumatic
 - Mechanical
 - Thermal
 - Hydraulic
 - Chemical

12.2 Responsibilities

- When performing service or maintenance activities, the contractor shall:
 - Have a lockout/tagout program prior to performing work.
 - Have trained employees prior to performing work.
 - Understand and comply with the WVU Control of Hazardous Energy (Lockout/Tagout) Program.
 - Inform the WVU Project Manager and EHS if their program deviates from the WVU program.
 - Coordinate with WVU representatives prior to performing service or maintenance activities that require locking and tagging out equipment and/or systems.
 - Provide contractor-issued lockout/tagout equipment that meets OSHA standards.

- Perform service and maintenance where lockout/tagout is required in accordance with OSHA standards.
- Follow special procedures for jobs requiring multiple lockout devices and those involving shift or personnel changes.

12.3 Regulations

- OSHA 29 CFR 1910.147, The Control of Hazardous Energy;
- OSHA 29 CFR 1926.417, Locking and tagging of circuits; and
- Any other applicable regulations.

13. FALL PROTECTION

13.1 General

- Contractors working at unguarded locations above six feet must provide their employees with fall protection. Potential activities requiring fall protection may include working on:
 - Portable and fixed ladders
 - Aerial lifts
 - Scaffolds
 - Roofs
 - Elevated work locations and platforms

13.2 Responsibilities

- Contractors have the responsibility to:
 - Reduce the hazards associated with falls.
 - Control fall hazards first through engineering controls.
 - Institute personal fall arrest systems, administrative controls and training when engineering controls are not feasible.
 - Have a formal fall protection program in accordance with OSHA requirements.
 - Have the necessary fall protection equipment to safely perform the job.
 - Have workers properly trained in the use of fall protection equipment.
 - Consult WVU Personnel on the ratings and limitations of the anchors and lifeline systems.

13.3 Regulations

- The contractor's fall protection program shall include, but not be limited to, the regulations below:
 - OSHA 29 CFR 1926. 502 – Fall Protection Systems Criteria and Practices;
 - OSHA 29 CFR 1910.22 – Walking-Working Surfaces;
 - OSHA 29 CFR 1910.66-68 F – Powered Platforms for Building Maintenance, Vehicle-Mounted Elevating and Rotating Work on Platforms. Scaffolds, and Manlifts
 - OSHA 29 CFR 1926 Subpart L – Scaffolds;
 - OSHA 29 CFR 1926.453 – Aerial Lifts; and
 - Any other applicable regulations.

14. HOT WORK

14.1 General

- Hot work is any activity that creates heat, flame, sparks, or smoke. Examples of hot work include, but are not limited to:
 - Brazing
 - Cutting
 - Grinding
 - Soldering
 - Gas or Arc Welding
 - Torch-Applied Roofing
- Hot work permits are not required during the construction of new facilities or renovations of unoccupied existing facilities.

14.2 Responsibilities

- The contractor shall:
 - Understand and comply with the WVU Hot Work Permit Program
 - Have trained employees and approved fire prevention equipment on site prior to performing work.
 - Complete all necessary hot work permits.
 - Coordinate with Facilities Management and WVU Fire Control for the temporary protection of localized smoke detection systems to prevent possible fire alarm activation and disruption of normal business operations.
 - Post the hot work permit at the job site in an accessible and conspicuous location.
 - Submit the hot work permit to the appropriate EHS staff at the completion of the activity.
 - Conduct hot work activities in a sound, fire safe manner and follow the precautions outlined on the hot work permit.
 - Assure that a designated fire watch remains on the job for 30 minutes after the completion of the hot work activity.

14.3 Regulations

- OSHA 29 CFR 1926 Subpart J – Welding and Cutting;
- OSHA 29 CFR 1910 Subpart Q – Welding, Cutting, and Brazing; and
- Any other applicable regulations.

15. MOLD

15.1 General

- Molds are present almost everywhere in indoor and outdoor environments. High levels of humidity in WVU buildings may cause mold growth that can produce toxins, which can cause allergic reactions and produce flu-like symptoms.
- At a minimum, mold may be found, among other places, in the following building components or furnishings:
 - Drywall
 - Insulation
 - Carpeting
 - Flooring

15.2 Responsibilities

- Before undertaking any projects of repair, renovation or construction that may impact mold, contractors shall:
 - Request the location of mold in the work area from the WVU Project Manager.
 - Stop work if mold is encountered and notify the WVU Project Manager.
 - Make certain that employees and subcontractors have had the appropriate level of mold awareness training.
 - Contact the WVU Project Manager and/or EHS at 304-293-3792 with any questions regarding mold.

15.3 Regulations

- Currently, there are no federal, state, or local regulations for evaluating potential health effects of mold contamination and remediation.

16. SCAFFOLDING

16.1 Responsibilities

- Before undertaking any projects of repair, renovation or construction that may require the use of scaffolding, contractors shall:
 - Understand and comply with the applicable OSHA regulations and WVU policies.
 - Ensure all employees have received training in compliance with federal and local regulations.
 - Contact EHS with questions regarding scaffolding safety and required precautions.
- The contractor shall ensure that the scaffolding be:
 - Erected and dismantled by competent workers under the supervision of knowledgeable and experienced supervisors.
 - Erected on sound and rigid footing, capable of carrying the maximum intended load without settling or displacement.
 - Securely fastened with all braces, pins, screw jacks, base plates and other fittings installed as required by the manufacturer.
 - Limited to authorized personnel only, especially after working hours.
 - Equipped with standard guardrails and toe boards on all open sides and ends of platforms greater than ten (10) feet in height.
 - Provided with a screen with maximum one-half (½) inch openings between the toe board and the guardrail, where persons are required to work or pass under the scaffold.
 - Replaced or repaired immediately if scaffolding and accessories have any defective parts.
 - Provided with an access ladder or equivalent safe access.
- The contractor shall ensure that the planking be:
 - Scaffold grade or equivalent.
 - Overlapped a minimum of twelve (12) inches or secured from movement.
 - Extended over the end supports not less than six (6) inches and no more than twelve (12) inches.

16.2 Regulations

- OSHA 29 CFR 1926, Subpart L – Scaffolding
- OSHA 29 CFR 1910.28, Safety Requirements for Scaffolding; and
- Any other applicable regulations.

17. PERSONAL PROTECTIVE EQUIPMENT

17.1 Responsibilities

- Contractors shall provide employees with personal protective equipment including:
 - General Requirements. (OSHA 1910.132)
Protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be used wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.
 - Eye and Face Protection. (OSHA 1910.133)
Each affected employee shall use appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.
 - Respiratory Protection. (OSHA 1910.134)
Each affected employee shall use appropriate respiratory protection when potentially over exposed to air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors and when such hazards cannot be reduced or eliminated by effective engineering controls.
 - Head Protection. (OSHA 1910.135)
Each affected employee shall wear protective helmets when working in areas where there is a potential for injury to the head from falling objects. Protective helmets shall also be worn to reduce electrical shock hazards when near exposed electrical conductors which could contact the head.
 - Foot Protection. (OSHA 1910.136)
Each affected employee shall wear protective footwear when working in areas where there is a danger of foot injuries due to falling and rolling objects, or objects piercing the sole, and where such employee's feet are exposed to electrical hazards.
 - Hearing Protection. (OSHA 1910.95)
Each affected employee shall wear hearing protection whenever noise exposures equal or exceed an 8-hour time-weighted average (TWA) sound level of 85 decibels and when engineering controls cannot reduce or eliminate the hazard.
 - Hand Protection. (OSHA 1910.138)
Each affected employee shall wear protective gloves when working in areas where hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes.
 - Provide training to each employee who is required to use PPE.
Each affected employee must show understanding of training to their specific PPE. Contractors shall provide this training and upon completion, each employee shall be tested, and certified in writing by the trainer. If at any time the trained employee changes work activities requiring different PPE, or exhibits lack of understanding of the required PPE, the employee shall be retrained and re-certified.
 - High Visibility Clothing and Devices

Construction workers including flaggers are required to follow the Manual on Uniform Traffic Control Devices for streets and highways (MUTCD) provided by the Federal Highway Administration for regulations regarding high visibility clothing and devices.

17.2 Regulations

- OSHA 29 CFR 1910 Subpart I – Personal Protective Equipment;
- OSHA 1910.95 – Occupational Noise Exposure;
- OSHA 29 CFR 1926.52 – Occupational Noise Exposure;
- OSHA 29 CFR 1926 Subpart E – Personal Protective and Life Saving Equipment;
- 23 CFR 655 – Manual on Uniform Traffic Control Devices for Streets and Highways
- Any other applicable regulations.

18. HAZARD COMMUNICATION

18.1 Notification

- WVU is responsible for disclosing site-specific hazards to the contractor.
- Site-specific hazards may include the presence of chemical, radiological or biological materials.
- Disclosure of any site-specific hazards should occur prior to the solicitation process so any necessary precautions to address the identified hazards can be considered.

18.2 Responsibilities

- The contractor shall:
 - Maintain and have accessible copies of Safety Data Sheets (SDSs) for hazardous chemicals brought onto WVU property.
 - Before use, forward SDSs of hazardous materials that produce strong odors to EHS for review.
 - Maintain an effective hazard communication program.
 - Use and store all hazardous or flammable chemicals, liquids, or gases brought onto the project site in approved containers conforming to applicable federal and local regulations.
 - Secure permits, if applicable, for the temporary storage of hazardous materials on the project site.
 - Ensure that spills of hazardous materials are contained and cleaned-up immediately and that all necessary means and materials are maintained at the work site to accomplish this task.
 - Notify the WVU Project Manager and EHS immediately when a hazardous material spill occurs.
 - In the event the contractor encounters a hazardous material on the project site (i.e., asbestos, lead, PCBs), which has not been rendered harmless, the contractor shall report the condition to the WVU Project Manager.
 - Contractors must make project related SDSs readily available to all employees under their supervision.

18.3 Regulations

- OSHA 29 CFR 1910.1200 – Hazard Communication;
- OSHA 29 CFR 1926.59 – Hazard Communication; and
- Any other applicable regulations.

19. TRENCHING AND EXCAVATION

19.1 General

- Excavation includes, but is not limited to, operations such as drilling, digging and trenching.

19.2 Responsibilities

- Contractors shall apply the following safety controls:
 - Before any excavation work begins, underground utilities including underground pipes, electrical conductors, gas lines or other structures shall be identified, and the location marked.
 - Evaluation of the trenching site is required to be performed by a "competent person" who knows and is trained to identify soil types, proper protective systems and hazardous conditions.
 - Contact WVU Project Manager and EHS for procedures and notification requirements when applicable.
 - Conduct a daily inspection of the excavation and the adjacent areas prior to work and as needed during the workday. If there are any unsafe conditions, work shall stop in the excavation and personnel removed until the problems are corrected.
 - Monitor and recognize hazardous atmospheres and conditions such as vibration, external loads, weather conditions, ground water conditions and confined spaces.
 - Check all protective material or equipment for any damage.
 - When excavations are deeper than four (4) feet, ladders or steps shall be located so that a worker does not need to travel more than twenty-five (25) feet in the excavation before being able to exit. Refer to OSHA 29 CFR 1910.146 – Permit-Required Confined Space for testing requirements before employees enter excavations greater than four (4) feet in depth.
 - Each employee in an excavation shall be protected from cave-ins by an adequate protective system. Refer to OSHA 29 CFR 1910.146 – Permit-Required Confined Space and/or OSHA Standard 1926.1204 – Confined Spaces in Construction for requirements.
 - Examination of the ground by a competent person for excavations less than five (5) feet in depth must present no indication of a potential cave-in hazard. If a cave-in hazard exists, protective systems are required.
 - When excavations are deeper than five (5) feet, the sides shall be provided with a protective system (shored, braced or sloped sufficiently) to protect against hazardous ground movement.
 - When heavy equipment will be operated nearby, the shoring or bracing shall be able to withstand this extra load regardless of the depth of the excavation. For any excavation that a person will enter, all dirt, debris and excavation material shall be effectively stored or retained at least two (2) feet from the edge of the excavation.
 - Adequate protection from hazards associated with water accumulation should be in place before working in excavations.
 - Signs and barricades shall be displayed at all excavation/trenching sites.
 - All excavations into which a person could fall, or trip shall be guarded. While work is being performed in or near the opening, the guards surrounding the area shall be maintained.

- Barricades at least three (3) to five (5) feet high shall be spaced no further than ten (10) feet apart and yellow and black "Caution, Do Not Enter" construction tape shall be stretched securely between the barricades.
- A registered professional engineer shall design excavations more than twenty (20) feet deep.
- Excavations should be covered and not left open overnight whenever possible.

19.3 Regulations

- OSHA 29 CFR 1910.146 – Permit-Required Confined Space;
- OSHA 29 CFR 1926.1204 – Trenching and Excavations;
- OSHA 29 CFR 1926.650-652 – Excavation Requirements; and
- Any other applicable regulations.

20. HAND AND POWER TOOLS

20.1 General

- Each contractor shall be responsible for the safe working condition of tools and equipment used by its employees, which may include, but are not limited to, hand and portable power tools and other hand-held equipment.

20.2 Responsibilities

- Prior to performing activities related to repair, renovation, or construction projects, contractors shall eliminate or minimize any potential unsafe tools or equipment by implementing the following procedures:
 - The contractor shall be responsible for the safe condition of tools and equipment used by its employees.
 - Tools shall be inspected at regular intervals and shall be repaired in accordance with the manufacturer's specifications.
 - Before using a tool, the operator shall inspect it to determine that all operating moving parts operate as designed and that it is clean.
 - Power tools shall be maintained in accordance with the manufacturer's specifications.
 - Appropriate personal protective equipment should be worn due to hazards that may be encountered while using portable power tools and hand tools.
 - Tools should only be used for their intended purposes.
 - All employees should receive instruction on regulations and the safe use of each power tool.
 - Owner's manuals including manufacturer's specifications and suggested work practices should be kept on-file and made available upon request to all employees required to use the equipment.
 - Temporary wiring installations that are used during construction-like activities shall have ground-fault circuit-interrupter protection.

20.3 Regulations

- OSHA 29 CFR 1910.242 - Hand and Portable Powered Tools and Equipment;
- OSHA 29 CFR 1910.243 - Guarding of Portable Powered Tools;
- OSHA 29 CFR 1910.244 - Other Portable Tools and Equipment;
- OSHA 29 CFR 1926.302 Power-operated hand tools; and
- Any other applicable regulations.

21. HAZARDOUS WASTE

21.1 General

- With the enactment in 1976 of the Resource Conservation and Recovery Act (RCRA), the transportation, handling, storage and disposal of hazardous wastes became regulated under federal, state and local laws. The Environmental Protection Agency (EPA) and the local jurisdiction, WV Department of Environmental Protection (WV DEP), have developed regulations for compliance with RCRA. Responsibility for compliance with hazardous waste regulations begins with the person generating the waste material and follows through to disposal.
- RCRA defines a hazardous waste as a solid waste that because of its quantity, concentration, physical, chemical, or infectious characteristics may cause or significantly contribute to an increase in serious, irreversible, or incapacitating reversible illnesses or pose a substantial, present or potential hazard to human health, safety, or welfare to the environment when improperly treated, stored, transported, used, disposed of or otherwise managed. Examples of hazardous wastes associated with the construction industry include, but are not limited to: aerosol containers, adhesives, cements, lubricants, spill residues, used oil, fuels, cleaning supplies, solvents, paints, paint thinners, strippers, and compressed gas cylinders. Heavy metals- Lead walls or pipes. Corrosive wastes (acids with pH less than 2 or bases with pH greater than 12.5) such as rust removers, cleaning fluids, and battery acids.
- To identify additional regulated wastes at the construction site, refer to:
 - 40 CFR 261 for characteristic and listed hazardous wastes.
 - 40 CFR 273 for universal wastes.
 - 10 CFR 61 for radioactive wastes.
 - 40 CFR 761 for TSCA PCB wastes.

21.2 Responsibilities

- Prior to performing activities related to repair, renovation, or construction projects potentially impacting or generating hazardous waste, contractors shall:
 - Identify any potentially hazardous waste associated with the planned work activity.
 - Provide intended quantities and expected wastes to be generated to EHS at least 45 days prior to initiating activities that produce regulated wastes. **(Notification to external agencies may be required.)**
 - Implement their own hazardous waste program.
 - Implement their own employee training program for the specific wastes identified in compliance with local and federal regulations. Copies of training records must be readily available for inspection for the duration of the project and retained for three years from completion of the project.
 - Notify EHS at 304-293-3792 regarding the transportation, handling, storage, and disposal of all solid and hazardous wastes potentially generated as part of the proposed work activities.
 - Ensure no wastes are abandoned in place.
 - Comply with all local and federal regulations and the WVU Waste Management Standard Operating Procedures (WMSOP).

- Confirm that all wastes removed from WVU owned properties are transported to and disposed of or recycled at WVU approved facilities. A list of pre-approved facilities can be obtained from EHS during normal business hours.
- Prior to transportation and disposal, waste manifests for materials meeting the definition of a hazardous waste, as defined by RCRA, must be signed by an approved representative of EHS.
- Original documentation of all off-site shipments of waste must be provided to WVU EHS within 3 days of shipment. RCRA hazardous waste “Designated Facility to Generator” paperwork must be provided within 30 days of original shipment to WVU EHS.
- Be responsible for the removal and/or disposal of hazardous waste generated from the project. Hazardous waste generated from the project must be removed and disposed of in accordance with federal and local regulations and the WVU WMSOP.
- EHS is available to address any related hazardous waste concerns and must be consulted prior to the removal of any hazardous waste from WVU property.

21.3 Regulations

- EPA 40 CFR 260-273 – Standards for Hazardous Waste Management; and
- Any other applicable regulations.

22. MERCURY-CONTAINING LAMPS

22.1 General

- Much of the indoor and outdoor lighting at WVU comes from fluorescent and high-intensity discharge lamps, also known as mercury-containing lamps. Mercury-containing lamps include all fluorescent and high-intensity discharge lights, bulbs, tubes, and lamps.
- Mercury-containing tubes will not be transported from one campus to the other. Each campus has at least one designated storage site.

22.2 Responsibilities

- Before undertaking any projects of repair, renovation or construction that may require the disposal or recycling of mercury-containing tubes, contractors shall:
 - Read and understand WVU WMSOP.
 - Notify the WVU Project Manager, Facilities Management (FM) supervisor, or EHS of the project nature and duration prior to the start of the planned work activity.
 - Plan to remove the light tubes from service and immediately place them into a container labeled as “Used Lamps” then store in a manner sufficient to prevent unnecessary breakage.
 - Date container with the date the first lamp goes into the box. Keep boxes closed.
 - If tubes are broken, immediately contact EHS at 304-293-3792 for consultation on clean-up and disposal in accordance with state and federal regulations. Manage broken tubes as hazardous waste, Refer to Section 16.
 - Coordinate with the WVU Project Manager, FM supervisor, and/or EHS for the recycling of the unbroken tubes:
- If not handled through the WVU-contracted hazardous waste handler, waste must be sent to WVU approved facilities. Original shipping papers for all off-site shipments of universal waste lamps shall be provided to WVU EHS within 3 days of shipment.

Certificates of Recycling must be provided within 45 days of the original shipment to WVU EHS.

22.3 Regulations

- EPA 40 CFR Part 273 – Standards for Universal Waste Management;
- EPA 40 CFR Parts 262 – 264, 266, Solid Wastes; and
- Any other applicable regulations.

23. FLUORESCENT LIGHT AND BALLAST DISPOSAL

23.1 General

- Prior to 1978, electrical light ballasts were commonly manufactured with polychlorinated biphenyls (PCBs) in the capacitor oil. PCBs are regulated because they are carcinogenic and pose a long-term hazard due to their persistence in the environment.
- Ballasts made after 1978 are usually marked "NO PCB", however they may contain a PCB replacement called di (2-ethylhexyl) phthalate (DEHP), a probable human carcinogen. Given this possibility, the best option for No-PCB ballasts is recycling.

23.2 Responsibilities

- Before undertaking any projects of repair, renovation or construction, that may require the disposal or recycling of PCB and No-PCB light ballasts, contractors shall:
 - Read and understand WVU WMSOP.
 - Notify the WVU Project Manager and EHS of the project nature and duration prior to the start of the planned work activity.
 - Plan to detach ballasts from lamp fixtures and strip all wiring.
 - Plan to segregate PCB ballasts and No-PCB ballasts for disposal/recycling purposes, place ballasts into DOT approved containers
 - *Note:* All light ballasts made prior to 1978 and not marked "NO PCB" are assumed to contain PCBs and are also treated as such.
 - If ballasts/capacitors are leaking, immediately contact EHS at 304-293-3792 for consultation.
 - Coordinate with the WVU Project Manager and EHS for the disposal/recycling of the ballasts:
 - As determined by EHS, projects producing quantities of either PCB or No-PCB ballasts for disposal or recycling in excess of the temporary storage capabilities of the applicable campus may be approved for temporary storage on-site in accordance with federal and local regulations.
 - Prior to transportation and disposal, waste manifests for materials meeting the definition of a TSCA waste as defined by EPA must be signed by an approved representative of WVU-EHS
 - Waste must be shipped to WVU approved facilities.
 - If not handled through the WVU-contracted hazardous waste handler, the waste must be shipped to WVU approved facilities. Original documentation of all off-site shipments of waste must be provided to WVU EHS within 3 days of shipment. TSCA waste manifest "Designated Facility to Generator" paperwork must be provided within 30 days of original shipment to WVU-EHS

23.3 Regulations

- EPA 40 CFR 761 – Toxic Substances Control Act (TSCA); and
- Any other applicable regulations

24. ELECTRICAL SAFETY

24.1 General

- Construction activities frequently impact electrical systems as part of the planned work activity. Such activities include, but are not limited to:
 - Installation of electrical systems, components, machinery, and equipment.
 - Alterations of electrical systems, components, machinery, and equipment.
 - Maintenance of existing systems and equipment.
 - Demolition of existing systems.
 - Temporary planned outages.
 - Tests and diagnostics.

24.2 Responsibilities

- Prior to performing activities related to repair, renovation, or construction projects potentially impacting electrical system components and energized or non-energized machinery, equipment, parts, or systems, contractors shall:
 - Identify any potential sources of electrical energy likely to cause death, injury, or serious physical harm.
 - Notify the WVU Project Manager of impact activities prior to the start of work.
 - Coordinate planned outages with WVU Facilities Management through the WVU Project Manager.
 - Ensure all employees performing impact activities have received sufficient training in compliance with federal and local regulations.
 - Ensure all employees are provided adequate personal protective equipment as required by regulations.
 - Ensure all work is performed in accordance with the guidelines of federal and local regulations.
 - Ensure all affected employees, contractors, staff, faculty, and students are notified through the WVU Project Manager prior to impacting building electrical systems.
 - Follow Lockout/Tagout procedures for the control of hazardous energy as specified in the OSHA 29 CFR 1910.147 standard and in Section 11.

24.3 Regulations

- NFPA 70 – National Electric Code
- NFPA 70E – Electrical Safety Requirements for Employee Workplaces
- 29 CFR 1910.303
- 29 CFR 1926.416
- Any other applicable regulations.

25. BLOODBORNE PATHOGENS

25.1 General

- OSHA defines work related exposure to potential Bloodborne Pathogens (BBPs) as reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.
- Construction related work activities such as repair work and renovation projects

create an environment where serious injuries have the potential to occur and thus the possible exposure to BBPs.

25.2 Responsibilities

- Prior to allowing employees access to job sites where work activities related to repair, renovation, or construction projects are completed, contractors shall:
 - Identify any potential work activities likely to cause injury or serious physical harm.
 - Establish a written Exposure Control Plan designed to eliminate or minimize potential employee exposure in accordance with federal and local regulations, containing the following elements:
 - Employee exposure determinations.
 - The schedule and method for plan implementation.
 - The procedure for the evaluation of circumstances surrounding exposure incidents.
 - The Exposure Control Plan must be:
 - accessible to all employees.
 - reviewed at least annually.
 - evaluated by employees potentially exposed to injuries, blood, or other potentially infectious materials.
 - Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials.
 - Engineering and work practice controls shall be used to eliminate or minimize employee exposure. Where an occupational exposure potential remains after institution of these controls, personal protective equipment shall also be used.
 - Ensure all employees have received sufficient training in compliance with federal and local regulations.
 - Ensure all employees are provided with adequate personal protective equipment as required by regulations.

25.3 Regulations

- OSHA 29 CFR 1910.1030 – Bloodborne Pathogens Standard; and
- Any other applicable regulations.

26. POWERED INDUSTRIAL TRUCKS

26.1 General

- Powered Industrial Trucks include, but are not limited to, fork lifts, tractors, platform lift trucks, motorized hand trucks, and other specialized industrial trucks powered by electric motors or internal combustion engines.

26.2 Responsibilities

- Prior to allowing employees access to job sites where industrial lift trucks are used, contractors shall ensure:
 - Vehicles are inspected daily.
 - Employees obey all safe operating procedures.
 - Any power-operated industrial truck not in safe operating condition shall be removed from service.
 - All repairs shall be made by authorized personnel.
 - All parts of any such industrial truck requiring replacement shall be replaced only

- by parts equivalent to those used in the original design.
- No person shall be allowed to stand or pass under the elevated portion of any truck whether loaded or empty.
- Unauthorized personnel shall not be permitted to ride on powered industrial trucks.
- Operators will sound the horn and use extreme caution when encountering pedestrians, making turns, and traveling through doors.
- When loading trailers, dock plates will be used. Operators will assure dock plates are in good condition and will store on edge when not in use.
- Operators are instructed to report all incidents, regardless of fault and severity.
- All employees are trained in the operation and handling in accordance with federal and local regulations.

26.3 Regulations

- OSHA 29 CFR 1910.178 – Powered Industrial Trucks; and
- Any other applicable regulations.

27. NOISE

27.1 General

- Several rules apply regarding noise for contractors to follow including OSHA regulations and WVU policies.
- OSHA noise standards consist of a two-stage program:
 - A hearing conservation program must be implemented when employees are exposed to 85 dB or more in an 8-hour day. This program includes annual audiometric testing and require hearing protection devices, such as earplugs.
 - Engineering or administrative noise controls are required when exposure exceeds 90 dB. Engineering controls include redesigning the space to reduce machinery noise, replacing machinery with quieter equipment, enclosing the noise source or enclosing the noise receiver. Administrative controls include mandating the length of time an employee can be exposed to a particular noise source.

27.2 Responsibilities

- Contractors must protect their own workers in accordance with OSHA regulations and WVU polices. If WVU is fined for non-compliance with these regulations, the WVU department managing the project or activity is expected to pay the fine, and that department may seek retribution from the contractor(s) involved.

27.3 Regulations

- OSHA 29 CFR 1910.95 – Occupational Noise Exposure; and
- Any other applicable regulations.

28. STORM WATER MANAGEMENT

28.1 General

- Materials from land-disturbing activities or construction activities that could potentially enter the storm sewer system during rain events include, but are not limited to, the following:
 - Gasoline
 - Diesel fuel

- Antifreeze/coolants
- Paints
- Water-proofing materials
- Concrete
- Cleaning solvents
- Glues/adhesives
- Sanitary toilets
- Fertilizer
- Sediment
- Used Oil
- Hydraulic fluid
- Grease
- Pesticides

28.2 Responsibilities

- Contractors performing planned work on property owned by WVU shall notify EHS prior to commencing in any land-disturbing activities or construction activities greater than 3,000 Square Feet. A land-disturbing activity or construction activity has the potential to generate stormwater pollutants, including sediment deposition, during a runoff producing rain event. Contractors must consult with EHS prior to commencing any project to ensure proper Best Management Practices (BMPs) are installed for protection of the storm sewer system, local waterways, and to ensure all permitting of land-disturbing activities is compliant.
- WVU strictly prohibits the disposal of chemicals or solid waste into the storm sewer system. No hazardous or toxic liquids, solid materials, sediment-laden water or other pollutants shall be discharged into the storm sewer system at any time.
- Any evidence of a non-storm water discharge entering the storm sewer system shall be reported immediately to EHS at 304-293-3792.

28.3 Regulations

- National Pollution Discharge Elimination System (NPDES)
 - Permit No. WV0116025 (MS4)
 - Permit No. WV0115924 (Construction Activities greater than 1 Acre)
- West Virginia University's MS4 program
 - Construction Activities less than 1 Acre
 - Construction Stormwater General permit WV0115924
 - Post-Construction Stormwater Management
 - Treatment of first 1-inch of runoff from new impervious surfaces or parking lot modifications with impervious surfaces 3,000 SF or greater.
 - Peak flow calculations for a 2yr, 10yr, and 50yr-24hour storm event, showing matching or reduction of preexisting runoff conditions.

29. MOBILE CRANES

29.1 General

- A Notice of Proposed Construction or Alteration may be required for cranes located near the WVU Hospitals or where the type of structure exceeds a certain height. It is

the property owner's responsibility to complete this form and return it to the Federal Aviation Administration (FAA) at least forty-eight (48) hours before the start of the construction or alteration work activities. For more information on this requirement, visit the Federal Aviation Administration website. This process can take up to forty-five (45) days for approval.

29.2 Responsibilities

- The WVU Project Manager shall:
 - Coordinate temporary removal of personnel from occupied offices/spaces located beneath the load during lifting operations where a risk is present of the object being handled to enter the building envelope if it is mishandled or dropped.
 - Assure that the area around the crane and its lift path is adequately barricaded to protect WVU personnel and the public.
 - Coordinate who will provide notice to the FAA, where applicable.
- The contractor shall:
 - Provide a certified crane operator.
 - Ensure that notification to the FAA is filed in a timely manner, if applicable.
 - Inspect the crane and slings for tears and damage prior to every use.
 - Coordinate activities involving mobile cranes with the WVU Project Manager where work will involve occupied buildings and/or public spaces.
 - Provide a copy of the annual and/or monthly crane inspections to EHS upon request.
 - Barricade the accessible area within the swing radius of the rear of the rotating structure of the crane in such a manner as to prevent personnel from being struck or crushed by the crane.
 - Barricade the lift path of the crane to keep personnel clear of loads about to be lifted and of suspended loads.
 -

29.3 Regulations

- OSHA 29 CFR 1926.1400-1402;
- OSHA 29 CFR 1910.180; and
- Any other applicable regulations.

30. LEAD CONTAINING BUILDING MATERIALS

30.1 General

- Construction workers are exposed to lead during the removal, renovation, or demolition of structures painted with lead pigments. Workers may also be exposed during installation, maintenance, or demolition of lead pipes and fittings, lead linings in tanks and radiation protection, leaded glass, work involving soldering, and other work involving lead metal or lead alloys. In general industry, workers encounter lead in solder, plumbing fixtures, rechargeable batteries, lead bullets, leaded glass, brass or bronze objects, and radiators.

30.2 Responsibilities

Contractors who will disturb lead-containing building materials during work shall take all necessary precautions to protect university employees and the public from exposure to lead dust or contamination. These measures shall conform, at a

minimum, to OSHA requirements detailed in 29 CFR 1926.62 and applicable local, state and federal regulations related to health, safety, transportation, and disposal of such materials.

30.3 Regulations

- OSHA 29 CFR 1926.62; and
- Any other applicable regulations.

31. ROOF ACCESS

31.1 General

- Buildings on campus may have hazards that require approval for roof access that necessitate pre-planning to address the hazardous conditions. Hazardous conditions on WVU building roofs may include chemical fume hood exhaust, biological research exhaust, emergency sirens, and fall hazards.

31.2 Responsibilities

- If work will be conducted on the roof of a WVU building, the WVU Project Manager shall coordinate access with WVU Facilities Management and the building coordinator and EHS as necessary.
- The WVU Project Manager should inform the contractor of the hazards regarding the potential exposure to chemical fume hood systems and exhausts, biological fume hood exhausts, severe noise hazards, and fall hazards that may be present on the roof.

32. SILICA (RESPIRABLE CRYSTALLINE)

32.1 General

- Crystalline silica is a common mineral that is found in construction materials such as sand, stone, concrete, brick, and mortar. When workers cut, grind, drill, or crush materials that contain crystalline silica, very small dust particles are created. These tiny particles (known as “respirable” particles) can travel deep into workers’ lungs and cause silicosis, an incurable and sometimes deadly lung disease. Respirable crystalline silica also causes lung cancer, other potentially debilitating respiratory diseases such as chronic obstructive pulmonary disease, and kidney disease. In most cases, these diseases occur after years of exposure to respirable crystalline silica.

32.2 Responsibilities

- Contractors shall take all necessary steps to comply with the exposure limits for silica established in 29 CFR 1926.1153. The written exposure plan must detail how potential exposure to the general public and WVU students, staff, and employees in adjacent areas will be kept below allowable limits. A copy of this plan shall be provided to EHS and/or the WVU Project Manager upon request.
- Where tasks are preformed indoors or in an enclosed area, exhaust shall be provided as needed to minimize the accumulation of visible dust. If the exhaust is vented where the building occupants or general public may be exposed, the system must incorporate a HEPA-filtration system.
- If the building ventilation system provides air to an area where “restricted work” is being performed, the air returns shall be blanked or closed while work is in progress.

- A “Temporary Restricted Area” must be established where tasks performed in accordance with Table 1 of 29 CFR 1926.1153 require that respiratory protection be used, where tasks are performed that are not listed in Table 1 and where no historic or objective data exists to prove exposures will be below the action level.
 - Temporary restricted Areas must be designed with signs, barriers, or other effective means that will assure unauthorized persons do not enter.
 - If such work is performed in an occupied building, dust barriers shall be installed as necessary to isolate the restricted area.
- Contractors shall clean up all residual dust after project is complete.

32.3 Regulations

- OSHA 29 CFR 1926.1153; and
- Any other applicable regulations.

33. BIOLOGICAL SAFETY HAZARDS

33.1 General

- Biological hazards involve organic substances that pose a threat to the health of humans and other living organisms. Biological hazards include pathogenic microorganisms, viruses, toxins (from biological sources), spores, fungi and bio-active substances. Biological hazards can also be considered biological vectors or transmitters of disease.

33.2 Responsibilities

- The WVU Project Manager shall coordinate with the responsible laboratory Principle Investigator and/or Laboratory Manager to ensure that no active manipulation of biohazardous materials will occur while contractors access the space.
 - If work will be conducted on the roof systems of a building where biological research occurs, the WVU Project Manager shall coordinate access with WVU Facilities Management, the building supervisor and EHS as necessary to ensure:
 - No experiments are in progress that will generate toxic or infectious airborne containments and that all biohazardous materials are contained while the contractor is performing work.
 - The contractor is informed of any special precautions that must be taken to prevent employee exposure to biohazards.
 - The contractor is informed of emergency procedures that the contractor must follow in the event of an exposure during work.

33.3 Regulations

- OSHA 29 CFR 1910.1450 – Occupational Exposure to Hazardous Chemicals in Laboratories
- OSHA 29 CFR 1910.1200 – Hazard Communication Standard
- Any other applicable regulations.

34. Heavy Equipment

34.1 General

- Heavy equipment refers any item of equipment that is self-propelled or drawn by mechanical power or designed principally for operators to use off highways. The term includes construction, maintenance, materials handling, forestry, and agricultural equipment. Examples of heavy equipment include, but not limited to:

Backhoes
Wheel Loaders
Scrapers

Excavators
Bulldozers
Road Graders

Rock Trucks
Skid Steers
All-Terrain Forklifts

34.2 Responsibilities

- Any contractor operating heavy equipment on behave of WVU or on WVU property shall ensure:
 - The operator is aware of all hazards on the site. This information can be obtained by the project manager and facilities management.
 - The operator is properly trained on the equipment.
 - The operator must obey all safe operating procedures.
 - Vehicles are to be inspected daily by a competent person and should be installed with properly functioning safety equipment such as seatbelts, flashing lights, roll over protection systems, and back up alarms.
 - A spotter is in a visible position to guide and direct the operator when blind spots are present.
 - Any heavy equipment not in safe operating condition shall be removed from service.
 - During loading and unloading of heavy equipment makes sure the best practices methods are followed and check with the project manager on locations where loading and unloading will occur and where the equipment can be stored when not in use.
 - Flaggers are on hand and properly equipped if required for job in accordance with the West Virginia DOT Flagger specifications and MUTCD.

34.3 Regulations

- OSHA 29 CFR 1926.602 – Material handling equipment
- OSHA 29 CFR 1926.600 – Equipment
- West Virginia DOT Flagger Specifications
- ANSI 107-2015 – American National Standard for High-Visibility Apparel and Accessories
- MUTCD 2009
- 23 CFR part 634- Worker Visibility
- Any other applicable regulations.