

# Physical Plant Safety Program



**It's Safe to Talk  
About My Safety**

**Physical Plant  
The Way We Work**

This manual contains important program policies and procedures.

This manual shall be readily accessible to all FP&M Physical Plant employees.



**Facilities Planning & Management**

UNIVERSITY OF WISCONSIN-MADISON

*Providing excellence in facilities and services  
for our university community*



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# Introduction

### Policy Statement

The University of Wisconsin–Madison Physical Plant considers its employees as its most valuable asset and will take every possible practical action to make your working conditions free from hazard. It is within our Culture of Safety to persistently encourage and facilitate the elimination of all “near miss,” injury and fatality incidents as well as implementing the appropriate corrective actions when confronted with occupational hazards associated with our activities. We are, as an institution and as individual employees, committed to continuously improve the way we complete activities keeping health and safety at the forefront of our actions both at and away from our place of employment. In addition, it is our obligation to provide a work environment that is inherently safe for all. “The Way We Work.”

Employees are also encouraged to engage in “It’s Safe to Talk about My Safety” conversations with each other. By demonstrating your willingness to be approached by others to receive safety advice or to lend safety advice helps our Culture of Safety to evolve into an employee guided occupational safety program with its primary focus of incident prevention.

Safety requires not only that each person understand and perform individual activities in a safe manner, but also that each individual is aware of all surroundings and is actively involved in the safety of others. You and your supervisor are required to conduct all activities and overall operations in such a manner as to afford maximum protection for employees, the public, systems, equipment, machines, materials and property of the institution. Occupational safety shall be a primary responsibility of all management, supervisors and you.

Supervisors have oversight for safety; they cannot be with all employees all the time. If the activity you have been assigned is not safe to complete, stop; make it safe to complete; then complete the activity. All employees have the right as well as the obligation to stop all unsafe acts, activities with uncontrolled hazards and or ask others that are not complying with safety regulations to remove themselves from the activity area. Each employee is encouraged to contact their Supervisor immediately should a safety or health risk exist in order for immediate hazard analysis and implementation of corrective action.

Your active participation is vital for the protection of yourself and others. It is important that you take no unnecessary chances, adhere to the regulations, use all provided safety devices, and that you make incident prevention a regular part of your job. The responsibility for incident prevention rests upon each one of us.

Thank you for insuring our Culture of Safety is persistent.

Robert Lamma  
Executive Director-Physical Plant

### Policy

Safety and health in our workplace must be a part of every activity and every operation. Without question, it is every employees responsibility at all levels of the institution. To be successful, our program must embody the proper attitudes toward injury and illness prevention on the part of supervisors and employees. It also requires cooperation in all safety and health matters, not only between supervisors and employees, but also between employees and co-employees. Only through such a cooperative effort can an effective safety and health program be established and preserved.

Safety policy and procedure cannot be administered, implemented, monitored and enforced by any one individual. The total objective of a safe, incident free work environment can only be accomplished by a dedicated, concerted effort by every employee involved from management to the last newly hired employee.

Each employee must understand their value to the institution; the impact of incidents, both physical and emotional as well as monetary; the objective of the safety program policy and procedures; the safety procedures that apply to the activities employees are assigned to complete; and what their individual role is in administering, implementing, monitoring, and compliance of this safety program policy and procedures. This allows for a more personal approach to compliance through self-assessment, planning, training, understanding and cooperative effort, rather than by strict enforcement. If for any reason an unsafe act persists, strict enforcement shall be implemented to protect overall employee wellbeing and the Culture of Safety.

This comprehensive safety program provides guidance for the performance of assigned activities within the framework of appropriate Occupational Safety & Health Administration (OSHA) Regulations. These regulations are the foundation for the safe performance of all assigned activities. Other referenced agencies; when employed to implement safe standard work practice and or standard operating procedures shall meet the intent of the aforementioned regulations and or exceed the intent to insure employee wellbeing.

### Purpose

To exemplify the University of Wisconsin–Madison Physical Plant commitment of providing a campus that is inherently safe for all. This safety program is intended to assist employees with the methods to prevent incidents through direct involvement with the way activities are performed safely.

### Scope

Employers are advised and encouraged to institute and maintain in their establishments a program which provides systematic policies, procedures, and practices that are adequate to recognize and protect their employees from occupational safety and health hazards.

This program includes provisions for the systematic identification, evaluation, and prevention or control of general workplace hazards, specific job hazards, and potential hazards which may arise from foreseeable conditions. The major elements of this occupational safety and health program include the following:

Management commitment and Employee involvement are complementary. Management commitment provides the motivating force and the resources for organizing and controlling activities within an institution. In an effective program, management regards employee safety and health as a fundamental value of the institution and applies its commitment to safety and health protection with as much vigor as to other institutional purposes. Employee involvement provides the means through which employees develop



and or express their own commitment to safety and health protection, for themselves and for their fellow employees.

Worksite analysis involves a variety of worksite examinations, to identify not only existing hazards but also conditions and operations in which changes might occur to create hazards. Unawareness of a hazard which stems from failure to examine the worksite is a sure sign that safety and health policies and or practices are ineffective. Effective management actively analyzes the work and worksite, to anticipate and prevent harmful occurrences.

Hazard prevention and controls are triggered by a determination that a hazard or potential hazard exists. Where feasible, hazards are prevented by effective design of the jobsite or job. Where it is not feasible to eliminate them, they are controlled to prevent unsafe and unhealthful exposure. Elimination or controls is accomplished in a timely manner, once a hazard or potential hazard is recognized.

Safety and health training shall address the safety and health responsibilities of all employees of the institution. It is most effective when incorporated into other training about activity requirements and work practices. Its complexity depends on the magnitude of the activities to be completed and the nature of the hazards and potential hazards present at the worksite.

Incident Prevention is intended to prevent all employees and or contractors from working in conditions that are unsanitary, hazardous, or dangerous to their health or safety. Incident prevention requires a commitment from all employees and contractors within our institution to actively participate in our safety program. All employees shall be aware of job site hazards and follow procedures to eliminate and or control these hazards by engineering controls, proper work procedure modification, use of personal protective equipment, and proper use of tools and equipment. All employees are encouraged to ask questions and make positive suggestions for safety improvement.

Although compliance with the law, including specific OSHA standards, is an important objective, an effective program looks beyond specific requirements of law to address all hazards. It will seek to prevent injuries and illnesses, whether or not compliance is at issue.

Section 5(a) (1) of the Occupational Safety and Health Act, commonly referred to as the General Duty Clause is a "catch all clause" which states: "Each employer shall furnish to each of its employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

### **Failure to Comply**

Failure to comply with this policy shall result in disciplinary action per the following:

Employee Handbook for University Staff Employees  
Section 230.34, Wisconsin Statutes

**Approvals and Revisions**

**Program Approval**

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

*Robert D. Lamppa - Executive Director - Physical Plant*

**Revisions**

Revision Number  Date: \_\_\_\_\_

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

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File: FP&M Physical Plant Safety Manual.pdf			
Web Address for this Policy: <a href="http://physicalplant.wisc.edu/safety/safety-manual-htm">http://physicalplant.wisc.edu/safety/safety-manual-htm</a> .			

# Section I—Safety Procedures

### Procedure Statement

This comprehensive safety & health program has been developed to address specific safety concerns and to provide guidance for the performance of job related activities within the framework of appropriate Occupational Safety & Health Administration (OSHA) regulations.

Safety demands a commitment from all personnel within the institution. We have an obligation to ensure that all employees, as well as contractors performing work activities on campus are afforded the protection of an appropriate safety & health program.

This program contains policy and procedures to address common work place hazards, specific activity related hazards and the methods to assess activities to avoid creating additional hazards.

Each employee is encouraged to contact a supervisor immediately should a safety or health risk exist in order for the appropriate corrective action be taken to eliminate the hazard entirely or address the hazard in a safe manner through engineering controls, modified work practices, standard operating procedures, personal protective equipment and or other appropriate means.

All managers, supervisors, designated competent person and or employees shall make routine and random safety observations to both identify new hazards and to monitor the effectiveness of this safety & health program.

The success of our culture of safety depends on all employees from senior management to the newest hire as well as all contractors, demonstrating a commitment to safety by working with each other's wellbeing as a priority always.

Activity completion with zero incidents is how our culture of safety is ultimately measured.

For ease of use, this safety program manual has been divided into three categories:

Section I      Safety Procedures  
Section II     OSHA Required Programs  
Section III    Department Specific Procedures

Appendices

### Primary Reference

CFR 29 OSHA 1910 General Industry Regulations  
CFR 29 OSHA 1926 Construction Regulations

**NOTE:** When difference to this safety program manual and or other issued procedure are discovered and challenged, the prevailing federal regulations shall govern unless otherwise approved and stated.

### 01. Primary Definitions

**Should.** The application is a recommendation. Employees assess the likelihood or probability of hazard exposure and or hazards are not currently present or unknown. Employees are responsible to be aware of changing conditions or activities that would require the use of PPE.

**Shall.** The application is an obligation. Hazards are known and present. Employee shall assess exposure level through the safety self -assessment process and shall use the required PPE.

**Readily Accessible.** Employee shall provide direct access. In close proximity to an employees' assigned work location, within nearby reach for ease of deployment when required.

**Competent Person.** Competent person means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

**Qualified Person.** Qualified person means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project.

NOTE 1: To the definition of "qualified person:" Whether an employee is considered to be a "qualified person" will depend upon various circumstances in the workplace. It is possible and, in fact, likely for an individual to be considered "qualified" with regard to certain activities in the workplace, but "unqualified" as to other activities.

NOTE 2: To the definition of "qualified person:" An employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform activities safely at a specified level of training and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those activities.

NOTE 3: *Procedural definitions are included with each specific standard operating procedure where required.*

### 02. General Safety Rules

Cooperative guidance, self-governance and self-safety assessments shall be the means to which we all remain safe in our daily activities. The “It’s Safe to Talk about My Safety” theme will allow us to freely approach each other with everyone’s safety in mind.

- 02.01. Disregard and or deviation from this Safety Program policy and procedures are prohibited and shall result in disciplinary action.
- 02.02. It is your obligation to protect your life, your co-employees life, the public and the property of the University of Wisconsin-Madison.
- 02.03. Never take chances or attempt any activity without being qualified and knowing the proper procedures, the potential hazards, and the methods to control or eliminate hazards. If the assigned activity is not safe to complete, it is your obligation to make it safe then complete it.
- 02.04. Perform your safety self-assessment before each assigned activity.
- 02.05. Take a “4 Second Stop-Safety Moment” before you proceed with any activity.
- 02.06. Report all unsafe conditions and actions immediately to the proper authority.
- 02.07. Report all near miss, non-injury, injury and or safety violation incidents to your supervisor.
- 02.08. Personal protective equipment shall be worn where required. The “Basic Three” shall be with you at all working times ready for deployment: safety glasses, hearing protection and applicable hand protection.
- 02.09. Remember the discretion, should, shall and readily accessible rules of all personal protective equipment.
- 02.10. Maintain your balance, traction and grip by always being aware of your working surroundings. Always survey your path of travel for before you proceed.
- 02.11. Fall protection systems: Personal fall arrest equipment shall be worn and lanyards attached to approved anchor points at all times when working at 6 feet or less of an opening or edge where there is the potential to fall 6 feet or more. Arrest, Restraint or Positioning systems shall be used where required.
- 02.12. Ladders shall be inspected and appropriate for the activity to be performed. Ladders shall be used only as per the manufacturer and design specifications.
- 02.13. The Control of Hazardous Energy (LOTO) shall be applied where required.
- 02.14. Do not bypass, remove and or disable any safety device or system.
- 02.15. Use the appropriate tools for the job.
- 02.16. Maintain a clean work area always.
- 02.17. Only authorized and qualified employees will operate systems, equipment, machinery and vehicles.
- 02.18. Always wear the seatbelt while operating any vehicle or equipment.

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- 02.19. Perform tool, vehicle, machine and or equipment inspections as required. Immediately report all suspected damage, failures and or maintenance issues to your supervisor.
- 02.20. No weapons and or firearms shall be present on the campus, including the parking lots or at any work place.
- 02.21. Insure the appropriate clothing is being worn for assigned activities.
- 02.22. Avoid activities that could endanger you, co-employees and or any others on campus.
- 02.23. Employees taking physician prescribed medication that might impair their ability to operate certain equipment or perform various job activities safely shall report this to their immediate supervisor prior to the start of any assigned activity.
- 02.24. Never engage in hostile actions against anyone while on campus.
- 02.25. Report all hostile actions of to an authority immediately.

### 03. Job Hazard Analysis

Employees and supervisors are encouraged to use this process to analyze their activities and recognize workplace hazards in order to take the necessary action to eliminate or control the hazards identified and or report them to management for corrective action. It also offers guidelines to help you conduct your own step-by-step analysis.

- 03.01. A hazard is the potential for harm. In practical terms, a hazard often is associated with a condition or activity that, if left uncontrolled, can result in an injury or illness. Identifying hazards and eliminating or controlling them immediately will assist in injury prevention and illness.
- 03.02. A job hazard analysis is a technique that focuses on job activities as a way to identify hazards before they occur. It focuses on the relationship between the employee, the activity, the tools, and the work environment. Ideally, after you identify uncontrolled hazards, you will take steps to eliminate or reduce them to an acceptable risk level.
- 03.03. A job hazard analysis is an exercise; your goal is to determine the following:
  - 03.03.01. What can go wrong?
  - 03.03.02. Who will be affected?
  - 03.03.03. How likely is it that the hazard will occur?
  - 03.03.04. What controls need to be in place?
  - 03.03.05. What are other contributing factors?
- 03.04. Job Hazard Analysis process forms are located in the Appendices of this program manual.



## 04. Incident Investigation

The purpose of incident investigation is to complete the process steps of collecting the evidence that leads to conclude a root cause, recommendations and implementation of corrective actions to prevent the reoccurrence of the incident. As safely practicable; the incident investigation process shall begin immediately after an incident by the employee(s) with either direct or indirect employee oversight of the activity.

### 04.01. Responsibilities

04.01.01. Responsibilities for incident investigation will be assigned prior to occurrence of an incident. The Primary Incident Investigation Team shall be designated with logical backup for each member of the team to respond to requests for incident investigation. Individual responsibilities for reporting and investigation must be pre-determined and assigned prior to incidents.

### 04.02. All Employees

04.02.01. Immediately report any near miss, non-injury, injury, suspected hazardous material exposure, job related illness, fatality, environmental spill and or damage to any property to their immediate supervisor. If their immediate supervisor is not available, the employee is then to immediately notify an authority designated by supervision.

NOTE: Employees who volunteer as first responders shall be trained and qualified in CPR/AED and or first aid techniques to control the degree of loss during the immediate post-incident phase.

### 04.03. Procedure

04.03.01. Immediately post incident; attending to all injured including securing transport and or emergency medical response to a medical facility; after a competent person and or command authority renders the location safe; the completion of assessed actions to prevent further loss shall occur at the location of the incident

NOTE: For example, emergency response personnel shall govern incident location activities until incident location is released for investigation; maintenance personnel should be summoned to assess integrity of buildings and equipment; engineering personnel to evaluate the need for bracing of structures and special equipment; response requirements such as safe rendering of hazardous materials.

### 04.04. Investigations of Incidents & Non-conformances

04.04.01. Investigation is a critical element of an effective safety program in that it determines the root cause and corrective actions necessary to prevent similar incidents or non-conformances. The process of investigation and implementation of corrective actions; once completed shall mistake proof the activity to eliminate any potential reoccurrence.

### 04.05. The following shall be reported to a supervisor and or designated authority immediately.

04.05.01. Near miss incidents with the potential to harm people, the environment or property.

04.05.02. Work related injury or illness.

04.05.03. Work related fatality.

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- 04.05.04. Property damage including vehicle incidents
- 04.05.05. Hazardous chemical spillage, loss of containment and or contamination
- 04.05.06. Non-conformance to human safety, environmental policies, procedures and or codes adopted to preserve and protect human life by any person on campus.
- 04.06. The supervisor shall make the necessary notifications and begin the incident investigation process.
- 04.07. In the case of all major injury or a fatality incident the scene of the event shall be closed off; barricaded and shall remain undisturbed from the exact time of the incident. This is vital for effective incident investigation.
- 04.08. Incident investigation occurs immediately, as soon as the incident location will allow, while the facts are still at the forefront of those involved. Take the opportunity to interview all involved before they become unavailable or memory fades.
- 04.09. An incident investigation shall be:
  - 04.09.01. Thorough and concerned with cause and prevention.
  - 04.09.02. A separate activity from any administrative disciplinary action.
- 04.10. Equipment
  - 04.10.01. Proper equipment will be available to assist in conducting an investigation. Equipment may include some or all of the following items; writing equipment such as pens, paper, measurement equipment, cameras, small tools, audio recorder, PPE, flags, equipment manuals, etc. Incident Investigation Team shall have an incident investigation kit prepared in advance.
- 04.11. Incident Notification Matrix
- 04.12. The Incident Notification Matrix identifies, based on type of incident, who within supervision shall be verbally notified and when. It also specifies which type of report from the field shall be completed based on the type of incident.
  - 04.12.01. Reporting of the incident shall occur in a specified manner based on site specific requirements and the reporting sequence shall be posted.
- 04.13. Incident Notification Matrix

Type of Incident	Who to Notify Verbally	When	Incident Report Form
First Aid Injury Remain on campus	Supervisor or designated authority	ASAP	
First Aid Medical Attention Injury Self or assisted transport Off campus	Supervisor or designated authority	ASAP	

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Type of Incident	Who to Notify Verbally	When	Incident Report Form
Medical Attention Injury Assisted transport Off campus	Supervisor or designated authority	ASAP	
Medical Attention Injury Emergency transport Off campus	911 Supervisor or designated authority	Immediately	
Fatality	911 Supervisor or designated authority	Immediately	
Fire and/or Explosion	911 Supervisor or designated authority	Immediately	
Reportable Spill	Environment, Health & Safety Department Supervisor or designated authority	ASAP	
Non-Injury Property and/or Vehicle Damage	Supervisor or designated authority	<24 Hours.	

### 04.14. Time Elements for Notification

04.14.01. Incidents shall be verbally reported to the proper authority as soon as possible. Incident reports shall be completed and submitted by employee and supervisors as soon as possible or within 24 hours of incident.

### 04.15. Incident Investigation Team and Incident Investigation Report

04.15.01. All incidents shall be investigated to the appropriate level with regard to incident severity. While all incidents shall be investigated, the extent of such investigation shall reflect the seriousness of the incident utilizing a root cause analysis (RCA) process or other similar methodology. The Incident Investigation Team shall participate in the determination of the root cause for inclusion in the final incident report.

### 04.16. Initial Identification and Assessment of Evidence

04.16.01. Initial identification of evidence immediately following the incident shall include a listing of affected employees, victims, witnesses, equipment, and materials involved and a recording of environmental factors such as workplace conditions, activity scope, weather, illumination, temperature, noise, ventilation, etc.

### 04.17. Collection, Preservation and Security of Evidence

04.17.01. Evidence such as positions of people, positions of equipment, tools, parts, and papers shall be preserved, secured and collected through notes, photographs, witness

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statements, flagging, and impoundment of documents and equipment. All shall be photographed with date affixed to evidence items.

### 04.18. Witness Interviews and Statements

04.18.01. Witness interviews and statements shall be collected. Witness statement shall be taken separate from others in a location that is conducive for an interview while gathering information. Locating witnesses, ensuring unbiased testimony, obtaining appropriate interview locations, and use of trained interviewers asking the same series of investigative questions shall be detailed. The need for follow-up interviews shall also be addressed. All items shall be dated.

### 04.19. Preparation of the Written Incident Report

04.19.01. Written incident reports shall be prepared; include the Incident Report with a detailed narrative statement concerning the events. The format of the narrative report may include an introduction, methodology, summary of the incident, Incident Investigation Team member names, narrative of the event, findings and recommendations. Photographs, witness statements, drawings, etc. shall be included where deemed permissible by policy.

### 04.20. Supervisors In Charge

04.20.01. Provide emergency assistance, as needed and qualified for.

04.20.02. Secure the area as quickly as possible to retain area in the same condition at the time of the incident

04.20.03. Notify management by phone.

04.20.04. Identify potential witnesses

04.20.05. Use investigation tools, as needed (camera, drawings, video, etc.)

04.20.06. Tag out for evidence any equipment that was involved

04.20.07. Interview witnesses (including the affected employee(s)) and obtain written, signed statements

04.20.08. Prepare Incident Report, sign the form.

04.20.09. Implement any immediate corrective actions needed

### 04.21. Incident Investigation Team

04.21.01. Shall provide documentation of lessons learned.

04.21.02. Shall review similar activities to determine if existing safety procedures accurately reflect the control measures of potential hazards to prevent further occurrence. Lessons learned shall be reviewed and communicated to all employees. Changes to procedures shall be placed into effect to prevent reoccurrence or similar events.

04.21.03. In order to communicate incident information and lessons learned from incidents The Incident Investigation Team shall send the Incident Notice to all department supervisors

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for review and posting. The form shall be posted on employee bulletin boards and shall be discussed in safety meetings until all employees have been informed of the incident.

### 04.22. Corrective Actions Resulting from Incident Investigations

- 04.22.01. Incident investigations shall result in corrective actions, individuals shall be assigned responsibilities relative to the corrective actions and these actions shall be tracked to closure.
- 04.22.02. Supervisors are held accountable for closing corrective actions. Corrective actions for safety improvement input are posted and tracked by the Incident Investigation Team to ensure timely follow up and completion.
- 04.22.03. Corrective actions shall also be used as needed for revisions to specific standard operating procedures and Physical Plant Safety Program Management.
- 04.22.04. The final incident investigation report consists of findings with activity summary, critical factors, evidence, root cause, recommended corrective actions, responsible parties, and timelines for corrective action completion.

### 04.23. Results of incident investigations; based upon severity; are communicated to employees via the following methods:

- 04.23.01. All employee safety stand down
- 04.23.02. Departmental safety meeting
- 04.23.03. Safety bulletin
- 04.23.04. Email
- 04.23.05. Electronic broadcast

### 04.24. Notification means shall insure all employees are alerted of the incident investigations results where required.

### 04.25. Training

The Incident Investigation Team shall insure the investigative team members are trained in their responsibilities and incident investigation techniques. Training requirements relative to incident investigation and reporting are described below:

- 04.25.01. The initial investigation at the incident scene
- 04.25.02. Managing information:
  - 04.25.02.01. Collection
  - 04.25.02.02. Recording
  - 04.25.02.03. Retention
  - 04.25.02.04. Analyzing
- 04.25.03. Developing Judgment of Cause and Conclusions

04.25.04. Developing Corrective Action Plans

04.25.05. Reporting the Results

Note: AED/CPR (voluntary enrollment only-not required to serve on investigative team)

## **05. Contractor Responsibilities**

- 05.01. The below four major elements of safety management that apply to all contractors performing work on campus property:
  - 05.01.01. Management commitment and employee involvement.
  - 05.01.02. Worksite analysis.
  - 05.01.03. Hazard prevention and control.
  - 05.01.04. Safety & health training.
- 05.02. It is expected that all contractors work within the requirements of the OSHA regulations.

## **06. Fire Prevention**

Fire prevention is not handling a fire emergency, but rather preventing a fire in the first place. To reduce the likelihood of a fire, employees shall adhere to the following rules:

- 06.01. Smoking is allowed only in designated areas and smoking materials shall be totally extinguished and placed in the appropriate receptacles.
- 06.02. All chemical products shall be handled and stored in accordance with the procedures noted on their individual safety data sheet.
- 06.03. Heat producing equipment shall be properly maintained and operated per the manufacturer's instructions to prevent unintended ignition of combustible materials.
- 06.04. Precautions shall be taken when working with an open flame and those areas shall be made fire safe by removing or protecting combustibles from ignition.
- 06.05. Combustible liquids shall be stored in approved containers.
- 06.06. Chemical spills shall be cleaned up immediately. This is particularly important for combustible and reactive liquids. Damaged chemical containers and cleanup materials shall be properly disposed.

Note: Information on appropriate personal protective equipment; proper disposal; proper cleanup procedures; required ventilation, etc. is found on the product's safety data sheet.

- 06.07. Combustible liquids and trash shall be segregated and kept from ignition sources.
- 06.08. Keep clear access to fire hydrants as well as portable fire extinguishers.
- 06.09. Employees shall notify their Supervisor of any unusual fire hazard conditions existing in the workplace.
- 06.10. If a fire should occur, all personnel and the local fire department shall be notified. As in all emergency situations, employees calling the fire department shall:
  - 06.10.01. Remain calm.
  - 06.10.02. Speak clearly and slowly.
  - 06.10.03. Give the exact location.
  - 06.10.04. Describe the situation.
  - 06.10.05. Give the phone number from where you are calling.
  - 06.10.06. Do not hang up until told to do so.



## **07. Housekeeping**

Employees shall maintain a neat and orderly work area. Housekeeping and general cleanliness have a direct effect on safety and health. Proper housekeeping can prevent slips, trips and falls; allowing easy egress in the event of an emergency, prevent falling object injuries and enhance fire safety. Below listed are general housekeeping rules:

- 07.01. Walking and working surfaces shall be kept clean and dry.
- 07.02. Do not allow construction debris to accumulate.
- 07.03. Stored materials shall be neatly stacked at the job site.
- 07.04. Containers, when not in use, shall be sealed.
- 07.05. No objects shall be left unattended on stairways.
- 07.06. Entrances and exits shall be properly marked and not blocked.
- 07.07. Tools shall be properly cleaned, stowed and secured after use.

## **08. Slip, Trip, and Fall**

Slips, trips, and falls are among the most common workplace incidents and they are easily preventable. Not assessing the path of travel before proceeding is a contributing factor to all loss of balance, traction and grip. Below are causes of slips, trips, and falls:

- 08.01. Footwear that is not suitable for working conditions.
- 08.02. Improper assessment of path of travel
- 08.03. Failure to properly steady oneself during travel.
- 08.04. Rushing
- 08.05. Carrying an object that blocks line of vision.
- 08.06. Messy work areas with debris strewn about.
- 08.07. Not using fall restraint or arrest devices
- 08.08. Working off a ladder that is not correct for the activity and or firmly positioned.

## 09. Vehicle Safety

The purpose of this procedure is to ensure that employees operate vehicles in a safe manner and in compliance with federal, state and University of Wisconsin-Madison regulations. This procedure applies to all employees that drive state owned vehicles and personal vehicles for state business. For those who operate a personally owned vehicle on University of Wisconsin-Madison property; the same procedures apply as it relates to the rules of operation.

### 09.01. Definitions

09.01.01. State Vehicle: A vehicle owned by the State of Wisconsin for use to conduct official state business. A state vehicle also includes a commercially leased or rented vehicle that is assigned to an individual, agency or business sub unit for use to conduct official state business.

### 09.02. Requirements:

09.02.01. Shall have a valid operator's license,

09.02.02. Shall have minimum of two years licensed driving experience, and

09.02.03. Shall be eighteen (18) years of age.

### 09.03. Vehicle Use Agreement:

09.03.01. The employee and their supervisor shall complete a Driver Authorization form and submit it to the Risk Management Office.

09.03.02. Link where form can be filled in online: [http://www.bussvc.wisc.edu/risk\\_mgt/DraftFacStaff\\_VUA\\_from%20website.pdf](http://www.bussvc.wisc.edu/risk_mgt/DraftFacStaff_VUA_from%20website.pdf)

09.03.03. Link to Statewide Fleet Policies and Procedures: <http://www.doa.state.wi.us/docview.asp?docid=3962>

### 09.04. Driver Disqualification:

09.04.01. Three or more moving violations and or at-fault incidents within the past two years.

09.04.02. An Operating While Intoxicated (OWI) Driving under the Influence (DUI) citation within 12 months.

09.04.03. Suspension or revocation of a valid driver's license.

#### 09.04.04. Using State Owned Vehicles:

09.04.04.01. Employees and passengers shall wear seat belts while the vehicle is in motion.

09.04.04.02. Employees shall report all mechanical problems to their supervisors immediately.

09.04.04.03. Employees shall report any motor vehicle incident that results in damage, injury and or a citation to their supervisors immediately.

09.04.04.04. Employees shall have a valid driver's license for the vehicles they will

operate, shall follow all license restrictions, and shall have their license in their possession when they are driving. A driver whose license is suspended, revoked or terminated will notify their supervisor immediately.

- 09.04.04.05. Employees are completely responsible for all traffic and parking violations they receive when using state vehicles.
- 09.04.04.06. Smoking is prohibited in state vehicles.
- 09.04.04.07. State vehicles shall not be used for personal purposes.
- 09.04.04.08. Texting while operating a moving vehicle is prohibited and illegal.

### 09.05. Cell Phone Use:

09.05.01. The following practices shall be followed when you use a mobile phone when you are driving:

- 09.05.01.01. Find a safe place to pull off of the road and place your call.
- 09.05.01.02. If you receive a call while driving, let the call go to voice mail and answer when it is safe to do so.
- 09.05.01.03. Employees who use hands-free devices may accept calls while driving but shall find a safe place to pull off of the road to place calls unless able to place calls hands-free.

### 09.06. 09.15. General Safe Driving Practices:

- 09.06.01. When driving for prolonged periods, it is a good practice to take short breaks every two hours.
- 09.06.02. It is also a safe practice to allow for no more than 10 hours driving per day in good driving conditions.
- 09.06.03. Use of electronic devices while driving can distract your attention while driving and distracted driving is never a good thing. Pre-set devices prior to driving or pull over to a safe location to re-adjust.

## 10. Abrasive Wheels

An abrasive wheel is defined as a cutting tool consisting of abrasive grains held together by organic (resin, rubber, shellac or similar bonding agent) or inorganic bonds. Hazards that present themselves during abrasive wheel operations include physical contact with the rotating wheel; destruction of the wheel, itself; inhalation of the bonding particles; being struck by flying fragments. All these hazards can be eliminated through adherence to appropriate machine guarding principles, appropriate PPE, and or respiratory protection.

- 10.01. Immediately before mounting, wheels shall be inspected and sounded (ring test) to ensure they have not been damaged. Ensure the spindle speed does not exceed the maximum operating speed noted on the wheel.
- 10.02. Ring Test: Wheel to be tested shall be dry and free from sawdust. Wheels should be tapped gently with a light nonmetallic implement, such as the handle of a screwdriver, or a wooden mallet for heavier wheels. If they sound cracked (dead), they shall not be used. It should be noted that organic bonded wheels do not emit the same clear metallic ring as do vitrified and silicate wheels. Tap the wheels about 45° each side of the vertical centerline and about one or two inches from the periphery. Rotate the wheel about 45° and repeat the test. A sound, undamaged, wheel will give a clear metallic tone.

### 11. Aerial Lifts

This applies to all owned or leased and or rented equipment which is designed to elevate personnel on a platform that is propelled by a powered lifting device, with the controls located on the platform itself. Examples of aerial platform lifts include single occupant lift, scissor lift and articulating boom type lifts.

#### 11.01. Definitions:

- 11.01.01. Aerial Lift Work Platform: Any powered, mobile device that may elevate, telescopically extend, articulate and may (or may not) rotate around a substantial axis in order to raise and support personnel to elevated job sites.
- 11.01.02. Articulating Boom Aerial Lift: This aerial lift has at least 2 hinged sections which are used to increase mobility.
- 11.01.03. "Personnel Lift" and or "Cherry Picker": This piece of equipment lifts personnel vertically, but not horizontally.
- 11.01.04. Scissor Lift: This piece of equipment lifts personnel vertically, but not horizontally.
- 11.01.05. Extendable and or Telescoping Aerial Lift: This aerial lift has a boom that extends horizontally and vertically.

#### 11.02. Shop Responsibilities

##### 11.02.01. Responsibilities Upon Purchase:

- 11.02.01.01. Ensure that the operating and maintenance manuals have been received.
- 11.02.01.02. Should acquire repair and parts manuals within 60 days of acquisition.
- 11.02.01.03. Provide the manufacturer of the lift with the name and address of the assigned department along with the model and serial number of the lift.
- 11.02.01.04. Place the operating and maintenance manual in a pouch or compartment on the lift.
- 11.02.01.05. Have all employee operators of the lift review the operating manual, fill out and sign the form titled "Operating Manual Acknowledgment Form" and return it to the department supervisor for documentation of record filing.

#### 11.03. Responsibilities Upon Lease and or Rental:

- 11.03.01. Ensure that the operating and maintenance manuals have been received.
- 11.03.02. Have all employee operators of the lift review the operating manual, fill out and sign the form titled "Operating Manual Acknowledgment Form" and return it to his/her supervisor for documentation.

#### 11.04. Maintenance, Inspection, and Repair:

- 11.04.01. Maintenance: The shop responsible for each aerial platform lift shall arrange for maintenance that is appropriate for the lift. The shop shall establish a preventive

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maintenance program based on the manufacturer's recommendations, the environment it is to be used in and the frequency at which it is to be used. Lift maintenance will be performed only by personnel qualified by education, training and or experience in aerial lift maintenance.

- 11.04.02. Inspection: The shop shall ensure that pre-start inspections, frequent inspections and annual inspections are being performed on the lift.
- 11.04.03. Repair: Defective items shall be tagged and placed out of service until the item(s) have been repaired and deemed safe for operation by a qualified entity. All replacement parts or components that are replaced shall be identical to or equivalent to the original parts based on information provided by the manufacturer or supplier.
- 11.05. Training:
  - 11.05.01. The "owning shop" is responsible for the completion and documentation of any training and qualification of all authorized users of the lift.
  - 11.05.02. Options include training from the manufacturer, vendor or other authorized training provider. No personnel shall operate an aerial lift unless qualified and authorized to do so. The shop supervisor is responsible for maintaining a record of each individual's training. FP&M training can assist with records verification.
- 11.06. Responsibilities Involving Contractors
  - 11.06.01. Shops shall not loan out lifts to contractors.
- 11.07. Record Retention for Owned Aerial Lift Platforms
  - 11.07.01. Each shop shall date and retain the following records for each aerial platform lift they own.
  - 11.07.02. Serial number and date of purchase (this shall be kept for as long as the department owns the lift).
  - 11.07.03. Written records of the frequent and annual inspections and repairs performed. This shall include deficiencies found, corrective actions taken and the identification of the person(s) who performed the inspection and repairs.
  - 11.07.04. Written records of repairs made on the lift.
  - 11.07.05. Training records for any employees trained in the maintenance of the aerial platform lift.
  - 11.07.06. Record Retention for Leased and or Rented Aerial Lift Platforms:
    - 11.07.06.01. Serial number and date of lease and or rental (this shall be kept for as long as the department leases and or rents the lift).
    - 11.07.06.02. Written records of the frequent and annual inspections and repairs performed. This shall include deficiencies found, corrective actions taken and the identification of the person(s) who performed the inspection and repairs.
- 11.08. Employee and or User Responsibilities

11.08.01. Because the user has direct control over the application and operation of aerial platform lifts, conformance with good safety practices in this area is the responsibility of the user and the operating personnel. Decisions on the use and operation of the lift shall be made with the understanding that the platform will be carrying personnel whose safety is dependent on those decisions. Users and operators of aerial platform lifts have responsibilities involving the following:

### 11.09. Inspection

11.09.01. Users shall inspect the aerial platform as required by their shop to ensure proper operation.

11.09.02. All users shall perform pre-start inspections on the lift prior to each day's use of the lift.

11.09.03. Documentation of the pre-start inspections shall be done by completing an "Aerial Platform Lift Pre-Start Inspection Form". Aerial platform lifts that are not in safe operating condition shall be immediately removed from service and reported to the appropriate shop supervisor. Keys shall be returned to the supervisor and a CAUTION: "Do Not Operate" tag shall be affixed to the unit stating, who tagged the unit, why it is tagged and who to contact for additional information.

### 11.10. Workplace Inspections

11.10.01. Prior to setting up the lift at each new location the user shall conduct a workplace inspection to identify potential hazards. See "Inspections" section of this procedure.

### 11.11. Training

11.11.01. Only trained employees shall operate or use aerial platform lifts.

11.11.02. Likewise, only trained and authorized employees shall perform maintenance duties on the lifts.

11.11.03. Operators: Operators shall be trained, qualified and authorized on the safe operation of aerial platform lifts prior to use. Only employees who successfully completed training and become authorized are allowed to operate aerial lifts.

11.11.04. Trainers: The training can be conducted by either a qualified trainer and or by a vendor who specializes in aerial lift training.

Note: A qualified trainer is someone who by either education and or experience is knowledgeable with the construction, inspection, hazards associated and the safe operation of aerial equipment.

11.11.05. Training Content: The training will consist of both classroom and hands-on. The format and content will include the following:

11.11.05.01. The purpose and use of manuals.

11.11.05.02. Pre-start inspection process.

11.11.05.03. Identification of malfunctions and problems.

11.11.05.04. Factors affecting stability.



- 11.11.05.05. Purpose of placards and decals.
- 11.11.05.06. Workplace inspections.
- 11.11.05.07. Safety rules and regulations.
- 11.11.05.08. Authorization to operate.
- 11.11.05.09. Operator warnings and instructions.
- 11.11.05.10. Demonstrated operational competency of the aerial platform.

### 11.12. Re-Evaluation:

- 11.12.01. Documented re-evaluation of each aerial lift operator shall be completed at once every three years.

### 11.13. Refresher Training:

- 11.13.01. The operator has been observed to be using the aerial lift in an unsafe manner.
- 11.13.02. The operator has been involved in an incident or near-miss incident.
- 11.13.03. The operator has received an evaluation that reveals the operator is not using the aerial lift safely.
- 11.13.04. The operator is assigned to operate a different type of aerial lift.
- 11.13.05. A condition in the workplace changes in a manner that could affect safe operation of the aerial lift.

### 11.14. Inspections

- 11.14.01. The inspection process is a critical step in preventing aerial lift incidents that are caused from faulty or worn out equipment. Aerial platform lifts that are not in proper operating condition shall be removed from service until the problems have been corrected by a qualified maintenance technician.

### 11.15. Pre-Start Inspection:

- 11.15.01. If the aerial lift is used daily, it is to be completed every day or shift. If the aerial lift is not used daily, it is to be completed prior to use. The purpose of the pre-start inspection is to make sure the aerial lift is in good working condition prior to use.
- 11.15.02. The pre-start is both a visual and functional inspection.
- 11.15.03. The prestart Inspection will include the following criteria:
  - 11.15.03.01. Operating and emergency controls.
  - 11.15.03.02. Safety devices.
  - 11.15.03.03. Personal protective devices.
  - 11.15.03.04. Air, hydraulic and fuel system leaks.

- 11.15.03.05. Cables and wiring harness.
- 11.15.03.06. Loose or missing parts.
- 11.15.03.07. Tires and wheels.
- 11.15.03.08. Placards, warnings, control markings and operating manuals.
- 11.15.03.09. Outriggers, stabilizers and other structures.
- 11.15.03.10. Guardrail system.
- 11.15.03.11. Other items specified by manufacturer.
- 11.15.03.12. The pre-start inspection is to be documented and can be documented using the inspection form in the Appendices of this program manual.

11.16. Workplace Inspections:

11.16.01. Before an aerial platform lift is used and during its use, the operator shall check the area in which the aerial platform lift is to be used for possible hazards such as, but not limited to:

- 11.16.01.01. Drop-offs or holes.
- 11.16.01.02. Slopes.
- 11.16.01.03. Bumps and floor obstructions.
- 11.16.01.04. Debris.
- 11.16.01.05. Overhead obstructions and high voltage conductors.
- 11.16.01.06. Hazardous locations and high voltage conductors.
- 11.16.01.07. Hazardous locations and atmospheres.
- 11.16.01.08. Inadequate surface and support to withstand all load forces imposed by the aerial platform lift.
- 11.16.01.09. Wind and weather conditions.
- 11.16.01.10. Presence of unauthorized people.
- 11.16.01.11. Other possible unsafe conditions.

11.17. Frequent Inspections:

- 11.17.01. To be completed quarterly.
- 11.17.02. To be completed by a qualified mechanic on that specific type of aerial lift. A qualified mechanic is one who, by possession of a recognized degree, certificate, or professional standing, or by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems related to the subject matter.

11.18. Includes the following:

- 11.18.01. All functions and their controls for speed(s) smoothness, and limits of motion.
- 11.18.02. Lower controls including the provisions for overriding of upper controls.
- 11.18.03. All chain and cable mechanisms for adjustment and worn or damaged parts.
- 11.18.04. All emergency lowering controls means and safety devices.
- 11.18.05. Lubrication of all moving parts, inspection of filter element(s), hydraulic oil, engine oil, and coolant as specified by the manufacturer.
- 11.18.06. Visual inspection of structural components and other critical components such as fasteners, pins, shafts and locking devices.
- 11.18.07. Placard, warnings and control markings.
- 11.18.08. Additional items specified by the manufacturer.
- 11.19. Annual Inspections:
  - 11.19.01. An annual inspection shall be performed on each aerial platform lift each year. The inspection shall be performed by a qualified mechanic who is authorized to perform maintenance duties on the lift. The inspection shall include all items specified by the manufacturer for an annual inspection.
- 11.20. Safe Operation of Aerial Platform Lifts
  - 11.20.01. To ensure safe practices, the following general procedures shall be followed when an authorized operator uses an aerial platform lift:
- 11.21. Safe Operating Procedures:
  - 11.21.01. Obtain any necessary authorization to use the lift.
  - 11.21.02. Check the last pre-start inspection for any comments or notes.
  - 11.21.03. Perform a pre-start inspection on the lift, document the inspection and place it in the reserved waterproof storage location on the lift.
  - 11.21.04. Perform a workplace inspection in the area that the lift will be used.
  - 11.21.05. Extend and adjust the outriggers, stabilizers, extendible axles, or other stability enhancing means if so equipped.
  - 11.21.06. Ensure that the guardrails are installed and are in place.
  - 11.21.07. Ensure that the load being placed on the lift is within the rated capacity of the lift.
  - 11.21.08. Test the controls of the lift.
  - 11.21.09. If there are mechanical or safety issues that make the use of a lift unsafe discontinue use. Notify the department supervisor immediately and tag the unit out of service.
  - 11.21.10. Ensure that all personnel on the lift have been trained and authorized to operate or work on the platform.

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- 11.21.11. Ensure the lift operator has either a radio, cell phone or other person on the ground to communicate with, in case the lift has mechanical problems.
- 11.21.12. When using lifts in high traffic areas (pedestrians or vehicles), the area around the base of the aerial lift shall be cordoned off as well as the area below the platform or basket.

### 11.22. Fall Protection:

- 11.22.01. All lifts designed to the required ANSI standard have fall protection systems to anchor to incorporated into their design.
- 11.22.02. Top and mid rails shall never be altered without expressed written permission from the manufacturer.
- 11.22.03. Movable chains or bars provided at access points shall be attached or properly placed in order to maintain the protective system.
- 11.22.04. The operator shall always be within the protective system (i.e. feet on the floor and not overreaching beyond the guardrail system).
- 11.22.05. Fall arrests systems (full body harness and shock absorbing lanyard) are required for boom and articulating lifts and if specified by the lift's operating manual.

### 11.23. Scissor Lift Fall Protection

- 11.23.01. Employees using this type of lift shall use fall protection. It is not a regulatory requirement, but requires consideration when working aloft from any aerial lifts.
- 11.23.02. Fall protection is provided by employees maintaining firm footing on the lift and using guardrails. Under no circumstances are employees to place ladders or other items on the lift to extend their reach. Use of these items negates the value of the guardrail system and may possibly exceed the scissor-lift's design limits for stability.
- 11.23.03. Personnel shall not to tie off to items adjacent to the lift.

### 11.24. Electrical Hazards:

- 11.24.01. Aerial lifts shall not be operated within 25 feet of overhead power lines unless the operator is a qualified person in electrical activities and has the training, knowledge, applicable electrical protective equipment and tools necessary to work in close proximity to energized electrical equipment.
- 11.24.02. This 25-foot clearance applies to any part of the lift, the furthest extent of the operator, and any extendable tools, materials, and equipment in use.
- 11.24.03. When electrically qualified persons are operating within the 25-foot clearance area, personnel on the ground shall not be in contact with any part of the aerial lift.
- 11.24.04. If the boom is insulated, it shall be maintained in accordance with manufacturer recommendations and insulating qualities verified by annual dielectric testing.
- 11.24.05. Six 36 inch orange safety cones with "Warning - Equipment May Become Energized" notification labels shall be distributed around the perimeter of the aerial lift until the activity is completed.

- 11.24.06. In high traffic areas, an attendant should be present to control traffic and assist as a “ground person” to the employee working aloft.
- 11.25. Adverse Weather Conditions:
  - 11.25.01. Aerial lifts operated outdoors should not be used in adverse weather conditions, such as approaching thunderstorms, high winds, or lightning in the area.
  - 11.25.02. See the aerial lift manual for high wind restrictions.
- 11.26. Fueling/Battery Charging
  - 11.26.01. Fueling or battery charging of the lift shall be conducted according to the manufacturer’s recommendations.
  - 11.26.02. No sparks or open flames in the area, and adequate ventilation shall be available.
  - 11.26.03. An ABC fire extinguisher shall be readily available.
- 11.27. Battery Charging
  - 11.27.01. When filling the water level of batteries the following personal protective equipment (PPE) at a minimum shall be worn: Safety goggles or face shield with safety glasses, acid resistant gloves and acid resistant apron.
  - 11.27.02. When filling the water level of batteries an emergency eye wash shall be readily available.
- 11.28. LP Fueling
  - 11.28.01. Signs shall be posted at fueling and or storage locations that state: “Danger – Propane, No Smoking or Open Flames” (or equivalent).
  - 11.28.02. Liquid Petroleum (LP) cylinders shall only be stored outside in a secured and protected designated rack or storage area.
  - 11.28.03. When removing and attaching the connection to the LP cylinder, the following PPE (at a minimum) shall be worn: Safety glasses and work gloves (leather or equivalent).
  - 11.28.04. LP cylinders shall be secured to the aerial lift before operating.
  - 11.28.05. LP cylinder connections shall be checked for leaks by the sound or smell of escaping gas.
- 11.29. Marking and Decals
  - 11.29.01. In addition to any other markings or decals that are placed on the lift by the manufacturer, the following information shall be displayed on all aerial platform lifts in a clearly visible, accessible area and in a durable manner:
    - 11.29.02. The make, model, serial number, and manufacturer’s name and address.
    - 11.29.03. The rated workload, including rated number of occupants.
    - 11.29.04. The maximum platform height.

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11.29.05. The shop which is assigned the lift and a shop point of contact with phone number.

11.30. 12.30. Record Retention

11.30.01. Maintenance, inspections and training records shall be maintained for equipment and operators.

11.30.02. Training records shall be maintained for a period of 5 years.

11.30.03. The following records shall be maintained by each shop who is assigned lift:

11.30.03.01. Workplace inspection documents shall be maintained for a period of one month after completion.

11.30.03.02. Pre-start inspection documents shall be maintained for a period of one month after completion.

11.30.03.03. Frequent inspection documentation shall be maintained for one year after completion.

11.30.03.04. Annual inspection documentation shall be maintained for five years after completion. The "Operating Manual Acknowledgement" form can be found in the Appendices of this program manual.

## 12. Combustible and Flammable Liquids

- 12.01. Only approved containers and portable tanks shall be used for storage and handling of flammable and combustible liquids. Approved safety cans or Department of Transportation approved containers shall be used for handling and use of flammable liquids in quantities of 5 gallons or less.

Note: The above does not apply to flammable liquid materials which are highly viscid (extremely hard to pour) which may be used and handled in their original shipping containers. For quantities of one gallon or less, the original container should be used for storage, use and handling.

- 12.02. Flammable or combustible liquids shall not be stored in areas used for exits, stairways, or normally used for the safe passage of people.
- 12.03. Inside a facility, no more than 25 gallons of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet.
- 12.04. Gasoline:
- 12.04.01. Gasoline fires shall be fought with an extinguisher that is rated for Class B Fires such as carbon dioxide, dry chemical, or foam. It should be noted that water spray may be used to cool containers that may be exposed to the heat of the fire to prevent an explosion.
  - 12.04.02. If there is a spill, notify emergency response personnel, evacuate area, remove ignition sources; build a dike to contain flow, do not flush to sewer or open water. Pick up with inert absorbent and place in closed container for disposal.
  - 12.04.03. Post “No Smoking” signs around gasoline storage and ensure that it is enforced. Use only approved plastic or metal containers for portable gasoline carriers. They shall not contain more than 5 gallons.

### 13. Compressed Gas Cylinders

- 13.01. Cylinder contents shall be identified by a decal, label, tag, or stenciling (all referred to herein as labeling). If an identifying label is lacking or not legible, return the container to the supplier, unused.
- 13.02. Industrial gas containers are equipped with outlet connections that are in accordance with “Compressed Gas Association’s” standard for “Compressed Gas Cylinder Valve Outlet and Inlet Connections.” Such fittings are designed to prevent the connection of a gas container to a gas system with an incompatible gas. Never circumvent this protection by utilizing adapters.
- 13.03. Never abuse gas cylinders by using them for rollers, blocks, striking arcs, etc.
- 13.04. Never attempt to lift cylinders by the valve protection cap.
- 13.05. Always move large cylinders with a hand-truck specially designed for transporting cylinders.
- 13.06. Do not store or transport compressed gases in closed vans or automobiles.
- 13.07. Always secure cylinders in transit or in storage to insure against their tipping over.
- 13.08. Always use a pressure reducing regulator that is properly conditioned for the gas being used.
- 13.09. Never attempt to transfer gas from one cylinder to another, or mix any gases in a cylinder.
- 13.10. Storage Requirements
  - 13.10.01. Store all cylinders in designated areas that are secured.
  - 13.10.02. Flammable toxics and Oxygen (or any Oxidizer) shall be separated from each other by a distance of at least 20 feet, or by a non-combustible barrier at least 5 feet high having a fire resistance rating of at least one-half hour. Inert gases (Argon, Nitrogen, Helium, Carbon Dioxide), since they are chemically inert and compatible with all other gases, may be used within the separation distance.
  - 13.10.03. Outdoor storage shall be kept clear of dry vegetation and combustible materials for a minimum distance of 15 feet.
  - 13.10.04. Cylinders stored outside shall not be placed on the ground (earth) or on surfaces where water can accumulate.
  - 13.10.05. Storage areas shall be provided with physical protection from vehicle damage.
  - 13.10.06. Do not store cylinders near elevators, truck loading platforms, gangways, or under operating cranes, or other areas where they can be damaged by falling objects.
  - 13.10.07. Cylinders shall not be exposed to temperatures in excess of 125F.
  - 13.10.08. Smoking and open flames shall not be permitted in Oxygen and flammable gas storage areas or within 20 feet of such areas.
  - 13.10.09. Observe local codes limits set for the storage of flammable gases in buildings.
- 13.11. Transportation of Cylinders



- 13.11.01. When transporting compressed gas cylinders, the following rules shall be followed at all times:
- 13.11.01.01. Ensure cylinders are properly labeled as to the contents;
  - 13.11.01.02. Regulators shall be removed and valve protection caps put in place before the cylinder is moved;
  - 13.11.01.03. Do not lift or move the cylinder by the cap;
  - 13.11.01.04. Do not subject cylinders to rough handling or abuse;
  - 13.11.01.05. Cylinders should only be transported in freight/cargo elevators only, not on passenger elevators;
  - 13.11.01.06. Never roll or drag a cylinder when transporting;
  - 13.11.01.07. Firmly secure and move cylinders with a suitable hand truck, lift truck, or crane with a cradle or platform;
  - 13.11.01.08. Always secure cylinders with a strap or chain when using a designated cart; and
  - 13.11.01.09. Only one cylinder should be handled at a time unless a two cylinder cart is used and each cylinder is restrained by its own chain.

## 14. Concrete and Masonry Construction

- 14.01. For the safety of all employees, the following procedures shall be followed:
- 14.01.01. Limited or controlled access zones will be restricted to employees who have actual activity responsibilities within the established zones.
  - 14.01.02. Employees shall not work under concrete buckets while they are being elevated or lowered into position.
  - 14.01.03. Employees, except those required for the job, are not allowed under precast concrete members while they are being lifted or tilted into position.
  - 14.01.04. Personal protective equipment, determined by a supervisor and or employee shall be used without fail. It should be noted that when cement is mixed with water, a highly alkaline solution is produced by the dissolution of calcium, sodium, and potassium hydroxides. Gloves shall be worn to protect the skin. Hands shall be washed after contact. Head, face, eye and body personal protective equipment shall be worn by employees applying a cement, sand, and water mixture through a pneumatic hose.
  - 14.01.05. Employees shall not be allowed to perform maintenance on any equipment where the unexpected activation of that equipment could cause harm without following the Control of Hazardous Energy Plan.
  - 14.01.06. Concrete mixers with one cubic yard or larger loading skips shall be equipped with a:
    - 14.01.06.01. Mechanical device to clear the skip of materials.
    - 14.01.06.02. Guardrail installed on each side of the skip.

NOTE: Regardless of the size of the skip, point of operation guarding shall be utilized.

### 14.02. Concrete Cutting

Only trained, qualified and authorized personnel shall operate concrete tile cutting equipment. The following guidelines shall be used during all concrete cutting operations:

- 14.02.01. Follow the manufacturer's recommendations for the safe use of the equipment.
- 14.02.02. Use the correct blade (size, type, speed) for the job, properly tightened. Inspect the blade and all equipment before use.
- 14.02.03. Ensure all safety guards are functioning properly.
- 14.02.04. Never operate a hand held saw above shoulder height.
- 14.02.05. Wear proper personal protective equipment including head, hearing, eye, hand and skin protection. Depending on the activity, respiratory protection should be used.
- 14.02.06. Establish a control zone and keep others out who are not directly involved with the work at hand.
- 14.02.07. Ensure there is adequate coolant water for the equipment where appropriate.
- 14.02.08. Never operate an internal combustion saw in an enclosed space.

## 15. Gantry or Stationary Cranes and Hoists

This procedure prescribes the requirements for operational controls to provide guidance on the safe use of crane and hoist equipment to prevent injuries and property damage.

### 15.01. Definitions:

- 15.01.01. Below the Hook Device: Any device that is attached to the hook of the hoist on one end and attached to the object lifted on the other end, also called rigging.
- 15.01.02. Qualified and Authorized Employee: An employee trained by a qualified and authorized contractor or employee in hoist and crane operation and inspection. A certified employee or contractor has been deemed is one through either certification; education or experience is deemed competent by an employer in the safe use and operation of cranes and hoists.
- 15.01.03. Crane: A machine for lifting and lowering a load and moving it horizontally, with the hoisting mechanism an integral part of the machine.
- 15.01.04. Hoist: A machinery unit that is used for lifting or lowering a freely suspended (unguided) load.
- 15.01.05. Slings: Slings are used in conjunction with other material handling equipment for the movement of material by hoisting. Slings include those made from alloy steel chain, wire rope, metal mesh, natural or synthetic fiber rope and synthetic web.

### 15.02. 12.49. Service Classification

- 15.02.01. Normal service: Service that involves operating at less than 85% of rated load and not more than 10 lift cycle per hour except for isolated instances.
- 15.02.02. Heavy service: Service that involves operating at 85 to 100% of rated load or in excess of 10 lift cycles per hour as a regular specified procedure.
- 15.02.03. Severe service: Service that involves handling load approaching the rated capacity or in excess of 20 lift cycles per hour and or abnormal operating conditions.

### 15.03. Training

- 15.03.01. Awareness Level: All employees who may be affected by the operation of hoists and cranes shall have awareness level training and periodic re-fresher training.
- 15.03.02. Operator Level: All hoist and crane operators shall be trained, qualified and authorized by a qualified trainer on the inspection, operation and rigging of loads for cranes and hoists. User level training should include both classroom and hands on evaluations.
- 15.03.03. Retraining will occur at periodic intervals (at minimum 3 years) and whenever it appears that personnel should have refresher training. User Level instructors may also be authorized to train by a qualified trainer.

### 15.04. Inspections

15.04.01. Initial inspection. Refers to the first time a site's crane and hoist equipment has been inspected. An initial inspection shall be conducted before using any new, reinstalled and altered crane to ensure safety and compliance.

15.04.02. Initial inspections elements and operational tests shall include, but are not limited to:

15.04.02.01. lifting and lowering

15.04.02.02. trolley travel

15.04.02.03. bridge travel

15.04.02.04. limit switch, locking and safety devices

15.04.02.05. Load test. Only on new, reinstalled and altered cranes should be load tested prior to initial use, as determined by a qualified and authorized employee or contractor.

15.04.02.06. Any other items determined by a qualified and authorized employee or contractor.

### 15.05. Daily Inspections

15.05.01. Refers to a reoccurring visual inspection that is performed every day or every shift by the operator if the crane or hoist is used daily. If a crane or hoist is not used daily, it is to be completed prior to operation. Operators shall be trained on how to perform daily inspections.

NOTE: In addition to the daily inspection, operators shall observe cranes, hoists, and riggings during operation to identify defects or safety or operational issues that may occur between inspections.

15.05.02. Daily inspections elements should include, but are not limited to:

15.05.02.01. All functional operating mechanisms.

15.05.02.02. Hooks, chains, slings and other below the hook lifting devices.

15.05.02.03. Any deterioration of the air or hydraulic system.

15.05.02.04. Any other items determined by a qualified and authorized employee or contractor.

### 15.06. Frequent Inspections

15.06.01. Refers to a recorded examinations by a qualified and authorized employee which frequency should be based on service classification (normal service, monthly; heavy service, weekly to monthly; severe service, daily to weekly.) The frequent inspections shall be completed by a qualified and authorized employee or contractor.

15.06.02. Frequent inspection elements should include, but are not limited to:

15.06.02.01. Operating mechanisms for proper operation, proper adjustment, and unusual sounds

15.06.02.02. Limit device(s)

- 15.06.02.03. Tanks, valves, pumps, lines, and other parts of air or hydraulic systems for leakage or deterioration.
- 15.06.02.04. Hooks and hook latches
- 15.06.02.05. Hoist ropes and end connections
- 15.06.02.06. Running Rope of proper spooling onto the drum(s) and sheave(s).
- 15.06.02.07. Running rope for any deterioration, resulting in loss of original strength.
- 15.06.02.08. Below the hook devices used with the hoist or crane.

### 15.07. Periodic Inspections

- 15.07.01. Refers to a recorded examinations by a qualified and authorized employee or contractor which frequency should be based on service classification (normal service, yearly; heavy service, yearly; severe service, quarterly).
- 15.07.02. Periodic inspection elements include, but are not limited to:
  - 15.07.02.01. Deformed, cracked or corroded members.
  - 15.07.02.02. Loose bolts or rivets.
  - 15.07.02.03. Cracked or worn sheaves and drums.
  - 15.07.02.04. Worn, cracked or distorted parts such as pins, bearings, shafts, gears, rollers, locking and clamping devices.
  - 15.07.02.05. Excessive wear on brake system parts.
  - 15.07.02.06. Load, wind, and other indicators over their full range, for any significant inaccuracies.
  - 15.07.02.07. Gasoline, diesel, electric or other power plants for improper performance.
  - 15.07.02.08. Excessive wear of chain drive sprockets and excessive chain stretch.
  - 15.07.02.09. Electric apparatus for signs of pitting or any deterioration of controller contactors, limit switches and pushbutton stations.
  - 15.07.02.10. Slings, chains and other below the hook lifting devices are to be checked for damage and defects.

### 15.08. Inspection Records

- 15.08.01. Written records are to be maintained for all initial, frequent and periodic inspections. Inspection records will include date of inspection, signature of person performing the inspection, identification number or other identifier of the device inspected and any findings from the inspection.

### 15.09. Crane and Hoist Safety Design Requirements

- 15.09.01. All crane, hoist and accessory lifting equipment shall meet the following design requirements:

- 15.09.02. All crane and hoist hooks shall have properly functioning safety latches.
- 15.09.03. Pendant control boxes shall be constructed and maintained to prevent electrical shock and shall be clearly marked for identification of functions.
- 15.09.04. Crane bridges and hoist monorails shall be labeled on both sides with the maximum capacity and the label shall be clearly legible from the ground or floor.
- 15.09.05. Each hoist-hook block shall be labeled with the maximum hook capacity, and the label shall be clearly legible from the ground or floor.
- 15.09.06. A device such as an upper-limit switch or slip clutch shall be installed on all building cranes and hoists. A lower-limit switch may be required when there is insufficient hoist rope on the drum to reach the lowest point.
- 15.09.07. All cab and remotely operated bridge cranes shall have a motion alarm to signal bridge movement. The motion alarm shall be used to signal motion.
- 15.09.08. All newly installed cranes and hoists, or those that have been altered, repaired or rebuilt structurally, shall have an initial inspection prior to be placed into service.

### 15.10. Crane and Hoist Overloading

- 15.10.01. The department shall establish procedures and or processes to ensure that cranes or hoists shall not be loaded beyond their rated capacity. Any crane or hoist suspected of having been overloaded shall be immediately removed from service.
- 15.10.02. Any cranes suspected of having been overloaded shall be inspected, repaired (if altered, repaired or modified, conduct a load test) and approved for use before being returned to service.

### 15.11. Operating Rules

Operators shall comply with the following rules while operating the cranes and hoists:

- 15.11.01. Do not engage in any practice that will divert your attention while operating the crane or hoist.
- 15.11.02. Where required, assign a single designated signal person before beginning the lift.
- 15.11.03. Respond to signals only from the person who is directing the lift, or any one appointed signal person.
- 15.11.04. OBEY a STOP signal at all times, no matter who gives it.
- 15.11.05. Do not move a load over people. People shall never be placed in jeopardy by being under a suspended load. Nobody shall ever work or be located under a suspended load.
- 15.11.06. A crane or hoist operator shall remain at the controls while the load is suspended.
- 15.11.07. Ensure that the rated load capacity of a crane's bridge, individual hoist, or any sling or rigging is not exceeded. Know the weight of the object being lifted.
- 15.11.08. If spring-loaded reels are provided to lift pendants clear off the work area, ease the pendant up into the stop to prevent damaging the wire.

- 15.11.09. Cranes shall not be used for side pulls.
- 15.11.10. To prevent shock loading, avoid sudden stops or starts. Shock loading can occur when a suspended load is accelerated or decelerated, and can overload the crane or hoist. When completing an upward or downward motion, ease the load slowly to a stop.
- 15.11.11. The hoist chain or rope shall be free from kinks or twists and shall not be wrapped around the load.
- 15.11.12. The load shall be attached to the load block by means of rigging or other approved devices.
- 15.11.13. The sling and load shall clear all obstacles and shall be evaluated to determine such clearance before hoisting, lowering, or movement.
- 15.11.14. Never use a hoist or crane to lift personnel.

### 15.12. Moving a Load

Operators shall comply with the following rules while moving a load using cranes and hoist equipment:

- 15.12.01. Center the hook over the load to keep the cables from slipping out of the drum grooves and overlapping, and to prevent the load from swinging when it is lifted.
- 15.12.02. The hook shall be brought over the load in such a manner as to prevent swinging.
- 15.12.03. The hoist limit switch which controls the upper limit of travel of the load block shall never be used as an operating control.
- 15.12.04. Two or more cranes shall not be used to lift a load unless a competent person is placed in charge of the operation. The competent person shall, in advance of the operation, analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and movements to be made, in addition to all safety measures to be taken.
- 15.12.05. Use a tag line when loads shall traverse long distances or shall otherwise be controlled. Manila rope may be used for tag lines.
- 15.12.06. Plan and check the travel path to avoid personnel and obstructions.
- 15.12.07. Ensure that the hoist rope or chain is not damaged or kinked.
- 15.12.08. Ensure that multiple part lines are not twisted around each other.
- 15.12.09. If the load being lifted approaches the rated load for the crane or hoist, test the brakes by raising the load a few inches and applying the brakes.
- 15.12.10. The load shall not be lowered below the point where less than two full wraps of rope remain on the hoisting down.
- 15.12.11. Lift the load only high enough to clear the tallest obstruction in the travel path.
- 15.12.12. Start and stop slowly, and ensure that there is no sudden acceleration or sudden stop of the moving load.



- 15.12.13. Choose a safe landing area. Land the load when the move is finished.
- 15.12.14. Never leave suspended loads unattended. In an emergency where the crane or hoist has become inoperative, if a load must be left suspended, barricade and post signs in the surrounding area, under the load, and on all four sides. An attendant shall remain at the work site until the load can be safely lowered and to maintain safe control of the site.
- 15.12.15. Hoisting, lowering, or traveling is prohibited while any employee is on (or in immediate proximity of) the load or hook.

### 15.13. Rigging Loads

- 15.13.01. Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary to ensure that it is in serviceable condition. Defective rigging equipment shall be tagged and removed from service.
- 15.13.02. Rigging equipment not in use shall be removed from the immediate work area to eliminate the hazards it may create for other employees.
- 15.13.03. All employees shall keep clear of loads that are about to be lifted as well as suspended loads.
- 15.13.04. Operators shall comply with the following rules while rigging cranes and hoist equipment:
  - 15.13.04.01. Determine the weight of the load.
  - 15.13.04.02. Determine the proper size and capacity for slings and components. Review angle capacity according to mode of use (basket, vertical, choke).
  - 15.13.04.03. Do not use manila rope (natural fiber rope) for rigging. Use only proper rigging materials and equipment.
  - 15.13.04.04. Make sure that shackle pins and shouldered eye bolts are installed in accordance with the manufacturer's recommendations.
  - 15.13.04.05. Use safety hoist rings (swivel eyes) as a preferred substitute for eye bolts wherever possible.
  - 15.13.04.06. Pad sharp edges to protect slings.
  - 15.13.04.07. Wood, tire rubber, or other pliable materials may be suitable for padding. Use only proper padding materials.
  - 15.13.04.08. Do not use slings, eye bolts, shackles, or hooks that have been cut, welded, repaired, or brazed.
  - 15.13.04.09. Install wire-rope clips with the base only on the live end (load side) and the U-bolt only on the dead end (no-load side). Follow the manufacturer's recommendations for the spacing for each specific wire size.
  - 15.13.04.10. Determine the center of gravity and balance the load before moving it.
  - 15.13.04.11. Initially lift the load only a few inches to test the rigging and balance.
  - 15.13.04.12. When using slings made from alloy steel chain, wire rope, metal mesh,



natural or synthetic fiber rope (conventional three strand construction), and synthetic web (nylon, polyester, and polypropylene), the following safe operating practices shall be observed:

- 15.13.04.12.01. Slings shall not be shortened with knots or bolts or other makeshift devices.
- 15.13.04.12.02. Sling legs shall not be kinked.
- 15.13.04.12.03. Slings used in a basket hitch shall have the loads balanced to prevent slippage.
- 15.13.04.12.04. Slings shall be padded or protected from the sharp edges of their loads.
- 15.13.04.12.05. Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load.

### 15.14. Working Under Loads is Strictly Prohibited

- 15.14.01. All loads shall be rigged by a certified rigger.
- 15.14.02. Routes for suspended loads shall be pre-planned to ensure that no employee is required to work directly below a suspended load.

### 15.15. Hoisting

- 15.15.01. All control mechanisms for maladjustments.
- 15.15.02. Control and drive mechanism for excessive wear of components and contamination.
- 15.15.03. Crane safety devices.
- 15.15.04. Air, hydraulic, and other pressurized lines and systems for condition.
- 15.15.05. Hooks and latches for deformation, chemical damage, cracks, or wear.
- 15.15.06. Wire rope travel and attachment.
- 15.15.07. Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, or moisture accumulation.
- 15.15.08. Ground conditions.
- 15.15.09. Leveling.
- 15.15.10. Only a qualified person can inspect the rigging.

### 15.16. Crane - Hoist Daily Checklist Form and the Crane - Hoist Frequent Inspection Form can be found in the Appendices of this program manual.

## 16. Demolition

Demolition work presents specific hazards that are not normally found on typical job sites. These hazards include, but are not limited to:

- 16.01. The actual collapse of all or a portion of a structure being demolished. Prior to demolition operations, a structural engineer and or competent person shall determine, and document in writing, the condition of the framing, floors, walls, and assess the possibility of an unplanned collapse of any portion of the structure. If appropriate, adjacent structures where employees may be exposed to danger shall be checked by a competent person. Wall and floors shall be braced and or shored if employees are to perform work in a structure to be demolished that has been damaged by fire, flood, and or explosion.
- 16.02. Explosion, electrocution, hazardous atmospheres. Prior to demolition work all electric, gas, water, steam, sewer, and other service lines shall be controlled before demolition work is started. In each case; as required, a utility company which is affected shall be notified in advance.
- 16.03. A competent person shall determine if hazardous materials, chemicals, gases, explosives, flammable materials, etc. are in pipes, tanks, or other equipment are present on the property. If apparent or suspected, testing and verification of hazard control shall be performed before demolition is started.
- 16.04. Shattering glass.
- 16.05. Falling debris.
- 16.06. Personnel falling through holes or wall openings.

NOTE: If an abatement contractor has abated hazardous material from a building, supervisors shall obtain written documentation from the abatement contractor verifying that all the materials in question have been properly removed and appropriate air and or wipe clearance testing has been completed by a competent person.

## **17. Earth Moving Equipment**

- 17.01. All heavy equipment shall be inspected prior to use and operated only by qualified and authorized personnel.
- 17.02. Bi-directional machines such as front-end loaders shall have an audible alarm, distinguishable from the surround noise level which shall be used if the operator does not have a clear, unobstructed view or a ground guide indicating that the line of travel is safe.
- 17.03. Scissors points on all front-end loaders which may harm the operator shall be guarded as well as all parts exposed to employees such as belts, gears, pulleys, sprockets, spindles, drums, flywheels, chains and other moving parts.
- 17.04. Equipment that is operated from the seated position and has roll over protection shall have seat belts and their use is required. If there is no roll over protection, seat belts shall not be used.
- 17.05. All trucks into which earth is dumped shall have protection for the driver of that vehicle or the driver shall exit the vehicle before loading.
- 17.06. Vehicle operators shall not operate heavy equipment on any access roadway or grade that is not suitable for the vehicle.
- 17.07. Loader buckets, dump bodies and similar equipment shall be fully lowered or blocked to prevent movement during maintenance or when not in use.
- 17.08. When equipment is parked, the parking brake shall be set and wheels chocked to prevent unintended movement.
- 17.09. On inclines, wheeled vehicles shall be chocked always.
- 17.10. Equipment left unattended at night, adjacent to either a highway or construction area in use, will be clearly visible with reflectors and or lights; or illuminated barricades.

## 18. Common Electrical Safety

- 18.01. Daily, prior to use, all electrical equipment including extension cords shall be inspected prior to use. Defective equipment shall be tagged out of service and either repaired or destroyed.
- 18.02. With the exception of double insulated tools (with UL approval), all electrical tools and equipment shall be grounded.
- 18.03. Tools shall not be hoisted by their flexible electrical cords.
- 18.04. Except in an emergency, load rated switches and circuit breakers shall be used for the opening and closing of circuits under load conditions as opposed to fuses and splice connections.
- 18.05. While working on electrical equipment, unqualified persons shall be kept clear by barricades, barriers, safety monitors or other means of guarding.
- 18.06. Temporary wiring and extension cords shall be kept off of walking working surfaces and vehicle traffic areas; secured or covered to prevent tripping and vehicle damage.
- 18.07. Electrical cords shall not be suspended with staples, hid under temporary floor coverings, hung from nails, or suspended by wire.
- 18.08. Worn or frayed electric cords or cables shall not be used.
- 18.09. Hands and hand protection shall be dry when working on electrical equipment including plugging in extension cords.
- 18.10. Areas in which electrical work is to be done shall be adequately illuminated and temporary lighting shall:
  - 18.10.01. Have guards in place.
  - 18.10.02. Not be suspended by its cords unless specifically designed for such installation.
  - 18.10.03. A qualified and or competent person; before work commences, shall inform all employees in the work area of both exposed and concealed electrical hazards. If appropriate, warning tags shall be used to prevent unintended contact with electrical energy.
- 18.11. When working around any electrical power circuit, employees shall:
  - 18.11.01. Apply the proper Electrical Protective Equipment before work begins on any electrically energized parts.
  - 18.11.02. Administer all applicable Lock out Tag out Procedures.
  - 18.11.03. De-energize the equipment, system, and or machines; apply a ground where required and.
  - 18.11.04. Ensure that any conductive materials and equipment that are in contact with any part of the body will be handled in a manner that will preclude contact with exposed energized equipment, conductors or circuit parts.
  - 18.11.05. Use portable ladders that have non-conductive side rails.

18.11.06. Remove or insulate conductive articles of jewelry and clothing that might contact exposed energized parts.

**18.12. Extension Cords**

Extension cords shall not replace permanent wiring and the following safety precautions shall be adhered to:

18.12.01. Inspect the cord for cracks and cuts.

18.12.02. Cords shall have a three prong plug that includes a connection to ground.

18.12.03. Use the shortest continuous length of cord possible. Cords shall not be spliced together.

18.12.04. Make certain the cord does not lie in water.

18.12.05. Ensure cord is properly rated for the tools and or activity being performed.

18.12.06. Secure and route cords out of the traffic flow to prevent tripping.

18.12.07. Defective cords shall be tagged and removed from service.

18.12.08. All extension cords used shall be used with a ground fault circuit interrupter (GFCI).

18.12.09. All 15, 20, or 30 amp receptacle outlets that are not part of the permanent wiring of the building or structure and that are used by personnel shall have ground-fault circuit interrupter protection. GFCI pigtails may be used to meet this requirement if properly sized.

18.13. Ground fault circuit interrupters shall be tested before use.

18.14. Only qualified persons shall perform testing work on electric circuits or equipment.

18.15. Sufficient access and working space shall be maintained about all electric equipment to permit safe, readily accessible operation and maintenance. This space shall be kept clear and shall not be used for storage.

18.16. The above electrical safety measures are not all inclusive; however they cover many normal job site events.

**18.17. Heavy Equipment and Electrical Power Lines**

18.17.01. Except where electrical distribution and transmissions lines have been de-energized and visibly grounded at point of work or where insulating barriers (not attached to the vehicle) have been erected to prevent physical contact with the lines, the following clearance -- between any part of the vehicle and the line -- shall be observed:

18.17.02. Line Rating	Minimum Clearance
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18.17.03. All Utility Owned Electrical Lines	25 Feet
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18.18. A ground attendant shall be designated to observe clearance of the equipment and give warning to the equipment operator in situations where it is difficult for the equipment operator to maintain the desired clearances by visual means.

- 18.19. An overhead wire shall be considered energized unless the owner of the line or the electrical utility authorities indicates that it is not energized, has been visibly grounded and deemed intrinsically safe to approach.

## 19. Excavating and Trenching

- 19.01. Prior to excavating, obstructions that may create a hazard to employees shall be removed and or supported.
- 19.02. Utility companies shall be contacted, advised of the proposed work, and asked to establish the location of underground installations.
- 19.03. To ensure employee safety, the competent person shall ensure that during excavating work in trenches there is:
  - 19.03.01. Appropriate access and egress for personnel and or equipment such as stairs, ramps and ladders so as to require no more than 25 feet of lateral travel for employees in trenches four (4) feet or more deep.
  - 19.03.02. PPE shall be worn by affected employees to include hard hats, hearing protection, safety glasses, torso, hand and foot protection.
  - 19.03.03. No spoil pile or equipment within two (2) feet of the edge of the excavation.
  - 19.03.04. Employee protection from vehicular traffic such as barricades, ground guides for operators of equipment with a limited view.
  - 19.03.05. No exposure to:
    - 19.03.05.01. Falling loads
    - 19.03.05.02. Engulfment
    - 19.03.05.03. Water accumulation
    - 19.03.05.04. Hazardous materials
    - 19.03.05.05. Chemical exposure
  - 19.03.06. No danger from collapse. Shoring, a structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation.
  - 19.03.07. Shoring is not required for trenches less than five (5) feet deep if an examination by a competent person determines the soil has no potential for collapse.
- 19.04. For excavations greater than 20 feet in depth, protective systems, which may include shoring, shall be designed by a registered professional engineer.
- 19.05. There are other methods of protection from cave-ins such as sloping or benching the adjacent ground according to specific criteria dependent on the soil conditions, weather, and adjacent structures.
- 19.06. Barricades and “spotters” monitoring proper distances are methods to prevent mobile equipment from falling into the excavation. Ground guides shall be used if the equipment operator does not have a clear view of the edge. If possible, the grade should slope away from the excavation.
- 19.07. If there is potential for a hazardous atmosphere air quality monitoring and or testing shall be required and completed per regulations.

- 19.08. Emergency rescue equipment (breathing apparatus, safety harness, rescue line, and a basket stretcher) shall be available when applicable.
- 19.09. When a hazardous atmosphere does exist, appropriate respiratory protection shall be used and a rescue plan developed which includes having an attendant outside the hazardous area with appropriate equipment and training. Refer to the Confined Space procedures.
- 19.10. Protective Systems
  - 19.10.01. Except when an excavation is made entirely in stable rock or it is less than 5 feet in depth and a competent person finds no indication of potential cave-in, employees in an excavation will be protected from cave-in by protective systems designed in accordance with regulation.
  - 19.10.02. All employees involved with excavating are to review these standards and understand, in general terms:
    - 19.10.02.01. Knowledge that goes into employee protection during excavating projects.
    - 19.10.02.02. The types of soils and how to identify them on the job site.
    - 19.10.02.03. The soil condition (specifically moisture content) and how that impacts on stability during excavations.
    - 19.10.02.04. The absolute need for a competent person to be on site at all times during excavating work in order to visually inspect and manually test soil conditions as work progresses to maintain a safe excavation site.
- 19.11. Daily Inspections
  - 19.11.01. Prior to work and as needed throughout the shift, a competent person shall conduct inspections of excavations, adjacent areas and protective systems to find evidence of a developing cave-in situation; failure of protective systems; hazardous atmosphere; or other hazardous conditions.
  - 19.11.02. After any rainstorm or event which is suspect to affect the safety of employees within an excavation, inspection shall be made by a competent person before any activity can proceed.
- 19.12. Excavation Fall Protection
  - 19.12.01. Walkways shall be provided where employees or equipment are required or permitted to cross over excavations. If these walkways are 6 feet or more above a lower level, guardrails shall be installed and used.



## 20. Traffic Control

- 20.01. For daytime work, the flagger's vest, shirt, or jacket shall be Class II and or Class III high visibility orange, yellow, yellow green or fluorescent versions of these colors.
- 20.02. For nighttime work, similar colored outside garments shall be light reflective. The reflective material should be orange, yellow, white, silver, strong yellow-green or a fluorescent version of one of these colors and should be visible at a minimum distance of 1,000 feet. The reflective clothing shall be designed to identify clearly the wearer as a person and be visible through the full range of body motions.
- 20.03. Uniformed law enforcement officers may be used as flaggers in some locations, such as an intersection, where enforcement of traffic movements is important. Uniformed law enforcement officers may also be used on freeways where traffic is channeled around work sites and it is necessary to assure that advisory and regulatory speeds are being enforced. For nighttime work and in low-visibility situations, a reflective garment as described above shall be worn.
- 20.04. Work areas exposed to any traffic and construction areas shall be posted with legible traffic signs at points of hazard.
- 20.05. Barricades and means of alerting traffic of work in progress shall be utilized in work areas where the possibility of injury from the activities being performed by employees. Employees shall be aware of the potential for trespass by traffic into the work area and be at ready to stop activities to allow the traffic to be cleared from the work area to avoid any potential incident.
- 20.06. Hand-signaling devices, such as STOP and SLOW paddles, lights, and red flags are to be used to control traffic through temporary traffic control zones. The STOP and SLOW paddle, which gives drivers more positive guidance than red flags, should be the primary hand-signaling device. The standard STOP and SLOW sign paddle will be 18 inches square with letters at least 6 inches high. A rigid handle should be provided. This combination sign should be fabricated from light semi-rigid material, and will have an octagonal shape. The background of the STOP face will be red with white letters and border. To be better seen, the STOP and SLOW paddles may be supplemented by one or two symmetrically positioned alternately flashing white high-intensity lamps on each side. The background of the SLOW face will be orange with black letters and border. When used at night, the STOP and SLOW paddle will be reflectorized in the same manner as signs.
- 20.07. Flag use should be limited to emergency situations and at low-speed and or low-volume locations which can best be controlled by a single flagger. Flags used for signaling shall be a minimum of 24 inches square, made of a good grade of red material, and securely fastened to a staff about 3 feet long. The free edge should be weighted so the flag will hang vertically, even in heavy winds. When used at night, flags will be reflective red or orange.

## **21. Illumination**

- 21.01. Employees shall ensure that all work areas have adequate lighting. If generators are used for auxiliary lighting, they shall be operated and maintained by employees who are qualified and authorized.

## **22. Machine Guarding**

Injuries that occur when operating a machine happen at the point of operation -- the point on a machine where the actual work (cutting, bending, and spinning) occurs. This is also the point where guards can protect fingers and hands exposed to that hazard. Machine guarding also protects employees from other dangers such as flying pieces of metal, sparks, gears, belts, and rotating parts. Types of machine guarding are almost as numerous as types of machines with the most common being a physical barrier to prevent unintended insertion of body parts.

- 22.01. Machine guards designed into a machine shall never be altered or removed.
- 22.02. Any machine that is determined to have unguarded moving parts shall be investigated by qualified employees to determine the corrective action needed to provide protection from hazards.

## **23. Machinery**

Never operate any machinery until you have received proper training and you thoroughly understand safety procedures, instructions for adjustments, power interruption, jamming, lubrication, and inspection.

- 23.01. Ensure the guarding systems are in place, functioning properly, and have not been altered or removed.
- 23.02. Operate all machines according to the manufacturers operators manual and follow all safety procedures.
- 23.03. Wear all specified personal protective equipment (PPE).

## 24. Signs and Tags

- 24.01. Signs and tags should be used to warn of specific hazards. Types of signs are classified according to their use, and their design is regulated by standard. All personnel should be instructed in the meaning of the various types of signs. Sign usage includes:
- 24.01.01. Danger Signs (Red border, Black typescripts with White background): indicates an immediate hazard that presents a threat of death or serious injury and denotes special operational procedures are required that shall not be deviated from.
  - 24.01.02. Warning Signs (Black typescripts with orange background) Indicate an incident prevention tag are to warn of hazardous or potentially hazardous conditions that are out of the ordinary, unexpected, or not readily apparent..
  - 24.01.03. Caution Signs (Black typescripts with yellow background): warns of a potential hazard or cautions against an unsafe practice.
  - 24.01.04. Safety Instruction Signs (White Background): used to provide general instructions and suggestions relative to safety measures.
- 24.02. All tags shall have:
- 24.02.01. A signal word: “Danger”; “Warning”; “Caution”; BIOHAZARD (and or its symbol; a major message such as: “High Voltage” or “Do not start”; major messages indicate the specific hazardous condition.)
- 24.03. The color scheme is basically the same as for signs:
- 24.03.01. Danger                      Black typescripts; red border with white background
  - 24.03.02. Warning                      Black typescripts with orange background
  - 24.03.03. Caution                      Black typescripts with yellow background
  - 24.03.04. Biological hazard      Black typescripts fluorescent orange background
- 24.04. Danger Tags: indicates a hazardous condition that is immediately dangerous to life and health and denotes special operational procedures are required and or active that shall not be deviated from. Under penalty of discipline up to and including termination; these tags shall only be installed or removed exclusively by the affixing employee.
- 24.05. Warning Tags: indicate an incident prevention notification to advise of potentially hazardous conditions that are not ordinary; unexpected from standard, and or not readily apparent.
- 24.06. Caution Tags: indicate an alert of an abnormal operating condition; non-immediate hazard and or unsafe condition that presents a lesser threat of injury.
- 24.07. Biohazard Tags: indicate the actual or potential presence of a biological hazard and identify equipment, rooms, containers, etc., that may be contaminated.

## 25. Hot Work Permitting

This procedure is to ensure employee safety during welding and cutting operations along with the protection of property (including equipment) from hot work operations. Welding, cutting, and other processes that produce molten metal, sparks, slag, and hot work surfaces can cause fire or explosion if precautionary measures are not followed.

### 25.01. Definitions:

- 25.01.01. Compressed Gas: A material that is shipped in a compressed gas cylinder and acts as a gas upon release at normal temperature and pressure or is used or handled as a gas.
- 25.01.02. Hot Work: A task or operation that generates heat, sparks, or an open flame, such as welding, cutting, grinding, soldering, torch applied roofing, heat guns, and similar activities.
- 25.01.03. Hot Work Operator: Is the employee who is qualified and authorized to perform hot work such as welding, brazing, soldering, and other associated work tasks.
- 25.01.04. Authorized Employee: An employee who has been trained in Hot Work Permitting is authorized to issue a hot work permit.
- 25.01.05. Fire Watch: Is the employee who is trained in hot work safety and monitors the hot work area for changing conditions and watches for fires and extinguishes them if possible.

### 25.02. Supervisor

- 25.02.01. Supervisors are responsible in making sure employees who will be performing Hot Work operations are properly trained.

### 25.03. Employee performing hot work shall:

- 25.03.01. Inspect all welding equipment daily prior to use.
- 25.03.02. Perform a hazard assessment before work or during any unusual welding operations are planned.
- 25.03.03. Follow all the safety requirements outlined in the issued Hot Work Permit.
- 25.03.04. Use all required welder personal protective equipment for the specific job.
- 25.03.05. Correct all unsafe conditions before proceeding with hot work activity.

### 25.04. Safety Requirements:

- 25.04.01. Any welding, cutting, or burning operations will not be performed in atmospheres containing combustible, flammable or explosive dusts, gases, mists, fumes or vapors.
- 25.04.02. Always clean areas around and below cutting or welding operations.
- 25.04.03. Barricade adjacent areas and or provide a fire watch.
- 25.04.04. Use welding helmets approved shaded lenses and goggles for eye protection and to prevent flash burns. Always wear approved eye protection (safety glasses and face shield) to guard against slag while chipping, grinding and dressing of welds.

- 25.04.05. Use only manual electrode holders specifically designed for arc welding.
- 25.04.06. Make sure that all parts subject to electrical current are fully insulated against the maximum voltage encountered to ground.
- 25.04.07. A ground return cable shall have a safe current carrying capacity equal to or exceeding the specified maximum output capacity of the arc welding unit that it services.
- 25.04.08. Welding cables, leads, connections and hoses are to be placed so they do not present a tripping hazard or become damaged.
- 25.04.09. Shield all arc welding and cutting operations with noncombustible or flame-resistant screens, wherever practical.
- 25.04.10. An ABC rated fire extinguisher shall be located within the immediate area of any welding, cutting or burning operation.
- 25.04.11. Be sure that proper ventilation is provided whenever welding, cutting or heating is performed in a confined space. Cylinders shall not be taken into the confined space.
- 25.04.12. Before handling cylinders or apparatus, be sure there is no oil or grease on your hands or gloves. Oxygen under pressure reacts violently with grease or oil.
- 25.04.13. Use a friction lighter to light your torch. DO NOT light torches using matches, butane lighters, fluid cigarette lighters, or from hot work.
- 25.04.14. Never use oxygen as a substitute for compressed air as a source of pressure or ventilation.
- 25.04.15. Never tighten a leaky connection between the cylinder and the regulator without first closing the cylinder valve.
- 25.04.16. Do not force connections that do not fit. Check threads directions before connecting.
- 25.04.17. Compressed gas cylinders, empty or full, shall be secured in an upright position during use and while in storage. Oxygen cylinders shall be separated from fuel-gas cylinders by minimum of twenty (20) feet or by a 5 foot high ½ hour fire rated wall.
- 25.04.18. Protective caps shall be in place whenever the regulators are removed.
- 25.04.19. Check hoses, fittings, and valves for leaks by brushing a soapy water solution onto the connections.
- 25.04.20. Oxygen or compressed flammable gas cylinders found to have leaky fittings, which closing of the valve will not stop, should be taken into the open, away from any source of ignition, and slowly drained of gas.
- 25.04.21. Open compressed gas cylinders slowly to avoid valve damage.
- 25.04.22. Always close cylinder valves when work is finished or when leaving the operation for extended periods.
- 25.04.23. When a cylinder is empty, close the valve, replace the protecting cap, tag or mark the cylinder "MT" or EMPTY; return cylinder to its rack and secure it.

- 25.04.24. Cylinders shall not be lifted by a crane or hoist unless they are in a cradle or substantial stand and have protective caps in place. A cylinder shall never be lifted by the cap.
- 25.04.25. Cylinders shall never be used for any other purpose other than what is intended.
- 25.04.26. When practicable combustible and flammable material within 35' shall be removed and or protected from hot work.

### 25.05. Hot Work Permits

- 25.05.01. Hot work is never permitted in certain types of locations where safe conditions do not exist and cannot be created. Hot work is allowed in two types of locations:
  - 25.05.01.01. Designated area: A permanent location approved for routine hot work operations made safe by removal of all possible sources of ignition that could be ignited by the hot work tool. An example is the Welding Shop or Maintenance Shop where all combustibles have been removed. A Hot Work Permit is not required in a Designated Hot Work Area.
  - 25.05.01.02. Controlled Area: Safe conditions for hot work exist or where safe conditions can be created by moving or protecting combustibles. In a controlled area, a Hot Work Permit shall be completed by an Authorized Employee.
  - 25.05.01.03. A Hot Work Permit is valid for one work shift only.
  - 25.05.01.04. Non-Permissible Locations: A location that cannot be made safe for hot work and hot work is not permitted in these locations.

### 25.06. Condition Requiring Fire Watch:

- 25.06.01. A fire watch shall also be required when any of the following conditions exist:
  - 25.06.01.01. Combustible material in building construction or contents is closer than 35 feet to the point of operation that cannot be removed or protected by fire proof cover.
  - 25.06.01.02. Combustible materials are more than 35 feet away but easily ignitable.
  - 25.06.01.03. Wall or floor openings within a 35-foot radius expose combustible material including concealed spaces in walls or floors
  - 25.06.01.04. Combustible materials are adjacent to the opposite side of partitions, walls, ceilings or roofs and are likely to be ignited

### 25.07. Procedure for Fire Watch:

- 25.07.01. A Fire Watch shall have the following responsibilities:
  - 25.07.01.01. Provide required fire extinguishing equipment at hot work activity location.
  - 25.07.01.02. Guard against fire in exposed areas.
  - 25.07.01.03. Make a complete inspection of the exposed areas for possible fire.



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25.07.01.04. Remain on site at least one half of an hour after the completion of hot work activities to detect and extinguish possible smoldering fires.

25.07.01.05. Complete an final inspection of all exposed areas one-half of an hour after completion of hot work activities for the purpose of detecting fire.

### 25.08. Training:

25.08.01. Employees shall be initially trained on hot work permit, prior to performing hot work operation in locations that require a hot work permit.

25.08.02. Retraining will be performed at minimum of every 3 years or if employees are observed not following hot work procedures.

25.08.03. All participants of a hot work permit shall also have completed fire extinguisher training.

## **26. Tools**

### 26.01. Hand

- 26.01.01. Proper PPE shall be worn when using hand tools.
- 26.01.02. Hand tools shall be used only for the purpose for which they are designed.
- 26.01.03. Hand tools shall be kept clean and in serviceable condition.
- 26.01.04. Hand tools which are damaged shall not be used.
- 26.01.05. Hand held cutting tools shall be kept sharp and shall be sheathed or retracted when not in use.
- 26.01.06. Do not force tools.
- 26.01.07. Power tools may be operated only by those persons who are qualified by training or experience.
- 26.01.08. Do not alter remove any guards on power tools.
- 26.01.09. Electrical tools shall be double insulated or grounded and, in the absence of permanent wiring, a Ground Fault Circuit Interrupter shall be used.
- 26.01.10. Electric tools shall not be lifted by their cords and pneumatic tools shall not be lifted by their hoses.

### 26.02. Pneumatic Powered

- 26.02.01. Proper PPE shall be worn when using pneumatic powered tools and or equipment.
- 26.02.02. Pneumatic powered tools shall be guarded.
- 26.02.03. Three specific hazards associated with pneumatic powered tools which are unique to their use are noise levels, tool retention, and air hose pressure.
- 26.02.04. Hearing protection shall be employed.
- 26.02.05. If there is a possibility of tool ejection during use, a tool retainer shall be installed.
- 26.02.06. Hose and hose connections be designed for the pressure and service to which they are subjected.

## **27. Identification of Hazardous Materials**

The presence of crystalline silica, lead, asbestos and mercury is possible at work sites. Before work begins, the appropriate PPE and respiratory protection requirements will be discussed with employees. Areas that contain the below materials will be cordoned off or protected with appropriate warning signs until verification and abatement can be completed by Abatement Specialists.

### 27.01. Crystalline Silica

27.01.01. Crystalline Silica can be readily found on many job sites in rocks as well as many concrete and masonry products. Crystalline Silica can be released in the air when employees are performing such tasks as:

## **28. Laboratory Safety**

Prior to starting work in a lab, communicate with a knowledgeable person for that lab on hazards and protective measures for lab entry. This may be the principal investigator (PI), lab manager or other lab personnel.

- 28.01. If occupational health services are required to enter a lab, a supervisor shall schedule a consultation with the appropriate staff and services of the University Health Services before assigning any related activities.
- 28.02. Be aware of the hazards in the lab.
- 28.03. Read the door card for the lab. See the sample door cards in the Appendix of this document.
- 28.04. Wear required PPE for the lab. See door card or talk to a knowledgeable person for the lab for the PPE requirements.
- 28.05. Never touch or move any lab containers or equipment. If lab containers or equipment need to be moved to complete the activity; contact the lab for assistance. Schedule the activity with lab personnel to insure the work area is cleared prior to starting.
- 28.06. If working inside a fume hood or the exhaust for the hood, notify the lab to have all chemicals and other materials removed from the hood prior to starting work.
- 28.07. Do not handle or move animals or animal cages. Have lab personnel move items for you. The same applies for animal bedding and waste.

# Section II—OSHA Required Programs

## 29. Personal Protective Equipment

This Personal Protective Equipment (PPE) procedure has been prepared to inform employees of potential hazards in the workplace and to identify the proper PPE to be used to reduce or eliminate exposure to these hazards. This procedure relies on a cooperative effort by all employees to understand the reasons for PPE and to protect them from hazards associated with daily activities.

- 29.01. The use of PPE does not lessen an employee's obligation to use safe work practices and procedures. Employees are expected to be aware of the hazards within their area of responsibility and properly use prescribed PPE.
- 29.02. Operations, work methods and individual job sites present specific hazards which shall be identified, analyzed, and matched with the appropriate PPE through a continuing hazard assessment process.
- 29.03. A verification of hazard assessment shall be kept per department as a document of record for inspection purposes.
- 29.04. Hazard Assessment and PPE Selection
  - 29.04.01. Hazard assessment, performed by the PPE Procedure Administrator or a designated competent person, starts with a thorough knowledge of the work activities, work procedures and methods of operation as well as the hazards that may be present. The basic hazardous energy categories are: gravity, electrical, mechanical, kinetic, chemical and other. A careful, systematic personal protective equipment selection process is used to identify what, if any, protection is required to reduce or eliminate the possibility of head, hearing, eye, torso, hands, foot and or other limb injury.
  - 29.04.02. Identifying the source of the above hazardous energy allows for consideration of administrative or engineering controls to eliminate the hazardous energy as opposed to providing protection against it. Administrative and engineering controls are passive -- no employee involvement is required -- they are preferable to PPE.
  - 29.04.03. A PPE selection is made by analyzing the above information and evaluating the type of risk, the level of risk, the potential for injury and the possible seriousness of that injury. PPE, which is compatible with the above risks and work situation, is considered. Actual selection involves all the above factors plus an attempt to provide a level of protection greater than the minimum required.
  - 29.04.04. Where it has been determined that a particular type of PPE is to be used, it shall be used. There will be no exceptions by virtue of position; rank; job title or function as it relates to the procedure.
  - 29.04.05. The Safety Program Authority, Department Supervisor and or designated competent person determines the PPE requirements.
- 29.05. Dissemination of PPE Selection Information
  - 29.05.01. Employees shall understand when and what type of PPE is required for any given activity.

- 29.05.02. All employees for whom PPE is issued and where it shall provide any measure of safety will be given appropriate training on that item of PPE as well as an explanation of the importance of its required use.
- 29.05.03. Employee owned PPE shall be approved for use by the Safety Program Authority. Employee owned PPE shall meet or exceed all regulatory requirements of manufacture and or design without deviation. The utilization of this equipment shall coincide with the applicable regulations of these procedures. The replacement of employee owned PPE shall be at the employees' expense. Upon the replacement of and or for each occurrence of additional employee owned PPE; the review and approval process shall be completed. If any change in any of the manufacture and or design specifics of the employee owned PPE is discovered upon review for approval and does not meet or exceed regulatory requirements; will be cause for denial of use on property. Employee owned PPE shall be properly inspected; maintained and cleaned in accordance with the manufacturer's instructions.

### 29.06. Sizing and Fitting

- 29.06.01. PPE comes in a variety of sizes and within those size groups, adjustments may be made to affect an appropriate fit. It is important to understand the procedures for donning, adjusting, using, and doffing PPE. Each person who is required to use any type of PPE shall be taught, before initial issue; of the specific procedures for properly donning, adjusting, using, and removing the specific PPE. This instruction will generally be given by the employee's Supervisor, fellow employee or a Competent Person. When available, the manufacturer's instructions should be issued with the PPE.

### 29.07. Care and Maintenance of PPE

- 29.07.01. PPE shall be visually inspected before each use and if defects are noticed, it shall be removed from service immediately. Some types of PPE are expendable and have a limited life span after which they are discarded and new PPE is reissued. Safety glasses become scratched and they too shall be exchanged for new ones when vision is impaired. PPE will be maintained in accordance with the manufacturer's instructions and, where appropriate, kept in a sanitary condition.
- 29.07.02. Cleanliness takes on an added importance when dealing with PPE designed to protect the eyes and face. Dirty or fogged lenses can impair vision and, rather than offer protection from a hazard, actually becomes a contributory factor in causing an incident.

### 29.08. Training

Affected employees will be given an understanding of:

- 29.08.01. Where replacement PPE can be obtained
- 29.08.02. When PPE is required;
- 29.08.03. What PPE is required;
- 29.08.04. Why PPE is required;
- 29.08.05. How to properly put on, take off, adjust, and wear PPE;

- 29.08.06. The limitations of the PPE; and,
- 29.08.07. The proper inspection, care, maintenance, useful life and disposal of the PPE.
- 29.08.08. Retraining will be given in situations when changes in PPE requirements render the previous training obsolete or it is observed that an employee is not following these PPE procedures.
- 29.09. Supervisors:
  - 29.09.01. Conduct or oversee the performance of hazard assessments for work activities performed by employees.
  - 29.09.02. Select, obtain, and provide PPE that is properly sized and appropriate for the activities performed by the employee before employee's first exposure to hazards requiring use of PPE.
  - 29.09.03. Provide or arrange for training to each affected employee on proper use and care of personal protective equipment.
  - 29.09.04. Ensure that the provided PPE is consistently used and properly maintained.
- 29.10. Employees:
  - 29.10.01. Complete the training for PPE used.
  - 29.10.02. Properly use and maintain issued PPE.
  - 29.10.03. Communicate any problems experienced due to fit, adequacy, or condition of issued personal protective equipment to their supervisor.
- 29.11. Program Requirement
  - 29.11.01. Priority for Elimination of a Hazard
  - 29.11.02. Before a determination is made to utilize PPE, the department will first work to eliminate the hazard and or need for PPE through material substitution, engineering controls or administrative measures. If such measures are not possible or practical, then PPE can be utilized.
- 29.12. Hazard Assessment and Selection:
  - 29.12.01. Each department will assess the work activities performed by employees to determine if hazards are present or are likely to be present, which necessitate the use of personal protective equipment.
  - 29.12.02. If such hazards are identified, the department shall:
    - 29.12.02.01. Select and have each employee use the PPE that will protect the affected employee from the identified hazard.
    - 29.12.02.02. Have available appropriate sizes that will properly fit affected employees.
- 29.13. Completion of a Hazard Assessment:



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- 29.13.01. The hazard assessment shall be documented and signed by the individual doing the assessment, typically a supervisor and or supervisor's designated competent person.
- 29.13.02. The verification shall be documented using the PPE Hazard Assessment Certification form in the Appendix of the program manual.
- 29.13.03. The hazard assessment shall be reviewed at least annually for accuracy and completeness, and shall be updated whenever the hazards of the employee's job duties change.

### 29.14. Payment for Protective Equipment:

- 29.14.01. Unless otherwise addressed elsewhere, PPE will be provided at no cost to the employee. Reasonable accommodation shall be used in the specification and standardization of PPE with exceptions to the procedure being submitted the process of review and approval by the Safety Program Authority.

### 29.15. Head Protection

- 29.15.01. Employees working in areas where there is a possible danger of any head injury from an impact, falling and or flying objects; from electrical shock and burns shall be protected by approved protective helmets.
- 29.15.02. Head protection shall be provided to each employee that meets all regulatory specifications for the activities the employee is required to perform.

### 29.16. Hearing Protection

- 29.16.01. Wherever it is not feasible to reduce the noise levels or duration of exposures to those specified in the table below; hearing protection devices shall be provided and used.
- 29.16.02. Approved hearing protection devices that insert in the ear shall be of the fitted type or determined individually by a department supervisor or competent person.
- 29.16.03. Plain cotton is not an acceptable protective device.
- 29.16.04. Permissible Noise Exposure

Duration per day (hours)	dBa slow response
8	90
6	92
4	95
3	97
1.5	102
1	105
0.5	110
0.25 or less	115

### 29.17. Eye and Face Protection

- 29.17.01. Eye protection is required when there is a possibility of any injury to the eyes. Eye injury is not confined to flying objects. Eye injury can be caused by bright light, dust, chemicals,

heat, and any substance that can be projected and or transferred to the eye by abnormal means. Different hazards require different types of protection.

- 29.17.02. Eye and face protection is required when one is exposed to dusts, flying particles, chemicals, or injurious light radiation. Types of eye protection include: impact resistant safety glasses; safety glasses with side shields; prescription issued safety glasses with side shields; goggles; goggles with a face seal; face shields; and shaded goggles with varying degrees of shading.
- 29.17.03. Affected employees who wear prescription lenses shall wear eye protection over the prescription lenses without disturbing the proper positioning of the prescription lenses, or shall wear eye protection that incorporates their prescription into the design.
- 29.17.04. All prescription glasses shall be made with impact-resistant lenses.
- 29.17.05. All employees who wear contact lenses shall also wear appropriate eye and face protection in hazardous environments.
- 29.17.06. Welding helmets and face shields, when required, shall be worn over primary eye protection (spectacles or goggles).

### 29.18. Hand Protection

- 29.18.01. Appropriate hand protection shall be worn when performing activities where hazards are present that expose the hands to potential injury. There are numerous types of hand protection available; each with a specific purpose. Hands shall be protected from chemicals, abrasions, cuts and lacerations, temperature extremes, germs, radiation, impact, punctures, electricity, and other hazards in the workplace. Specific job requirements determine the type of hand protection needed. Proper hand protection shall do more than protect the hands; it shall allow the completion of the activity with efficiency and dexterity.

### 29.19. Personal Body Protection

- 29.19.01. The protection of the body is equally as important as the PPE issued to protect specific portions of the body from hazards. Your work clothing should be in good serviceable condition and provide basic protection from the hazards of the activities performed. The body shall be covered appropriately as to prevent the exposure of unprotected skin to any hazardous elements of activity completion.

### 29.20. Foot Protection

- 29.20.01. When purchasing new protective footwear, ensure that it complies with ANSI Z41-1991, "American National Standard for Personal Protection-Protective Footwear".
- 29.20.02. Specific hazards require specific types of protective footwear. Certain types of footwear can offer traction, crush protection, penetration protection, electrical protection, chemical resistance, heat and or fire resistance, dryness, cushion, or ankle-protection. Certain activities may require a combination of these features.

### 29.21. Respiratory Protection

- 29.21.01. Employees who are exposed to harmful aerosols, vapors, gases, contaminated air, or non-breathable air will be provided air purifying or air supplying respirators after training, medical evaluation, and fit testing per our Respiratory Protection Program.
- 29.21.02. The one exception is dust masks voluntarily worn solely for comfort and not for respiratory protection.

### 30. Emergency Procedures

The purpose of this procedure is to provide guidance to employees on what to do in the event of an emergency. For employee Injury reporting:

30.01. Employees:

30.01.01. If you get hurt or sick on the job, get appropriate medical care right away.

30.01.02. Notify your supervisor as soon as possible (in person or by phone).

30.01.03. Complete an Employee Injury Report (see Appendices).

30.01.04. Employee Injury Report may be obtained from your supervisor.

30.02. Department Supervisors:

30.02.01. Investigate incidents, determine contributing causes and take appropriate actions to prevent the risk of future occurrences.

30.02.02. Complete the Supervisor Injury Report. (See Program Appendices). Supervisor reports shall be completed as soon as possible or within 24 hours of notification of the incident or injury.

30.03. Evacuation Emergencies

30.03.01. All campus buildings have evacuation route maps for each floor.

30.03.02. The evacuation route maps show the locations of exits, egress routes, fire extinguishers, fire alarm pull stations, severe weather shelter locations and other safety information.

30.04. In the Event of a Building Evacuation

30.04.01. Follow directions of authorities.

30.04.02. Use the nearest exit or, if it is blocked, an alternate exit.

30.04.03. Do not use elevators.

30.04.04. Assist persons with disabilities or special needs.

30.04.05. Once outside, make your way to the designated gathering point. Good practice is to gather across the street from the main entrance to the building.

30.05. Fire Emergencies

30.05.01. Activate the nearest fire alarm.

30.05.02. Evacuate the building.

30.05.03. Call 911.

30.05.04. Do not re-enter the building until authorized to do so by emergency personnel.

30.06. Severe Weather

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- 30.06.01. Tornado Watch: Means conditions are right for tornado, remain alert to weather conditions.
- 30.06.02. Tornado Warning: Means a tornado has been sighted within a 25-mile radius; warnings are typically available 3-15 minutes in advance of the tornado.
- 30.07. In the Event of Severe Weather:
  - 30.07.01. Go to an internal, lowest area of safety: hallways or basement away from windows and glass.
  - 30.07.02. Do not use elevators during a tornado warning.
  - 30.07.03. Close all doors, including main corridors.
  - 30.07.04. Crouch near the floor or under heavy, well-supported objects and cover your head.
  - 30.07.05. If outside, lie down in a low area such as a ditch and cover your head.
  - 30.07.06. Be alert for fire and use the fire plan if needed.
- 30.08. Shelter in place:
  - 30.08.01. Shelter in place is a process for taking immediate shelter in a location readily accessible to the affected individual by sealing a single area (an example being a room) from an outside situation. You may be safer where you are.
  - 30.08.02. Stay quiet and calm.
  - 30.08.03. Pay attention to your surroundings.
  - 30.08.04. Follow directions of authorities.
- 30.09. Violent Incident
  - 30.09.01. If you know location of assailant or danger, consider escaping if a safe escape route is immediately available to you. Call 911 when safe.
  - 30.09.02. If it is unsafe to escape:
    - 30.09.02.01. Immediately seek protection.
    - 30.09.02.02. Secure area by locking or barricading door using whatever means available.
    - 30.09.02.03. Stay behind solid objects away from door.
    - 30.09.02.04. Call 911.
    - 30.09.02.05. Minimize noise that may draw attention to your location: turn off lights, computers, radios and put cell phones on vibrate.
  - 30.09.03. Follow all directions of authorities; do not challenge law enforcement.
- 30.10. Hazardous Materials Release:

- 30.10.01. For major spills call 911.
- 30.10.02. Evacuate, and assemble at a safe distance.
- 30.10.03. Notify emergency personnel if you have been exposed or have information about the spill.
- 30.11. Suspicious Package
  - 30.11.01. Do not touch or disturb object.
  - 30.11.02. Call 911.
  - 30.11.03. Be prepared to evacuate.
- 30.12. Blood Borne Pathogens
  - 30.12.01. Blood borne Pathogen program (BBP), protect employees against exposure to human blood or other potentially infectious materials (OPIM). Blood or OPIM can contain disease-causing viruses such as Hepatitis B, Hepatitis C and HIV.
  - 30.12.02. Exposures can be direct or indirect.
  - 30.12.03. Direct – passed from one person to another (ex. during first aid).
  - 30.12.04. Indirect – passed through an object (ex. needle stick).
  - 30.12.05. Both types of exposures require immediate medical attention.
  - 30.12.06. Jobs that may encounter human blood or OPIM will receive BBP training and offered the Hepatitis B vaccinations.
  - 30.12.07. If you see blood or OPIM, do not touch or clean, block or control access to the area and notify your supervisor.
  - 30.12.08. What to do if you're exposed.
    - 30.12.08.01. Wash the exposed area with non-abrasive, antibacterial soap and running water.
    - 30.12.08.02. Flush exposed eye, nose or mouth with running water for at least 15 minutes.
    - 30.12.08.03. Seek medical evaluation.
    - 30.12.08.04. Report the exposure to your supervisor.
    - 30.12.08.05. Complete the Injury Report form & Biological Exposure form. Both forms are located in the Appendix of the safety program manual.

## 31. Heat Illness Prevention

This procedure has been developed to assist employees in implementing heat illness prevention procedures to reduce the risk of work related heat illnesses. Activity locations shall be assessed for specific hazards and environmental concerns in order to eliminate or reduce the risk of heat related illness.

NOTE: This procedure provides the minimal steps applicable to most environments and is essential to reducing the incidence of heat related illnesses. In working environments with a higher risk for heat illness (e.g., during a heat wave, or other severe working or environmental conditions), it is the employee with oversight's duty to exercise greater caution and additional protective measures beyond what is listed in this document, as needed to protect employees from a high heat exposure hazard.

### 31.01. Provision of Potable Drinking Water

31.01.01. All departments shall make available ample portable potable water for consumption by affected employees when the dispensing of potable water is not readily accessible.

### 31.02. High Heat Procedure

31.02.01. Effective communication by voice, observation, or electronic means will be maintained, so that employees can contact a supervisor when necessary. If the supervisor is unable to be near the employees (to observe them or communicate with them), then an electronic device, such as a cell phone or text messaging device, may be used for this purpose if reception in the area is reliable.

31.02.02. Frequent communication will be maintained with employees working by themselves or in smaller groups (keep tabs on them via phone or two-way radio or "report in" intervals determined by Supervision), to be on the lookout for possible symptoms of heat illness.

31.02.03. Employees will be observed for the signs and symptoms of heat illness. When the supervisor is not available, an alternate responsible person may be assigned, to look for signs and symptoms of heat illness. Such a designated observer will be trained and know what steps to take if heat illness occurs.

31.02.04. Employees are expected to remain hydrated by the available resources necessary throughout the work shift.

31.02.05. When exposed to extreme environmental conditions new employees shall be closely supervised, or assign an experienced co-employee for the first 14 days of the employment. This action will not be necessary if the employee indicates at the time of hire that he or she has been doing similar work for at least 20 of the past 30 days for greater than four hours per day.

### 31.03. Acclimatization

Acclimatization is the temporary and gradual physiological change in the body that occurs when the environmentally induced heat load to which the body is accustomed is significantly and suddenly exceeded by sudden environmental changes. In more common terms, the body needs time to adapt when temperatures rise suddenly, and an employee risks heat illness by not taking it easy when a heat wave strikes or when starting a new job that exposes the employee to heat to which the employee's body has not yet adjusted.

- 31.03.01. Inadequate acclimatization can be significantly more perilous in conditions of high heat and physical stress.
  - 31.03.02. Employers are responsible for the working conditions of their employees, and they shall act effectively when conditions result in sudden exposure to heat their employees are not used to.
  - 31.03.03. When applicable the weather will be monitored daily. The supervisor will be on the lookout for a sudden heat wave or increase in temperatures to which employees haven't been exposed to for several weeks or longer.
  - 31.03.04. For new employees, the intensity of the work may be lessened during a two-week break-in period (such as scheduling slower paced, less physically demanding work during the hot parts of the day and the heaviest work activities during the cooler parts of the day (early-morning or evening). Steps taken to lessen the intensity of the workload for new employees will be documented.
  - 31.03.05. The supervisor will be extra-vigilant with new employees and stay alert to the presence of heat related symptom
  - 31.03.06. New employees will be assigned an experienced co-employee to watch each other closely for discomfort or symptoms of heat illness.
  - 31.03.07. During a heat wave, all employees shall observe hydration requirements and remain aware of any change in physical condition that may be the symptoms of a heat related illness.
  - 31.03.08. Employees and supervisors will be trained on the importance of acclimatization, how it is developed and how this procedure addresses it.
- 31.04. Attending to an Employee who is exhibiting illness
- 31.04.01. When an employee displays possible signs or symptoms of heat illness, a trained first aid employee or supervisor will check the sick employee and determine whether resting in the shade and drinking cool water will suffice or if medical attention or emergency service providers will need to be called. An employee exhibiting symptoms shall not be left alone as the employee can take a turn for the worse.
  - 31.04.02. When an employee displays possible signs or symptoms of heat illness and no trained first aid employee or supervisor is available at the site, emergency service providers shall be contacted.
  - 31.04.03. Emergency service providers shall be contacted immediately if an employee displays any combination of the following signs or symptoms of heat illness:
    - 31.04.03.01. Loss of consciousness
    - 31.04.03.02. Incoherent speech
    - 31.04.03.03. Convulsions
    - 31.04.03.04. Red and hot face
    - 31.04.03.05. Does not look OK



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31.04.03.06. Does not respond or is not getting better after drinking water and resting in the shade.

31.05. While the ambulance is in route, first aid will be initiated

31.05.01. Cool the employee

31.05.02. Place the employee in the shade

31.05.03. Remove excess layers of clothing

31.05.04. Place ice pack in the armpits and joint area

31.05.05. Fan the employee

31.05.06. Do not let an ill employee leave the site.

31.06. Training

31.06.01. Training will include this written procedure and the steps supervisors will follow when an employee exhibits symptoms consistent with heat illness.

## 32. Control of Hazardous Energy (aka Lockout Tagout)

Lock out and or tag out is the process where authorized employees isolate and secure energy sources prior to maintenance or construction activities. The energy sources remain secured by locks and or tags during the completion of the activity and are not removed until the activity is completed. The lock is placed by the authorized employee exposed to the hazard and is removed by the same authorized employee. The key remains in the possession of the authorized employee throughout the completion of the activity requiring a system, machine or equipment to have the control of hazardous energy procedures applied. Tag out is a similar process where tags are used instead of locks. Tag out is only permitted on a system, machine or equipment without lockout capability and where it is approved by a department supervisor as a standard operating procedure.

- 32.01. Employees are required to comply with the restrictions and limitations imposed during the use of lockout and or tag out. Any employee authorized to lockout and or tag out systems, machines or equipment is required to perform the lockout in accordance with this procedure. Employees upon observing a system, machine or equipment which is locked out and or tagged out to perform servicing or maintenance shall not attempt to start; energize or operate the affected system, machine or equipment.
- 32.02. Department Supervisor
  - 32.02.01. Provide guidance, training and the direction necessary to ensure the effectiveness of this procedure is maintained.
  - 32.02.02. Ensure that only qualified, authorized and or competent persons trained in this procedure perform any control of hazardous energy activities.
  - 32.02.03. Ensure that employees who are found to have insufficient skills or understanding of lockout and or tagout requirements do not perform lockout and or tagout activities and are retrained.
  - 32.02.04. Ensure employees understand the failure to comply with this procedure constitutes corrective action and or enforcement of disciplinary regulations.
  - 32.02.05. Manage and perform inspections of employees for compliance with this control of hazardous energy procedure.
  - 32.02.06. Ensure that any deficiencies or deviations found in the department procedures are corrected through the review and revision process.
  - 32.02.07. Where required, identify and label all hazardous energy sources, systems, equipment and or machines that require lockout and or tagout.
  - 32.02.08. Developing, documenting, implementing, and enforcing specific energy control procedures for hazardous energy sources.
  - 32.02.09. Maintaining a lockout and or tagout record log when documented procedures are required that records the following: the date and time a lockout and or tagout was issued, the name of the "authorized person" performing the lockout and or tagout, the exact location of the lockout and or tagout, the name of the system, equipment and or machine being locked out and or tagged out, the reason for the lockout and or tagout, in

addition, the date and time the lockout and or tagout was removed and the time of return to normal operation.

32.02.10. Provide the resources, including tags, locks, and keys, as appropriate. Identifying and labeling all work area hazardous energy sources or equipment that require the control of hazardous energy.

32.02.11. Provide classroom training and refresher training as required.

### 32.03. Authorized Employee

32.03.01. Provide the affected employees in the activity area with the expected start date, start time, and duration of the activity and a description of all the systems, machines and equipment affected.

32.03.02. Implementing the energy control procedure, including positioning the energy isolation device and physically testing the equipment to ensure the equipment is isolated.

### 32.04. Definitions:

32.04.01. Affected employee: An employee whose job requires the operation or use of a system, machine or equipment on which servicing or maintenance is being performed under lockout and tag out, or whose job requires working in an area in which such servicing or maintenance is being performed.

32.04.02. Authorized employee: A person who locks out and or tags out systems, machines or equipment in order to perform servicing or maintenance on that system, machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this procedure.

32.04.03. Capable of being locked out: An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

32.04.04. Energized: Connected to an energy source or containing residual or stored energy.

32.04.05. Energy isolating device: A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

32.04.06. Energy sources: Any source of gravity, electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

32.04.07. Hot tap: A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure,

in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

- 32.04.08. Lockout: The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.
  - 32.04.09. Lockout device: A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in a safe position and prevent the energizing of a system, machine or equipment.
  - 32.04.10. Normal production operations: The utilization of a system, machine or equipment to perform its intended production function.
  - 32.04.11. Servicing and or maintenance: Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.
  - 32.04.12. Setting up: Any work performed to prepare a machine or equipment to perform its normal production operation.
  - 32.04.13. Tag out: The placement of a tag out device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the system, machine or equipment being controlled may not be operated until the tag out device is removed.
  - 32.04.14. Tag out device: A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tag out device is removed.
- 32.05. Control of Hazardous Energy Program
- 32.05.01. The employer shall establish a program consisting of the control of hazardous energy procedures, employee training and periodic inspections to ensure that before any employee performs any servicing or maintenance on a system, machine or equipment where the unexpected energizing, start up or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source, and rendered inoperative.
- 32.06. Lockout Tag out
- 32.06.01. If an energy isolating device is not capable of being locked out, the employer's energy control program shall utilize a tag out system.
  - 32.06.02. If an energy isolating device is capable of being locked out, the employer's control of hazardous energy procedures shall utilize lockout, unless the employer can demonstrate that the utilization of a tag out system will provide full employee protection.

### 32.07. Full Employee Protection

- 32.07.01. When a tag out device is used on an energy isolating device which is capable of being locked out, the tag out device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the tag out procedure will provide a level of safety equivalent to that obtained by using a lockout procedure.
- 32.07.02. In demonstrating that a level of safety is achieved in the tag out procedure which is equivalent to the level of safety obtained by using a lockout procedure, the employer shall demonstrate full compliance with all tag out related provisions of this procedure together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures where required.

### 32.08. Control of Hazardous Energy Procedure

- 32.08.01. Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in the activities covered by this program.
- 32.08.02. Exception: The employer need not document the required procedure for a particular system, machine or equipment, when all of the following elements exist:
- 32.08.03. The system, machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees;
- 32.08.04. The system, machine or equipment has a single energy source which can be readily identified and isolated;
- 32.08.05. The isolation and locking out of that energy source will completely de-energize and deactivate the system, machine or equipment;
- 32.08.06. The system, machine or equipment is isolated from that energy source and locked out during servicing or maintenance;
- 32.08.07. A single lockout device will achieve a locked-out condition;
- 32.08.08. The lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance;
- 32.08.09. The servicing or maintenance does not create hazards for other employees; and
- 32.08.10. The employer, in utilizing this exception, has had no incidents involving the unexpected activation or re-energization of the system, machine or equipment during servicing or maintenance.

### 32.09. The procedures shall clearly and specifically outline the scope, purpose, authorization, rules, and techniques to be utilized for the control of hazardous energy, and the means to enforce compliance including, but not limited to, the following:

- 32.09.01. A specific statement of the intended use of the procedure;

- 32.09.02. Specific procedural steps for shutting down, isolating, blocking and securing system, machines or equipment to control hazardous energy;
- 32.09.03. Specific procedural steps for the placement, removal and transfer of lockout devices or tag out devices and the responsibility for them; and
- 32.09.04. Specific requirements for testing a system, machine or equipment to determine and verify the effectiveness of lockout devices, tag out devices, and other energy control measures.

### 32.10. Protective Materials and Hardware

32.10.01. Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by the employer for isolating, securing or blocking of machines or equipment from energy sources.

32.10.02. Lockout devices and tag out devices shall be singularly identified; shall be the only devices(s) used for controlling energy; shall not be used for other purposes; and shall meet the following requirements:

#### 32.10.03. Durable

32.10.03.01. Lockout and tag out devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

32.10.03.02. Tag out devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

32.10.03.03. Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.

#### 32.10.04. Standardized

32.10.04.01. Lockout and tag out devices shall be standardized within the facility in at least one of the following criteria: Color; shape; or size; and additionally, in the case of tag out devices, print and format shall be standardized.

#### 32.10.05. Substantial

32.10.05.01. Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.

32.10.05.02. Tag out devices, including and their means of attachment, shall be substantial enough to prevent inadvertent or unintended removal. Tag out device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.

#### 32.10.06. Identifiable

- 32.10.06.01. Lockout and or tag out devices shall indicate the identity of the employee applying the device(s).
- 32.10.06.02. Tag out devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following: Do Not Start, Do Not Open, Do Not Close, Do Not Energize, Do Not Operate.

### 32.11. Periodic Inspection

- 32.11.01. The employer shall conduct a periodic inspection of the hazardous energy control procedure at least annually to ensure that the procedure and the requirements of this standard are being followed.
- 32.11.02. The periodic inspection shall be performed by an authorized employee other than the ones(s) utilizing the energy control procedure being inspected.
- 32.11.03. The periodic inspection shall be conducted to correct any deviations or inadequacies identified.
- 32.11.04. Where lockout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized employee, of that employee's responsibilities under the energy control procedure being inspected.
- 32.11.05. Where tag out is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the energy control procedure being inspected.
- 32.11.06. The employer shall certify that the periodic inspections have been performed. The certification shall identify the systems, machine or equipment on which the hazardous energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

### 32.12. Training and Communication

- 32.12.01. The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired by employees. The training shall include the following:
  - 32.12.01.01. Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.
  - 32.12.01.02. Each affected employee shall be instructed in the purpose and use of the hazardous energy control procedure.
  - 32.12.01.03. All other employees whose work operations are or may be in an area where the hazardous energy control procedures may be utilized, shall be instructed about the procedure, and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out and or tagged out.



- 32.12.01.04. When tag out systems are used, employees shall also be trained in the following:
  - 32.12.01.04.01. Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.
  - 32.12.01.04.02. When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored, or otherwise defeated.
  - 32.12.01.04.03. Tags shall be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.
  - 32.12.01.04.04. Tags and their means of attachment shall be made of materials which will withstand the environmental conditions encountered in the workplace.
  - 32.12.01.04.05. Tags shall hold the same magnitude of significance as a lock. The meaning of equal authority to a lock shall to be understood as part of this overall control of hazardous energy program.
  - 32.12.01.04.06. Tags shall be securely attached to energy isolating devices so that they cannot be inadvertently or unintended detached during use.

### 32.12.02. Employee Retraining

- 32.12.02.01. Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures.
- 32.12.02.02. Additional retraining shall also be conducted whenever a periodic inspection reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of these control of hazardous energy procedures.
- 32.12.02.03. The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.
- 32.12.02.04. The employer shall document that employee training has been accomplished and is being kept up to date. The verification shall contain each employee's name and dates of training.

### 32.13. Energy Isolation

- 32.13.01. Lockout or tag out shall be performed only by the authorized employees who are performing the servicing or maintenance.



### 32.14. Notification of employees

32.14.01. Affected employees shall be notified by the employer or authorized employee of the application and removal of lockout devices or tag out devices. Notification shall be given before the controls are applied, and after they are removed from the machine or equipment.

### 32.15. Application of Control of Hazardous Energy Procedures

32.15.01. The established procedures for the application of the control of hazardous energy procedures shall cover the following elements; actions and shall be done in the following sequence:

#### 32.15.02. Preparation for shutdown

32.15.02.01. Before an authorized or affected employee turns off a system, machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.

#### 32.15.03. Sequential Shutdown

32.15.03.01. The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown shall be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.

#### 32.15.04. System, machine or equipment isolation

32.15.04.01. All energy isolating devices that are needed to control the energy to the system, machine or equipment shall be physically located and operated in such a manner as to isolate the system, machine or equipment from the energy source(s).

32.15.04.01.01. Lockout and or tag out device application

32.15.04.01.02. Lockout and or tag out devices shall be affixed to all affected energy isolating device by an authorized employees.

32.15.04.01.03. Lockout devices, where used, shall be affixed in a manner to that will hold the energy isolating devices in a "safe" or "off" position.

32.15.04.01.04. Tag out devices, where used, shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.

32.15.04.01.05. Where a tag out devices is used with energy isolating devices designed with the capability of being locked, the tag attachment shall be fastened at the same point at which the lock would have been attached.

32.15.04.01.06. Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

### 32.15.05. Stored Energy

32.15.05.01. Following the application of lockout and or tag out devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe.

32.15.05.02. If there is a possibility of accumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.

### 32.15.06. Verification of isolation

32.15.06.01. Prior to starting work on a system, machines or equipment that have been locked out and or tagged out; the authorized employee shall verify that isolation and de-energization of the machine or equipment have been accomplished.

### 32.15.07. Release from lockout and or tagout

32.15.07.01. Before lockout or tags out devices are removed and energy is restored to the system, machine or equipment, procedures shall be followed and actions taken by the authorized employee(s) to ensure the following:

32.15.07.01.01. The work area shall be inspected to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

### 32.15.08. Employees

32.15.08.01. The work area shall be checked to ensure that all employees have been safely positioned or removed.

32.15.08.02. After lockout or tags out devices have been removed and before a system, machine or equipment is started, affected employees shall be notified that the lockout or tags out device(s) have been removed.

### 32.15.09. Lockout and or tagout device removal

32.15.09.01. Each lockout and or tagout device shall be removed from all energy isolating devices by the employee who applied the devices.

### 32.15.10. Reenergize and Test

32.15.10.01. Reenergize and test the system, machine or equipment to verify operability and readiness to return to normal operation.

32.15.11. Return system, machine or equipment to normal operation.

Exception: In the event an authorized employee who applied the lockout or tag out device is not available to remove it, that device may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented and incorporated into the employer's hazardous energy control program. The employer shall demonstrate that the specific procedure provides equivalent safety to the removal of the device by the authorized employee who applied it.

32.15.12. The specific procedure shall include at least the following elements:

- 32.15.12.01. Verification by the employer that the authorized employee who applied the device is not at the facility;
- 32.15.12.02. Making every and all reasonable efforts to contact the authorized employee to inform that the lockout and or tagout device assigned to that employee has been removed; and
- 32.15.12.03. Ensuring that the authorized employee has this knowledge of these actions before resuming any activities on that system, machine or equipment.

32.16. Verification of Readiness to Return to Normal Operation

32.16.01. Testing or positioning of system, machines or equipment. Situations which lockout and or tag out devices shall be temporarily removed from the energy isolating device and the system, machine or equipment energized to test or position the system, machine, equipment, the following sequence of actions shall be followed:

- 32.16.01.01. Clear the system, machine or equipment of tools and materials in accordance with this procedure;
- 32.16.01.02. Remove employees from the system, machine or equipment area in accordance with this procedure;
- 32.16.01.03. Remove the lockout and or tag out devices as specified in in this procedure;
- 32.16.01.04. Energize and proceed with testing or positioning;
- 32.16.01.05. De-energize all system, machine or equipment and reapply energy control measures in accordance with this procedure to continue the servicing and or maintenance or
- 32.16.01.06. Return System, machine or equipment to Normal Operation

32.17. Outside personnel

32.17.01. Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, the on-site employer and the outside employer shall inform each other of their respective lockout or tag out procedures.

32.17.02. The on-site employer shall ensure that affected employees understand and comply with the restrictions and prohibitions of the outside employer's control of hazardous energy program.

### 32.18. Group lockout and or tagout

- 32.18.01. When servicing and or maintenance is performed by a crew, craft, department or other group, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tag out device.
- 32.18.02. Group lockout or tag out devices shall be used in accordance with the procedures required by this policy including, but not necessarily limited to, the following specific requirements:
  - 32.18.02.01. Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout or tag out device (such as an operations lock);
  - 32.18.02.02. Provision for the authorized employee to ascertain the exposure status of individual group members with regard to the lockout or tag out of the machine or equipment; and
  - 32.18.02.03. When more than one crew, craft, department, etc. is involved, assignment of overall job-associated lockout or tag out control responsibility to an authorized employee designated to coordinate affected work forces and ensure continuity of protection; and
  - 32.18.02.04. Each authorized employee shall affix a personal lockout and or tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work, and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.

### 33. Abnormal Operating Condition Hold Out

33.01. This hold out procedure is intended to provide protection or security to systems, machines and or equipment—NOT EMPLOYEES and shall be administered by Department Supervisors, Designated Employees or Authorized Employees only.

Note: In the event an employee is required to place any part of the body into an area where a hazardous energy exists, the Control of Hazardous Energy Procedure for that system, equipment and or machine shall be implemented.

Note: By a standard definition and or under any circumstance of allowing the initial operation, continued operation, energization and or re-energization of any system, equipment, and or machine which will likely result in the potential exposure of persons, property, or the environment to a hazardous condition.

33.02. Locks and tags used for the hold out or securing of devices and or work zones shall not be of the same type as used for lock out tag out.

33.03. Abnormal Operating Condition Hold Out is used in the following circumstances:

33.03.01. Complete failure of the device or system

33.03.02. Malfunction of a component

33.03.03. Missing component

33.03.04. A temporary deviation from normal operation

33.03.05. Servicing, maintenance, diagnostic testing, return to service testing and or repair not completed

33.03.06. System, equipment, or machine is secured to prevent its operation when a component is missing.

33.03.07. System, equipment, or machine is secured to prevent its operation when deemed necessary by the attending authorized employee.

33.03.08. Installation is complete or in progress, but the system, equipment or machine has not been safety tested, inspected for quality control and, therefore, not released for normal operation.

33.03.09. As an informational or advisory alert of monitoring and or other condition of a system, equipment, or machine in a normal operational state that would require temporary restriction from any change in its normal operation for a specific period of time.

## 34. Fall Protection

This Fall Protection Program has been developed to prevent injury from falls of six (6) feet or more from a walking and or working surface to a lower level; to prevent objects falling from above and striking persons below, and to prevent job site persons from falling into and or through holes.

- 34.01. In all departments where activities are assigned that expose employees to a fall hazard, there will be at least one competent person who has the training and ability to identify fall hazards and the authority to ensure that proper fall protection systems are properly issued for use and the program is effectively implemented. This competent person(s) can be any combination of the following qualified employees; Supervisors, Supervisor designee and or any employee(s) with verifiable training in fall protection systems.
- 34.02. The following areas are addressed by this program:
  - 34.02.01. The need to know where a fall protection system is required.
  - 34.02.02. Selection of fall protection systems which are appropriate for given situations.
  - 34.02.03. Construction and installation of fall protection systems.
  - 34.02.04. Supervision of employees.
  - 34.02.05. Implementation of safe work procedures.
  - 34.02.06. Training in selection, use, and maintenance of fall protection systems.
- 34.03. Hazard Assessments
  - 34.03.01. Fall protection requires an effort by our employees to identify work situations in which fall hazards exist, determine the most appropriate fall protection system to be utilized, and to ensure that all persons affected understand the proper methods of utilizing the selected fall protection systems.
  - 34.03.02. Fall protection system requirements may change during an activity and employees will ensure that fall protection requirements are maintained at all times. Care will be taken to assure that load limits are not exceeded on walking and working surfaces and attachment points and hardware is capable of withstanding the potential forces that may be generated during an actual fall incident.
- 34.04. Definitions
  - 34.04.01. Anchorage: a secure point of attachment for lifelines, lanyards or deceleration devices.
  - 34.04.02. Body Harness: straps which may be secured about the employee in a manner that will distribute the fall arrest over at least the thighs, pelvis, waist, chest, and shoulders with means for attaching it to other components of a personal fall arrest system.
  - 34.04.03. Body positioning: A system that restrains and prevents a vertical fall of an employee to 2 feet or less.
  - 34.04.04. Buckle: any device for holding the body harness closed around the employee's body.

- 34.04.05. Carabineer: an oval metal ring with a snap link used to fasten a rope to the piton [a spike (attachment) with an eye to which a rope can be secured.]
- 34.04.06. Competent Person: one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees; and who has authorization to take prompt corrective measures to eliminate them.
- 34.04.07. Connector: a device which is used to couple parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabineer, or it may be an integral component of part of the system.
- 34.04.08. Controlled Access Zone: An area in which certain activities take place without the use of guardrail systems, personal fall arrest systems, or safety net systems; access to the zone is controlled.
- 34.04.09. Dangerous Equipment: Equipment which, as a result of form or function, may be hazardous to employees who fall onto or into such equipment.
- 34.04.10. Deceleration Device: any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.
- 34.04.11. Deceleration Distance: The additional vertical distance a falling employee travels from the point at which the deceleration device begins to operate before stopping, excluding lifeline elongation and free fall distance. It is measured as the distance between the location of an employee's body harness attachment point at the moment of activation of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.
- 34.04.12. Equivalent: alternative designs, materials, or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the standard.
- 34.04.13. Failure: load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.
- 34.04.14. Fall Arrest: A system that halts a fall in progress.
- 34.04.15. Fall Restraint: A system that prevents an employee from progressing to a point where a fall can occur.
- 34.04.16. Free Fall: the act of falling before a personal fall arrest system begins to apply force to arrest the fall.
- 34.04.17. Free Fall Distance: the vertical displacement of the fall arrest attachment point on the employee's body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline or lanyard elongation, but includes any deceleration device slide distance of self-retracting lifeline or lanyard extension before they operate and fall arrest forces occur.
- 34.04.18. Guardrail System: a barrier erected to prevent employees from falling to lower levels.



- 34.04.19. Hole: a gap or void 2 inches or more in its least dimension, in a floor, roof, or other walking and or working surface.
- 34.04.20. Infeasible: it is impossible to perform the construction work using a conventional fall protection system or that it is technologically impossible to use any one of these systems to provide fall protection.
- 34.04.21. Lanyard: a flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body harness to a deceleration device, lifeline, or anchorage.
- 34.04.22. Leading Edge: the edge of a floor, roof, or formwork for a floor or other walking and or working surface which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an “unprotected side and edge” during periods when it is not actively and continuously under construction.
- 34.04.23. Lifeline: a component consisting of a flexible line for connection to an anchorage at one end to hang vertically, or for connection to anchorages at both ends to stretch horizontally, and which serves as a means for connecting other components of personal fall arrest system to the anchorage.
- 34.04.24. Low-Slope Roof: a roof having a slope of the vertical to horizontal of less than or equal to 4 feet in 12 feet.
- 34.04.25. Lower-Levels: those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.
- 34.04.26. Mechanical Equipment: all motor or human propelled wheeled equipment used for roofing work, except wheelbarrows and mop carts.
- 34.04.27. Opening: a gap or void 30 inches or more high and 18 inches or more wide, in a wall or partition through which employees can fall to a lower level.
- 34.04.28. Overhand Bricklaying and Related Work: the process of laying bricks and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work. Related work includes mason tending and electrical installation incorporated into the brick wall during the overhand bricklaying process.
- 34.04.29. Personal Fall Arrest System: a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body harness and may include a lanyard, deceleration device, lifeline, or suitable combination of these. The use of body belts for fall arrest is prohibited.
- 34.04.30. Positioning Device System: a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.
- 34.04.31. Qualified Person: one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has



successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

- 34.04.32. Rope Grab: a deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.
- 34.04.33. Roof: the exterior surface on the top of a building. This does not include floors or formworks which, because a building has not been completed, temporarily become the top surface of a building.
- 34.04.34. Roofing Work: the hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck.
- 34.04.35. Safety-Monitoring System: a safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.
- 34.04.36. Self-Retracting Lifeline or Lanyard: a deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.
- 34.04.37. Snap Hook: a connector comprised of a hook-shaped member with a normally closed keeper of similar arrangement which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snap hooks are generally one of two types:
  - 34.04.37.01. The locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection;
  - 34.04.37.02. The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection. The use of a non-locking snap hook as part of personal fall arrest systems and positioning device systems is prohibited.
- 34.04.38. Steep Roof: a roof having a slope of the vertical to horizontal of greater than 4 feet in 12 feet.
- 34.04.39. Toe Boards: a low protective barrier that will prevent the fall of material and equipment to lower levels and provide protection from falls for personnel.
- 34.04.40. Unprotected Sides and Edges: any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or guardrail system at least 39 inches high.
- 34.04.41. Walking and Working Surface: any surface, whether horizontal or vertical, on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runway, formwork and concrete reinforcing steel; not including ladders, vehicles, or trailers on which employees must be located in order to perform their job duties.

- 34.04.42. Warning Line System: a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.
- 34.04.43. Work Area: that portion of a walking or working surface where job duties are being performed.
- 34.05. Where Fall Protection Is Required
  - 34.05.01. The “key” distance is six (6) feet. All employees shall be aware that if there is a possibility of falling six (6) feet or more at least one fall protection system shall be implemented.
- 34.06. Below listed are specific situations where fall protection systems shall be utilized.
  - 34.06.01. Unprotected Sides and Edges: Each employee on a walking and working surface with an unprotected side or edge which is 6 feet or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems.
  - 34.06.02. Leading Edges: Each employee who is constructing a leading edge 6 feet or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems.
  - 34.06.03. Hoist Areas: Each employee in a hoist area shall be protected from falling 6 feet or more to lower levels by guardrail systems or personal fall arrest systems. If a guardrail system is utilized in a hoist area and portions of the system are removed to facilitate the hoisting operation, and an employee must lean through the access opening or out over the edge of the access opening, that employee shall be protected by a fall arrest system.
  - 34.06.04. Holes: Each employee on walking and or working surfaces regardless of height shall be protected from falling through holes more than 6 feet above lower levels by personal fall arrest systems, covers, or guardrail systems.
  - 34.06.05. Each employee on a walking and working surface shall be protected from tripping in or stepping into or through holes by covers.
  - 34.06.06. Each employee on a walking and or working surface regardless of height shall be protected from objects falling through holes by covers.
  - 34.06.07. Formwork and Reinforcing Steel: Each employee on the face of formwork or reinforcing steel shall be protected from falling 6 feet or more to lower levels by personal fall arrest systems, safety net systems, or positioning device systems.
  - 34.06.08. Ramps, Runways and Other Walkways: Each employee on ramps, runways, and other walkways shall be protected from falling 6 feet or more to lower levels by guardrail systems.
  - 34.06.09. Excavations: Each employee at the edge of an excavation 6 feet or more in depth shall be protected from falling by guardrail systems, fences, or barricades when the excavations are not readily seen because of plant growth or other visual barriers. Each

employee at the edge of a well, pit, shaft, and similar excavation 6 feet or more in depth shall be protected from falling by guardrail systems, fences, barricades, or covers.

- 34.06.10. Dangerous Equipment: Each employee less than 6 feet above dangerous equipment shall be protected from falling into or onto the dangerous equipment by guardrail systems or by equipment guards. Each employee 6 feet or more above dangerous equipment shall be protected from fall hazards by guardrail systems, personal fall arrest systems, or safety net systems.
- 34.06.11. Overhand Bricklaying and Related Work: Each employee performing overhand bricklaying and related work 6 feet or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or shall work in a controlled access zone. Each employee performing overhand bricklaying and related work who is required to reach more than 10 inches below the level of the walking and or working surface on which the employee is working shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system.
- 34.06.12. Roofing Work On Low-Sloped Roofs: Each employee engaged in roofing activities on low-sloped roofs with unprotected sides and edges 6 feet or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems or a combination of a warning line system and a safety net system or a warning line system and a safety monitoring system.

NOTE: On roofs 50 feet or less in width, the use of a safety monitoring system alone (without the warning line system) is permitted.

- 34.06.13. Steep Roofs: Each employee on a steep roof with unprotected sides and edges 6 feet or more above lower levels shall be protected from falling by guardrail systems with toe boards, safety net systems, or personal fall arrest systems.
- 34.06.14. Wall Openings: Each employee working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is 6 feet or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface, shall be protected from falling by the use of a guardrail system, a safety net system, or a personal fall arrest system.
- 34.06.15. Working Surfaces Not Otherwise Addressed: Each employee on a walking or working surface 6 feet or more above a lower level that is not addressed in the preceding fourteen (14) categories shall be protected from falling by a guardrail system, a safety net system, or a personal fall arrest system.

NOTE: On multi-employer work sites, employees of all contractors and subcontractors shall understand the fall protection hazards that exist and utilize the various methods of fall protection systems when required by regulation.

### 34.07. Pre-Construction Survey

- 34.07.01. Prior to the initiation of any construction project, the job site will be surveyed by a competent and or qualified person to determine:
- 34.07.02. If fall protection systems will be required.
- 34.07.03. If fall hazards exist, the types of conventional fall protection systems to be utilized.

- 34.07.04. Particular attention will be given to anchorage points, location of warning lines.
- 34.07.05. Rescue procedures to be used if a fall actually occurs.
- 34.07.06. The load-carrying capabilities of the walking/working surface.
- 34.07.07. Assuring that all personnel utilizing a fall protection system have training in that system.
- 34.07.08. This survey may be made without the use of fall protection because no work will be accomplished during this survey and installing fall protection systems would create a greater hazard.
- 34.07.09. If it is determined that certain areas within the overall worksite have fall hazards that cannot be addressed with conventional fall protection systems (those areas being limited to leading edge work, residential construction work, and precast concrete work), then a Fall Protection Plan shall be prepared to specifically protect employees from these hazards.

### 34.08. Fall Protection Systems

#### 34.08.01. Guardrail System:

- 34.08.01.01. A guardrail system is a physical barrier erected to prevent employees from falling to lower levels.
- 34.08.01.02. The main advantage of a guardrail system is that it is a “passive” system which, once installed, requires no employee involvement in its function. A guardrail will stop an employee who inadvertently walks into it.

#### 34.08.02. Guardrail Systems at Hoisting Areas:

- 34.08.02.01. When guardrail systems are used at hoisting areas, a chain, gate or removable guardrail section shall be placed across the access opening between the guardrail sections when hoisting operations are not taking place.

NOTE: If a portion of the guardrail system is removed at a hoisting area to facilitate the hoisting operations and an employee must lean out over the opening, then that employee shall be protected by a personal fall arrest system. In this instance it is important to remember that the personal fall arrest system may not be attached to the guardrail system.

#### 34.08.03. Guardrails Systems At Holes:

- 34.08.03.01. Guardrail systems used at holes shall be erected on all unprotected sides of the edges of the hole.
- 34.08.03.02. When the hole is to be used for the passage of materials, the hole shall not have more than two sides provided with removable guardrail sections to allow the passage of materials. When the hole is not in use, it shall be closed over with a cover or protected with a guardrail system on all unprotected sides or edges.
- 34.08.03.03. At the hole, passing materials through the hole, etc.. When work is completed around the hole, the hole shall be protected by guardrails on

all sides of the hole or by covers.

- 34.08.03.04. Guardrail systems used around holes which are used as points of access will be provided with a gate or be offset so that a person cannot walk directly into the hole.

### 34.08.04. Guardrail Systems On Ramps and Runways:

- 34.08.04.01. Guardrail systems used on ramps and runways shall be erected along each unprotected side or edge. Ramps, runways, and other walkways on which employees need protection from falling 6 feet or more to a lower level shall be protected by a guardrail system and only a guardrail system.

### 34.08.05. Personal Fall Arrest Systems:

- 34.08.05.01. A personal fall arrest system is, as the name implies, a means of safety decelerating a falling body before a lower level is hit. The three main components of a personal fall arrest system are the:

- 34.08.05.01.01. Body harness.

- 34.08.05.01.02. Lanyard.

- 34.08.05.01.03. Anchorage point.

NOTE: Body belts can be used in a body positioning system and shall not be used in a personal fall arrest system.

- 34.08.05.02. The tie-off attachment point shall be at or above the connection point on the harness to prevent additional free fall distance.

- 34.08.05.03. As are guardrails, personal fall arrest systems are “passive” and require no employee involvement once they are properly rigged.

- 34.08.05.04. For all practical purposes, Dee-rings and locking type snap hooks shall have a minimum tensile strength of 5,000 pounds and lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds. Anchorages shall be capable of supporting 5,000 per employee. Anchorages used in personal fall arrest systems shall be independent of any anchorage being used to support or suspend platforms.

NOTE: Knots in a rope lanyard or lifeline can reduce its strength by as much as 50% and having a lanyard go over or around sharp edges can completely destroy its effectiveness.

- 34.08.05.05. With the exception that harnesses and components may be used as positioning device systems, personal fall arrest system components may not be used for purposes other than that for which they were designed.

- 34.08.05.06. Positioning device system components shall be inspected prior to each use for wear, damage, and other deterioration and defective components shall be removed from service.

- 34.08.05.07. Personnel should be aware that should a fall occur and self-rescue is not

possible, equipment and personnel will be available for rescue.

- 34.08.05.08. Should a personal fall arrest system actually be used to stop a fall, it shall be removed from service and not used again until inspected and determined to be undamaged and suitable for reuse by a competent person.

### 34.08.06. Warning Line System:

- 34.08.06.01. A warning line system is a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which activities may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.
- 34.08.06.02. A warning line system is to be used only during roofing work on low-sloped roofs over 50-feet in width with unprotected sides and edges 6-feet or more above lower levels on a simple rectangular roof, width is the lesser of the two primary overall dimensions. This is also the case with roofs which are sloped toward or away from the roof center. Warning line systems shall be used in conjunction with either a guardrail system; a safety net system; a personal fall arrest system; or a safety monitoring system.
- 34.08.06.03. As a general rule, warning line systems will be used in conjunction with a safety monitoring system.
- 34.08.06.04. A warning line made of ropes, wires, chains and supporting stanchions will be flagged at no more than 6-foot intervals with high-visibility material. As the name implies, this line will only “warn” employees that they are approaching an unprotected side or edge. The horizontal resisting force of a warning line is 16 pounds versus 200 pounds for a guardrail system.
- 34.08.06.05. No personnel are allowed in the area between a roof edge and a warning line unless they are performing roofing work in that area and wearing the appropriate fall protection system.
- 34.08.06.06. Mechanical equipment on roofs shall only be used in areas that are protected by either a warning line system, a guardrail system, or a personal fall arrest system.
- 34.08.06.07. The warning line shall be erected around all sides of the roof work area not less than 6-feet from the roof edge unless mechanical equipment is being used. In that case, the warning line shall be erected not less than 6-feet from the roof edge which parallels the mechanical operation and not less than 10 feet from the roof edge which is perpendicular to the direction of the mechanical operation.
- 34.08.06.08. Points of access, material handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines. When the aforementioned areas are not in use, the warning line will be adjusted to completely seal off the work area so that a



person cannot inadvertently enter the area.

### 34.08.07. Safety Monitoring System

34.08.07.01. A safety monitoring system used in conjunction with a warning line system is not considered a “passive system” because it takes active employee involvement and, as such, both the Safety Monitor and the employee(s) being monitored shall be alert for fall hazards.

34.08.07.02. A competent person shall perform the duties of Safety Monitor. These duties include:

34.08.07.02.01. Recognizing fall hazards,

34.08.07.02.02. Warning the employee when it appears the employee is unaware of a fall hazard or is acting in an unsafe manner,

34.08.07.02.03. Remaining on the same walking/working surface and within visual sighting of the employee being monitored, and

34.08.07.02.04. Remaining close enough to communicate orally with the employee being monitored.

34.08.07.02.05. The Safety Monitor shall have no other responsibilities which could take the monitor’s attention from the monitoring function.

34.08.07.02.06. Only the employee engaged in roofing work on low-sloped roofs or an employee covered by a fall protection plan [29 CFR 1926.502(k)] is allowed in the area being protected by the Safety Monitor.

34.08.07.02.07. When a safety monitoring system is being used, mechanical equipment will not be used or stored in that controlled zone.

### 34.08.08. Positioning Device System

34.08.08.01. A positioning device system consists of a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as an extension ladder, wall, and work with both hands free while leaning and limiting a fall to a vertical distance of 2 feet.

34.08.08.02. Positioning device systems shall be inspected prior to each use for wear, damage, and other deterioration. Defective components shall be removed from service. Components of positioning device systems shall never be used for purposes other than that for which they are designed.

### 34.08.09. Controlled Access Zone (CAZ):

34.08.09.01. A controlled access zone is an area in which certain work activity may take place without the use of guardrail systems, personal fall arrest

systems, or safety net systems and access to the zone is controlled.

- 34.08.09.02. Controlled access zones will only be used as part of a fall protection plan or when an employee is performing overhand bricklaying and related work. Persons performing overhand bricklaying or related work that requires reaching more than 10 inches below the walking and or working surface may not be afforded fall protection by working in a controlled access zone.
- 34.08.09.03. Controlled access zones are work areas that have limited access to only authorized personnel by means of control lines or other means that restrict access.

### 34.08.10. Covers

- 34.08.10.01. Covers can prevent an employee from stepping into a hole, tripping over a hole, falling through a hole, or being injured by objects falling through a hole.

NOTE: When work is completed around a hole, the hole shall be protected by guardrails on all sides of the hole or by covers.

- 34.08.10.02. Covers shall be capable of supporting, without failure, twice the weight of the employees, equipment, and/or materials that may be imposed upon them.
- 34.08.10.03. Covers, when used, shall be secured to prevent unintended displacement by wind, equipment, or employees.
- 34.08.10.04. All covers shall be color coded or marked with the word: "HOLE" or "COVER" to identify the hazard.

NOTE: The above does not apply to cast iron manhole covers or roadway steel grates.

- 34.08.10.05. Covers, and only covers, will be used on walking and or working surfaces to protect employees from tripping or stepping into or through a hole. This provision is regardless of the height of the hole above a lower surface.
- 34.08.10.06. Covers, and only covers, will be used to protect employees from objects falling through holes. This provision is regardless of the height of the hole above a lower surface.

### 34.08.11. Protection from Falling Objects

- 34.08.11.01. Covers are to be used to protect employees from objects falling through holes (including skylights) from upper surfaces regardless of heights.
- 34.08.11.02. Toe boards, used to prevent objects from falling on employees on a lower level shall be at least 3½ inches high with not more than a ¼ inch clearance between the toe board and the walking/working surface. When tools, materials, or equipment are piled higher than the top edge of the toe board, paneling or screening will be erected from the top of the toe board to the appropriate mid or top rail of the guardrail system to provide



adequate protection to employees below.

### 34.08.12. Incidents

34.08.12.01. Near miss, non-injury, injury and fatality incidents involving fall hazards will be investigated by a management designated investigation team to determine the cause of the incident and a method of preventing a reoccurrence. Questions to be considered are:

34.08.12.01.01. Was the fall protection system selected appropriate for the hazard?

34.08.12.01.02. Was the system properly installed?

34.08.12.01.03. Was the person involved in the incident following proper procedures?

34.08.12.01.04. Were there contributing factors such as ice, wind, debris, etc.?

34.08.12.01.05. Is retraining or a change of the Fall Protection Plan required?

### 34.08.13. Training and Retraining

34.08.13.01. Training, which shall be documented, shall include the following topics:

34.08.13.02. The nature of fall hazards in the work area.

34.08.13.03. The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection to be used.

34.08.13.04. The use and operation of guardrail systems; personal fall arrest systems; safety net systems' warning line systems; safety monitoring systems' controlled access zones; and other protection to be used.

34.08.13.05. The role of the Safety Monitor and the role of the employee when a safety monitoring system is used.

34.08.13.06. The limitations on the use of mechanical equipment during the performance of roofing work on low-sloped roofs.

34.08.13.07. The correct procedures for handling and storage of equipment and materials and the erection of overhead protection.

34.08.13.08. The role of employees in fall protection plans.

34.08.13.09. Training will be conducted by competent person(s) using the below listed items as resource materials:

34.08.13.09.01. This Fall Protection Program.

34.08.13.09.02. The manufacturer's instruction manuals that come with fall protection equipment.

- 34.08.13.09.03. Should the safety authority, competent person, a supervisor, or the a Program authority determine that an employee lacks the skills needed for proper fall protection, that employee shall be retrained.
- 34.08.13.09.04. Changes in the workplace, types of fall protection systems and equipment will also necessitate retraining.
- 34.08.13.10. Only the latest training verification document will be kept on file.

### **35. Powered Industrial Trucks (PIT) (Forklifts and Material Handlers)**

This program has been developed to make PIT operators aware of the hazards associated with motorized truck use as well as to provide guidance for safe truck operations.

- 35.01. Employees will be authorized to operate PIT only after they have successfully demonstrated their understanding of proper procedures for inspection, use, and refueling or recharging. Operators will demonstrate knowledge and abilities by passing a written test and performing designated maneuvers while operating the PIT. All operators will be evaluated by a Department supervisor, program consultant or a designated competent person.
- 35.02. Power; weight; size; restricted visibility; and, often, high center of gravity, operation of industrial trucks demands skill and attention to detail. Additionally, the load presents potential hazards if not properly secured, balanced, and or properly placed on the truck.
- 35.03. The department supervisor, program consultant or a designated competent person will determine whether the atmosphere or location in which our industrial trucks will operate is hazardous or non-hazardous and, after further assessing our needs, will determine which types of trucks are appropriate and allowed for our specific operations.
- 35.04. In the unlikely event that unsafe industrial motor truck operations are observed, retraining will be given with emphasis on correcting the improper behavior. PIT shall be operated in a professional manner and anything less shall not be tolerated.
- 35.05. All truck operators will have ready access to this program manual and all truck operator manuals.
- 35.06. Forklifts

PIT training should also apply to numerous types of powered industrial trucks such as: tractors; platform lift trucks; motorized hand trucks; and other specialized industrial trucks powered by electric motors or internal combustion engines.

#### 35.07. General Requirements:

- 35.07.01. All PIT operators shall be thoroughly familiar with the equipment. This includes knowing:
  - 35.07.02. Instinctively what the function of each control.
  - 35.07.03. How to perform and document a safety inspection.
  - 35.07.04. The limitations such as maximum load, height and width, visibility, stability, and surface requirements.
  - 35.07.05. The stopping and turning ability and its effect on loads.
  - 35.07.06. The below safety rules and guidelines to which one shall adhere to while operating a PIT. These rules are designed to protect the operator and or persons adjacent to the activity area.
- 35.07.07. Specifically:
  - 35.07.07.01. No person shall operate a PIT unless training is successfully completed and authorized in writing by a Department Supervisor.

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- 35.07.07.02. Prior to authorization, the operator will have read this program, received training, passed a quiz on PIT operations, and been evaluated on operational skills.
- 35.07.07.03. Authorization to operate one type of PIT does not automatically authorize a person to operate all. Different power sources, visibility restrictions, controls, and capacities may dictate a separate certification process be required for a different type of PIT. There may be instances where a new vehicle does not necessitate new training and a demonstration of proficiency. A newer model of a currently used truck may be identical to the truck the operator is qualified on as far as safety and operations are concerned. As a general rule, each type of truck has its own characteristics, limitations, and idiosyncrasies -- each model of a type of truck may or may not be unique. This shall be a judgment of the department supervisor, program consultant or a designated competent person if additional training is required.
- 35.07.07.04. No riders are allowed on our PIT unless:
  - 35.07.07.05. The truck is specifically designed for such use.
  - 35.07.07.06. The rider is authorized by the department supervisor, program consultant or a designated competent person.

NOTE: PIT are generally designed to move product, supplies and equipment, not personnel.

- 35.07.08. The department supervisor, program consultant or a designated competent person shall revoke the authorization to operate a PIT if unsafe acts are observed or it is apparent that the operator has not retained the knowledge and job skills necessary to safely perform PIT operations.
  - 35.07.09. An operator who has lost authorization to operate a truck will be retrained, reevaluated and when appropriate, re-authorized to operate.
  - 35.07.10. At the beginning of each shift, the operator will inspect the PIT using the PIT Daily Checklist. See appendix for form.
  - 35.07.11. If deficiencies relating to safety are found, the deficiencies will be noted on the checklist and reported to a Department supervisor, program consultant or a designated competent person. The vehicle will not be used until safety defects are repaired.
  - 35.07.12. If cosmetic damage is discovered during the daily check, it will be noted on the Checklist; however, the truck will be used. Cosmetic faults will not delay any operations.
- 35.08. Hazards. The major safety hazards involved in truck operation include:
- 35.08.01. Physically hitting a person and or object with the truck or load.
  - 35.08.02. Having a load fall and hit the operator or other person.
  - 35.08.03. Having the PIT tip and crush the operator or other person.
  - 35.08.04. Fire or explosion during refueling and or recharging.

- 35.08.05. Unintentional Contact with a Person or Object
- 35.08.06. Never drive up to a person standing in front of a fixed object.
- 35.08.07. When possible, stay within delineated travel lanes or aisles.
- 35.08.08. Be seen and or heard.
- 35.08.09. Ensure that adequate lighting is available.
- 35.08.10. Maintain a clear view of travel. If the load blocks or restricts the view, the operator will drive with the load trailing or backwards.
- 35.08.11. Slow down, sound horn, and do not pass where vision is restricted.
- 35.08.12. Operate the truck at speeds that will allow it and the load to be stopped in a safe, smooth, manner.
- 35.08.13. Be aware of floor conditions. Remove loose objects that have found their way to the truck travel lanes. Operate the PIT at slower speeds on wet or slippery floors.
- 35.08.14. Stunt or reckless driving is prohibited.
- 35.08.15. Be aware of the height of the PIT and, if equipped, its mast and load.
- 35.08.16. Never allow anyone to stand or pass under an elevated portion of any truck at any time.

### 35.09. Falling Loads

- 35.09.01. Know your load -- do not "over stack". Practically all loads lifted or hauled by a forklift are not secured to the PIT, ensure the load is properly stacked. Cartons generally should be interlaced or banded.
- 35.09.02. If lifting a load or pallet, position the forks or other engaging means as far under the load as possible.
- 35.09.03. Travel with the load in the lowest position for stability as well as prevention of hitting objects overhead. If using forks, tilt the load backward for stabilization.
- 35.09.04. Do not exceed the truck's rated capacity or stack loads too high.
- 35.09.05. Do not make abrupt movements such as slamming the brakes or high speed turns.
- 35.09.06. A load backrest extension will reduce the possibility of part of the load falling rearward.
- 35.09.07. When using a fork lift, the forks may be tilted forward only for picking up or setting down a load.

### 35.10. Tipping

A PIT is, by design, narrow allowing them greater access within the work setting. Unfortunately, a narrow track offers less stability. Tipping or falling off an edge or dock is a preventable incident by following the guidelines below. If your PIT tips, keep your body and limbs within the safety of the cage. Wear a seat belt if the truck is so equipped.

- 35.10.01. Stay within travel lanes.

- 35.10.02. If entering a trailer, ensure:
- 35.10.03. The trailer brakes are engaged.
- 35.10.04. The trailer is secured from movement by means of chocks and/or a locking mechanism.
- 35.10.05. The tractor is either shut off or removed from the trailer.
- 35.10.06. The trailer is squared up with the dock opening and dock plates are secure.
- 35.10.07. The trailer floor is capable of supporting the forklift and its load.
- 35.10.08. The lighting within the trailer is adequate.

NOTE: Falling off a dock edge because a trailer has moved is invariably a serious incident. Do not count on the tractor-trailer driver to lock his brakes or even trust that his brakes work. Physically check and ensure that the trailer into which you are taking your forklift is flush against the dock. If possible, the trailer should be attached to the dock; in all cases, the wheels shall be chocked.

- 35.10.09. Travel with the load in the lowest possible position and avoid sharp turns at higher speeds as well as abrupt truck movements.
  - 35.10.10. Be aware of the surface on which you are traveling -- its traction, ability to hold weight, slope, and surface.
- 35.11. Fire and or Explosion During Refueling or Battery Recharging
- 35.11.01. Refueling incidents are not common experiences, however should they occur, they would be sudden and possibly catastrophic. Follow the manufacturer's owner's manual and local fire laws.
  - 35.11.02. There is absolutely NO SMOKING or open flame during any portion of the refueling and or recharging process.
  - 35.11.03. At least an ABC rated fire extinguisher, shall be readily available when refueling propane. Facilities for quick drenching of the eyes and body shall be readily available.

### 35.12. Other Considerations

The program is concerned with the personal safety of PIT operators. However, when discussing truck operations, it would be remiss if it were not pointed out that improper PIT operations could also result in physical damage to products, trucks, and or facilities. Proper PIT operation will reduce personal injury incidents, and, as an added benefit, prevent general damage.

### 35.13. Operator Protection

- 35.13.01. A hazard assessment of PIT operations will be conducted by a department supervisor, program consultant or a designated competent person. Particular attention will be given to hand, head, eye, and foot protection as well as environmental conditions such as atmospheres, heat or cold. If the truck is equipped with a seat belt, it shall be worn when the truck is moving.
- 35.13.02. Keep your limbs within the running lines of the truck and keep your hands and fingers away from moving parts -- particularly the mast on a fork lift truck.

35.13.03. The department supervisor, program consultant or a designated competent person will perform a hazard assessment of PIT operations and determine the personal protective equipment (PPE) requirements. If PPE (examples: steel toed boots, leather gloves, hard hat, eye protection, etc.) is required, it shall be worn.

### 35.14. PIT Operation

35.14.01. In addition to safety operating practices previously identified in this manual, the following will be considered general operating procedures:

35.14.02. Fire aisles, access to stairways, and fire equipment shall be kept clear.

35.14.03. Operators leaving the PIT shall ensure the load is fully lowered; controls neutralized, and brakes set. On an incline, the wheels shall be chocked. If the operator is 25 feet or more from the truck or does not have a clear view of the truck, the power to the truck shall be shut off and the keys removed.

35.14.04. A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock, platform or freight car.

35.14.05. PIT shall not be used for opening or closing freight doors.

35.14.06. PIT, like all items of equipment, will be used for the purpose for which they were designed. Be aware that if the operator of a semi-trailer has placed the rear wheels in a far forward position, the trailer may act as a “teeter-totter” when a heavy forklift enters the trailer. When a trailer is not coupled to a tractor, fixed jacks may be necessary to support the semi-trailer during loading or unloading. Be aware that the overhead guard is designed to prevent injury from the impact of small packages, boxes, bagged material, etc. -- it is not designed to withstand the impact of a falling capacity load.

35.14.07. In the event persons are lifted by a PIT, a lifting platform shall be securely attached to the lifting mechanism and the persons on the safety platform shall have means of shutting off power to the PIT.

35.14.08. If more than one PIT is operated, they shall be separated by a safe distance of a minimum of three PIT lengths and may not pass each other in intersections, blind spots, or other dangerous locations. The right of way shall be yielded to other vehicles in emergency situations.

35.14.09. PIT traveling in the same direction shall not be passed at all.

35.14.10. Driving on grades:

35.14.10.01. Grades shall be ascended or descended slowly.

35.14.10.02. When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade.

35.14.10.03. Motorized hand trucks shall enter confined areas with the load end forward.

### 35.15. Maintenance



- 35.15.01. While the operator is responsible for checking the PIT before use, actual mechanical maintenance shall be performed by a qualified and authorized person.
- 35.15.02. If at any time a PIT is found to be in need of repair, defective, overheating, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition.
- 35.15.03. Forklifts should be kept reasonably clean and free of excess oil and grease.
- 35.16. Duties of the department supervisor, program consultant or a designated competent person:
  - 35.16.01. Operator training, qualification and authorization.
  - 35.16.02. Hazard assessment of PIT operations.
  - 35.16.03. Identification deficient PIT operators; by demonstration of performance; have demonstrated a lack of retained knowledge or ability to safely operate a powered industrial truck. These employees will receive retraining.
  - 35.16.04. Keeping abreast of developments in the materials handling field with an emphasis on safety.
  - 35.16.05. Additionally, the administrator will ensure that all truck operators have readily available this program manual, the individual PIT Operator and Owner Manual.
- 35.17. Training
  - 35.17.01. The department supervisor, program consultant or a designated competent person will administer the training portion of this program.
  - 35.17.02. Interactive training will be given with ample opportunity to ask questions and clarify all aspects of PIT operation relating to safety. Prior to actual operation on the job, all PIT operators will become familiar with the contents of this program as well as the operator's manual applicable to the specific powered industrial truck. Each operator will demonstrate an understanding of PIT operations and complete an operational driving test which will include inspection, maneuvering, fueling and or charging.
  - 35.17.03. The department supervisor, program consultant or a designated competent person will ensure that all PIT operators have a complete understanding of the below listed topics:
    - 35.17.04. Truck Related Topics:
      - 35.17.04.01. Operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.
      - 35.17.04.02. Differences between the truck and the automobile.
      - 35.17.04.03. Controls and instrumentation: where they are located, what they do, and how they work.
      - 35.17.04.04. Engine or motor operation.
      - 35.17.04.05. Steering and maneuvering.



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- 35.17.04.06. Visibility (including restrictions due to loading).
- 35.17.04.07. Fork and attachment adaptation, operation, and use limitations.
- 35.17.04.08. Vehicle capacity.
- 35.17.04.09. Vehicle stability.
- 35.17.04.10. Any vehicle inspection and maintenance that the operator will be required to perform.
- 35.17.04.11. Refueling and/or charging and recharging of batteries.
- 35.17.04.12. Operating limitations.
- 35.17.05. Workplace Related Topics:
  - 35.17.05.01. Surface conditions where the vehicle will be operated.
  - 35.17.05.02. Composition of loads to be carried and load stability.
  - 35.17.05.03. Load manipulation, stacking, and un-stacking.
  - 35.17.05.04. Pedestrian traffic in areas where the vehicle will be operated.
  - 35.17.05.05. Narrow aisles and other restricted places where the vehicle will be operated.
  - 35.17.05.06. Hazardous (classified) locations where the vehicle will be operated.
  - 35.17.05.07. Ramps and other sloped surfaces that could affect the vehicle's stability.
  - 35.17.05.08. Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust.
  - 35.17.05.09. Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.
  - 35.17.05.10. New truck operators may operate powered trucks in a training capacity:
    - 35.17.05.11. When they are under the direct supervision of persons who have the knowledge, training, and experience to train and evaluate their competence.
    - 35.17.05.12. Where such operation do not endanger themselves or others.
- 35.17.06. The department supervisor, program consultant or a designated competent person will validate the training and evaluation has been accomplished per the following schedule:
  - 35.17.06.01. Before the employee is assigned to operate a forklift.
- 35.17.07. Refresher training shall be completed:
  - 35.17.07.01. At 3 year intervals or at 1st occurrence of:

- 35.17.07.01.01. Unsafe PIT operation is observed.
- 35.17.07.01.02. After any near-miss or incident.
- 35.17.07.01.03. Operator is to be assigned to drive a different type of PIT.
- 35.17.07.01.04. Workplace changes that could affect safe operation of the PIT.

### 35.18. Use of PIT to support scaffold platforms

35.18.01. PIT may be used to support scaffold platforms with the following conditions:

- 35.18.01.01. The forklift will be designed for such use as indicated either:
  - 35.18.01.02. In the owner's manual, or
  - 35.18.01.03. By a letter from the manufacturer allowing such use, or
  - 35.18.01.04. Certification by a registered engineer that the forklift is so designed.
- 35.18.01.05. The entire scaffold platform is securely attached to the forks.
- 35.18.01.06. The PIT is not moved horizontally while the platform is occupied.
- 35.18.01.07. The platform and PIT meets the recommended requirements for capacity, construction, access, use, and fall protection.
- 35.18.01.08. If the platform is not designed by the manufacturer of the forklift, it shall be designed and assembled by a qualified person.
- 35.18.01.09. The PIT shall be capable of supporting, without failure, its own weight and at least four times the maximum intended load.
- 35.18.01.10. The platform for elevating personnel shall not extend more than 10 inches beyond the wheelbase of the machine in use.
- 35.18.01.11. The employees on the platform shall be able to have travel and power controls at the platform level. This requirement is fulfilled by having the PIT operator remain with the operator compartment while personnel are on the platform.
- 35.18.01.12. The use of a PIT to support a scaffold platform will be used only after a determination that the use of other equipment such as scaffolds, scissor lifts, aerial lifts and ladders is not practical.

## 36. Hazard Communication

36.01. Hazard communication addresses the health and physical hazards associated with essentially all the chemical and chemical products found on the job site. This hazard communication program is designed to make all employees aware that most, if not all, job site chemicals have a downside if improperly used, spilled, transferred or stored. The hazard may be a physical hazard such as an explosion or a health hazard such as cancer.

36.02. Definitions:

36.02.01. Article: A manufactured item which is formed to a specific shape or design during manufacture; has end use function(s) dependent in whole or in part upon its shape or design during end use; and does not release, or otherwise result in exposure to a hazardous chemical under normal conditions of use.

Note: Articles are exempt from the Hazard Communication regulation.

36.02.02. Hazardous Chemical: any chemical that is a physical or a health hazard.

36.02.03. Physical Hazard: a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric (will ignite spontaneously in air at a temperature of 130°F or below), unstable (reactive) or water-reactive.

36.02.04. Health Hazard: a chemical 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. To clarify the difference between acute and chronic, acute effects occur rapidly as a result of short term exposure and are of short duration. Chronic effects occur as a result of long term exposure and are of a long duration. These terms can overlap. For example, a mild heart attack, with no pain severity, would be termed acute within the first two hours, yet if there were long term effects, it would be termed chronic.

36.02.05. Almost all chemicals are considered hazardous -- a steel beam or metal casting does not immediately come to mind as a hazardous chemical. Without a material safety data sheet (SDS) and or a label, one cannot assume a chemical is safe.

36.02.06. Even filters for your equipment will have an SDS. This is because, until it is placed in your equipment, it still has a downstream use and therefore until it is used it is not an article by definition.

36.02.07. Also exempt from the hazard communication regulation are chemicals which are regulated by other government agencies such as hazardous waste, food, tobacco products, and normal consumer products that are used in the workplace in the same manner, frequency and duration as normal consumer use and produce the same or less exposure as normal consumer use.

36.03. Chemical Types as Related to Health. Below is a list of categories of hazardous chemical types as they relate to health:

36.03.01. Carcinogen or potential carcinogen as determined by the International Agency for Research on Cancer (IARC) or a carcinogen or potential carcinogen as listed in the

Annual Report on Carcinogens published by the National Toxicology Program (NTP), latest edition, or as regulated by OSHA as a carcinogen.

- 36.03.02. Corrosive: A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. This is not to be confused with, and does not refer to, action on inanimate surfaces.
- 36.03.03. Highly Toxic: A chemical which is lethal to test animals under specific doses and time limits. Some tests require ingestion, some inhalation, some skin exposure, and some implantation.
- 36.03.04. Irritant: A chemical which is not a corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.
- 36.03.05. Sensitizer: A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure.
- 36.03.06. Toxic: A chemical which is lethal to test animals under specific doses and time limits. A toxic chemical has a greater dose per weight than a Highly Toxic chemical.
- 36.04. Target Organ Effects:
  - 36.04.01. Hepatotoxins: Chemicals which produce liver damage
  - 36.04.02. Signs & Symptoms: Jaundice; liver enlargement
  - 36.04.03. Chemicals: Carbon tetrachloride; nitrosamines
  - 36.04.04. Nephrotoxins: Chemicals which produce kidney damage
  - 36.04.05. Signs & Symptoms: Edema; proteinuria
  - 36.04.06. Chemicals: Halogenated hydrocarbons; uranium
  - 36.04.07. Neurotoxins: Chemicals which produce their primary toxic effects on the nervous system
  - 36.04.08. Signs & Symptoms: Narcosis; behavioral changes; decreased motor function
  - 36.04.09. Chemicals: Mercury; carbon disulfide
  - 36.04.10. Agents which act on the blood or hemotopoietic system: decrease hemoglobin function; deprive the body tissue of oxygen
  - 36.04.11. Signs & Symptoms: Cyanosis; loss of consciousness
  - 36.04.12. Chemicals: Carbon monoxide; cyanides
  - 36.04.13. Agents which damage the lungs: chemicals which irritate or damage the pulmonary tissue
  - 36.04.14. Signs & Symptoms: Cough; tightness in the chest; shortness of breath
  - 36.04.15. Chemicals: Silica; asbestos
  - 36.04.16. Reproductive toxins: Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis)

- 36.04.17. Signs & Symptoms: Birth defects; sterility
- 36.04.18. Chemicals: Lead; DBCP
- 36.04.19. Cutaneous hazards: Chemicals which affect the dermal (skin) layer of the body
- 36.04.20. Signs & symptoms: Defatting of the skin; rashes; irritation
- 36.04.21. Chemicals: Ketones; chlorinated compounds
- 36.04.22. Eye hazards: Chemicals which affect the eye or visual capacity
- 36.04.23. Signs & Symptoms: Conjunctivitis; corneal damage
- 36.04.24. Chemicals: Organic solvents; acids

### 36.05. Hazard Determination

- 36.05.01. The determination of chemical hazards is primarily the responsibility of the manufacturer and or importer. Should hazard information be received from a source other than the manufacturer, it shall be placed in this Hazard Communication Plan.
- 36.05.02. Labels: A label is any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.
- 36.05.03. All chemicals used in or on the job site shall be properly labeled using the manufacturer's labeling system. Labels shall not be removed or defaced. If a chemical is not labeled, it shall not be used with the following exception:

Note: Portable containers into which hazardous chemicals are transferred from labeled containers need not be labeled if they are for immediate use of the employee who makes the transfer. To simplify, one may take a hazardous chemical (example: paint) out of a labeled container and put it into a smaller, unlabeled container (example: paint tray), for immediate use. "Immediate use" is defined as being under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

- 36.05.04. The label shall clearly state:
  - 36.05.04.01. The identity of the hazardous chemical(s).
  - 36.05.04.02. The appropriate hazard warning.
  - 36.05.04.03. The name and address of the manufacturer.
  - 36.05.04.04. Appropriate hazard warnings would contain:
  - 36.05.04.05. Instruction for proper and safe use. This would include obvious information such as, "do not ingest" or "do not spray in eyes" as well as less obvious information such as, "caustic, wear rubber gloves"
  - 36.05.04.06. First aid instructions
  - 36.05.04.07. Fire containment instructions
  - 36.05.04.08. Storage

36.05.04.09. Disposal instructions

36.05.04.10. Treat empty containers of hazardous materials as if they were full. Proper disposal is a must.

### 36.06. Safety Data Sheets (SDS)

36.06.01. It is required that safety data sheets (SDS) be maintained for all hazardous chemicals in inventory. The information contained on SDS shall be readily accessible to the individual(s) using the products and we will share that information with whom we may work.

36.06.02. Chemicals come in all forms of matter: liquid, solid, and gas; they can be found as sludge, vapor, mist, dust, etc..

36.06.03. How would one know what a chemical smelled or looked like? How would one be able to administer first aid quickly? Where would you find the proper procedure for cleaning up a spill? Where would you find a listing of symptoms caused by inadvertent exposure to a chemical or chemical mixture? Where would you find firefighting procedures? These questions and many others are answered on Safety Data Sheets (SDS).

36.06.04. The Designated Safety Authority will be notified immediately if a chemical is in inventory without an SDS. Should that event occur, the Designated Safety Authority will submit a letter to the manufacturer or distributor requesting an SDS.

36.06.05. Personnel utilizing a new chemical product will review the SDS before initial use. New chemical products will be added to our List of Hazardous Chemicals.

36.06.06. While there is no specific format, the following information will be found on an SDS:

36.06.06.01. Identity (chemical or common name) which will be the same as on the label and on the required list of hazardous chemicals.

36.06.06.02. Hazardous chemical ingredients -- both the chemical and common name(s).

36.06.06.03. Physical and chemical characteristics such as boiling point, flash point, solubility in water, etc. Two of the most important items to be found in this category are appearance and odor. It is important to be able to identify chemicals rapidly and appearance and odor are of great value in initial determination.

36.06.06.04. Physical hazards which would include the potential for explosion, fire, and reactivity. Also included in this section are the flash point and auto ignition temperature. Special firefighting procedures are also noted and should be carefully studied by potential users.

36.06.06.05. Health hazards which include first aid procedures, signs and symptoms of exposure, medical dangers, exposure limits, routes of entry, precautions for safe handling, potential carcinogen information, and whether professional medical response is required after a mishap.

36.06.06.06. Chemical reactivity which includes stability, incompatibility with



other chemicals, hazardous decomposition products and hazardous polymerization. Special conditions to avoid may also be included.

- 36.06.06.07. Spill and/or leak procedures which include approved waste disposal methods.
- 36.06.06.08. Special handling information which includes appropriate hygienic practices, protective equipment requirements, and needed ventilation.
- 36.06.06.09. Special precautions which would include applicable control measures known to the manufacturer and/or importer. Should it be determined there are special advisories that pertain to our company, the advisories will be placed in this section of the SDS.
- 36.06.06.10. The name, address and telephone number as well as the date of preparation or revision shall be included.
- 36.06.06.11. Employees are not required to memorize nor expected to know all the information contained on an SDS; employees are expected to know where to find information when it is needed and to ask questions to clear up any uncertainties of the chemicals used in the workplace.
- 36.06.06.12. Particular attention should be paid to:
  - 36.06.06.12.01. Identification and detection of a hazardous chemical. This would include odor and color as well as container labeling.
  - 36.06.06.12.02. Physical hazards of the hazardous chemical. This information would include the potential for fire, explosion, and reactivity. Reactivity, in chemistry, is defined as “the reciprocal action of chemical agents upon each other; chemical change.” The SDS will indicate proper procedures for fire extinguishing, including special precautions, if needed.
  - 36.06.06.12.03. The health hazards of the chemical. Routes of entry are noted. A chemical may enter the body through ingestion, inhalation, absorption, or injection. Signs and symptoms are indicated such as irritation of the skin, redness of the eyes, nausea, etc. Health hazards are defined as acute, chronic or both. Carcinogenicity is indicated. First Aid procedures are explained as well as notes to a treating physician, if appropriate.
  - 36.06.06.12.04. Methods to lessen or prevent exposure are explained. The need for protective equipment such as rubber gloves, disposable suits, respirators, goggles, etc. is explained. Hygienic work practices are re-enforced such as keeping the product away from food and washing hands after use.

- 36.06.06.12.05. The SDS has a wealth of information which is to be made available to all employees and to anyone who wants to review them. There is nothing secret about an SDS; its whole purpose is the dissemination of information. It provides awareness.
- 36.06.06.12.06. Should an employee not be able to read English, the information contained on SDS and labels (and any other warning sign) will be given orally or written in that employee's language. The actual labels, SDS, and all warning signs shall be written in English.

### 36.07. List of Hazardous Chemical Products

- 36.07.01. A list will be maintained of all hazardous chemical products in our inventory. This list will be arranged alphabetically by trade or common name and be readily available to our employees. This will also be the order in which the SDS is filed.

### 36.08. Training and Documentation

- 36.08.01. The designated safety authority is responsible for employee training and will ensure that all new employees attend training on our Hazard Communication Plan prior to initial work assignment. Training shall include:
  - 36.08.01.01. Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area. The primary method to detect the presence of a release is sight and smell. As mentioned above, the appearance and odor of a hazardous chemical can be found on the SDS for that chemical.
  - 36.08.01.02. Physical and health hazards of the chemicals in the workplace. This information is found on the appropriate SDS.
  - 36.08.01.03. Measures to take to protect the employee from chemical hazards. This Hazard Communication Program, the specific SDS, as well as oral and hands on training and instruction provide the basis for measures to protect one's self. Where required protective equipment will be provided. Never minimize the value of protective safety equipment. For example, the use of relatively inexpensive eye protection could easily save your eyesight.
  - 36.08.01.04. Each employee will sign a form indicating that they have attended training and understand the above.
  - 36.08.01.05. Annually, all employees will receive refresher training to ensure that awareness is maintained. Furthermore, with the introduction of each new hazard, not necessarily each new chemical, training will be given with specific emphasis on emergency procedures as noted on the SDS. This training will include procedures for handling leaks and spills, personal protection equipment if required, decontamination procedures, etc.

### 36.09. 12.248. Non-Routine Tasks



36.09.01. Prior to performing a non-routine task, an employee will be given information by a competent person or supervisor concerning the hazardous chemicals to which he may be exposed. This information will include:

36.09.02. Specific chemical hazards

36.09.03. Protective/safety measures the employee may take.

36.09.04. Measures taken to lessen the hazards including ventilation, respirators, presence of another employee and emergency procedures.

### 36.10. Chemicals in Unlabeled Pipes

36.10.01. Should work activities be performed in areas where chemicals are transferred through unlabeled pipes, the employee shall be informed by the competent person or supervisor of:

36.10.01.01. The chemical in the pipes.

36.10.01.02. Potential Hazards.

36.10.01.03. Safety precautions to be taken.

## 37. Permit Required Confined Space

The purpose of this procedure is to protect employees from the hazards of entry into confined spaces. Employees are required to comply with the restrictions and limitations imposed upon them during entry of permit required confined spaces. Employees authorized to participate in permit required entry activities are required to perform the entry in accordance with this policy. Failure to comply with this Permit Required Confined Space Program is cause for disciplinary action up to and including dismissal. This procedure applies to all Physical Plant locations and employees that enter and or work around confined spaces.

### 37.01. Definitions

- 37.01.01. Attendant: An employee that is designated to remain outside of a permit space and monitors authorized entrants.
- 37.01.02. Authorized Entrant: An employee that is authorized to enter a permit required space.
- 37.01.03. Entry Supervisor: An employee responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry. Entry Supervisor may also serve as an attendant.
- 37.01.04. Confined Space: A space or work area containing all of the following characteristics:
  - 37.01.04.01. Is large enough and so configured that an employee can bodily enter and perform assigned work and
  - 37.01.04.02. Has limited or restricted means for entry or exit and is not designed for continuous employee occupancy.
- 37.01.05. Entry: The action by which a person passes through an opening into a permit-required confined space; entry is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.
- 37.01.06. Hazardous Atmosphere: An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (escape unaided from a space), injury, or acute illness from one or more of the following:
  - 37.01.06.01. Flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit (LEL).
  - 37.01.06.02. Airborne combustible dust at a concentration that meets or exceeds its LEL (this condition is met if dust obscures vision at a distance of 5 feet or less).
  - 37.01.06.03. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.
  - 37.01.06.04. Atmospheric concentration of any substance that could result in employee exposure in excess of the substance's permissible exposure limit.
  - 37.01.06.05. Any other atmospheric condition that is immediately dangerous to life or health (IDLH).

- 37.01.07. Non-Permit Confined 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.
- 37.01.08. Permit-Required Confined Space (Permit Space): Any space or work area that has one or more of the following characteristics:
  - 37.01.08.01. Contains or has the potential to contain a hazardous atmosphere.
  - 37.01.08.02. Contains a material that has the potential for engulfing an entrant.
  - 37.01.08.03. Has an internal configuration that can trap or asphyxiate an entrant by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section.
  - 37.01.08.04. Contains any other recognized serious safety or health hazard.
- 37.02. Department Supervisors
  - 37.02.01. Identify work locations that are possible confined spaces.
  - 37.02.02. Assist in classifying confined spaces as “Permit-Required” or “Non Permit- Required”.
  - 37.02.03. Ensure that employees that enter permit spaces are trained and follow permit space entry procedures.
- 37.03. Employees
  - 37.03.01. Attend confined space training if required.
  - 37.03.02. Follow permit space procedures if entering a permit space.
- 37.04. Physical Plant Safety
  - 37.04.01. Assist in identifying confined spaces.
  - 37.04.02. Assist in classifying confined spaces as “Permit-Required” or “Non Permit-Required”.
- 37.05. Confined Space Program coordinator for the Physical Plant
  - 37.05.01. Identification of Confined Spaces
    - 37.05.01.01. Spaces in which employees perform work shall be evaluated for hazards, both known and potential.
    - 37.05.01.02. Spaces that meet all of the criteria for a confined space shall be identified as a confined space.
    - 37.05.01.03. Confined Space Identification form may be used to list identified confined spaces.
- 37.06. Reclassification of a Permit-Required Confined Space
  - 37.06.01. A space classified as a permit-required confined space may be reclassified as a non-permit confined space under the following conditions:

- 37.06.01.01. If the permit space poses no actual or potential atmospheric hazards and it has been verified by sampling the atmosphere of the space.
- 37.06.01.02. All hazards within the space can be eliminated without entry into the space.
- 37.06.01.03. If it is necessary to enter a permit-required space to eliminate hazards, the space shall first be entered following permit space requirements. Once the hazard is eliminated the space may be reclassified as a non-permit confined space.
- 37.06.02. Use Confined Space Evaluation form to certify and document the reclassification of the space.
- 37.07. Alternate Procedures for Permit Space Entry
  - 37.07.01. A space classified as a permit-required confined space may be entered using alternative procedures (Confined Space Entry Permit Form not required) if:
    - 37.07.01.01. The only hazard posed by the permit space is an actual or potential hazardous atmosphere, and
    - 37.07.01.02. Continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry.
    - 37.07.01.03. Data (air monitoring results) supporting use of alternative procedures is obtained without entry into the permit space.
- 37.08. Entering Permit Required Confined Spaces
  - 37.08.01. General Requirements
    - 37.08.01.01. Before entry into any permit-required confined space, the following general procedures shall be followed:
      - 37.08.01.01.01. All entrants and attendants shall have been trained on permit space entry procedures.
      - 37.08.01.01.02. Confined Space Entry Permit form is to be completed prior to entry into the permit required space.
      - 37.08.01.01.03. Guard or barricade entry opening to prevent unauthorized entry; and to protect entrants from external hazards.
      - 37.08.01.01.04. Prior to entry, atmospheric testing shall be completed.
      - 37.08.01.01.05. All hazards of the permit space shall be identified and evaluated before employees are allowed to enter. Use the Confined Space Entry Permit form to document the identification and evaluation of hazards in the space.
      - 37.08.01.01.06. Establish communication procedures for entrants and attendants, prior to entrance.

37.08.01.01.07. Personal protective equipment and other safety equipment needed for safe entry, egress or rescue shall be provided.

37.08.01.01.08. The Entry Supervisor shall review and verify the confined space entry permit form is completed before approval can be given to enter a permit-required confined space.

### 37.08.02. Air Monitoring

37.08.02.01. Prior to entry, before an employee enters the space, the internal atmosphere will be tested for oxygen content, flammable concentrations and potential toxic air contaminants. Results of the air monitoring will be documented on the confined space entry permit.

37.08.02.02. No entry if oxygen levels are below 19.5 percent or above 23.5 percent.

37.08.02.03. No entry if concentration of flammable gases, vapors, or mists are in excess of 10 percent of their lower explosive limit (LEL).

37.08.02.04. No entry if levels of any substance that could result in employee exposure in excess of the substance's permissible exposure limit.

37.08.02.05. During entry, continue to monitor the space for oxygen levels, flammable concentrations and for toxic contaminants. If a hazardous atmosphere is detected during the entry, the attendant will order the entrants to exit the space.

### 37.08.03. Air Ventilation

37.08.03.01. If the atmosphere is found to lack oxygen or to contain unsafe levels of toxic gas or vapor, the space shall be mechanically ventilated to acceptable levels before entry.

### 37.08.04. Interruption of Work in Permit Required Spaces

37.08.04.01. If circumstances cause an interruption in the work, such as taking lunch or a break:

37.08.04.02. The air will be tested each time before re-entry and documented on the permit form.

37.08.04.03. Assess the space to verify that all other hazards identified on the permit form are not present in the permit space.

### 37.08.05. Once work in the Permit Required Confined Space is Completed

37.08.05.01. Ensure that all employees and all equipment are out of the permit space.

37.08.05.02. Close the access cover to the permit space.

37.08.05.03. Return canceled permit to the entry supervisor.

- 37.08.05.04. All completed permit forms are to be kept for a minimum of one year.
- 37.08.06. Duties of Attendant
  - 37.08.07. Remain outside the permit space(s) at all times during entry operation until relieved by another attendant.
  - 37.08.08. Communicate with authorized entrants to monitor entrant status and to alert entrants of the need to evacuate the space when conditions warrant.
  - 37.08.09. Monitor activities inside and outside the permit space to determine if it is safe for entrants to remain in the space and ordering the entrants to evacuate the permit space immediately under any of the following conditions:
    - 37.08.10. The attendant detects a prohibited condition.
    - 37.08.11. The attendant detects the behavioral effects of hazard exposure in an entrant.
    - 37.08.12. The attendant detects a situation outside the space that could endanger the authorized entrants.
    - 37.08.13. Summon rescue and other emergency services if needed.
    - 37.08.14. Do not enter the permit space to attempt rescue of entrants.
    - 37.08.15. Perform any other assigned rescue and emergency duties without entering the permit space.
- 37.09. Duties of Authorized Entrant
  - 37.09.01. Complete training as required for confined space entry.
  - 37.09.02. Comply with the confined space entry procedures.
  - 37.09.03. Be able to recognize potential permit space hazards.
  - 37.09.04. Use appropriate PPE and other safety equipment and as designated by the permit space entry form.
  - 37.09.05. Communicate with the attendant to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space if necessary.
  - 37.09.06. Exit the permit space if:
    - 37.09.07. Ordered by the attendant to evacuate the space.
    - 37.09.08. Entrant recognizes any warning signs or symptoms of dangerous exposures.
    - 37.09.09. Entrant detects a prohibited condition or perceives there is a danger.
    - 37.09.10. An evacuation alarm is activated.
- 37.10. Duties of Entry Supervisor
  - 37.10.01. Make sure entry permit is completed before authorizing or allowing entry.

- 37.10.02. Make sure the necessary procedures, practices, and equipment for safe entry are in effect before allowing entry.
  - 37.10.03. Ensure that entry operations remain consistent with the terms of the entry permit, and that acceptable entry conditions are maintained.
  - 37.10.04. Take the necessary actions when terminating an entry operation, such as closing off a permit space and canceling the permit, once the work authorized by the permit has been completed.
- 37.11. Training
- 37.11.01. Awareness Training
    - 37.11.01.01. Awareness training will be provided for employees who work around or near confined spaces but do not enter the spaces.
    - 37.11.01.02. Awareness training will include the hazards and recognition of confined spaces
- 37.12. Training for Entry Supervisor, Authorized Entrants and Attendants
- 37.12.01. Requirements of the Physical Plant's Permit Required Confined Space policy and OSHA Permit Required Confined Space Standard.
  - 37.12.02. Recognition, evaluation and control of hazards within a permit required confined space.
  - 37.12.03. Use and limitations of atmospheric testing equipment, PPE and other safety equipment.
  - 37.12.04. Use of "Physical Plant Confined Space Entry Permit Form".
  - 37.12.05. Duties of entry supervisor, authorized entrant, and attendants.
- 37.13. Rescue Plan – Permit Required Confined Spaces
- 37.13.01. Non-Entry Rescue
    - 37.13.01.01. Retrieval systems and/or equipment located outside the permit space will be used.
    - 37.13.01.02. Attendants will conduct the rescue if needed from outside the permit space.
- 37.14. Fire Department Emergency Rescue Services
- 37.14.01. Attendant shall call 911 if an emergency situation arises.
  - 37.14.02. A telephone (or 2-way radio to contact personnel with a phone) shall be available at all times to facilitate calling for emergency services.
  - 37.14.03. When using a 2-way radio, personnel at the phone shall be notified prior to entry into the permit space and when the entry has been completed.
  - 37.14.04. When calling for emergency services, be prepared to provide the following information:
    - 37.14.04.01. Identify the location as a "Permit-Required" confined space.

- 37.14.04.02. The specific location of the permit space (Building and room number).
- 37.14.04.03. The nature and details of the emergency situation.
- 37.14.04.04. The types of hazards present in the space.
- 37.14.04.05. Do not enter or allow others to enter the permit space. Only rescue personnel may enter the permit space.

### 37.15. Contractors

- 37.15.01. When a Physical Plant contractor performs work that includes entry into a UW-Madison permit required confined space the Physical Plant will do the following:
  - 37.15.01.01. Inform contractor that the workplace contains permit spaces and that all entries into permit spaces shall comply with OSHA Permit-Required Confined Space standard.
  - 37.15.01.02. Provide information to the contractor about the elements and hazards of the space that make the space in question a permit space.
- 37.15.02. Contractor will inform Physical Plant of the permit space program they will follow.
- 37.15.03. Contractor will inform Physical Plant of any hazards confronted or created in the permit space.
- 37.15.04. If the contractor and Physical Plant employees will both be entering the permit space:
- 37.15.05. Coordinate Entry (complete the entry permit together)
- 37.15.06. Debrief at conclusion of the entry



### 38. Hearing Conservation

The primary purpose of the hearing conservation program is to prevent occupational noise-induced hearing loss for employees. A secondary purpose of the program is to provide guidance to comply with OSHA standards.

38.01. The Standard requires an effective hearing conservation program when noise levels exceed 85dBA for an 8 hour time weighted average. The program includes the following elements:

- 38.01.01. Noise monitoring
- 38.01.02. Audiometric testing
- 38.01.03. Hearing protection
- 38.01.04. Education and training
- 38.01.05. Related Documents
- 38.01.06. Regulatory Standards
- 38.01.07. Hearing Conservation Forms

38.02. Definitions

- 38.02.01. Action Level: Employee exposure to noise levels, without regard to any attenuation provided by the use of personal protective equipment, which exceeds 85 dBA or 50 percent of the permissible exposure limit.
- 38.02.02. Decibel: dB/dBA) Unit of sound measurement. dBA is a measurement using the A-weighted scale which approximates how humans hear sound.
- 38.02.03. Hertz: (Hz) Measurement of frequency also expressed as number of cycles per second.
- 38.02.04. Permissible Exposure Limit (PEL): A legal limit for an employee exposure to a chemical or physical agent, such as noise. PEL for noise is 90 decibels for an 8 hour time weighted average.
- 38.02.05. Standard Threshold Shift (STS): A change in hearing threshold of an average of 10 dB or more at 2,000, 3,000 or 4,000 Hz in either ear measured against the baseline audiogram.
- 38.02.06. Time-weighted Average (TWA): The average exposure to a chemical or physical agent to which employees may be exposed without adverse effect over a period, such as an 8-hour day or 40-hour week.

38.03. Administration

- 38.03.01. The administration of the program is the responsibility of each employing unit with assistance from the Physical Plant Safety.
- 38.03.02. Administrative responsibilities include the following:
- 38.03.03. Coordinating and supervising noise exposure monitoring.

- 38.03.04. Coordinating and supervising the audiometric testing program.
- 38.03.05. Assisting with hearing protector selection.
- 38.03.06. Developing policies relating to the use of hearing protection.
- 38.03.07. Coordinating and supervising required recordkeeping.
- 38.03.08. Evaluating the overall program periodically.
- 38.03.09. Coordinating required changes and improvements in the program.
- 38.04. Supervisors
  - 38.04.01. Identifying areas, work tasks and employees to be included in the hearing conservation program.
  - 38.04.02. Providing the resources for the program to be implemented, including availability for audiometric testing and hearing protection.
  - 38.04.03. Coordinating and assisting with employee training programs.
  - 38.04.04. Maintaining or coordinating documentation of noise exposures, training, audiometric testing and hearing protection use.
- 38.05. Procedure
  - 38.05.01. Noise Measurements and Monitoring
  - 38.05.02. The University has implemented a monitoring program to determine whether an employee's exposure may equal or exceed the action level of 85 dBA as an 8-hour time-weighted average.
  - 38.05.03. The Physical Plant Safety can assist with identifying employees for inclusion in the hearing conservation program by monitoring and consultation. Measurements can be used to enable the proper selection of hearing protection and to determine feasible engineering or administrative exposure control measures.
  - 38.05.04. Monitoring may be repeated whenever a change in production, process, equipment or controls increases noise exposures to the extent that additional employees may be exposed at or above the action level or the attenuation provided by hearing protection being used by employees is not adequate to meet requirements.
  - 38.05.05. The employee's Supervisor will notify an employee exposed at or above an 8-hour TWA exposure of 85 dBA of the monitoring results.
  - 38.05.06. The Physical Plant Safety will provide affected employees, or their representatives, with an opportunity to observe any noise measurements conducted.
  - 38.05.07. Monitoring will be coordinated by a campus industrial hygienist with assistance from the affected department or office.
- 38.06. Audiometric Testing

- 38.06.01. The University will make audiometric testing available to employees whose exposure equals or exceeds an 8-hour time-weighted average of 85 dBA at no cost to the employee.
- 38.06.02. Audiometric tests shall be performed by a licensed or certified audiologist, otolaryngologist, or other physician, or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation. A technician who operates microprocessor audiometers does not need to be certified. A technician who performs audiometric tests shall be responsible to an audiologist, otolaryngologist or physician.
- 38.06.03. Audiometric testing will be preceded by at least 14 hours without exposure to workplace noise. Hearing protectors may be used as a substitute for the requirement that baseline audiograms be preceded by 14 hours without exposure to workplace noise.
- 38.06.04. The Supervisor will notify employees of the need to avoid high levels of non-occupational noise exposure during the 14-hour period immediately preceding the audiometric examination
- 38.07. Baseline audiogram
  - 38.07.01. Within 6 months of an employee's first exposure at or above the action level, the University will establish a valid baseline audiogram to compare against subsequent audiograms.
- 38.08. Annual audiogram
  - 38.08.01. Audiograms will be completed at least annually after obtaining the baseline audiogram for employees exposed at, or above, an 8-hour time-weighted average of 85 dBA.
- 38.09. The EH&S Department, Occupational Health Officer will maintain a record of employee audiometric test records. This record will include the following:
  - 38.09.01. Name and job classification of the employee.
  - 38.09.02. Date of the audiogram.
  - 38.09.03. The examiner's name.
  - 38.09.04. Date of the last acoustic or exhaustive calibration of the audiometer.
  - 38.09.05. Employee's most recent noise exposure assessment.
- 38.10. Audiometric Evaluation
  - 38.10.01. Each employee's annual audiogram will be compared to their baseline audiogram by a qualified evaluator to determine if a Standard Threshold Shift (STS) has occurred.
  - 38.10.02. In determining if a STS has occurred, an allowance can be made for the contribution of aging (presbycusis).
  - 38.10.03. The audiologist, otolaryngologist, or physician will review audiograms and determine whether there is a need for further evaluation. The University will provide the following information to the person performing this evaluation:

- 38.10.04. A copy of the requirements for hearing conservation as set forth in the standard.
- 38.10.05. The baseline audiogram and most recent audiogram of the employee to be evaluated.
- 38.10.06. Any noise exposure measurements pertaining to the employee's work tasks.
- 38.10.07. The person conducting the audiograms may be required to provide the following documentation to the University:
- 38.10.08. Measurements of background sound pressure levels in the audiometric test room.
- 38.10.09. Records of audiometer calibrations.
- 38.10.10. If the annual audiogram shows that an employee has suffered a STS, the University may obtain a retest within 30 days and consider the results of the retest as the annual audiogram.
- 38.10.11. Unless a physician determines that the STS is not work-related or aggravated by occupational noise exposure, the University will follow these steps when a standard threshold shift occurs:
- 38.10.12. Employees not using hearing protection will be trained, fitted, and required to use hearing protection if they are exposed to an 8-hour TWA of 85 dBA or greater.
- 38.10.13. Employees already using hearing protection will be retrained, refitted, and required to use hearing protectors and provided with hearing protectors offering greater attenuation if necessary.
- 38.10.14. The audiology clinic will inform the employee in writing within 21 days of this determination of the existence of a permanent STS. A copy of the STS letter will also be sent to the employee's Supervisor.
- 38.10.15. The audiology clinic will counsel the employee on the importance of using hearing protection and refer the employee for further clinical evaluation if necessary.
- 38.10.16. Persistent significant threshold shifts shall be entered on the OSHA 300 Log if determined to be work-related.
- 38.11. Protective Equipment
- 38.12. The Supervisor will ensure that hearing protection is worn by the following employees:
  - 38.12.01. those subjected to sound levels equal to, or exceeding, an 8-hour TWA of 90 dB;
  - 38.12.02. those who have experienced a persistent STS and are exposed to an 8-hour TWA of 85 dBA or greater;
  - 38.12.03. Any employee who has not had an initial baseline audiogram and who is exposed to an 8-hour TWA of 85 dBA or greater.
  - 38.12.04. Hearing protection will be available for any employees exposed to noise levels greater than 85 dBA.
  - 38.12.05. Employees will be given the opportunity to select their hearing protection from a variety of suitable hearing protectors at no cost to them.

- 38.12.06. The Supervisor will provide training in the use and care of hearing protection and will ensure proper initial fitting and supervise the correct use of hearing protection.
  - 38.12.07. Employees will be held accountable for not properly using and maintaining the equipment furnished.
  - 38.12.08. The EH&S department will evaluate the attenuation characteristics of the hearing protectors to ensure that a given protector will reduce the individual's exposure to levels within the PEL.
  - 38.12.09. If the 8-hour TWA is over 90 dBA, the protector shall attenuate the exposure to at least an 8-hour TWA of 90 dBA or below.
  - 38.12.10. If the protector is being worn because the employee experienced a STS, then the protector shall attenuate the exposure to an 8-hour TWA of 85 dBA or below.
  - 38.12.11. If employee noise exposures increase to the extent that the hearing protectors provided may no longer provide adequate attenuation, the employee will be provided more effective hearing protectors.
- 38.13. Employee Training
- 38.13.01. An annual training program for each employee included in the hearing conservation program will be conducted by the Supervisor or EH&S Department and will include information on the following:
    - 38.13.02. The effects of noise on hearing.
    - 38.13.03. The purpose and use of hearing protectors.
    - 38.13.04. The advantages, disadvantages, and attenuation of various types of protection.
    - 38.13.05. Instruction in the selection, fitting, use and care of protectors.
    - 38.13.06. The purpose of audiometric testing and an explanation of the test procedures.
    - 38.13.07. Information provided in the training program will be updated to be consistent with changes in protective equipment and work processes.
- 38.14. Recordkeeping
- 38.14.01. Employee data relating to noise exposure measurements, audiometric testing and personal protective equipment used shall be kept for the duration of the affected employees employment plus 30 years. The records shall be kept in a confidential, secure manner. The following information should be forwarded to the Occupational Health Program:
    - 38.14.01.01. Noise exposure monitoring results.
    - 38.14.01.02. Audiometric test information, not including private, confidential medical information.
    - 38.14.01.03. Training information.
    - 38.14.01.04. Hearing protection information.

38.14.01.05. Records required by this section will be provided upon request to employees, former employees, and representatives designated by the individual employee.

### 38.15. Program Evaluation

38.15.01. At least annually, the implementation of the hearing conservation program will be evaluated by the Supervisor or other designated party. The overall program will be evaluated periodically by the Physical Plant Safety. After evaluation, program changes or revisions deemed necessary will be made as soon as possible.

### 39. Respiratory Protection

- 39.01. The purpose of this program is to assure that each respirator user is adequately protected from air contaminants of concern under routine and emergency situations; that respirators are kept clean, sanitary, and maintained in good operating condition; and that respirators are used by employees who have been properly fitted and trained.
- 39.02. This procedure applies to all Physical Plant employees who are exposed to a hazardous level of an airborne contaminant, or required by the employer to wear respirators, or permitted to wear respirators.
- 39.03. Definitions:
- 39.03.01. Filtering face piece or dust mask - A negative pressure particulate respirator with a filter as an integral part of the face piece or with the entire face piece composed of the filtering medium. A dust mask.
  - 39.03.02. Respirator – An air filtering device worn over the mouth and nose to protect the respiratory tract of the user from hazardous gas, vapor or particulate materials in the ambient air.
  - 39.03.03. Tight fitting face piece – A negative pressure respirator with a tight fitting face piece made of elastomers such as rubber or silicone. Depending on type of filter or cartridge used, may be used for vapor or particulates.
  - 39.03.04. Voluntary use - The use of a respirator in atmospheres which are not hazardous.
- 39.04. Department Director
- 39.04.01. The director of the department is solely responsible for this program and has full authority to make necessary decisions to ensure its success. The director may assign responsibility for implementation and day-to-day operation of the respirator program to a designated Respirator Program Administrator (RPA).
- 39.05. Supervisor
- 39.05.01. Supervisors are responsible to ensure that employees follow procedures for medical evaluations, fit tests, and training requirements; that they use and maintain the respirator properly; and that they report changes in exposure conditions to the RPA.
- 39.06. Employees
- 39.06.01. Employees shall obtain required medical evaluations, fit tests, and training, and wear and maintain the assigned respirator (as recorded in the “List of Employees Authorized for Respirator Use”) when working in an area requiring respirator use. Employees shall report changes in exposure conditions to the Department RPA.
- 39.07. Physical Plant Safety
- 39.07.01. The Physical Plant Safety will work with the department to conduct hazard assessments, set up the initial program, provide consultation as needed, periodically review effectiveness of the department program, and serve as the central records custodian for



copies of records of medical determinations, fit tests, and the list of authorized users in each department.

### 39.08. Selections Hazard Survey

39.08.01. Departments shall survey their work areas for respiratory hazards with the help of Physical Plant Safety or other experts on respiratory hazards

### 39.09. Selection Criteria

39.09.01. Where hazard evaluation data indicates the need for respiratory protection, the department shall provide the employee with an appropriate respirator model with acceptable fit at no cost to the employee.

39.09.02. Respirator selection shall be based on hazards the employee will be exposed to, and any other factors that may affect performance and reliability. All models of respirators used for employee health protection shall be certified by the National Institute of Occupational Safety and Health (NIOSH).

39.09.03. Selection and use of respirators for department employees includes consideration of the following:

39.09.04. Estimate of exposure hazard

39.09.05. Chemical and physical form of contaminant

39.09.06. Characteristics of the hazardous operations or processes

39.09.07. Location of hazardous areas

39.09.08. Period of time which respiratory protection may be needed

39.09.09. Activity of employees in the hazardous areas

39.09.10. Physical characteristics, capabilities, and limitations of various types of respirators

39.09.11. Respirator protection factors and respirator fit.

### 39.10. Limitations of Use

39.10.01. Employees are only allowed to wear the specific make, model, and size of air purifying respirators for which they have been properly fitted, and when applicable, those that meet the appropriate change-out schedule for cartridges and filters

39.10.02. Employees are prohibited from performing work in other departments where respiratory protection is required unless Physical Plant Safety or another authority on respiratory hazards has first completed a hazard evaluation for the work

### 39.11. Air Purifying Respirators Shall not be used Under the Following Conditions:

39.11.01. Immediately Dangerous to Life and Health (IDLH) atmospheres.

39.11.02. Oxygen deficient atmospheres (less than 19.5% oxygen).

39.11.03. Situations where contaminants lack sufficient warning properties.



- 39.11.04. Atmospheres containing unknown contaminants or concentrations.
- 39.11.05. Atmospheres containing contaminant concentrations exceeding maximum use of Respirators.
- 39.12. Training
  - 39.12.01. Training is required prior to use in the workplace, annually, and more frequently if necessary to ensure safe respirator use. The RPA shall maintain records of employees who participate in respiratory protection training.
  - 39.12.02. General training for air purifying respirators will be provided by Physical Plant Safety. Training appointments can be made by calling Physical Plant Safety. General training for air purifying respirators can also be provided by the department RPA. Site-specific training will be provided by personnel qualified to teach the information.
- 39.13. Medical Evaluations and Fit Testing
  - 39.13.01. Prior to initial use, medical authorization to wear a respirator shall be required of every employee that will be required to use a respirator. Medical evaluations will be conducted at University Health Services (UHS).
  - 39.13.02. For non-required use respirators, an initial medical evaluation is required only if the device has a tight-fitting elastomeric face piece.
  - 39.13.03. All department employees required to use a tight-fitting face piece respirator will be fit tested using the same make, model, style and size respirator they will use.
  - 39.13.04. Fit testing will be performed before initial use of a respirator, at least annually thereafter, and whenever conditions (such as employee's physical condition) change that could affect respirator fit.
  - 39.13.05. Fit testing requires the respirator user to handle the respirator, have it fitted properly, test the face piece-to-face seal, and to wear it in normal air for a familiarity period.
- 39.14. Inspection
  - 39.14.01. Respirators will be inspected before each use and after cleaning, checking respirator function, tightness of connections, condition of parts (including face piece, head straps, valves, filtering elements), and for any deterioration or loss of pliability of elastomeric (e.g., rubber or silicone) parts.
- 39.15. Cleaning and Disinfecting
  - 39.15.01. Respirators will be regularly cleaned, disinfected, inspected, repaired, stored, and when necessary, discarded.
  - 39.15.02. Respirators will be properly cleaned and sanitized.
  - 39.15.03. Respirators used routinely will be inspected during cleaning and worn or deteriorated parts will be replaced.
- 39.16. Respirator Repairs

- 39.16.01. Respirators failing inspection or found defective shall be removed from service.
- 39.16.02. Respirator repairs or adjustments are only done by properly trained personnel using parts designed for the respirator according to manufacturer's recommendations.
- 39.16.03. Discard respirators permanently removed from service so they do not return to service.

### 39.17. Storage

- 39.17.01. All respirators shall be stored in a clean and sanitary location to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, damaging chemicals, and to prevent face piece and exhalation valve deformation.

### 39.18. Volunteer Respirator Use

- 39.18.01. Where respirator use is not required for protection of employee health, the department may choose to allow voluntary use of respirators for employees who wish to wear them for comfort
- 39.18.02. Department management shall approve the respirator selected.
- 39.18.03. Any respirator may be used as a voluntary use respirator provided it does not create a health or safety risk to the user.
- 39.18.04. Employees may only use the voluntary use respirators that they are authorized for.
- 39.18.05. Employees are prohibited from using a voluntary use respirator in other departments.
- 39.18.06. Fit testing is not required for voluntary use respirators because respirator use is not necessary for protection of health.
- 39.18.07. Voluntary respirators may only be used as authorized by the department.
- 39.18.08. In locations where respirator use is required, voluntary use respirators are prohibited.
- 39.18.09. In locations where any overexposure could occur, voluntary use respirators are prohibited.
- 39.18.10. Provide OSHA-Required Information to All Voluntary Respirator Users

### 39.19. Program Evaluation

- 39.19.01. The RPA shall maintain appropriate surveillance of work area conditions and employee exposure.
- 39.19.02. The RPA shall monitor the effectiveness of the program.
- 39.19.03. Issues identified during surveillance shall be promptly corrected by the RPA.
- 39.19.04. A guide is found in the Appendices for performing program evaluations.
- 39.19.05. If a change is noted that has potential to increase employee exposure, the RPA will contact Physical Plant Safety to determine if protection modifications are necessary.
- 39.19.06. Record Keeping

- 39.19.07. The RPA will maintain the following records:
  - 39.19.08. Respirator user initial and annual medical clearance records
  - 39.19.09. Records of annual fit tests
  - 39.19.10. Evaluations of program effectiveness
  - 39.19.11. A written copy of the current department respirator program
- 39.20. Only authorized employees may use a respirator. Employees shall complete all requirements of the required use respirator program before using a respirator.
- 39.21. The authorization table lists employee names, their job classification, type of respirator, and the location or operation where respirator use is required.
- 39.22. The program shall be updated as necessary to reflect changes in workplace conditions and respirator use. The Department RPA shall maintain awareness of respirator use in the workplace to ensure that continuous successful implementation of all program elements is being achieved.
- 39.23. Frequency of evaluation is based on the complexity and factors such as the hazard, types of respirator in use, variability of processes and operations, numbers of users, and worker experience.

## 40. Scaffold and Ladders

A scaffold, by definition, is any temporary elevated platform and its supporting structure used for supporting employees or materials or both. Because of the numerous types of scaffolds, the infinite possible combinations of uses, the various surface features on which the scaffold may rest, and the varying conditions in which scaffolds may be used, it would be impossible to detail what to do in every situation.

### 40.01. 12.304. Definitions

- 40.01.01. Body Harness: a design of straps which may be secured about the employee in a manner to distribute the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with means for attaching it to other components of a personal fall arrest system.
- 40.01.02. Competent Person: one who is capable of identifying existing and predictable hazards in the surrounding or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- 40.01.03. Exposed Power Lines: electrical power lines which are accessible to employees and which are not shielded from contact. Such lines do not include extension cords or power tool cords.
- 40.01.04. Failure: load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.
- 40.01.05. Guardrail System: a vertical barrier consisting of, but not limited to, top-rail, mid-rail, and posts erected to prevent employees from falling off a scaffold platform or walkway to lower levels.
- 40.01.06. Landing: a platform at the end of a flight of stairs.
- 40.01.07. Lifeline: a component consisting of a flexible line that connects to an anchorage at one end to hang vertically (vertical lifeline), or that connects to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.
- 40.01.08. Lower Levels: areas below the level where the employee is located and to which an employee can fall. Such areas include, but are not limited to, ground levels, floors, roofs, ramps, runways, excavations, pits, tanks, materials, water, and equipment.
- 40.01.09. Maximum Intended Load: the total load of all persons, equipment, tools, materials, transmitted loads, and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time.
- 40.01.10. Open Sides and Ends: the edges of a platform that are more than 14 inches away horizontally from a sturdy, continuous, vertical surface (such as a building wall) or a sturdy, continuous, horizontal surface (such as a floor), or a point of access. Exception: For plastering and lathing operations, the horizontal threshold distance is 18 inches.
- 40.01.11. Personal Fall Arrest System: A system used to arrest an employee's fall. It consists of an anchorage, connectors, a body harness and may include a lanyard, deceleration device, lifeline, or combinations of these.

- 40.01.12. Platform: a work surface elevated above lower levels. Platforms can be constructed using individual wood planks, fabricated planks, fabricated decks, and fabricated platforms.
  - 40.01.13. Qualified Person: one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.
  - 40.01.14. Rated Load: the manufacturer's specified maximum load to be lifted by a hoist or to be applied to a scaffold or scaffold equipment.
  - 40.01.15. Scaffold: any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage) used for supporting employees or materials or both.
  - 40.01.16. Unstable Objects: items whose strength, configuration, or lack of stability may allow them to become dislocated and shift and therefore may not properly support the loads imposed on them. Unstable objects do not constitute a safe base support for scaffolds, platforms, or employees.
- 40.02. General Scaffold Guidelines:
- 40.02.01. Scaffolds and scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.
  - 40.02.02. Scaffolds and scaffold components shall be inspected for visible defects by a qualified and or competent person before each work shift and after any occurrence which could affect a scaffold's structural integrity.
  - 40.02.03. Damaged or weakened parts will be immediately replaced.
  - 40.02.04. Scaffolds shall be erected, moved, dismantled or altered only under the supervision and direction of a competent person qualified in scaffold erection, moving, dismantling or alteration. Such activities shall be performed only by experienced and trained employees selected for such work by the competent person.
  - 40.02.05. Work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for employees to be on the scaffold and these employees are protected by a personal fall arrest system or wind screens.
  - 40.02.06. Personnel may not work on scaffolds covered with snow, ice or other slippery material except to remove the material with extreme care.
  - 40.02.07. Where swinging loads are being hoisted onto or near scaffolds such that the loads might contact the scaffold, tag lines or equivalent measures to control the loads shall be used.
  - 40.02.08. Debris shall not be allowed to accumulate on platforms.
  - 40.02.09. Make-shift devices on top of scaffold platforms shall not be used to increase the working level height of employees.
  - 40.02.10. Guardrails should have smooth surfaces to prevent puncture, laceration, or snagging injuries.

40.02.11. Make-shift parts will not be used. A nail is not a substitute for a pin.

### 40.03. Supported Scaffolds

40.03.01. Employees who work on supported scaffolds shall follow the below listed rules and guidelines. These guidelines cover most, but not all situations. The competent person will address unusual situations.

40.03.02. Each platform unit on all working levels of a scaffold shall be fully planked or decked between the front uprights and the guardrail supports and each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 1 inch wide (where feasible.)

40.03.03. Supported scaffolds shall have a height to base (including outrigger supports, if used) width ratio of no more than 4:1 unless restrained from tipping by guying, tying, bracing, or equivalent means. The competent person will direct the procedures for prevention of tipping.

40.03.04. Supported scaffold poles, legs, posts, frames and uprights shall rest on base plates and mud sills or other adequate firm foundation.

Note: Base plates shall always be used on supported scaffolds

40.03.05. Footings shall be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.

40.03.06. Unstable objects cannot be used to support scaffolds or platform units.

40.03.07. Unstable objects shall not be used as working platforms.

40.03.08. Front-end loaders and similar pieces of equipment shall not be used to support scaffold platforms unless they have been specifically designed by the manufacturer for such use.

40.03.09. Fork-lifts shall not be used to support scaffold platforms unless the entire platform is attached to the fork and the fork-lift is not moved horizontally while the platform is occupied.

40.03.10. Supported scaffold poles, legs, posts, frames and uprights shall be plumb and braced to prevent swaying and displacement.

40.03.11. Scaffolds shall not be moved horizontally while employees are on them unless they have been designed by a registered professional engineer specifically for such movement or, in the case of mobile scaffolds:

40.03.11.01. The surface on which the scaffold is being moved is within 3 degrees of level and free of pits, holes, and obstructions.

40.03.11.02. The height to base width ratio of the scaffold during movement is two to one or less.

40.03.11.03. Outrigger frames, when used, are installed on both sides of the scaffold.

40.03.11.04. When power systems are used, the propelling force is applied directly to the wheels and does not produce a speed in excess of 1 foot per second.

- 40.03.11.05. No employee is on any part of the scaffold which extends outward beyond the wheels, casters, or other supports.
- 40.03.11.06. Before the scaffold is moved, each employee on the scaffold shall be made aware of the move.

### 40.04. Suspended Scaffold

- 40.04.01. Employees who work on suspended scaffolds shall follow the below listed procedures. These procedures address most situations. The qualified and or competent person will address unusual situations other than has been indicated in this procedure.
- 40.04.02. All suspension scaffold devices shall rest on surfaces capable of supporting at least 4 times the load imposed on them by the scaffold operating at the rated load of the hoist (or at least 1.5 times the load imposed on them by the scaffold at the stall capacity of the hoist, whichever is greater). Direct connections on suspension scaffolds shall be evaluated before use by a competent person who shall confirm that the supporting surfaces are capable of supporting the loads to be imposed.
- 40.04.03. Counterweights shall be made of non-flowable material. Sand, gravel and similar materials that can be easily dislocated may not be used as counterweights.
- 40.04.04. Only items specifically designed as counterweights shall be used as counterweights. Construction material shall not be used as counterweights.
- 40.04.05. Counterweights shall not be removed from an outrigger beam until the scaffold is disassembled.
- 40.04.06. The use of repaired wire rope as suspension rope is prohibited.
- 40.04.07. Wire ropes shall not be joined together except through the use of eye splice thimbles and secured by eye splicing or equivalent means.
- 40.04.08. Wire ropes shall be inspected for defects by a competent person prior to each work shift and after every occurrence which could affect a wire rope's integrity. Wire ropes will be replaced if any of the following conditions exist:
  - 40.04.08.01. Any physical damage which impairs the function and strength of the rope.
  - 40.04.08.02. Kinks that might impair the tracking or wrapping of rope around the drum(s) or sheave(s).
  - 40.04.08.03. Six randomly distributed broken wires in one rope lay or three broken wires in one strand in one rope lay.
  - 40.04.08.04. Abrasion, corrosion, scrubbing, flattening or peeling causing loss of more than one third of the original diameter of the outside wires.
  - 40.04.08.05. Heat damage caused by a torch or any damage caused by contact with electrical wire.
  - 40.04.08.06. Evidence that the secondary brake has been activated during an overspeed condition and has engaged the suspension rope.



40.04.09. Gasoline-powered equipment and hoists shall not be used on suspension scaffolds.

40.04.10. Gears and brakes of power-operated hoists used on suspension scaffolds shall be enclosed.

40.04.11. Manually operated hoists shall require a positive crank force to descend.

40.05. Guidelines for the Control of Electrical Hazards

40.05.01. To prevent the possibility of electrical shock, neither the scaffold nor any conductive material handled on the scaffold shall come closer to exposed and energized power lines as noted below:

Voltage	Minimum Distance
1000V and above	25 Feet

40.05.02. Scaffolds may be closer to power lines if it is necessary to accomplish the work, but only after the utility company or electrical system operator has been notified of the need to work closer, and the utility company or electrical system operator has de-energized or relocated the lines or installed protective coverings to prevent incidental contact with the lines.

40.05.03. When using 120 volt electrical power tools, extension cords and or lights; a ground fault circuit interrupter shall be used. Electrical extension cords shall be inspected for cuts or cracks in the insulation before use.

40.06. Guidelines for the Control of Fall Hazards

40.06.01. Each employee working on a scaffold more than 10 feet above a lower level shall be protected from falling to that lower level as noted below:

SCAFFOLD TYPE	FALL PROTECTION REQUIREMENT
Boatswains' Chair	All require a Personal Fall Arrest System
Catenary Scaffold	
Float Scaffold	
Needle Beam Scaffold	
Ladder Jack Scaffold	
Single-Point Adjustable	
Suspension Scaffold	
Two-Point Adjustable	
Suspension Scaffold	
All Other Scaffolds not specified above.	

40.07. Planking Requirements:

40.07.01. Below are requirements for platforms and/or planks used on scaffolds and walkways:

40.07.01.01. Each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than one inch wide.

40.07.01.01.01. Exceptions to the above: When a wider space is necessary to fit around uprights when side brackets are



used to extend the width of the platform the platform shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed nine and one half inches, or when planking or decking is used solely for walkways or solely for use by personnel erecting or dismantling the scaffold. In these instances, only the planking the competent person establishes as necessary to provide safe working conditions is required.

- 40.07.01.02. Each scaffold platform and walkway shall be at least eighteen inches wide.
  - 40.07.01.02.01. Exceptions to the above: Each ladder jack scaffold, top plate bracket scaffold, roof bracket scaffold, and pump jack scaffold shall be at least twelve inches wide.
- 40.07.01.03. There is no minimum width for boatswain's chairs.
- 40.07.01.04. Where working areas are so narrow that platforms and walkways cannot be at least eighteen inches wide, the platforms and walkways shall be as wide as feasible. In these instances, personnel shall be protected from fall hazards by the use of guardrails and/or personal fall arrest systems regardless of the height.
- 40.07.01.05. The front edge of all platforms shall not be more than fourteen inches from the face of the work unless guardrail systems are erected along the front edge and or fall arrest systems are used.
  - 40.07.01.05.01. Exceptions to the above: For outrigger scaffolds, the maximum distance from the face of the work shall be three inches.
- 40.07.01.06. For plastering and latching operations, the maximum distance from the face of the work shall be eighteen inches.
- 40.07.01.07. Each end of a platform, unless cleated or otherwise restrained by hooks or equivalent means, shall extend over the centerline of its support by at least six inches and not more than:
- 40.07.01.08. Twelve inches for a platform ten feet or less in length unless the platform is designed and installed so that the cantilevered portion of the platform is able to support personnel and/or material without tipping, or has guardrails which block access to the cantilevered end.
- 40.07.01.09. Eighteen inches for a platform greater than ten feet in length unless it is designed and installed so that the cantilevered portion of the platform is able to support personnel without tipping or has guardrails which block access to the cantilevered end.

NOTE: Cantilevered portion of the platform is the portion of the platform which extends beyond the support by twelve or eighteen inches.

- 40.07.01.10. On scaffolds where scaffold planks are abutted to create a long platform, each abutted end shall rest on a separate support surface. The use of common support members such as "T" sections to support abutting planks or hook on platforms designed to rest on common support is acceptable.
  - 40.07.01.11. Where platforms are overlapped to create a long platform, the overlap shall occur only over supports and shall not be less than twelve inches unless the platforms are nailed together or otherwise restrained to prevent movement.
  - 40.07.01.12. At points of a scaffold where the platform changes direction, such as turning a corner, any platform that rests on a bearer at an angle other than a right angle shall be laid first; platforms which rest at right angles over the same bearer shall be laid second on top of the first platform.
  - 40.07.01.13. With the exception that the edges may be marked for identification, wood platforms shall not be covered with opaque finishes. Platforms may be coated with wood preservatives, fire-retardant finishes, and slip-resistant finishes as long as the coatings allow the actual wood to be seen. This is so the wood platforms may be inspected for damage and/or deterioration.
  - 40.07.01.14. Scaffold components manufactured by different manufacturers shall not be intermixed unless the components fit together without force and the scaffold's structural integrity, as determined by a competent person, is maintained.
  - 40.07.01.15. Scaffold components made of dissimilar metals shall not be used together unless a competent person has determined that galvanic action will not reduce the strength of any component below acceptable levels.
- 40.08. Fall Protection Requirements During Erection and Dismantling of Supported Scaffolds
- 40.08.01. Supported Scaffolds: The competent person shall determine the feasibility and safety of providing fall protection for employees erecting and dismantling supported scaffolds.
  - 40.08.02. Suspended Scaffolds: Fall protection for those erecting and dismantling suspended scaffolds is possible because the anchorage points used for supporting the scaffold would certainly support a fall protection system. Therefore, fall protection shall be utilized for personnel erecting or dismantling supported scaffolds.
- 40.09. Guidelines for the Control of Falling Objects
- 40.09.01. All personnel working on a scaffold shall wear hard hats. Further protection from falling objects will be provided, if needed, by toe boards, screens, or guardrail systems; or through the erection of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects.
  - 40.09.02. Objects that are too heavy or massive to be prevented from falling by the above measures will be kept away from the edge of the scaffold and secured as necessary to prevent their falling.
  - 40.09.03. Where there is a possibility of falling objects the below safeguards shall be implemented:

- 40.09.03.01. The area below the scaffold to which objects can fall shall be barricaded and employees shall not be permitted to enter the hazard area, or
- 40.09.03.02. A toe board will be erected along the edge of platforms more than ten feet above lower levels for a distance sufficient to protect employees below.
- 40.09.03.03. When tools, material, or equipment are piled to a height higher than the top edge of the toe board, the below listed safeguards shall be implemented:
- 40.09.03.04. Paneling or screening extending from the toe board or platform to the top of the guardrail shall be erected for a distance sufficient to protect employees below, or
- 40.09.03.05. A guardrail system shall be installed with openings small enough to prevent passage of potential falling objects, or
- 40.09.03.06. A canopy structure, debris net or catch platform strong enough to prevent passage of potential falling objects shall be erected over the employees below.
- 40.09.03.07. Toe boards shall be capable of withstanding, without failure; a force of at least fifty pounds applied in any downward or horizontal direction and at least three and one half inches high from the top edge of the walking or working surface. Further, toe boards shall be secured to the outermost edge of the platform and not have more than one quarter of an inch clearance above the walking or working surfaces. Toe boards shall either be solid or have openings not over one inch in the greatest dimension.

NOTE: Canopies used for falling object protection shall be installed between the falling object hazard and the employees below.

### 40.10. Access

- 40.10.01. Twenty-four inches is the height at which some sort of access is required to reach a scaffold platform. When a scaffold platform is two feet above or below the point of access, portable ladders, hook-on ladders, ramps, walkways, ladder stands, etc. shall be used. Never use a cross brace as a means of getting on or off a scaffold.
- 40.10.02. Hook-on and attachable ladders shall:
  - 40.10.02.01. Be positioned so they do not tip the scaffold.
  - 40.10.02.02. Have the bottom rung within twenty-four inches of the supporting level.
  - 40.10.02.03. Have rest platforms at least at thirty-five foot vertical intervals when used on supported scaffolds.
  - 40.10.02.04. Be designed for use with the scaffold being used.
  - 40.10.02.05. Have a minimum spacing between rungs of sixteen and three quarters inches and a minimum rung length of eleven and one half inches.
- 40.10.03. Stairway type ladders have essentially the same requirements except that:

- 40.10.03.01. The rest platforms shall be at the twelve foot maximum vertical level.
- 40.10.03.02. The minimum step width is sixteen inches and for mobile scaffold stairway-type ladders eleven and one-half inches is required.
- 40.10.03.03. Slip-resistant treads are required on all steps and landings.
- 40.10.04. Stair towers, if used, shall have the bottom step within twenty-four inches of the supporting level and have
  - 40.10.04.01. A top rail and mid-rail (stair rail) on each side.
  - 40.10.04.02. A landing platform at least eighteen inches by eighteen inches at each level.
  - 40.10.04.03. A width of eighteen inches between stair rails.
  - 40.10.04.04. Resistant surfaces on treads and landings.
  - 40.10.04.05. Employees shall be able to safely get on and off a scaffold platform and, at twenty-four inches; you will need a specific method of access.
- 40.11. Training
  - 40.11.01. Training will be given to all employees who will be performing work on scaffolds by a competent person; it will focus on the hazards associated with the type(s) of scaffolding used on our job site, as well as the methods to minimize or eliminate those hazards. For those employees who will be erecting, disassembling, moving, operating, repairing, inspecting, or maintaining our scaffolds, the competent person will provide additional training applicable to their job requirements.
  - 40.11.02. Retraining will be provided should new types of scaffolding be introduced, standards change, or on-the-job performance indicate that a particular employee has not retained the required proficiency in scaffold safety.
- 40.12. Training modules shall include:
  - 40.12.01. The nature of fall hazards in the work area.
  - 40.12.02. The correct procedures for erecting, maintaining, and disassembling the fall protection systems to be used.
  - 40.12.03. The proper assembly, construction, placement, care and handling.
  - 40.12.04. The maximum intended load-carrying capacities used.
  - 40.12.05. The availability of the assembly standards of equipment.
  - 40.12.06. Retraining will be provided, as necessary.
  - 40.12.07. Observation of failure to follow established ladder safety procedures would be a cause for retraining.
- 40.13. Inspection

- 40.13.01. The first inspection will be conducted by the scaffold erector immediately after scaffold has been completed.
  - 40.13.02. Scaffolds and scaffold components shall be inspected for visible defects by the scaffold user prior to initial use, before each work shift, and after any occurrence which could affect a scaffold's structural integrity.
  - 40.13.03. If scaffold is used over an extended period of time (1 week), the scaffold should be inspected at least once by a scaffold erector.
  - 40.13.04. Scaffold users shall read scaffold tags prior to using any scaffold. The instructions or warnings outlined on the tag shall be followed.
  - 40.13.05. Before erecting and during dismantling, trained scaffold craftsmen shall inspect all scaffold components. Those found with defects shall be repaired or replaced immediately.
  - 40.13.06. Handrail, mid-rail, cross bracing, and steel tubing shall be inspected for nicks, especially near center span, and indications where a welding arc has struck.
  - 40.13.07. Scaffold components shall be straight and free from bends, kinks dents, and severe rusting.
  - 40.13.08. Scaffold frame weld zones shall be inspected for cracks and ends of tubing for splitting or cracking.
  - 40.13.09. Manufactured decking shall be inspected for loose bolt or rivet connections and bent, kinked, or dented frames. Plywood surfaces should be checked for softening due to rot or wear, and peeling or de-lamination of layers at the edge. Scaffold boards should be inspected for rot, cracks, notches, and other damage. Also, inspect cleats if used.
  - 40.13.10. Each quick-connecting device, whether spring, threaded connection, or toggle pin arrangement, should be inspected to see that it operates properly.
  - 40.13.11. Casters, if used, should be inspected for smooth rolling surfaces, free turning, free acting swivel, and to be sure that the locking mechanism is in good working order.
- 40.14. Scaffolding Tags
- 40.14.01. The most effective means of communication between the scaffold builder and the scaffold user is a scaffold tag.
  - 40.14.02. The crew that erects the scaffold will complete and attach the scaffold tag. (See Appendix)
  - 40.14.03. The tag should be placed at eye level on or near the access ladder so it is easy to locate and plainly visible.
  - 40.14.04. A scaffold erector shall ensure that the scaffold is erected properly and the tag attached is properly and completely filled out.
  - 40.14.05. If the scaffold needs to be altered in any way, a scaffold erector shall be contacted to authorize the change and a new inspection conducted.

40.14.06. An untagged scaffold shall not be used.

40.14.07. If a scaffold is to be used for an extended period of time it shall be inspected before each shift by the scaffold user. The scaffold shall be inspected at least once a week by a scaffold erector, qualified and or competent person.

### 40.15. Tagging Systems

40.15.01. A three tag system can be used which includes a red or "Danger" tag in conjunction with the yellow and green tags.

40.15.02. A red tag means the scaffold is being dismantled, not yet completely erected, or for some reason not safe and shall not be used.

40.15.03. A yellow tag is completed and attached to scaffolds which cannot be erected with all components complete. A yellow tag also informs the user that a fall protection device is required while on a scaffold with incomplete guardrails or deck openings.

Note: Contract erectors will affix yellow tags only. This is to insure the end user is aware of the responsibility to inspect the scaffold assembly before each use and to alert the users of any hazards present that are in need of control.

40.15.04. A green tag is completed and attached by the erecting crew to scaffolds which have complete handrails, mid-rail, toe boards, and decking. A green tag informs all users that the scaffold is safe to use.

### 40.16. Ladders. All employees using ladders are required to receive training and understand proper procedures for ladder use before using a ladder in a work situation.

40.16.01. American National Standards Institute (ANSI) and NIOSH approval labels should never be covered with paint or tape. Having ladders that are constructed to standard will prevent collapse and resultant falls.

40.16.02. Specific operational procedures for ladders directly relating to the elimination of fall hazards are listed below:

40.16.03. A stairway or a ladder will be provided at all personnel points of access where there is a break in elevation of nineteen inches or more.

40.16.04. Ladders will never be overloaded.

40.16.05. Ladder rungs, cleats, and steps shall be parallel, level, and uniformly spaced when a ladder is in position for use.

40.16.06. Ladders will not be tied or fastened together unless they are so designed.

40.16.07. Portable ladders used for gaining access to an upper level will extend at least three feet above the upper landing surface or the ladder will be secured at its top.

40.16.08. Ladders shall be free of oil, grease, or other slipping hazards.

40.16.09. Ladders shall be used for the purpose for which they were designed.



- 40.16.10. Non-self-supporting ladders will be used at an angle that the horizontal distance from the top support to the foot of the ladder is approximately  $\frac{1}{4}$  of the working length of the ladder.
- 40.16.11. Ladders will only be used on stable and level surfaces unless secured to prevent displacement.
- 40.16.12. Ladders shall not be used on slippery surfaces unless secured or provided with slip-resistant feet to prevent unintended displacement.
- 40.16.13. Ladders placed in any location where they can be displaced by workplace activities or traffic will be secured to prevent incidental displacement, or a barricade will be used to keep the activities or traffic away from the ladder.
- 40.16.14. The area around the top and bottom of the ladder shall be kept clear.
- 40.16.15. Ladders shall not be moved, shifted, or extended while occupied.
- 40.16.16. The top step of a stepladder shall not be used as a step.
- 40.16.17. Portable ladders with structural defects will be immediately marked in a manner that readily identifies them as defective and removed from service until repaired.
- 40.16.18. When ascending or descending a ladder, one shall face the ladder.
- 40.16.19. Employees shall use at least one hand to grasp the ladder when progressing up and or down the ladder.
- 40.16.20. Employees are not to carry any object or load that could cause loss of balance and a resultant fall.
- 40.16.21. Fixed ladders where the length of climb is less than twenty-four feet but the top of the ladder is greater than twenty-four feet above the lower level shall have cages, wells, ladder safety devices, or self-retracting lifelines.
- 40.16.22. Fixed ladders where the length of climb equals or exceeds twenty-four feet shall have at least one of the following:
  - 40.16.23. Ladder safety devices;
  - 40.16.24. Self-retracting lifelines and rest platforms not exceeding one hundred-fifty feet;
  - 40.16.25. A cage or well, and multiple ladder sections not exceeding fifty feet in length. At the maximum interval of fifty feet, ladder sections will be offset on landing platforms.

## 41. Ergonomics and Material Handling

This program applies to all employees. It provides a series of specific actions to be implemented with the ultimate goal of integrating ergonomics into every activity decision. This process promotes continuous improvement in the efficiency, comfort and well-being of all employees through a team effort of management and employee involvement. The objective is to fit the activity and the work area to the employee over time by designing activities within the employee's capabilities and limitations. This action will lead to the reduction of musculoskeletal disorders (MSDs).

### 41.01. Responsibilities

- 41.01.01. Supervisors are responsible for employee training and the implementation of the ergonomics program. They will perform a hazard analysis of the activities that employees is assigned to complete.
- 41.01.02. Employees are responsible for following the ergonomics program policies and procedures. Employees shall report all incidents and inform supervisors of ergonomic hazards.
- 41.01.03. The Ergonomics Specialist is responsible for performing ergonomic assessment with the supervisors. They will also formulate solutions to ergonomics hazards.
- 41.01.04. Ergonomics hazards will be addressed by performing Job Hazard Analysis (JHA) reviews of ergonomics intensive job duties. The JHA shall be conducted by the Supervisor and or Ergonomics Team:
  - 41.01.04.01. Review normal activities for signs of ergonomics problems
  - 41.01.04.02. Discuss activities with employees for their opinion of ergonomics issues
  - 41.01.04.03. Review incident reports for prior ergonomics issues.
  - 41.01.04.04. Conduct an ergonomics hazard analysis on these activities
  - 41.01.04.05. Look for alternatives and solutions to lessen the ergonomics hazard
- 41.01.05. Investigate conditions
  - 41.01.05.01. Try to find which jobs may be causing problems by: observing the workplace, talking to employees and becoming aware of early warning signs:
    - 41.01.05.01.01. Employee fatigue or discomfort
    - 41.01.05.01.02. Employees restricting their movements or range of motion because of fatigue or discomfort (e.g., a stiff neck, sore shoulder, or backache)
    - 41.01.05.01.03. Employees modifying tools, equipment or workstations on their own
    - 41.01.05.01.04. High absenteeism or employee turnover rates
    - 41.01.05.01.05. Poor product or service quality



41.01.05.01.06. Employee reports of problems

41.01.06. To determine which tasks to address first, consider the following:

41.01.06.01. Frequency and severity of complaints, symptoms and injuries

41.01.06.02. Contributing factors or other problems identified in a particular task

41.01.06.03. Employee ideas for improvements

41.01.06.04. Difficulty of implementing various improvements

41.01.06.05. Time frame for making improvements

41.01.06.06. Potential effects on productivity, efficiency and product or service quality

41.01.06.07. Technical and financial resources

41.02. Musculoskeletal Disorders (MSD)

41.02.01. A musculoskeletal disorder (MSD) is an injury or disorder of the nervous system or soft tissue such as muscles, tendons, ligaments, joints, cartilage or blood vessels. MSD risk factors are major contributors to MSD-related injuries and illnesses. Prolonged exposure to one or more of the following risk factors puts you at risk of an MSD:

41.02.01.01. Repetition and duration—Same motion repeated for long periods of each day, which includes daily and lengthy use of a keyboard or mouse

41.02.01.02. Force—Constant lifting, pushing, pulling

41.02.01.03. Awkward postures

41.02.01.04. Working with back or neck bent down or twisted working with hands above head

41.02.01.05. Extending arms to type or sitting forward with hunched shoulders

41.02.01.06. Bent wrists when typing, using tools or operating equipment

41.02.01.07. Contact stress

41.02.01.08. Using hand or knee as a hammer

41.02.01.09. Contact with a hard surface such as leaning against a counter

41.02.01.10. Continually pounding a stapler with palm

41.02.01.11. Vibration—Using vibrating tools or equipment such as jackhammers or powered saws

41.02.02. Employees suffering from MSDs may display behaviors such as:

41.02.02.01. Vigorously shaking hands as if trying to regain circulation

41.02.02.02. Massaging hands, wrists or arms

41.02.02.03. Cradling arms

41.02.02.04. Limping

41.02.02.05. Walking stiffly, indicating a sore back

Note: The feeling of the pain varies depending on the MSD and can be described as tightness, stiffness, soreness, burning, tingling, coldness, numbness, or general discomfort. MSDs may affect the back, neck, shoulders, arms, legs, elbow and knee joints, hands, wrists, fingers, thumbs, feet and toes.

41.03. MSD Prevention Tips:

Employees shall report any MSD symptoms immediately to prevent further injury. Reducing exposure to risk factors such as repetition, poor posture, forceful gripping, contact stress and vibration, will reduce the potential for suffering from an MSD-related injury. Suggested prevention measures include:

41.03.01. Avoiding Repetition

41.03.01.01. Avoiding repetition is the best defense in preventing an MSD-related injury. Keep the body in a neutral position when possible. When faced with risk factors of repetition including force, duration, awkward postures, contact stress and vibration, change movement as soon as the task is finished.

41.03.02. Paying Attention to Posture and Workspace

41.03.02.01. One of the best ways to reduce exposure to MSD risk factors is to adjust the workspace or workstation design to maintain a neutral posture as much as possible while working. Overall, the body should be in a relaxed and comfortable position.

41.03.03. Neutral posture should include the following elements:

41.03.03.01. Head should be vertical and facing forward. Put work that is repetitive or of long duration (i.e., notes that need to be typed) in front of you to minimize head rotation.

41.03.03.02. Maintain a straight back posture

41.03.03.03. Shoulders should be in a neutral position with arms tucked close to your body and hanging relaxed. Elbows should be positioned comfortably below the shoulders and not extended outward from the body or forward or backward from the shoulders.

41.03.03.04. Forearms should be parallel to the ground and wrists in a straight line with the forearms.

41.03.03.05. Sit with thighs parallel to the floor, knees bent about 90 degrees and feet resting comfortably flat on the floor or on a footrest.

41.03.04. Ergonomically Correct Workspace Includes:

41.03.04.01. Adjustable furniture

41.03.04.02. Employee's ability to maintain neutral position and avoid awkward postures and extended reaches

- 41.03.04.03. Variety of working positions available to avoid prolonged static postures
- 41.03.04.04. Adequate room for a full range of body motion
- 41.03.04.05. Easy access to all tools and equipment
- 41.03.04.06. Work items in front of employee and within easy reach
- 41.03.05. Stretch muscles
  - 41.03.05.01. Hand stretches—Make a fist, then extend and spread fingers.
  - 41.03.05.02. Wrist and forearm stretches—Hold arms out in front of body and bend hands up and down. Place palms together with fingers pointed upward and elbows pointed out, bring hands down until you feel the stretch.
  - 41.03.05.03. Shoulder stretches—Shrug shoulders; roll shoulders forward and back. With elbows out, move arms back to bring shoulder blades together. Reach arms overhead and stretch; bend from side to side.
  - 41.03.05.04. Neck stretches—Rotate head up and down. Turn head from side to side. Tilt head toward each shoulder.
  - 41.03.05.05. Back and arm stretches—Put hands behind head and pinch shoulder blades together. Bend forward in chair and touch the floor. While sitting, grasp your shin or knee and pull knee toward your chest. Stand up, place hands on the hips and bend backwards.
- 41.03.06. Take breaks
  - 41.03.06.01. Eye breaks: Every 30 minutes look away from the monitor and focus on something at a distance of about 20 feet for a minute or so. This allows eye muscles to relax. Also, blink rapidly for a few seconds to refresh the eye's surface.
  - 41.03.06.02. Mini-break: Typing is typically done in short bursts. Between those bursts of activity, allow your hands to relax in a flat and straight posture. A mini-break is not a break from work; rather it is a break from using the typing or "mousing" muscles. Make a phone call or file some documents.
  - 41.03.06.03. Rest breaks: Take a short rest break every thirty to sixty minutes. Stand up and get a drink of water, make some photocopies, etc. Just get away from your computer workstation for a couple of minutes.
- 41.04. Corrective Action
  - 41.04.01. Administrative improvements include changing work practices or the way work is organized.
  - 41.04.02. Provide variety in jobs.
  - 41.04.03. Adjust work schedules and work pace.
  - 41.04.04. Provide recovery time (i.e., muscle relaxation time).

- 41.04.05. Modify work practices.
- 41.04.06. Ensure regular housekeeping and maintenance of workspaces, tools and equipment.
- 41.04.07. Encourage exercise.
- 41.04.08. Provide variety in jobs—there are a couple of ways to increase variety in jobs. Job rotation means rotating employees through different jobs. Job enlargement means increasing the variety by combining two or more jobs or adding tasks to a particular job. To be effective, both of these improvements rely on rotating through or combining jobs and tasks which differ in the following ways:
  - 41.04.08.01. Muscles or body parts used
  - 41.04.08.02. Working postures
  - 41.04.08.03. Amount of repetition
  - 41.04.08.04. Pace of work
  - 41.04.08.05. Amount of physical exertion required
  - 41.04.08.06. Environmental conditions
- 41.04.09. Adjusting work schedules and works pace—Limit the amount of time any employee has to spend performing repetitive activities. If you have new employees or employees returning from long absences, introduce them to a normal work pace and workload gradually. Try to break up work with frequent, short recovery periods. Even recovery periods as short as a few seconds on a regular basis are helpful.
- 41.04.10. Modify work practices—Employees should be encouraged to be comfortable, to change positions and to stretch when working.

### 41.05. Employee Training

- 41.05.01. Employees shall be trained thoroughly and given opportunities for hands-on practice with any new tools, equipment or work procedures. The goals for training shall include a mix of the knowledge and the skills needed to work safely. Employees will be informed of any workplace changes.

# **Section III—Department Specific Standard Operating Procedures**

## 42. Personal Protective Actions for Post ACM Abatement

### Purpose

- 42.01. Define the standard operating procedures for activities involving the potential for unintended contact; release of and or exposure to Asbestos Containing Material (ACM) in work activities involving installation, servicing and or removal of equipment.

### Scope

- 42.02. The extent will reflect the potential existence of none to trace amounts of ACM post abatement and or materials that contain asbestos could possibly be disturbed with fiber release being the result. Activities can be divided into three categories with regard to the potential for disturbing ACM:

42.02.01. Those which are unlikely to involve any direct disturbance of ACM.

42.02.02. Those which may cause unintended disturbance of ACM.

- 42.03. Those which involve intentional minor-scale manipulation or disturbance of ACM.

FPN: Activities beyond minor scale; short duration activities that involve known ACM exposure shall be performed only by specially trained and accredited asbestos control professionals. When similarity in activities exists, this SOP can be employed with the understanding that hazards unrelated or incidental to this procedure can arise. Accordingly, additional hazard analysis and activity steps shall be completed and documented as required.

### Authority Matrix

42.04. Executive Director – Physical Plant

42.05. Director Operations

42.06. Shop Supervisors

42.07. Safety Officers

42.08. Assigned Employees

### Additional Safety Training Requirements

- 42.09. It is required that employees are properly trained in hazard recognition, use and selection of personal protective equipment; removal, and disposal of protective garments after use. For specific ACM training requirements beyond the scope of this SOP, contact an Abatement Specialist. It is important for Supervisors and or an Abatement Specialist to assess training requirements for ACM related activities.

- 42.10. Training modules required in association with this SOP.

42.10.01. Asbestos Awareness

42.10.02. Protective garment installation, removal and disposal

42.10.03. HEPA vacuum operation

### Personal Protective Equipment Requirements

Employees are required to wear personal protective equipment whenever there is the potential to be in contact with and or exposed to ACM levels above permissible levels.

#### 42.11. Protective Garments

- 42.11.01. Protective garments shall be disposable and consist of coveralls or the equivalent that covers all employee personal clothing, head, face and foot covers made of a synthetic fabric which does not allow asbestos fibers to pass through. This type of garments shall prevent employee personal clothing from becoming contaminated with asbestos fibers.
- 42.11.02. Oversize protective garments according to employee personal clothing. The protective garments shall be sized to offer ample room for mobility while completing the activity and to allow for ease of installation and removal.
- 42.11.03. Employee personal clothing that becomes contaminated shall not be transported off campus.
- 42.11.04. Installing the Protective Garments
  - 42.11.04.01. Inspect garments before application.
  - 42.11.04.02. Standing or sitting, step into the legs of the suit; ensure proper placement of the feet within the suit; then gather the suit around the waist.
  - 42.11.04.03. If necessary; seal off limb exit points with duct or similar adhesive tape.
- 42.11.05. Removing the Protective Garments
  - 42.11.05.01. Keep gloves and N100 respirator intact until the removal process is complete.
  - 42.11.05.02. Remove any extraneous or disposable garments, boot covers, outer gloves, and tape. Carefully place approved disposal bag.
  - 42.11.05.03. Remove arms, one at a time from suit avoiding any contact between the outside surface of the suit and the wearer's body and laying the suit out flat behind the wearer. Sitting, if possible, remove both legs from the suit.
  - 42.11.05.04. Carefully dispose suit into an approved bag and seal the bag accordingly.

Note: The employee shall avoid any direct contact with the outside surface of the suit upon removal to avoid any cross contamination.

#### 42.12. Respiratory Protection

- 42.12.01. The selection of approved respirators, suitable for the hazards to which the employee is exposed is authority recommended. Employees are responsible for respirator inspection, cleaning, storage or replacement when found defective. As with protective garments, regulations require the use of respirators whenever employees are exposed, or likely to be exposed, to fiber levels above permissible levels.

Note: When in doubt about the potential release, contact and or exposure during a certain work activities, employees are obligated to take the necessary precautions to protect their wellbeing and it is authority recommended that approved respiratory protection be applied.

42.12.02. The options that shall be available include:

- 42.12.02.01. A half or full face piece, negative pressure, air-purifying respirator equipped with replaceable high-efficiency filters [HEPA].
- 42.12.02.02. N100 disposable cartridge respirator
- 42.12.02.03. Safety glasses
- 42.12.02.04. Full face shields
- 42.12.02.05. Disposable:
  - 42.12.02.05.01. Coveralls or equivalent
  - 42.12.02.05.02. Over the foot covering
  - 42.12.02.05.03. Head cover

Note: Do not use single use, disposable paper dust masks (Aka N95 respirators or the similar) for respiratory protection of ACM.

### **Procedures for Unintended Release of Hazardous Material**

- 42.12.03. If an acute threat to safety and or health is observed or perceived, all personnel shall immediately exit the work area by the nearest means of egress.
  - 42.12.04. Assist injured in the evacuation process if required.
  - 42.12.05. If emergency assistance is required, use either the nearest telephone to call 911 and or contact the UWPD to summon emergency assistance.
  - 42.12.06. Secure work zone.
  - 42.12.07. Contact Supervision and or designated authority.
  - 42.12.08. Contact any Abatement Specialist for further instructions.
  - 42.12.09. For major fiber releases isolate the area and alert building occupants the area should be isolated by closing doors and or erecting temporary barriers to restrict airflow as well as access to the site.
  - 42.12.10. Signs shall be posted as necessary, immediately outside the fiber release site to prevent persons not involved in the cleanup operation from inadvertently entering the area.
  - 42.12.11. If asbestos fibers could enter the HVAC system, the system shall be modified to prevent fiber entry, or shall be shut down and sealed off.
  - 42.12.12. The final step shall be to employ thorough cleanup procedures to properly control the ACM.
- 42.13. Conduct a careful visual inspection and final clearance air monitoring to verify satisfactory cleanup.



### Job Hazard Analysis

42.14. In the event any activity is required to be performed in any work areas that either ACM abatement has been performed and or the potential for ACM exposure exists a review of the hazards identified in this standard operating procedure shall be completed. This is an opportunity for any new hazards to be identified, controlled and documented to assist in preventing all incidents.

#### 42.14.01. Major Hazards

42.14.01.01. Operator failure to comply with this procedure

42.14.01.02. Mechanical failure of components causing hazardous material release

42.14.01.03. Unintended release of hazardous material.

42.14.01.04. Airborne contaminants other than identified hazardous material

### General Instructions

42.15. Below are basic procedures to minimize and or contain ACM:

42.15.01. Low pressure wet method spray

42.15.02. Use of mini-enclosures.

42.15.03. Use of portable power tools equipped with special local ventilation attachments.

42.15.04. Work area isolation.

42.15.05. HEPA Vacuums

42.15.05.01. The use of special vacuum cleaners, commonly referred to as HEPA (high efficiency particulate air) vacuums, may be preferable to wet cleaning in certain situations. These vacuums are equipped with filters designed to remove very small particles or fibers by filtering those particles from the air passing through the vacuum.

FPN: Use caution when emptying HEPA vacuums and changing the filters because exposures could result from such activities. Before emptying the HEPA vacuums, employees shall move the HEPA vacuum to a physically isolated area of the facility and put on all applicable personal protective equipment before emptying the dust and debris into properly labeled, sealed, and leak-tight containers for disposal as asbestos-containing waste.

42.15.06. Avoidance of certain activities, such as sawing, sanding, and drilling suspect materials without content verification.

42.15.07. If in doubt about the possibility of disturbing ACM during activities, adequate precautions shall be taken to avoid or minimize fiber release.

42.15.08. Supervision shall not issue a work order to an employee that is not fully qualified for these and other related electrical activities.

42.15.09. All contractors shall meet or exceed all training, certification and procedural criteria indicated in this standard operating procedure.

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### Procedure Controls

- 42.15.10. Supervisors and or Abatement Specialists shall perform a hazard analysis review upon issuing the work order for the assigned activity. In order to proceed with the activity, all affected employees shall be able to identify the recognized hazards of the activity and what is required eliminate or control those hazards.
- 42.15.11. An annual review of this SOP shall be completed to insure no major changes have occurred for this activity. Affected Supervision and a Safety Authority shall revise as changes are identified.
- 42.15.12. Employees shall report any major changes in the performance of the activity immediately to Supervision or the Safety Authority for review and corrective action.
- 42.15.13. Supervision shall insure all affected employees have received and are current with all applicable safety training and corresponding refreshers that pertain to these activities.

### Reference Documents

- 42.16. UWM Safety Program Manual
- 42.17. UWM Asbestos Remediation Procedures
- 42.18. Equipment Manufacturers Operator or Maintenance Manuals
- 42.19. Table of Activity Authority

Table of Activity Authority	Hazard Risk Exposure Potential	
	None to Trace	Eminent
<b>Supervisor Responsibilities</b>		
Pre-work approval from abatement specialist	Yes	Yes
Job hazard analysis	Yes	Yes
Abatement specialist present	No	Yes
HVAC system coordination	Contact abatement specialist	Yes
Work area containment	Contact abatement specialist	Contact abatement specialist
<b>Personal Protective Equipment</b>		
Hard hat	Should	Shall
Safety glasses	Shall	Shall
Face shield	Shall	Shall
N100 respirator	Authority recommended	Shall
Disposable protective suit	Yes	Yes
<b>Work Practices</b>		
Use wet method as control	As required	Yes
Use HEPA vacuum as control	As required	Contact abatement specialist