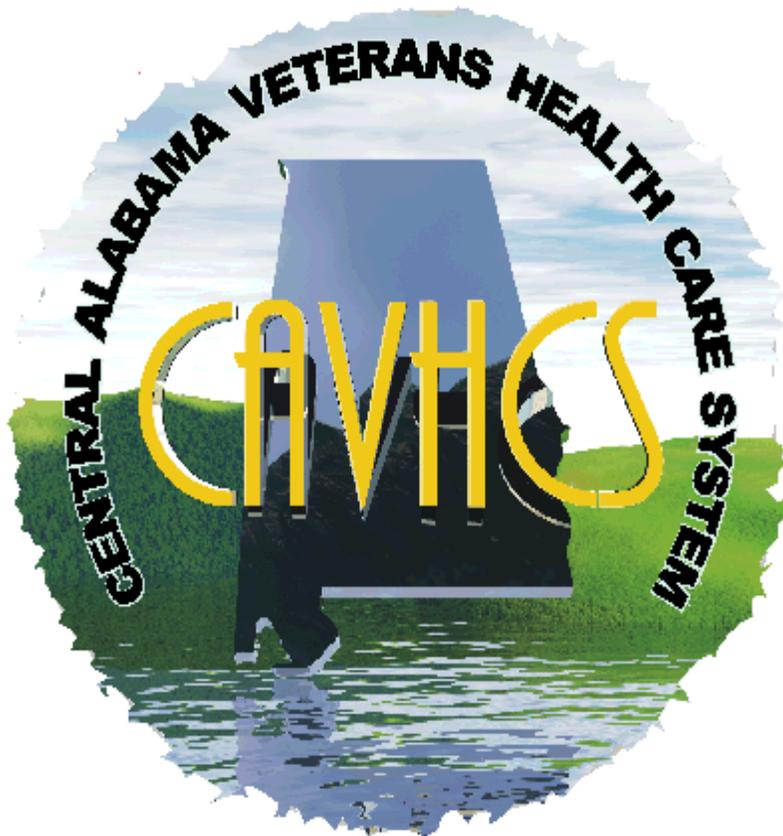


**Central Alabama Veterans Health Care System (HCS)  
Contractor Safety Manual  
Montgomery/Tuskegee, Alabama**



## **FORWARD**

**WELCOME!** We're glad to have you join our team dedicated to serving our Nations' veterans. Your work assists us in providing the most modern, comprehensive care possible. The Safety Management Service at the Health Care System (HCS) promotes health and safety at both campuses including the clinics in Georgia and Alabama. In order to help you make your stay with us a safe one, we have prepared this Safety Manual for you to follow and to be in compliance with Occupational Safety and Health Administration (OSHA) standards, Environmental Protection Agency (EPA), Alabama Department of Environmental Management (ADEM), National Fire Protection Association (NFPA), National Electric Code (NEC) and the Joint Commission (TJC). (And, prepare you when the OSHA Compliance Officer comes out to review your work should you obtain one of the stimulus projects projected to begin at the Tuskegee Campus.) It addresses typical safety and health concerns every contractor generally encounters while performing work at HCS. Each chapter outlines the requirements of an individual aspect of the HCS Safety Program and various regulatory standards. It is not, intended to be a neither comprehensive nor exhaustive reference of all the applicable Federal, State, or local safety and health program requirements, standards, regulations, or guidelines that may affect your work at **HCS**. You are responsible for becoming aware of and abiding by the applicable rules, regulations, standards, codes, guidelines, and similar governing elements that may impact your work, including all Health and Safety policies, procedures, and memorandums, while working at the HCS. In all cases, the requirements of the contract and decisions of the **Contracting Officer supersede any information outlined within**. Each chapter is designed to assist you in forming a positive approach to job site safety and health as you design and implement your Safety Program.

## **WHO WE ARE**

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## **OUR MISSION**

We are committed of insuring and improving the health and safety of our veteran patient, visitors, staff, and the surrounding community by working to protect human, environmental health and safety and by promoting regulatory compliance.

**CHAPTER 1**  
**PROJECT SAFETY POLICY**

**1. Purpose:** To establish policy, procedures and responsibilities to ensure that construction projects will be planned, coordinated and regularly inspected to ensure compliance with applicable fire, infection control, environmental, security, safety and occupational health regulations and policies.

**2. Policy:**

a. In order to protect patients, staff, visitors and contractors from safety and health hazards associated with construction activities, this policy is established for all property where construction is undertaken. This policy requires the strategies be established to control the hazards inherent in conducting construction or maintenance operations in areas that are occupied by patients, visitors or healthcare staff. These strategies include the assignment of appropriate responsibility at all levels of the organization, establishing and maintaining the necessary expertise to manage an effective construction health and safety program, applying technical guidance and best practices to assist in managing the program and providing a construction safety multi-disciplinary team to oversee and enforce the application of this policy.

VA provided or contracted construction activities must be planned and performed with care to prevent adverse impact on our patients, visitors, staff and the environment. Issues covered by this policy include NFPA Code 101, Life Safety Code (current edition), and OSHA, EPA compliance, ADEM, Centers for Disease Control (CDC) guidelines and other recognized standards. For purposes of this policy, they will collectively be referred to as “safety” issues.

b. Construction activities shall be defined to include delegated minor or non-recurring maintenance and/or stimulus projects performed by contractors or purchase and hire personnel, as well as station-level projects performed by contractors, purchase and hire personnel or station Maintenance and Operations (M&O) personnel.

The contractor shall be held solely responsible for the safety and health of their employees and shall also be held responsible to protect the health and safety of the community (patients, staff, and visitors) from unwanted effects of construction. Ensuring that a competent person (CP) that has the 30-hour OSHA certification is on the grounds during the construction and rest of the contractors has the 10-hour OSHA certification. Where necessary, the HCS CP may use regulatory agencies to help enforce contractor compliance.

c. The HCS is responsible for eliminating those safety hazards created by or within control (e.g., lock out/tag out of energized equipment, chemical/radiation exposure, infectious materials, etc.). Their representative will notify the contractor of all recognized hazards that cannot be effectively eliminated or controlled. The intention of the construction safety program is to reduce the potential for injury and illness to patients, employees and visitors that might result from unsafe construction activities; to increase the level of construction safety expertise of employees; to decrease the potential for serious OSHA violations; to provide guidelines for addressing safety related construction issues.

d. Construction Site Intervention Authority. The Safety Manager or delegated authority, Contracting Officer (CO) or Contracting Officer’s Technical Representative (COTR) have the responsibility and the authority to immediately halt construction site activities should they observe activities that places individuals in imminent danger or that may be of a serious threat to the loss of facilities or a serious threat to the environment.

**3. Definitions:**

a. CP (by OSHA definition). One who is capable of identifying existing or predictable hazards in the surroundings and working conditions that are unsanitary, hazardous or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them?

b. Inspection/Risk Assessment Checklists. The checklists and risk assessment forms as attached to this document are intended to be examples and are not mandatory. Facilities Management shall ensure appropriate processes to ensure the intent is met and documented.

c. Imminent Danger. A situation exists where it could reasonably be expected to cause death or serious physical harm immediately or before the imminence of such danger can be eliminated.

d. Serious Physical Harm.

(1) Impairment of the body, in which part of the body is made functionally useless or is substantially reduced in efficiency on or off the job. Such impairment may be permanent or temporary, chronic or acute. Injuries involving such impairment would usually require treatment by a medical doctor.

(2) Illness that could shorten life or significantly reduce physical or mental efficiency by inhibiting the normal function or part of the body.

e. Moderate Hazard. A situation exists where it could reasonably be expected to cause moderate physical harm or environmental damage requiring a report to state or local entity.

f. Moderate Physical Harm. Situations where the most serious injury or illness that would likely result from a hazardous condition cannot reasonably be predicted to cause death or serious physical harm to exposed employees, but does not have a direct immediate relationship to their safety.

g. De-minimus. A minor workplace rule violations that may have occur in the construction area that has a minor impact on the contractor, patient, visitor or staff safety.

h. Safety Staff. Staff recognized by the HCS has having specialized training or experience with OSHA regulations, life safety requirements or environmental regulations. Safety staff can include, but shall not be limited to industrial hygienists, safety specialists, safety technicians and firefighters.

i. Contractors. Contractors may be private contractors, subcontractors or vendors providing a service to contractors, and also include VA purchase and hire employees or other VA entities providing construction activities.

j. Interim Life Safety Measures (ILSM) includes the risk assessment process and mitigating measures to address life safety issues that may be a result of the construction.

k. Infection Control Risk Assessment (ICRA) is the process to determine if and when infection control measures must be assessed and enforced.

#### **4. Responsibilities:**

a. The Director is responsible for:

1) Establishing and monitoring an effective construction safety program utilizing a multidisciplinary team concept, which ensures appropriate activities such as infection control and safety risk assessments, interim life safety measures, periodic inspections and other activities are conducted.

2) Ensuring multidisciplinary participation as necessary with respect to the nature of hazards associated with the construction project(s). Participation may change as the project progresses.

3) Ensuring appropriate staff receives training in construction safety including specified construction safety 10-hour and 30-hour courses.

4) Designating a CP to oversee construction safety that has the necessary training, experience and authority to carry out the responsibilities with respect to safety and health during construction. The Designate CP is:

Chief, Facilities Management Service

Project Engineers

Safety Manager

Safety Specialist

GEMS Coordinator

Industrial Hygienist

- 5) Protection of patients, visitors and employees from traumatic injury, as well as occupational and facility-associated infections.
- 6) Compliance with OSHA and State construction safety regulations.
- 7) Compliance with EPA and state environmental regulations.
- 8) Developing a written policy addressing the responsibilities of a multidisciplinary team concept, including processes to document inspection and risk assessment activities. Attachments to this document may be adopted, but are not mandatory if equivalent processes exist at the facility.

b. The **Contracting Officer** is responsible for:

- 1) The review of all proposed contracts to ensure the incorporation of all applicable federal and VA provisions and clauses relating to OSHA, and specific mandatory compliance with these clauses.
- 2) Ensuring that specifications include on-site general and sub-contractor's construction workers have completed the OSHA 10-hour construction worker course, the 30-hour construction worker course, or other relevant competency training as determined by the safety officer.
- 3) Keeping the COTR informed of where and when construction will be taking place, as well as the general nature of the work to be performed.
- 4) Notifying the contractor in writing of any noncompliance with life safety, OSHA, environmental and infection control standards, and requiring timely action.
- 5) The initiation of any appropriate penalties or actions as specified in the contract, should the contractor fail to take appropriate action.
- 6) Providing technical support to the safety staff, infection control staff and other related parties on the interpretation of contract language relative to safety requirements.
- 7) Ensuring that the contractor meets and documents any required safety and health inspection activities.

c. The **Project Engineer** is responsible for:

- 1) Reviewing the project design and becoming familiar with the processes a contractor will use to complete the project.
- 2) Performing and documenting daily work site safety and health inspections as they pertain to the welfare of patients, visitors and staff.
- 3) Providing timely verbal or written notification to the CO, safety office, infection control staff or other disciplines of any identified safety issues.
- 4) Stopping any observed construction activity immediately that may pose an imminent danger.
- 5) Seeking technical support from the safety or infection control staff as needed.
- 6) Having a thorough understanding of the types of processes, equipment and materials to be used on site.
- 7) Having a basic knowledge or understanding of pertinent safety and health regulations.
- 8) Reviewing submitted contractor documentation.
- 9) Notifying the safety office and others of incidents or risks that may affect the health and safety of the HCS.
- 10) Providing technical assistance to the CO, safety or infection control staff relative to construction and contract requirements.
- 11) Coordinating the temporary shutdown of vital equipment and utilities that may impact on patient care, HCS staff or contractor safety.
- 12) Ensuring the security of the construction site is maintained, and that signs are clearly posted to restrict unauthorized access.

d. The **Safety Office and/or Infection Control Staff** are responsible for:

- 1) Ensuring that all construction is reviewed for safety compliance in accordance with the design review schedule, as written in the contract.

2) Ensuring safety/infection control staff participates in the pre-construction briefings and other forums to review safety responsibilities, contractor safety plans and HCS safety requirements associated with the project.

3) Performing and documenting pre-determined work site evaluations as they pertain to the welfare of the patients, visitors and staff.

4) Ensuring the CO and project manager is sent documented notification as soon as practicable, of any safety staff.

5) Delegation of authority for the safety office to immediately stop any observed construction activity that may pose an imminent danger. Such actions require an immediate notice the CO and project manager.

6) Having a general understanding of the processes, equipment and materials to be used on site.

7) Ensuring safety/infection control staff, in conjunction with the project manager, evaluates the need for ILSM and ICRA requirements.

e. The **Contractor including all subcontractors** is responsible for:

1) The health and safety of their employees and the protection of the work environment. All contractor and subcontractor personnel are responsible for compliance with applicable local, state, federal and HCS safety and health regulations. A qualified Contractor's Safety Representative (CSR) (Designated competent person) shall be appointed in accordance with 29 CFR 1926.32 (f) to coordinate and implement the contractors' job site Safety Regulations and Program with the HCS Safety Staff, the Contracting Officer's Technical Representative (COTR) and/or the Project Engineer, as necessary. An OSHA certified "competent person" (CP) is a person who has completed the 30 hour OSHA certified construction safety training course. This duty may fall to the Contractor's Foreman or to an individual specifically hired to perform the function. The Contractor will provide the Safety Manager the necessary telephone, and/or pager, and/or cellular telephone number(s) to contact the CSR 24 hours a day. Beginning January 1, 2005, all employees of general contractor or subcontractor shall have the 10 hour OSHA certified Construction Safety Course and/or other relevant competency training, as determined by the CP.

2) Providing documentation clearly showing the experience and training of the contractor's supervisory personnel, and indicating they are qualified as a competent person to properly supervise and maintain job site safety. During projects lasting greater than 30 days, the CSR will hold scheduled meetings to instruct all personnel on safety practices and job site conditions. Meeting notes and attendees will be recorded and submitted to the Safety Office and/or CO.

3) Conducting daily/weekly site safety inspections and maintaining documentation of such inspections and actions taken to abate deficiencies and unsafe conditions as required by the contract or at the request of the CO. (*Note: The CO shall provide the contractor the appropriate inspection form as developed by the host facility with the contractor completing and giving the Safety Office a copy at least once a week.*)

f. The **CSR** is responsible for:

1) Furnishing and maintaining safety equipment and enforcing the use of such equipment by all personnel.

2) Maintaining accurate injury/accident reports. All accidents must be reported to the CSR immediately, whether or not an injury or property loss has occurred. An accident investigation report must be filed using the contractors' reporting mechanism. Accidents or incidents involving patients, personnel or property will be completed by the COTR in conjunction with the contractor and the Safety Manager using the ASISTS GUI, "Report of Accident or Incident".

3) Ensuring that an after hour safety program is instituted when working beyond normal work hours and weekends, or if first aid station/emergency care facilities are not readily available, the CSR will designate a person who has a current first aid card to work during these hours to fulfill first aid measures,

should they be required. Emergency and humanitarian first aid services (billed to the employee's medical insurance) and services for qualified veterans may be obtained at the Emergency Department at the Montgomery Campus during operating hours. The contractor must arrange for all other medical services to include the work that is accomplished at the Tuskegee Campus. Each job site shall have a physician-approved first-aid kit; expended items shall be replaced as required.

4) Coordinating all work activities with the requirements of the Safety and Health program, including the requirements set forth in established the policies, procedures, memorandums and standard operating procedures.

5) Developing a comprehensive safety program and submitting to the Safety Office for approval prior to the commencement of work activities under the contract. At a minimum, the contractors' safety plan shall incorporate the following programs as applicable:

A Fire Prevention Program emphasizing TJC ILSMs.

Assured equipment grounding program, including a method for assuring the safe and proper operations of all equipment brought into the facilities.

A Respirator Program

Housekeeping and Scrap Waste Material Disposal and Recycling procedures that shows how much waste is being disposed and recycled on a daily basis

A scaffold and ladder safety program

A Hazard Communication Program

A Confined Space Entry and trenching and excavation program

A Lock out/Tag out program.

A Personal Protective Equipment Program

A Hot Work Permit and Fire Watch Program

A Hearing Conservation Program

A method for informing any subcontractors of the requirements of the HCS safety program and insuring compliance with all aspects

## **5. Procedures:**

### **a. Design Review.**

1) The CO will make available to the safety/infection control staff, the technical plans and specifications for construction projects in accordance with the design review schedule, as written in the contract. The design review schedule will be established to afford the safety/infection control staff sufficient time to perform the review.

2) The Safety/Infection control staff will assist the project manager in identifying special safety or health training requirements that must be met by the contractor or vendor, such as pre-construction training and/or periodic training. They shall monitor the need for specialized training and shall coordinate such training with the CO or project manager.

3) The Safety Office and Infection Control Staff, in conjunction with the Project Manager, will evaluate the need for ILSMs or ICRA requirements using current TJC criteria or CDC guidelines, and implement accordingly.

**b. Construction Contract Submittals.** The CO and Safety staff will review the submittal list to identify those items that are key items to the HCS staff safety, patient or visitor safety and any regulatory compliance. The CO and Safety/Infection Control staff will ensure, within an agreeable timeframe, those targeted submittals are reviewed for completeness and accuracy.

**c. Pre-Construction Meetings.** A meeting of the CO, Safety/Infection Control Staff and contractor or subcontractors must be held prior to initiation of work to review the contractor plans to address the ILSM and ICRA measures, and to ensure everyone is familiar with their role for the following:

1) Identification of the contractor and the subcontractor CP(s).

2) Identification of local, state and federal safety and environmental regulations that are in effect and applicable during the construction; e.g., OSHA, EPA, NFPA and VA regulations, hot work permits, fire detection and suppression system disruptions, etc.

3) Review of all ILSM or ICRA requirements that apply to the phase or phases of the contract, and/or establish periodic review.

d. Construction Site Oversight and Inspections. The facility will provide site oversight and inspections to ensure the welfare of the patients, visitors, staff and /or environment.

1) Construction activities must not take place without appropriate facility oversight. The facility responsibility must be conducted by staff on duty and located on the property in which the construction activities are taking place. Should the Project Manager not be available to provide this oversight, a replacement will be designated. The replacement shall have sufficient time and ability to perform such duties, and shall have the same level of authority as the project manager of the project.

2) The Project Manager shall visit the site daily, conduct a safety/health inspection of the construction site, and document the findings. The Project Manager shall make all documents available for review by the CO, safety staff, or other regulatory agency representative. *(Note: The attached inspection forms are recommendations and not mandated. Each facility may adopt alternate forms of inspection, assessment, and documentation as long as they meet the full intent.)*

3) The Safety/Infection Control staff will conduct periodic construction site hazard surveillance for each project as determined by the CP, the ILSMs and ICRA reports. All documents shall be available to regulatory agency representatives upon request.

e. Construction Site Activity Intervention.

1) All work must be immediately stopped should the CO, Project Manager, Infection Control or Safety staff identify activities that could reasonably be expected to cause death or serious physical harm immediately or before the imminence of such danger can be eliminated.

2) Unresolved safety issues, including continuous and/or repetitive deficiencies that are the cumulative effect, may represent a more serious safety concern and will be brought to the attention of the CO for resolution.

a) At a minimum, the CO must notify the contractor in writing of noncompliance with life safety, OSHA, environmental and infection control standards requiring timely corrective action.

b) Repeated contractor failure to correct hazards or blatant disregard for safety and environment will not be tolerated. Lack of cooperative action by the contractor will result in increasing pressure to comply, including contact of government enforcement agencies of job safety and the environment.

f. Infection Control: Contractors must strictly adhere to infection control measures to control the generation of dust, and provide for the containment of the dust in and around patient care areas, supplies and equipment during all phases of the construction.

1) Where possible, the construction area shall be under negative pressure, ensuring there is an appreciable flow of clean air from the occupied area into the demolition/construction area.

2) Construction debris transported through the occupied portion of the buildings shall be covered, and carts will be wiped down or vacuumed to reduce the transporting of dust and contamination from construction areas to occupied areas.

3) Construction employees shall remove or cover dust-laden clothing before entering the occupied portion of the HCS when practical.

4) Carpet/sticky mats shall be placed at all construction site entrances and satisfactorily maintained so as to minimize the tracking of dust into the occupied portion of the buildings.

5) Dry sweeping of dust and debris may only be performed in a manner that does not create a dust issue in the occupied portion of the buildings.

g. Post-Construction Survey.

1) The CO, Project Manager, Safety/Infection Control staff or others shall conduct a post construction survey of the site to ensure compliance and functionality of all building components and systems. Punch lists shall be developed and tracked for completion by the Project Manager.

2) The Safety/Infection Control staff and the VISN Safety Manager shall be offered a pre-occupancy inspection for those projects deemed necessary.

**Job Safety Check Sheet**

Company: \_\_\_\_\_ Division: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Job Name/Location: \_\_\_\_\_ Job Number: \_\_\_\_\_ Crew Size: \_\_\_\_\_  
 Type of Work: \_\_\_\_\_ Weather: \_\_\_\_\_ Temperature: \_\_\_\_\_  
 Inspected By: \_\_\_\_\_ Title: \_\_\_\_\_  
 Inspected By: \_\_\_\_\_ Title: \_\_\_\_\_

**A. PPE:**

1. Hard hats in use by all personnel.
2. Eye protection in use by all personnel.
3. Hearing protection (engineering controls, double protection for high noise areas, rotation of employees).
4. Proper footwear and protective clothing.
5. Fall protection in use.
6. Respirators/face masks in good condition and used as required (medical evaluation and fit test).

**B. Tools and Equipment:**

1. Tools and equipment in good condition.
2. All equipment properly guarded.
3. Electrical equipment connected properly, grounded and in good condition; GFCI; automatic magnetic cut-off for woodworking tools.
4. Air/sandblast hoses in good condition and properly wired.
5. Compressors equipped with automatic shut-off.
6. Ladders in good condition; tied back; extended 3 ft. beyond landing.

No.	Grade 1 to 5 (5 is Best)	N/A	COMMENTS – Note Improvements Needed:
<b>A1</b>	<b>1 2 3 4 5</b>		
<b>A2</b>	<b>1 2 3 4 5</b>		
<b>A3</b>	<b>1 2 3 4 5</b>		
<b>A4</b>	<b>1 2 3 4 5</b>		
<b>A5</b>	<b>1 2 3 4 5</b>		
<b>A6</b>	<b>1 2 3 4 5</b>		
<b>B1</b>	<b>1 2 3 4 5</b>		
<b>B2</b>	<b>1 2 3 4 5</b>		
<b>B3</b>	<b>1 2 3 4 5</b>		
<b>B4</b>	<b>1 2 3 4 5</b>		
<b>B5</b>	<b>1 2 3 4 5</b>		
<b>B6</b>	<b>1 2 3 4 5</b>		

**C. Scaffolding:**  Suspended  Tubular  Other (***Rope Falls Not Permitted***)

1. Scaffold in good repair; guardrails; toe boards and wire mesh in place.
2. Counterweights marked with weight and in proper ratio.
3. Scaffold tied back and tied in.
4. Passageways under scaffold blocked.

**D. Hazardous Chemicals/Air Contaminants:**

1. Hazard Communication Right-To-Know poster / written program on job.
2. List of hazardous materials on job.
3. Material Safety Data Sheets.
4. Employees are familiar with program.
5. Proper containers in use with correct labels.

**E. General:**

1. Safe access to work area.
2. Good housekeeping and material storage.
3. Barricades/debris protection/warning signs in place.
4. Floor and wall openings properly protected.
5. Shoring properly installed; engineer's stamped drawings on job.
6. Eye wash available.
7. Fire extinguisher: Good condition; current inspection tag; within 50 ft.
8. First aid: Kit and certified employees.
9. Trucks: Safe/good condition; D.O.T. regulation compliance.

**F. Paperwork and Other Postings:**

1. OSHA poster/log.
2. Emergency phone number card.
3. Drug-Free Workplace Policy Summary and poster (if applicable).
4. Job logs and Job Safety Check Sheets.
5. Site-Specific Safety Plan (if applicable).

<b>C1</b>	<b>1 2 3 4 5</b>		
<b>C2</b>	<b>1 2 3 4 5</b>		
<b>C3</b>	<b>1 2 3 4 5</b>		
<b>C4</b>	<b>1 2 3 4 5</b>		
<b>D1</b>	<b>1 2 3 4 5</b>		
<b>D2</b>	<b>1 2 3 4 5</b>		
<b>D3</b>	<b>1 2 3 4 5</b>		
<b>D4</b>	<b>1 2 3 4 5</b>		
<b>D5</b>	<b>1 2 3 4 5</b>		
<b>E1</b>	<b>1 2 3 4 5</b>		
<b>E2</b>	<b>1 2 3 4 5</b>		
<b>E3</b>	<b>1 2 3 4 5</b>		
<b>E4</b>	<b>1 2 3 4 5</b>		
<b>E5</b>	<b>1 2 3 4 5</b>		
<b>E6</b>	<b>1 2 3 4 5</b>		
<b>E7</b>	<b>1 2 3 4 5</b>		
<b>E8</b>	<b>1 2 3 4 5</b>		
<b>E9</b>	<b>1 2 3 4 5</b>		
<b>F1</b>	<b>1 2 3 4 5</b>		
<b>F2</b>	<b>1 2 3 4 5</b>		
<b>F3</b>	<b>1 2 3 4 5</b>		
<b>F4</b>	<b>1 2 3 4 5</b>		
<b>F5</b>	<b>1 2 3 4 5</b>		

**CHAPTER 2**  
**GENERAL JOBSITE SAFETY RULES**

**1. General Intention:** Safety and health concerns are taken seriously at this HCS. Both our staff and yours are expected to strictly adhere to the regulations and requirements. This is extremely important, since we must be concerned for the safety of our American Heroes, the veterans. In this regard, OSHA Standards may protect worker safety and health, but they have minimal benefit for protecting our patients, due primarily to their medical conditions. Review this information as orientation with your personnel performing work on site. Where the requirements as outlined in this and Section 01010 are differing, the more stringent shall apply.

**2. Requirements:**

a. Security:

1. Secure all construction areas, especially mechanical and electrical rooms against entry of unauthorized individuals including patients. **Do not leave any rooms unsecured at any time. Do not leave any equipment around unattended, for they can be stolen and/or use as a weapon.**

2. Notify the COTR for permission to work after hours and weekends. Standard work hours for the HCS are Monday–Friday, 8:00 a.m. to 4:30 p.m.

3. Concealed weapons; firearms, alcohol, drugs and similar contraband are not allowed on the property. Individuals entering the federal installation consent to the search of their persons and vehicles without the need to show cause. Contractor employees will not perform work while under the influence of illegal drugs or while using prescription medications that will impair their ability to operate tools, use machinery or drive motor vehicles safely.

b. Key Security:

1. Only a limited number of keys will be issued to the contractor.

2. If the Contractor loses a key, all areas that are keyed to that key will be re-keyed at the Contractor's expense at a charge of \$5.00 per key and \$5.00 per change. All new keys required to be issued will be completed at the Contractor's expense.

3. Ensure all doors leading to and from construction are either monitored or locked to prevent access to the area from unauthorized persons.

c. General Safety: The contractor shall be responsible for promoting and maintaining safe-working conditions at all times. The CSR shall instruct all workers with regard to performing their duties in a safe manner as possible and the hazards involved. Workers will follow all contractor safety rules and those of the HCS. The CSR shall ensure that no worker will be permitted to work in or enter a place where it is known that a dangerous condition exists, except to remove the danger, and then only under direction supervision, utilizing appropriate precautionary measures.

1. Follow all federal, state and local safety and health regulations. (Since Alabama doesn't have a local safety and health regulations, it's required that you follow the Federal OSHA regulations.)

2. Maintain safety in the construction site/area in accordance with the provisions of the contract that includes the OSHA Regulations; NEC 70 and NFPA 101, Life Safety Code, current edition. Work in a safe manner and take all proper precautions while performing your work. Extra precautions shall be taken when working around persons occupying the building during construction.

3. Provide PPE for your employees.

4. Post appropriate signs in specific hazardous areas.

5. Keep tools, ladders, etc., away from patients to prevent injuries. Machinery guards shall be kept in place at all times, except while being repaired, maintained, or adjusted. Unless necessary, machinery shall not be repaired while in motion, such as timing adjustments and calibration. Lock out procedure

must be followed. Hammers or other striking tools and struck tools such as chisels and chipped edges, mushroomed heads, broken or split handles shall not be used. Handles will be provided for all rat-tail files.

d. Safety Inspections: The professional Safety staff at the HCS will perform safety inspections of all contract operations. Written reports of unsafe practices or conditions will be reported to the COTR and Contracting Officer for immediate attention and resolution.

e. Fire Alarms:

1. The fire alarm system connects all buildings, and is activated by various heat, duct, manual pull stations and smoke sensors. Manual pull stations are provided at each entrance. Please survey the area in which you are working to locate the manual pull stations.

2. In the event of a fire alarm sounding, you are to remain in your area, unless personnel (Safety, Nursing or Engineering) instruct otherwise, or unless a fire situation is in your area, in which case you should immediately evacuate.

3. Any work involving the fire protection systems will require written permission to proceed from the COTR. **Do not tamper with or otherwise disturb any fire alarm system components without prior written permission, to do so without written permission will result in an adverse action.**

f. Hazardous Materials:

1. Many of the operations you are scheduled to perform may involve the use of hazardous materials. Prior to locating hazardous materials on site, all Material Safety Data Sheets (MSDS) will be submitted through the COTR for evaluation by the Safety Office.

2. Storage of hazardous materials within buildings will be minimal with only enough on hand to perform daily work tasks. Flammable materials will either be removed from buildings at the end of the work shift or stored in approved flammable storage containers.

3. Care must be taken to ensure adequate ventilation to remove vapors of hazardous materials in use. Many of the patients being cared for in the HCS are susceptible to environmental contaminants, even when odors seem minimal. You will isolate those areas where vapors are produced, and ventilate to the most extent possible to reduce the number of complaints.

g. Airborne Dust Control during Construction:

1. Generation of dust is of major concern within staff and especially in patient occupied buildings. Where operations involve the generation of dust, all efforts will be directed at reducing airborne generated dust to the lowest level feasible. This may be accomplished by a number of methods. These include misting the area with water, or use of tools attached to high efficiency particulate air (HEPA) filtering vacuums. Where large amounts of materials may be disturbed, resulting in airborne dust, establishment of full ceiling-to-floor plastic barriers may be required.

2. Classification of Jobs:

a. CLASS I - Includes, but is not limited to, minor disturbances involving plumbing, electrical, carpentry, ductwork and minor aesthetic improvements.

1. Mist (with water) work surfaces to control dust while cutting. Alternatively a high efficiency particulate air vacuum (HEPA) can be used by positioning the vacuum next to the equipment at the use site.

2. Tape doors for activities that produce large amounts of dust, and block off and seal air vents.

3. Cover holes/openings (penetrations), in walls, ceiling, floors or door that cannot be patched or fixed within 4 hours. Only approved fire-rated materials will be used to fill holes in fire/smoke walls and shall be inspected by the COTR and/or the Safety Staff after completion; preferably that day.

4. Comply with the OSHA regulations regarding noise and vapor containment.
5. Cleanup and disposal: Construction waste must be contained before transport using plastic bags and/or covered transport receptacle and/or cart and tape.
6. Wet mop and/or HEPA vacuum before leaving work area.
7. Place dust mats at entrance and exit of work area, and clean or change daily to prevent tracking of dust into occupied areas.
8. After work completion, remove covering from air vents.

b. CLASS II - (projects require barrier precautions) - Includes, but is not limited to, construction of new walls, construction of new rooms, major utility changes, major equipment installation, demolition of wallboards, plaster, ceramic tiles or ceiling and floor tiles, removal of windows, removal of casework, etc. covering.

1. Same procedures as Class I - however, use of a HEPA vacuum is mandatory.
2. Construct all dust barriers before construction begins per the following instructions: For single rooms, seal door/frame with tape and plastic. The sheet should be divided vertically with a knife. Flaps should be taped on either side of the single sheet to create a flapped entrance.
3. For larger areas, install an airtight (fire retardant) plastic barrier that extends from floor to floor above the suspended ceiling, to prevent dust and debris from escaping. Seal all seams with duct tape. Install barrier partitions to stop movement of air and debris penetrating ceiling envelopes, chases and/or ceiling spaces. Construct entrance with a double flap of plastic to prevent escape of debris; or, if elevator shafts or stairways are within the field of construction, install solid barriers.

h. Contact with Asbestos Containing Materials (ACM):

1. Due to the age of buildings, many contain ACM. Primary ACM uses in the health care system include floor tile, mastic, and piping and HVAC insulation. The HCS has performed a comprehensive asbestos survey and has identified accessible ACM. Some areas contain damaged asbestos and should not be accessed without prior abatement.

2. The most common type of ACM insulation you may encounter includes thermal system insulation (TSI) and floor tile. ACM TSI is generally covered with a cloth wrap or lagging, and the asbestos substrate generally appear white in color. **Do not sand, drill, gouge or otherwise disturb this type of insulation.** Contractors disturbing or releasing asbestos containing materials will be liable for all damages and cleanup costs.

3. Where disturbance of asbestos is likely, it has been addressed in the contract for removal. If contact with the presence of asbestos is presented, stop all work in the immediate area and immediately contact the COTR to make the necessary arrangements for removal.

4. In some areas, asbestos insulation has been identified on elbows, between fiberglass piping insulation, as patching materials among the fiberglass insulation. Fiberglass insulation used in this facility is usually yellow or pink in color, wrapped either by cloth or paper lagging.

5. To protect and ensure all your employees are aware that asbestos containing materials have been used in the construction of this facility, you are required to have them review this section and complete the awareness statement.

6. A complete assessment of asbestos materials and conditions are available for viewing by contacting the GEMS Coordinator at extension 4883 (Montgomery) and 3707 (Tuskegee). Prior to performing work above any ceiling or starting in a new area, consult with the COTR concerning existing conditions of ACM.

7. Some of the areas in the facility are identified as restricted areas due to condition of ACM. These are readily labeled. **Do not enter these areas** unless first contacting the COTR. Entry requirements to these areas are awareness of the hazards, proper protective clothing (coveralls and respirators) and personal monitoring in accordance with OSHA requirements.

8. Submit contractor asbestos awareness statements for all persons working on the site prior to commencing work.

i. Environmental Protection:

1. It may help you to be aware of the seriousness that the environmental protection requirements of each contract are regarded. Adherence to these requirements is subject to continuing scrutiny from the community and backed by severe penalties, such as fines and incarceration. These environmental requirements will be strictly enforced.

2. **No** hazardous materials will be disposed of on government property. All waste will be hauled off-site or disposed in contractor owned and operated waste removal containers.

3. A copy of all waste manifests for special or hazardous wastes will be forwarded to the COTR. Environmental requirements will be strictly enforced.

j. Permit Required Confined Spaces:

1. Contractors performing work on this facility will follow all requirements outlined in OSHA Standards for working in confined spaces. There are numerous permit required confined spaces on this facility. These spaces have been identified. Some spaces have been posted, but the majority has not due to their configuration. A complete listing of these areas is located in the Safety Office. **You may request a copy from the Safety Office at the Montgomery Campus, Bldg 7, 2<sup>nd</sup> floor or the Tuskegee Campus, Bldg 68, room 63 or 57.**

2. Confined spaces are areas that are large enough to be entered; have limited egress/exit potential and are not designed for permanent human occupancy. If you encounter any space that meets this definition, and if it is a suspected confined space, please contact the COTR.

3. Contractors performing work in confined spaces are responsible for compliance with all applicable standards and regulations.

k. Housekeeping:

1. Protect patients and personnel in occupied areas from the hazards of dust, noise, construction debris and material associated with a construction environment. Keep work area clear, clean and free of loose debris, construction materials and partially installed work that would create a safety hazard or interfere with personnel duties and traffic.

2. Wet mop occupied areas clean and remove any accumulation of dust/debris from cutting or drilling from any surface at the end of each workday.

3. Make every effort to keep dust and noise to a minimum at all times. Take special precautions to protect equipment from damage including excessive dust.

4. Maintain clear access to mechanical, electrical devices, equipment and main corridors. This will ensure access to existing systems in the event of an emergency.

5. Clean area of all construction debris and dust upon completion of demolition and/or renovation.

6. During construction operations, keep existing finishes protected from damage. Cover and protect all carpets during construction. Any carpets or surfaces damaged as a result of construction activities will be replaced at the contractor expense.

l. Hot Work Permits:

1. Any hot work operations including cutting, welding, thermal welding, brazing, soldering, grinding, thermal spraying, thawing pipes or any other similar activity, will require a Hot Work Permit to be obtained by the Contractor from the HCS Fire Department at the Tuskegee Campus and Safety Office/Boiler Plant at the Montgomery Campus. The Contractor will be responsible for conforming to all HCS regulations, policies and procedures concerning Hot Work Permits as outlined below:

a. Prior to the performance of hot work in patient-occupied buildings, a request for a Hot Work Permit will be made at the HCS Fire Department (extension 3377 Tuskegee Campus) and the Boiler Plant (x4897 Montgomery Campus).

b. The COTR will inspect the area and ensure that the requirements of NFPA 241 and OSHA standards have been satisfied. The Hot Work Permit will be granted and will be posted in the immediate area of the work.

c. The Hot Work Permit will apply only to the location identified on the permit. If additional areas involve hot work, additional permits must be requested.

d. Upon completion of all hot work, the COTR will be notified by the responsible individual to perform a re-inspection of the area.

2. Do not use any of the extinguishers in the health care system for standby purpose while conducting hot work. Contractors are required to supply their own Class ABC extinguishers. The HCS fire extinguishers are only to be used in the event of a fire.

m. Emergency Medical Services: Emergency medical services for stabilization purposes are available for contractors at this health care system. For medical emergencies, dial 3377 (Tuskegee Campus), 911 when inside any building. Report the nature of the emergency and location. The operator will dispatch in-house personnel or coordinate an outside emergency assistance based on the nature of the emergency.

n. Use of Government-Owned Material and Equipment: Use of Government-owned material and equipment is **prohibited**.

o. Superintendent Communications: At all times during the performance of this contract, the Contractors Superintendent is to be available by cellular phone. At the beginning of the contract and prior to beginning any construction, supply the COTR with the telephone number for the Superintendent.

p. Parking: Contractor employees shall be assigned a parking area during the preconstruction meeting.

q. Traffic:

1. Traffic hazards are minimal at this facility. Drivers should be particularly concerned with pedestrian traffic.

2. Seat belt use is mandatory on the station.

3. Federal police officers maintain a 24-hour patrol of the area.

r. Contractor's Trailers: Contractor's trailers shall be located at the area assigned. All utility connections to the trailer shall be installed at the contractor expense. Trailer removal is required upon completion of the contract, unless approved by the COTR to leave in place. All contractor personnel will properly display the identification badge issue to them. The CRS will keep an accurate log of the badge numbers issued to him and will be able to identify the individual employee by the badge at all times.

s. Smoking: No smoking is permitted in buildings or around hazardous areas. Any smoking inside a government building is subject to a fine without warning.

t. Fluorescent (PCB Containing) Fixtures: All fluorescent lighting fixtures being removed as part of this project are to have their ballasts removed and collected for disposal. All components of the lighting fixture are to be disposed of by the Contractor following EPA, ADEM, and DOT guidelines.

u. Road Closures: For any work requiring closure of a road or parking lot, a request for closure will be made in writing at least 5 days in advance for approval by the COTR and HCS Fire Department. Contractor-required road closures require completing a permit and forwarding to the COTR for authorization by the HCS Fire Department. Permits will be issued for no longer than 1 week. Work lasting longer than 1 week will be authorized by multiple permits.

## Weekly Construction Area Safety Inspection Form

Date: \_\_\_\_\_ Contract Number or Description: \_\_\_\_\_

Area or Building Name: \_\_\_\_\_

Inspectors: \_\_\_\_\_

1. Please survey the work area and explain any deficiencies that you find in Section 3.

<b>Section A – Means of Egress</b>			
	YES	NO	N/A
1. Fire/Smoke Doors unlocked, free of obstructions?			
2. Means of Egress free of obstructions and clearly marked?			
<b>Section B - Fire Alarm, Fire Detection and Fire Suppression Systems</b>			
	YES	NO	N/A
1. Fire Alarm Pull Stations unobstructed? (If still in service)			
2. Are smoke detector dust caps in use (if still in service)?			
3. Contractor employee assigned to insure caps are removed at close of the work day?			
4. Hot Work Permits in use?			
5. Are sprinkler heads unobstructed?			
6. Heat detectors installed and in service?			
<b>Section C – Housekeeping and Traffic Control</b>			
	YES	NO	N/A
1. Trash and debris removed promptly?			
2. Debris covered / dampened prior to being transported outside the construction area?			
3. Floor mats and dust tack mats located at the entrance to the construction area and replaced as needed?			
4. Tool & material storage neat and orderly (18" below sprinkler heads)?			
5. Signs installed to restrict patient access (doors locked as needed)?			
6. Dust is picked up using a shop vacuum or other dust reducing technique. (Dry sweeping is not performed)?			
7. Doors closed, sheetrock or fire resistant plastic sheeting installed to enclose wall openings?			
8. Barriers are wiped down prior to being removed?			
<b>Section D - Air Handling &amp; HVAC</b>			
	YES	NO	N/A
1. Negative pressure, with respect to the patient occupied space, is maintained within the construction area?			
2. HVAC exhausts and supply ducts are covered during demolition?			
3. Construction debris chutes are not adjacent to open windows or HVAC air intakes?			
4. Other (list).			
<b>Section E - Hazardous Chemicals / Conditions</b>			
	YES	NO	N/A
1. Appropriate storage?			
2. MSDS(s) posted on job site?			
3. Lock Out / Tag Out procedures in place?			
4. Permit Required Confined Space procedures in place?			
5. Hazardous building materials, such as asbestos, have been identified			

and addressed?			
6. Other (list).			

<b>Section F - Clothing</b>			
	YES	NO	N/A
1. Contractor clothing are relatively dust free when performing work in a patient occupied space?			
2. Contractors with dusty clothing are provided gowns and foot coverings when exiting through critical patient care areas?			
3. Other (list).			

2. Please explain nature of any non-compliance issues from the front:

<b>Section I - Non-Compliance Issues</b>		
Item #	Deficiency	Corrective Actions

Content of the above checklist is advisory and should be modified to satisfy the circumstances of the specific contract or work activity. Any modification of the checklist requires the consent of the safety and engineering staff.

**Contractor/Subcontractor/Employee Notification of Asbestos Form**

The HCS was constructed during a period when asbestos was commonly used in building materials.

The HCS has completed a survey for asbestos. All buildings contain some type of asbestos (i.e. steam lines, floor tiles, crawl spaces, etc.).

If you or your employee encounters suspected friable asbestos or conditions that may cause suspected asbestos to become friable, notify the COTR immediately.

When working in areas that are suspected of having asbestos, relocate employees and patients from the area until work is completed.

If there are any questions, please feel free to contact the COTR \_\_\_\_\_.

Thank you for your assistance.

Contractor/Subcontractor/Employee signature, please sign and date below as acknowledgement of the above information.

Employee Name

Contractor/Subcontractor

Date

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**Permit for Road Closure Form**

VA Project No: \_\_\_\_\_ Date of Request: \_\_\_\_\_  
Name of Contractor's Firm: \_\_\_\_\_  
Date(s) of Requested Closure: \_\_\_\_\_  
Time(s) of Requested Closure: \_\_\_\_\_  
Location Description: \_\_\_\_\_

Work to be done: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Protection required (to be completed by COTR):
- \_\_\_ Solid barricade with flashing lights to guard excavation site
  - \_\_\_ Warning cones and/or construction barrier tape.
  - \_\_\_ Construction Fencing.
  - \_\_\_ Flag/attendant for directing traffic
  - \_\_\_ Cover excavation site with steel sheet to permit traffic flow after administrative work hours
  - \_\_\_ Other describe

COTR Concurrence: \_\_\_\_\_ Date: \_\_\_\_\_  
Fire Department Approval: \_\_\_\_\_ Date: \_\_\_\_\_

(Fire Department Officer who approves permit will contact the on-duty Police Officer to inform of closure.)

(Original copy of the form is to be maintained in the HCS Fire Department until completion of work. Once the form is completed, return original to the COTR for filing.)

## **Sample Contractor Orientation Procedures**

In order to promote safety in construction activities, the HCS shall orient individual contractors to specific safety concerns. These documents provide examples of programs used to give contractors the necessary site-specific and procedural information.

The first example is a process used to orient contractors with the policies and standard forms used. During the pre-construction meeting, contractors are given a Contract Worker's Safety Information document that summarizes policies such as utility shutdown, smoking policies, dust and order requirements, what to do in case of a fire, and other pertinent information. Along with the document, each contractor is provided a safety brochure that summarizes much of the same information in a brief, east-to-read form.

Also provided to the contractor is a CD containing the forms that should be used for doing various types of work?

- Pre-Construction Checklist
- After Hours Work Request
- Confined Space Entry Permit
- Construction Worker Infection Control Information
- Contractor Cutting and Welding Permit (Hot Work)
- Contract ID Badge Request Form
- Contract Key Receipt
- Contractor Parking Permit Request
- Interstitial Work Protocol
- Life Safety Measures
- Risk Assessment Form
- VA Daily Log Form
- Request for Information Log
- Request for Proposal Log
- Supplemental Agreement Log
- Barrier Type and Control Requirement

Another way to orient the contractor to site-specific issues is to create a specification section that is dedicated to this issue. This document lays out the requirements for security, key security, general safety, safety inspections, fire alarms, etc.

## Contract Worker's Safety Information

Contract Reference: \_\_\_\_\_

The HCS is a full service medical center with inpatients, outpatients, and staff who can be affected by what you do while working here. Many of these patients may have health problems that make them more susceptible to materials used or generated in your work area.

In the event of a fire, (you will hear "Code Red" and the location) remember **RACE**. Rescue the persons in immediate danger, pull the fire alarm and contain the fire by closing any doors. If it is safe to do so, and you have been trained, try to extinguish the fire with a portable fire extinguisher. If you do not hear the alarm sound call after you have pulled the alarm, please call ext 3378 (Tuskegee Campus) and x4444 (Montgomery Campus) to report the location. Know the location of the fire alarm and extinguisher in your work area.

Keep all dust and odors within the construction or maintenance site. All MSDS for materials must be posted. Provide MSDS to the COTR. MSDS for materials already present in the area may be obtained through the Safety Office.

**Asbestos:** Assume that any sprayed on fireproofing and thermal insulation contains asbestos. All interstitial spaces are considered asbestos hazard areas and require specific training and personal protective equipment. Ceiling tiles provide the barrier between the asbestos in the interstitial and the occupied areas below. Interior walls provide a similar barrier to asbestos fireproofing on vertical columns.

**Ceiling tiles cannot be moved or displaced without proper containment and PPE. Wall penetrations cannot be made without proper containment and PPE. Immediately report all disturbances of asbestos containing materials to your supervisor and the COTR.**

**Hazardous Waste:** HCS indicates waste that is hazardous with different colored bags.

Red for infectious or bio-hazards waste

Yellow for radioactive waste

Clear for general waste

Signs on containers also indicate whether the contents are bio-hazards, radioactive or cyto-toxic.

**DO NOT TOUCH THE CONTENTS OF ANY OF THESE CONTAINERS.**

**Hazardous Spills:** Locate the MSDS and contact the contractor safety representative and/or the Safety Office if you need assistance.

**Utility Shutdown:** You must notify your supervisor and COTR

Prior to lock out/tag out of any utility system

If a utility failure occurs.

Prior to restoring the system

**Injuries:** Either Occupational Health or Emergency Department will evaluate all bleeding wounds at the Montgomery Campus. Injuries at the Tuskegee Campus the contractor must take the person to the nearest medical center for treatment.

**Smoking:** Smoking is not allowed in any building and only in designated outdoor areas.

**Patient Care Areas:** Before entering a patient care room, receive permission and instructions from the nurse in charge. Respect the privacy of all patients. Remember, the patients at the HCS are veterans who have served to protect our country.

Your Project Manager (COTR) is: \_\_\_\_\_ Cell Phone: \_\_\_\_\_

The Safety Manager is: \_\_\_\_\_ Cell Phone: \_\_\_\_\_

Police and Security can be reached at extension 3468 (Tuskegee Campus).

Employee Name/Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**CHAPTER 3**  
**CONTRACTORS FIRE PROTECTION & PREVENTION PROGRAM**

**1. General Requirements:** This policy will be followed throughout all phases of the construction and demolition work and shall provide the equipment as specified in the OSHA regulations.

a. Access to all firefighting equipment must be maintained at all times. Specifications are given in the standard for the amount, type and distance required to reach firefighting equipment. Access to emergency vehicles will be maintained at all times as well.

b. Firefighting equipment must be easily located. This is a common problem on construction sites. The fire extinguisher that is inside of a truck parked outside, or buried behind boxes or materials, cannot be easily found.

c. Firefighting equipment must be inspected daily and maintained in operating condition. Defective equipment shall be immediately removed and replaced. Periodic inspection can be determined by examining the tag that should be on all portable fire extinguishers. This tag will tell you when it was serviced, if it has been inspected on a monthly basis as required, and when it is due for the annual inspection.

d. The contractor shall provide a trained fire brigade to ensure adequate protection to life, as warranted by the project.

e. Water Supply.

1. A temporary or permanent water supply of sufficient volume, duration and pressure required to properly operate the firefighting equipment shall be made as soon as combustible materials begin to accumulate.

2. Where underground mains are provided, water supply shall be installed, completed and made available for use as soon as practicable.

*Note: The following specific OSHA requirements represent a minimally effective program, and may be superseded by the HCS Fire Protection Program.*

f. Portable Firefighting Equipment.

1. Fire extinguishers and small hose lines.

a. A fire extinguisher, rated not less than 2A, shall be provided for each 3,000 square feet of the protected building. Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 100 feet.

b. One 55-gallon drum of water with 2 fire pails may be substituted for a fire extinguisher having a 2A rating.

c. A 1/2 inch diameter garden-type hose not exceeding 100 feet in length may be substituted for a 2A-rated fire extinguisher, provided it can discharge at a rate of 5 GPM with a minimum hose stream range of 30 feet horizontally. (The use of garden-type hose is not commonly found on construction sites due to the availability of commercial portable fire extinguishers.)

d. One or more fire extinguishers, not rated less than 2A, shall be provided on each floor. In multi-story buildings, at least one extinguisher shall be located adjacent to a stairway.

e. Extinguishers and water drums that are subject to freezing shall be protected from freezing.

f. Carbon tetrachloride or other toxic vaporizing liquid fire extinguishers are **prohibited**.

g. Portable fire extinguishers must be inspected periodically and maintained in accordance with Maintenance and Use of Portable Fire Extinguishers, NFPA 10 (current edition).

h. Fire extinguishers, which have been listed or approved by a nationally recognized testing laboratory, shall be used to meet the requirements of this subpart.

2. Fire Hose and Connections.

a. One hundred feet of 1½ inch hose, with a nozzle capable of discharging water at 25 gallons or more per minute, may be substituted for a fire extinguisher not rated more than 2A in the designated area, provided the hose can reach all points in the area.

b. If the hose connections are not compatible with local firefighting equipment, the contractor shall provide adaptors or equivalent to permit connection.

c. During demolition involving combustible materials, charged hose lines supplied by hydrants, water tank trucks with pumps or equivalent shall be made available.

3. Fixed Firefighting Equipment.

a. Sprinkler protection.

1. If the HCS being constructed includes the installation of automatic sprinkler protection, the installation shall closely follow the construction and be placed in service as soon as applicable laws permit.

2. During demolition or alterations at the HCS, existing automatic sprinkler installations shall be retained in service as long as possible.

b. Standpipe systems. In structures where standpipes are required, they shall be brought up as soon as possible and shall be maintained as construction progresses. The standpipe shall be provided with a Siamese connection on the outside of the structure. At least one standard hose is required on each floor.

4. Fire Alarm Devices.

a. An alarm system shall be established by the employer so that the employees and the local fire department can be alerted of an emergency.

b. The alarm code and reporting instructions shall be conspicuously posted at phones and at employee entrances.

c. No portion of the automatic or manual fire alarm or sprinkler system will be disabled at any time. Where construction involves the complete removal of a fire alarm or sprinkler zone, a temporary system will be installed. Temporary systems will be inspected at least monthly.

5. Fire Prevention

a. Ignition Hazards. Electrical wiring and equipment for light, heat or power must be installed in compliance with Subpart K of the OSHA Construction Standards.

1. Internal combustion engine-powered equipment must be located so that the exhaust is clear of combustible materials. If the exhaust is piped out of the building, there must be a clearance of six inches between the piping and combustible materials. Proper ventilation will be employed for confined areas to prevent flammable fume buildup. Fuel cans or combustible material shall not be left near open flames, sparks or areas where welding and cutting are performed.

2. Smoking is prohibited in the vicinity of operations that constitute a fire hazard, and signage must be posted: No Smoking or Open Flames. Some operations will prohibit smoking while working with or around a certain process. In most situations, the prohibition of smoking will be a decision made by the person directing the work.

3. Portable battery-powered lighting used in or around flammable gases or liquids must be approved for hazardous locations.

4. The nozzles of air, inert gas, steam lines or hoses must be bonded when used in the cleaning or ventilation of tanks and vessels that contain hazardous concentrations of flammable gases or vapors. This bonding must be to the tank or vessel shell, and not attached or detached in hazardous locations.

b. Hazardous Locations.

1. No temporary building shall be erected where it may adversely affect the means of exit.
2. Temporary buildings, when located within another structure, shall be either non-combustible or of combustible construction with a fire resistance of not less than one hour.
3. Temporary buildings not located within another structure and not used for the storage, handling or use of flammable or combustible liquids or other hazardous occupancies, shall be located at least 10 feet from another building or structure.
4. Also see NFPA 241, which is referenced by the VA Specification Section 01010 General Requirements and the VA Fire Protection Design Manual. These documents have more stringent requirements for the location of temporary structures.

c. Open Yard Storage. Open yard storage is not commonly found on construction jobsites. The open yard storage requirements are meant for locations where large piles of combustibles (such as lumber or rail road ties) will be stored for an indefinite period of time:

1. Combustible materials shall be piled with regard to the stability of the piles, but in no case more than 20 feet in height. The method of piling materials shall be solid whenever possible, and in orderly and regular piles. No combustible material shall be stored outdoors within 10 feet of a building or structure.
2. Driveways between and around combustible storage piles must be at least 15 feet wide and must be free from accumulation of rubbish, equipment or other materials. Driveways must be spaced so that the maximum grid system unit of 50 feet by 150 feet is produced.
3. The entire storage area must be kept free of the accumulation of unnecessary combustible materials. Weeds and grass must be controlled.
4. If there is a possibility of an underground fire, the land cannot be used for storage purposes.
5. Portable fire extinguishing equipment, suitable for the fire and hazard involved, shall be provided in a conspicuous, convenient location. Distance to the extinguisher (no smaller than 2A) must be less than 100 feet.

d. Indoor Storage.

1. Storage must not obstruct or adversely affect the means of exit. During construction, especially during fit-out of commercial space, it is common to have a large number of cardboard boxes, paper and other materials begin to accumulate. These materials must not block the means of exit, and should be removed as soon as possible to reduce the fire load inside of the building.
2. Materials must be stored, handled and piled with regard to their fire characteristics.
3. Non-compatible materials that may cause a fire hazard shall be segregated by a barrier having a fire resistance of at least one hour.
4. Materials must be piled to minimize the spread of the fire internally and to permit convenient access for firefighting. Stable piles must be maintained, and aisle space must be maintained to safely accommodate the largest vehicle that will be used for firefighting purposes.
5. Thirty-six inches must be maintained from the top of a pile to the sprinkler deflectors. This space allows the sprinkler deflectors to work properly to effectively stop the spread of fire.
6. Clearance must be provided around lights and heating units to prevent accidental ignition. Traditionally, the requirement is a 36-inch clear area around lighting and temporary heating units.
7. A clearance of 24 inches, plus width of the door, shall be maintained around the path of travel around doors.
8. Material must not be stored within 36 inches of a fire door.
9. Flammable and Combustible Liquids

a. General Requirements. Only approved containers and portable tanks shall be used for storage and handling of flammable and combustible liquids. Approved containers must have a self-closing lid(s) and a flame arrester, and are most commonly made of metal. The use of plastic cans to handle flammable and combustible liquids (such as gasoline, diesel fuel and kerosene) *must* be prohibited on VA jobsites.

- Approved cans or Department of Transportation (DOT) approved containers must be used for the handling and use of flammable liquids in quantities of 5 gallons or less, except when the liquids are highly viscous (hard to pour).

- For quantities less than one gallon, the original container can be used for storage, use and handling of flammable liquids.

- Flammable and combustible liquids shall not be stored in areas used for exits and stairways normally used for the safe passage of people. This includes storage of materials underneath stairways.

b. Indoor Storage of Flammable and Combustible Liquids.

1. No more than 25 gallons of flammable or combustible liquids can be stored in a room outside of an approved storage cabinet.

2. Quantities of flammable and combustible liquids in excess of 25 gallons shall be stored in an acceptable or approved cabinet that meets the following:

- a. Approved metal storage cabinets will be acceptable.

- b. Cabinets must be labeled with conspicuous lettering, i.e., Flammable - Keep Fire Away. Not more than 60 gallons of flammable or 120 gallons of combustible liquids can be kept in one storage cabinet. Not more than three cabinets may be located in a single storage area. Quantities in excess of this must be stored in an inside storage room.

- c. Inside Storage Rooms.

1. Must be constructed to meet the required fire-resistive rating for their use, and must comply with current NFPA 251.

2. Where automatic extinguishing systems are used, the system must be designed and used in an appropriate manner.

3. Openings to other rooms or building shall be provided with noncombustible liquid-tight raised sills or ramps at least four inches in height or the floor in the storage area shall be kept at least four inches below the surrounding floor.

4. Door openings must have self-closing fire doors.

5. The room must be liquid tight where the walls meet the floors.

6. An open trench inside the room, which drains to a safe location, is a permissible alternate.

7. Where other portions of the building or other buildings are exposed, windows must be provided as specified in the current edition of NFPA 80.

8. Wood of at least one-inch nominal thickness may be used for shelving, racks, Dunn age, scuff boards, floor overlay or similar installations.

9. Materials that will react with water and create a fire hazard shall not be stored in the same room with flammable or combustible liquids.

10. Storage in inside storage rooms must comply with Figure 6-1 below.

**Figure 6-1**

<b>Fire Protection Provided</b>	<b>Fire Resistance</b>	<b>Maximum Size</b>	<b>Total Allowable Quantities Gals/Sq Ft/Floor Area</b>
Yes	2 hrs	500 sq ft	10

No	2 hrs	500 sq ft	4
Yes	1 hr	150 sq ft	5
No	1 hr	150 sq ft	2
<b>Note:</b> Fire protection system shall be sprinkler, water spray, carbon dioxide or other system approved by a nationally-recognized testing laboratory for this purpose.			

11. Electrical wiring and equipment located inside storage rooms must be approved for Class 1, Division 1 Hazardous Locations.

12. Every inside storage room must be provided with either a gravity or mechanical exhaust system.

a. The system must not be more than 12 inches above the floor, and be designed to provide for a complete change of air within the room at least 6 times per hour.

b. Mechanical exhaust systems must be controlled by a switch located outside of the door. The lighting and ventilation systems must be controlled by one switch. An electric pilot light must be installed adjacent to the switch, if flammable liquids are dispensed in the room.

c. Where gravity ventilation is provided, the fresh air intake, as well as the exhausting outlet from the room, shall be on the exterior of the building in which the room is located.

13. In every storage room, there shall be one clear aisle maintained, at least 3 feet wide. Containers over 30 gallons capacity shall not be stacked on top of one another.

14. Flammable and combustible liquids, in excess of that permitted in an inside storage room, shall be stored outside of buildings.

15. The quantity of flammable and combustible liquids kept in the vicinity of spraying operations shall be the minimum required for operations, and should generally not exceed a one-day or one-shift supply.

10. Storage Outside Buildings:

a. Storage of containers (not more than 60 gallons each) shall not exceed 1100 gallons in any one pile or area. Piles or groups of containers must be separated by a 5-foot clearance, and must not be within 20 feet of a building.

b. Within 200 feet of each pile of containers, there shall be a 12-foot wide access way to permit fire-control apparatus.

c. Areas must be graded in a manner to divert possible spills away from buildings or other exposures, or shall be surrounded by a curb or earth dike at least 12 inches high. When curbs or dikes are used, provisions shall be made for draining off accumulations of ground or rainwater or spills of flammable or combustible liquids. Drains shall terminate at a safe location and be accessible to operation under fire conditions.

11. Outdoor Portable Tank Storage.

a. Outdoor portable tanks cannot be any closer than 20 feet from any building.

b. If two or more tanks have a combined capacity greater than 2200 gallons, they must be separated by a 5-foot clear area.

c. Within 200 feet of each portable tank, you must have a 12-foot wide access way for fire equipment.

d. Storage areas must be kept free of weeds, debris and other combustible material.

e. Portable tanks less than 660 gallons must be provided with emergency venting and other devices, as required by the current edition of NFPA 30, Chapters III and IV.

f. Portable tanks in excess of 660 gallons must have emergency venting and other devices, as required in the current edition of NFPA 30, Chapters II and III.

12. Fire Control for Flammable and Combustible Liquid Storage.

- a. At least one fire extinguisher rated not less than 20-B must be located outside of, but not more than 10 feet from, the door opening into any room used for storage of 60 gallons or more of flammable or combustible liquids.
- b. At least one fire extinguisher rated 20-B must be located no closer than 25 feet, but not more than 75 feet from the storage area.
- c. Sprinkler systems that are in use must be installed according to the standard for the Installation of Sprinkler Systems of the current edition of NFPA 13.
- d. At least one portable fire extinguisher, not rated less than 20 B: C units, shall be provided on all tank trucks or other vehicles used for transporting and/or dispensing flammable or combustible liquids.

### 13. Dispensing Liquids.

- a. Areas where flammable and/or combustible liquids are transferred at one time in quantities greater than 5 gallons from one tank to another must be separated from other operations by 25 feet or by construction having a fire resistance rating of one hour.
- b. Transfer of flammable liquids from one container to another shall be done only when containers are electrically interconnected (bonded).
- c. The transfer of flammable or combustible liquids must be drawn from or transferred into vessels, containers, etc., through a closed-piping system by gravity or pump. The use of air pressure to move flammable or combustible liquids is prohibited.
- d. The dispensing units shall be protected against collision damage.
- e. Dispensing devices and nozzles for flammable liquids must be of an approved type.

### 14. Handling Liquids at Point of Final Use.

- a. Flammable liquids must be kept in a closed container when not in use.
- b. Spillage or leaking of flammable or combustible liquids must be disposed of quickly and safely.
- c. Flammable liquids can be used only where there are no open flames or other sources of ignition within 50 feet of the operation, unless conditions warrant a greater distance.

### 15. Service and Refueling Areas.

- a. Flammable and combustible liquids must be stored in approved containers, in tanks located underground or in aboveground tanks.
- b. Tank trucks must comply with the Standard for Tank Vehicles for Flammable and Combustible Liquids, with the current edition of NFPA 385.
- c. Dispensing hoses must be of an approved type.
- d. The dispensing nozzle shall be an approved automatic-closing type without a latch-open device.
- e. Underground tanks cannot be abandoned.
- f. Emergency shut-off switches must be clearly identified and easily accessible.
- g. Approved heating equipment may be installed in the lubrication or storage area where there is no dispensing or transferring of flammable liquids, provided the bottom of the heating unit is at least 18 inches above the floor and is protected from physical damage.
- h. Heating equipment installed in lubrication and service areas where flammable liquids are dispensed shall be of an approved type for garages, and must be installed at least 8 feet above the floor.
- i. No smoking or open flames is allowed in the areas used for fueling, servicing fuel systems for internal combustion engines, or receiving or dispensing of flammable and combustible liquids. Conspicuous and legible signs prohibiting smoking shall be permitted.
- j. The motors of all equipment must be shut off prior to and during refueling.
- k. Each service or fueling area must be provided with at least one fire extinguisher having a rating of not less than 20-B:C, located so that an extinguisher will be within 75 feet of each pump, dispenser, underground pipe opening and lubrication or service area.

16. Penetration through established smoke and fire partitions will be sealed at the end of each shift. In the event construction requires the removal of a smoke or fire partition, a partition of equivalent rating will be provided to separate the construction area from adjacent areas. Ceiling tiles will be put back in place prior to leaving the area.

## Contractor Fire Protection and Prevention Checklist

29 CFR 1926 – Subpart F

**Location:** \_\_\_\_\_

**Date:** \_\_\_\_/\_\_\_\_/\_\_\_\_

**Job Name:** \_\_\_\_\_

**Contractor:** \_\_\_\_\_

<i>Inspection Item</i>	<i>Yes</i>	<i>No</i>	<i>Comment</i>	<i>Correction Date</i>
1. Does the contractor have a fire protection plan for this jobsite?				
2. Are extinguishers conspicuously located and immediately accessible to employees?				
3. Are there enough extinguishers on the jobsite [See 1926.150(c)]?				
4. Have extinguishers been inspected and found to be in good working order?				
5. Are “No Smoking” signs posted in designated areas? (High hazard areas, refueling areas, storage areas, etc.)				
6. Is there an accumulation of unnecessary materials on site that are contributing to the fire load?				
7. Are approved containers used for the storage of flammable and combustible liquids?				
8. Are flammable and combustible liquids being stored in compliance with 29 CFR 1926.152?				
9. Are engines shut down and allowed to cool prior to being refueled?				
10. Are LP gas cylinders being stored inside of a building?				
11. Is adequate ventilation provided in areas where temporary heaters are being used?				

**Name:** \_\_\_\_\_

**Date:** \_\_\_\_/\_\_\_\_/\_\_\_\_

## **CHAPTER 4**

### **ASSURED EQUIPMENT GROUNDING CONDUCTOR PROGRAM**

The contractor shall have a program to insure the installation, use and maintenance of construction equipment and utilities in accordance with the applicable requirements of Sections 210-7(c), 250-45, 250-59 and 305-2(d) of the current edition of NEC and OSHA Regulation 29CFR 1926.400.

Qualified person(s) as defined in 29CFR 1926.32(f) shall be designated to implement this program. This may be the CSR or another individual(s); however, the designation must be made in writing and included in the contractors' safety plan.

Electrical utilization equipment will be properly used and maintained.

Conductors shall be spliced or joined with devices suitable for the use or by brazing, welding, or soldering. All splices, joints, and free ends of conductors shall be covered with insulation equivalent to that of the conductor or with an insulating device suitable for the purpose.

Live parts of electrical equipment operating at 50 volts or more shall be guarded against accidental contact by means of approved cabinets or other forms of approved enclosures, or by location. Entrances to guarded locations containing exposed live parts shall be marked with warning signs.

Markings on electrical equipment shall be provided giving voltage, wattage, and other ratings as necessary, and with the manufacturer's identification. Each service, feeder, and branch circuit, at its disconnecting means or over-current device, shall be legibly marked to indicate its purpose unless and arranges so the purpose is evident.

Conductors and equipment shall be protected in accordance with their ability to conduct current safely.

For a grounded system, a grounding electrode shall be used to connect both the equipment grounding conductor and the grounded circuit conductor to the grounding electrode. Both the equipment grounding conductor and the grounding electrode conductor shall be connected to the grounding circuit conductor on the supply side of the service disconnecting means or on the supply side of the system disconnecting means or over-current devices if the system is separately derived.

For an ungrounded service-supplied system, the equipment-grounding conductor shall be connected to the grounding electrode conductor at the service equipment.

The path to ground from circuits, equipment, and enclosures shall be permanent and continuous.

Exposed non-current-carrying metal parts of fixed equipment which may become energized shall be grounded, if within 8 feet vertically or 5 feet horizontally of ground or grounded metal objects if subject to employee contact, if located in a wet or damp location and not isolated, if in electrical contact with metal, or if in a hazardous location.

Equipment connected by cord and plug shall be grounded if it is in a hazardous location, if it operates at more than 150 volts to ground, if it is used in a damp or wet location, if it is used by persons standing on the ground on or metal floors, or working inside metal tanks or boilers, or if it is likely to be used in wet and conductive locations.

All 120 volt, single phase, 15 and 20 ampere receptacles shall be of a grounding type.

Grounding contacts shall be grounded by connection to the equipment-grounding conductor of the circuit supplying the receptacles in accordance with applicable requirements of Section 210-7(c) and 305-2(d) of the NEC.

All 120-volt flexible cord sets (extension cords) shall have an equipment-grounding conductor, which shall be connected to the grounding contact of the connector(s) on each of the cords.

The exposed non-current carrying metal parts of 120 volt cord, plug-connected tools and equipment that are employed in such a manner that it is deemed likely to become energized shall be grounded in accordance with the applicable requirements of Sections 250-4 and 250-59 of the NEC.

Each cord set, and any equipment connected by cord and plug, except cord sets and receptacles which are fixed and not exposed to potential damage, shall be visually inspected by the user before each day's use for potential defects such as deformed or missing pins, insulation damage, and/or indication of possible internal damage. Equipment found damaged or defective may not be used until repaired.

All 120 volt, single phase, 15 and 20 ampere receptacles, 120 volt flexible cord sets, and 120 volt equipment connected by cord and plug which is not a part of the permanent wiring of the building or structures shall be tested to assure that electrical continuity is maintained through all required equipment grounding conductors and their connectors. All equipment-grounding conductors shall be tested for continuity and shall be electrically continuous. Receptacle of cord sets shall be tested for correct attachment of the equipment-grounding conductor. The equipment-grounding conductor shall be connected to its proper terminal.

## **CHAPTER 5**

### **RESPIRATORY PROTECTION AND ODOR CONTROL PROGRAM**

**1. Respiratory Protection Program:** In any workplace where respirators are necessary to protect the health of the employee or whenever respirators are required by the contractor, the contractor shall establish and implement a written respiratory protection program that must include:

a. Procedures for selecting respirators for the workplace. Concentrations of toxic and hazardous substances will be maintained below the published Threshold Limit Values (TLV) for Chemical Substances and Physical Agents and Biological Exposure Indices of Airborne Contaminants of the American Conference of Governmental Industrial Hygienists (ACGIH) and as adopted by OSHA Sec. 29 CFR 1926.55-Gases, Vapors, Fumes, Dusts, and Mists. The TLV/TWA shall be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations. Whenever the TLV/TWA is exceeded, immediate corrective steps shall be taken. These include, but are not limited to: improved ventilation; removal of the vapors by venting; use of additional safety equipment such as cartridge (organic vapor filter) respirators; fresh air masks or dust masks. In every instance, however, the CSR will work to prevent the generation or contaminants so that respiratory protection is not necessary.

b. Medical evaluations must be accomplished for employees required to wear a respirator. Once the evaluation is conducted, this does not mean you are able to wear a respirator. You must be fit-tested on a respirator that is suitable to your facial features.

c. Fit-testing procedures for tight fitting respirators. All respirators shall be checked by fit-test for each individual to assure that the seal of the facemask is proper and secure. If difficulty is encountered in obtaining an effective seal, a different size mask or model respirator shall be obtained. All respirators shall be inspected routinely before and after each use. Respirator inspection shall include: tightness of connections and the condition of face piece, headbands and valves; connections of tubes and canisters and; rubber parts shall be checked for pliability and deterioration.

d. Procedures for proper use of routine and reasonably foreseeable emergency situations must be inspected after each use.

e. Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding and otherwise maintaining respirators. Respirators shall be cleaned after each use, as follows: remove filters, cartridges and headbands, and disassemble the major parts; wash all respirator parts (except cartridges and completely in clean, warm water; air dry in clean area; inspect all parts and replace if defective; reassemble respirator and insert new filters or cartridges. Make sure the seal(s) is tight; disinfect all facial contact areas with an approved type disinfectant, and seal the respirator in a new plastic bag for storage after dry. **Only experienced persons shall do repair or replacement with parts designed for the respirators. No attempt shall be made to replace components or to make adjustments or repairs beyond the manufacturer's recommendation.**

f. Procedures for ensuring adequate air quality, quantity and flow for breathing air to atmosphere-supplying respirators.

g. Training employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations.

h. Training of employees in the proper use of respirators, including donning and doffing, any limitations of their use and their proper maintenance.

i. Procedures for regularly evaluating the effectiveness of the program.

**2. Voluntary Respirator Use:** Where respirator use is not required, the employer may provide respirators at the request of the employees or permit employees to use their own respirators, if the employer determines that the respirator use will not in itself create a hazard. If the employer determines that the voluntary respirator use is permissible, the employer is required to provide the employee with the information contained in Appendix D of the 1910.134 standard. If the employer allows voluntary use of respirators, it must establish and implement those elements of a written program that will ensure that the employee using the respirator voluntarily is medically able to use that respirator and that the respirator is cleaned, stored and maintained so that its use does not present a health hazard to the employee.

**3. Selection of Respirators:** The employer must evaluate the respiratory hazards in the workplace; identify relevant workplace and user factors, and base respirator selection on these factors.

a. General Requirements. The employer shall select and provide the appropriate respirator based on the respiratory hazard(s) to which the worker is exposed, workplace factors and other factors that affect performance and reliability. The respirator selected must carry NIOSH (National Institute for Occupational Safety and Health) approval (as identified on the body of the respirator), and must be chosen after the employer conducts an inspection of the respiratory hazards of the workplace. The inspection must include:

1. A reasonable estimate of employee exposures to respiratory hazard(s).
2. Identification of the contaminant's chemical state and physical form (dust, mist, vapor, fume).
3. If the contaminant cannot be identified or the exposure cannot be determined, the atmosphere should be considered IDLH (Immediately Dangerous to Life and Health); additionally, any oxygen deficient atmosphere will also be considered IDLH.

The employer must select respirators from a sufficient number of models and sizes so that the respirator is acceptable and will correctly fit the user.

b. Respirators for IDLH Atmospheres. If it is determined during the inspection process that the concentration of the contaminant exceeds the IDLH for that contaminant, the employer must provide one of the following respirators:

1. Full-face piece, pressure demand SCBA (Self-Contained Breathing Apparatus) certified by NIOSH for a minimum service life of thirty months, or
2. A combination of full face piece pressure demand supplied air respirator (SAR) with auxiliary self-contained air supply.

All respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

c. Respirators for Atmospheres That Are Not IDLH. The employer shall provide a respirator that is adequate to protect the health of the employee and ensure the compliance with all other OSHA statutory and regulatory requirements. The selected respirator shall be appropriate for the chemical state and physical form of the contaminant. For protection against gases and vapors, the employer shall provide:

1. An atmosphere-supplying respirator.
2. An air purifying respirator, provided that:
  - a. The respirator is equipped with an end-of-life service indicator certified by NIOSH for the contaminant.
  - b. If there is not an end-of-service life indicator appropriate for the conditions, then the cartridges must be regularly changed based on known data.

For protection against particulates, the employer shall provide:

1. An atmosphere-supplying respirator.
2. An air purifying respirator equipped with a filter certified by NIOSH as a high-efficiency particulate air (HEPA) filter, or an air-purifying respirator with a filter certified for particulates by NIOSH under 42 CFR, Part 84.
3. For contaminants consisting primarily of particles with a mass median aerodynamic diameter (MMAD) of at least two micrometers, an air purifying respirator equipped with any filter certified for particulates by NIOSH.

**4. Medical Evaluation of Employees:** The use of a respirator may place a physiological burden on the employee; this burden varies with the type of respirator worn, the amount of energy needed to complete the task while wearing respiratory protection, the type of respiratory protection worn, and the medical status of the employee. To ensure that employees are properly protected and physically capable of handling the additional stress of a respirator, the employer must conduct medical evaluations and fit testing as specified in sections (e) and (f) of the 29 CFR 1910.134 OSHA standards.

The medical evaluation is conducted by a physician or other licensed healthcare professional (PLHCP) of the employer's choosing. This provider will administer a confidential medical questionnaire to the employee (this questionnaire can be found in Appendix C of the 29 CFR 1910.134 standard). The evaluation must be

administered confidentially during the employee's normal working hours or at a time that is convenient to the employee. Necessary measures may need to be taken so the employee understands the content of the questions, yet does not have his or her confidentiality breached. Any positive responses to Questions 1 through 8 in Section 2 of the questionnaire will require a mandatory follow-up evaluation. During the evaluations, the employer must provide the opportunity to discuss the questionnaire and medical examination results with the PLHCP.

The employer must provide the following to the PLHCP before the PLHCP makes a recommendation concerning an employee's ability to use a respirator:

1. The type and weight of the respirator that will be used by the employee.
2. The duration and frequency of respirator use (including use for rescue and escape).
3. The expected physical work effort that will be required of the employee.
4. Additional protective equipment that will be worn.
5. Any temperature and/or humidity extremes that may be encountered.
6. A copy of the company's Respiratory Protection Program.

a. **Medical Determination.** In determining the employee's ability to use a respirator, the employer must obtain a written recommendation from the PLHCP. This recommendation must only provide the following information:

1. Any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used (including whether or not the employee is medically able to use the respirator).
2. The need, if any, for follow-up medical evaluations.
3. A statement that the PLHCP has provided the employee with a copy of PLHCP's written recommendations.

If the respirator is a negative pressure respirator and the PLHCP finds a medical condition that may place the employee's health at increased risk if the respirator is used, the employer shall provide a PAPR (powered air-purifying respirator) if the PLHCP's medical evaluation finds that the employee can use such respirator. If a subsequent medical evaluation finds that the employee is medically able to use a negative pressure respirator, then the employer is no longer required to provide a PAPR.

b. **Additional Medical Evaluations.** At a minimum, the employer shall provide additional medical evaluations that comply with the requirements of this section if:

1. An employee reports medical signs or symptoms that are related to the ability to wear a respirator.
2. A PLHCP, supervisor or the respirator program administrator informs the employer that an employee needs to be re-evaluated.
3. Information from the respiratory protection program, including observations made during the fit testing and program evaluation, indicates the need for an employee reevaluation.
4. A change in the workplace conditions (physical work effort, protective clothing and temperature) occurs that may result in a substantial increase in the physiological burden placed on an employee.

**5. Fit-Testing Requirements:** Before an employee may be required to use any respirator with a negative or positive pressure tight-fitting face piece, the employee must be fit-tested with the same make, model, style and size of the respirator that will be used. This fit test can be either of the qualitative (smell or cannot smell the test solution) or a quantitative fit test that will determine the exact amount of leakage from an improper respirator fit. Fit testing must be conducted prior to initial respirator use, whenever a different respirator face piece (size, style, model or make) is used, and annually thereafter. Additional fit testing may be required whenever there is a visible observation of changes in the employee's physical condition that could affect the respirator fit. These conditions may include, but are not limited to:

- Facial Scarring.
- Dental Changes.
- Cosmetic Surgery.

- Obvious Change in Body Weight.

After passing the fit test, the employee can request to select a different respirator and to be retested after notifying the Program Administrator, supervisor or PLHCP. All fit testing must be administered using OSHA-accepted QLFTP (qualitative fit testing procedures) and QNFTP (quantitative fit testing procedures) as contained in Appendix A of the 29 CFR 1910.134 Standards.

**6. Use of Respirators:** Contractor must establish and implement procedures for the proper use of respirators. These requirements include prohibiting conditions that may result in face piece seal leakage, preventing employees from removing respirators in hazardous environments, taking actions to ensure continuing effect respirator operation throughout the work shift, and establishing procedures for the use of respirators in IDLH atmospheres or in structural firefighting situations.

a. **Face piece Seal Protection.** To protect the integrity of the face piece seal on the user, the employer shall not permit respirators with a tight-fitting face piece to be worn by employees who have:

1. Facial hair that comes between the sealing surface of the face piece and the face or that interferes with valve operation, or any condition that interferes with the face-to-face piece seal or valve function.
2. Corrective glasses, goggles or other personal protective equipment that may interfere with the seal of the face piece to the face of the user.

Additionally, all employees wearing tight-fitting respirators must perform a seal check each time they put on the respirator, using the procedures listed in Appendix B-1 of the 29 CFR 1910.134 Standard, the procedures recommended by the respirator manufacturer or procedures that the employer demonstrates are as effective as those in Appendix B-1 of the standard.

b. **Continuing Respirator Effectiveness.** To assure the continuing respirator effectiveness, the employer must maintain appropriate surveillance of the work area conditions and monitor the degree of employee exposure and/or stress. When there is a change in work area conditions or degree of employee stress that may affect respirator effectiveness, the employer shall re-evaluate the continued effectiveness of the respirator. Some examples of these changes include:

- Temperature or humidity change.
- Additional personal protective equipment.
- Change (either increase or decrease) in the amount of the airborne contaminant.
- An increase or decrease in the workload of the employees.

The employer must allow employees to immediately leave the respirator use area:

1. To wash their faces and respirator face piece as necessary to prevent eye or skin irritation associated with respirator usage.
2. If they detect vapor or gas breakthrough, changes in breathing resistance or leakage of the face piece.
3. To replace the respirator or the filter, cartridge or canister elements.

If the employee detects vapor or gas breakthrough, changes in breathing resistance or leakage of the face piece, the employer must replace or repair the respirator before allowing the employee to return to the work area.

c. **Procedures for Dealing with IDLH Atmospheres:** When dealing with IDLH atmospheres, OSHA requires the contractor to take additional measures to deal with these highly hazardous environments. These procedures include keeping one employee, or if needed more than one employee, outside of the IDLH atmosphere to monitor the condition of the employee working inside of the IDLH atmosphere:

1. The employer is required to maintain visual, voice or signal line communication between the employee(s) inside and employee(s) outside of the IDLH atmosphere.

2. The employees outside of the IDLH atmosphere must be trained to provide emergency rescue in the event that an employee inside of the atmosphere is overcome and/or becomes injured.

3. The employer or specified designee must be notified prior to the outside entering of the atmosphere for the purposes of rescue.

4. The employees outside of the IDLH atmosphere must be equipped with a pressure demand or other positive pressure SCBA, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA, *and* either the appropriate retrieval equipment or other equivalent means of retrieving the employee from the IDLH atmosphere.

**7. Maintenance and Care of Respirators:** In addition to testing, supplying and monitoring employees while wearing respirator protection, OSHA requires that the employer instruct employees on the proper maintenance and care needed to ensure that respirators continue to provide the appropriate level of protection throughout their useful life.

**8. Cleaning and Disinfection of Respirators:** The employer is required to provide each respirator user with a respirator that is clean, sanitary and in good working order. It is the employer's responsibility to ensure that the respirator is cleaned and disinfected using the procedures listed in Appendix B-2 of the 29 CFR 1910.134 Standard, or by the procedures recommended by the respirator manufacturer, provided that such procedures are of equivalent effectiveness. Additionally, the respirator must be cleaned and disinfected at the following intervals:

1. Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition.

2. Respirators issued to more than one employee shall be cleaned and disinfected before being worn by different individuals.

3. Respirators maintained for emergency use shall be cleaned and disinfected after each use.

4. Respirators used for fit testing and training must also be cleaned and disinfected after each use.

**9. Storage of Respirators:** The employer shall ensure that respirators are stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture and chemical damage; and they must be stored or packed to prevent deformation of the exhalation valve. Respirators stored for emergency uses shall be kept accessible to the work area, stored in compartments or covers that are clearly marked as containing emergency respirators and stored in compliance with the manufacturer's recommendations.

**10. Inspection of Respirators:** The employer shall ensure that the respirators are inspected as follows:

1. Respirators used in routine situations must be inspected before each use and during cleaning.

2. Respirators maintained for use in emergency situations must be inspected at least monthly and in accordance with the manufacturer's recommendations. Additionally, they shall be checked for proper function before and after each use.

3. Emergency escape-only respirators shall be inspected prior to being carried into the workplace for use.

**11. Checklist for Respirator Inspection:** The employer shall ensure that employees conducting respirator inspections include the following items during the inspection process:

1. A check of the respirator function, tightness of connections and conditions of various parts, including, but not limited to: the face piece, head straps, valves, connecting tube, cartridges, canisters or filters, and a check of elastomeric parts for pliability and signs of deterioration.

2. SCBAs shall be inspected monthly. Air and oxygen cylinders must be maintained in a fully charged state and must be refilled if they drop below 90% of the manufacturer's recommended pressure level.

**12. Repairs to Respirators:** OSHA requires that the employer immediately remove from service any respirator that does not pass inspection and/or is found to be defective while in use. All repairs to the respirator must be made by persons appropriately trained to perform such operations, and who use only the respirator manufacturer's NIOSH-approved parts designed for each specific respirator. If working with air-line

or SCBA units, repairs to the reducing valves, regulators and alarms must be adjusted or repaired only by the manufacturer or technician trained by the manufacturer.

**13. Breathing Air Quality and Use:** When an employer is using atmosphere-supplying respirators (supplied-air or SCBA), the employer must ensure that the breathing air supply meets the requirements of the 29 CFR 1910.134(i) Standards. Below is a brief summary of the standard.

1. The employer must ensure that compressed air, compressed oxygen, liquid air and liquid oxygen used for respiration meets the following specifications:

a. Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen.

b. Compressed breathing air shall meet at least the requirements for Grade D breathing air as described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989 that includes: oxygen content of 19.5%-23.5%, hydrocarbon (condensed) content of 5 milligrams/m<sup>3</sup> of air or less, carbon monoxide content of 10 ppm or less, carbon dioxide content of 1,000 ppm or less and must lack a noticeable odor.

2. The employer must also ensure that compressed oxygen is not used in atmosphere supplying respirators that have been previously used compressed air.

**14. Requirements for Cylinders Used to Supply Breathing Air to Respirators:** When the employer uses compressed gas cylinders to supply breathing air to respirators, the following criteria must be met.

1. Cylinders must be tested and maintained according to 49 CFR, Part 173 and Part 178 (Shipping Container Specification Regulations of the Department of Transportation).

2. Cylinders of breathing air purchased must have a certificate of analysis from the supplier that the air meets the requirements for Grade D Breathing Air.

3. The moisture content in the cylinder does not exceed a dew point of -50°F at one atmosphere of pressure.

**15. Requirements for Compressors Used to Supply Breathing Air to Respirators:** When a contractor chooses to use a compressor to supply breathing air to respirators, they are required to ensure that the compressor is constructed and situated so that:

1. Contaminated air is not allowed into the air-supply system.

2. Moisture content is minimized so that the dew point at one atmosphere of pressure is 10°F below the ambient temperature.

3. Have suitable in-line air-purifying sorbent beds and filters to further ensure breathing air quality. Sorbent beds and filters must be maintained or replaced as required by the manufacturer's specifications.

4. An inspection tag must be present at the compressor that shows the most recent change date and signature of the person authorized by the employer to perform the change.

5. For compressors that are not oil lubricated, the employer shall ensure that the carbon monoxide levels in the breathing air do not exceed 10 ppm (parts per million).

6. For oil-lubricated compressors, the employer shall use a high-temperature or carbon monoxide alarm or both to monitor carbon monoxide levels. If a high-temperature alarm is the only alarm used, the employer must monitor the air supply at regular intervals to prevent carbon monoxide in the breathing air to exceed 10 ppm.

7. Breathing air couplings **must** be incompatible with outlets for non-respirable worksite air or other gas systems. No asphyxiating substance can be introduced into the breathing air lines.

**16. Identification of Filters, Cartridges and Canisters:** It is the responsibility of the employer to ensure that all filters, cartridges, and canisters used in the workplace are labeled and color-coded with NIOSH-approved label, and that the label is not removed and remains legible.

**17. Training and Information:** The contractor is required by the standard to provide effective training to employees who are required to use respirators. The training must be comprehensive, understandable and be done on an annual basis (more often if deemed necessary). The contract must ensure that each employee can demonstrate knowledge of at least the following:

1. Why the respirator is necessary and how improper fit, usage or maintenance can compromise the protection provided by the respirator.

2. The capabilities and limitations of the respirator being used.
3. How to use the respirator in emergency situations, including how to function when the respirator malfunctions.
4. How to inspect, put on and remove, use and check the seals of the respirator.
5. How to recognize the medical signs and symptoms that may limit or prevent the effective use of respirators.
6. How to properly maintain and store the respirator.
7. The general requirements of the respiratory protection standard.

This training must be conducted in a manner that is understandable to the employee, and must be provided *prior* to the employee using a respirator in the workplace. If the employer can prove that the employee has completed such training within the last 12 months with another employer and that such training meets the requirements of the OSHA standard and the employee demonstrates competency, then the previous training may be accepted.

Retraining of employees must be administrated annually, and when any of the following situations occur:

- Changes in the workplace or the type of respirator render previous training obsolete.
- Inadequacies of the employee's knowledge or use of the respirator indicate the employee has not retained the requisite understanding or skill.
- Any situation arises in which retraining appears necessary to ensure safe respirator use.

**18. Program Evaluation:** Per OSHA standards, the contractor is required to conduct evaluations of the workplace to ensure that the written respiratory protection program is being properly implemented, and to consult employees to ensure that they are using respirators properly. To comply, the following, at a minimum, must be conducted.

1. Workplace evaluations must be conducted to make sure the provisions of the program are being followed, and that the program is continuing to be effective.
2. Employees wearing respiratory protection should be periodically consulted to identify any problems. These problems could include respirator fit, appropriate selection for the hazards that the employee may be exposed, proper respirator usage and proper maintenance of the respirators.

**19. Recordkeeping:** The contractor is required per OSHA Respiratory Protection Standard, to keep records regarding the medical evaluations, fit testing and its respiratory protection standard. These records will assist the contractor in auditing the program, and will provide a record to be provided to OSHA upon request. Below is a listing of the required items needed to comply with the standard?

1. Records of the individual medical evaluations for each employee must be kept and made available to the employee and his/her representatives.
2. Record of the quantitative and/or qualitative fit test(s) administered to each employee must include:
  - a. Name and/or identification of the employee tested.
  - b. Type of test performed.
  - c. Specific make, model, style and size of respirator tested.
  - d. Date of test.
  - e. The pass/fail results for qualitative fit tests or the strip chart recording from the quantitative fit test.

**Contractor Personal Protective Equipment Checklist**  
29 CFR 1910.134 – Respiratory Protection

**Location:** \_\_\_\_\_

**Date:** \_\_\_\_/\_\_\_\_/\_\_\_\_

**Job Name:** \_\_\_\_\_

**Contractor:** \_\_\_\_\_

Inspection Item	Yes	No	Comment Date	Correction
1. Can the hazard be controlled, reduced or eliminated to prevent employee exposure?				
2. Does the contractor have a written respiratory protection program that meets the 1910.134 standard?				
3. Is the contaminant and amount of the contaminant known?				
4. Have employees received a medical evaluation and been cleared for respirator use?				
5. Have employees been trained on respirator use and able to demonstrate why it is needed, limitations of use, inspection of unit, and maintenance and storage?				
6. Are units being cleaned and disinfected regularly?				
7. Are units not in use stored properly?				
8. If breathing air is used, does it meet the requirements of 1910.134 (h)?				

**Name:** \_\_\_\_\_

**Date:** \_\_\_\_/\_\_\_\_/\_\_\_\_

**CHAPTER 6**  
**SCRAPS, WASTE MATERIALS, AND HAZARDOUS WASTES**  
**DISPOSAL GUIDELINES**

The Contractor is responsible for providing for and managing the disposal of wastes from the project unless otherwise provided for in the terms of the contract or as noted. Also, providing the facility with the quantity or weight of the material being removed whether recycled and/or scrapped as a waste by using the form on the attached excel file.

The CSR is responsible for developing and implementing a comprehensive waste management program for wastes generated by the contractor during the project.

At a minimum the comprehensive waste management program will provide for waste reduction (pre-cycling), recycling, and management of hazardous and non-hazardous wastes, including the management of residues, rinse and wash waters, and similar wastes.

The CSR will provide a copy of the EPA Generator Identification Number issued to the contractor along with the most current Hazardous Waste generator notification provided to the ADEM. If no EPA identification number has been obtained and Waste Generator notification has not been made to ADEM, the contractor will certify in writing to the GEMS Coordinator that such actions are unnecessary due to the contractor's generator status and/or the absence or limited quantities and/or characteristics of the wastes expected to be generated as a result of the project or previously generated within the past year.

Unless the wastes generated are a direct result of the abatement or removal of a toxic or hazardous substance (e.g., asbestos abatement or lead-based paint removal), the CSR is responsible for insuring that all shipments of hazardous wastes are properly and legally completed using the contractors' EPA identification number and are properly and legally manifested and tracked to disposal. Receipts for any hazardous wastes generated as a result of the abatement or removal of a toxic or hazardous substance will be turned over to the COTR. Hazardous wastes to be disposed of will be shipped via approved, licensed, and insured haulers to licensed disposal or recycling facilities.

The CSR will submit to the GEMS Coordinator a copy of the hazardous waste management plan which will include: an inventory of the hazardous waste stream(s) expected to be generated and referencing the chemical inventory submitted in accordance with Chapter 9; a determination of the hazardous waste characteristic(s) of each of the hazardous waste(s) generated and specifying the method of determination, and; the management method (i.e., disposal, recycling, etc.) selected for each of the hazardous waste stream(s). Chemicals depleted during the construction process will be identified as such.

Empty drums or other containers must be drained and rinsed at least three times with copious amounts of water prior to disposal. The wash or rinse waters from such activities will not be discharged to the HCS drains or otherwise disposed of on property.

Containers of hazardous wastes- other than those identified under section 6-1.d. or waiting recycling- will not be stored on property for greater than the shift during which they were generated. They will be removed prior to the end of that shift to a proper hazardous waste storage area under the supervision and control of the contractor until disposed of. Weekly inspections of the storage area will be conducted by the CSR and copies provided to the GEMS Coordinator.

An inventory of the wastes intended for recycling will be submitted to the GEMS Coordinator for approval.

Containers or areas used to store waste materials intended for recycling will be properly managed and maintained in a sanitary and safe manner. The waste storage area shall remain secured under lock and key for the duration of the project. Containers or materials will be removed at least weekly. Leaking containers of liquid wastes are prohibited. Solid wastes will be protected from rain and similar weather to prevent run-off. The GEMS Coordinator will approve such storage areas in advance.

**CHAPTER 7**  
**FALL PROTECTION, SCAFFOLD AND LADDER SAFETY PROGRAM**

**1. PURPOSE:** To establish policy, responsibility and procedures for protecting all employees and/or contractors working on scaffolds, aerial lifts, stairways and ladders.

**2. POLICY:** To minimize potential accidents involving stairways (not having the appropriate stair rail and handrail installed along each unprotected edge of a stairway) and ladders through selection of the proper ladder for the job, correct use of the ladders, and maintaining the ladders in good working condition. That all scaffolds and aerial lifts used in construction, renovation, repair and demolition shall be erected, dismantled and maintained in accordance with this procedures.

**3. RESPONSIBILITIES:** *Contractors* are responsible for:

- 1) Utilizing ladders are responsible for following safe ladder use and maintenance procedures while working at the health care system.
- 2) Ensuring that his/her employees follow this policy to the fullest.
- 3) Ensuring that a competent person under 29 CFR 1926, Subpart L has had the training in and knowledge about the style of scaffold and/or aerial lift used, the hazards associated with the particular type of scaffold, the use of protective systems and the requirements of this standard.
- 4) Informing the COTR if they are in noncompliance when using the checklist at the end of this chapter.

**4. PROCEDURES:**

- 1) Ladder Selection: Metal ladders are prohibited with the exception of extension ladders used exclusively outside.
- 2) All wood parts must be free from sharp edges and splinters and must be free of visual flaws, defects, decay, or other irregularities. Low-density wood must not be used.
- 3) Metal ladders must be without structural defects or accident hazards such as sharp edges, burrs, etc. The metal must be protected against corrosion unless inherently corrosion-resistant.

a. Construction Requirements:

- 1) Steps must be uniformly spaced not more than 12 inches apart. Steps must be parallel and level when the ladder is in position for use. Steps of metal ladders must be corrugated, knurled, dimpled, coated with skid-resistant material, or otherwise treated to minimize the possibility of slipping.
- 2) The length of a stepladder, as measured by the length of the front rail, must not exceed 20 feet. Stepladders must have a metal spreader or locking device of sufficient size and strength to securely hold the front and back sections in the open position. The spreader must be a component of each stepladder and must have all sharp points covered or removed to protect the user.
- 3) Portable rung ladders must be equipped with non-slip bases when there is a hazard of slipping.
- 4) The length of a single ladder or individual sections of ladders must not exceed 30 feet. Two section metal ladders must not exceed 48 feet in length, and over two-section metal ladders must not exceed 60 feet in length. Two-section wood ladders must not exceed 60 feet.

b. Ladder Use:

- 1) Place the ladder so that the horizontal distance from the base to the vertical plane of the support is approximately one-fourth the ladder's length between supports. (For example, place a 12-foot ladder so that the bottom is 3 feet away from the object against which the top is leaning.)
- 2) Ladders must be placed to prevent slipping, or must be lashed, or held in position. Provide solid footing on soft ground to prevent the ladder from sinking. A ladder is considered to be in a hazard of slipping if it is

placed on oily, metal, concrete, floor tile, or slippery surfaces. Non-slip bases are not intended as a substitute for care in safely placing, lashing, or holding a ladder.

- 3) Ladders must not be used in a horizontal position as platforms, runways, or scaffolds.
- 4) Ladders must not be placed in front of doors opening toward the ladder unless the door is blocked, locked or guarded.
- 5) Ladders must not be placed on boxes, barrels, or other unstable bases to obtain additional height.
- 6) Ladders with broken or missing steps, rungs, or cleats, broken side rails, or other faulty equipment must not be used. Improvised repairs must not be made.
- 7) Short ladders must not be spliced together to provide long sections.
- 8) Tops of ordinary types of stepladders must not be used as steps.
- 9) No ladder should be used to gain access to a roof unless the top of the ladder extends at least 3 feet above the point of support, at eaves, gutter, or rooflines.
- 10) The bracing on the back legs of stepladders must not be used for climbing.
- 11) Ladders must not be used for other uses than those for which they were intended.
- 12) Since metal ladders are electrical conductors, their use is prohibited where they may come into contact with exposed energized parts.
- 13) When ascending or descending, the climber must face the ladder.
- 14) Before climbing a ladder, be sure shoes are not wet, greasy, muddy, or otherwise slippery.
- 15) When climbing or standing on a ladder, keep your weight centered on the ladder. Do not lean to the side.
- 16) When using an extension ladder in the extended position, a second employee is required to stabilize the ladder's base and keep other persons away.

c. Ladder Care & Maintenance:

1) Ladders must be maintained in good condition at all times, the joint between the steps and side rails must be tight, all hardware and fitting securely attached, and the moveable parts must operate freely without binding or undue play. Free use of both hands is required for climbing ladders. If materials or tools have to be handled, use of a proper construction equipment belt, and/or adequate lanyard and/or an approved materials hoist is required.

- 2) Metal bearings of locks, wheels, pulleys, etc., must be frequently lubricated.
- 3) Frayed or badly worn rope must be replaced.
- 4) Safety feet and other auxiliary equipment must be kept in good condition to insure proper performance.
- 5) Rungs must be kept free of grease and oil.
- 6) Wood ladders may be coated with ordinary linseed oil, or other commonly used clear, non-conductive wood preservatives. Ladders must not be painted except for identifying information.
- 7) Each ladder must be marked with the name of the Unit to which it belongs.
- 8) Ladders must be stored where they will not be exposed to the weather and where there is good ventilation. They should not be stored near radiators, heaters, or steam pipes, nor in other places subjected to excessive heat or dampness.
- 9) Ladders must be inspected before each use by supervisors and by users, as used using the inspection checklist included in this chapter. A copy of all inspection checklists is to be forwarded to the Safety Office (001S).
- 10) Ladders, which have developed defects, must be withdrawn from service for repair or destruction and tagged or marked as "Dangerous, Do Not Use."

e. General Requirements for Scaffolds: **No** employee or contractor shall erect scaffold greater than or equal to 20 feet. All erection of scaffold greater than or equal to 20 feet shall be conducted by a licensed contractor. Stationary scaffolds over 125 feet in height and rolling scaffolds over 60 feet in height shall be designed by a professional engineer. All equipment shall be inspected to see that it is in good condition and is serviceable. Damaged or deteriorated equipment shall not be used. All scaffolds and their components must support

without failure its own weight and at least 4 times the maximum intended load applied or transmitted to the scaffolds.

f. Platforms shall be constructed as follows:

1) Platforms shall be entirely planked and decked with space not more than 1 inch wide between platforms and uprights.

2) Platform shall not deflect more than 1/60 of the span when loaded.

3) All platforms shall be kept clear of debris or other obstruction that may hinder the working clearance on the platforms.

4) Wood planks shall be inspected to see that there are graded for scaffold use, are sound and in good condition, straight grained, free from saw cuts, splits and holes.

5) Platforms and walkways shall be at least 18 inches in width. When the work area is less than 18 inches wide, guardrails and/or personal fall arrest system shall be used.

6) Where platforms are overlapped to create a long platform, the overlap shall occur only over supports, and shall not be less than 12 inches unless the platforms are nailed.

7) A platform greater than 10 feet in length shall not extend over its support more than 18 inches, unless it is designed and installed so that the cantilevered portion of the platform is able to support employee without tipping, or has guardrails which block employee access to the cantilevered end.

8) Wood surface shall not be covered with opaque finishes, other than the edges for making identification.

9) Platforms may be coated periodically with wood preservative, fire-retardant finishes, and slip-resistant finishes; however, the coating shall not obscure the top or bottom wood surface.

10) Each end of the platform unless cleated or otherwise restrained by hooks or equivalent means, shall extend over the centerline of its support at least six inches. Scaffold components manufactured by different manufacturers shall not be intermixed unless the components fit together without force and the scaffold's structural integrity is maintained. Scaffold components made of dissimilar metals shall not be used together unless a competent person has determined that the galvanic action will not reduce the strength of any component.

11) Aerial platform lifts that are not in proper operating condition shall be removed from service until the problems have been corrected by an authorized and trained maintenance technician.

g. Guardrails: All scaffold more than 6 feet above the lower level shall protect the employees with guardrails on each open side of the scaffold. Guardrails shall be installed along the open sides and ends before releasing the scaffold for use by the employees, other than erection or dismantling crews. Guardrails are not required when:

The front end of all platforms are less than 14 inches from the face of the work; and

When employees are plastering and lathing 18 inches or less from the front edge.

Materials such as steel or plastic banding shall not be used for top rails or mid rails.

h. Erection of Scaffolds:

1) All jobsites and work areas shall be inspected prior to the erection of scaffolds to determine the site's ability to support structure, and for location of electric power lines, overhead obstructions, wind conditions, and the need for overhead protection or weather protection coverings.

2) Frame spacing and sill size can only be determined after total loads to be imposed on the scaffold and the strength of the support soil or structure are calculated and considered. Special consideration is required when scaffolding is to be erected on fill, soft or frozen ground. Sills shall be level and in full information on components is available from the scaffold manufacturer.

3) Scaffold shall be erected, moved or disassembled only under the supervision of a qualified person. Base plates or screw jacks shall be in firm contact with both the sills and the legs of the scaffolding. Screw jacks with

base plates shall be used to compensate for uneven ground. Do not use unstable objects such as loose bricks, blocks of wood or concrete to shore up the uneven surfaces.

4) All scaffolding shall be plumb and level. Tying, guying or bracing may be needed to assure a safe and stable scaffold assembly. Do not force members to fit. Be sure scaffolding stays level and plumb as erection progresses. The height of the scaffold in relation to the minimum base width, wind loads, the use of brackets and cantilevered platforms and imposed scaffold load determine the need for stability bracing.

i. Access Requirements: Access shall be provided when scaffold platforms are more than 24 inches above or below the point of access. Direct access is acceptable when the scaffold is not more than 14 inches horizontally and not more than 24 inches vertically from the other surfaces. Cross braces shall not be used as a means of access.

1) Type of accesses which are permitted:

- Portable ladders tied off to the structure
- Hook-on ladders
- Attachable ladders
- Stairways
- Stair towers
- Ramps and walkways; or
- Integral prefabricated frames

2) When erecting or dismantling supported scaffolds, a safe means of access shall be provided when a competent person has determined the feasibility and analyzed the site condition.

j. Use Requirements: The use of shore scaffold and lean to scaffolds is strictly prohibited. All employees are prohibited from working on scaffolds covered with snow, ice or other slippery materials.

The following table provides the clearance distances between scaffolds and power lines, or any other conductive material, while being erected, used, dismantled, altered or moved.

<b>Insulated Line Voltage</b>	<b>Minimum Distance</b>	<b>Alternatives</b>
Less than 300 volts 300 to 50 kv More than 50 kv	3 feet 10 feet 10 feet .4 inches for each 1kv over 50 kv	Two times the length of The line insulator, but Never less than 10 feet
<b>Un-insulated Lines Voltage</b>	<b>Minimum Distance</b>	<b>Alternatives</b>
Less than 50 kv More than 50 kv	10 feet 10 feet plus .4 inches for each 1 kv Over 50 kv	Two times the length of the line insulator, but never less than 10 feet

*Exception: Scaffolds and materials may be closer to power lines than specified where such clearance is necessary for performance of work and only after the utility company or electrical system operator has de-energized or relocated the lines.*

k. Stilts: All employees using stilts shall wear the stilts on surfaces that are flat and free of holes, pits, and obstructions, such as debris or other tripping and falling hazards. Properly maintain the stilts. The manufacturer must approve alterations to stilts.

l. Scaffolds Prohibited for use: The following types of scaffolds are prohibited for use on HCS property:

Window jack scaffolds	Catenary scaffold	Float scaffolds
Needle beam scaffolds	Pole scaffolds	Tube and coupler scaffolds
Plaster, decorators and large area scaffolds		Horse scaffolds
Outrigger scaffolds	Interior hung scaffolds	
Step, platform and trestle ladder scaffolds		
Single-point adjustable suspension scaffolds		

m. Fall Protection: All employees on scaffolds six feet or more above ground/floor shall use fall protection in accordance with the Fall Protection Program policy. All scaffolding shall have toe boards, screens, a guardrail system and/or debris nets as determined by a competent person.

n. Standard Procedures: To ensure safe practices, the following general procedure is used when an authorized user uses an aerial platform lift: Obtain any necessary authorization to use the lift; check the last pre-start inspection for any comments or notes; perform a pre-start inspection on the lift, document the inspection and place it in the reserved storage location on the lift; perform a workplace inspection in the area that the lift will be used.

o. Training: All employees who perform work on a scaffold shall be trained annually to recognize the hazards associated with the type of scaffolds being used and the procedures to control or minimize those hazards. Employees shall be trained to demonstrate competency in the following areas:

- Nature of electrical, fall hazards and falling object hazards in the work area
- Proper use of scaffolds
- Proper handling of materials on scaffolds
- Proper erecting, maintaining and disassembling of fall protection systems.
- Proper construction, use, placement and care in handling of scaffolds and
- Maximum intended load and load-carrying capacities of scaffolds used.

**LADDER INSPECTION CHECKLIST**

	<b>Condition</b>	<b>Repairs Needed:</b>	<b>Unsafe: Destroy</b>
<b>General (All Ladders):</b>			
Loose steps or rungs (considered loose if they can be moved at all with the hand)			
Loose nails, screws, bolts, or other metal parts			
Cracked, split or broken uprights, braces, steps or rungs			
Slivers on uprights, rungs or steps			
Damaged, worn, or missing non-slip bases			
<b>Step Ladders:</b>			
Wobbly (from side strain)			
Loose or bent hinge spreaders			
Stop broken on hinge spreaders			
Broken, split or worn steps			
Loose hinges			
<b>Extension Ladders:</b>			
Loose, broken or missing extension locks			
Deterioration of rope			
Defective locks that do not seat properly when the ladder is extended			
<b>Trestle Ladders:</b>			
Loose in hinges; Wobbly			
Loose or bent hinge spreaders			
Stop broken on hinge spreader			
Center section guide for extension out of alignment			
Defective locks for extension			
<b>Fixed Ladders:</b>			
Loose, worn or damaged rungs or side rails			
Damaged or corroded parts of cage			
Corroded bolts & rivet heads on inside of metal stacks			
Weakened or damaged rungs			
Damaged or corroded handrails or brackets on platforms			
Base of ladder obstructed			
<b>Sectional Ladders:</b>			
Worn or loose metal parts; Wobbly			

Inspected By: \_\_\_\_\_ Date: \_\_\_\_\_

**Contractor Personal Protective Equipment Checklist  
29 CFR 1926 – Subpart M – Fall Protection**

Location: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Job Name: \_\_\_\_\_  
Contractor: \_\_\_\_\_

<i><b>Inspection Item</b></i>	<i><b>Yes</b></i>	<i><b>No</b></i>	<i><b>Comment</b></i>	<i><b>Correction Date</b></i>
<b>General</b>				
1. Does the contractor have a written fall protection program?				
2. Have employees been trained per the standard and are copies of the certification available?				
3. Are employees exposed to unprotected sides and edges protected by a guardrail system, safety net system, or personal fall arrest system?				
4. Are employees who are constructing a leading edge with a fall hazard of six foot or greater protected by a guardrail, safety net or fall arrest system?				
5. Are hoist areas with fall hazards of six foot or more protected with a guardrail system or personal fall arrest system?				
6. Are employees working on the face of vertical formwork or reinforcing steel protected against falls six feet or greater in height?				
7. Is a fall protection system erected at the edge of all excavations?				
8. Are employees working over dangerous equipment protected with a fall protection system regardless of fall height?				

Name: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

### Stationary Scaffold Assessment

Location: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Job Title: \_\_\_\_\_  
 Contractor: \_\_\_\_\_

Item	Y/N N/A	Comment	Date Completed
1. Scaffold components and planking in safe condition?			
2. Frame spacing and mudsills capable of carrying intended load?			
3. Competent Person identified? Supervising work?			
4. Are mudsills properly placed and adequate size?			
5. Screw jacks used to level and plumb scaffold?			
6. Are base plates and/or screw jacks in firm contact with mudsills and frames?			
7. Is scaffold plumb and level?			
8. Are all scaffold legs braced with braces properly attached and secured to the scaffold leg?			
9. Are guardrails in place on all open sides and ends?			
10. Has proper access been provided above 2'?			
11. Has overhead protection or wire screens been provided where necessary?			
12. Has scaffold been tied to structure at 30 H and 26 V?			
13. Has freestanding scaffold been guyed at 26V?			
14. Have brackets and accessories been properly braced?			
15. Are scaffold components of same make and manufacturer?			
16. Are working level platforms fully planked between guardrails?			
17. Does plank have 12" overlap and extend 6" beyond bearing points?			
18. Are toe boards 4" and installed properly on all open sides?			
19. Have hazardous conditions been addressed? a. Electrical lines (Minimum of 10' clearance)    b. Wind loading c. Washout of footings                                    d. Uplift			
20. Approved drawings for scaffold over 125'?			
21. Employees trained as required?			
22. Area around scaffold cleared with adequate housekeeping?			

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
 Name \_\_\_\_\_ Date \_\_\_\_\_

Distribution: \_\_\_\_\_ ICRA    \_\_\_\_\_ General Contractor    \_\_\_\_\_ Safety Office  
 \_\_\_\_\_ COTR    \_\_\_\_\_ Subcontractor    \_\_\_\_\_ Other: \_\_\_\_\_

## Operator's Daily Checklist

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Operator: \_\_\_\_\_

Fuel: Gas    LP    Diesel    Electric

Unit: \_\_\_\_\_    Model #: \_\_\_\_\_    Engine Oil: \_\_\_\_\_

Job: \_\_\_\_\_    Serial #: \_\_\_\_\_    Radiator Coolant: \_\_\_\_\_

Hour Meter Reading: \_\_\_\_\_

Safety and Operational Checks (Prior to each shift)

<i><b>Item</b></i>	<i><b>O.K.</b></i>	<i><b>Needs Maintenance</b></i>
Fuel Odor Present?		
Leaks – Fuel, Hydraulic, oil, or Radiator Coolant?		
Tires – Condition and Pressure?		
Hoses – Damaged, Staining, Leaking?		
Hydraulic Hoses on Boom?		
Propane Tanks (LP Lifts) - Rust, corrosion, Damage?		
Safety Warning and Decals – Attached, Understandable?		
Engine Compartment: Battery – Water/Electrolyte Level?		
Hydraulic & Transmission Tank Fluid Level?		
Engine Oil Level?		
Warning Signals – Functioning Properly?		
Engine Air Cleaner?		
Radiator and Brake Fluid Levels?		
Operator's Manual in Container?		
Capacity Plate Attached? Load Capacity Posted?		
Hood Latch – Adjusted and Fastened? Attachment Point in Basket?		
Controls – Lower Unit Function Check? Basket/Platform Function Check?		
Service Brake – Functioning Properly?		
Steering Operations – Functioning Properly?		
Drive & Tilt Control – Forward/Reverse – Functioning Properly?		
Hoist and Lowering Controls – Functioning Properly?		
Horn & Lights – Functioning Properly?		
Hour Meter – Functioning Properly?		
Gauges – Functioning Properly?		
Platform and Guardrails -Good Condition?		
Hydraulic Release Valve – Functioning Properly?		
Class III Body Harness Available? Lanyard w/shock absorber?		

### Suspended Scaffold Assessment

Location: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Job Title: \_\_\_\_\_  
 Contractor: \_\_\_\_\_ Inspected by: \_\_\_\_\_

Item	Y/N N/A	Comment	Date Completed
1. Structure is capable of supporting rigging loads?			
2. Outrigger is of proper design and correctly assembled?			
3. Tie-back installed, structurally secured, and taut?			
4. Counterweights calculated? (Ax4B/C=D)=_____			
5. All beams, cornice hooks, clamps are correctly tied back?			
6. Suspension deck: Guardrails (top and mid rail) toe boards, stanchions installed correctly and secure?			
7. Suspension deck stirrups in good condition, free of weld cracks and metal bends?			
8. Suspension deck has posted maximum load ratings?			
9. Suspension wire rope perpendicular to suspension anchorage?			
10. Hoist torque loads known by operator(s)?			
11. Hoist manufacturer operating manual available?			
12. Hoists are in proper operating condition and attached correctly stirrup?			
13. Wire rope has been inspected, proper size, reeve correctly, attached properly to anchorage and reaches ground?			
14. After load applied, all connections (J-clamps, tiebacks, etc.) checked for tightness?			
15. Electric cords/air hose connections inspected, and strain relief in place?			
16. Power supply (electric/air) enough to operate hoist properly?			
17. Fall protection independent of rigging system?			
18. Each deck occupant equipped with Class 3, full body harness, lanyard (max. length of 6'), independent lifeline, rope grab?			
19. Life line inspected by Competent Person?			
20. Fall protection system inspected daily?			
21 Scaffold at least 10' from energized electrical source?			

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
 Name Date

Distribution: \_\_\_\_\_ ICRA \_\_\_\_\_ General Contractor \_\_\_\_\_ Safety Office  
 \_\_\_\_\_ COTR \_\_\_\_\_ Subcontractor \_\_\_\_\_ Other: \_\_\_\_\_

## **CHAPTER 8**

### **HAZARD COMMUNICATION PROGRAM**

**1. PURPOSE:** To assure the safe handling of hazardous materials (toxic substances and harmful physical agents) through proper labeling, provision of MSDS and employee training throughout HCS to include the contractors.

**2. POLICY:** To manage hazardous materials from the point of requisition to the point of disposal in a manner that will protect patients, visitors, and the environment from any adverse effects and to reduce occupational illness and health problems through education, awareness, standard operating procedures, and by reducing exposure to levels as low as reasonably achievable.

#### **3. DEFINITIONS:**

a. *Hazardous Materials:* Are those materials (chemical, physical or biological) utilized or generated by the operation of any and all components that includes construction at the facility, which possess one, or more of the characteristics identified in Federal Standard #313. These characteristics address the flammability, corrosives, reactivity and toxicity of the material(s) in question. The Department of Veterans Affairs (VA) defines hazardous chemical or hazardous material as any chemical or chemical product or substance, which is either a physical hazard or a health hazard.

b. *Health Hazard:* A chemical or chemical product for which there is statistically significant evidence, based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term health hazard includes chemicals, which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxin, nephrotoxins, neurotoxins, agents having an effect on the hematopoietic system, and agents, which damage the lungs, skin, eyes, or mucous membranes.

c. *Physical Hazard:* A chemical, chemical product or substance for which there is scientific evidence that it is a combustible liquid, compressed gas, explosive, flammable, or organic peroxide, oxidizer, pyrophoric, unstable (reactive) or water reactive.

#### **4. RESPONSIBILITIES:**

a. *Logistic Management* is responsible for:

(1) Ensuring that the hazardous material requirements in the Federal Acquisition Regulation (FAR) 49 CFR 52.223-3 and FSS Clause Manual I-FSS-22 are contained in the Acquisition Document if the words HAZARDOUS: MSDS required are in the purchase request.

(2) Ensuring that contractors provide MSDSs for products used to the Industrial Hygienist.

b. *CSR* is responsible for:

(1) Ensuring that the Contractor has a written Hazard Communication Program that includes provisions for container labeling and other forms of warning, MSDS Management and employee training.

(2) Ensuring that all affected employees receive the required hazard communication training prior to initial assignment and as necessary after reassignment.

(3) Ensuring that an inventory of the hazardous substances used during the completion of the project will be provided along with all pertinent MSDS to the Industrial Hygienist for evaluation and review prior to the beginning of any work. Requests by the employees to review contractor chemicals, inventories, or MSDS's will be referred to Industrial Hygienist. Similarly, contractor personnel with concerns regarding hazardous substances used at the facility will also be referred to Industrial Hygienist.

(4) Using substances of less toxicity or hazard will be used.

(5) Ensuring that the inventories of chemical substances and MSDS references manuals for the chemicals used at the health care system is provided to each work area.

(6) Checking with the GEMS Coordinator to review the Asbestos Assessment and Lead-Based Paint Assessment. He/she is responsible for insuring that all contractor and subcontractor personnel are aware of the presence of these materials and the measures and work practices necessary to prevent damage to the materials present.

## **5. PROCEDURES:**

### **a. Hazardous Materials Inventory (HMI):**

(1) The CSR shall conduct an initial HMI within their respective area. A current Master Inventory shall be maintained in each area and kept up to date as each new chemical or product or substance is received or deleted.

(2) The inventory for each hazardous material or chemical shall contain all the requested information for each material.

(3) The inventory must be completed and provided to the Industrial Hygienist prior to project beginning for review.

(4) All materials used during the project must be used up. Any materials unused must be removed from the facility at the contractor expense.

### **b. MSDS:**

(1) The CSR shall obtain the most current copy of the specific MSDS for each chemical or hazardous material meeting the VA definition of hazardous material or chemical. The location of the MSDS files for each service will be posted in all areas where hazardous materials or chemicals are used.

(2) MSDSs are available upon request from the vendor. It is sometimes necessary to contact either the distributor or manufacturer, but usually the salesperson, customer service department or the product manager are the appropriate contacts to request an MSDS. A copy of all new MSDSs received will be forwarded to the Industrial Hygienist for review, evaluation prior to the project beginning.

**c. Labeling:** The manufacturer will ensure that each container of hazardous chemicals leaving their facilities are labeled, tagged or marked with the following information:

- (a) Identity of the hazardous chemical(s).
- (b) Appropriate hazard warnings; and
- (c) Name and address of the manufacturer or other responsible party.

(1) OSHA regulates the hazardous chemical in a substance-specific health standard; the manufacturer or employer shall ensure that the labels or other forms of warnings used are in accordance with the requirement of the hazard communication standard.

(2) The contractor shall ensure that each container of hazardous chemicals in the construction area is labeled, tagged or marked identifying the hazardous chemical, appropriate hazard warnings, and name and address of chemical manufacturer. The hazard warning can be words, pictures, or symbols, which provide an immediate understanding of the primary, health and/or physical hazards of the material.

(3) The contractor is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use by the employee who performs the transfer.

(4) The contractor shall ensure that employee(s) will not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information. Existing labels that may not remain legible over the useful life of the container must be replaced.

d. Training: CSR shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, annually and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards or specific chemicals. Chemical-specific information must always be available through labels and MSDS.

(1) Employees shall be informed of:

(a) The elements of the HCS's Hazardous Materials (Communication) Management Program.

(b) Any operations in their work area where hazardous chemicals are present.

(c) The location and availability of the written policy, including the required list of hazardous chemicals and MSDS.

(2) Employee training shall include at least:

(a) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area.

(b) The physical and health hazards of the chemicals in the work area.

(c) The measures employees can take to protect themselves from these hazards, including specific procedures the service chief has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and PPE to be used.

(d) The details of the hazardous materials (communication) management program including an explanation of the labeling system and the MSDS and how employees can obtain and use the appropriate hazard information.

(3) Hazardous chemical spill and leak procedures for cleanup purposes.

e. Contractors:

(1) Contractors must be informed of the following:

(a) Chemicals to which their employees may be exposed and how to obtain MSDSs for those chemicals.

(b) Methods that may be used to protect employees from hazardous exposure to those chemicals.

(c) An explanation of the HCS's chemical container labeling system.

(2) If a contractor must bring chemicals into the facility, a MSDS for each chemical must be provided to the Industrial Hygienist prior to the use of any chemical.

f. For each project, which uses hazardous materials or chemicals, the contractor will develop and implement policies and procedures on the safe handling of those materials. Non-routine tasks involving the use of hazardous materials or chemicals must be addressed in the policies and procedures. The policies and procedures for the management of hazardous materials or chemicals in the service will address all aspects of handling hazardous materials or chemicals including the use of PPE and emergency procedures for the containment of spills. They will ensure that each container of hazardous materials or chemicals in the workplace is labeled, tagged or marked with the identity of the hazards and includes appropriate hazard warnings.

e. Spills or Leaks: Follow emergency procedures developed by the construction safety representative or use the following guideline for handling spills and leaks:

(1) Evacuate all non-essential personnel from the spill area to minimize the number of employees exposed to the chemical or material.

(2) Notify the GEMS Coordinator.

(3) Contain the spilled material as much as possible using spill dikes and/or other available absorbent material to prevent the spread and/or entrance of the spilled material into the drainage system.

(4) Secure the spill area by closing all exits and entrances to the spill area and only allow essential personnel to enter the spill area.

(5) Identify the spill chemical/material.

(6) Post signs to warn other employees to keep out of the spill/leak area.

(7) Cleanup personnel should consult MSDS's for PPE that will be required during the cleanup operation.

Furthermore, the cleanup personnel will follow the procedures outlined on the MSDS in case of a spill or leak. (Contractors may have to hire qualified individuals to clean up the spill and dispose of the materials in accordance with EPA guidelines.)

**Contractor Hazard Communication Checklist**  
**29 CFR 1926.59 – 29 CFR 1910.1200**

**Location:** \_\_\_\_\_ **Date:** \_\_\_\_/\_\_\_\_/\_\_\_\_

**Job Name:** \_\_\_\_\_ **Contractor:** \_\_\_\_\_

<b>Inspection Item</b>	<b>Yes</b>	<b>No</b>	<b>Comment</b>	<b>Correction Date</b>
1. Does the contractor have a written program?				
2. Does the program address the training of employees?				
3. Do field employees know the location of Material Safety Data Sheets (MSDS)?				
4. Do all regulated chemicals on the jobsite have a MSDS on file?				
5. Are container labels legible and in compliance with the standard?				
6. Are employees using the chemical(s) as specified by the manufacturer's instructions?				
7. Is the personal protective equipment required by the MSDS being used by those using and exposed to the chemical?				
8. Does the contractor have a method of informing employees of hazards of non-routine tasks (tank entries, line breaks)?				

**Name:** \_\_\_\_\_ **Date:** \_\_\_\_/\_\_\_\_/\_\_\_\_

**CHAPTER 9**  
**CONFINED SPACE ENTRY PROCEDURES AND TRENCHING**  
**AND EXCAVATION PROGRAM**

**1. PURPOSE:** To minimize health risks to employees by identifying permit-required confined spaces and controlling or eliminating the hazards associated with entry including work task performance; and provide guidance and safety requirements for trench and excavation by contractors.

**2. POLICY:** To identify permit required confined spaces, eliminate unauthorized entry, and minimizing the hazards associated with entry via engineering controls, safe entry procedures, training, personal protective equipment, and a comprehensive permit required-space entry system. No employee shall enter any confined space without the expressed permission of his/her supervisor. Operate under the OSHA rules, regulations and standards concerning excavations. This will include the use of support systems, sloping and benching systems which are used as protection against excavation cave-ins.

**3. BACKGROUND:** Confined space hazards have long been recognized as serious threats to the health of both entrants and rescuers. Historically, multiple fatalities have resulted from improperly informed or equipped entrants being fatally stricken followed by the deaths of ill-prepared rescuers. The nature of the restricted workspace, limited bodily movement and lack of proper air circulation often increase the hazards associated with the work tasks performed by entrants.

**4. DEFINITIONS:**

a. *Confined Space:* An enclosed space which:

(1) Is large enough and so configured that an employee can bodily enter and perform assigned work;

(2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry) and;

(3) Is not designed for continuous employee occupancy.

b. *Permit-Required Confined Space:* A confined space that has one or more of the following characteristics:

(1) Contains or has a potential to contain a hazardous atmosphere.

(2) Contains a material that has the potential for engulfing an entrant.

(3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly sloping walls or by a floor that slopes downward and tapers to a smaller cross-section.

(4) Contains any other recognized serious safety or health hazard.

c. *Cave-in:* The separation of a mass of soil or rock material from the side of an excavation either by falling or sliding, in sufficient quantity so that it could entrap, bury or otherwise injure and immobilize a person.

d. *Double Block and Bleed:* A method used to isolate a confined space from a line, duct or pipe by physically closing two in-line valves on a piping system and opening a vented-to-atmosphere valve between them.

e. *Engulfment:* The surrounding and effective capture of a person by a liquid or finely divided solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

f. *Entry:* The action by which a person passes through an opening into a space. Entry includes work activities in the space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

g. *Hazard Evaluation:* A process to assess the severity of known, real or potential hazards or all three, at or in the confined space.

h. *Hazardous Atmosphere*: An atmosphere that may be or is injurious to occupants by reason of oxygen deficiency or enrichment, flammability, explosivity; or toxicity.

i. *Hot Work Permit*: The facility has a written hot work permit that gives authorization to perform operations capable of providing a source of ignition (for example, riveting, welding, cutting, burning, and heating).

j. *Isolation*: The process by which a permit required confined space is removed from service and completely isolated against the release of energy and material into the space. This may be accomplished by: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lock out or tag out of all sources of energy; or blocking or disconnecting all mechanical linkages.

k. *Lock out/Tag out*: The placement of a lock/tag on the energy isolating device in accordance with an established procedure, indicating that the energy isolating device shall not be operated until removal of the lock/tag in accordance with an established procedure.

l. *Non-Permit Space*: A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm. Examples include: vented vaults, motor control cabinets and dropped ceilings. Although they are “confined spaces”, these spaces have either natural or permanent mechanical ventilation to prevent the accumulation of a hazardous atmosphere, and they do not present engulfment or other serious hazards.

## 5. **RESPONSIBILITIES:**

a. The *Industrial Hygienist* is responsible for overall implementation of the confined space entry program and will:

(1) Evaluate the workplace to determine if any spaces are permit required confined spaces.

(2) Inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by permit required confined spaces. **Note:** A sign reading “**DANGER-PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER**” or using other similar language would satisfy the requirement for a sign.

(3) Take effective measures to prevent employees from entering the permit required confined spaces.

(4) Inform CO and COTR, that the workplace contains permit required confined spaces and requires submittal of permit entry plans.

b. The *Contracting Officer* is responsible for informing contractors of the following:

(1) The locations of the permit required confined spaces at our facility and notify entry into these spaces is only allowed through a Permit required-Space Program.

(2) The rationale for listing the space as a permit required confined space noting any hazards and experience with the particular space.

(3) Precautions that the HCS has implemented to protect employees working in or near the permit required confined space.

(4) The CO and COTR will be debriefed at the completion of the entry operation, or during, if any hazards were created during the work.

(5) Ensuring that the contractors comply with 29 CFR 1926, Subpart P.

c. *Contractors* are responsible for:

(1) Obtaining available information regarding permit required confined space hazards and entry operations from the CO.

(2) Coordinating entry operations with the COTR, when both HCS employees and contractor employees will be working in or near permit required confined space.

(3) Informing the Contracting Officer and COTR of the permit required confined space program that they will follow and if any hazards are confronted or created in the space, either through debriefing or during the entry operations.

(4) Ensuring that the contractor follows this procedure when working on the HCS buildings/grounds.

d. *Entry supervisors* are responsible for ensuring that all equipment needed for safe entry into any permit required confined space is available and in proper working order. He/she is responsible for being knowledgeable of the hazards associated with permit required confined spaces; verifying acceptable entry conditions, signing the permit, canceling permits following task performance and routing the entry, terminate entry and/or cancel permit through the immediate supervisor to the Industrial Hygienist.

e. *Entry attendants* are responsible for being knowledgeable of permit required confined space hazards; prohibited conditions, their role to remain outside and in communication with entrants; preventing unauthorized entry; summoning rescue and emergency services, and performing non-entry rescue. The attendants' primary duty is to monitor and protect the authorized entrants.

f. *Authorized entrants* are responsible for being proficient in dealing with the hazards of permit required confined spaces, proper equipment use, communication systems, acceptable entry and prohibited conditions, immediate evacuation conditions, and safe work task performance.

## **6. PROCEDURES:**

a. Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed. When entrance covers are removed, a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the confined space shall promptly guard the opening. Before an employee enters the space, the internal atmosphere shall be tested, with a calibrated direct-reading instrument, for the following conditions in the following order: oxygen content, flammable gases and vapors, and potential toxic air contaminants.

There may be no hazardous atmosphere within the space whenever any employee is inside the space.

b. Entry into any permit required confined space, where a full permit required-space program is mandated, will require specially trained and equipped teams. Each team will consist of authorized:

- Entrants
- Entry supervisor
- Attendant
- Rescue personnel

c. Continuous forced air ventilation shall be used, as follows:

(1) An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.

(2) The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.

(3) The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space. The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

d. If a hazardous atmosphere is detected during entry the employees shall leave the space immediately. The space shall be evaluated to determine how the hazardous atmosphere developed and measures shall be implemented to protect employees.

e. The CSR and/or competent person shall verify that the space is safe for entry and that the pre-entry measures have been taken through a written certification that contains the date; the location of the confined space, and the signature of the person providing the certification shall be made before entry.

f. The CSR and/or competent person shall document the basis for determining that all hazards in a permit required confined space have been eliminated, through a certification that contains the date, the location of the space, and the signature of the person making the determination. If hazards arise within a

permit required confined space that has been declassified to a non-permit required confined space. Each employee in the space shall exit.

g. When the HCS has a contractor perform work that involves permit required confined space entry, the CO and COTR shall:

(1) Inform the contractor that the workplace contains permit required confined spaces and that entry is allowed only through compliance with permit required confined space program.

(2) Apprise the contractor of the elements, including the hazards identified and the HCS's experience with the space, that make the space in question a permit required confined space and any precautions or procedures that the HCS has implemented for the protection of employees in or near confined space where contractors will be working.

(3) Coordinate entry operations with the contractor, when both HCS and contractor employees will be working in or near confined spaces.

h. Evaluating Permit Required Confined Spaces:

(1) Test conditions in the permit required confined space to determine if acceptable entry conditions exist before entry is authorized to begin, except that, if isolation of the space is infeasible because the space is large or is part of a continuous system. Pre-entry testing shall be performed to the extent feasible before entry is authorized and, if entry is authorized, entry conditions shall be continuously monitored in the areas where authorized entrants are working.

(2) Test or monitor the space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations. When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.

(3) Provide at least one attendant outside the permit required confined space into which entry is authorized for the duration of entry operations. Attendants may be assigned to monitor the space. If multiple spaces are to be monitored by a single attendant, include in the permit program the means and procedures to enable the attendant to respond to an emergency affecting one or more of the permit required confined spaces being monitored without distraction from the attendant's responsibilities.

(4) The supervisor shall designate the persons who are to have active roles in entry operations including identifying the duties of each such employee and providing each employee with the training required.

j. Isolation and Lock out/Tag out:

(1) All energy sources, which are potentially hazardous to, confined space entrants shall be secured, relieved, disconnected and/or restrained before personnel are permitted to enter the confined space.

(2) Methods and means shall be selected and used to prevent flammable, toxic, irritating, or oxygen displacing gases and vapors from entering the space. Utilizing blinding, disconnection, removal, or double block and bleed as needed to prevent entry of material(s) and hazardous contaminant(s) shall isolate all hazardous material, high pressure, high temperature and other piping that could introduce a hazard.

(3) Equipment or processes shall be locked or tagged or both per ANSI Z244.1 and the Health Care System lock out/tag out policy.

k. Emergency Response Plan:

(1) Offsite emergency response personnel may be used provided they are capable of performing a rescue, are familiar with the premises, and can respond in a timely manner.

(2) Harnesses, lifelines, and mechanical lifting device for vertical entries are required. Breathing equipment and medical aid equipment may also be necessary. Consideration should also be given to what type of lighting would be used in the confined space, communication devices, and other special equipment, which might be used for rescue.

(3) Audible alarms, two-ways radios, telephones, etc., are some of the possible means for summoning aid and rescue personnel.

#### 1. Training:

(1) Each employee who has access or potential access to a permit required confined space would be given training. The amount and type of training needed depends on the individual duty assignment. The overall intent of this training is to give employees the understanding, knowledge, and skills necessary for the safe performance of their assigned duties in relation to the permit required-spaces of concern.

(2) Awareness training for employees potentially exposed to permit required confined spaces: The employees are informed to not enter the space without authorization.

(3) Training for using alternative procedures if the space qualifies.

(4) These procedures can only be used when a hazardous atmosphere is the only hazard of concern.

(5) The harm associated with the atmospheric hazards of concern including their acceptable entry levels and symptoms of overexposure.

(6) Awareness training to recognize other potential hazards in or around the space.

(7) Atmospheric testing equipment including its use, method of calibration and maintenance. Also, testing protocol for oxygen, combustibles, and toxics

(8) The training will be specific for the duties of each team member and include the procedures and practices necessary to protect them from the dangers of the permit required confined space.

(9) Authorized Entrants will be trained to know the hazards associated with the permit required confined space and their effects. How to properly use the equipment required for entry and to maintain a continuous means of communication with the attendant. How to alert the attendant in the event of an emergency and to evacuate the space.

(10) Attendants will be trained to know the hazards associated with the permit space and their effects. Maintain the accurate account of the authorized entrants, to monitor conditions in and around the space and summon rescue services in the event of an emergency.

(11) The attendant will remain at their assigned station until relieved by another attendant or until the permit required confined space entry is complete. Perform non-entry rescue procedures and take measures to prevent unauthorized personnel from entering the space.

(12) Entry supervisors will be trained to know the hazards associated with the permit required confined space and their effects. Verify that the safeguards required by the permit required have been implemented and that rescue services are available. Cancel the written permit and terminate the permit-space entry when required. Remove personnel who are not authorized to enter and periodically, determine that entry operations are being performed in a manner consistent with the requirements of the entry procedures.

### **CONFINED SPACE TYPES AND LOCATIONS**

The following represent different kinds of confined space at the HCS. These include, but are not limited to:

Manholes leading to sanitary sewers – **labeled bright red** – Permit Required

Manholes leading to storm sewers – **labeled bright red** – Permit Required

Manholes leading to steam – **labeled bright blue** – Permit Required

Water Tower – Alternative Entry Procedures in lieu of Permit Required (Tower is posted as confined space)

Manholes leading to signal or electrical raceways – **labeled bright yellow** – Alternative Entry Procedures in lieu of Permit Required

Vaults on front lawn where city water pumps are underground and enter the property – Alternative Entry Procedures in lieu of Permit Required

Spaces that do not require any permit, monitoring, etc.:

All hot water tanks

Underground Vaults in shop areas and steam tunnels

Vertical chases in Imaging and Canteen Retail Store (Montgomery Campus)

Crawlspaces under building 1 and 4 (Montgomery Campus) and under all buildings at the Tuskegee Campus

Interstitial wall spaces

Elevator pits in buildings 1, 4, 6 and 7 (Montgomery Campus); buildings 2, 3A, 4A, 50, 62, 68, 69, 44, 120, 129 (Tuskegee Campus)

Boiler Plant; Boilers

In general, the spaces above are marked with the type of procedures to be used for entry. However, be sure to review specific location/type map to determine correct entry procedures. There may be reasons why some spaces marked above may or may not have more stringent procedures.



**ALTERNATE PERMIT SPACE**  
**ENTRY PROCEDURE WORKSHEET**

Date: \_\_\_\_\_

Alternate Permit Space Entry Procedure worksheet is provided for employers to assist you in complying with OSHA standard 29 CFR 1910.146 - Permit-Required Confined Spaces. It must be used in conjunction with the entire standard to ensure proper compliance.

**REQUIRED CONDITIONS FOR USING ALTERNATE PROCEDURES:**

- o Can be demonstrated that the only hazard posed by the permit-space is an actual or potential hazardous atmosphere.
- o Can demonstrate that continuous forced air ventilation alone is sufficient to maintain the permit-space safe for entry.
- o Monitoring and inspection data developed that supports the demonstration that the only hazard is an atmospheric one and ventilation above is sufficient for safe entry.
- o An initial entry into the permit-space, if required, was performed under an authorized entry permit.
- o The determinations and supporting data are made available to each employee who enters the permit-space.
- o Entry under the alternate procedure meets the following requirements:

**REQUIREMENTS FOR ALTERNATE PROCEDURE USE:**

- o Any conditions making it unsafe to remove an entrance cover is eliminated before the cover is removed.
- o When entrance covers are removed, railings, temporary cover, or other temporary barrier that prevents accidental fall through the opening and that protects entrants in the space from falling objects promptly guards the openings.
- o The atmosphere in the space is tested with a calibrated direct reading instrument, before an employee enters the space.
- o The atmospheric tests are conducted in the following order:
  1. Oxygen content,
  2. Flammable gases and vapors, and
  3. Potential toxic air contaminants.
- o No hazardous atmosphere in the space whenever any employee is inside.
- o Continuous forced air ventilation is used as follows:
  1. Employee does not enter until forced air ventilation eliminated any hazardous atmosphere;
  2. Forced air ventilation ventilates employee's immediate work area and continues throughout the entry;
  3. A clean source of forced air ventilation is used which does not increase the hazards in the space.
- o Space atmosphere is periodically tested to ensure the ventilation is preventing the accumulation of a hazardous atmosphere.
- o If a hazardous atmosphere is detected during entry:
  1. Each employee leaves the space immediately;
  2. The space is evaluated to determine how the hazardous atmosphere developed; and
  3. Measures are taken to protect employees from the hazardous atmosphere before any subsequent entry.
- o A written certification is provided which verifies that the space is safe for entry. Certificate shows the date, location of the space and signature of the person providing the certification.

**OTHER COMMENTS:**

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Prepared By: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed By: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

**Trenching & Excavations**

**Mandatory Requirements:**

a. The walls and faces of trenches 5 feet or more in depth and all excavation in which employees are exposed, changes from moving ground or cave-in shall be guarded by a shoring system, sloping of the ground or a shielding system.

b. Trenches 4 feet in depth or more shall have an adequate means of exit such as ladders, steps, or ramps located whereas to require no more than 25 feet of lateral travel. Ladders must be secured and must extend 36 inches above the landing.

c. In all excavation which employees may be required to enter, all equipment, excavated materials, or other materials shall be effectively stored and retained at least 2 feet or more from the edge of the excavation.

d. A competent person for any hazardous conditions, which might exist, shall make daily inspections of excavations, protective systems, and adjacent areas. An excavation checklist will be used as a guide for compliance and will be filled out for each excavation or trench.

e. All materials removed from an excavation will be considered Class C soil unless otherwise determined. All protective systems will; therefore, be constructed for Type C soil. The maximum allowable slope will be 35 degrees on all excavation.

f. When an excavation is near vehicular traffic, exposed employees shall be provided with, and shall wear; warning vests or other suitable garments marked or made of reflectorized or high-visibility material.

g. Prior to opening an excavation, as-built plans or any other feasible method will be used to determine the location of utility installations such as sewer, telephone, fuel, electrical/water lines, or any other installation. For additional details request a copy of the facility Trenching and Excavation Policy from the Safety Office.

**Confined Space Entry Checklist**  
**29 CFR 1910.146**

Location: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Job Name: \_\_\_\_\_ Contractor: \_\_\_\_\_

<b>Inspection Item</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>	<b>Correction Date</b>
1. Are known confined spaces clearly labeled?				
2. Have the contractor employee been trained in the confined space standard that has been certified by the employer per the standard?				
3. Does the contractor know the hazards of the confined space and have measures in place to protect employees from those hazards?				
4. Has the identified space been identified as permit or non-permit required confined space?				
5. Has internal monitoring of the atmosphere been conducted prior to any entry?				
6. Are the results of the monitoring within acceptable levels?				
7. Has an emergency rescue team (if needed) been notified of the entry?				
8. Does the contractor have the appropriate retrieval equipment so that a non-entry rescue can be effectively made?				

Name: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

**Excavation Checklist**  
**To be completed by a competent person**

Location: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_  
 Time: \_\_\_\_\_ Competent Person: \_\_\_\_\_  
 Excavation Depth: \_\_\_\_\_ Excavation Width: \_\_\_\_\_  
 Type of Protective System Used: \_\_\_\_\_

<b>Inspection Item</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>	<b>Correction Date</b>
1. Are surface encumbrances removed or supported?				
2. Are the employees protected from loose rock or soil that could pose a hazard by falling or rolling into the excavation?				
3. Do all employees wear hardhats?				
4. Are spoils, materials, and equipment set back at least 2 feet from the edge of the excavation?				
5. Are barriers provided all remotely located excavations, wells, pits, shafts, etc?				
6. Are warning vests or other highly visible clothing provided and worn by all employees exposed to vehicular traffic?				
7. Are the employees required to stand away from vehicles being loaded and unloaded?				
8. Are warning systems established and utilized when mobile equipment is operating near the edge of the excavation?				
9. Are the employees prohibited from working on the faces of sloped or benched excavation above other employees?				
10. Are the exact locations of buried utilities marked?				
11. Is the underground installation protected, supported or removed when excavation is open?				

**CHAPTER10**  
**LOCK OUT/TAG OUT**

**1. PURPOSE:** To provide details regarding lockout/tag out procedure by which consistent positive protection can be provided to prevent unexpected equipment or system start ups.

**2. POLICY:** The use of lock-out/tag-out to prohibit equipment unexpectedly starting up while being worked on and to prevent the likelihood and frequency of severe injury.

a. The OSHA states: where the starting of a machine, device or thing may endanger the safety of a worker:

(1) Control switches or other control mechanisms shall be locked out.

(2) Other effective precautions necessary to prevent such starting shall be taken.

b. While the above regulation refers generally to the hazards associated with the accidental starting of a machine, etc. This will be understood to include the possibility of injury from working near interconnecting machines or equipment (in which case they too shall be shut down and locked out). Lock Out and Tag out policy covers all kinds of energy – electrical, mechanical, pneumatic, hydraulic, and thermal and gravity. It also covers stored energy that remains in equipment even after it is isolated from its energy source. This can be but not limited to electrical capacitors, springs, flow lines or pipes. Some machinery and equipment may be powered from multiple sources. All sources of energy must be locked and tagged out prior to repair, service or modification.

**3. RESPONSIBILITIES:**

a. All authorized employees shall be instructed in the safety significance of the lock-out and tag-out procedures, as well as how to implement those procedures.

b. Foreman and contracting representatives (COTR's) are responsible for implementing and enforcing the lock-out tag out policy.

c. The CSR will:

(1) Ensure that a documented procedure exists for the lock out/tag out of such machines and equipment.

(2) Training will be provide to contractor personnel involved in the lockout/tag out program to review the documented procedures established and the overall program at least annually.

(3) Coordinate with the COTR whenever lockout/tag out procedures requires the involvement of the personnel.

**4. PROCEDURES:** All energy-generating machines, devices or items are to be locked and tagged out before servicing, repairing, or making modifications. If the device requiring lock-out cannot accommodate a lock, contact your construction safety representative for further direction.

a. Only the standardized devices are to be used for lock-out and tag-out, and they shall not be used for the securing of any other device or purpose. Lock-out devices may be padlock, blanking device, restraining bar, chain and padlock or any other device that is manufactured and approved as a lock-out device which prevents a machine, system or thing from being energized or releasing stored energy. All devices used to lock-out and tag-out shall be stored in a secure manor, which prevents unauthorized use.

b. All tags shall be filled out completely and correctly i.e., name, date, trade and the reason for the lock-out.

c. Logbooks shall be kept for the recording of lock-out & tag-out use. Logbooks shall include start and stop dates, times, and location, name of authorized employee performing lock-out & and tag-out procedure, and work performed (maintenance, repair, or modification).

d. Authorized employee who places the lock must be the one to remove it. In an emergency, a lock can be removed in the presence of an authorized supervisor.

e. If more than one person can activate a piece of equipment, then all must place their locks on it when a lock-out is conducted.

f. Contractors or others who work on energized equipment must coordinate their work with those of the HCS authorized personnel as designated in this policy.

g. Lock-out and tag-out has three separate levels of involvement:

(1) Authorized employees; These perform the lock-out of the equipment and may only lock-out authorized equipment. The facility policy limits authorized employees to the following Engineering employees: Electricians, Plumbers, Maintenance Mechanics, Electronic and Bio Medical Technicians.

(2) Affected employees: These operate equipment or work in an area where a lock-out is taking place. While they do not perform the lock-out, they must be notified of the lock-out before it begins.

(3) Other employees: These are not directly affected by the lock-out but need to recognize when a lock-out is in place. In some cases, the affected employee and the authorized employee may be the same person. An authorized employee, as listed by job title in this policy, is the only one permitted to perform energy shut downs and lock-out procedures.

(4) The employee authorized to lock-out equipment assumes the responsibilities designed to prevent accidental startup of the locked out equipment. The person's duties are to:

(a) Be familiar with the machinery and its hazards, including the type of energy, the hazards of that energy, and which controls need to be locked out to remove the hazards.

(b) Notify affected employees that a lock-out is about to begin to ensure that they will not attempt to restart equipment.

(c) Shut down the equipment using the normal on/off control, whether it is a stop button, switch, or valve. Follow correct shut down procedure for the equipment, system or thing to eliminate all associated dangers.

(d) Isolate the equipment from all of its energy sources using an isolating device like a circuit breaker or shut off valve.

(e) Attach an approved locking device that prevents each energy source from re-energizing the equipment.

(f) Attach a tag at the lock-out point to warn people when, why and by whom the lock was placed. A tag alone warns that equipment should not be started but provides no physical protection. A tag should be used only in conjunction with a lock as a way of providing additional information.

(g) Control hazards from stored energy. The actual hazards depend on the equipment, but can include bleeding lines, opening or closing valves, draining pipes, releasing tension on springs or blocking or bracing parts that may fall. Inspect the system to make sure all parts have stopped moving. Install ground wires. Relieve trapped pressures. When applicable, bleed the lines and leave vent valves open.

(h) Drain process piping systems and close valves to prevent the flow of hazardous materials. Block parts in hydraulic and pneumatic systems that could move from loss of pressure.

(i) If a line must be blocked where there is no valve, an approved mechanical device must be used to prohibit the flow of energy.

(j) Dissipate extreme cold or heat, and or wear protective clothing when applicable.

(k) If stored energy can re-accumulate, monitor energy sources to ensure energy levels stay below hazardous levels.

(l) Verify the lock-out by making sure the power or energy source is off, check with other people in the area to ensure their safety, clear all danger areas of personnel. Verify that locked out devices cannot be maneuvered to the on position. Use appropriate testing equipment to ensure that all energy sources have been secured in the off position. Activate the equipment using the normal on/off control. If the equipment does not start, the lock-out is in place and the on/off control is returned to the off position while work is in progress.

(m) If locked out tagged out equipment requires reactivation during the procedure for test or adjustment purposes, the lock-out system must be removed for the testing and then replaced if more work is needed.

(n) Precautions must be taken not to bypass the lock-out or re-activate the locked out device or system. This can happen when doing wiring or when adding piping or valves.

(5) Re-energizing equipment or system: When the work is completed, the authorized person ends the lock-out by reversing the procedure. This also must be done anytime the machinery or equipment needs to be started during the lock-out.

(a) Make sure the equipment is safe to operate. Check for and remove tools and blocking or bracing.

(b) Reassemble the equipment.

(c) Replace all guards.

(d) Make sure the equipment is still in the off position.

(e) Safeguard all employees. Clear all people from the hazard area.

(f) If the authorized employee whose lock is securing the device, system or item cannot view the area where the lock is located, a second authorized employee shall watch the area while primary employee removes the lock-out device.

(6) Test the equipment by turning it on.

(a) Inform all affected employees that the lock-out is removed, and the equipment, system, or item is safe for operation.

(b) Lock-out devices and tags shall be returned to appropriate storage area.

## Lock out/Tag out Assessment Form

1. Inspection Date: \_\_\_\_\_

2. Inspector (Printed Name/Signature: \_\_\_\_\_ / \_\_\_\_\_

3. Employee (s) Inspected: \_\_\_\_\_ / \_\_\_\_\_  
 \_\_\_\_\_ / \_\_\_\_\_

4. Machine/Equipment on which the Energy Control Procedure was utilized:

Machine/Equipment Name	Location	Procedure Available? Y/N	Date

Item	Yes	No	Date
Does the employee have or have access to adequate lock out/tag out devices?			
Has employee tested the effectiveness of his/her lock out/tag out devices?			
If this is an outside contractor, has VA personnel been informed of the necessity for adhering to those procedures?			
Have all written procedures been followed?			
Tags legible and clearly displayed?			
Has contractor been advised of VA lock out/tag out policy and procedures?			

5. Comments/Observations:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**CHAPTER 11**  
**PERSONAL PROTECTIVE EQUIPMENT (PPE) PROGRAM**

**1. Employee Training Required.** Upon issue of PPE to the employee, each person must be trained on the proper use, procedures for wearing and/or adjusting, limitations and proper care of the items. Additionally, an employee must be re-trained if he/she demonstrates improper use, insufficient skills using the PPE or if the employee does not use the equipment as instructed.

Employees who are required to wear respiratory protection are required to undergo annual training that will include any updates to the employer's Respiratory Protection Program.

PPE is designed to act as a barrier between the hazard and the employee. This barrier does nothing to prevent the hazard; it merely acts as a line of defense between the hazard and the employee. The decision to use personal protective equipment should be made only after it is determined that the hazard cannot be removed (so that it no longer exists), administrative controls such as job rotation are not feasible, and the hazard cannot be controlled by engineering methods (such as the application of a guard to prevent employee contact).

PPE is required in some situations when a hazard determination finds that the situation encountered is capable of causing injury or impairment of the function of any part of the body through any of the following:

- Absorption.
- Inhalation.
- Physical Contact.

These general determinations can be made by a member of the HCS Safety staff, or can be left as a responsibility of the contractor. A written copy of this hazard determination is not required by the 29 CFR 1926 Construction Standards, but could be used to inform the contractor of some of the hazards identified prior to the start of the job. The personal protective equipment, even if provided by the employee, must comply with the standards specified in the sections below. It is the responsibility of the contractor to ensure that the equipment being worn by the employees is in compliance with the required standards and is being inspected frequently to identify any defects, which may reduce the level of protection afforded. These include defects from age, use or modifications (removal of parts, ventilation holes) that are not approved by the manufacturer in writing.

**2. Occupational Foot Protection (29 CFR 1926.96):** Because of the environments found during construction, it is important that all employees wear substantial footwear to provide protection from the hazards that are common to construction sites. It is recommended that construction employees wear sturdy leather shoes/boots that provide protection at or above the ankle, and have sturdy inner leather sole.

OSHA does not require the use of steel or safety-toed boots, but their use is highly recommended for anyone who will be carrying any items of weight. The term safety-toed is now commonly used because toecaps, once made of steel, can now be replaced with plastic and composite materials that provide the required protection with less weight. Regardless of composition, safety-toed boots must comply with the ANSI Z41.1-1967 Standard. Footwear meeting this standard will usually have the designation marked on the tongue of the shoe.

**3. Occupational Head Protection (29 CFR 1926.100):** Head protection (hardhats) are required for all employees who will be working in areas where there is a possible danger of head injury from impact, falling or flying objects, or electrical shock. Helmets that are used for protection against impact and penetration hazards must meet the ANSI Z89.1 Standard - Safety Requirements for Industrial Head Protection. Employees who will be working on or near high voltage must wear a voltage-rated hard hat that complies with the ANSI Z89.2-1971 Standard. All hardhats that meet the standards will have a sticker that states compliance with the ANSI standards.

Recommendation:

1. Require 100% hardhat use while construction employees are on the jobsite, regardless of their trade.

2. Require that the bill be worn forward, unless the contractor provides written documentation from the manufacturer that the helmet can be reversed in the headgear.

**4. Hearing Protection:** Hearing protection in construction is often one of the last forms of personal protective equipment that an employee will want to wear, but it is the one hazard that has the potential to impact the employee greatly upon leaving the construction trade. Many employees don't take into consideration that the effects of elevated noise exposure do not show themselves until later in life. When an employee does notice changes in his or her hearing, it is often too late and the damage done cannot be repaired.

Employers are required by 29 CFR 1926.52, Occupational Noise Exposure Standard, to provide some form of hearing protection for employees when it is not possible to reduce the noise levels below 85 dBA, as measured on the slow scale with a decibel meter over an eight hour period. The use of the provided hearing protection is mandatory for all employees exposed at noise levels of 85 dBA and higher. Employees may wear hearing protection at any time while on the jobsite, but mandatory use will occur at and above the 85dBA levels.

When hearing protection is provided to any employee, the employee must be trained on the proper way to insert and remove the protection, the limits of protection provided and procedures for caring and/or maintaining the equipment. If employees are provided with custom molded earplugs, the fit must be verified by a Competent Person.

| *Note: The use of plain cotton inserted into the ear is prohibited.*

**5. Eye and Face Protection:** Employees must be provided with eye and face protection when machines or operations present the potential for eye or face injury from physical, chemical or radiation agents. The glasses, goggles or other devices provided must comply with ANSI Standard Z87.1-1968, Practice for Occupational and Educational Eye and Face Protection. Non-prescription eyewear will most commonly carry the ANSI Z87.1 designation on the temples of the eyewear; other non-prescription forms of eyewear will carry the designation on a portion of the body or lens.

Employees who require corrective lenses must be protected from the hazards found by one of the following methods:

1. Prescription safety glasses that comply with the ANSI Z87.1 Standard.
2. Goggles meeting the requirements of the ANSI Standard that can be worn over the prescription glasses.
3. Goggles that have a corrective lens built into the structure.

Minimum Requirements: All eye and face protection must be kept clean and in good repair and must meet the following minimum requirements:

1. Must provide adequate protection against the hazards for which they are designed.
2. Shall be reasonably comfortable when worn in the required conditions.
3. Shall fit snugly, and shall not unduly interfere with the movement of the wearer.
4. Must be durable.
5. Must be capable of being disinfected.
6. Must be easily cleanable.

**6. Protection against Radiant Energies:** Exposure to radiant energies on construction sites comes primarily from welding, cutting, soldering operations and laser use. Each particular exposure will require a different type and/or shade of filter to protect employees; in some cases, different filters will be required based on the size or duration of the work. The table below provides the filter shade numbers for electric arc welding, soldering, torch brazing and cutting, and gas welding:

<b>Welding/Cutting Operation</b>	<b>Shade Number</b>
Shielded metal-arc welding 1/16", 3/32", 1/8", 5/32" diameter electrodes.	10
Gas-shielded arc welding (nonferrous) 1/16", 3/32", 1/8", 5/32" diameter electrodes.	11
Gas-shielded arc welding (ferrous) 1/16", 3/32", 1/8", 5/32" diameter electrodes.	12
Shielded metal-arc welding 3/16", 7/32", 1/4" diameter electrodes.	12
Shielded metal-arc welding 5/16", 3/8" diameter electrodes.	14
Atomic hydrogen welding.	10-14
Carbon-arc welding.	14
Soldering.	2
Torch brazing.	3 or 4
Light cutting, up to 1" of horizontal length.	3 or 4
Medium cutting, 1" to 6" of horizontal length.	4 or 5
Heavy cutting, over 6" of horizontal length.	5 or 6
Gas welding (light), up to 1/8" thick material.	4 or 5
Gas welding (medium), 1/8" up to 1/2" thick material.	5 or 6
Gas welding (heavy), over 1/2" thick material.	6 or 8

When laser beams are used on the jobsite, any employee who may be exposed to the beam shall be furnished suitable laser safety goggles to provide protection from the specific wavelength of the laser; and these goggles shall be of an adequate optical density for the laser being used. The following chart provides selection criteria based on the maximum power density of the laser in use.

<b>Intensity</b> CW Maximum Power Density (Watts/cm <sup>2</sup> )	<b>Attenuation</b>	
	Optical Density (O.D.)	Attenuation Factor
10 <sup>-2</sup>	5	10 <sup>5</sup>
10 <sup>-1</sup>	6	10 <sup>6</sup>
1.0	7	10 <sup>7</sup>
10.0	8	10 <sup>8</sup>

All protective goggles designed to provide protection from laser light will have an identification label that provides the laser wavelengths for which it may be used, the optical density for those wavelengths, and the visible light transmission. If the goggles do not have this information or if they are not designed to protect the employee from the particular wavelength of laser in use, the laser should be shutdown until the employee can safely exit the area.

Below is a modified version of a table provided in the 29 CFR 1926.102 regulations? This table is meant to be used as a guide for minimum personal protective equipment; this should not be used as a replacement for a formal hazard determination for the worksite.

<b>Personal Protective Equipment Matrix</b>		
Applications		
<i>Operation</i>	<i>Hazards</i>	<i>Recommended Protection</i>
Acetylene welding, cutting, or burning	Sparks, harmful rays, molten metal, flying particles	Welding spectacles or goggles with the appropriate shade of lens.
Chemical handling	Splash, acid/caustic burns,	Indirectly vented goggles, in

	fumes	severe cases use a chemical resistant face shield.
Electric arc welding	Sparks, intense rays, molten metal	Welding goggles or hood with safety glasses worn underneath the hood.
Chipping	Flying particles	Safety glasses or goggles worn under a face shield.
Furnace Operations	Glare, heat, molten metal	Welding or cutting goggles worn with a face shield.
Grinding	Flying particles	Safety glasses worn under a face shield.
Machining	Flying particles	Safety glasses or goggles as a minimum. Safety glasses with face shield for severe exposure.

### **7. Safety Belts, Lifelines and Lanyards:**

1. Lifelines, safety belts and lanyards shall be only used only for the purpose of employee safeguarding. Any lifeline, belt or harness actually exposed to in-service loading shall be immediately removed from service and cannot be used again for employee safeguarding.

2. Lifelines shall be secured to an anchorage that is capable of supporting a 5,400-pound minimum static load.

3. Lifelines used on rock-scaling operations or in areas where they may be exposed to cutting or abrasion shall be a minimum of 7/8" wire-core manila rope. For all other lifeline applications, a minimum of 3/4" manila rope or equivalent is required with a minimum breaking strength of 5,400 pounds.

4. Safety belt and lanyard shall be a minimum of 1/2" nylon or equivalent with a maximum length so that an employee cannot be exposed to a fall greater than six feet. This rope shall have a nominal breaking strength of 5,400 pounds.

5. All safety belts and lanyards hardware shall be constructed out of drop forged or pressed steel, cadmium plated and free of sharp edges.

6. All safety belt and lanyard hardware except rivets shall be capable of withstanding a tensile load of 4,000 pounds without cracking, breaking or taking a permanent deformation.

**Contractor PPE Checklist  
29 CFR 1926 – Subpart E**

Location: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Job Name: \_\_\_\_\_

Contractor: \_\_\_\_\_

<i><b>Inspection Item</b></i>	<i><b>Yes</b></i>	<i><b>No</b></i>	<i><b>Comments</b></i>	<i><b>Correction Date:</b></i>
<b>General</b>				
1. Is PPE being used in lieu of eliminating or correcting a hazard?				
2. Is the equipment in proper working order, without regard to ownership?				
3. Is the PPE being used designed for the application that is being used?				
<b>Foot Protection</b>				
4. Are employees wearing substantial shoes/boots that have leather inner soles to prevent punctures?				
5. Are employees who are operating jackhammers or exposed to falling material required to wear safety-toed boots and metatarsal guard?				
<b>Head Protection</b>				
6. Are employees who are exposed to possible injury from impact due to falling/flying objects, electrical shock and burns, wearing hardhats that meet the ANSI Z89.2-1971 specifications?				
7. Are employees exposed to high voltage electrical shock and burns, wearing hardhat meeting ANSI Z89.2-1971 standards?				
8. Are employees wearing hardhats with energy absorbing suspension or “bump caps”?				
9. Are hardhats being worn with the bill forward? If no, the manufacturer must approve wearing the hardhat with the bill towards the rear.				
10. Have the hardhats been modified with holes, openings or other field modifications?				
11. Are employees wearing hearing protection (plugs or muffs) in areas where noise levels are elevated?				
12. Is the protection being worn correctly?				
<b>Eye and Face Protection</b>				
13. Are employees wearing safety glasses?				
14. Do employees with prescription glasses have frames, lenses and side shields that meet the ANSI standards?				
15. Is the use of flexible side shields prohibited?				
16. Are employees using grinders, overhead drills, and/or handling chemicals wearing face shields?				
17. Are the face shields being used designed for impact, chemical resistance, or both?				
18. Are goggles being worn in extremely dusty environments?				
19. Are employees performing welding, cutting,				

and/or brazing wearing the appropriate shade of goggle or hood (per 126.102 Table E)?				
<b>Safety Belts and Lanyards</b>				
20. Have harnesses and lanyards been inspected prior to use?				
21. Are employees wearing the harness properly? Leg loops tight, chest strap secured?				

Name: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

**CHAPTER 12**  
**HOT WORK PERMIT AND FIRE WATCH PROGRAM**

**1. PURPOSE:** To establish policy and procedures for cutting and welding and other hot work operations in non-designated areas. To assure that all supervisors, employees, and contractors take proper precautions when any cutting, welding, etc., and that all work is done in a safe manner with limited risk to patients, staff and visitors.

**2. POLICY:** To minimize the risk of fires during construction, alteration, demolition operations, or making repairs while performing hot work such as cutting, welding, thermal welding, brazing, soldering, grinding, thermal spraying, thawing pipe, or any other similar work. Procedures and controls are hereby established to control all cutting and welding operations conducted in areas not specifically designated for this type of operation. Designated welding areas include the Pipefitting Shop, Air Condition Shop, and the Biomedical Engineering Section.

**3. DEFINITION:** Hot work operations include cutting, welding, brazing, soldering, thawing pipe, grinding or other spark or flame producing operation. Any process, which involves an open flame, used temporarily for repair or temporary heating is considered a hot work operation. The use of a portable engine for temporary power is also considered a hot work operation.

**4. RESPONSIBILITIES:**

a. The *Fire Chief* is responsible for the Fire Protection Program, including hot work operations that involve cutting and welding operations within the HCS complexes.

b. The *COTR* is responsible for:

1) Providing these requirements to construction contractors before work begins (i.e., pre-construction meetings) in contracts involving cutting and/or welding, instructing contractor employees in the proper procedures for cutting, welding, and other hot work and ensuring that the procedures are followed.

2) Discussing the possibility of some smoke, dust, noise, etc., with nurse managers or persons responsible for the area in which the work is to be accomplished prior to the starting of any hot work operation. This is done to assure these persons that every precaution is being taken to minimize any risks to patients and staff.

3) Approving cutting, welding, and other hot work operations in areas not specifically designed or approved for such processes, and signing the hot work permit before work begins. Hot work permits will be issued only for one day at a time. If work takes additional time, additional permits must be secured. The Fire Chief will be responsible for auditing the hot work permits issued, and signing the same.

4) Surveying the areas to determine if unsafe conditions exist, if combustibles are or will be present in the area, and taking the necessary steps to either remove them from the area, or shield them from accidental ignition.

5) Determining that fire protection and extinguishing systems are present in the area and immediately accessible in case of an emergency.

6) Performing a final check of the area one half hour after completion of the operation to ensure that no smoldering fires or potential fires exist, and that the area is free of potential safety hazards.

7) Signing and returning the completed Hot Work Operation Permit to the Boiler Plant (Montgomery Campus) and Fire Chief (Tuskegee Campus).

c. *Contractors* are responsible for instructing/training their employees on the requirements of this policy and ensuring that the required checklist is completed prior to any welding and cutting procedure. In no case, disable or otherwise render inoperable any portion of the Life Safety systems of the HCS without first notifying the COTR and providing a plan or system of equivalent Life Safety to compensate for the loss of the Life Safety System affected.

d. *Supervisors* are responsible for:

- 1) Ensuring the safe handling of the cutting or welding equipment and process.
- 2) Determining if combustible materials and hazards are present or are likely to be present in the work location.
- 3) Issuing authorization for the cutting and welding operations and providing the Boiler Plant (Montgomery Campus) or Fire Chief (Tuskegee Campus) with a copy of the permit after completion of the job. Completed permits should be returned by close of business on date issued.
- 4) Ensuring that fire protection and extinguishing equipment are properly located at the site.
- 5) Annually train their employees of this policy

e. *Employees* are responsible for ensuring that authorization and permits are secured before cutting, welding, and other hot work operations and ensure that conditions are safe.

f. Should a fire watch be required during operations, an individual from the requesting contractor, shop or department shall supply an individual for safety operations who is knowledgeable and capable of operating the fire extinguisher in his or her possession. Upon completion of any operation, the fire watches individual will make an inspection for hot materials before securing the area.

## **5. PROCEDURES:**

a. Gas Welding and Cutting:

1) Valve protection caps must be in place and secured when the cylinders are not in use. Valves protection caps cannot be used for lifting cylinders from one position to another. Bars cannot be used under valves or valve protection caps to pry cylinders loose when frozen. Warm, not hot, water must be used to thaw cylinders loose.

2) When pressure cylinders are hoisted, they must be secured in cradle, sling board or pallet. The use of magnets and/or choker slings is strictly prohibited.

3) Cylinders must be moved in a cart or by titling and rolling them on their bottom edges. They must not be intentionally dropped, struck or permitted to strike each other violently. When cylinders are transported by powered vehicles, they shall be secured in the vehicle; they shall be secured in a vertical position. Unless cylinders are firmly secured on a special carrier intended for that purpose, the regulators must be removed and valve protection re-installed before the cylinders are moved.

4) Cylinders stored inside buildings must be kept in a well-protected, well-ventilated, dry location that is at least 20 feet from highly combustible materials. Designated areas should be away from elevators, stairs or gangways. Cylinders must also be in an area where they cannot be knocked over or damaged by passing or falling objects or subject to tampering by unauthorized persons. Cylinders must not be kept in unventilated enclosures, such as lockers and cupboards. Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials by 20 feet at a minimum, or by a noncombustible barrier at least 5 feet tall that has a fire resistant rating of at least 1/2 hour.

b. Placing of Cylinders:

1) Cylinders must be kept far enough away from the actual welding or cutting so that sparks, hot slag or flame will not reach the cylinders. If this is not possible, fire resistant shields must be used. Cylinders must be placed where they cannot become part of an electrical circuit. Electrodes cannot be struck against cylinders at any time.

2) Cylinders containing oxygen or fuel gas must not be taken into confined spaces. Hoses containing oxygen and fuel gases must be removed immediately when not in use. Fuel gas cylinders must be placed with the valve end up whenever they are in use. They should not be placed in a location where they would be subject to open flame, hot metal or other sources of artificial heat.

c. Treatment of Cylinders:

- 1) Cylinders, regardless of whether they are full or empty, must never be used as rollers or supports.
- 2) No person other than the supplier can mix gases in a cylinder.
- 3) Damaged or defective cylinders must never be used.

d. Fuel Gas and Oxygen Manifolds:

1) Fuel gas and oxygen manifolds must have the name of the substance they contain in letters at least 1 inch in height, which shall be either painted on the manifold or on a sign permanently attached to it. The manifolds must also be placed in a safe, well-ventilated and accessible location. They must not be placed in enclosed spaces.

2) Manifold hose connections, including both ends of the supply hose that lead to the manifold, must be designed so that the hose cannot be interchanged between fuel gas and oxygen manifolds. Adaptors shall not be used to permit the interchange of hose. Hose connections must be kept free of grease and oil. When not in use, manifold and header hose connections shall be capped. Nothing can be placed on top of a manifold when in use that will damage the manifold or interfere with the quick closing of the valves.

e. Torches:

1) Clogged torch tip openings must be cleaned with suitable cleaning wire, drills or other devices designed for that purpose. Torches in use must be inspected at the beginning of each shift for leaking shut off valves, hose couplings and tip connections. Defective torches must not be used.

2) Torches must be lighted by friction lighters or other approved devices. The use of matches, lighters or lighting from hot work is not permitted.

3) The head of the torch must not be used to chip or clean slag, remove metal or for any other purpose than that intended.

f. Regulators and Gauges: Oxygen and fuel gas pressure regulators, including their related gauges shall be kept in proper working order while in use.

g. Oil and Grease Hazards: Oxygen cylinders and fittings shall be kept away from oil and grease. Cylinders, cylinder caps and valves, couplings, regulators, hose and apparatus must be kept free from oil and shall not be allowed to come into contact with oily surfaces or greasy clothes; further, they shall not be used in fuel oil or other storage tanks/vessels.

h. When practical, objects to be welded, cut or heated (a hot work permit is required) must be moved to a designated safe location. If they cannot be moved, the area should be cleared of all fire hazards. If the object being cut, welded or heated cannot be removed or the fire hazards cannot be completely removed, positive means shall be taken to confine the heat, sparks and slag to prevent unintentional fires. No welding, cutting, heating or burning shall be conducted where the application of flammable paints or the presence of other flammable compounds or heavy dust concentration creates a hazard.

1) Suitable fire-extinguishing equipment must be immediately available when hot work is in progress.

2) When normal fire prevention measures do not provide the needed protection, a fire watch must be used. This person will directly over see the hot work operation and will continue to monitor the area of hot work for at least one-half hour after the hot work is complete. They shall be familiar with procedures for sounding an alarm in the event of a fire. They shall watch for fires in all exposed areas, try to extinguish them only when it is obviously within the capacity of the equipment available or otherwise sound the alarm. When hot work is performed on walls, floors and ceilings, the spread of fire to an adjacent area is possible. It then becomes necessary to provide the same level of fire prevention measures on the opposing side as well.

3) When working in enclosed spaces, torches must be extinguished immediately after use and not allowed to remain in the confined area for extended periods of time. It is highly recommended that the torch and hoses be removed immediately upon the completion of the necessary hot work.

4) Cutting, welding and other hot work shall not be permitted in the following areas:

a) In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dust with air) or an explosive atmosphere that may develop inside unclean or improperly prepared tanks or items which have previously contained such materials or that may develop in areas of combustible dust accumulation.

b) In areas not authorized by management.

c) In buildings equipped with a sprinkler system while the sprinkler system is impaired.

d) In areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulfur, baled paper, or cotton.

5) Upon issuance of a hot work permit, the permit must be kept on the site of the hot work procedure and be made available to the Boiler Plant Staff (Montgomery Campus) and Fire Chief (Tuskegee Campus) upon request. At the end of the hot work procedure, the permit should be returned to the authorizing official and forwarded to the Boiler Plant Office (Montgomery Campus) and Fire Chief (Tuskegee Campus).

4. The Safety Officer and Safety Staff have the authority to stop cutting, welding, and other hot work operations that are being accomplished without a permit, and such operations that do not meet the standards set forth in NFPA 51B.

5. For all cutting, welding and other hot work operations not in approved designated areas, the Boiler Plant Staff (Montgomery Campus) and Fire Chief (Tuskegee Campus) will be notified at least 30 minutes prior to any operation.

## ENERGIZED ELECTRICAL (HOT) WORK PERMIT

Extended Duration       One-time Use Only

Division/CAT:	Building:	Room/Area:	Permit #
---------------	-----------	------------	----------

Job Supervisor/Responsible Engineer:	Date Start:	Expiration Date:
--------------------------------------	-------------	------------------

Description of work to be done:

Description of Circuit/Equipment:

Justification for why equipment cannot be de-energized:

### Results of Shock Hazard Analysis (NFPA-70E 2004 130.2)

Maximum Voltage:	Glove Voltage Rating: (Inspect gloves before use, check certification date)
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Limited Approach Boundary: (ft.)	Restricted Approach Boundary: (ft.)	Prohibited Approach Boundary: (ft.)
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### Results of Arc Flash Hazard Analysis (NFPA-70E 2004 130.3)

Risk Category:	Incident Energy at 18":      Cal/cm <sup>2</sup>	Flash Protection Boundary: (ft.)
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All Natural Fiber Outerwear

<input type="checkbox"/> Fire Retardant Clothing	Cal/cm <sup>2</sup>	ATPV Rating:	
--	---------------------	--------------	--

Required Additional PPE:

### Safety Checklist (Verify that proper controls are in place):

Workers must be trained, qualified, and have full knowledge of equipment.

Safe work practices to be followed

Safety watch is required. This person must be trained, qualified, be able to cut off all power sources, and have immediate access to a telephone or radio to call 911 in case of emergency.

Insulated tools and equipment required.

Remove all jewelry and metal apparel.

Use barricades and warning signs.

Documented job briefing including discussion of any job-specific hazards (e.g., NFPA-70E 2004 Annex I).

See attachment for added information, special requirements, procedures, or written work plans.

### APPROVALS

Hazard analysis performed by:	Date:
-------------------------------	-------

Group Leader/CAT Director:	Date:
----------------------------	-------

ESH Coordinator:	Date:
------------------	-------

Electrical Safety Committee Representative:	Date:
---	-------

Electrical Safety Committee Representative:	Date:
---	-------

Division Director (extended duration permit only):	Date:
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### AUTHORIZED WORKERS that understand and agree to the above:

Printed or typed name(s):	Signature(s) & Date(s):	Printed or typed name(s):	Signature(s) & Date(s):
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**Welding and Cutting Inspection Checklist**  
**29 CFR 1926.350 – 1926.354 Subpart J**

Inspection Item	Yes	N o	Comment	Correction Date
<b>Gas Welding &amp; Cutting 1926.350</b>				
1. Valve protection caps are secured during transport?				
2. Gas cylinders are hoisted on a cradle, sling board or cage? Magnets are not being used. Cylinders are not being hoisted by the protective cap.				
3. "Rolling" cylinders on the bottom edge is prohibited.				
4. Cylinders are secured in a vertical position when being moved by powered vehicles?				
5. Regulators must be removed and caps in place on cylinders unless they are in a cart designed for such use.				
6. Cylinders must be secured in an upright position at all times except, if necessary, for short periods of time while cylinders are being hoisted or transported.				
7. Oxygen and fuel gas cylinders must be separated by 20' or by a non-combustible barrier at least five feet tall that has at least a one-half hour fire rating.				
8. Cylinders being stored inside of buildings must be kept at least 20' from combustible materials and way from elevators, stairs or gangways.				
9. Cylinders must be kept far enough away from hot work so as not to cause a fire hazard.				
10. Oxygen and fuel gas cylinders are prohibited in confined spaces.				
11. Have cylinders been 'cracked' to clean out debris prior to the installation of gauges and regulators?				
12. Are "t-handles" or other special				

wrenches located with the fuel gas to permit easy closure?				
13. Are compressed gas hoses easily distinguishable from each other?				
14. Do hoses have tape exceeding 4" of every 12"? Excess tape can hide damage.				
15. Has the hose been inspected prior to each work shift?				
16. Oxy/fuel hoses must be stored in ventilated boxes (not gang boxes).				
17. Do employees use the proper tools to clean clogged torch tips?				
18. Have torches, hose couplings and connections been inspected prior to the shift?				
19. Are regulators in good working order with operable gauges and covers?				
20. Is oxygen kept away from grease and oil?				

**CHAPTER 13**  
**HEARING CONSERVATION AND NOISE MINIMIZATION**  
**PROGRAM**

**1. PURPOSE:** To describe the hearing conservation program for employees who are exposed to noise at or above (8) hour time weighted average of 85 decibels measured on the A scale.

**2. POLICY:** To protect employees from incurring a permanent loss of hearing due to excessive noise exposure in the workplace. The Hearing Conservation Program will meet as a minimum all provisions of the OSHA 29 CFR 1910.95. This program will include:

- Noise Monitoring
- Medical Surveillance
- PPE
- Health Education and Training
- Engineering Controls and Work Practices

**3. DEFINITIONS:**

a. *Action Level (AL):* Exposure levels at which hearing conservation begins. CAVHCS has set the action level and permissible exposure limit at 85 dBA for an eight hour time weighted average (TWA).

b. *Permissible Exposure Limit (PEL):* Exposure limit at which noise controls and hearing protection would be required. Note: In VA. PEL = AL.

c. *Decibel (dB):* Unit of noise measured.

d. *dBA:* Decibels as measured on the A scale (dBA).

e. *Eight Hours TWA:* Noise or dose that is averaged over an eight-hour period.

**4. RESPONSIBILITIES:**

a. *Contractor* is responsible for:

(1) Making hearing protectors available to employees in consultation with the contractor Industrial Hygienist.

(2) Ensuring that the employees wear hearing protectors.

(3) Providing training in the use and care of all hearing protectors.

(4) Ensuring that each employee is informed of the following:

(a) The effects of noise on hearing.

(b) The purpose of hearing protectors, the advantages, disadvantages and attenuation of various types and instructions on selection, fitting, use and care.

(c) The purpose of the audiometric testing and explanation of the test procedures.

(5) Ensuring that the employees attend their audiology appointment when scheduled.

b. *Employees* working in hazardous noise areas are responsible for:

(1) Wearing authorized and properly fitted hearing protection devices.

(2) Reporting for all examinations and health education training.

(3) Reporting any hearing problems.

(4) Complying with recommendations and provisions of this program.

## **5. PROCEDURES:**

### a. Noise Monitoring:

(1) Noise surveys will be conducted to identify areas of potential noise risk ( $\geq 85$  dBA). Potential hazardous noise areas will be surveyed or evaluated when:

- (a) Environmental monitoring surveys indicate significant noise levels may be present;
- (b) Employee complaints are received; or,
- (c) Employees are having difficulty with normal conversation.

(2) Monitoring will consist of sound level monitoring of work areas and dosimeter monitoring of personnel. Noise measuring equipment will be calibrated pre- and post survey. Calibration records will be kept as part of survey reports.

(a) Employees will be notified if they are being exposed to noise at or above the permissible exposure limits and of the engineering controls that are being implemented to reduce noise exposure.

(b) Noise exposure assessments will be evaluated and retained by the Industrial Hygienist.

(c) Employees and their representatives will be given an opportunity to observe noise monitoring survey.

### b. Audiometric Testing:

(1) A copy of the noise standard, 29 CFR 1910.95 will be provided to the health care provider performing the audiometric testing.

(2) Audiometric testing will be conducted in accordance with 29 CFR 1910.95 (g), Audiometric Testing Program.

(3) Testing will be performed by a licensed or certified Audiologist, Otolaryngologist or other physician, or a technician certified by the Council of Accreditation in Occupational Hearing Conservation (CAOHC). Or, has satisfactorily demonstrated competence in administering audiometric examinations, obtaining a valid audiogram, and properly using, maintaining, and checking calibration and proper functioning of audiometric equipment. A technician operating a microprocessor does not need to be certified, but must be responsible to an audiologist, otolaryngologist or physician.

(4) Audiometric testing will consist of:

(a) Testing to establish a baseline audiogram shall be preceded by at least 14 hours without exposure to workplace noise.

(b) The employer shall obtain an audiogram for each employee exposed at or above a TWA of 85 dBA at least annually after obtaining the baseline audiogram.

(c) Each employee's annual audiogram shall be compared to the employee's baseline audiogram to determine if there is any hearing change.

(d) If the annual audiogram indicates an employee has demonstrated a standard threshold shift, the employer may obtain a retest within 30 days and consider the results of the retest as the revised baseline audiogram.

(e) When a comparison of the annual audiogram to the baseline indicates a standard threshold shift has occurred, the employee shall be informed of this fact in writing within twenty-one days of the determination. Unless a physician determines that the standard threshold shift is not work related or aggravated by occupational noise.

(f) A follow-up audiogram within 30 days of a STS determination.

(5) The employer shall ensure that the following steps are taken when a standard threshold shift occurs:

(a) Employees not using hearing protectors shall be fitted with hearing protectors, trained in their use and care, and required to use them.

(b) Employees already using hearing protectors shall be refitted and retrained in the use of hearing protectors and provided with hearing protectors offering greater attenuation, if necessary.

(c) Employees will be referred for clinical audiological evaluation or an otological examination, as appropriate. Additional testing may be necessary if the employer suspects a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors.

(d) Employees are informed of the need for an otological examination if a medical pathology of the ear unrelated to the use of hearing protectors is suspected.

(6) When subsequent audiometric testing of an employee with exposure to noise is less than the eight hour TWA of decibels indicates that a standard threshold shift is not persistent, the employer:

(a) Shall inform the employee of the new audiometric interpretation.

(b) May discontinue the required use of hearing protectors for that employee.

(7) An annual audiogram may be substituted for the baseline audiogram when, in the judgment of the audiologist, otolaryngologist or physician who is evaluating the audiogram.

(a) The standard threshold shift revealed by the audiogram is persistent; or

(b) The hearing threshold shown in the annual audiogram indicates significant improvement over the baseline audiogram.

c. Training shall be conducted annually for eligible employees on:

(1) The effects of noise.

(2) The purpose and methods of audiometric testing.

(3) The selections, use and care of hearing protective devices.

(4) The purpose of hearing protection.

(5) The function, advantages and disadvantages of hearing protection.

d. Engineering Controls, Work Practices and Hearing Protection:

(1) Engineering will use available technology to reduce noise at its sources or utilize enclosures (e.g., control rooms for boiler and A/C chiller plants.)

(2) In combination with engineering controls, noise exposure may be control by limiting the amount of time employee(s) must spend in the noisy environment. Other work practices such as putting distance between the noise source and the employee can be used to reduce noise levels.

(3) When work practices and engineering controls are not sufficient or are not feasible, hearing protection will be provided to employees when exposed to noise at or above 85 dBA for an eight hour TWA.

(4) Some situations will require that alternate work schedules or coordination of activities be instituted prior to work beginning. Jack hammers, rotary impact hammers, air hammers and similar equipment will not be used inside the HCS buildings unless first coordinated with unless first coordinated with COTR to prevent undue disruption of patient care activities.

e. The adequacy of hearing protection will be evaluated by suing one of the methods found in Appendix B of 29 CFR 1910.95.

f. Posting.

(1) Signs will be posted in areas where protection is required to be worn.

(2) A copy of the noise standard will be posted in workplace where affected employees may review the standard. Note: Copies of standard will also be available to affected employees and their representatives upon request.

g. Record Keeping. Records shall meet the requirements set forth in the OSHA standard and will be maintained as follows:

(1) Dosimeter and sound level monitoring records will be retained by the testing facility for two years.

(2) Occupational Health shall retain audiometric test records for the duration of an employee's employment. Copies will be furnished to the Occupational Health physician for inclusion in the employee's health folder by the service or facility performing the hearing tests.

(3) Records of audiometric calibrations and background sound pressure levels in audiometric test rooms shall be retained for a period of five years by the testing facility.

(4) A summary report of all audiometric testing conducted by the testing facility shall be furnished to the Industrial Hygienist annually.

(5) A summary report of all sound level monitoring conducted by the Industrial Hygienist will be furnished to the testing physician or other testing personnel.

(6) Records of training shall be maintained for the duration of an employee's employment.

**CHAPTER 14:**  
**CONTRACTOR SAFETY AND INFECTION CONTROL STANDARDS AND GUIDELINES**

**1. PURPOSE:** To state policy, assigned responsibilities and to provide procedures for the Contractors and/or HCS staff that works at this facility and procedures regarding infection control precautions before, during and after construction and renovation projects.

**2. POLICY:** It is the policy of this HCS that all work performed by staff or contractor personnel be performed in a safe manner and in accordance with all applicable laws and regulations. Contractor shall ensure that all personnel working for them or on their behalf have been briefed on the contents of this orientation before they perform any work.

That the staff understands that during construction, renovation and minor improvement projects, hidden infectious disease hazards may be released into the air, carried on dust particles or on clothing. One such hazard is fungal organisms such as Aspergillus. Aspergillus species may be found in decaying leaves and compost, plaster and drywall, and settled dust. These organisms usually do not cause problems in healthy people, but can cause problems in a hospital that is full of sick patients! Aspergillus and other fungal organisms can cause illness and even death in people with certain medical conditions such as transplant patients, cancer treatment patients and patients with lung problems or poor immunity. There, it is critical that you do your part to keep our patients, employees and visitors as safe and healthy as possible. We, in turn, will make conditions as safe as possible for you.

**3. RESPONSIBILITIES:**

a. The contractor is responsible for:

(1) Briefing each employee on each section. It is imperative that all contractor personnel are aware of the Safety Policies and the expectations while working at the health care system.

(2) Ensuring all tools are in good working order in accordance with applicable OSHA standards.

(3) Securing the work area. This is to be coordinated with the COTR.

(4) Providing written documentation of training provided for any employee entering into a confined space.

(5) Ensuring a competent person is on site and reviewing the conditions at least daily or more frequently as conditions change.

b. Safety and Project staffs are available to assist in this briefing if necessary.

c. Individual contractor employees are responsible for:

(1) Checking the work area for hazards before work begins.

(2) Do not perform any task that may endanger you, health care system staff, visitors, or especially patients.

(3) Ask questions of your supervisor if you are unsure of how a task is to be completed, or if a hazard is apparent that has not been addressed.

(4) Following all lock out/tag out, confined space, hot work and other procedures applicable to the work being performed.

(5) Following all infection control measures for each construction project where applicable.

(6) Reporting unsafe conditions to your supervisor.

(7) Ensuring that their clothing is free of loose soil and debris when exiting the construction area.

(8) Using PPE as indicated for the task at hand.

(9) Washing their hands to reduce the transmission of infection. Always wash your hands with soap and water after visiting the restroom, before eating or smoking and when leaving the construction site.

d. Asst. Chief, Engineering Service will:

(1) Keep the Infection Control Practitioner (ICP) informed of construction plans, discuss infection control-related issues in preplanning sessions, and submit plans to Infection Control Committee to the Construction Safety Committee for review prior to the start of the construction.

(2) Notify ICP of meetings when infection control construction-related issues are to be discussed. The ICP will make a preconstruction site risk assessment. THE ICP will periodically check for appropriate barrier precautions and dust control until the project is completed, and will review/approve all construction plans to ensure infection control-related issues are addressed before the plans are issued for construction.

e. The COTR/Superintendent assigned to the project ensure that all construction areas have proper barrier precautions in place prior to starting construction. He/she will educate construction workers regarding dust control and proper disposal of waste products.

f. Environmental Management Service will be responsible for cleaning surface areas as needed, daily damp mopping of adjacent and surrounding construction areas, and the final cleaning of the construction area prior to admittance as stated in the center memorandum. The ICP or COTR will notify EMS when cleaning in the area is needed.

g. The Contracting Officer should place a mandatory adherence requirement for infection control into construction contracts with mechanisms to ensure timely correction of deficiencies.

#### **4. PROCEDURES:**

##### a. Contract Personnel Requirements:

(1) Clothing shall be free of loose soil and debris upon exiting the construction zone.

(2) PPE, including face shields, gloves and N95 respirator will be utilized as appropriate for the task at hand. Contractors are responsible for providing PPE.

(3) Contractors entering sterile/invasive procedure areas will be provided with a disposable jump suit and head and shoe coverings that must be removed prior to exiting the work area. Tools and equipment must be damp-wiped prior to entry and exit from sterile and invasive procedures areas. CAVHCS reserves the right to require certain types of PPE to be used for work performed on government property.

(4) All equipment, tools, material, etc., transported through occupied areas shall be made free from dust and moisture by vacuuming and wipe down. Tools and equipment soiled with blood and body fluids will be cleaned with an approved germicide.

b. All incidents, injuries, or near misses should be reported to the HCS representative regardless of severity. These incidents must be investigated to determine the root cause and to prevent like occurrences.

c. Smoking and tobacco use shall only be permitted in designated areas. These areas are generally shelters located in several locations outside the buildings. At no time will smoking be permitted inside any part of the building.

d. Compressed gas cylinders and other hazardous materials shall be stored in designated locations in accordance with NFPA, OSHA, or other applicable standards. The contractor shall coordinate the storage of materials with the facility representatives.

e. Horseplay, fighting, gambling and possession of firearms, other weapons, illegal drugs, or drug paraphernalia are strictly prohibited, and can result in removal from the premises or prosecution.

f. All posted signs should be obeyed.

##### g. Safe Work Practices:

(1) Scrap material, rubbish or debris shall be kept in designated containers. These pose significant fire and personal injury hazards and must be disposed of as work progresses. Make every effort to keep the work areas free from tripping hazards.

(2) Do not leave tools or equipment where they can be a hazard to any person.

(3) Place oily or greasy rags in designated metal containers with a self-closing lid.

(4) Maintain MSDS for all materials being used and inform the employees of the location of any type of materials in accordance with 29 CFR 1910.1200. Ensure that MSDS is provided to engineering for all materials used at the HCS.

(5) Never alter any type of PPE.

(6) Remove all nails from scrap boards.

(7) Only trained, designated personnel may operate any type of materials handling equipment.

(8) Follow Subpart D of 29 CFR 1910 for all walking or working surface requirements.

(9) Use only approved fall protection devices or systems.

(10) Barricade any area where heavy equipment or aerial lifts will be operating.

(11) Scaffolding must be erected and used in accordance with applicable OSHA regulations. In addition, scaffolding must be inspected daily by a "competent person" designated by the contractor.

(12) Electrical safe work practices should be followed by all "qualified" and "unqualified" personnel as defined in 29 CFR 1910, Subpart S.

(13) All rigging shall be performed by qualified personnel designated by the contractor.

**h. Hot Work Permitting and Operations:**

(1) Ensuring that the guidelines in the local policy are in the performance of hot work. A copy of Hot Work Policy will be provided to the contractor.

(2) Fire watches shall remain in place a minimum of 30 minutes after the completion of hot work.

(3) Hot work permits are obtained from the Fire Department (Tuskegee Campus) and Boiler Plant (Montgomery Campus)

**i. Confined Spaces:**

(1) Any contractors performing confined space work must have a written program that has been reviewed and approved by the Safety Office before work can begin.

(2) CAVHCS is the final authority for determining which spaces are permit or non-permit required confined spaces.

**j. Excavations and Trenches:**

(1) All excavating and trenching work shall be performed in accordance with 29 CFR 1926 Subpart P. Appropriate sloping, shoring or other techniques will be used as necessary for employee protection.

(2) All excavation and trenches shall be appropriate guarded to prevent accidental falls or unauthorized access.

**k. Environmental Control:**

(1) External demolition and construction activities:

(a) Determine if the facility can operate temporarily on re-circulated air; if feasible, seal off adjacent air intakes.

(b) If this is not possible or practical, check the low-efficiency filter banks frequently and replace as needed to avoid buildup of particulates.

(c) Seal windows and reduce wherever possible other sources of outside air intrusion (e.g., open doors in stairwells and corridors).

(d) Avoid damaging the underground water system to prevent soil and dust contamination of the water.

(2) Internal construction, repairs and renovations.

(a) Relocate the patients whose rooms are adjacent to work zones, depending on their immune status, the scope of the project, the potential for generation of dust or water aerosols, and the methods used to control these aerosols.

(b) Ensure proper operation of the air-handling system in the affected area after erection of barriers and before the room or area is set to negative pressure. Return air vents should be sealed off and blocked if rigid barriers are used for containment.

(c) Create and maintain negative air pressure in work zones adjacent to patient-care areas and ensure that required engineering controls are maintained.

(d) A HEPA (High Efficiency Particulate Accumulator) filter vacuum system rated at 95% capture of 0.3 microns shall be utilized. Ensure that negative air pressures occur within the work area. HEPA filtration is required where the exhaust dust may re-enter the breathing zone. HEPA filters should have American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 85 or other pre-filter to extend the useful life of the HEPA. Exhaust hoses shall be heavy duty, flexible steel reinforced and exhausted so that dust is not reintroduced into the facility.

(e) Negative airflow shall be monitored inside the rigid barriers.

(f) Barriers shall be monitored to ensure their integrity; any gaps or breaks in barrier joints shall be repaired immediately.

(g) Windows in work zones shall be sealed if practical; use window chutes for disposal of large pieces of debris as needed, but ensure that the negative pressure differential for the area is maintained.

(h) In patient care areas, for major repairs that include removal of ceiling tiles and disruption of the space above the false ceiling, use plastic sheets or pre-fabricated plastic units to contain dust; use negative air pressure systems within this enclosure to remove dust; and either pass air through an industrial-grade portable HEPA filter capable of filtration rates of 300-800 ft<sup>3</sup>/min., or exhaust air directly to the outside away from any air intake devices.

(i) After completion of construction, ventilation will meet specifications as mandated by regulatory bodies. Restore HVAC, humidity and pressure differentials; replace spent filters with new filters. The area will be thoroughly cleaned and disinfected before being placed into service. The Infection Control Practitioner will submit a final report to the Chief, Facilities Management Service, regarding the compliance/noncompliance of IC precautions during the project.

#### 1. Traffic Control:

(1) Designated entry and exit procedures will be defined (in conjunction with any necessary ILSM) for each construction project where applicable.

(2) Keep all egress pathways free of debris.

(3) No unauthorized personnel should be allowed to enter construction areas.

(4) Use designated elevators only.

#### 1. Cleaning:

(1) The construction zone and adjacent entry areas shall be maintained by the contractor in a clean and sanitary manner, and will be swept and wet mopped daily or more frequently as needed to minimize dust generation. Vacuum utilizing HEPA filtration. Area shall be maintained frequently and debris shall be removed as they are created.

(2) Debris shall be hauled through patient care areas without prior approval of the Project Engineer, Infection Control and Safety. When approved, debris shall be hauled in enclosed dust-proof containers or wrapped in plastic and sealed with duct tape. No sharp objects shall be allowed to cut through the plastic. Wipe down the exterior of the containers with a damp rag to remove dust.

(3) Adhesive walk-off/carpet or walk-off mats, minimum 24" x36" shall be used at all interior transitions from the construction area to occupied HCS areas. These mats shall be changed as often as required to

maintain clean work areas directly outside the construction area. Other methods may be utilized as approved by Infection Control and the Project Engineer.

(4) There shall be no standing water during construction. This includes water in equipment drip pans and open containers within the construction areas. All accidental spills must be cleaned up and dried within 12 hours. Remove and dispose of porous materials that remain damp for more than 48 hours.

(5) Environmental Management Service will be responsible for the routine cleaning of adjacent areas and for the terminal cleaning of the construction zone prior to the opening of the newly renovated or constructed area. Specific responsibility will be defined in the construction contract.

n. Infection Control Risk Assessment Procedures:

(1) Using the Guidelines for Design and construction of Hospitals and Healthcare Facilities, 2001 Edition, published by the American Institute of Architects or applicable standards and regulations, a preconstruction risk assessment will be completed.

(2) The original document will be kept in the Infection Control office; a copy will be provided for Engineering and Environmental Management Services.

(3) A construction rounds/compliance monitor will be completed periodically during the demolition, construction, and concluding clean-up phase. Final infection control rounds will be made when the project is completed.

**Interim Life Safety Measures Risk Assessment**

These criteria are used to evaluate areas in which construction renovation or repair activities are planned or in which a Life Safety Code deficiency has been identified. Consideration should be given to the scope of operations in the area, the level of staff activity, and the acuity of patient treatment in the area.

Area: \_\_\_\_\_

Project: \_\_\_\_\_

Description: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Date Assessed: \_\_\_\_\_ PFI Unique ID# \_\_\_\_\_

Criteria	NO	YES	Findings / Comments	ILSM
The issue alters or significantly compromises exit access, exiting, or exit discharge building elements				
Significant compromise of building compartmentation including fire or smoke walls, floor /ceiling assemblies, corridor walls, use area doors, or other defend in place elements				
The issue impairs the building fire alarms or sprinkler systems for more than 4 hours in a 24-hour period.				
The activity includes significant ignition sources such as cutting, welding, or other operations using flame or producing sparks.				
The activity includes large quantities of combustible materials, flammable materials, or generation of large amounts of dust and debris.				
Other Factors:				

Findings:  ILSM are required  ILSM are not necessary

Assessed by: \_\_\_\_\_

**Interim Life Safety Measure (ILSM) Checklist**

**Construction/Renovation/Project Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_ **Building/Room Numbers Affected:** \_\_\_\_\_

New construction and renovation within the HCS may create conditions that alter the physical facility and compromise the Life Safety Code. It is the policy of the HCS to prepare, implement and enforce procedures to ensure ILSM are met when these conditions exist. The following is a checklist of conditions that should exist to maintain a safe environment.

Inspector: \_\_\_\_\_ Department/Section: \_\_\_\_\_  
 Date of Distribution: \_\_\_\_\_ Distribution to: Safety: \_\_\_\_\_  
 COTR: \_\_\_\_\_ Contractor  
 Safety Rep: \_\_\_\_\_ Infection Control: \_\_\_\_\_

	<b>Yes</b>	<b>No</b>
1. Staffs are educated and trained in the HCS safety policies/procedures and fire safety related requirements.		
2. Staffs are educated and trained in ILSM when life safety is impaired, i.e., provisions of additional firefighting equipment and its use. Staffs are trained when structural or compartmentalization features of the life safety are compromised.		
3. Staffs are notified of specific construction/renovation locations, nature of work associated hazards involved.		
4. Exits are clear, unobstructed, and functional (checked daily).		
5. Life Safety equipment, fire alarms, fire sprinklers, exit lights, smoke detectors and pull stations etc., are not impaired and are in proper working order.		
6. When fire alarm, detection and suppression systems are impaired, a temporary but equivalent system is provided. The Safety Office is notified when the system is down for more than 4 hours in a 24 hour period.		
7. Temporary construction partitions are smoke-tight and built of noncombustible materials that will not contribute to the development and spread of fire (check monthly).		
8. Staffs are trained in fall hazards in work areas near roof edge.		
9. Proper documentation available for all required agencies (OSHA 200, MSDS's, etc...)		
10. All areas clean and free of debris including scrap material and food.		
11. Power properly secured at the end of the day.		
12. Hand and safety rails in place and in good condition.		
13. Power tools and extension cords are grounded and in good condition; GFCI's are used.		
14. All utilities are maintained or temporary provisions made, e.g., heat, ventilation, air conditioning and electricity.		
15. Cutting and welding operations are properly conducted and pre-approved by the health care system (Hot Work Permit Required) in and/or adjacent to existing operations.		
16. All hazardous materials, including flammable liquids, are properly disposed of and/or stored properly when not in use. (Cannot be stored inside the building!)		
17. Security has been notified. Construction area is secured at all times.		

**FIRE WATCH CHECKLIST**

Date: \_\_\_\_\_

Unit/Location: \_\_\_\_\_

SERVICE			FIRE DEPARTMENT/SAFETY OFFICE		
Suggested Time	Initial	Actual time	Suggested Time	Initial	Actual time
0030			0100		
0130			0200		
0230			0300		
0330			0400		
0430			0500		
0530			0600		
0630			0700		
0730			0800		
0830			0900		
0930			1000		
1030			1100		
1130			1200		
1230			1300		
1330			1400		
1430			1500		
1530			1600		
1630			1700		
1730			1800		
1830			1900		
1930			2000		
2030			2100		
2130			2200		
2230			2300		
2330			2400		

**NOTES:**

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*Note: When the fire watch is complete, forward this form to the Safety Office. If for any reason an inspection cannot be made, indicate the time and reason in the note section.*

**Attachment D**

**Infection Control Construction Permit**

Project Location: Permit  
Project Manager: Number:  
Project Start  
Date:  
Permit Requested by: Date  
Requested:  
Contractor: Permit  
Expiration:  
Contractor Supervisor: Telephone:

**Complete this section based on the results of the ICRA Matrix**

**CONSTRUCTION ACTIVITY**

**INFECTION CONTROL PATIENT RISK GROUP**

**TYPE A:** Inspection and Non-Invasive Activities

**GROUP I: Low Risk**

**TYPE B:** Small scale, short duration activities which create minimal dust

**GROUP II: Medium Risk**

**TYPE C:** Activity generates moderate to high levels of dust, or requires demolition or removal of any fixed building components or assemblies.

**GROUP III: Medium/High Risk**

**TYPE D:** Major Demolition and construction activities.

**GROUP IV: Highest Risk**

**CLASSIFICATION**

**CLASS I Required**

Date:

Signature:

**CLASS II Required**

Date:

Signature:

**CLASS III Required**

Requires ICRA Committee Approval and Signatures Below

**CLASS IV Required**

Requires ICRA Committee Approval and Signatures Below

**Additional Requirements**

**Signatures of Infection Control Risk Assessment Committee**

User Contact:

Date:

Planning Supervisor:

Date:

Project Management Supervisor:

Date:

Architect/Planner:	Engineer:
Date:	Date:
Information Technologies	Telecommunications:
Date:	Date:
EMS:	Other Personnel:
Date:	Date:
Safety Staff:	Permit Authorized on:
Date:	

**Infection Control Risk Assessment (ICRA)  
Matrix of Precautions for Construction & Renovation**

<b>Step 1:</b>	<b>Identify specific site of all activities, e.g. bldg, floor, patient rooms, medication room, etc.</b>
<b>Step 2:</b>	<b>Work hours: Can or will the work be done during non-patient care hours, or can patients be relocated for the duration of the project?</b>

**Step Three:**

<b>TYPE A</b>	<p><b>Inspection and Non-Invasive Activities</b> Includes but is not limited to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Removal of ceiling tiles for visual inspection or cable installation limited to 3 tiles at a time.</li> <li><input type="checkbox"/> Painting (but not sanding)</li> <li><input type="checkbox"/> Wall covering, electrical trim work, minor plumbing, installation of telephone and computer cabling and other activities which do not generate dust or require cutting of walls or access to ceilings other than as above.</li> </ul>
<b>TYPE B</b>	<p><b>Small scale, short duration activities which create minimal dust</b> Includes, but is not limited to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Access to chase spaces</li> <li><input type="checkbox"/> Cutting of walls or ceiling where dust migration can be controlled.</li> <li><input type="checkbox"/> Removal of sections of telephone or computer cabling.</li> <li><input type="checkbox"/> <b>NOTE: Any Type B activity in any location when patients will not be present, and for which the area can be isolated and vacated for the minimum time as per Appendix A and cleaned to required patient standards prior to resuming patient operations can be classified as Type A.</b></li> </ul>
<b>TYPE C</b>	<p><b>Work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies</b> <b>Includes, but is not limited to:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Sanding of walls for painting or wall covering</li> <li><input type="checkbox"/> Removal of floor coverings, exposure of large sections of ceiling spaces and casework</li> <li><input type="checkbox"/> Demolition of walls or new wall construction</li> <li><input type="checkbox"/> Minor duct work or electrical work above ceilings</li> </ul>



**Step Five:**

**Match the highest Patient Risk Group (Low, Medium, High, and Highest) with the planned**

**Construction Project Type (A, B, C, D) on the following matrix, to find the... Class of Precautions (I, II, III, or IV) or the level of infection control activities required.**

**IC Matrix-Class of Precautions: Construction Project by Patient Risk**

Construction Project Type

PATIENT RISK GROUP	TYPE A	TYPE B	TYPE C	TYPE D
LOW Risk Group	I	I	II	III
MEDIUM Risk Group	I	II	III	III/IV
HIGH Risk Group	I	II	III/IV	III/IV
HIGHEST Risk Group	II	III	III/IV	IV
<b>Step 5:</b>	<b>Match the Patient Risk Group and Construction Project Type, to identify the Class of infection control Precaution required.</b>			

**Note: When the Construction Activity and Risk Level indicate that Class III or Class IV control procedures are necessary, a Project Committee must be convened for final approval.**

### Description of Required Infection Control Precautions by Class

	<b>During Construction Project</b>	<b>Upon Completion of Project</b>
<b>Class I</b>	<ol style="list-style-type: none"> <li>1. Execute work by methods to minimize raising dust from construction operations.</li> <li>2. Use approved disinfectant by EPA to mist tiles and work surfaces to control dust before disturbing.</li> <li>3. Immediately replace a ceiling tile displaced for visual inspection. HEPA-VAC obvious dust collection.</li> </ol>	<ol style="list-style-type: none"> <li>1. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area.</li> </ol>
<b>Class II</b>	<ol style="list-style-type: none"> <li>1. Provide active means to prevent airborne dust from dispersing into atmosphere.</li> <li>2. Use approved disinfectant by EPA to mist work surfaces to control dust while cutting.</li> <li>3. Seal unused doors with duct tape.</li> <li>4. Block off and seal air vents.</li> <li>5. Place dust mat at entrance and exit of work area.</li> <li>6. Remove or isolate HVAC system in areas where work is being performed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Wipe work surfaces with disinfectant.</li> <li>2. Contain construction waste before transport in tightly covered containers.</li> <li>3. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area.</li> <li>4. Remove isolation of HVAC system in areas where work is being performed.</li> </ol>
<b>Class III</b>	<ol style="list-style-type: none"> <li>1. Remove or isolate HVAC system in area where work is being done to prevent contamination of duct system.</li> <li>2. Complete all critical barriers i.e. sheetrock, rated-plywood, to seal area from non work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins.</li> <li>3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.</li> <li>4. Contain construction waste before transport in tightly covered containers.</li> <li>5. Cover transport receptacles or carts. Tape covering unless solid lid.</li> </ol>	<ol style="list-style-type: none"> <li>1. Do not remove barriers from work area until the project is completed project and inspected by the COTR, Safety and Infection Control and thoroughly cleaned by the Environmental Management Services.</li> <li>2. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction.</li> <li>3. Vacuum work area with HEPA filtered vacuums.</li> <li>4. Wet mop area with disinfectant.</li> <li>5. Remove isolation of HVAC system in areas where work is being performed.</li> </ol>

<b>Class IV</b>	<ol style="list-style-type: none"> <li>1. Isolate HVAC system in area where work is being done to prevent contamination of duct system.</li> <li>2. Complete all critical barriers i.e. sheetrock, rated-plywood, to seal area from non work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins.</li> <li>3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.</li> <li>4. Seal holes, pipes, conduits, and punctures appropriately with approved UL fire rated material.</li> <li>5. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site.</li> <li>6. All personnel entering work site are required to wear shoe covers. Shoe covers must be changed each time the worker exits the work area.</li> <li>7. Do not remove barriers from work area until completed project is inspected by the COTR, Safety and Infection Control Department and thoroughly cleaned by the Environmental Management Services.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove barrier material carefully to minimize spreading of dirt and debris associated with construction.</li> <li>2. Contain construction waste before transport in tightly covered containers</li> <li>3. Cover transport receptacles or carts. Tape covering unless solid lid.</li> <li>4. Vacuum work area with HEPA filtered vacuums.</li> <li>5. Wet mop area with disinfectant.</li> <li>6. Remove isolation of HVAC system in areas where work is being performed.</li> <li>7. Clean or replace HVAC filters and verify appropriate ventilation parameters for the area have been re-established.</li> <li>8. Flush the mains water system to clear dust contaminated lines if affected.</li> <li>9. Commission the space as indicated.</li> </ol>
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<b>Step 6:</b>	<b>Identify issues related to: ventilation, plumbing, electrical in terms of the occurrence of probable outages.</b>
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	<u>IMPLEMENT ELEMENT</u>	<u>METHOD</u>
	<b>FORMCHECKBOX Water Isolation:</b>	
	_____	
	<b>FORMCHECKBOX Noise Impact:</b>	
	_____	
	<b>FORMCHECKBOX Vibration Impact:</b>	
	_____	
	<b>FORMCHECKBOX Generator Failure:</b>	
	_____	
	<b>FORMCHECKBOX Fuel Shortage/Restriction:</b> _____	
	<b>FORMCHECKBOX Transportation Failure:</b>	
	_____	
	<b>FORMCHECKBOX Natural Gas Failure:</b>	
	_____	
	<b>FORMCHECKBOX Water Failure:</b>	
	_____	

- FORMCHECKBOX Sewer Failure:

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- FORMCHECKBOX Steam Failure:

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- FORMCHECKBOX Nurse Call Failure:

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- FORMCHECKBOX Telephone Failure:

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- FORMCHECKBOX Telemetry Failure:

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- FORMCHECKBOX Public Address Failure:

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- FORMCHECKBOX O<sub>2</sub> Failure:

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- FORMCHECKBOX Medical Air Failure:

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- FORMCHECKBOX Nitrogen Failure:

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- FORMCHECKBOX N<sub>2</sub>O Failure:

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- FORMCHECKBOX CO<sub>2</sub> Failure:

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- FORMCHECKBOX Medical Vacuum Failure:

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- FORMCHECKBOX HVAC Failure:

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- FORMCHECKBOX Control Air Failure:

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- FORMCHECKBOX Hazmat Exposure:

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- FORMCHECKBOX Asbestos Exposure:

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- FORMCHECKBOX Structural Damage:

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- FORMCHECKBOX Natural Gas Failure:

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<b>Step 7:</b>	<b>Identify containment measures, using prior assessment. What type of barriers? (e.g. solid wall barriers); Will a HEPA filtration be required?</b>
	(Note: Renovation/Construction Area shall be isolated from the occupied areas during construction and shall be negative with respect to surrounding areas)
<b>Step 8:</b>	<b>Consider potential risk of water damage. Is there a risk due to compromising structural integrity? (e.g. wall, ceiling, roof)</b>
<b>Step 9:</b>	<b>Work hours: Can or will the work be done during non-patient care hours?</b>
<b>Step 10:</b>	<b>Do plans allow for adequate number of isolation/negative airflow rooms?</b>

<b>Step 11:</b>	<b>Do plans allow for the required number and type of hand washing sinks?</b>
<b>Step 12:</b>	<b>Does the infection control staff agree with the minimum number of sinks for this project? (Verify against AIA Guidelines for types and area)</b>
<b>Step 13:</b>	<b>Does the infection control staff agree with the plans relative to clean and soiled utility rooms?</b>
<b>Step 14:</b>	<b>Plan to discuss the following containment issues with the project team. (e.g., traffic flow, housekeeping, and debris removal (how and when)).</b>

## **CHAPTER 15**

### **CRANES & HEAVY EQUIPMENT**

**1. PURPOSE:** To establish policy, responsibilities and procedures for the safe use and maintenance in operating cranes and heavy equipment.

**2. POLICY:** To minimize potential accidents involving cranes and heavy equipment while working at the facilities.

**3. RESPONSIBILITIES:** The Contractors are responsible for ensuring that all employees operating a crane and/or heavy equipment is certified in the operations of the equipment through a written test. He/she is able to read and locate the relevant information in the equipment manual and other materials containing information. The individual operating the equipment must be able to read and locate relevant information in the equipment manual and other materials containing information the equipment being used. Each signal person should possess the following qualifications.

a. Know and understand the type of signals used. If hand signals are used, the signal person must know and understand the standard method for hand signals.

b. Be competent in the application of the type of signals used.

c. Have a basic understanding of crane operation and limitations, including the crane dynamics involved in swinging and stopping loads, and boom deflection from hoisting loads.

#### **4. PROCEDURES:**

a. There are many different types of cranes in use in today's construction industry such as crawler cranes, lattice boom track cranes, rough terrain cranes, boom trucks and hydraulic truck cranes. At the risk of sounding overly simple, not all cranes are the same. More specifically, not all cranes with the same nominal rating have the lifting capacities and capabilities. Each crane's capabilities are dependent on a number of variables. The amount of boom and counterweight installed; boom attachments, such as jibs; the size of the load blocks; and other items all affect capacity. Some cranes have reduced capacity when lifting over the side, and some prohibit loads being lifted over the front quadrant. Whenever a lift will exceed 75% of chart capacity or when multiple cranes will be used for single lift, it is recommended that a critical lift plan be drawn up.

b. Smaller cranes (u to 30-ton rating) can be driven from site to site fully assembled. Large cranes, however, require varying degrees of assembly usually involving a second crane to hoist and place the components. If the crane is to be assembled on-site, it is important to know who will assemble the crane and who will supervise them. Crane assembly can be tricky and has its own special set of hazards. Some companies have their own very good crane crews. Some companies have the dealer or Rental Company assemble and operate the crane. These people should be able to articulate the procedure they will follow and precautions to be used; and there should be few worries. On the other hand, a contractor that rents a "bare" crane, hires a new operator and plans to have the laborers on the job help the operator assemble the crane is asking for trouble.

c. Another area of concern is set-up. Is the set-up area capable of supporting the chosen crane? Truck-mounted and rough terrain cranes can generate very high ground pressures on their outrigger floats (up to 200 pounds per square inch) and will probably need pads or mats to spread the load so they don't sink. Large crawler cranes can have a very high gross weight sometimes in excess of 200 tons within the crane's footprint.

d. Inspection: OSHA regulations and American National Standards Institute (ANSI) standards require a number of inspections of mobile cranes; manufacturers and project owners may require additional items. It is important to determine who is performing the various inspections and their level of responsibility.

e. Daily operational inspections, monthly maintenance inspections and the thorough annual inspection are required to be accomplished by a Competent Person. More than 1 individual may perform the inspection or the same person may perform all inspections, provided that the person meets the criteria for each type of inspections. Some locations required that the annual inspection be performed by a third party. A copy of the documentation of all required crane inspections should be readily available at the jobsite.

f. Maintenance: Proper maintenance is as important for safe crane operations as having a qualified operator. ANSI B30.5 requires monthly maintenance for all cranes that are operated on a regular basis. Maintenance items should be those specified in the manufacturer's operations manual. It also requires that written records be kept of all maintenance activities. Copies of all maintenance documentation should be available upon request.



Reports to: \_\_\_\_\_ at worksite.

Operator Conducting Inspections? \_\_\_\_\_ Yes \_\_\_\_\_ No

How Often? \_\_\_\_\_ Daily \_\_\_\_\_ Weekly \_\_\_\_\_ Other

Documentation of Above Inspections? \_\_\_\_\_ Yes \_\_\_\_\_ No

Who Schedules Required Maintenance/Repairs? \_\_\_\_\_

Is Operator Serving as Competent Person? \_\_\_\_\_ Yes \_\_\_\_\_ No

Is Operator Inspecting Equipment Prior to Each Use? \_\_\_\_\_ Yes \_\_\_\_\_ No

Is Operator Assuring Equipment is in Safe Operating Condition?  
 \_\_\_\_\_ Yes \_\_\_\_\_ No

Operator Understands Duties as Competent Person? \_\_\_\_\_ Yes \_\_\_\_\_ No

Operator Agreed to Serve as Competent Person? \_\_\_\_\_ Yes \_\_\_\_\_ No

Operator Decides if lift should be made/stopped? \_\_\_\_\_ Yes \_\_\_\_\_ No

Comments: \_\_\_\_\_

Access to Manuals/Load Charts? \_\_\_\_\_ Yes \_\_\_\_\_ No

Where are Manuals/Load Charts? \_\_\_\_\_ Yes \_\_\_\_\_ No

Heaviest Load to be Lifted: Weight: \_\_\_\_\_ Identify: \_\_\_\_\_

Boom Length/Is angle a concern at this weight? \_\_\_\_\_ Yes \_\_\_\_\_ No

Max Boom Length Anticipated: \_\_\_\_\_ Weight/This Lift: \_\_\_\_\_

Max Boom Swing Radius Anticipated: \_\_\_\_\_ Weight/This Lift: \_\_\_\_\_

How is this information given to the Operator? \_\_\_\_\_ Daily Meetings \_\_\_\_\_ Weekly Meetings \_\_\_\_\_

Other (Specify) \_\_\_\_\_

By Whom? \_\_\_\_\_

## **CHAPTER 16**

### **STEEL ERECTION**

**1. PURPOSE:** To provide some specific requirements that must be met prior to start of any erection activity on grounds.

**2. POLICY:** The facility policy will cover erection activities involving the construction, alteration and/or repair of single and multi-story buildings, bridges and other structures where steel erection occurs. Steel erection activities include: hoisting, connecting, welding and bolting, rigging, structural steel, steel joists, and metal buildings, installation of metal decking, siding systems and ornamental iron.

**3. RESPONSIBILITIES:** The Contractor is responsible for:

a. Ensuring that the steel erector is provided with the following notifications:

(1) The concrete footings, piers and walls and the mortar in the masonry piers and walls has attained either 75% of the intended minimum compressive design strength or sufficient strength to support the loads imposed during steel erection.

(2) Any repairs, replacements and modifications to the anchor bolts were conducted in accordance with 1296.755 (b).

b. The erection contractor shall not erect steel unless it has received written notification that the concrete in the footings, piers and walls or the mortar in the masonry piers and walls has attained either 75% of the intended minimum compressive design strength or sufficient strength to support the loads imposed during the steel erection.

c. The controlling contractor shall ensure that the following is provided and maintained:

(1) Adequate access roads to and through the site for safe delivery and movement of derricks, cranes, trucks, other necessary equipment and the material to be erected, and means and methods for pedestrian and vehicular control.

(2) A firm, properly-graded, drained area, readily accessible to the work, with adequate space for the safe storage of materials and the safe operation of the erector's equipment.

d. Completing the checklist at the end of the chapter on a weekly basis until all items has been corrected.

e. Providing training to all employees exposed to fall hazards working with multiple lift rigging and connector procedures.

**4. PROCEDURES:**

a. Hoisting and Rigging: All provision of the OSHA Crane Standard (1926.550) applies with the exception of the hoisting of employees.

b. Pre-Shift Inspection of Cranes; Cranes used in steel erection activities shall be visually inspected prior to each shift by a competent person. The inspection shall include observation for deficiencies during operation. At a minimum this inspection shall include:

(1) All control mechanism for maladjustments.

(2) Control and drive mechanisms for excessive wear of components and contamination by lubricants, water or other foreign matter.

(3) Safety devices, including but not limited to boom angle indicators, boom stops, boom kick-out devices, anti-two block devices, and load moment indicators, where required.

(4) Air, hydraulic and other pressurized lines for deterioration or leakage, particularly those that flex during normal operation.

(5) Hooks and latches for deformation, chemical damage, cracks or wear.

(6) Wire rope weaving for compliance with hoisting equipment manufacturer's specifications.

(7) Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt or moisture accumulation.

(8) Hydraulic systems for proper fluid level.

(9) Tires for proper inflation and condition.

(10) Ground conditions around the hoisting equipment for proper support, including ground settling under and around outriggers, ground water accumulation or similar conditions.

(11) Hoisting equipment for level position.

(12) Hoisting equipment for level position after each move and setup.

(13) If any deficiency is identified, an immediate determination shall be made by a competent person as to whether the deficiency constitutes a hazard. If the deficiency is determined to constitute a hazard, the hoisting equipment shall be removed from service until the deficiency has been corrected.

(14) The operator shall be responsible for those operations under the operator's direct control. Whenever there is any doubt as to safety, the operator shall have the authority to stop and refuse to handle loads until safety has been assured.

(15) A qualified rigger shall inspect the rigging prior to each shift in accordance with 29 CFR 1926.251.

(16) The headache ball, hook or load shall not be used to transport personnel except as provided when a personnel basket is used within the limits of this standard.

(17) Safety latches on hooks shall be deactivated or made inoperable except: when a qualified rigger has determined that the hoisting and placing of purlins and single joists can be performed more safely by doing so and when equivalent protection is provided in the site-specific erection plan.

c. Working under Loads: Routes for suspended loads shall be pre-planned to ensure that no employee is required to work directly below a suspended load except for: Employees directly engaged in the initial connection of the steel and necessary for the hooking and unhooking of the load.

d. When working under suspended loads, the following criteria shall be met: materials being hoisted shall be rigged to prevent unintentional displacement, hooks with self-closing safety latches or their equivalent shall be used to prevent components from slipping out of the hook and all loads shall be rigged by a qualified rigger.

e. Multiple Lift Rigging Procedure: A multiple lift shall only be performed if the following criteria are met: a multiple lift rigging assembly is used, a maximum of five members are hoisted per lift, only beams and similar structural members are lifted, all employees engaged in the multiple lift shall have been trained in the procedures in accordance with 1926.76©(1) and no crane is permitted to be used for a multiple lift where such use is contrary to the manufacturer's specifications and limitation.

(1) Components of multiple lift rigging assembly shall be specifically designed and assembled with a maximum capacity for total assembly and for each individual attachment point. This capacity, certified by the manufacturer or a qualified rigger, shall be based on the manufacturer's specifications with a 5 to 1 safety factor for all components.

(2) The total load shall not exceed: the rated capacity of the hoisting equipment specified in the equipment load charts and the rigging capacity specified in the rigging rating chart.

(3) The multiple lift rigging assembly shall be rigged with members: attached at their center of gravity and maintained reasonably level, rigged from top down and rigged at least 7 feet apart.

(4) The members of the multiple lift rigging assembly shall be set from the bottom up.

(5) Controlled lowering shall be used whenever the load is over the connector.

f. Structural Stability shall be maintained at all times during the erection process.

g. Multi-story structure requirements shall apply for structures:

(1) The permanent floors shall be installed as the erection of structural members' progresses and there shall not be more than 8 stories between the erection floor and the upper-most permanent floor, except where the structural integrity is maintained as a result of the design.

(2) At no time shall there be more than 4 floors whichever is less, of unfinished bolting or welding above the foundation or uppermost permanently secured floor, except where the structural integrity is maintained as a result of the design.

(3) A fully planked or decked floor or nets shall be maintained within 2 stories or 30 feet whichever is less, directly under any erection work being performed.

h. Shear Connectors and Similar Devices: Shear connectors (headed steel studs, steel bars, lugs) deformed anchors or threaded studs shall not be attached to the top flanges of beams, joist or beam attachments so that they project vertically or horizontally from across the top flange of the member until after the metal decking, or other walking/working surface has been installed. When shear connectors are used in construction of composite floors, roofs and bridge decks, employees shall lay out and install the shear connectors after the metal decking has been installed, using the metal decking as a working platform. Shear connectors shall not be installed from within a controlled decking zone.

i. When deemed necessary by a competent person, plumbing-up equipment shall be installed in conjunction with the steel erection process to ensure the stability of the structure. When used, plumbing-up equipment shall be placed and properly installed before the structure is loaded with construction materials such as joists, bundles of decking or bundles of bridging. Plumbing up equipment shall be moved only with the approval of a competent person.

j. Hoisting, landing and placing of metal decking bundles: Packaging and strapping cannot be used for hoisting unless so designed for that purpose and all loose items shall be secured to the bundles before hoisting. Bundles must be landed in accordance with 1926.757© (4) and on framing members so that enough support is provided to allow the bundles to be un-banded without dislodging the bundles from the support. At the end of the shift, or when environmental or jobsite conditions require, metal decking shall be secured against displacement.

(1) Framed metal deck openings shall have the structural members turned down to allow continuous deck installation except where not allowed by structural design constraints or constructability. Roof and floor holes and openings shall be decked over. Where size configuration or design does not allow the openings to deck over, a fall protection system must be installed.

(2) Metal decking and holes shall not be cut until immediately prior to being permanently filled, with the equipment or structure needed or intended to fulfill its specific use, and which meets the strength requirements in this standard.

(3) Covers from the roof and floor openings shall be capable of supporting, without failure, twice the weight of the employees, equipment and materials that may be imposed on the cover at any one time. All covers shall be secured when installed to prevent accidental displacement by the wind, equipment or employees. The covers shall be painted with high-visibility paint, or shall be marked with word HOLE or COVER to provide warning against the hazard. Smoke dome or skylight fixtures that have been installed are not considered covers unless they meet the structural strength requirements of the section.

(4) Wire mesh, exterior plywood or equivalent, shall be installed around columns where planks or metal decking do not fit tightly. The materials used must be of sufficient strength to provide fall protection for personnel and prevent objects from falling through.

(5) Except as provided in 29 CFR 1926.760 metal decking shall be laid tightly and immediately secured upon placement of prevent accidental movement or displacement. During initial placement, decking panels shall be placed to ensure full support by structural members.

k. During the final placing of solid web structural members, the load shall not be released from the hoisting line until the members are secured with at least two bolts per connection, of the same size and strength shown in the erection drawings, drawn up wrench-tight or the equivalent as specified by the structural engineer of record. A competent person shall determine if more than two bolts are necessary to ensure the stability of cantilevered members. If additional bolts are needed, they shall be installed.

(1) Solid web structural members used as diagonal bracing shall be secured by at least one bolt per connection drawn up wrench tight or equivalent.

(2) Double connections at column and/or at beams over columns are connected sharing common connection holes and at least one bolt with it wrench tight nut shall remain connected to the first member unless a show attached or field attach seat or equivalent is provided to prevent the column from being displaced. If a seat or equivalent device is used, the seat or device shall be designed to support the load during the double connection process. It shall be adequately bolted or welded to both a supporting member and the first member before the nuts on the shared bolts are removed to make double connection.

(3) Each column splice shall be designed to resist a minimum eccentric gravity load of 300 pounds, located 18 inches from the extreme outer face of the column in each direction at the top of the column shaft.

(4) The perimeter column extends a minimum of 48 inches above the finished floor to permit installation of perimeter safety cables prior to erection of the new tier, except where construction does not allow. The perimeter columns have holes or other devices in or attached to perimeter columns at 42-45 inches above the finished floor an the midpoint between the finished floor and top cable to permit installation of perimeter safety cables required by the standard, except where constructability does not allow.

#### l. Open Web Steel Joists:

(1) Where steel joist are used and columns are not framed in at least two directions with solid members, a steel joist shall be filed-bolted at the column to provide lateral stability. Where steel joist at or near columns span 60 feet or less, the joist shall be designed with sufficient strength to allow one employee to release the hoisting cable without the need for erection bridging. Where the joist at or near columns span more than 60 feet, the joists shall be set in tandem with all bridging installed, unless an alternate method of erection that provides equivalent stability is included in the site-specific erection plan. Steel joints or girders shall not be placed on any support structure unless such structure can be stabilized. Any modifications must be made with the approval of the structural engineer of record.

(2) During the construction period, the employer placing the load on steel joists shall ensure that the load is distributed so as not to exceed the carrying capacity of any steel joist. No construction loads are allowed on the steel joists until all bridging is installed and anchored and all joist bearing needs are attached. The weight of a bundle of joist bridging shall not exceed a total of 1000 pounds. A bundle of joist bridging shall be placed on a minimum of three steel joists that are secured at one end. The edge of the bridging bundle shall be positioned within one foot of the secured end.

(3) No bundle of decking may be placed on steel joists until all bridging has been installed and anchored, and all joist bearing ends attached, unless the following conditions are met:

(a) The employer has determined from a qualified person that the structure or portion of the structure is capable of supporting the load.

(b) The bundle of decking is placed on a minimum of three steel joists. The joists supporting the bundle of decking are attached at both ends and at least one row of bridging is installed and anchored.

m. All the requirements of the subpart apply to the erection of systems-engineered metal buildings except 29 CFR 1926.755 and 1926.757.

(1) Each structural column shall be anchored by a minimum of 4 anchor bolts. Rigid frames shall have 50% of their bolts or the number of bolts specified by the manufacturer (whichever is greater) installed and tightened on both sides of the web adjacent to each flange before the hoisting equipment is released.

(2) Construction loads shall not be placed on any structural steel framework unless such framework is safely bolted, welded or otherwise secured. In girt and eave strut-to frame connections, when girths or eave struts share common connection holes at least one bolt with its wrench-tight shall remain connected to the first member unless a manufacturer supplied, field attached seat or similar connection devices is present to secure the first member so that the girt or eave strut is always secured against displacement.

(3) Both ends of steel joists or cold-formed joists shall be fully bolted and/or welded to the support structure before: releasing the hoist cables; allowing an employee on the joists and allowing construction loads on the joists.

n. Each employee engaged in a steel erection activity that is on a walking/working surface with an unprotected side or edge more than 15 feet above a lower level shall be protected from fall hazards by a guardrail system, safety net system, personal fall arrest system, positioning device system or fall restraint system.

(1) On multi-story structures, safety cables shall be installed the final interior and exterior perimeters of the floors as soon as the metal decking has been installed. Each connect shall be protected from fall hazards or more than 2 stories or 30 feet above the lower level, whichever is less; have completed connector training in accordance with the standard and provided at heights over 15 feet and up to 30 feet above the lower level, with personal fall arrest system, positioning device system or fall restraint system and wear the equipment necessary to be able to be tied off or other means of protection from fall hazards in accordance with the standard.

(2) Controlled decking zone may be established in an area of the structure over 15 feet and up to 30 feet above a lower level where metal decking is initially being stalled and forms the leading edge of work area. In the control decking zone, the following shall apply:

(a) Each employee working at the leading edge in the zone shall be protected from fall hazards of more than 2 stories or 30 feet, whichever is less.

(b) Access to the zone shall be limited to only those employees engaged in leading edge work and boundaries of the zone shall be designated and clearly marked. It must not be more than 90 feet wide and 90 feet deep from any leading edge.

**Steel Erection Checklist**  
**29 CFR 1926 – Subpart R**

Location: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_  
Job Name: \_\_\_\_\_ Contractor: \_\_\_\_\_

Inspection Item	Yes	No	Comments	Correction Date
1. Has the controlling contractor submitted written approval for the commencement of steel erection?				
2. Has the site layout been completed-including drained, graded access roads?				
3. Has the erector submitted the pre-plan for overhead hoisting operations?				
4. If a site-specific erection plan is being used, has it been submitted in writing?				
5. Have cranes been inspected daily by a competent person?				
6. Have crane deficiencies been corrected?				
7. Has rigging been inspected daily by a qualified rigger?				
8. Are all employees except those connecting prohibited from being under suspended loads?				
9. Are multiple lifts kept to a maximum of five pieces?				
10. Have employees engaged in multiple lifts been trained of the hazards as required?				
11. Is the rigging of multiple lifts of sufficient capacity?				
12. During steel assembly, are there more than 4 floors of unfinished or unbolted steel?				
13. Are shear connectors on the top flanges of beams prior to erection?				
14. When deemed necessary by a competent person, is plumbing-up equipment used?				
15. Are decking bundles lifted by proper means rather than by strapping?				
16. Is metal decking bundles secured at the end of each shift or where environmental or jobsite conditions dictate?				
17. Are floor and roof openings covered with material that is capable of supporting the intended loads, secured and marked?				
18. Are columns secured with at least 4 anchor bolts?				

19. Are all beams two-bolted (or more if required by the structural engineer of record)?				
20. Are columns provided with a means of attaching fall protection?				
21. Are materials, equipment, and tools secured while a lot and not in use?				
22. Has the controlling contractor provided overhead hazard protection for employees working below steel erection activities?				
23. Are connectors tied off as required by the standard?				
24. Have employees been trained by a qualified person?				
25. Have employees had fall hazard training?				
26. Have connectors been trained?				
27. Have employees working in controlled access zones been trained?				
28. Have employees working with multiple lift rigging been trained?				

Name: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

## **CHAPTER 17**

### **MATERIAL HANDLING AND RIGGING**

**1. GENERAL:** Material handling and rigging are part of every worksite and every construction trade. Every trade stores and handles materials on the jobsite in one form or another. Lay down yards for material storage, hoisting of materials to work levels and installation of these materials in or on the structure are continuous and on-going activities involving material handling. Generally speaking, it is the improper storage or rigging of these materials that can easily cause employee injury or damage to materials or completed products.

On every job, provisions must be incorporated into the phases of construction to provide safe and efficient methods of moving material. As a general guideline, materials stored in tiers must be stacked, racked, blocked, interlocked or otherwise secured to prevent sliding, falling or collapse. Additionally, maximum safe load limits of floors within buildings and structures must be conspicuously posted in all storage areas (in pounds per square foot), except for floor or slab on grade. Maximum loads must not be exceeded.

To facilitate the movement of materials and equipment, aisles and passageways must be kept clear to provide for free and safe movement of material handling equipment or employees.

Safe access to the construction site is also very important. Consideration must be given to road surfaces/conditions and transitions in grade. When a difference in road or working level exists, ramps, blocking or grading shall be used to ensure the safe movement of vehicles between the two levels. Prior planning on access design must incorporate safe delivery of materials to the site.

**2. MATERIAL STORAGE:** Once materials arrive on site, material storage becomes a very important issue. When storing materials inside buildings under construction, the material shall not be placed within six feet of any hoist way or inside floor openings or within ten feet of an exterior wall that does not extend above the top of the stored material. This requirement reduces the potential for materials falling onto persons below, as well as provides employees safe access to the storage area.

Common sense planning for storage areas greatly reduces the potential for accidents. For instance, separation of non-compatible materials reduces the potential for fires and explosions. Other items, such as bagged materials, should be stacked by stepping back the layers and cross-keying the bags at least every ten bags high to ensure stack stability. *Note: As a general rule of thumb, never stack materials higher than 3 times their narrowest base width, unless otherwise secured.*

The location of materials storage is important. Materials shall not be stored on scaffolds or runways in excess of the amount needed for immediate operations. Scrap lumber poses significant hazards from a fire standpoint and an impalement hazard. As such, used lumber shall have all nails removed before stacking. When storing lumber, it should be stacked on level and solidly-supported sills, and not exceeding twenty feet in height. If employees must handle the lumber manually, the lumber to be handled should not be stacked more than sixteen feet high. *Note: It is recommended that pile heights be limited to 3 times the narrowest base width to ensure stability of the pile.*

Structural steel, poles, pipe, bar stock and other cylindrical materials, unless racked should be stacked and blocked so as to prevent spreading or tilting. Housekeeping or lack of good housekeeping practices contributes to a large number of accidents. Keep storage areas free from accumulation of materials that constitute hazards from tripping, fire, explosion or even pest harborage. If materials are stored outside, keep vegetation under control.

**3. RIGGING EQUIPMENT:** The next step is that contractor's need is the standard and rigging equipment for moving materials safely. It is extremely important that rigging equipment for material handling is inspected prior to use on each shift and as necessary during its use to ensure that it is safe. Defective rigging equipment must be removed from service immediately.

Rigging equipment shall not be loaded in excess of its recommended safe working load(s), which means users must know the load capacity of the entire lifting system. If the rigging equipment is found to be defective, it must be removed from the work area. Device equipment must be: tagged Do Not Use; rendered unusable and removed from the job site. Rigging equipment, when not in use, must be removed from the immediate work area to prevent a hazard to employees.

**4. INSPECTION CRITERIA:** For the various types of hoisting equipment are listed below. All equipment must be continually monitored and inspected for defect. The more frequent the use, the more frequent the inspection.

Disposal of waste materials is the end result of material handling. In order to maintain effective levels of housekeeping, waste material must be removed from the job daily and more often, if necessary. If waste material is to be removed by dumping from upper level, then a debris chute should be used. If waste materials are dropped more than 12 feet to any point outside of the exterior walls or through openings on the interior of the building, an enclosed chute must be used. This chute is a slide, closed on all sides, through which material is moved from a higher place to a lower one.

It is recommended that warning signs warning identifying the hazards of falling materials be posted at each level on the interior and around the receiving point on the exterior of the building or structure. Debris removal should allow, until debris handling from upper levels ceases.

All trades and contractors throughout the course of the workday should practice good housekeeping. As scrap lumber, waste material and rubbish buildings up, it should be removed from the immediate work area. Good housekeeping also takes into consideration reducing the potential for all types of accidents. Timely removal of debris serves to reduce the potential for trips and falls, and facilitates the safe movement of man and materials. Good housekeeping also serves to reduce the potential for fires. Care must be taken to keep and maintain all work areas fire safe. To accomplish this, all solvent waste, oily rags and flammable liquids should be kept in a fire-resistant covered container until removed from the worksite.

**Material Handling and Rigging Checklist**  
**29 CFR 1926 – Subpart H**

Location: \_\_\_\_\_  
 Job Name: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_  
 Contractor: \_\_\_\_\_

Inspection Item	Yes	No	Comment	Correction Date
<b>Storage of Materials</b>				
1. Are materials stored in tiers stacked, racked, or blocked to prevent movement?				
2. Are aisle ways and corridors kept clear to allow egress?				
3. Are materials being stored with 6 feet of a hoist way or within 10 feet of an exterior wall that does not stand taller than the materials being stored?				
4. Are non-compatible materials kept segregated?				
5. Are excess materials being stored on scaffolds or runways?				
6. Are loose bricks stacks tapered above 4' in height?				
7. Are storage areas free of accumulated materials that may constitute hazards from tripping, pest harborage or fire?				
<b>Rigging Equipment</b>				
8. Has rigging equipment been inspected prior to each shift?				
9. Is rigging equipment being overloaded in excess of Subpart H?				
10. Are specially made hooks, spreader bards, lifting devices clearly marked with maximum weight, and been proof tested at 125% of maximum intended load?				
11. Do alloy steel chains have a permanent ID tag showing size, grade, rated capacity and manufacturer?				
12. Have the alloy steel chains been inspected as required by 1926.251 standard?				
13. Are wire rope slings being loaded in excess of Subpart H?				
14. When "u-bolts" are used with wire rope: are the correct size and number of bolts used, and are they positioned so the "dead" end of the rope is on the u-bolt side, rather than the saddle of the clamp?				
15. When slings carry a load in a basket hitch, is the load balanced to prevent unwanted move or upset?				
16. When lifting, are employees prohibited				

from placing their hands on the slings or between the sling and the load?				
17. Is a clear and legible identification tag on each synthetic web sling that shows manufacturer, capacities by hitch types and material used for the manufacture of the sling?				
18. Are nylon slings prohibited in areas that contain acids, caustics, or temperatures in excess of 180 degrees F.				
19. Are nylon slings removed from service when acid or caustic burns; melting or charring of any surface; snags, punctures or tear; broken or worn stitches; or distortion of fittings are present?				
20 Shackles and hooks are not loaded in excess of the manufacturer's specifications?				
21. Shackles and hooks are removed from service based on the manufacturer's recommendations for wear, twist and bending?				
<b>Disposal of Waste Materials</b>				
22. When materials are dropped from a height greater than 20' on the outside of a building, a required enclosed chute is used?				
23. When material is dropped through a floor opening a lower level without the use of chutes, a barricade not less than 42" high and not less than 6 feet back from the projected edge of the opening above is erected/used?				

Name: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

## **CHAPTER 18**

### **SILICA HAZARD CONTROL PROGRAM**

**1. Purpose:** To minimize exposure and hazards of silica to employees and contractors working in the health care system in accordance with OSHA Subpart Z.

**2. Scope:** This program applies to all silica hazards which include crystalline silica which is a basic component of sand, quartz and granite rock, with quartz being the second most common mineral in the earth's crust.

#### **3. Definitions:**

a. *Administrative Controls.* Administrative Controls that reduce the duration or frequency and severity of the hazard include rotation, increased non-exposure periods, or job enlargement.

b. *Competent Person.* As defined by OSHA is one who is capable of identifying existing and predictable silica hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them. At the HCS this role might be filled by the Industrial Hygienist, Safety Manager, or an Engineering Management person.

c. *Construction (Work).* As defined by OSHA is work consisting of construction, alteration, repair including painting and decorating. Further examples are sawing, sandblasting, drilling, stonecutting and grinding materials that has a basic component of sand quartz and granite rock associated with construction activities.

d. *Employee Exposure.* Airborne exposure to silica without regard to the use of a respirator while performing a single task.

e. *Engineering Controls.* Equipment that is used or installed to reduce silica exposure during the renovation/remodeling includes tools equipped with local exhaust ventilation, dust collection systems, and HEPA vacuum cleaners.

f. MSDS; however, because 1910.1200 only requires hazardous chemicals that comprise 1% or more of the composition of the product to be listed, verification that a product does not contain silica should be made when acquiring about the products.

g. *Permissible Exposure Limit (PEL).* As defined by OSHA is an occupational airborne exposure level of 10  $\mu\text{g}/\text{m}^3$  calculated as an 8-hour, time-weighted average (TWA).

h. *Work Practice Controls.* Changes in the way a job is performed that reduces silica exposure. Examples include manual scraping instead of using a power tool without exhaust ventilation (which would be an engineering control).

#### **4. Authority/Responsibilities:** Contractors will:

- (1) Follow OSHA guidelines when working with silica products.
- (2) Ensure routine maintenance of dust control systems is in good working conditions.
- (3) Ensure his/her employees are practicing good housekeeping.
- (4) Ensure that his/her employees are wearing disposable or washable protective clothing prior to entering the regulated area.
- (5) Provide shower and clean room for the employee to change before leaving the worksite.
- (6) Ensure workers are not eating in the exposed area.
- (7) Provide workers with training that includes information about the health effects and that medical surveillance is conducted annually.

#### **5. Hazard Identification and Assessment:**

a. Silica concentrations and locations at the HCS are to be determined by a qualified individual or consulting firm.

b. Prior to the start of any construction or maintenance activity that could disturb silica based material, or result in silica exposure to patients, visitors, or employees and their families in residence, an evaluation of the work site, work practices, and previous assessment will be done as a part of project design or by a CP (in-house) if it is an in-house activity. If there is the potential for silica exposure above the PEL, a work permit (as described above.) will be completed by the CP. The following will be considered in determining the need for completing a work permit:

1) The presence of silica.

2) Past personal sampling data (According to OSHA, objective data within the previous 12 months and from closely similar work conditions, can be used to satisfy personal sampling requirements. This data can also be used to evaluate the need for silica exposure controls).

c. When the following silica related tasks or work is to be performed, OSHA has presupposed a hazard assessment and has defined that specific protection measures will be provided as listed in paragraph 9.a.(6) and; therefore, a work permit is to be completed (unless objective data and other conditions can show that exposure would be below the PEL):

1) Manual demolition of structures.

2) Manual scraping or sanding, blasting, etc.

3) Any task where there is a reason to believe that hazardous airborne silica levels may exist.

e. Periodic Surveillance and assessment of silica on surfaces should be conducted by the CP as the need arises; e.g., prior to renovation or other planned construction activity. At that time such assessments such as wipe sampling might be done to determine appropriate work practice needs or maintenance.

## **6. Information & Training:**

a. Training will be provided prior to the work assignment for all employees and/or contractors exposed or potentially exposed to silica at or above the PEL.

b. Training will consist of:

1) Content of the OSHA (1910, Subpart Z).

2) The PEL and personal sampling requirements.

3) Work practices that could result in silica exposure above the PEL.

4) PPE including respirators and their purpose, selection, limitations, fit testing, and use.

5) Medical surveillance and medical removal protection.

6) Engineering, work practice, and administrative controls.

7) Review of this medical center Silica Program (Compliance Plan).

8) Right of access to medical and exposure records, OSHA standards; e.g., 1926.62.

9) Review of applicable MSDSs; e.g., a Silica MSDS.

10) Labeling and signs associated with silica construction work.

11) That silica is a chemical and health hazard covered under the Hazard Communication Program.

12) Hygiene practices and facilities.

c. Signs will be legibly posted in work areas where exposure is greater than the PEL with the following wording:

**WARNING: Silica Work Area, No Smoking or Eating.**

d. Training should be updated annually for employees exposed or potentially exposed to silica at or greater than the PEL.

e. An appropriate Union Representative; e.g., the Safety Representative should also be provided this training.

f. When work is to be done that could result in exposure or contamination of the facility, affected employees, besides those performing the work; will be notified and provided information to prevent exposure to patients, visitors, affected employees, or their families in residence. Affected employees might include contractors, Service Chiefs and Supervisors of the Services where work is to be performed, and their employees; employees in residence; and EMS employees. Information could include:

- 1) When work is to be done.
- 2) Duration of the work.
- 3) Barrier and information signs.

g. If the HCS laundry employees are to launder contaminated clothing, appropriate training to prevent exposure to themselves or contamination of the laundry facility will be provided. Also, EMS employees transferring containers will be provided appropriate training and PPE to prevent exposure.

*Note: The use of disposable PPE is to be encouraged to minimize potential exposure.*

h. All training will be documented including names, instructor, and content of training. Records will be maintained by Service and/or Contractor with documentation forwarded to the Safety Office for compliance monitoring.

## **7. Medical Surveillance and Removal:**

a. Medical surveillance will be provided to any employee exposed once to silica at or greater than the PEL. This surveillance will consist of:

- 1) A medical and occupational history to collect data on work exposure to crystalline silica and signs and symptoms of respiratory disease.
- 2) Chest x-ray.
- 3) Pulmonary function testing (spirometry).
- 4) Annual evaluation for tuberculosis.

b. Where employees are exposed or may be exposed to silica at or above the PEL for more than 30 days in any consecutive 12 months is found to be at or greater than 10 µg/dl, medical examinations and consultations will be provided.

c. Within 5 working days after receiving the results of the medical surveillance, Occupational Health will provide a written copy to the employee.

d. Occupational Health will provide a written copy to the employee of the medical opinion as described in 29 CFR 1910 (Subpart Z).

e. All medical examinations and consultations will be performed by or under the supervision of a licensed physician.

## **8. Personal Protective Equipment (PPE):**

a. Respirators will be used according to the HCS respirator program including fit-testing, cleaning, maintenance, storage, and training.

b. The following minimum level of respiratory protection will be required when OSHA predetermined work tasks are performed; or the following airborne levels are exceeded and until objective data can show what level of protection is required, or that exposure would be below hazardous levels:

- 1) Half mask air purifying respirator with HEPA filters during manual demolition of structures, manual scraping or sanding, power tool cleaning with a dust collection system 50 µg/m<sup>3</sup> but less than 500 µg/m<sup>3</sup>.

2) Full face air purifying respirator with HEPA filters, any PAPR with HEPA filters, or any Supplied Air Respirator (SAR) operated in continuous flow mode during power tool cleaning without a dust collection system; or levels of  $500 \mu\text{g}/\text{m}^3$  but less than  $1250 \mu\text{g}/\text{m}^3$ .

3) Full face respirator, tight fitting PAPR, tight fitting SAR in continuous flow mode, during blasting, welding, cutting, torch burning; or levels of  $1250 \mu\text{g}/\text{m}^3$  but less than  $2500 \mu\text{g}/\text{m}^3$ .

c. To prevent employee (or clothing) contamination to silica and to prevent facility contamination when an employee is exposed to levels above the PEL; or when performing work tasks described in the above paragraph., appropriate clothing and equipment will be provided, such as: coveralls, gloves, eye/face protection, and shoes or shoe coverings.

d. Employees will remove PPE at the completion of a work shift only in change areas provided for that purpose.

e. Employees are not to clean or attempt to remove dust by blowing, shaking, or other dust generating means.

f. Disposable PPE will be placed in a labeled container and discarded according to local, state, or federal environmental protection requirements. Internal handling of containers will be according to the medical center's Hazardous Waste Disposal Policy.

g. Non-disposable PPE clothing will not be taken from the workplace. Contaminated PPE to be cleaned will be placed in a provided container, properly labeled in the change area, and laundered on or off site as determined by the HCS (If laundered on site, EMS will transfer containers to the laundry unless other procedures are followed)

## **9. Work Practices and Control of Hazards Associated with Silica:**

a. When silica remains in place, various methods of controlling exposure will be used during operations and maintenance activities. Even if elevated silica exposure is not expected; but silica contamination could occur, appropriate equipment and work practices should be used (as described below):

1) As described in the paragraph above, hazard identification and assessment will have previously been done in high priority areas. Where work is to be performed and a silica assessment has not been done; but silica containing material is suspected, before proceeding, the IH or Competent Person should be notified for an assessment to be made.

2) If unplanned disturbances of known or suspected silica containing material occurs to such an extent that exposure at or above the PEL may occur, then the Supervisor, IH, or Competent Person should be notified.

3) Housekeeping is of primary importance in reducing exposure. Where silica remains in place, dust levels should be routinely controlled on a scheduled basis by wet wiping, vacuuming, use of TSP detergent for significant silica dust accumulation or contamination, and use of disposable cleaning items. Periodic wipe sampling; e.g., annually, could be used to verify (comparison to the Clearance Standards) proper housekeeping.

4) Where work is performed near silica, care will be taken to avoid its disturbance. Prior to performing construction work, the assessment as described in the above paragraph should be reviewed.

5) As described in the paragraph above., during manual scraping or sanding, power tool cleaning with a dust collection system, burning/welding/cutting, or demolition and remodeling; e.g., the following controls and work practices will be used unless objective data can show that exposure would be below the PEL:

- a) Moistening of the surface to be worked on (if applicable).
- b) Wet method removal.
- c) Hydraulic shears (if available) instead of torch cutting.

- d) Appropriate respiratory protection and PPE.
- e) Change areas.
- f) Available hand washing facilities.
- g) Collection of debris on polyethylene sheeting.
- h) Complete cleanup by HEPA vacuuming and/or with TSP detergent.
- i) Demarcating the work area to prevent cross contamination of silica dust.

7) Where exposure is known or expected to exceed the PEL, controls in addition to those described in the above paragraph should include one or more of the following:

- a) Installation of a polyethylene sheeting containment.
- b) Covering room ventilation exhaust and inlets after turning off the system.
- c) Use of local exhaust on equipment, such as power tools or welding.

b. Cleanup will be done upon completing maintenance operations.

1) Surfaces such as floors, walls, window sills, etc., will be HEPA vacuumed and/or wet wiped/mopped with TSP detergent.

2) Silica-containing debris, scrapings, dust, and HEPA filters (to be disposed of) will be collected and placed in labeled containers.

3) Materials such as polyethylene sheeting may be vacuumed and wet wiped for reuse or for disposal as non-hazardous waste; or silica-containing debris might be collected within sheeting, placed in a labeled container, and disposed of as hazardous waste.

4) If airborne dust above the AL has not been generated or has not been contaminated, it should not be treated as hazardous. If levels have exceeded the AL or PPE has been contaminated, then it will be included in labeled hazardous containers, and disposed of or laundered.

5) Internal handling of hazardous waste containers or PPE to be laundered will be according to the HCS Hazardous Waste Disposal Policy.

c. A work permit will be completed before construction work on silica or other silica-containing material; such as but not limited to, manual scraping or sanding, power tool cleaning with or without local exhaust, burning/welding/cutting silica-containing materials, demolition, or remodeling when silica-containing materials are to be worked on and potential exposure will be at or greater than the PEL, unless objective data can show that exposure would be below the PEL.

1) Prior to the start of each job the CP will complete the Work Permit: Work Involving Silica-Containing Materials (Attachment) assisted by the supervisor after determining applicable work practices and controls are in accordance with this program.

2) Prior to the job, the Supervisor will arrange for personal sampling with the Industrial Hygienist or Safety Representative.

3) The Union Representative will be contacted by the Industrial Hygienist to be given an opportunity to observe sampling.

4) The Industrial Hygienist will maintain work permit records.

e. Only properly trained employees will perform work when silica exposure may occur including incidental exposure or uses of silica-containing materials: such as, within occupational therapy, radiation therapy, or use of lead solder.

f. The CP will oversee work and assessments where lead exposure could occur.

g. When silica exposure could occur or silica-containing materials are used and an ingestion hazard exists, proper personal hygiene will be followed.

l) Employees will not eat, drink, smoke, or apply cosmetics within a lead exposure work area.

2) Upon leaving a silica exposure work area employees will vacuum and change clothing if to be reused, or dispose of clothing; and wash hands and face prior to eating, drinking, smoking, etc.

3) The CP will ensure that eating areas, used by silica exposed employees, are not cross contaminated with lead. Wipe sampling may be used for assessment.

#### **10. Personal Sampling:**

a. Whenever work is performed on silica-containing material and exposure might exceed the PEL; full shift personal sampling representative of each job classification and work area during each shift, or the shift with the highest expected exposure will be conducted by the Industrial Hygienist or other trained safety representative (for example, an electrician and carpenter exposed would require 2 separate samples; one carpenter or painter performing manual scraping and one using a power tool would require separate samples).

b. Personal sampling data may be used as objective data to satisfy sampling requirements for subsequent work performed within 12 months of the objective data. Sampling data will be entered on VA Form 10-0018.

c. The Union Representative will be given the opportunity to observe personal sampling. Written notification and documentation will be provided by the Industrial Hygienist or Safety Representative.

d. Within 5 days of receiving personal sampling results, written notification will be provided to employees. This can be done by posting. If exposure is at or above the PEL, the notification will include a statement that the PEL was reached or exceeded and any corrective action to be taken to lower the exposure.

#### **11. Personnel Hygiene Facilities:**

a. Where employees are exposed to levels above the PEL, or perform tasks listed in the above paragraph, until objective data can show exposure to be less than the PEL, the following will be provided:

1) Clean change area, equipped with separate storage facilities for contaminated PPE and clothing to be worn home.

2) Shower facilities.

b. Where employees are exposed to levels below the PEL, changing areas and hygienic practices should be used, as applicable, to prevent the contamination of employees' clothing or the surrounding area.

#### **12. Waste Disposal:**

a. All applicable federal, state, and local environmental regulations will be followed. Cost of hazardous waste disposal and hazardous waste generator status (i.e., small quantity vs. large quantity) should be considered when deciding on the type of work or abatement and cleanup to be done.

b. Replaced components are not considered hazardous waste; however, various states or local governments may require specific handling procedures.

c. Disposable PPE may be considered hazardous waste.

d. Polyethylene sheeting can be vacuumed and/or wet mopped to be reused or disposed of in regular trash to avoid generating extra hazardous waste. If cleaned, the contractor Certified Industrial Hygienist or Safety Representative will take representative wipe samples using NIOSH approved methods and guidance from the accredited laboratory analyzing the samples.

e. Rags, mop heads, etc., should be rinsed in clean water two or more times to prevent contamination or disposal as hazardous waste. Until methods have been established to determine the number of rinses required and the cleaning item as non-hazardous, a sample (approximately 5 g) of the material, should be sent to an accredited laboratory for analysis. A result of 5 ppm or less [EPA's Toxicity Characteristic Regulatory Level (TCLP)] will clear the material as non-hazardous.

f. Wastewater generated from wet wiping/mopping should be minimized as much as possible. Contaminated wastewater, if it is passed through a filter to remove the visible particles, should be able to be disposed of within the sewer system. Until methods have been established to determine the amount of filtration necessary for meeting POTW requirements, a sample of approximately 10 mL should be collected and sent to an accredited laboratory. The results will be compared to total facility effluent and the levels acceptable to the local POTW. The local POTW will be contacted to determine limits.

**Work Permit  
Work Involving Silica Containing Materials**

1. Competent Person:\* \_\_\_\_\_
2. Description & Location of Work: \_\_\_\_\_
3. Anticipated Start Date & Duration of Work: \_\_\_\_\_
4. Silica Containing Material to be Worked On: \_\_\_\_\_
5. Crew Size/Names: \_\_\_\_\_
6. Supervisor of Crew: \_\_\_\_\_
7. Employee Responsibilities: \_\_\_\_\_
8. Equipment to be Used: \_\_\_\_\_
9. Work Practices & Engineering Controls to be Used: \_\_\_\_\_
10. Personal Sampling (*Results to be Attached*)
  - a. Employees/Tasks: \_\_\_\_\_
  - b. Frequency: \_\_\_\_\_
  - c. Competent Person or Person working under CP supervision to do: \_\_\_\_\_
11. PPE to be Used: \_\_\_\_\_
12. Hygiene Facilities & Practices to be Used: \_\_\_\_\_
13. Cleanup Methods: \_\_\_\_\_
14. Environmental Sampling (*Results to be Attached, if applicable*): \_\_\_\_\_
15. Provisions for Handling Hazardous Waste or Non-disposable PPE: \_\_\_\_\_
16. Name of Union Representative (*if present*): \_\_\_\_\_
17. Competent Person's Approval/Signature: \_\_\_\_\_
18. Competent Person's Signature/Work Completion Date: \_\_\_\_\_

\*Competent Person is usually the facility Industrial Hygienist.

## Silica Assessment

Location: \_\_\_\_\_  
 Job Title: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_  
 Contractor: \_\_\_\_\_

Item	Y/N	Comments	Date Completed
1. Employer Written Program Review?			
2. Employee Training Records Complete?			
3. Competent Person Identified?			
4. Work Area Protected: a. Negative Pressure? b. Adequate Seams? c. Signs Posted?			
5. Employee Clean-room Available?			
6. Exterior Containment Monitoring Available?			
7. Interior Containment Monitoring Available?			
8. Medical Surveillance Provided/Recommended?			
9. Respiratory Protection Enforced? a. Forced Air (=> PEL) b. HEPA (P100) (</=PEL)			
10. Protective Clothing Worn: a. Protective Suits b. Gloves? c. Eye Protection? d. Footwear?			
11. Waste Areas Protected/Isolated?			
12. Methods Used: a. Wet Method? b. Encapsulation? c. Fractured (i.e. sandblasting)?			
13. Other:			

Name: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_  
 Distribution: \_\_\_ ICRA      \_\_\_ General Contractor      \_\_\_ Safety Office  
                   \_\_\_ COTR      \_\_\_ Subcontractor      \_\_\_ Other

**CHAPTER 19**  
**ACCESS TO CONSTRUCTION AREAS &**  
**INTERIM LIFE SAFETY MEASURES (ILSMs)**

**1. PURPOSE:** To establish a program to control access to construction/renovation areas and prevent interference/disruption with construction/renovation activities and other necessary preoccupancy work, to assure ILSMs are continued and documented so the level of life safety is not diminished in any occupied area and a safe environment is maintained throughout construction/renovation of buildings or grounds.

**2. POLICY:**

a. It is the policy of the facility to assure a safe and healthful environment and assure that life safety is not impaired during construction. In specific circumstances, where any Life Safety System is impaired, specific procedures outlined in this policy shall be implemented to assure that life safety is not diminished, and assist in the facility goal of providing safe, quality care for all its patients.

b. ILSMs are a series of operational actions taken to temporarily reduce the hazards posed by existing Life Safety deficiencies or construction. ILSMs consist of the following actions:

(1) Ensuring free and unobstructed exits. Personnel receive additional training when alternative exits are designated. Buildings or areas under construction must maintain escape routes for construction workers at all times. Means of existing construction areas are inspected daily when construction is underway.

(2) Ensuring free and unobstructed access to emergency services and for fire, police and other emergency forces.

(3) Ensuring fire alarm, detection and/or suppression systems are in good working order. A temporary, but equivalent, system shall be provided when any fire system is impaired. Temporary systems must be inspected and tested monthly. The HCS Fire Department is notified and a fire watch is provided whenever an approved fire alarm or automatic sprinkler system is out of service for more than 4 hours in a 24-hour period in an occupied building by the Safety Manager or designee.

(4) Ensuring that temporary construction partitions are smoke tight and are non-combustible materials so they will not contribute to the development or spread of fire.

(5) Ensuring that additional fire fighting equipment is provided, and personnel are trained in its use.

(6) Prohibiting smoking throughout the organization's buildings and in and adjacent to construction areas.

(7) Developing and enforcing storage, housekeeping and debris removal policies and procedures that reduce the flammable and combustible fire load to the lowest level necessary for daily operations.

(8) Increasing fire drills to a minimum of two (2) per shift per quarter.

(9) Increasing hazard surveillance of buildings, grounds and equipment with special attention to excavations, construction areas, and construction storage and field office.

(10) Training personnel when structural or compartment features of fire safety are compromised. Construction personnel will be trained in fire protection.

(11) Conducting an organization-wide safety education programs to staff to provide awareness on any or all Life Safety Code deficiencies, construction hazards and what ILSMs are being accomplished. ILSMs will be presented to the Environment of Care Committee for review monthly and placed in the minutes to inform all employees of the ILSMs taken on the construction projects.

**3. RESPONSIBILITIES:**

a. The *Project Engineer or Engineering Supervisor(s)* for smaller projects is responsible for coordinating the ILSMs assessment with the Safety Manager prior to the start of construction activities at this HCS.

b. The *COTR* supervising a construction or renovation project is responsible for ensuring that access to a construction area is controlled in order to protect patients, staff, visitors and others from the hazards found in construction areas. The *COTR* is responsible for providing construction plans to the multidisciplinary team for fire safety review, infection control, and security intervention.

#### **4. PROCEDURES:**

a. During all construction/renovation projects, measures will be taken to insure that life safety requirements are met. Before construction/renovation begins, the Project Engineer or supervisor for smaller projects and the Safety Manager or designee will evaluate the project for implementation of ILSMs by completing Attachment A. The Safety Manager will maintain this form.

b. Construction Project Superintendent/Supervisor/Engineering Project Engineer or supervisor is responsible for limiting access to construction sites by personnel, patients, and visitors not involved with construction activities. Where total isolation of construction activities is not feasible, access limitations will be accomplished by the use of freestanding barricades or other appropriate means.

c. The Construction Project Superintendent/Supervisor/ Engineering Project Engineer or supervisor shall ensure that all fire exits and means of egress are unobstructed. Means of egress shall be inspected each day work is in progress and documented by the Project Superintendent/Supervisor and/or Engineering Project Engineer or supervisor using Attachment B; it will be placed in the project file with a copy provided to the Safety Manager. If alternate exits must be designated, the Safety Manager or designee will provide training to all staff in affected areas.

d. Engineering, Environmental Management, Police, Safety and Logistics Management Services, Infection Control Nurse and Informatics employees are authorized access under their respective areas of purview for the purpose of accomplishing assigned duties and responsibilities with preoccupation work through the *COTR*.

e. Vendors, installation technicians, etc., are authorized access only as arranged and coordinated through Logistics Management and the *COTR*.

f. When access to or through a construction area is unavoidable because corridors that patients, visitors, and employees must use are within a construction area, the *COTR* will ensure that contractors keep corridors and egress paths clear and unobstructed. The contractor will post warning and directional signs in appropriate locations for patients, visitors, and employees. During the project, the contractor is responsible for maintaining the area with daily cleaning, or more often as necessary.

g. Construction areas, which can be locked, will remain locked at all times when contractor personnel are not present. Locks and keys are to be provided by Engineering through the *COTR* so that appropriate HCS staff will have access at any time.

h. Appropriate barricades and signage will be maintained, in accordance with the current Life Safety Code, around construction areas at all times.

i. Fire Watch:

(1) The Construction Project Superintendent/Supervisor/Project Engineer and/or Fire Department/Safety on the behalf of the Safety Manager (regular tour) and Police and Security (irregular tours and weekends) are designated firewatchers for this health care system. Firewatchers will conduct surveillance of areas that require a fire watch every two hours. Fire watch duties consist of notifying the Montgomery Fire Department or HCS Fire Department in the event of an emergency, preventing a fire from occurring, extinguishing small fires and protecting the public from fire or life safety dangers. Firewatchers shall watch for fires in all exposed areas; and, attempt to extinguish them only properly trained and appropriate equipment is available or otherwise sound the alarm immediately.

(2) When a fire watch is implemented due to the fire alarm or sprinkler system being shut down, the Patient Care Manager and/or supervisor in charge of the affected area will be notified by the Project Engineer. The Patient Care Manager in charge of the affected area will disseminate this information to

their personnel and inform them to call Montgomery Fire Department and/or the HCS Fire Department at any sign of smoke or fire.

(3) The Safety Manager will have the situation assess and implement the required ILSMs, if required.