



Safety Manual
November 2013

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SECTION 1.0 SAFETY OVERVIEW

1.1 OVERVIEW

This manual is provided to the Physical Plant employees of Ferris State University. It is intended to serve as an overview of the safety programs and procedures in place at Ferris State University.

This manual does not replace any written programs. This manual, all written safety programs and procedures along with the various training programs incorporate Ferris State University's commitment to safety.

1.2 ENVIRONMENTAL HEALTH AND SAFETY POLICY (BUSINESS POLICY LETTER: 2007:07)

1.1.1. POLICY

It is the responsibility and intent of Ferris State University to protect the health and safety of students, faculty, staff and visitors while engaged in the educational and business activities of the University. To this end the University will provide the necessary services and controls to promote, create and maintain a safe and healthful campus environment and operations.

The purpose of this policy statement is to establish the University's commitment to campus environmental health and safety.

1.1.2. PROCEDURES

The Environmental health and safety function has been established to provide a comprehensive program of services and activities to protect faculty, staff, students, and campus visitors from avoidable and unnecessary risks of illness, injury or death. The responsibilities of the Environmental Engineer's health and safety staff shall include the following:

1. Perform regular inspections of campus facilities to identify hazards and potential hazards and determine compliance with OSHA and fire regulations.
2. Recommendations of corrective actions shall be submitted to appropriate offices.
3. Provide a program of safety training for employees to comply with OSHA regulations and to promote safe and healthful operating procedures.
4. Investigate employee job-related injuries and illnesses and recommend necessary action to reduce the possibility of recurrence.
5. Review proposals for new construction and major remodeling to insure compliance with OSHA and fire safety regulations.
6. Provide technical expertise and knowledge of regulatory compliance techniques for the guidance of management in the formulation of policy and decisions regarding the maintenance of a safe and healthful campus environment and operations, and to insure compliance with health and safety laws and regulations.
7. Operate a hazardous waste management system and provide necessary control measures to insure compliance with hazardous waste laws and regulations.

8. Develop for adoption all necessary safety rules and procedures to implement the University's compliance with OSHA regulations.

In order for the Environmental Engineer's health and safety staff to fulfill their responsibilities contained in this policy and any other efforts to create and maintain a healthful and safe campus environment, the cooperation of all members of the University community is requested.

Jerry L. Scoby, Vice President
Administration and Finance

Contact: Environmental Health & Safety Office

End Business Policy Letter: Environmental Health and Safety Policy 2007:07

1.1.3. Employee Responsibilities:

1. Report any unsafe conditions, practices or equipment to your supervisor.
2. Abide by all Ferris State University safety policies.
3. Attend required safety training.
4. Inform your supervisor if you are taking any medication that may jeopardize your safety.
5. Attend physicals as required.
6. Immediately report all injuries, no matter the severity, to your supervisor.
7. Use and maintain all assigned Personal Protective Equipment (PPE).

1.1.4. Supervisor Responsibilities:

1. Enforce all FSU safety policies.
2. Insure that employees receive the proper training and required physicals needed to safely perform their job.
3. Verify compliance to safety policies and individual practices.
4. Allow adequate time for employees to attend safety training.
5. Promote safety to the best of your ability.
6. Work diligently with the Safety Coordinator, Environmental Engineer and Risk Manager to ensure safety for all employees.
7. Ensure that the proper Personal Protective Equipment (PPE) is available for employees.

Question:

True or False: Only employers are responsible for workplace safety.

Answer:

False. Safety is everyone's responsibility.

1.3 GENERAL SAFETY

1. Read and abide by all signs and labels.
2. Smoke in designated areas only.
3. Utilize required personal protective equipment for each task.
4. Do not remove or alter any safety guard, unless proper lockout procedures are followed.
5. Do not wear loose, baggy clothing or dangling jewelry around reciprocating equipment.
6. Maintain good housekeeping skills.
7. Store flammables in flammable storage cabinets and containers.
8. Be aware of the location of emergency and life safety equipment.
9. Only use items for their intended purposes.
10. Avoid horseplay.

1.4 UNIVERSITY VEHICLE SAFETY

1. Always follow State of Michigan driving laws.
2. Smoking is prohibited in all state owned vehicles.
3. Always wear a seatbelt.
4. Avoid tailgating and report all accidents or damages to the vehicle to your supervisor.
5. Maintain good housekeeping within the vehicle.
6. Notify the garage for any maintenance issues.
7. Do not park in unauthorized areas such as handicapped spaces or fire lanes.
8. Yield to pedestrians.
9. Secure your load and close the truck tailgate if appropriate. Do not allow employees to sit or stand on a load as a means of securing the load.
10. Place a red flag on a load that extends 4 feet or more beyond the vehicle.
11. Riders shall not be permitted to sit on the bed of trucks, on open tailgates or plows.
12. Use of cellular telephones while driving is considered to be an unsafe practice; pull over when possible.
13. Texting while driving is prohibited.
14. Special care must be used when transporting all chemicals.

Physical Plant Vehicle Policy is available upon request.

1.5 HAZARD COMMUNICATION/RIGHT-TO-KNOW

Employees have Right-To-Know what hazards they may face on the job. FSU relies on Material Safety Data Sheets (MSDS) for hazard determination.

1. MSDS's are the basic hazard communication tool.
2. FSU is required to have a MSDS for every hazardous chemical received.
3. MSDS's give specific details on the chemical characteristics and properties as well as safe handling precautions.
4. A central database of MSDS's is maintained by the Safety Coordinator.
5. Read and follow the MSDS before using the chemical.
6. When ordering new chemicals retain a copy of the MSDS in the respective department and send a copy to Human Resources (HR) - Safety Coordinator.
7. When submitting new MSDS's to Human Resources, indicate the building and general location where the product is used.
8. For additional information, refer to the section on MSDS database in Section 1.5 of this safety manual.

Reference to Hazard Communication Standard, Part 92 Safety and Hazard Communication Standard, Part 430 Health

1.6 ELECTRONIC MATERIAL SAFETY DATA SHEET (MSDS) DATABASE

MSDS sheets for products used at Ferris State University have are available in an online database; The purpose of this database is to allow all members of the University community access to MSDS's at any time via the web. Contact Human Resources at 231-591-2150 for assistance between the hours of 8am to 5pm, Monday through Friday.

Step 1 – Go to the Ferris MSDS Website

- Click on the following link: <http://ferris.msdssoftware.com/>
- Or type: ferris.msdssoftware.com into the address bar of your web browser

Step 2 – Finding MSDS's:

- Type MSDS “, Product Name, or Manufacturer into the appropriate field on the upper left side of the screen.
- Click the “Search” icon in the top center of the page
- *Tip: Narrow your search results by selecting your Facility from the drop down menu before clicking the Search button*

Step 3 – Viewing MSDS's

- Successful searches will produce a list of MSDS's available for viewing
- Click on the MSDS # on the left side of the screen to view the MSDS.

Question:

The MSDS gives you everything you need to work with chemicals _____.

Answer:

Safely

1.7 CHEMICAL SAFETY

1. Always read and follow the MSDS prior to handling the chemical.
2. See MSDS link at: <http://ferris.msdssoftware.com/>
3. Only trained and licensed employees may apply pesticides and herbicides with the exception of applying general use ready-to-use, non-licensing required pesticide and related products. Female workers are NOT to apply round-up!
4. Never smell or taste a chemical as a means of identification.
5. Store chemicals in accordance with the MSDS. Ensure that the container is properly sealed.
6. Every chemical container must have a label on it:
 - a. The label must identify the chemical and its hazards.
 - b. Whenever possible, the labeling format to be used is the National Fire Protection Agency (NFPA) triangle. The NFPA triangle utilizes a color coding and numbering system that reflect the following:
 - c. Colors Indicate the Type of Hazard Associated with the Product
 - Red: Fire Hazard
 - Yellow: Re-Activity
 - White: Special Warning
 - Blue: Health
 - d. Numbers Indicate the Degree of Hazard Associated with the Product
 - 0: Minimal Hazard
 - 1: Slight Hazard
 - 2: Moderate Hazard
 - 3: Serious Hazard
 - 4: Severe Hazard
7. Never combine chemicals unless you have been properly trained to do so.
8. Notify the Environmental Engineer if a chemical spill occurs.
9. Notify the Environmental Engineer for proper disposal of chemicals
10. Chemicals should be used in well ventilated areas.

11. Primary routes of entry into the body:
 - a. Inhalation
 - b. Injection
 - c. Absorption
 - d. Ingestion
12. Wear the appropriate Personal Protective Equipment (PPE).
13. Practice good personal hygiene (i.e. frequent hand washing)

Question:

Do you know the difference between ACUTE and CHRONIC effects?

Answer:

Acute effect happens quickly and is sever (i.e. drinking poison)

Chronic effect happens from a long time exposure (i.e. Smoking cigarettes)

Helpful Tip:

Chemicals are part of our everyday lives. Medicines, cleaning products, plastics, degreasers, lubricants are some examples. These chemicals have made modern life easier in one way. Although, these chemicals help us, they must be treated with respect. Improper use and/or handling may cause injuries and illnesses.

1.8 HOUSEKEEPING

1. Good housekeeping helps to prevent accidents and injuries.
2. Housekeeping is an essential part of everyone's job.
3. Do not obstruct stairways, aisles, entrances or exits.
4. Dispose of flammable and combustible materials in approved containers.
5. Keep your work area, including University vehicles, clean and orderly. Report conditions beyond your control to the respective supervisor.
6. If you spill something clean it up immediately and/or report it to the appropriate personnel.
7. Use "Caution, Wet Floor" signs when applicable.
8. Store tools, material and equipment in an orderly and secure manner.
9. Dispose of materials properly. Do not leave trash or unnecessary materials in mechanical rooms, on roofs, etc.

1.9 FALL PROTECTION/SAFETY

Any work 48" above the floor requires the use of a safety harness and a tie point with a 5000 pound rating. Inspect the fall protection harness and safety lanyards before use.

1.10 FLOOR AND WALL OPENINGS, INCLUDING STAIRWAYS AND SKYLIGHTS

1. Report missing and/or damaged handrails from stairways.
2. Stairways having four or more risers shall be equipped with handrails.
3. Platforms or mezzanines more than four (4) feet above the adjacent floor must be properly guarded with standard barriers and toe boards.
4. Use detour guards to direct employees away from potential hazards associated with openings.

1.11 EYE PROTECTION

Eye protection is needed to protect a worker's vision and depends on the task being done.

1. Dark glasses – sun
2. Safety glasses with side shields – maintenance
3. Goggles – particulates/chemicals
4. Full face shield – particulates/chemicals
5. Full face respirator – particulates, chemicals and fibers

1.12 HEARING CONSERVATION

1. Employees exposed to noise levels over 85 decibels must be part of FSU's Hearing Conservation Program. Employees in this program generally work at the Boiler Plant or in the Grounds Department.
2. Baseline audiograms are given upon initial assignment to employees working in these departments. Audiograms are a medical evaluation of the employee's hearing. Annual audiograms are also given to the employee.
3. Employees exposed to noise levels of 90 decibels or higher must wear hearing protection.
4. FSU provides hearing protectors at no charge to the employee.
5. Hearing loss and/or damage is incurable.

Question:

Ringling in the ears is a symptom of hearing _____

Answer:

Loss

Ferris State University's written Hearing Conservation Program available upon request.

Supplemental information can be found in

Refer to Occupational Noise Exposure Standard, Part 380 Health

1.13 RESPIRATORS

1. Respiratory protection is required to be worn in atmospheres where harmful substances are present.
2. Engineering controls shall be reviewed and tried to eliminate and/or reduce harmful substances to safe levels prior to requiring respiratory protection.
3. Employees must be trained and pass a medical examination prior to wearing a respirator.
4. Several types of respirators will be made available at no cost to the employee.
5. Negative pressure, air-purifying respirators are the most common type of respirator worn at FSU. These respirators cannot be worn in oxygen deficient atmospheres.
6. Employees are responsible for the care and maintenance of their respirators.
7. Employees must notify their supervisor if they incur any problems with their respiratory protection.
8. Facial hair that will interfere with the seal of a tight-fitting respirator is not allowed.
9. Employees shall change filters and cartridges as often as necessary.
10. Employees shall always conduct positive and negative pressure fit tests prior to each use of the respirator to verify the correct fit.

Question:

An oxygen deficient atmosphere (<19.5%) is considered to be IDLH. What does IDLH stand for?

Answer:

I=Immediately D=Dangerous to L=Life and H=Health

Refer to Respiratory Protection Standard, Part 451 Health

Ferris State University's written Respirator Protection Program available upon request.

1.14 BARRICADES

1. Appropriate barricades shall be used to ensure the safety of others when hazardous conditions are created by the work being performed. Some good examples are tape, gates, fences, signage, etc.
2. If barricades and proper signage are not sufficient, an attendant shall be stationed in the area to caution employees/pedestrians.

1.15 CONFINED SPACE (CS): CONFINED SPACE ENTRY STANDARD & PERMIT-REQUIRED CONFINED SPACE STANDARDS

1. A Confined Space (CS) has limited or restricted means of entry or exit and is large enough for an employee to enter and perform assigned work; it is not designed for continuous occupancy by the employee.

2. Examples of Confined Space CS are (but not limited to) manholes, tunnels, pits and tanks.
3. Four levels of employee training are required for confined space entry:
 - Attendant:** Monitors the authorized entrants from outside the confined space.
 - Authorized Entrant:** Employee authorized to enter the confined space.
 - Entry Supervisor:** Responsible for determining if the conditions are acceptable for entry as well as terminating if necessary.
 - Rescue Team:** Trained to respond to confined space emergencies.
4. There are two different classifications of confined spaces:
 - a. **Permit-Required Confined Space** - has one of the following dangers
 1. The potential to contain a hazardous atmosphere.
 2. The potential for engulfing an entrant.
 3. The internal configuration is an entrapment hazard.
 4. Any other recognized hazard.
 - b. **Non-Permit Required Confined Space** - does not have the potential to contain a hazard atmosphere.
5. The Environmental Engineer is responsible for classifying the confined space at FSU.
6. Permit-Required Confined Spaces with man-hole access typically have red covers.
7. Atmospheric testing is required for entry into confined spaces. Monitors for testing the atmosphere may be obtained through the Environmental Engineer. Air monitors measure oxygen, flammables and toxics. Always test all the possible stratospheres within the atmosphere.
8. The South and East utility tunnel at FSU are classified as non-permit confined spaces (notification only) as long as the following three requirements are met:
 - a. The main exhaust fan is on.
 - b. The entrant has a radio to contact station 20 and 30.
 - Radio notification to station 20 (Physical Plant) during normal operating hours or station 30 (DPS) after hours, is required prior and after entry.
 - c. The entrant carries a four gas monitor.
8. Acceptable atmospheric conditions for entry are as follows:
 - Oxygen: 19.5%-23.5%
 - Flammable: Less than 10% LEL
 - Toxics: Less than PEL
9. Some of the common toxics that are monitored are: Carbon Monoxide and Hydrogen Sulfide

Question:

Carbon Monoxide is generated as a result of _____ combustion.

Answer:

Fossil Fuel

Ferris State University's written Confined Space Program available upon request.

1.16 ELECTRICAL SAFETY: ELECTRICAL SAFETY RELATED WORK PRACTICES & THE CONTROL OF HAZARDOUS ENERGY SOURCES

1. Qualified Personnel: Personnel trained in avoiding the electrical hazards of working on or near exposed energized parts.
2. Only qualified employees are authorized to work on electrical circuitry.
3. Qualified employees shall utilize proper procedures prior to de-energizing and re-energizing of electrical circuitry.
4. Circuit-Protection Devices (CPD) are electrical components that protect against electrical damage and/or fire (i.e. fuses and circuit breakers).
5. Do not allow contact with water while working on or near electricity.
6. Employees must utilize the appropriate PPE while working on or near electricity.
7. Inspect electrical cords on a regular basis.
8. Do not use electrical cords or power tools with external damage such as (but not limited to) missing or deformed pins, damage to the insulation.
9. Use electrical cords for their intended purpose only.
10. All electrical tools and equipment should be properly grounded or double insulated.
11. Avoid using metal ladders and other equipment made of conductive material.
12. Do not block access to electrical equipment (i.e. circuit panels, switches, transformers, etc.). A minimum of a 3 foot clearance must be maintained in front of electrical equipment to allow for adequate space to conduct work.

Question:

What circuit-protection device provides a predetermined safety path for stray electrical currents?

Answer:

Grounding - A lightning rod is a form of grounding. It attracts dangerous electrical energy and conducts it harmlessly to the grounds.

Helpful Tip:

The human body contains a large percentage of water and water is an excellent conductor of electricity.

Ferris State University's written Lock Out/Tag Out Program available upon request.

1.17 LOCK OUT/TAG OUT (LOTO)

1. Lock Out Tag Out (LOTO) is best defined as blocking the flow of energy from a power source to a piece of equipment to help prevent accidental start up.
2. LOTO is required whenever repairs or non-routine tasks need to be completed on a machine or piece of equipment.
3. Energy to be locked out can be electrical, mechanical, hydraulic or pneumatic, etc.
4. Employees must always consider the possibility of stored/residual energy. Machines must be at a zero energy state. (Always verify before conducting the repairs.)
5. Employees conducting LOTO must be trained to proper LOTO procedures. Trained employees are considered *authorized*. Employees working in the area where the LOTO is being conducted are considered *affected*. Affected employees need to be aware of the importance of LOTO.
6. *Group Lockout*. Each authorized employee working on a machine or piece of equipment must attach their lock, utilizing a hasp.
7. Locking devices and tags to be used for LOTO are available to trained FSU employee's at no cost.
8. Locks must be used for lock out. Tags are used as a means of identification of the person conducting LOTO. Tags alone are not acceptable as a means of locking out a power source.
9. Communication is essential between shifts, trades and contractors in regards to the repairs being made to the equipment that is locked out.
10. Authorized employees conducting LOTO shall have the only key to their lock.
11. Locks used for LOTO must only be used for LOTO purposes.
12. Locks used for LOTO must also be standardized according to color, throughout FSU.
13. Emergency Lock Removal: A supervisor and/or locksmith, authorized by a supervisor, may remove an employee's lock in case of an emergency. The supervisor authorizing the emergency removal is responsible for maintaining safety during the removal.

Question:

True or False: Once you have locked out all energy sources you should verify its isolation by trying to turn the equipment on.

Answer:

True, for your safety verify isolation.

Reference The Control of Hazardous Energy Sources Standard, Part 85 Safety and Electrical Safety Related Work Practices, Part 40 Safety

1.18 HOT WORK

1. Hot work is the use of tools that generate flames or sparks.
2. Examples of hot work: welding, cutting, brazing, soldering, grinding.

3. Acetylene and oxygen tanks shall be securely fastened to a dolly or stand to prevent their falling or being knocked over.
4. Keep combustible materials, especially hot oils, away from oxygen tanks.
5. Conduct hot work in designated areas if possible.
6. Utilize a hot work permit when conducting hot work outside of the designated area(s).
7. Ensure proper ventilation is available when conducting hot work.
8. When conducting hot work in confined spaces follow FSU's written confined space program.
9. Always wear the appropriate PPE while conducting confined space operations.
10. Always have a fire extinguisher readily available for use.
11. Combustible materials shall be removed from within a 35 foot radius.
12. Have the appropriate fire watch available when required.
13. Only trained personnel may perform hot work.
14. Employees must notify the appropriate personnel (supervisor, station 20 or station 30) prior to each hot work activity.
15. Use proper ignition equipment to light torches. Do not use matches or a lighter.
Do not carry butane lighters when performing hot work
16. Do a fire watch when appropriate.
17. Hot work permits are obtained from the Physical Plant Work Control Center.

Ferris State University's written Hot Work Program available upon request.

Reference Welding and Cutting, Part 12 Safety

1.19 NATURAL GAS LEAKS

1. Evacuate the area – DO NOT turn equipment on/off or use a landline telephone in the leak area.
2. Dial 911 for the Fire Department, FSU Department of Public Safety and DTE.

1.20 HOME SAFETY

1. At home safety cannot be emphasized enough. The same safety guidelines and regulations should be observed at home as they are on the job.
2. Maintain smoke detectors.
3. Know where gas and electrical mains are.
4. Store flammables in approved cans.
5. Maintain good housekeeping not allowing combustibles such as oily rags to openly accumulate.
6. Label fuses and circuit breakers.
7. Do not over-load circuits or use frayed/damaged electrical cords.

8. Only use safe ladders and step stools. Do not stand on items that weren't intended for that purpose such as chairs, buckets, etc.
9. Prepare and practice family escape and shelter plans for fire and severe weather.
10. Keep emergency ladders on second stories for safe escape.
11. Store chemicals such as gas, cleaning agents, lubricants, oils, etc. in safety areas away from children and food.
12. Have the proper fire extinguishers throughout the home, garage, barn, etc.
13. Keep tools properly guarded.
14. Never conduct repair on equipment without de-energizing it.
15. Do not leave a vehicle, including tractors and ATV's running inside without opening doors and windows. Carbon monoxide is an asphyxiant.
16. Leave emergency phone numbers posted near all phones.
17. ALWAYS watch children when near equipment, tools and chemicals.
18. Avoid placing chemicals in household containers such as pop bottles.
19. Utilize PPE when handling chemicals.
20. Do not mix chemicals.
21. Remember – chemicals are just as dangerous at home. Just because you can purchase chemicals for at home use does not mean it is not hazardous.
22. The free guide "Family Preparedness Guide" from the Michigan State Police can be obtained via the web at:
http://www.michigan.gov/documents/familypreparedness_color_62898_7.pdf

Question:

Natural gas and propane are two common home heating products. Which products vapors are heavier than air?

Answer:

Propane, this means if you have a propane leak, the vapors will be low to the ground/floor surface! Natural gas vapors are lighter than air so its vapors will rise.

END OF SECTION 1

SECTION 2.0 ENVIRONMENTAL

2.1 BUILDING ODORS

1. Generally caused by mold, chemical spills or insufficient fresh air in the space.
2. Submit a work order for a detailed investigation.

2.2 CHEMICAL DISPOSAL

1. Do not dump or pour chemicals down any drains including sinks, toilets, floor drains, into trashcans, etc.
2. Contact the Environmental Engineer for proper disposal of chemicals.
3. Clean up any minor spills that occur or contact the Environmental Engineer.
4. Limit samples received from vendors. Disposal of chemicals is expensive!
5. Do not store chemicals outside.
6. Pesticide containers are to be triple rinsed, punctured and disposed of in accordance with MDA requirements.
7. Use sealed and labeled containers for disposal.
8. Contact the Environmental Engineer to obtain drums to store chemical wastes in.
9. The most cost effective way to dispose of a chemical is to use it for its intended purpose.

Question:

Which governing agencies place rules on FSU with regards to chemical disposal?

You can help prevent slips, trips and falls by maintaining good _____.

Answer:

City of Big Rapids

MDEQ: Michigan Department of Environmental Quality

EPA: Environmental Protection Agency

Housekeeping

2.3 CYLINDER STORAGE

1. Oxygen cylinders must never be stored near highly combustible material such as (but not limited to) acetylene, oil and grease.
2. There must be a minimum distance of 20 feet separating oxygen and fuel gases or have a ½ hour fire rated wall separating them.
3. Always keep cylinders in the upright position.
4. Valve caps must be in place when not in use.
5. Cylinders must be secured to a cart or with a restraining device such as a chain to prevent from accidentally falling over.
6. Cylinders must be labeled.
7. Store cylinders in well ventilated areas away from stairways.

8. Always clear the valves of dust and dirt prior to connecting to a regulator by slightly opening the valve for a brief second, when closing.

Question:

It is important that oxygen and acetylene tanks are secured from falling over because they are highly_____.

Answer:

Pressurized

Reference Welding and Cutting, Part 12 Safety

2.4 ENVIRONMENTAL CONCERNS

1. **Asbestos** is common material used for floor tile, sound proofing, thermal and electrical insulation, fire blankets and fire curtains as well as in appliances that have high temperatures. This material can be found in a very hard state (floor tile), very soft state (sound proofing) and pipe insulation (ridged block, cardboard and blankets).
 - a. Employee Action To Be Taken – If You Suspect Damaged Asbestos – Leave The Site Alone And Contact Your Supervisor.
 - b. Physical Plant has a trained response team to correctly and safely remediate spills or repair damaged insulation.
 - c. The buildings at FSU were constructed at various times and may contain building products that have asbestos as part of their structure.
 - d. Asbestos is a fibrous mineral that has the potential to cause health hazards in it's friable form. Normally for asbestos containing building materials to become friable it must be damaged.
 - e. The most common type of building materials that are in some buildings are 9" x 9" floor tiles.
 - f. When it is necessary to remove asbestos containing building materials, FSU posts notices prior to the removal activities and uses proper techniques to complete the tasks.
2. **Lead Paint** All steel used in commercial and industrial buildings prior to 1978 was coated with a lead-based primer. Some paint used on ceilings and walls also contain lead. The only way to determine the lead content of a painted surface is to send a sample to a laboratory for analysis.
 - a. Employee Action To Be Taken – before repainting a surface which may contain lead paint, contact your supervisor to determine if the coating needs to be sampled and what methods need to be used in completing the project.
 - b. All painted surfaces on the Big Rapids Campus of Ferris State University should be considered a potential location for lead paint.
 - c. Samples of the painted surface should be taken for laboratory analysis to confirm the composition of the paint.

- d. Any abrasive or heating of a lead paint must be done with respiratory protection, adequate ventilation and under some circumstances air sampling or wipe sampling down to provide a clearance for the work space.
3. **Polychlorinated bi-phenols (PCB's):** PCB's can be found in electrical transformer oil, fluorescent light ballasts, capacitors, lubricants, and heat transfer equipment. Production of PCB's ended in 1977 due to potential long term health risk.
- a. Employee action to be taken – all leaking oil filled transformers should be immediately reported to the Physical Plant Electrical Trades Supervisor and the Environmental Engineer. Fluorescent light ballasts that do not have a “no PCB” printing on the label and are wet with oil should only be handled with proper gloves and placed into a drum in chemical storage for disposal.
 - b. Chemicals on campus action to be taken – surplus, abandoned or leaking chemical containers should be reported to your supervisor who will in turn contact the Environmental Engineer for the proper action to be taken.
4. **Mold Issue:** For mold to become an issue, there must be a water source and a food source. A work order should be submitted to investigate the situation. Chemicals are available to kill the mold on contact and a six-month residual to prevent mold growth.

END SECTION 2

SECTION 3.0 WEATHER SAFETY

Rain, snow, ice and slush can make driving hazardous and walking sometimes almost impossible. Each employee should take weather factors into consideration when moving by vehicle or on foot in inclement weather.

3.1 WEATHER RELATED SAFETY

1. **Severe Weather Notification:** Notification of severe weather may come by the use of the notifications systems, from your building emergency coordinator, supervisor, and local radio stations or by observation of weather conditions outside your building.
2. **Incident Command System of Operations:** all search, rescue, damage assessments and relief operations will be done under the incident command system.
3. **Severe Weather Shelter:** You should be aware of the suggested shelter areas in your building before there is a need to seek a place of refuge. Plans showing shelter areas are posted in various locations in each building on campus. Stay in designated shelter area until instructed to return to your work area or leave the building.
4. **Where to Seek Shelter:** Seek shelter in interior spaces away from external windows. Bathrooms are usually a good space for shelter along with basement spaces. Avoid spaces with high and large area ceilings such as gyms, arenas, auditoriums, atriums and all areas with large glass surfaces.
5. **When to Leave a Shelter Area:** Only leave when the all clear has been sounded or instructed to do so by your building emergency coordinator.

3.2 SEVERE WEATHER – TORNADO, HIGH WINDS, & THUNDERSTORMS

1. A tornado warning indicates that a tornado has been sighted in the area.
2. A tornado warning is indicated through sirens within the community. When the siren alarms, shelter should immediately be taken.
3. The designated shelter area within the Physical Plant is the main hallway between the administrative offices and trade shops. If working in other campus facilities, please refer to the evacuation plans located within each building.
4. Specific attention should be given to the evacuation maps posted within other buildings frequently visited throughout campus. If you are unaware of the designated shelter area within a building, take shelter in low level floors such as basements and interior hallways. If time does not permit, take shelter under objects such as desks and tables. Avoid large rooms with high ceilings and glass.
5. There are generally 3 minutes after the warning is issued before a tornado hits.
6. Monthly severe weather siren tests are done on the first Saturday of the month at 1:00 pm.
7. There is a campus-wide outdoor broadcast system for notification at:
 - a. Business Building
 - b. Lot #47 (west of Ice Arena)

- c. Boiler Plant
- d. University Center (formerly Rankin Center)
- e. Intramural Field
- f. Katke Golf Course
- g. Racquet & Fitness Center

3.3 TORNADO PROCEDURES

1. Physical Plant Employees need to be aware of local changing weather conditions and where the suggested shelter areas are within the buildings in which you are working. Notification of severe weather can be made via the following methods:
 - a. Physical Plant Radio System
 - b. Campus Outdoor Warning System
 - c. City Siren System
 - d. Automated Telephone Fan out System
 - e. Local Radio Stations
 - f. Visual Observation of Severe Weather
2. Shelter should be taken in an area where there are limited windows, exterior doors, or in a basement location if possible. Avoid wide span roofs and taking shelter in a vehicle. Stay sheltered until instructed to do so or when the all clear signal is broadcast from the city siren system.
3. After the severe weather has cleared, each supervisor should check the status of employees using appropriate means which are available.
4. The Incident Command System (ICS) will assign staff members to check on building damage – only after the severe weather has passed through the Big Rapids Area.

END SECTION 3

SECTION 4.0 FIRE & LIFE SAFETY











This fire and life safety section is an information resource to help faculty, staff and departments within the university community create and maintain a safer environment.

4.1 FIRE & LIFE DRILLS

1. Academic buildings – when the fire alarms sound – exit the building through the nearest exit and proceed to the established rally point. Stay in this location until the incident commander gives the authorization to re-center the facility.
2. Residence Halls – follow established protocol for residence halls.
3. Other buildings – follow established protocol in buildings.
4. All Physical Plant Employees must cooperate with all tornado, fire and safety drills.

4.2 FIRE EXTINGUISHERS

1. Fire extinguishers are labeled as to the kind of fire they will be effective against.
2. Fire extinguishers are meant for use in small fires (i.e. trash can size).
3. See below for Fire Extinguisher Ratings and Uses

	CLASSES OF FIRES	TYPES OF FIRES	PICTURE SYMBOL
	A	Wood, paper, cloth, trash & other ordinary materials.	
	B	Gasoline, oil, paint and other flammable liquids.	
	C	May be used on fires involving live electrical equipment without danger to the operator.	
	D	Combustible metals and combustible metal alloys.	
	K	Cooking media (Vegetable or Animal Oils and Fats)	

The PASS Method – How most fire extinguishers work

- **PULL** – pull the pin or release other locking devices.
- **AIM** – aim the extinguisher nozzle at the base of the fire.
- **SQUEEZE** – squeeze or press the handle.
- **SWEEP** – sweep from side to side at the base of the fire while discharging the contents of the extinguisher



Reference Portable Fire Extinguishers Standard, Part 8 Safety

4.3 FIRE SAFETY

1. Activate the fire alarm system (red pull system) if you discover a fire.
2. Call 911.
3. Do not use elevators as a means of escape during a fire.
4. If your clothing catches fire; stop, drop and roll.
5. To escape a smoke filled building, crawl on the floor breathing through a wet rag if possible. Remember: smoke rises.
6. Utilize:
 - R:** Rescue and relocate anyone in immediate danger
 - A:** Alert others by activating alarms and calling 911
 - C:** Confine by closing the doors
 - E:** Extinguish/evacuate
7. During a fire, never open a door without feeling for heat.
8. Follow proper hot work procedures.
9. Be aware of fire evacuation routes and locations of extinguishers.
10. Do not use frayed electrical cords.
11. Do not accumulate excess trash inside a building. Practice good housekeeping.
12. Do not prop doors open. If possible, close the doors during an evacuation.
13. Do not block access to fire and life safety equipment or emergency exits.
14. Smoke in designated areas only.

15. Store flammables in approved cabinets and containers.
16. Rags that contain oils or solvents shall be stored in approved metal cans with lids.
17. Never use matches to check for leaks in pipes, etc.
18. Never place devices on doors that may hinder escape from a building
19. *Flammable* and *combustible* liquids are categorized by their ease of ignition.
Flammables are more easily ignited than *combustibles*.
 Examples of *Flammables* (Flash Point of <100 F)
 Acetone, Gasoline, Lacquer Thinner
 Examples of *Combustibles* (Flash Point of >100 F)
 Kerosene, Stoddard Solvent, Fuel Oil
20. Only use extension cords for temporary, quick jobs.
21. The use of candles and incense is prohibited throughout campus.
22. Portable electric heaters are allowed only in approved areas.

Question:

Do you know what the term flash point means?

Do you know the flash point of gasoline?

Answer:

Flash Point is the lowest temperature at which a product emits enough vapors that it could ignite if an ignition source is introduced.

The Flash Point of gasoline is -45 degrees F. It is an extremely flammable substance.

4.4 FIRE & LIFE SAFETY SYSTEMS & EQUIPMENT

The fire and life safety systems at Ferris State University on the Big Rapids Campus are made up of several types of equipment:

1. Building Alarm System
 - a. Pull stations
 - b. Horns
 - c. Strobes
 - d. Water flow switches
 - e. Smoke detectors
 - f. Heat detectors
 - g. Central monitoring system

2. Portable Fire Extinguishers
 - a. Dry powder – 5#/10#/2.5#
 - b. Carbon dioxide

3. Fixed Fire Extinguishing Systems
 - a. Halon
 - b. Wet powder systems
 - c. Carbon dioxide tanks
4. Sprinkler Systems
 - a. Sprinkler heads
 - b. Stand pipes
5. Specialty Controls/Systems/Procedures
 - a. Elevator override
 - b. Fire pumps for sprinkler systems
 - c. Flammable liquid storage and vent cabinets
 - d. Restrictions on chemical storage
 - e. Regular disposal of waste/surplus chemicals

END SECTION 4

SECTION 5.0 FIRST AID

First aid is the provision of initial care for an illness or injury. It is usually performed by non-expert, but trained personnel to a sick or injured person until definitive medical treatment can be accessed. Certain self-limiting illnesses or minor injuries may not require further medical care past the first aid intervention. It generally consists of a series of simple and in some cases, potentially life-saving techniques that an individual can be trained to perform with minimal equipment.

5.1 AUTOMATED EXTERNAL DEFIBRILLATOR (AED)

An automated external defibrillator (AED) is a portable electronic device that automatically diagnoses the potentially life threatening cardiac arrhythmias of ventricular fibrillation and ventricular tachycardia in a patient and through the use of an electrical shock, stops the arrhythmia, allowing the heart to re-establish an effective rhythm.

1. An AED will not restart a heart which has quit beating.
2. Using an AED (continue CPR if started):
 - a. Call 911 and get help coming
 - b. Check the victim's respiration and airway
3. All AED's have printed instructions and some have voice
 - a. Open the AED
 - b. Remove the two pads with wires attached
 - c. Open the victim's shirt and undershirt (cut away)
 - d. If needed – dry the victim's skin per the locations on the pads
 - e. Attach the pads as indicated
 - f. Plug in the wires
 - g. Turn on the AED
 - h. Stop CPR and say "clear"
 - i. The AED will analyze the victim's heart rhythm
 - j. If the AED determines a shock is needed – stand clear of the victim
 - k. Immediately following the shock, begin CPR for 5 cycles (2 minutes)
 - l. CPR should be done using the method determined by the American Red Cross – 30 compressions to 2 breaths
 - m. Check the victim's rhythm – after 2 minutes of CPR – reshock if the AED Prompts
 - n. If the AED gives a "no shock" message after analysis, check the victim's pulse and breathing
4. AED maintenance – when the battery level is low, the AED will have a blinking light emitting diode and/or an audible signal. The battery or other service work must be done by a trained technician. Contact the Safety Coordinator at x2150 for all service requests or equipment usage.

AED Locations
Ferris State University Big Rapids/Kendall

<u>Owner Department</u>	<u>ID</u>	<u>Location</u>	<u>Storage</u>
Campus Police	1	Police Car	Blue Case
Campus Police	2	Police Car	Blue Case
FSU-GR		FSU-GR Kitchen	Cabinet
SRC	1	SRC – Desk	Blue Case
SRC (IM)	2	SRC – Ropes	Blue Case
SRC (Ropes)	3	SRC – Outside	Blue Case
SRC	P	SRC – Pool	Blue Case
ATH	1	Sports Medicine	Blue Case
ATH	2	Sports Medicine	Blue Case
ATH	3	Sports Medicine	Blue Case
ATH	4	SPO by weight room	Cabinet
RTQ		Front Desk	Cabinet
FLITE		Front Desk	Cabinet
RAN		Outside RAN 243	Cabinet
WIL		Outside WIL 153	Cabinet
ICE		Ice Arena	Cabinet
KAT		Lobby	Cabinet
CSS	2	2 nd flr break room	Cabinet
CSS	1	1 st flr break room	Cabinet
MCO	1	1s flr office	Cabinet
MCO	2	1 st flr closet	Cabinet
MCO	3	2 nd flr break room	Cabinet
MCO	4	2 nd flr Dean' Office	Cabinet
VFS		2 nd flr dental clinic	Cabinet
BHC		Clinic room 121	Cabinet
PHR	1	Hall outside PHR 105	Cabinet
PHR	2	PHR 210	Cabinet
SWN		Hall outside SWN 104	Cabinet
AUT		Hall outside AUT	Cabinet
GRN		Main lobby by phone	Cabinet
HET		Main lobby by HET203	Cabinet
PRK		South end PRK 150	Cabinet
Kendall	1	Front Desk Main Atrium	Cabinet
Kendall	7	Administration 7 th flr	Cabinet
GEN		Hallway outside main	Cabinet

5.2 BACK SAFETY

1. Plan your path of travel.
2. If a load is too heavy or large for one person to safely lift, obtain help.
3. Use mechanical means if possible.
4. Have a good grip on the object being lifted.
5. Get as close to the object as possible, while maintaining balance.
6. Lift with your legs and arm muscles, not your back.
7. Always keep your back straight.
8. Always lift gradually and smoothly without twisting and jerking.
9. Always have a clear view over the load you are carrying.
10. Put the object down, using the same concepts.
11. Remember, exercise is an important element to maintaining a healthy back.

Question:

What is the first thing you do prior to helping an injured person?

Do you know what the three natural curves in your back are called?

Answer:

Protect Yourself! (i.e. latex gloves)

Cervical (neck area) Thoracic (middle area) Lumbar (lower area)

5.3 BLOODBORNE PATHOGENS

1. Bloodborne pathogens are viruses or bacteria present in human blood and other body fluids that can infect and cause disease in humans.
2. If you get injured, try to help yourself as much as possible. This limits possible exposure to others.
3. If helping an injured person, always utilize Universal Precautions. *Universal Precautions* is a means of infection control that treats all human blood and Other Potentially Infectious Material (OPIM) as potentially infectious.
4. Protect yourself first. Use nitrile (or equal) gloves and other personal protective equipment deemed necessary to protect yourself.
5. Syringes used for personal medical conditions must be taken home with the employee using them to be properly disposed of. Do not put syringes or other sharp objects in FSU's trash.
6. If clothing or medical supplies are contaminated with blood or OPIM, contact your supervisor for proper disposal. This material is a Biohazard Waste that must be disposed of in accordance with federal and state laws.
7. If an exposure to blood or OPIM occurs, contact a trained custodial staff member to properly clean up the exposure.
8. When an incident occurs:

- a. All exposure incidents must be reported immediately to your supervisor and an accident report is completed.
 - b. Report to the Birkam Health Center for evaluation. Everything is kept confidential.
9. FSU employees, through exposure determination, are placed into either category A or B:
- Category A:* Likely to come into contact with blood or OPIM.
- Category B:* Not likely to come into contact with blood or OPIM
10. Human Immunodeficiency Virus (HIV), Hepatitis A, B, C, D are some examples of viruses that can result due to exposure to Blood borne pathogens.
11. FSU has an established bio-waste pickup, storage and disposal program.

Question:

Hepatitis B (HBV) is hardy and easier to contract than you might realize. Do you know how many days the HBV can survive outside the body in the form of dried blood?

Answer:

Up to 7 days

Ferris State University's written Bloodborne Pathogen Program is available upon request.

Reference Bloodborne Infectious Disease Standard, Part 554 Health

**Source SmithKline Beecham, EBO880, 2/96*

5.4 COMMON WORKER HEALTH ISSUES

See Basic First-Aid for the Community and Workplace.

5.5 FIRST AID PROCEDURES

Basic First-Aid Procedures for Classrooms and Laboratories

1. Before attending to any injured individual, determine if the scene is safe, determine how many people are injured, determine if there are bystanders who can help, prioritize care if more than one person is injured.
 - A. Airway
 - B. Breathing
 - C. Circulation
2. Call 911 for assistance if the victim is:
 - a. Unconscious
 - b. No signs of life
 - c. Trouble breathing
 - d. Persistent chest pain or pressure

- e. Severe bleeding
3. When contacting 911, provide the following information:
- a. Your name and telephone number you are calling from
 - b. A description of what happened
 - c. Your exact location
 - d. The number of injured people
 - e. Condition of each victim
 - f. What assistance is being provided
4. Care for the victim:
- a. Reassure the victim
 - b. Monitor the airway, breathing and circulation
 - c. Prevent the victim from being chilled or overheated
5. Typical examples of first-aid:
- a. Minor Burn – include small scalds or burns from hot objects.
 - i. Flush the burned area with cool water from a tap or use cool wet compresses applied to the skin.
 - ii. Cleanse the burned area. Apply burn cream from the first aid kit.
 - iii. If blistering occurs – recommend that victim seek treatment at Birkam Health Center or with personal physician.
 - b. Chemical Burn
 - i. Start treatment immediately by placing the burned area under cool running water and continue flushing for at least 15 minutes.
 - ii. If the chemical has splashed into the eye, irrigate the injured eye with cool water. Make sure the eye is open and the head is positioned so the water will not run into the other eye. Irrigate for at least 15 minutes and then cover the eye with a sterile compress. Recommend the individual seek emergency medical treatment.
 - iii. Staff should pull Material Safety Data Sheet and send with victim to medical treatment facility.
 - c. Minor Cuts/Scrapes/Bruises
 - i. Clean area with a betadine wipe, which can be found in the first aid kit. Cover with a light protective adhesive bandage.
 - ii. Treat bruises that involve bleeding into the tissue beneath the outer layer of skin with cold packs to reduce swelling.
 - iii. For deeper cuts that go through the skin, control bleeding with direct pressure and elevation. If bleeding persists or recurs, recommend the victim seek medical treatment at the Birkam Health Center or with personal physician.

- d. Fainting
 - i. Check to make sure the individual is breathing.
 - ii. Lay the person on his/her back, raise the legs higher than the head to promote the flow of blood to the heart and brain.
 - iii. When person revives, color returns to the face, suggest lying or sitting for a few minutes before attempting to stand.
 - iv. Recommend the victim seek medical treatment at the Birkam Health Center or with personal physician.
- e. Nosebleeds
 - i. Have the person sit down with head angled slightly forward so the blood doesn't run back into the throat.
 - ii. If the blood comes from only one nostril, press the fleshy part of the nostril firmly toward the midline; if from both, pinch the nostrils together. Maintain pressure for 5 to 10 minutes.
 - iii. If the bleeding is profuse or cannot be controlled within 30 minutes or if nosebleeds occur frequently, advise the victim they should seek medical treatment at the Birkam Health Center or with personal physician.
- f. Sprains
 - i. Start with RICE – Rest, Ice, Compressions, And Elevation. Do not let the individual use the injured body part.
 - ii. Apply an ice pack and mild compression with an elastic bandage to the injured body part for several hours to keep swelling down.
 - iii. Keep the sprain elevated using pillows.
 - iv. If there is discoloration or deformity, advise the victim they may wish to seek medical treatment from Birkam Health Center or with personal physician.
- 5. Minor Eye Injuries
 - i. DO NOT rub or apply pressure or ice to the injured eye.
 - ii. Cover the eye with patch and recommend the victim seek medical treatment from the Birkam Health Center or with personal physician.
 - iii. If the injury is a black eye, you may apply ice to cheek and area around eye but not directly on the eyeball itself.
- 6. Severe Eye Injuries
 - i. If an object is impaled in the eye, CALL 911, DO NOT remove the object.
 - ii. Cover both eyes with sterile dressings to immobilize and have victim transported to medical treatment facility of their choice.
 - iii. DO NOT rub or apply pressure or ice to the injured eye.

- iv. Note – DPS may transport the individual to medical treatment facility if victim prefers this rather than an ambulance.
- v. Continue first-aid until professional medical personnel arrives on the incident scene or victim is at medical facility.

5.6 FIRST AID/WORK RELATED INJURIES/WORKER'S COMPENSATION

1. See HRPP 04:01 for additional information.
<http://www.ferris.edu/htmls/administration/adminandfinance/Human/HRPPs/FSU-HRPP0401WorkersCompensation.pdf>
2. First aid kits are available for use in the Physical Plant.
3. For a medical emergency, call 911 for an ambulance. (Life threatening conditions, uncontrolled bleeding, breathing, severe injury, loss of consciousness, chest pain, etc.)
1. If you get injured as a result of work, contact your supervisor immediately to report the incident.
 - a. Fill out an Incident Report with your supervisor, no matter the severity of the injury.
 - b. The completed incident reports are then turned in to the Physical Plant Front Office, faxed to HRD, and processed through Physical Plant administrative procedures for signatures. Send the original to:

Ferris State University
Human Resources
420 Oak Street, PRK 150
Big Rapids, MI 49307-2020
FAX: (231)591-2978
 - c. Send Incident reports to the Human Resources Department within 24 hours of the incident.
 - d. Employees with non-emergency, work related injuries will be sent to the Birkam Health Center.
2. Workers compensation questions can be directed to the Human Resources Department.
3. Some work related injuries may involve light duty assignments in the home department.
4. If the home department cannot accommodate the restrictions, immediately contact the Human Resources Department for alternative assignment.
5. Injured employees are required to report to the FSU Health Center for treatment of all non-life-threatening injuries.
6. Send all medical slips to the Human Resources Department and your Supervisor.
7. Employees should refrain from transporting any injured employee to the hospital.

END SECTION 5

6.0 EMERGENCY RESPONSE

An emergency response is put into effect whenever a crisis, man-made or natural, disrupts operations, threatens life, creates major damage, and occurs within the University community.

6.1 UNIVERSITY WIDE EMERGENCY PROCEDURES

See the FSU Emergency and Safety Procedures Guide for additional FSU emergency information located at:

<http://www.ferris.edu/htmls/administration/adminandfinance/Human/Safety/FSU-FlipCharts.pdf>

6.2 EMERGENCY COORDINATORS

All buildings on campus, including the Physical Plant have an emergency coordinator. The Environmental Engineer is the emergency coordinator for the Physical Plant.

1. Reference the FSU Emergency & Safety Procedures Guide for additional information.
2. During an evacuation, the initial meeting point for the Physical Plant employees is outside on the lawn in front of the Heavy Equipment building.
3. Reference the posted floor diagram(s) for suggested tornado shelters in the Physical Plant.

END SECTION 6

7.0 EQUIPMENT AND WORKER TRAINING

It is important that the information presented below be adhered to when utilizing equipment. Training is a necessary component of utilizing equipment.

7.1 AERIAL LIFTS

1. Personal Protection Equipment
 - Safety harness and lanyard. Inspect for any defects.
 - Any other equipment as required.
2. Equipment
 - Never tamper with or attempt to repair the vehicle.
 - Motor Pool will perform maintenance on aerial lifts.
 - Report known hazards concerning an aerial lift to your supervisor.
3. Passengers and Loading of Aerial Lifts
 - Only FSU employees with valid aerial work platform training are authorized to ride on an aerial work platform.
 - Never exceed the rated loading capacity for the work platform.
4. Parking
 - Park and shut down the machines according to the manufacturer's operating manual.
5. Platform Positions
 - Platform shall not be raised or lowered while moving. Minor adjustments may be made for alignment purposes.
 - Major positioning of the platform shall be done with the truck stopped, to increase the stability of the platform.
 - The boom will be carried as low to the floor as possible but high enough to clear obstacles.
 - Never allow anyone to walk under an elevated platform.
6. Each lift must have an operating manual or decals attached for safe operation.

Refer to Vehicle Mounted Elevating and Rotating Work Platforms, Part 58 Safety

7.2 AERIAL LIFT PRE-OPERATION PROCEDURES

1. A visual and functional inspection of the machine must be done at the beginning of each work shift and use. The inspection must include but is not limited to the following:
 - a) Check decals and markings for legibility and placement on machine.
 - b) Check for leaks of hydraulic oil and battery water.
 - c) Check tire and wheel condition.

- d) Check for problems with the machines structural areas (scissors arms, outriggers, boom, etc.).
 - e) Check the condition of the guardrail system including the platform deck extension.
 - f) Check hydraulic hoses and electrical wiring.
 - g) Check for any loose or missing parts.
 - h) Make sure the operator's manual is located on the unit.
 - i) Make sure the work platform is clean and uncluttered.
 - j) Test the ground control functions.
 - k) Test the platform control functions.
 - l) Test the operation of the manual decent valve and emergency power system.
 - m) Check safety devices (emergency stop switches, etc.).
2. The operator must conduct a workplace inspection which includes but is not limited to the following:
 - a) Check for open machinery, pits, holes, drop-offs, etc.
 - b) Check for floor obstructions, unlevelled surfaces, grade of slopes.
 - c) Check for floor debris.
 - d) Check for overhead obstructions, high voltage conductors.
 - e) Check for inadequate surface or possible improper support of equipment.
 - f) Check for hazardous locations.
 - g) Check wind and weather conditions; do not use lift in winds over 25 MPH.
 - h) Check any other unsafe conditions.
 3. Motor Pool or a qualified outside service will conduct an annual inspection of each aerial work platform for cracks and deformations using 1 1/2 times the rated load capacity.
 4. **Do not operate a malfunctioning unit.**

7.3 AERIAL LIFT OPERATING PROCEDURES

DO NOT'S

Do Not exceed the platform loading capacity.

Do Not raise the platform on unlevelled floors and unlevelled terrain.

Do Not drive machine into an unlevelled area when the platform is elevated.

Do Not exceed the machines gradability rating (see operating manual).

Do Not stand, reach or sit on or over the platform railings.

Do Not enhance the reach of the unit by using ladders, scaffolding, planks, etc.

Do Not tie off equipment or personnel to another object.

- Do Not** use the unit as a crane or material handling device.
- Do Not** attempt to mount or dismount the equipment while it is in motion.
- Do Not** use the platform as an electrical ground for arc welding.
- Do Not** transport any gas cylinders on the platform of an aerial lift.
- Do Not** position and operate aerial work platforms when they are on a truck, trailer, scaffolding, or similar equipment.
- Do Not** use guard rails to support any other work platforms, personnel or materials.
- Do Not** engage in horseplay or stunt driving.

DO'S

- Do** place objects on the platform so they can not fall off.
- Do** place heavy objects with the weight as low to the floor of the platform as possible.
- Do** wear a safety harness and lanyard.
- Do** evenly distribute the load on the platform.
- Do** limit your traveling speed according to the surrounding conditions.
- Do** enter and exit the platform safely.
- Do** use the unit on a hard, flat surface only when the platform is elevated.
- Do** maintain a clear path of travel.
- Do** maintain a safe distance from hazards and overhead obstructions.
- Do** maintain a firm footing on the platform floor.
- Do** look around the base of the unit before moving it.
- Do** check the clearance before lowering the platform.
- Do** immediately stop the use of an aerial life when used outdoors and the wind speed exceeds 25mph
- Do** limit travel speed according to the following factors:
 - A. Slope
 - B. Area congestion
 - C. Floor surface congestion
 - D. Location of personnel
- Do** maintain the following distances from electrical lines (refer to Table 1 on the following page)

0-50KV =	keep 10 feet away
50KV and over =	keep 10 feet away plus 4 inches per KV over 50KV
ex. 51KV =	keep 10 feet 4 inches away
52KV =	keep 10 feet 8 inches away

Table 1
Minimum Clearance Distances for Equipment

Voltage	Clearance With Boom Raised	Clearance Boom Lowered and No Load in Transit
To 50 kV	10 feet	4 feet
Over 50 kV	10 feet + .4 inch per each 1 kV over 50 kV	10 feet
50 to 345 kV		10 feet
346 to 750 kV		15 feet

7.4 AERIAL LIFT SPECIAL PROCEDURES

1. Except in the case of an emergency do not operate ground controls unless permission has been obtained from the personnel in the platform.
2. Stop operating the unit if it becomes damaged, malfunctions, or a potentially hazardous condition is encountered.
3. Do not climb down from an elevated platform if the platform becomes non-operational (platform is stuck, auxiliary power or manual decent valve is not working). Seek help from a qualified person on the ground.

FIGURE 1
VEHICLE-MOUNTED ELEVATING WORK PLATFORM

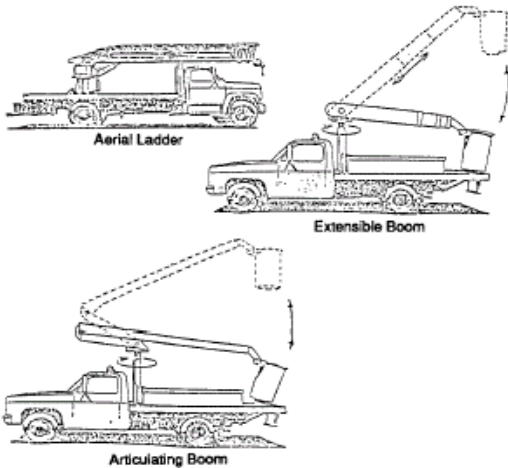


FIGURE 2
MANUALLY PROPELLED ELEVATING WORK PLATFORMS

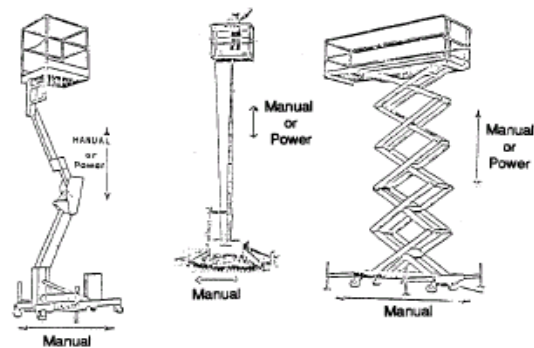


FIGURE 4
SELF-PROPELLED ELEVATING WORK PLATFORMS

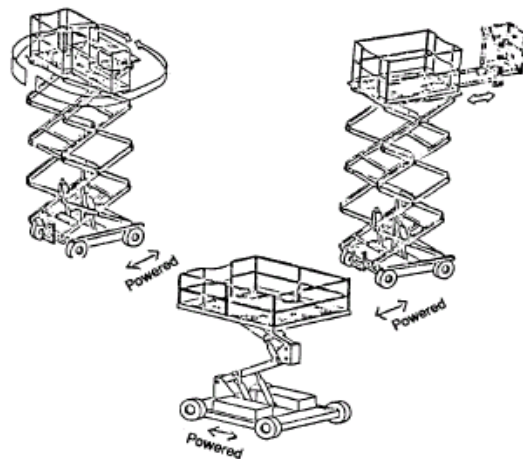
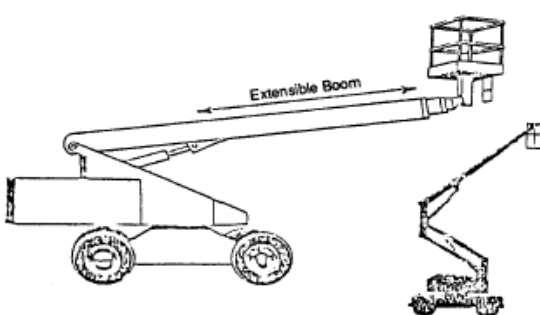


FIGURE 3
BOOM-SUPPORTED ELEVATING WORK PLATFORMS



7.5 EQUIPMENT CARE AND TOOL USE

1. Inspect all tools and equipment prior to using them.
2. Do not use equipment that is in need of repair. Report it to your supervisor.
3. Never adjust or repair equipment without conducting proper Lock out Tag Out procedures (LOTO).
4. All pinch points must be properly guarded. Never bypass safety devices unless proper LOTO procedures are implemented. Always replace guards before restarting the equipment.
5. Power take-off (PTO) shafts on equipment must be guarded. The equipment must be shut off prior to any repairs or adjustments.
6. Only use equipment for its' intended purposes. Select the right tool for the job.
7. Do not use chisels with mushroom heads. Keep all tools sharp and lubricated.
8. Electrical tools must be grounded or double insulated.
9. Always push knives away from the body.
10. Sharp-edge tools shall be stored in such a manner to prevent injuries.
11. Tools shall be cleaned and stored away properly.
12. Use Ground Fault Circuit Interrupters (GFCI) when appropriate for worker protection outdoors or in wet environments.

7.6 FORKLIFT CERTIFICATION

1. Only employees permitted by FSU are allowed to drive a forklift.
2. Certification is two-tier. There is a classroom training portion and a driving portion for the certification. Certification is obtained from the Safety Coordinator.
3. Forklift licenses are issued in three categories:
 - a. Industrial Forklift
 - b. Extended Reach Construction Equipment
 - c. Grounds Equipment with forks
4. Employees driving a forklift must have their FSU issued license on them or accessible at all times.
5. Drivers must always yield to pedestrians and obey all posted signs.
6. Drivers must not let anyone stand or walk under the elevated part of the forklift.
7. Drivers must always keep a clear view of where they are going, driving in reverse if necessary
8. Only the driver is allowed on the forklift - no passengers.
9. Drivers must be aware of all their surroundings.
10. Do not smoke on or near a forklift.
11. Do not drive a forklift if it is not operating properly. Report it immediately.
12. Drivers must be aware of the rated load capacity.

13. Utilize caution if working around forklifts. Be aware of the “rear-end swings.”
14. Drivers must sound the horn to warn pedestrians of their presence. This is particularly important at corners, intersections and aisle ways.
15. Michigan Driver’s License restrictions apply to FSU Forklift Operator’s Permits.

Question:

An employer shall not make any modification to the forklift affecting capacity or safety without written approval from the _____.

Answer:

Manufacturer

Reference Powered Industrial Trucks, Part 21 Safety

7.7 PORTABLE LADDER SAFETY

1. Always inspect a ladder before each use. Use only ladders in good repair and equipped with safety shoes.
2. Report defects to your supervisor.
3. Place ladders on a solid, flat surface.
4. Do not paint wooden ladders. This conceals defects.
5. Do not over-reach. Always move the ladder.
6. Always face the ladder when climbing or descending and hold onto each rung.
7. Watch for overhead power lines, etc.
8. Do not make repairs to ladders unless you have been approved by the Safety Coordinator.
9. Ladders shall not be used in a horizontal position as a plank, skid, etc.
10. Always keep the rungs clean.
11. Avoid aluminum ladders when working near electricity. Remember, wood and fibreglasses are non-conductive.
12. Maintain a 3-point contact while climbing a ladder.
13. Never stand on the top 2 steps of a step ladder (this includes the top platform).
14. Make sure the spreader bar is sturdy and locked in place with step ladders.
15. Never stand on the top 4 rungs of an extension ladder.
16. Make sure the extension locks are locked on extension ladders.
17. Extension ladders should reach at least three feet above the landing.
18. Remember the 4:1 ratio. Divide the number of rungs from the support point to the ground by 4 to determine how many feet out from the support to place the ladder.

Story Problem:

The number of rungs on an extension ladder, from the ground to the support port is 12, how many feet out from support should the ladder be set?

Answer:

3, Remember, the rule is 4:1

Question:

What does 3 point contact mean?

Answer:

Two hands and one foot maintaining, solid contact on the ladder or object climbing onto.

Reference Portable Ladders Standard, Part 4 Safety

7.8 SCAFFOLD SAFETY

1. A scaffold should not be loaded to more than the designed working load.
2. Tools, materials and debris should not accumulate in a quantity to cause a hazard.
3. Scaffolding endangered by moving equipment or vehicles shall be protected by a warning device or barrier.
4. Scaffolding shall not be altered or moved horizontally while it is used or is being occupied unless the scaffolding is specifically designed for that purpose.
5. Employees shall not be permitted to work on scaffolding outdoors during a storm or high winds or when covered with ice or snow, except for emergency situations. Special safety precautions will be taken during these emergencies such as (but not limited to) safety lanyards.
6. Watch for overhead obstructions, power lines, etc. A minimum clearance of 10 feet must be maintained between the scaffolding and power lines.
7. Scaffolding shall be equipped with guardrails and toe boards. If these guards are not applicable, then a safety harness must be worn. Use outriggers when needed for stability.
8. Planks shall be scaffold grade and capable of supporting the intended load.
9. Guardrails and toe boards are required on any scaffold over 15 feet.
10. Scaffolding shall not be moved until its height is reduced to 15 feet.
11. Prior to using the Genie Man lift, see your supervisor for training information.
12. Non-standard scaffolding usage must have prior engineering design approval.

Question:

True or False: It is acceptable to use a physical object such as a pail or ladder on a scaffolding to increase your working height.

Answer:

False

Reference Scaffolding Standard, Part 5 Safety

7.9 TRENCHING AND EXCAVATION

1. Follow Miss Dig procedures to locate underground utilities prior to the work.
2. The Miss Dig log book is located at the front desk at the Physical Plant.
3. Excavated material shall be kept at a minimum of 2 feet from the trench opening.
4. If an excavation is 4 feet or more in depth, confined space procedures must be followed. In addition a means of egress must be within every 25 feet.
5. Excavation under foundations requires a specially designed support.
6. Barricade the excavation area to protect pedestrians. If the excavation is left over night, barrier tape, snow fence or traffic barricades shall be utilized.
7. Excavation more than 5 feet in depth must be sloped according to the soil type or utilize a trench shield.
8. Excavations deeper than 48 inches are considered a confined space.
9. The Miss Dig will be initiated by the Project Manager or trades shop supervisor for the dig or the contractor performing the dig three days prior to starting any excavation – except in an emergency.
10. See Table 1 on following page.

Question:

The “less firm” the soil type the _____ the vertical slope must be for safe excavation.

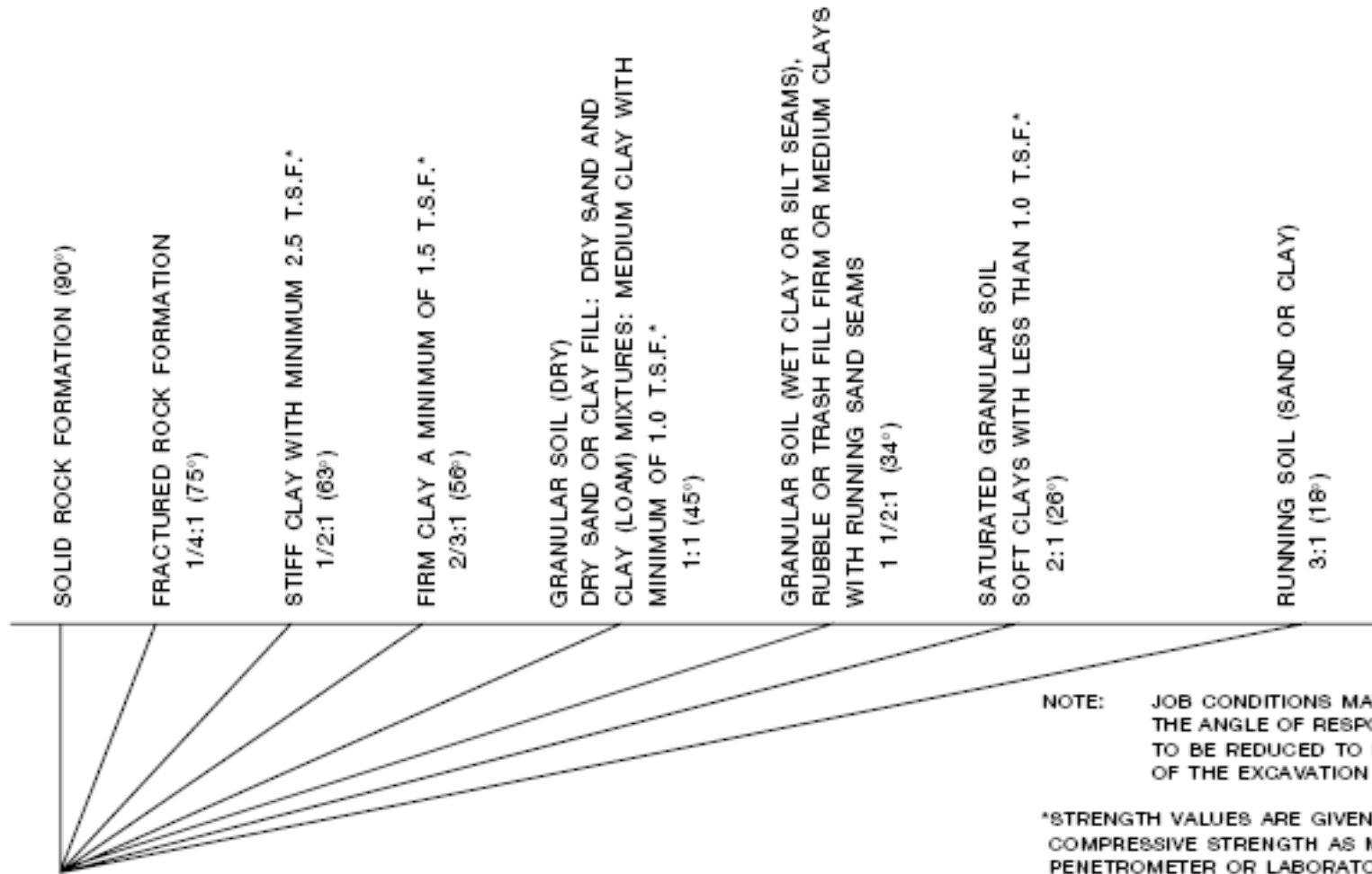
Answer:

Greater: See the chart above. Note: soft clay is 2 on 1 whereas firm clay is 2/3 on 1.

Reference Excavation, Trenching and Shoring, Part 9 Construction Safety

Ferris State University’s written Excavation Clearance Policy is available upon request.

TABLE 1
MAXIMUM ALLOWABLE ANGLE OF REPOSE FOR THE
SIDE OF AN EXCAVATION IN EXCESS OF 5' DEPTH



SECTION 8.0 PHYSICAL PLANT EMPLOYEE ACKNOWLEDGEMENT FORM



Physical Plant Employee Acknowledgement Form

Read and initial each of the following:

_____ I have received a copy of Ferris State University's Physical Plant Safety Manual.

_____ I have reviewed this document and had the opportunity to ask questions as to its contents.

_____ I am aware that if I encounter any concerns or have any questions pertaining to my health and safety during the course of my job, I will discuss the issue(s) with my supervisor.

_____ As an employee of FSU, I have the Right-to-Know what hazards I may face on the job and how to prevent them.

Employee Name

Date

Supervisor Name

Date

END SECTION 8

SECTION 9.0 ADDITIONAL RESOURCES AND REFERENCES

Resources:

Ferris State University

New Employee Safety Orientation Manual

<http://www.ferris.edu/HTMLS/administration/adminandfinance/human/Safety/NewEmpSafetyOrientationManual.pdf>

Ferris State University

Emergency and Safety Procedures Guide

<http://www.ferris.edu/HTMLS/administration/adminandfinance/human/Safety/FSU-FlipCharts.pdf>

Ferris State University

Safety Website

<http://www.ferris.edu/HTMLS/administration/adminandfinance/human/Safety/homepage.htm>

References:

Ferris State University Business Policy Letter

Smoking Policy

<http://www.ferris.edu/htmls/administration/buspolletter/Bpl0411.pdf>

Ferris State University Business Policy Letter

Automatic External Defibrillators (AEDS)

<http://www.ferris.edu/htmls/administration/buspolletter/bpl0509.pdf>

MSDS FINDER

<http://ferris.msdssoftware.com/>

END SECTION 9