SAFETY MANUAL

Roseville Crushed

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Roseville Crushed Safety Manual

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Roseville Crushed Safety Manual

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STATEMENT OF SAFETY POLICY

SAFETY is everyone's responsibility. It is the desire of Roseville to provide a safe working environment for all employees. To accomplish this, management will provide reasonable safeguards to help ensure safe working conditions and support safe and efficient development of all work activities.

No job is so important, and no task is so urgent that employees cannot take time to perform work safely. Employees are expected to use the safety equipment provided. Rules of conduct and rules of safety shall be observed. Safety equipment shall not be destroyed or abused. The cooperation of employees and management in observance of this policy will help provide safe working conditions, help reduce work-related accidents and will be to the mutual advantage of all. Therefore, we ask for your cooperation and support to help make all our jobs safe. We at Roseville feel you, as employees, along with management must strive to create a safe working environment. We feel that each employee must accept responsibility to work safely so that your life and the life of your fellow co-workers are not endangered. This means working intelligently with common sense, and with forethought. Management believes that it must set a policy which you can follow and on which you can rely. We do not want any employee to perform an act of work which is dangerous to the physical well-being of yourself or your fellow workers. In support of this policy, we have instructed management that we do not want them to continue to employ any person that does not cooperate by working in a safe manner.

There are endless examples of unsafe acts in all types of work. Construction is no exception. The safety guidelines below are only a starting point. You must use your own judgment and experience to complete this list. It is Roseville's goal to work in conjunction with its employees to comply with all applicable standards enforced by the Michigan Occupational Safety and Health Act. Since the most important component of any safety policy or program is implementation, it is our intent to communicate the contents of this program to our employees. In turn, all employees are expected to comply with this document and will be disciplined if found to be in non-compliance.

SAFETY MANAGER

A Safety Manager is the key person in any program designed to create and maintain interest in safety because this person is responsible for coordinating the program, supplying the ideas and inspiration, while enlisting the wholehearted support of management, supervisors, and employees.

The duties of the Safety Manager are as follows:

- Develop written safety policies and procedures.
- Coordinate activities with the Senior Safety Specialist and Safety Committee
- Inform management of proposed safety and health recommendations
- Compile and distribute safety and health information to employees.
- Arrange for training of new employees.
- Conduct routine workplace safety inspections.
- Analyze incident, injury, and accident investigation reports.
- Monitor and evaluate the effectiveness of safety and health programs.
- Assure compliance with government regulations.

It is the Safety Manager's responsibility to provide all assistance possible to help provide a safe environment for all employees and the public. The Safety Manager has full authority to implement Roseville's Safety Program, and any questions or comments regarding the safety program should be referred to this person.

SAFETY SPECIALIST

The Senior Safety Specialist is a vital part of the safety program. It is this person's responsibility to work in conjunction with the Safety Manager to ensure employee behavior and jobsite activities are in accordance with the company safety program, OSHA regulations, department of transportation regulations and the Federal Law.

The duties of the Safety Specialist are as follows:

- Develop written safety policies and procedures.
- Coordinate activities with the Safety Manager and Safety Committee
- Inform management of proposed safety and health recommendations
- Provide safety training for employees, supervisors, and managers.
- Conduct routine workplace safety audits/inspections on each crew monthly, this is to be completed annually.
- Complete and analyze incident, injury and accident investigation reports.
- Monitor and evaluate the effectiveness of safety and health programs.
- Monitor job-site safety regulations and personal protective equipment.

SAFETY COMMITTEE

The responsibilities of the Safety Committee are as follows:

- Develop and review written safety policies and procedures.
- Coordinate activities with the Safety Manager and Senior Safety Specialist
- Compile and distribute safety and health information to employees.
- Provide safety training for employees and supervisors.
- Review and analyze incidents, injury, and accident investigation reports.
- Monitor and evaluate the effectiveness of safety and health programs.
- Assure compliance with government regulations.

Employees should address complaints or concerns regarding safety with a member of the safety committee.

GUIDELINES TO MIOSHA VISIT

In the event that MIOSHA appears to your job site:

1. Stop Work.
2. Call your supervisor.
3. Collect their business card / information and have them sign JHA.
4. Foreman walks with them around job site until an update is provided from your Super. When the MIOSHA representative takes a photograph, foreman must photograph the same item.

GENERAL RULES

General Safety Guidelines

1. Be *Self*-Disciplined or *Be* Disciplined.
2. All posted safety rules shall be obeyed and shall not be removed except by management's authorization.
3. When light (illumination) levels are determined to be inadequate for work, additional lighting shall be provided to ensure that the employee is afforded the safest working conditions possible.
4. Safety Specialists will conduct routine workplace safety audits/inspections on every Roseville crew monthly, this is to be completed annually.

Competent/ Qualified Person

1. A Qualified Person is one who, by possession of a recognized degree, certification, 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 and work.
2. A Competent Person is one who can identify 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 those hazards.

3. Only Qualified Persons shall be permitted to conduct or participate in assigned work activities. Unqualified Persons may be permitted to participate in assigned work activities only under the direct and constant supervision of a Qualified and Competent Person.
4. There shall always be a Competent Person on any site where work is being conducted. A Qualified and Competent Person shall be designated on each crew or project and will have the following responsibilities:
   a. Ensure that the safety program is implemented.
   b. Inspect the construction site, tools, and equipment to ensure that unsafe conditions that may create a hazard are eliminated.
   c. Ensure the necessary PPE is on hand and used when required; and be familiar with all rules and guidelines pertaining to safety.
   d. Instruct each employee and the host employer regarding operating procedures, hazards, unanticipated hazards and safeguards of tools and equipment when necessary to perform the job. Measures taken to correct hazards reported to Roseville will be reported to the host employer.
   e. Inform each employee: where known harmful plants, animals, or insects are present; as to the potential hazards; how to avoid injury; and applicable first aid procedures to use if injury occurs.
   f. Inform each employee required to handle or use known hazardous or toxic materials of the potential hazards, safe handling, use, personal hygiene, required protective measures, and applicable first aid procedures to use in the event of an injury; and

g. Instruct all employees in the steps to be taken in case of an injury or accident.

h. Must maintain 20' clearance of all Unqualified Electrical Workers or those not trained in Electrical Safety Awareness from exposed energized sources

5. During any meetings or work activities, if any hazards, safety concerns, design issues or lack of materials and/or PPE are identified, Roseville Management gives the Competent Person the authority to cease or delay work until the issue is resolved.

6. Roseville Crushed employees trained in Electrical Safety Awareness may approach within 10' of an energized electrical source.

7. Instruct each employee and the host employer regarding operating procedures, hazards, unanticipated hazards and safeguards of tools and equipment when necessary to perform the job. Measures taken to correct hazards reported to Roseville will be reported to the host employer.

8. Only Qualified Electrical Workers are permitted to work up to the Minimum Approach Distances (MAD) of actual or potentially energized conductors/components. Minimum Approach Distances are as follows:

a) 50 – 300 volts	Avoid Contact
b) 301 – 750 volts	1'-1" (Ø-G) 1'-1" (Ø-Ø)
c) 751 – 5k volts	2'-1" (Ø-G) 2'-1" (Ø-Ø)
d) 5.1k – 15k volts	2'-2" (Ø-G) 2'-3" (Ø-Ø)
e) 15.1k – 36k volts	2'-7" (Ø-G) 3'-0" (Ø-Ø)
f) 36.1k – 46k volts	2'-7" (Ø-G) 3'-3" (Ø-Ø)
g) 46.1k – 72.5k volts	3'-4" (Ø-G) 4'-0" (Ø-Ø)

Employer Responsibilities

1. Roseville shall furnish its workers a workplace free from recognized hazards that can cause or is likely to cause death or serious physical harm; or shall provide the necessary work policies or personal

protective equipment to mitigate those recognized hazards to a compliant level for the worker.

2. Roseville shall train multiple employees to be a competent or qualified person in the activities being performed.
3. Roseville shall ensure a competent or qualified person is present on all jobsites while any work activities are being performed.
4. Roseville Crushed, Inc. ensures that a competent/qualified person trained in CPR and First Aid will be at each job site.
5. Training and Retraining is to be completed upon the first day of hire and annually thereafter December – March, or on an as needed basis.

Employee Responsibilities

1. All employees are required to report any incident, injury, accident near miss and spills to their supervisor and/or the safety personnel immediately.
2. When an emergency arises, immediate action shall be taken to administer first aid services, extinguish a fire and/or call 911. Roseville designates the 911 system as its first response in the event of a medical emergency and/or rescue operation.
3. Each employee of Roseville shall comply with all appropriate Safety & Health rules, work policies, and use the required personal protective equipment that is necessary to mitigate recognized hazards to an acceptable level for the worker.
4. **Each employee shall arrive to work Fit for Duty** which is defined as: Physically and mentally able to perform the essential duties and/or functions of his/her job in a safe, secure, and productive manner without reasonable accommodation; has received an adequate amount of rest and is without influence of alcohol, drugs, or prescription medication that will affect his/her ability to work safely.
5. Employees are required to comply with all Federal, State, Local, and Employer safety rules, laws, regulations, and policies. Any violations of such may subject employees to Company disciplinary action.

6. Horseplay, such as scuffling, practical jokes, or throwing articles at each other will not be tolerated.
7. Supervisors & Managers are responsible for the safety and compliant work behavior of their subordinates.

Stop Work Clause

1. All Roseville and subcontractor employees, regardless of individual job role or employment ranking, shall have the authority and obligation to stop any task or operation where any individual's health and safety is in question or of concern, or where potential property damage may result.
2. No work shall resume until all Stop-Work issues and concerns have been adequately addressed. Any form of retribution or intimidation directed at any individual or employer for exercising this authority in good faith will not be tolerated.
3. When any employee identifies a perceived unsafe condition or act, error, omission, or lack of understanding that could result in an undesirable event, that employee shall immediately:
    a. Coordinate a Stop Work action through the supervisor if the supervisor is readily available AND the affected person(s) is not at immediate risk; or
    b. Immediately initiate a Stop Work intervention with the employee(s) creating the exposure if the affected person(s) is at immediate risk.
    c. Notify all affected employee(s) and supervision of the Stop Work Action. If necessary, stop associated work activities, remove affected employee(s) from the area, neutralize the situation, and make the area safe.
    d. All affected employees shall investigate the cause of the Stop Work request and re-evaluate existing conditions.
        i. If it is determined and agreed upon by all affected employee(s) that the Stop Work request is unfounded (e.g., the Stop Work initiator was

unaware of all facts or procedures); then the affected employee(s) shall thank the initiator for their concern, explain why concern is not necessary, and proceed with the work.

ii. If it is determined that the stop work issue has any degree of validity, then every attempt shall be made to resolve the issue to the satisfaction of all affected employee(s) before work continues.

e. If the Stop Work issue cannot be resolved, suspend affected work operations until an effective solution can be reached. When opinions differ as to the validity of the Stop Work issue or the recommended resolution proposal(s), site management shall make the final determination.

Theft Policy

1. Roseville Crushed is committed to protecting its property and the property of its customers. Roseville Crushed will enforce a clear policy of zero-tolerance for all forms of theft and disposal of any property owned by Roseville Crushed and/or its Customers. This property includes but is not limited to:

- **a.** Scrap wire
- **b.** Salvaged / unused construction material(s)
- **c.** Inventory
- **d.** Tools and equipment
- **e.** Electronic media

2. Loss prevention is of great importance to Roseville. It is Roseville's goal to maintain a workplace free of harm and to minimize any thefts of losses. However, when a loss does occur on the job, at a storage yard, or anywhere on Roseville property, all employees should follow this procedure:

- **a.** Employees must report any potential theft to their supervisor even if he/she is not certain if it was stolen or misplaced.

b. In the event an employee witnesses a theft as it occurs, the employee should call the local police or 911 immediately. Employees shall NOT approach or communicate with the thief.
   - **i.** Once the police have been notified, the employee shall contact their supervisor.
   - **ii.** The employee or supervisor must report any losses or thefts to the Vice President of Operations and/or the Human Resources and Safety Manager by phone **immediately**. This is necessary to ensure a proper investigation is completed.

c. Once it is determined that the item is lost or stolen, the employee should notify the local police department and file a police report.

d. The employee should take photos of anything related to the incident such as:
   - **i.** Footprints, tire tracks; damaged property; location of missing material, items, etc.

e. In time of theft/loss, employees must remember to call:
   - **i.** 1st – 911
   - **ii.** 2nd – Direct Supervisor (foreman / superintendent / project manager)
   - **iii.** 3rd – Human Resources & Safety Manager or VP

f. The employee who noticed the loss shall **complete a written Loss Report** and submit it to the Human Resources Manager/Safety Manager as soon as possible.
   - **i.** Photographs are crucial and should be taken and submitted along with the Loss Report.

g. Depending on what type of item was stolen, the VP or Human Resources Manager will notify the proper persons such as the Fleet Manager, Warehouse Manager, Project Manager, etc. In all such cases, the following will be completed:

i. Human Resources /Safety Manager will:
- Report the loss to the insurance company.
- Submit the loss to MITA.
- Follow-up with the police

ii. VP will:
- Obtain the value of the stolen property.
- Obtain the replacement cost of the stolen property.
- Purchase the replacement.

h. Field supervision does not have the authority to grant permission for the removal of Roseville or Customer material or equipment for personal use.

i. All theft allegations will be thoroughly investigated. Anyone who is found to have engaged in the theft of Company and/or Customer property may be disciplined up to and including immediate termination with potential criminal prosecution.

j. Employees that witness acts of theft are obliged to report such acts to company management immediately. Employees who do not report such acts will be appropriately disciplined.

Disciplinary Action

1. It is the expectation of Roseville that all employees shall abide by the guidelines of the safety program and cooperate with the Safety Manager, Senior Safety Specialist, Safety Specialists, and Safety Committee in all safety-related matters. For a safety program to be effective, there must be a means developed for holding employees accountable for their unsafe work habits or conditions. If it has been determined that an employee is in violation of the safety policy, an employee may be subject to discipline, up to and including termination. Depending on the nature of the violation,

management reserves the right to take greater disciplinary action. If an incident, injury, or accident could have been avoided, the means of holding employees accountable should be made more severe after each consecutive offense. The purpose of holding employees accountable is to encourage employees to conform to company policy and work safely. It is not designed to end employment and, therefore, employees should be given the opportunity to start over with a clean slate periodically. Employees who violate safety guidelines may be subject to disciplinary action. Good safety practices are not limited specifically to those in writing. The best safety practices are followed with common sense and good judgment. *Please refer to the company Disciplinary Policy for more details.*

First Offense:	(minimum) Verbal Warning
Second Offense:	(minimum) Verbal and Written Warning
Third Offense:	(minimum) One day off work with no pay
Fourth Offense:	(minimum) Three to five days off work with no pay and potential no pay and potential termination of employment
Serious Offense:	(minimum) Potential immediate termination of employment

Drug & Alcohol Policy

1. Roseville has an extensive drug and alcohol workplace policy. New hires are required to have an initial drug screen and may be terminated for positive test results. All employees are subject to random, reasonable suspicion, post-accident, and return-to-duty drug tests. The use of, or being under the influence of, liquor and/or drugs while on the job shall be cause for immediate discipline, up to and including termination of employment.
    a. In addition, for job-specific requests, Roseville participates in the Safe-2-Work / MUST Drug Testing and Safety Training

Program. All employees are required to comply with the drug testing portion of the program. As per owner or Prime Contractor request, all field personnel, as well as office personnel that have occasion to visit field jobs sites, are required to participate in the requirements of the MUST program.

Earbud / Headphone Policy

1. Unless deemed necessary/relevant to the job being performed, earbuds or headphones (corded or cordless) shall not be used/worn during work hours on the job site.
2. Wearing only one earbud in one ear while keeping the second ear free is not an acceptable alternative.
3. At any construction site, communication & comprehension between co-workers is imperative. The use of earbuds or headphones in the workplace can drown out environmental sounds such as:
    a. Emergency alarms
    b. Back-up alarms
    c. Shifting/falling materials
    d. Approaching machine / equipment / workers
    e. A co-worker's screams of warning or help
    f. Procedural instructions or updates
    g. Etc.
4. Additional hazards include, but are not necessarily limited to:
    a. Distraction / complacency – The worker may become lost in the story or emotions that music & songs can evoke thereby mentally checking him/her out of reality. This compromises the perception of potential hazards and situational awareness at the workplace, effectively reducing alertness and concentration: no different than the distracting effects of cell phone usage while driving.
    b. Entanglement – Like loose clothing or unkempt long hair, loose earbud/headphone cords present an entanglement

hazard around moving or exposed parts. Depending on the strength, gauge, and manner worn, entangled cords can pull a worker's head into the hazard.

c. Shock / Electrocution – Earbud/headphone cords are conductive wiring, albeit typically extremely small gauge, but still near 100% conductive. Working around exposed, energized electrical equipment, the worker is increasing their exposure to potential shock and electrocution hazard.

Weapons Policy

1. Roseville Crushed does not have a weapons policy. However, many of our customers have a 'No Weapons Policy'. While on their property/job site, we are required to follow their policy. Please refer to our customers' weapons policy.

EMERGENCY ACTION PLANS

In the Event of an Emergency

1. Protect the public;
   - **a.** If applicable, manage the situation (e.g., extinguish the fire);
   - **b.** Barricade the jobsite/roadway as necessary; and
   - **c.** Evacuate the area (e.g., in the event of a natural gas leak all equipment should be shut off and all people must leave the area).

2. Make the scene safe;
   - **a.** Employees shall put the equipment and tools in a safe location and stop work until the supervisor has been notified of the event and has cleared employees to resume work.
   - **b.** In the event of a massive event such as an explosion, fire, gas leak, etc., employees should gather at a pre-determined location.

c. Employees working at the main office and shop are to follow the emergency fire evacuation plan that is posted in the building.

d. In the event of weather-related hazardous conditions such as tornadoes, high winds, winter storms, etc., employees should be prepared and devise a site-specific plan with their crew.

3. If necessary, call 911:

a. Roseville designates the 911 system as its first response in the event of a medical emergency and/or rescue operation.

b. For severe or life-threatening incidents, 911 should be called immediately. Trained employees should administer First Aid or CPR, if appropriate, until an EMS crew arrives.

c. Site specific safety plans will indicate the nearest emergency medical facility and hospital and a list of emergency phone numbers. This information can also be obtained by contacting the Human Resources Manager directly.

d. When working in Michigan and if the injury requires treatment (as per Roseville's insurance carrier), the injured employee must receive medical attention from a Concentra Medical Center if possible. Foremen should call the Human Resources Manager for a clinic location.

e. When necessary, injured employees should be accompanied to the clinic by another employee to a pre-determined medical facility. (The office may be contacted if help is needed.) For injuries and medical conditions that are beyond the standard capabilities of routine first aid or are considered life threatening, an ambulance shall be used.

f. Injured persons should not be moved unless necessary. Further injury may result. Co-workers should keep the

injured employee comfortable and utilize available first aid equipment until emergency services arrive.

4. Contact your direct Supervisor; and Contact the Human Resources Manager and the Senior Safety Specialist.
    a. Once the situation is stabilized, the onsite Foreman must be notified and then notify his supervisor and the Human Resources Manager.
    b. Foreman is provided company-issued phones which contain the necessary contact information, and all crews are provided a contact list which includes information for Foremen, Superintendents, Managers, Project Managers, and the Safety Committee.
5. Site specific safety plans will indicate the nearest emergency medical facility and hospital and a list of emergency phone numbers. That information can also be obtained by contacting the Human Resources Manager directly.

Vehicle Electric Contact

1. If a vehicle/machine/equipment becomes energized, then anyone on that vehicle must *remain* on the vehicle/machine/equipment for as long as the possibility of electrical contact exists.
2. If possible, remove the vehicle/machine/equipment from the point of energized contact.
    a. If that is not possible, then remain on the vehicle/machine/equipment while making no possible secondary points of electrical contact (i.e., Touch Potential).
3. No one is to attempt to exit, dismount, or mount the vehicle/machine/equipment until:
    a. A Qualified Person has determined it safe to do so; or
    b. Those dismounting or mounting the vehicle/machine/equipment are not exposed to Touch, Step, or Transferred Potentials; or

   c. Remaining on the energized vehicle/machine/equipment is becoming unsafe.

4. If a worker MUST dismount an energized vehicle/machine/equipment, then he/she must either:
   a. Use dielectric protection in doing so; or
   b. Dismount while making no contact with the vehicle/machine/equipment (i.e., jump), and then bunny-hop or shuffle a distance of at least 30' away from the vehicle/machine/equipment.

Natural Gas Leak

1. If the gas leak is the result of a vehicle/machine/equipment contact (as when conducting excavation or directional boring procedures), then, if possible, remove the equipment from the source of the leak and upwind of the leak.
   a. If not possible, then shut off the vehicle/machine/equipment, dismount, and move upwind from the leak.

2. Keep everyone upwind and away from the leak.

3. Prohibit any smoking in the area.

4. Do not operate any vehicles/machines/equipment in the evacuated area.

5. Do not use any flash cameras or cell phones within proximity of or downwind from the gas leak.

6. If the gas is suspected of entering a building, then evacuate the building and direct occupants not to return until notified.
   a. Leave all doors open.
   b. Do not operate doorbells, light switches, phones, etc. within the affected building.

Smoke / Fire

1. If the fire is controllable, then:
    a. Use the available fire extinguisher to extinguish the fire using the procedures documented under the Section entitled *Fire Protection & Prevention*.
    b. If the fire was extinguished successfully, do not leave the area. Watch the area for up to 30 minutes to prevent re-ignition.
    c. Contact / notify your supervisor and inform him/her of the incident.
2. If the fire is not controllable or you have concerns that the fire may become uncontrollable, then:
    a. Notify the local authority of the situation and/or activate available alarms.
    b. Ensure all potentially affected parties are aware of the fire.
    c. If possible, help in the evacuation of any potentially affected parties that may require assistance.
    d. Evacuate the area.
3. If inside of a building during a fire:
    a. Activate the building's alarm.
    b. Evacuate the building.
    c. If possible, help in the evacuation of any potentially affected parties that may require assistance.
    d. Prior to opening any doors, use the back of your hand to feel the door handle.
        i. DO NOT open the door if the handle is hot.
    e. As you pass through rooms to exit the building, close the doors behind you; DO NOT LOCK THEM.
        i. Closing the doors can assist in robbing the fire of oxygen.
    f. If there is smoke, then stay as low as possible or even crawl on your hands and knees to remain below the smoke.

   i. Breathe shallowly through your nose and, if possible, use a filter such as your shirt, towel, handkerchief, etc.
- **g.** DO NOT use the elevator.
- **h.** Proceed to the assembly area and take a headcount to ensure all employees are accounted for.
   i. If any employees cannot be accounted for, notify local authorities.
   ii. Do not return to an evacuated building until and unless told to do so by the local authority.

4. If you become trapped in a building during a fire:
- **a.** Close all doors between you and the fire.
- **b.** Use wet clothing or other material to seal cracks under the doors and to cover air vents to minimize your smoke exposure.
- **c.** DO NOT break glass unless necessary.
   i. If there is no window, then remain near the floor where the air will be less toxic.
- **d.** Shout at regular intervals to alert rescue personnel of your location.

Non-Hazardous Spills

1. An incidental spill is one that is deemed controllable by qualified employees. It is where the substance can be absorbed or otherwise contained at the time of release by employees in the immediate release area or by maintenance personnel. For such spills, qualified employees shall:
- **a.** Use available spill kits to contain, absorb, collect, and dispose of the spill.
- **b.** Contact / notify your supervisor and inform him/her of the incident.

2. If the non-hazardous spill is not controllable or you have concerns that it may become uncontrollable, then:

- **a.** Notify the local authority of the situation and/or activate available alarms.
- **b.** Ensure all potentially affected parties are aware of the spill.
- **c.** If possible, help in the evacuation of any potentially affected parties that may require assistance.
- **d.** Evacuate the area.

3. If hazardous or chemical spill occurs inside a building or closed space:

- **a.** Activate the building's alarm.
- **b.** Evacuate the building.
  - **i.** If possible, help in the evacuation of any potentially affected parties that may require assistance.
  - **ii.** Reserve the elevator for the evacuation of handicapped persons.
- **c.** Proceed to the assembly area. Take a headcount to ensure all employees are accounted for.
  - **i.** If any employees cannot be accounted for, notify the local authorities.
  - **ii.** Do not return to an evacuated building until and unless told to do so by the local authority.

4. If you become trapped in a building during a non-hazardous or chemical spill:

- **a.** Close all doors between you and the spill.
- **b.** Create barriers between the clean air inside and the contaminated air outside.
  - **i.** Close all windows, doors, air vents.
  - **ii.** If plastic sheeting and duct tape are not available, then seal cracks and openings with clothing.
- **c.** If a window is available, place an article of clothing outside the window as a notification of your situation to emergency personnel.
- **d.** Shout at regular intervals to alert rescue personnel of your location.

5. If the non-hazardous or chemical spill/release occurs outdoors:
    a. Activate the alarm (if possible).
    b. Avoid any obvious plume, vapor cloud, etc.
        i. If downwind from the spill/release, move crosswind (perpendicular) to the anticipated path until well clear; then proceed upwind.
    c. Limit any potential exposure.
        i. Cover your mouth and nose with a cloth.
        ii. If possible, cover any exposed skin (roll down sleeves, button up coat, etc.).
    d. Proceed to the assembly area. Take a headcount to ensure all employees are accounted for.
        i. If any employees cannot be accounted for, notify the local authorities.

Structural Failure / Collapse

1. There is typically little or no warning of a building collapse. Things happen quickly and time is essential. They can result from:
    a. Mudslides
    b. Natural gas explosions
    c. Soil collapse
    d. Earthquakes
    e. Terrorist acts
2. If you are on the outside of the building:
    a. Do not enter the building.
3. If you are inside of the building:
    a. Immediately evacuate the building through the nearest and most direct available exit. Consider ground floor windows as a viable option and if it is safe to do so.
    b. Taking the most direct exit path will get you closer to the outer walls more quickly. The further inside the building you remain, the greater the chances that your escape route will be blocked. If you become trapped inside, then being closer

to the outer walls may expedite your rescue as emergency workers must work their way *into* a collapsed structure.

c. However, when exiting the building, remain aware of potential falling materials form the building's walls and roof.

d. If possible, help in the evacuation of any potentially affected parties that may require assistance.

e. Do not use the elevator.

f. Once outside the building, run away from the building to a parking lot, to the middle of the street, or any clear area free of falling debris.

i. Avoid standing below any power lines or within striking distance of any trees, poles, lamp posts, etc. should they fall as well.

g. If possible, proceed to the assembly area. Take a headcount to ensure all employees are accounted for.

i. If any employees cannot be accounted for, notify the local authorities.

ii. Do not return to a collapsing building.

4. If you become trapped in the building:

a. Conserve as much of your energy as possible because it may be several hours before rescue crews can reach you.

i. Panicking increases the heart rate which causes you to inhale more oxygen (which may be in short supply) as well as toxic dust.

b. Take cover. Consider carefully where to take cover.

i. If taking cover *beneath* and object, feel confident that the object will not collapse under the weight of the ceiling and/or wall, resulting in your crushing death. This is common for beds, couches, etc.

ii. If in doubt whether the object can or will support the weight of a falling ceiling and/or wall, then consider lying down in the fetal position directly adjacent to the object (bed, couch, etc.) and cover

your head with your arms. Many times, the object (couch, bed, etc.) legs will collapse under the weight of large pieces of debris (ceiling, wall) but the object itself will remain standing. A triangular void is typically created immediately adjacent to this object where the ceiling/wall is lying at an angle. This triangular void has been termed the 'Triangle of Life'.

iii. Using the 'Triangle of Life', the safest areas to take cover in a collapsing building are:

- In the space between two large objects (between twin beds, between 2 cars, between 2 rows of desks, etc.).
- Next to an office bank vault.
- Next to a stack of paper (paper is already compressed).
- Next to a vehicle.
- At the foot of a bed.
- Next to a couch.
- Next to a large bulky object such as a piece of machinery, refrigerator, stove, etc.

c. Cover your mouth.

i. Building collapses kick up a lot of toxic dust, dirt, and debris. To minimize your inhalation hazard, breathe shallowly through your nose and, if possible, use a filter such as your shirt, towel, handkerchief, etc.

d. Limit movement.

i. Any movement can induce continued collapse of precariously positioned debris, increasing the potential of becoming pinned or crushed. It can also kick up dust and toxic particles, further impairing your ability to breathe.

ii. If movement is necessary, do so slowly and methodically.

e. Signal for help.

i. Limit unnecessary noise and vibration. Noise and vibration can induce continued collapse of precariously positioned debris, increasing the potential of becoming pinned or crushed.

ii. Use a flashlight or your cell phone to signal rescue workers to your location. A building collapse is a dark environment and rescue workers will be looking for flickers of light from the phone and movement caused by shadows.

f. Limit screaming and shouting. Doing so frequently will expedite exhaustion. It also causes you to inhale more dust particles, toxic fumes, etc. as well as causing additional noise and vibration.

i. Use any sound with caution. If you must use sound, tap – do not bang. If possible, tap on anything that would produce an echo (such as a metal desk) or which would project the sound longer distances (such as metal piping).

g. If you become caught or pinned beneath debris, again, limit any unnecessary movement.

5. If you are in a vehicle, adjacent to the collapsed building:

a. Evacuate the area immediately.

b. If moving the vehicle is delayed, exit the vehicle and using your best judgement based on the anticipation of falling materials:

i. Run away from the building to a parking lot, to the middle of the street, or any clear area free of falling debris.

c. Avoid standing below any power lines or within striking distance of any trees, poles, lamp posts, etc. should they fall as well.

d. Use the vehicle as a 'Triangle of Life' as described above.

Protest / Unrest / Riot

1. Demonstrations can be unpredictable: peaceful demonstrations can become violent within minutes if not seconds with the appropriate catalyst.
2. Every demonstration should be viewed as Mob Rule. If the Mob turns violent, then you are immediately outnumbered and in danger.
3. If you are aware of or observe any kind of demonstration:
    - **a.** Notify your supervisor of the situation.
    - **b.** Avoid the area until you have received assurances that it is safe.
    - **c.** If you have any doubts as to the nature of or mood of the demonstration, then, then leave immediately.
    - **d.** Don't be inquisitive and approach an unknown demonstration.
    - **e.** If possible, never proceed into or through a demonstration. Find another route.
    - **f.** If required to be within the vicinity of a demonstration, do not go alone. Maintain situational awareness by always having 1 person monitoring the situation. Always remain close and maintain visual contact with co-workers.
    - **g.** Whenever possible, avoid a demonstration area where there is an obvious police or security presence.
4. If you are inside a building:
    - **a.** Do not leave the building.
    - **b.** Notify your supervisor of the situation.
    - **c.** If gunshots or explosions are heard, stay away from the windows.

- **d.** Do not attempt to observe the events through the window. Draw the curtains and drop the blinds to minimize exposure to any potential flying glass.
- **e.** Ensure that all windows and door opening to the roadside of the property are closed and locked.
- **f.** Do not leave the building until it is determined safe to do so or until directed to do so by local authorities.

5. If you are inside a vehicle:

- **a.** Never drive through the crowd.
- **b.** If you find yourself in the path of the crowd, turn the vehicle around, and drive away calmly.
- **c.** If this is not possible, then park the vehicle, lock it, leave it, and seek shelter in an adjacent building, doorway, alley, etc. until the crowd passes.
- **d.** If it is not possible to exit the vehicle, then stop the vehicle, turn the engine off, lock the doors, and remain calm. Do not show any hostility or anger.

6. If you become trapped in the protest/unrest/riot:

- **a.** Remain on the outside edge of the crowd.
- **b.** At the first opportunity, break away from the crowd and seek shelter in a nearby building, doorway, alley, etc. Remain there until the crowd passes.
    - **i.** When leaving the crowd, simply walk away. Do not run as this will only draw attention to you.
- **c.** If you are arrested or detained by the police or security forces, do not resist. Go peacefully and contact your supervisor at the earliest opportunity.
- **d.** If you become caught up in the crowd, stay clear of glass shop fronts, stay on your feet, and move with the flow, while seeking the earliest opportunity to break away.
    - **i.** When being swept along in a crushing crowd, create a space for yourself by grasping your wrists and bracing your elbows away from your sides and

bend over slightly. This should allow you to maintain enough room to breathe.

e. If necessary, blend in for as long as it takes until you find the opportunity to break away. Remove any paraphernalia that may indicate that you are not one of them or that you may not agree with their message.

f. Do not look like a target. Keep your head up, maintain situational awareness, look people in the eye, and if possible, DO NOT let anyone get too close to you.

g. Do not get backed into a corner because this is where you will probably be receiving your beating. Evade, evade, evade; keep moving until you are safe.

h. There is safety in numbers. Remain with co-workers or like-minded people involved in the demonstration. Assist one another and maintain visual contact and communications.

i. If you are pushed to the ground, make every attempt to get against a wall and roll yourself into a tight ball, covering your head with your hands until the crowd passes.

j. If gunshots erupt, drop to the ground, cover your head and neck, and lie as flat as you can.

k. Never brandish a weapon unless it is as a last resort.

i. You are outnumbered and it will more than likely not end well for you.

ii. The police cannot be expected to know who the good guys are and who are the bad guys. They will have to assume that anyone brandishing a weapon is a bad guy. And they have weapons, too.

High Winds

1. Classifications

a. Wind Advisory describes sustained winds of 30 mph for at least 1 hour with potential gusts reaching at least 45 mph occurring or expected to occur within the next 36 hours.

   i. There may be difficulties in driving high profile vehicles on the roadways.
   ii. Small, unsecured objects may be blown around.

b. A Dust Storm Warning is issued when visibility is reduced to ½ mile or less due to blowing dust or sand due to winds speeds of at least 30 mph.
   i. Winds may make it difficult to drive high profile vehicles on the roadways.
   ii. Roadway visibility is a major concern.
   iii. Small, unsecured objects may be blown around.

c. High Wind Watch describes sustained winds of 40 mph for at least 1 hour with potential gusts reaching at least 58 mph are expected within the next 12 to 48 hours.
   i. Driving plans may require postponement as these conditions make driving high profile vehicles on the roadways.
   ii. Wind can be expected to damage trees, power lines, and small structures.

d. High Wind Warning describes sustained winds of 40 mph for at least 1 hour with potential gusts reaching at least 58 mph that are occurring or expected to occur within 36 hours.
   i. Unnecessary driving should be postponed as driving vehicles on roadways is difficult, especially higher profile vehicles.
   ii. Wind can be expected to damage trees, power lines, and small structures.

e. When conducting an effective hazard assessment, any wind conditions shall be factored into the tasks to be performed.
   i. Based on the anticipated severity level, consider eliminating, postponing, or re-scheduling the task.

2. If you are working outdoors:

a. High winds have the potential of, but not necessarily limited to, the following:

i. Blowing hardhats from workers at aerial work locations; creating struck-by hazards.

ii. Blowing unsecured objects off of elevated platforms, scaffolding, or other aerial work locations.

iii. Inducing varying wind conditions/speeds at various worker heights (as in tower climbing) especially once the worker is above the tree or roof line.

iv. Making it difficult to maintain footing at elevated locations.

v. Causing strains/sprains when forcefully pulling doors from operator's hands.

vi. Creating struck-by incidents when blowing unsecured items around the job site, blowing open unsecured doors, etc.

vii. Causing vehicle tip-overs (e.g., dump trucks with elevated buckets; cranes, bucket trucks, digger derricks with elevated booms; etc.).

viii. Contributing to hypothermia (at any time of the year) and frostbite.

b. Do not place yourself in the line-of-fire of wood chips, debris, dust, smoke, etc. that may be influenced by windy conditions.

c. Consider parking any work vehicles so that they may act as a wind break for the work being conducted.

3. If having to wait out windy conditions:

a. Do so in a solid building designed to withstand high winds.

b. Do not do so in the show-up trailer unless it has been adequately secured.

c. Do so in parked vehicles.

4. If you are in a building:

a. Remain clear of windows that are exposed to wind conditions.

b. If possible, do not use the elevator.

5. If you are driving:

a. Keep both hands on the steering wheel and reduce speed accordingly.

b. Be aware of objects blowing across the roadway and into the vehicle's path.

c. Maintain an adequate amount of distance from cars in adjacent lanes in the event a gust of wind forces them (or you) into another lane.

d. If the wind makes driving difficult, park the vehicle on the shoulder of the roadway until conditions improve.

i. If possible, park at least 15 feet off the traveled roadway.

ii. Turn on your hazards and beacon(s).

iii. DO NOT exit the vehicle to set out signs and/or cones. Doing so exposes you to potential struck-by hazards from other vehicles. Remain in the vehicle.

iv. When parking, position the vehicle or equipment so that the wind blows against the side opposite of where workers will be entering, exiting, mounting, dismounting the equipment.

v. Park outside the struck-by zone of any trees, poles, lamp posts that may fall due to the windy conditions.

vi. If electrical lines fall on or across the vehicle, remain inside the vehicle. DO NOT attempt to exit the vehicle or drive away. Driving away may only result in you pulling down additional poles.

- Call emergency services.

6. If you are operating equipment in windy conditions:

a. Do not exceed the manufacturer's working parameter for the equipment when actually or potentially exposed to those wind speeds.

b. Always take into account the Sail Effect of loads being lifted. Sail Effect can:

i. Side load equipment components beyond their designed limitations. Most equipment's working parameters are based on wind loadings anywhere from '0' to 25 mph.

ii. Induce additional stress effects on rigging hardware.

Tornado

1. Impending signs of a tornado may include but not necessarily be limited to:

a. A dark sky, often greenish in color;

b. A large, very dark, low-lying (possibly rotating) cloud;

c. Hail;

d. A loud roar, resembling a freight train.

2. If you are in a sturdy building:

a. Immediately get to the designated tornado shelter area.

b. If no designated shelter area is available, then:

i. Go to a windowless room on the lowest level of the building. If there is not one available, then go to an inner hallway, a bathroom, or closet.

ii. Stay away from all windows, doors, and outside walls.

iii. If possible, seek shelter under a sturdy piece of furniture to protect against falling debris.

iv. Cover up to protect yourself from flying debris.

v. Avoid places with wide-span roofs.

vi. Use your arms to protect your head and neck.

3. If you are in a show-up trailer:

a. Get out and find a sturdy building.

b. If no sturdy building is available, then seek shelter outdoors.

4. If you are in a vehicle:

a. Maintain a position on the tornado. Tornado speed and direction can be unpredictable.

5. If you feel the tornado will overtake the vehicle:

a. Stop and exit the vehicle immediately.

i. Do not stop beneath a highway overpass. The tunneling effect produced by the overpass and increase wind speeds.

b. Seek shelter in a sturdy building.

c. If no sturdy building is available, seek shelter outdoors.

i. DO NOT crawl beneath the vehicle for shelter.

6. If you cannot exit the vehicle before being overtaken by the tornado:

a. Keep your seatbelt fastened.

b. Keep your head down, below window level.

c. If possible, cover yourself with a blanket, cushion, coat, etc.

7. If you are outdoors:

a. Lie in a ditch or low-lying area. Beware of potential flood conditions when seeking a low area;

b. Do not stop beneath a highway overpass. The tunneling effect produced by the overpass and increase wind speeds.

c. Remain conscious of flying debris (trees, limbs, glass, hail, etc.). Most tornado related injuries result from flying debris.

Thunderstorm / Lightning

1. Thunderstorm is a rainstorm that also produces lightning.

a. Additional hazards that may be associated with thunderstorms can include:

i. Tornadoes

ii. High winds

iii. Hail

iv. Flash flooding

2. Dry Thunderstorm is a thunderstorm that produces rain that does not reach the ground (it evaporates first) but still produces lightning.
3. A Thunderstorm approaching the classification of Severe is a thunderstorm consisting of at least 1 of the following:
   a. Winds of at least 40 mph.
   b. Hail of at least ½" diameter.
4. Severe Thunderstorm is a thunderstorm consisting of at least 1 of the following:
   a. Winds of at least 58 mph
   b. Tornado
   c. Hail of at least 1" diameter.
5. Lightning can reach temperatures of 50,000°F; push 10,000 amps of current; and contain 100,000,000 volts of electricity.
6. Thunder can be heard 12 miles from the storm. Lightning can travel up to 20 miles from the storm. Therefore, if you can hear thunder, then you must assume you can be struck by lightning even if you are working under clear skies.
   a. If thunder lags the lightning flash by less than 30 seconds, then the storm can be expected to be within 6 miles of your location.
   b. Wait 30 minutes after the last lightning flash before resuming any work.
7. If working outdoors:
   a. If thunder can be heard, then immediately begin shutting down the job site and making it safe for the public.
   b. If possible, lower all equipment booms to their cradles.
   c. Remain clear of any conductive elements such as bodies of water, metal fences, power lines, etc.
   d. Seek shelter inside a building.
      i. Never seek shelter beneath a tree or adjacent to a conductive object.
8. If trapped outside with lightning:
   a. Seek shelter immediately.

   i. If no building is available, then seek shelter inside a vehicle.
   ii. Never seek shelter beneath a tree or adjacent to a conductive object.
- **b.** If no shelter is available, then:
   i. Stay off of anything tall or high including roof tops, utility poles, ladders, elevated work platforms, towers, scaffolding, metal conduit runs, etc.
   ii. Crouch as low as possible with as little of your body contacting the ground as possible. This eliminates Step Potential and maintains Equipotential should a lightning ground strike occur nearby (generally considered to be within 100').

9. If inside a building:
- **a.** Approximately 1/3 of lightning strike injuries occur indoors.
- **b.** Remain clear of concrete walls and floors if possible.
   i. The metal rebar encased inside the concrete creates a conductive path.
- **c.** Avoid water during a thunderstorm.
   i. Lightning has the potential of traveling through metallic plumbing pipes.
- **d.** Avoid using any corded equipment.

Earthquake

1. Following an earthquake, remain aware of potential aftershocks. Aftershocks can occur immediately, hours, or days following an earthquake and may be weaker or even stronger than the initial earthquake.

2. If you are outdoors:
- **a.** Remain in the open and out of potential striking distance of any falling trees, poles, power lines, bridges, buildings, etc.

b. The greatest danger exists directly outside buildings, at exits, and alongside exterior walls due to falling debris and collapsing walls.

i. If near slopes, cliffs, hills, or mountains, be alert for falling rocks and landslides.

ii. Wait out for the earthquake.

iii. Afterwards, be aware of and expect aftershocks.

iv. Do not enter any potentially affected buildings.

3. If you are inside of the building:

a. Drop to the ground.

i. Trying to move during the shaking effects of the earthquake increases the potential for injury.

ii. The greatest danger during an earthquake is being struck by falling or flying objects.

b. Take cover by getting under a sturdy table or another piece of furniture.

i. At the very least, cover your head and face with your arms.

ii. Stay away from glass, windows, outside doors, walls, and anything that could fall and strike you.

iii. Do not use elevators.

iv. Hold on until the shaking stops.

4. If you are in your vehicle, an earthquake may feel like something is wrong with the vehicle.

a. Pull over and stop the vehicle as quickly and safely as possible.

i. Do not stop on or under any bridge.

ii. If possible, do not stop within striking distance of any potentially falling trees, poles, power lines, etc.

b. Wait until the earthquake has ended.

c. Proceed cautiously.

i. Do not cross over or under bridges; they may have been significantly damaged and at risk of falling.

ii. Be aware of potential aftershocks.

Bomb Threat

1. Bomb threats can occur over the phone, in person, via email, written note, etc.
2. If a bomb threat is received by phone:
    a. Keep the caller on the phone for as long as possible.
        i. DO NOT hang up, even if the caller does.
    b. Listen carefully, be polite, and show interest.
        i. Keep the caller talking so that you may learn as much information as possible.
    c. If possible, notify a co-worker to call the police.
        i. As soon as the caller disconnects, DO NOT hang up. Using a separate phone, notify the police yourself.
    d. Document:
        i. The phone's display on which the call was received. Copy the number and/or letters on the window display.
        ii. The date and time the call had occurred.
        iii. The time the caller disconnected.
        iv. The number where the call was received.
        v. The location of the bomb (building, floor, room, etc.).
        vi. What time it is to explode?
        vii. What it looks like.
        viii. What kind of bomb it is.
        ix. What will make it explode?
        x. Who placed the bomb?
        xi. Why the bomb was placed.
        xii. The name of the caller.
        xiii. The exact words of threat.
        xiv. Any background noises indicating the caller's location.
        xv. Estimated age of the caller.
        xvi. If the voice seemed familiar. If so, who did it sound like.

xvii. Any other relevant information.

3. If the bomb threat is received verbally:
- **a.** If the individual leaves, note the direction he/she went.
- **b.** Notify your supervisor and call the police.
- **c.** Write down the threat exactly as it was communicated.
- **d.** Not the description of the person making the threat:
  - **i.** Name
  - **ii.** Gender
  - **iii.** Race
  - **iv.** Body size (weight/height)
  - **v.** Distinguishing features
  - **vi.** Type/color of clothing
  - **vii.** Hair and eye color
  - **viii.** Voice (loud, deep, accent, etc.)

4. If the bomb threat is received as a written note:
- **a.** Handle the document as little as possible.
- **b.** Notify your supervisor and the police.
- **c.** Rewrite the threat exactly as is on another piece of paper and note:
  - **i.** Date/time/location the document was found.
  - **ii.** Any situations or conditions surrounding the discovery/delivery.
  - **iii.** Full names of any personnel who saw the threat.
  - **iv.** Secure the original threat. DO NOT alter the item in any way.
    - If small/removable, then place in a bag for envelope.
    - If large/stationary, then secure the location.

2. If the bomb threat is received as an email:
- **a.** Leave the message open on the computer.
- **b.** Notify your supervisor and call the police.
- **c.** Print, photograph, or copy the message and subject line.
- **d.** Note the date and time.

3. If you are in a building:
   - **a.** Ensure all potentially affected parties are aware of the bomb threat.
   - **b.** If possible, help in the evacuation of any potentially affected parties that may require assistance.
   - **c.** Evacuate the building.
     - **i.** Do not conduct a search for the bomb.
     - **ii.** Do not activate the building's alarm system.
     - **iii.** Leave everything as is computers on, light switches on/off, vehicles stationery, etc.
     - **iv.** Do not use the elevator.
     - **v.** Do not use any electronic devices during the evacuation procedure.
     - **vi.** Proceed to the assembly area. Take a headcount to ensure all employees are accounted for.
       - If any employees cannot be accounted for, notify the local authorities.
     - **vii.** Do not return to an evacuated building until and unless instructed to do so by police.

4. If you are outdoors:
   - **a.** Ensure all potentially affected parties are aware of the bomb threat.
   - **b.** If possible, help in the evacuation of any potentially affected parties that may require assistance.
   - **c.** Evacuate the area.
     - **i.** Do not conduct a search for the bomb.
     - **ii.** Leave everything, such as vehicles, stationery, equipment in place, etc.
     - **iii.** Do not use any electronic devices during the evacuation procedure.
     - **iv.** Barricade the area to prevent anyone from entering the area.

d. Proceed to the assembly area. Take a headcount to ensure all employees are accounted for.
    i. If any employees cannot be accounted for, notify the local authorities.
e. Do not return to an evacuated building until and unless instructed to do so by police.

Suspicious Package / Materials

1. A suspicious item is anything (e.g., package, vehicle, etc.) that is believed to contain explosives, an IED, or other hazardous material that requires a bomb technician to further evaluate it. Potential indicators are threats, placement, and proximity of the item to people and valuable assets. A general rule-of-thumb is anything that is hidden, obviously suspicious, and not typical should be deemed suspicious.
    a. Examples include, but are not necessarily limited to:
        i. Unexplainable wires or electronics
        ii. Visible bomb-like components (piping, caps, etc.)
        iii. Unusual sounds, vapors, mists, or odors
2. Not all items are suspicious.
    a. An unattended item is anything (e.g., bag, package, vehicle, etc.) not in someone's possession and where there no obvious signs of being suspicious, especially if not threat was received.
3. If you are in a building:
    a. Notify your supervisor and call the police.
    b. Ensure all potentially affected parties are aware of the presence of the suspicious package / materials.
    c. If possible, help in the evacuation of any potentially affected parties that may require assistance.
    d. Evacuate the building.
        i. Do not touch, tamper with, or move the item.

ii. Do not conduct a search for the potential bomb.

iii. Do not activate the building's alarm system.

iv. Leave everything as is: computers on, light switches on/off, vehicles stationary, etc.

v. Do not use the elevator.

vi. Do not use any electronic devices during the evacuation procedure.

e. Proceed to the assembly area. Take a headcount to ensure all employees are accounted for.

i. If any employees cannot be accounted for, notify the local authorities.

f. Do not return to an evacuated building until and unless instructed to do so by police.

4. If you are outdoors:

a. Notify your supervisor and call the police.

b. Ensure all potentially affected parties are aware of the presence of the suspicious package / materials.

c. If possible, help in the evacuation of any potentially affected parties that may require assistance.

d. Evacuate the area.

i. Do not touch, tamper with, or move the item.

ii. Do not conduct a search for the potential bomb.

iii. Leave everything as is: vehicles stationary, equipment in place, etc.

iv. Do not use any electronic devices during the evacuation procedure.

v. Barricade the area to prevent anyone from entering the area.

e. Proceed to the assembly area. Take a headcount to ensure all employees are accounted for.

i. If any employees cannot be accounted for, notify the local authorities.

ii. Do not return to an evacuated building until and unless instructed to do so by police.

Active Shooter

1. Be mindful that violent attacks can involve any type of weapon, not just firearms. Knives, blunt objects, physical force or explosives can be just as deadly as firearms.
2. Active Shooter situations are typically concluded within 10-15 minutes.
3. If in an Active Shooter situation, quickly determine the most reasonable way to protect your own life. Remember that customers and clients are likely to follow the lead of employees and managers during an active shooter situation.
4. Understand that gunfire may sound artificial. Assume that any popping sound is gunfire.
5. If there are two or more persons in the same place when a violent incident begins, you should spread out in the room to avoid offering the aggressor an easy target.
6. Plan ahead: Visualize possible escape routes when entering any facility.
7. How to respond when an Active Shooter is within your vicinity:
    a. If there is an accessible escape path, attempt to evacuate the premises. Be sure to:
        i. Have an escape route and plan in mind
        ii. Evacuate regardless of whether others agree to follow
        iii. Leave your belongings behind
        iv. Help others escape, if possible
        v. Prevent individuals from entering an area where the active shooter may be
        vi. Keep your hands visible
        vii. Follow the instructions of any police officers
        viii. Do not attempt to move wounded people

ix. Call 911 when you are safe

b. If evacuation is not possible, find a place to hide where the active shooter is less likely to find you. Your hiding place should:

i. Be out of the active shooter's view

ii. Provide protection if shots are fired in your direction (i.e., an office with a closed and locked door)

iii. Not trap you or restrict your options for movement

c. To prevent an active shooter from entering your hiding place:

i. Lock the door

ii. Blockade the door with heavy furniture

d. If the active shooter is nearby:

i. Lock the door

ii. Silence your cell phone

iii. Turn off any source of noise

iv. Hide behind large items (i.e., cabinets, desks)

v. Remain quiet

e. If evacuation and hiding out are not possible:

i. Remain calm

ii. Dial 911, if possible, to alert police to the active shooter's location

iii. If you cannot speak, leave the line open and allow the dispatcher to listen

f. Take action against the active shooter

i. As a last resort, and only when your life is in imminent danger, attempt to disrupt and/or incapacitate the active shooter by:

- Acting as aggressively as possible against him/her
- Throwing items and improvising weapons
- Yelling

   ii. If you pursue this course of action, then COMMIT to it. Dedicate yourself to incapacitating the active shooter with extreme prejudice. There are no rules when engaging an active shooter.

8. How to respond when law enforcement arrives:
   a. Remain calm, and follow officers' instructions
   b. Put down any items in your hands (i.e., bags, jackets)
   c. Immediately raise hands
   d. Keep hands open and palms visible at all times
   e. Avoid making quick movements toward officers
   f. Avoid pointing, screaming and/or yelling
   g. Do not stop to ask officers for help or direction when evacuating, just proceed in the direction from which officers are entering the premises.
   h. Information to provide to law enforcement or 911 operator:
      i. Location of the active shooter
      ii. Number of shooters, if more than one
      iii. Physical description of shooter(s)
      iv. Number and type of weapons held by the shooter(s)
      v. Number of potential victims at the location

Infectious Disease

1. Both management and the employees will ensure a clean workplace, including the regular cleaning of objects and areas that are frequently used, such as bathrooms, break rooms, conference rooms, door handles, railings, tools, truck cabs, etc.
2. A monitor shall be designated to coordinate events around an infectious disease outbreak, as well as to create site-specific work rules (where necessary) that could be implemented to promote safety through infection control.
3. The most effective strategy in combatting the spread of an infection disease is through the most obvious methods:

a. Washing hands
   - **i.** Wash hands with soap and water frequently for at least 20 seconds; make an effort after having been in a public place, after blowing your nose, coughing, sneezing, etc.
   - **ii.** If soap and water are not available, use a hand sanitizer that contains at least 60% alcohol.

b. Covering your mouth when coughing
   - **i.** Cough and/or sneeze into your elbow and away from others.
   - **ii.** If you use a tissue, discard it properly and clean/sanitize your hands immediately.

c. Maintaining effective social distancing when possible
   - **i.** Whenever possible, remain a respective distance from others, at least 3 feet, when conversing or working. If not possible, then refrain from facing them directly.
   - **ii.** Avoid touching your face, particularly the eyes, nose, and mouth with your hands.
   - **iii.** Avoid meeting people face-to-face. Employees are encouraged to use the telephone, online conferencing, e-mail, or instant messaging to conduct business as much as possible, even when participants are in the same building.
   - **iv.** If a face-to-face meeting is unavoidable, minimize the meeting time, choose a large meeting room and maintain a respectable distance from each other if possible; avoid person-to-person contact such as shaking hands.
   - **v.** Avoid any unnecessary travel and cancel or postpone nonessential meetings, gatherings, workshops and training sessions.

vi. Do not congregate in work rooms, pantries, copier rooms or other areas where people socialize.

vii. Bring lunch and eat at your desk or away from others (avoid lunchrooms and crowded restaurants).

viii. Encourage members and others to request information and orders via phone and e-mail in order to minimize person-to-person contact. Have the orders, materials, and information ready for fast pick-up or delivery.

4. Based on the degree of risk involved, consider modifying travel methods.
   a. Consider taking separate vehicles to work.
   b. When using company vehicles, consider limiting cab occupancy.
   c. Frequently sanitize commonly touched surfaces between travels (steering wheel, door handles, window levers, etc.).
   d. Consider avoiding mass transit or other forms of public transportation.
5. Telework requests will be handled on a case-by-case basis. While not all positions will be eligible, all requests for temporary telecommuting should be submitted to your manager for consideration.
6. During an infectious disease outbreak, it is critical that employees do not report to work while they are ill and/or experiencing related symptoms.
7. Contact Human Resources for detailed company mandates regarding any specific infectious disease concerns.

INCIDENT, INJURY AND ACCIDENT POLICY

General

1. All employees are required to report any incident, injury, accident, near miss, and spills to their supervisor and/or the safety personnel immediately.
2. Examples of what employees are expected to report:
    i. Any work-related fatality
    ii. Any work-related injury, even if treatment is not required or is initially refused.
        - An injury is any wound or damage to the body resulting from an event in the work environment. Examples include, but are not necessarily limited to:
            - Sprains, strains, tears.
            - Lacerations, contusions, abrasions, punctures.
            - Burns, corrosions.
            - Broken, fractured, or dislocated bones.
            - Concussion.
            - Amputation, avulsion, loss of eye.
            - Gunshot or knife wounds.
        - Report any injury that is more than a scratch, even if medical attention is not necessary at the time. In some cases, the injury may worsen, requiring medical attention later.
    iii. Any work-related illness
        - The illness may be acute or chronic.
        - The cause of the illness may be attributed to, but not necessarily limited to, an exposure to a substance relating to a particular process, trade, occupation, animal, insect, or plant.
        - Examples include, but are not necessarily limited to:
            - Respiratory conditions associated with breathing hazardous biological agents, chemicals, dust, gases, vapors, or fumes at work. This may

include silicosis, asbestosis, pneumonitis, pharyngitis, rhinitis, or acute congestion; farmer's lung, beryllium disease, tuberculosis, occupational asthma, reactive airways dysfunction syndrome (RADS), chronic obstructive pulmonary disease (COPD), hypersensitivity pneumonitis, toxic inhalation injury, such as metal fume fever, chronic obstructive bronchitis and other pneumoconiosis; etc.

- Poisoning includes disorders evidenced by abnormal concentrations of toxic substances in blood, other tissues, other bodily fluids, or the breath that are caused by the ingestion or absorption of toxic substances into the body. This may include poisoning by lead, mercury, cadmium, arsenic, or other metals; poisoning by carbon monoxide, hydrogen sulfide, or other gases; poisoning by benzene, benzol, carbon tetrachloride, or other organic solvents; poisoning by insecticide sprays such as parathion or lead arsenate; poisoning by other chemicals such as formaldehyde; etc.
- Skin diseases or disorders caused by work exposure to chemicals, plants or other substances. This may include contact dermatitis, eczema, or rash caused by primary irritants and sensitizers or poisonous plants; oil acne; friction blisters, chrome ulcers; inflammation of the skin; etc.
- Hearing loss manifesting as a change in hearing threshold relative to a baseline audiogram of an average of 10dB or more in either ear at 2000, 3000, and 4000 hertz; and the employee's total hearing level is 25 decibels (dB) or more above the audiometric zero (also averaged at 2000, 3000, and 4000 hertz) in the same ear(s).

- Others illnesses may include heatstroke, sunstroke, heat exhaustion, heat stress and other effects of environmental heat; freezing, frostbite, and other effects of exposure to low temperatures; decompression sickness; effects of ionizing radiation (isotopes, x-rays, radium); effects of nonionizing radiation (welding flash, ultra-violet rays, lasers); anthrax; bloodborne pathogenic diseases such as AIDS, HIV, hepatitis B or hepatitis C; brucellosis; malignant or benign tumors; histoplasmosis; coccidioidomycosis; etc.

iv. Any work-related property damage events
- This applies to both Roseville property and any other property that Roseville:
  - Is at fault for damaging; *or*
  - Cannot be completely discounted as having been the cause or contributor of the damage; *or*
  - In the present or future, may potentially be accused of the damage.

v. Any motor vehicle accidents
- Any work-related motor vehicle accident.
- Any non-work-related accident (whether it occurred before, during, or after work hours) as it may affect driver eligibility regarding the operation of Roseville vehicles.

vi. Any motor carrier stops
- Any work-related motor carrier stop.
- Any non-work-related motor carrier stop (whether it occurred before, during, or after work hours) as it may affect driver eligibility regarding the operation of Roseville vehicles.

vii. Any work-related complaints against Roseville or the jobsite
- This includes complaints initiated by the public, other contractors, the customer, etc.
- Complaints have the potential to escalate in a short timeframe. Roseville requires documentation and facts as soon as possible to be better prepared should that escalation occur.

viii. Un-Safe actions, conditions, or imminent danger situations
- This includes criminal acts, threats, etc.

ix. Near-miss accidents
- A near-miss is where property damage and injury did not result; however, if there had been even the slightest shift in time or position, then it can reasonably be expected that either property damage or injury or both would have occurred.

x. Underground utility contact
- This typically refers to a dig-in or other unintentional contact with an underground utility that, at the very least, may have potentially compromised the integrity of the utility facility.
- If the status of the utility is abandoned or unknown, Roseville employees are still required to conduct and document an on-site investigation. It is not uncommon for Roseville to be billed for damaging an 'abandoned' utility line several months following the incident.

xi. Unplanned outage
- An interruption of a utility's service. This typically refers to any overhead contact with electrical lines which results in a loss of electricity.
- This does not usually refer to a power outage resulting from the damage to an underground electrical line as that would be considered an 'underground utility contact' (even though an unplanned outage may have resulted).

xii. Theft
- Theft of any Roseville property or personal property from Roseville vehicles, job sites, etc.
- Theft of any Customer property for which Roseville was or may have been responsible.
- Any theft for which Roseville or a Roseville employee cannot be completely discounted as having been the cause or contributor.

xiii. Spills
- This includes spills on Roseville property as well as the customer's property.
- This includes any spill which Roseville, Roseville equipment, or a Roseville employee cannot be completely discounted as having been the cause or contributor.

xiv. Any other event that a Roseville employee feels meets the requirement of an incident shall be reported. If unsure, contact your supervisor.

3. The Foreman must complete a written incident, injury, or accident report and submit it via FMP. In certain cases, the situation may require more than one form to be completed. All forms must be submitted together. The Foreman should document evidence relevant to the incident.

4. Photographs MUST be taken for all incidents, injuries and accidents.

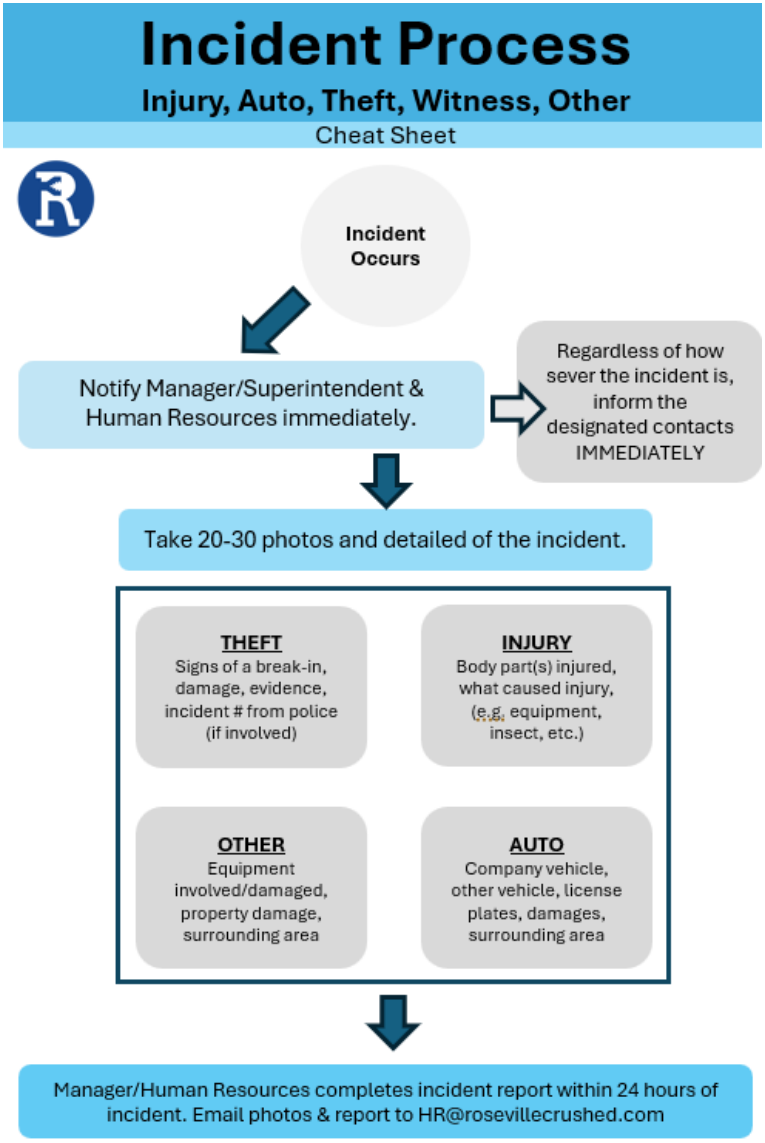
i. Photos should include, but not limited to:
- All vehicles or equipment involved.
- Body part(s) injured
- Source of injury/cause of accident.
- Surrounding area (facing in multiple directions)
- Sings of break-ins
- Damaged property
- Emergency services onsite
- Police report number or contact information

5. All forms provided by a physician must be submitted to Human Resources Manager as soon as possible.

i. Physicians will provide a form stating the injured employee's medical status and recommendations for returning to regular work activity.

ii. If the doctor issues a Return-to-Work form ***with*** restrictions, the employee must submit the paperwork immediately in order for Management to determine whether the employee can safely perform a job with the restrictions.

iii. It is especially important to inform the Human Resources Manager if the employee was hospitalized for any length of time or if the doctor recommends a leave of absence greater than three (3) days.



First Aid

1. There shall be at least one person trained in CPR and First Aid present at each job site location.
   a. This person shall be available to render first aid if necessary.
   b. Training records indicating which employees have completed CPR and First Aid training shall be kept in confidential employee files.
   c. Employees trained in CPR and First Aid must have proof of training with them at all times.
2. First aid will be administered only by trained personnel. Under no circumstances shall any employee attempt to administer any medical treatment beyond First Aid training (e.g. remove foreign objects from a fellow employee).
3. At least one vehicle on each crew shall be equipped with an adequate first aid kit and made easily accessible to all employees.
   a. Foremen are responsible for notifying the Safety Manager if replenishment of supplies is necessary.

Hazard Recognition / Pre-Job Hazard Analysis

In a continuing effort to prevent incidents, injuries, and accidents, the following should be completed:

1. Job sites shall be kept as neat and orderly as can be reasonably expected. Keep the workplace clean, organized, and free of materials that could potentially expose the employee to slips, trips, falls, pinch points, crushing, being struck, electrical shocks, or any other identifiable hazard.
   a. All debris, tools, and equipment are to be picked up and either stored or disposed of in the proper manner/location.
2. A hazard assessment of the workplace is to be performed so that any actual or potential hazards exposure(s) may be effectively identified. The survey shall focus on all the following:
   a. Hazards associated with the job;

b. Work procedures involved;
c. Energy source controls;
d. Personal protective equipment;
e. Any special precautions.

3. All employees shall either document the hazard assessment on a pre-job form or sign onto the corresponding pre-job prior to the job start each day.
   a. A Competent/Qualified Person shall conduct a pre-job with employees involved in planned work activities prior to the start of each job every day. A minimum of one job briefing shall be held each day. Should the scope of work change significantly, and the changes affect the safety of employees, additional job briefings shall be held onsite.
   b. Toolbox talks are communicated via SafetyHQ App on foremen's work phone and iPad to communicate a change of potential hazards onsite.

Housekeeping

1. To assist in preventing slips, trips and falls, employees should do the following:
   a. Mop floors in areas of spills immediately and post a sign stating, "WET FLOOR". Never leave spills unattended.
   b. Use an oil absorbing material to control small oil spills in the workplace.
   c. During inclement weather, keep rugs, mats, and floors dry. Snow and ice should be removed from all sidewalks, drives, and access points used by the general public or employees**.**
   d. Keep all floors, stairs, ladders, walkways, sidewalks, and driveways in good repair.
   e. Be aware that electrical cords can cause tripping hazards if not routed or barricaded properly.
   f. Keep the work area clean and free of debris, paying close attention to stairs, aisles, and walkways.

g. Analyze each job site / work area to consider the possible hazards.

Job Site Access

1. Absolutely no one is permitted onto a Roseville job site without the express permission of the Roseville designated Competent Person at that site. Employees shall exercise due diligence in keeping the public and all other unauthorized persons away from the work area.

a. Any non-Roseville employees on a Roseville jobsite (additional workers, visitors, customer representatives, MIOSHA inspectors, etc.) are subject to all the same policies and procedures that apply to the Roseville employees working at the site. This is designed to prevent injury or illness to anyone while ensuring the safety and well-being of everyone.

b. In the event of a non-Roseville employee's failure to follow Roseville Safety Policies and Procedures on a Roseville jobsite, the Competent Person on site shall cease all work procedures, make the site safe, and contact their supervisor immediately.

Phones

1. All foremen are provided a company-issued smartphone as a means of communication. In the event that an employee is working alone, who is not a foreman; a supervisor shall provide the employee with a cellular phone to communicate with management or emergency services if needed.

2. The use of any cell phone for personal use during working hours is prohibited.

a. The use of personal cell phones during working hours is prohibited unless deemed necessary due to an emergency or identified as necessary or required for the ongoing or planned job procedure.

3. Employees are to report unsafe conditions to a supervisor, the Human Resources Manager, Safety Manager, or a member of the Safety Committee immediately.

Safety Meetings

1. Daily
    a. Foremen shall conduct a pre-job with employees involved in planned work activities prior to the start of each job every day. A minimum of one job briefing shall be held each day. Should the scope of work change significantly, and the changes affect the safety of the employees, additional job briefings shall be held.
2. Weekly
    a. Weekly Safety Meetings are held to help keep all personnel abreast of appropriate safety measures. During a safety meeting, company policies, procedures, rules, and regulations can be communicated to employees. The use of posters, pamphlets, signs, and safety films will help promote employee involvement. These safety meetings are to be documented and signed by all employees attending the session. A file will be kept on all safety activity that is communicated to the employees by the methods mentioned above. Attendance at weekly safety meetings will be documented on the Jobsite Weekly Safety Meeting Sign-In Sheet.

Weather Related Hazard Prevention Guidelines

1. Due to the nature of the construction industry, employees may be exposed to extreme weather, heat, and cold conditions. Employees must make a diligent effort to prepare for extreme temperature conditions onsite.

2. In the event of extreme weather conditions, employees onsite must be aware of their surroundings and locations of elements in the vicinity.
    a. Avoid tall objects;
        i. Including objects that may not be completely stable in the event of high winds or rain.
    b. Avoid isolated trees, hills, cell phone towers, large equipment, ladders, rooftops, bodies of water;
    c. Avoid wiring, plumbing, and fencing;
    d. In the case of a lightning storm, avoid all metal objects and structures as well as open fields where equipment or an individual may be exposed to environmental hazards;
    e. In a situation where vision is impaired due to weather conditions, do not operate motor vehicles or other equipment for the safety of the operator and other people in the area until it is safe to do so.
3. Utilizing weather apps to assist in planning future projects on the jobsite can be essential in determining what type of conditions employees should be prepared for. Preparing for expected weather includes jobsite conditions, scheduling, operations, and worker safety.
4. Employees shall be aware of their surroundings and always maintain a safe workspace, regardless of weather conditions. Employees should acknowledge nearby storm shelters in case of severe weather. In a situation where there is a danger to life because of weather conditions, 911 should be contacted.

Heat-Related Illness

1. It takes the human body approximately 2 weeks to acclimate to consistent elevated temperatures. Until that time, the body is more prone to the onset of heat-related illness than it normally would be.
2. There are 1 of 4 (or a combination of the 4) methods the body uses to keep the skin cool:

a. Convection – heat exchange affected by air movement across the skin (i.e. fans, wind, etc.).

i. When temperatures reach ±94°F, air blowing across the skin is no longer effective. Alternate methods to cool the body MUST be implemented (shade, air/conditioning, applying cool water to the skin, etc.)

b. Radiation – heat exchange affected by radiating heat from the body to the surrounding environment (much like the shimmering heat waves coming off the hot hood of a vehicle).

c. Evaporation – heat exchange affected by (the evaporation of) liquid from the surface of the skin (i.e. sweating)

d. Conduction – heat exchange affected by direct contact between the body and another medium (i.e. immersing the body in cool water; covering the body with cool wet rags, etc.)

3. Precautions to help mitigate Heat-Related Illness:

a. Take intermittent breaks to rest in the shade or cooler areas;

b. Increase water consumption;

c. Eliminate caffeine consumption (coffee, energy drinks, tea, etc.);

d. Wear light, loose fitting, breathable clothing that allows air flow across the body;

i. AR & FR clothing DOES NOT BREATHE; therefore, it may compound or expedite the onset of heat-related illness. Mitigating measures must be more aggressive (more cool-down breaks, more water consumption, etc.).

e. Regularly observe their co-workers to determine if they are exhibiting any signs of heat-related illness; and

f. Make the best effort to perform the heaviest work during the coolest part of the day.

4. Contributing Factors:

a. Be aware that medications may compound or expedite the onset of heat-related illness. Know your medications and consult your physician.

b. Heavier individuals are more prone to expedited heat-related illness due to the amount of body tissue that must be cooled.

c. Elderly individuals are more prone to expedited heat-related illness due to slower and less efficient body functions.

5. Escalation / Symptoms / Care:

a. Heat Rash

i. Skin irritation resembling red cluster of pimples or blisters, caused by excessive sweating.

ii. Keep the area dry. Powder may be applied to increase comfort. Avoid ointments and creams.

b. Heat Cramps

i. Painful muscle cramps and/or spasms in the abdomen, arms, or legs.

ii. Drink water and have a snack every 15-20 minutes. Avoid salt tablets. Get medical attention is cramps do not subside within 1 hour.

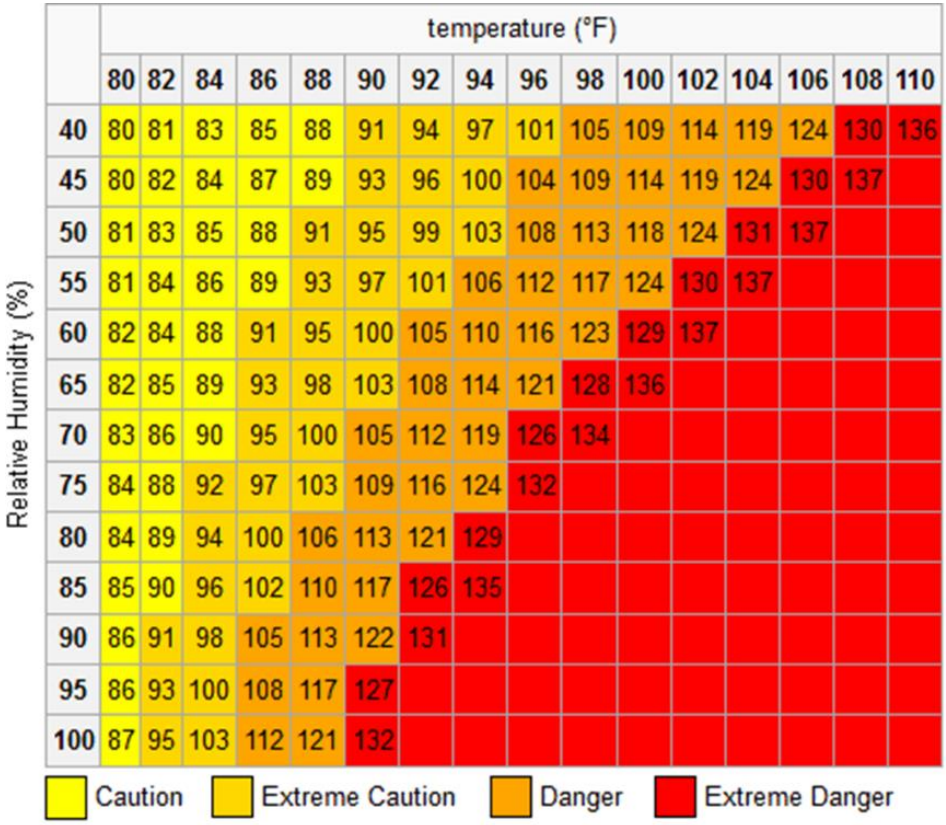
c. Heat Exhaustion

i. Excessive sweating, headache, nausea dizziness, weakness, irritability, thirst, elevated body temperature, decreased urine output.

ii. Remove from heat and give liquids to drink. Remove unnecessary clothing. Cool worker with compresses; wash head, neck, face with cool water. If symptoms persist, seek medical attention.

d. Heat Stroke

i. The body is unable to cool itself and begins to shut down resulting in confusion, slurred speech, hot & dry skin; may no longer be sweating; loss of consciousness, seizures.



ii. THIS IS A MEDICAL EMERGENCY. Seek medical attention immediately.

Dehydration Urine Color Chart

The following Dehydration Urine Color Chart will help you use your urine color as an indicator of your level of dehydration and what actions you should take to help return your body back to a normal level of hydration.

Doing ok. You're probably well hydrated. Drink water as normal.

You're just fine. You could stand to drink a little water now, maybe a small glass of water.

Drink about 1/2 bottle of water (1/4 liter) within the hour, or drink a whole bottle (1/2 liter) of water if you're outside and/or sweating.



Drink about 1/2 bottle of water (1/4 liter) right now, or drink a whole bottle (1/2 liter) of water if you're outside and/or sweating.

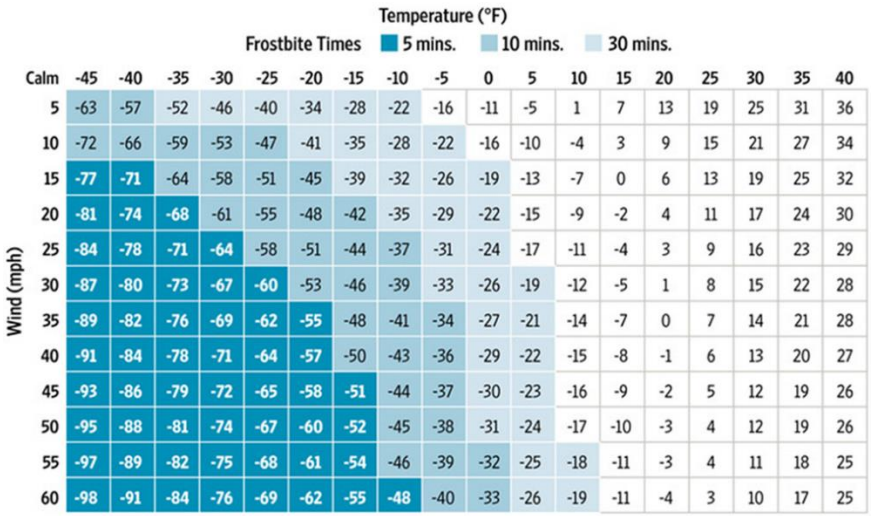


Drink 2 bottles of water right now (1 liter). If your urine is darker than this and/or red or brown, then dehydration may not be your problem. See a doctor.

For more information visit www.urinecolors.com

Cold-Related Illness

1. Four factors contribute to cold stress: cold temperatures, high or cold wind, dampness, and cold water.
2. A cold environment forces the body to work harder to maintain its core temperature of 98.6°F. Cold air, water, and snow all draw heat from the body. So, while it is obvious that below freezing conditions combined with inadequate clothing could bring about cold stress, it is important to understand that it can also be brought about by temperatures in the 50's coupled with rain and/or wind.
3. To help prevent Cold-Related Illness, employees should:
   a. Layer tight-fitting clothing and bring additional clothing to change into in the event their existing clothing becomes wet;
   b. Consume warm liquids and eat warm, high caloric foods;
   c. Wear hats, gloves, ear protection, and safety toe boots to protect their extremities;
   d. Take frequent breaks in warm, dry areas;
   e. Regularly observe their co-workers to determine if they are exhibiting any signs of cold-related illness; and
   f. Make the best effort to perform the heaviest work during the warmest part of the day.
4. Hypothermia
   a. Meaning ‘low heat’, results when the body is losing heat faster than it can be produced. Prolonged exposure will use up the body’s stored energy.
   b. Symptoms begin with shivering, slurred speech, lack of coordination and pale & cold skin.
   c. Move the worker to a warm area, stay active, remove any wet clothing, replace with dry clothing, cover the head, have them drink warm liquids.
   d. If symptoms persist or escalate, seek medical assistance immediately.



Calm	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40
5	-63	-57	-52	-46	-40	-34	-28	-22	-16	-11	-5	1	7	13	19	25	31	36
10	-72	-66	-59	-53	-47	-41	-35	-28	-22	-16	-10	-4	3	9	15	21	27	34
15	-77	-71	-64	-58	-51	-45	-39	-32	-26	-19	-13	-7	0	6	13	19	25	32
20	-81	-74	-68	-61	-55	-48	-42	-35	-29	-22	-15	-9	-2	4	11	17	24	30
25	-84	-78	-71	-64	-58	-51	-44	-37	-31	-24	-17	-11	-4	3	9	16	23	29
30	-87	-80	-73	-67	-60	-53	-46	-39	-33	-26	-19	-12	-5	1	8	15	22	28
35	-89	-82	-76	-69	-62	-55	-48	-41	-34	-27	-21	-14	-7	0	7	14	21	28
40	-91	-84	-78	-71	-64	-57	-50	-43	-36	-29	-22	-15	-8	-1	6	13	20	27
45	-93	-86	-79	-72	-65	-58	-51	-44	-37	-30	-23	-16	-9	-2	5	12	19	26
50	-95	-88	-81	-74	-67	-60	-52	-45	-38	-31	-24	-17	-10	-3	4	12	19	26
55	-97	-89	-82	-75	-68	-61	-54	-46	-39	-32	-25	-18	-11	-3	4	11	18	25
60	-98	-91	-84	-76	-69	-62	-55	-48	-40	-33	-26	-19	-11	-4	3	10	17	25

Insect Safety Protocol

1. Roseville and its employees are encouraged to understand exposure risks, how to recognize and respond to insect bites (ticks, spiders etc.) and stings, and what they can do to prevent them. Under 29 CFR Part 1904- Recording and Reporting Occupational Injuries and Illnesses, the Occupational Safety and Health Administration (OSHA) considers bites and stings to be recordable when an employee who is bitten or stung while working receives medical treatment beyond first aid. First aid is defined in 1904.7(b)(5)(ii), see attached appendix for the full definition as defined by OSHA.
    a. Emergency Response: Even though they can be painful, most insect bites (ticks, spiders etc.) and bee stings are harmless and do not require medical attention. However, if you are allergic to insect bites (ticks, spiders etc.), bee stings or you get stung numerous times, you may experience a more serious reaction that requires emergency treatment. If this happens, bite/sting victims should be observed for severe allergic reaction. Symptoms such as coughing, trouble breathing, chest pain,

severe sweating, confusion, nausea, vomiting, and hives require immediate emergency medical attention. If it is safe to do so, a bite/sting victim may be carefully moved to a protected shaded area. When assisting someone who has been bit/stung, it is important to be aware of their surroundings.

- **i.** If the employee carries an epinephrine auto-injector (e.g. EpiPen) to treat an allergic attack, it may be necessary to assist with injecting the medication. This is usually done by pressing the auto-injector against the person's thigh and holding it in place for several seconds.
- **ii.** Other steps in the event of an emergency include; loosen tight clothing and cover with a blanket, do not give the person anything to drink, turn the person to one side to prevent choking, begin CPR if the person is unresponsive.

b. First Aid: Most bites/stings will heal on their own with appropriate first aid and self-care. If an employee is bit/stung, steps to follow are:

- **i.** Stay calm and move away from the hive or bees/insects as quickly and safely as possible.
- **ii.** You can try to remove the stinger by flicking it off, scraping a fingernail over the area or wiping gauze over it; do not squeeze or use tweezers.
- **iii.** Wash the site with soap and water and apply antibiotic ointment.
- **iv.** For an inflamed bite/sting, apply an ice pack for no more than 15-20 minutes periodically, as needed.
- **v.** If there are signs of an allergic reaction such as difficulty breathing and/or swallowing or rash/hives start to develop on skin, call 911 or have your Supervisor take you to urgent care immediately. If the employee has an EpiPen, administer as directed.

vi. Non-drowsy, non-prescription antihistamines and analgesics may be used temporarily in accordance with instructions to help relieve itchiness, pain and swelling. If the employee considers taking a drowsy antihistamine, they should do this at home and not while driving or operating dangerous equipment.

c. Prevention: Prevention is key to staying safe, therefore the information noted below are steps you can take to prevent being stung:

i. First and foremost, assess the jobsite which is part of your pre job before every shift. This includes observing bees and wasps in areas of abundant flowers, ground nests, hidden dark corners, under wood piles, fallen logs, in panel boxes, or animal carcasses etc. Avoid walking near hives or nests that you have found.

- Also inspect equipment etc. such as around a meter, on gates, in panel boxes, around decks, around shrubbery, garages, cellars, underneath items (eaves, windowsills, leaf litter, stones, boards, siding, woodpiles. Do not reach into places or under items without looking for spiders first.

ii. Wear light-colored, loose-fitting clothes to limit exposed skin.

- Bees are attracted to light-colored clothing but wearing your PPE Vest is something you cannot avoid therefore being cautious of your surroundings is key.

iii. Keep your body clean and odor free; avoid wearing perfumed lotions and deodorant, aftershave, or scented hair products. Also, body wash, colognes, detergents, and fabric softeners are something to

consider due to bees being attracted to sugars/sweet scents.

iv. As mentioned above, remain calm and carefully back away if stinging insect(s) are flying around you.

v. Run to get away if you are being attacked.

2. Bee Bopper Wasp and Hornet Spray is available for everyone to stock their vehicle with. Bee Bopper is to be used to spray flying insects or their nests. If a nest or flying insects are spotted, the employee can spray the Bee Bopper to prevent being stung. Roseville has also provided a sticker that states “This Individual is Allergic to Bee Stings” to be worn on the employee’s hard hat for those that have noted they are allergic to bees on their Emergency Form. For those that are allergic, if they feel comfortable, they should also advise to their Foreman/Superintendent/Coworker where their EpiPen is located.

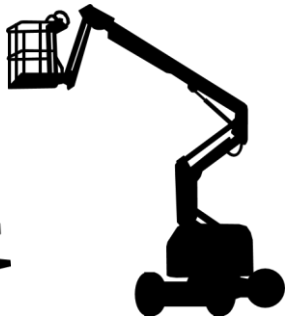
MOBILE ELEVATED WORK PLATFORMS

General

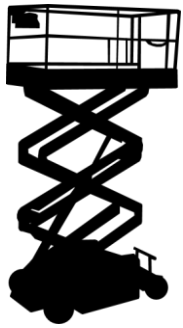
1. Any employee operating an aerial work platform must be qualified AND must have in his/her possession a card stating such.



Bucket Truck: a.k.a. Vehicle Mounted Extensible Boom; Vehicle Mounted Articulating Boom



Manlift: a.k.a. Boom Mounted / Supported Elevated Work Platform



Scissor Lift: a.k.a. Self-Propelled Elevated Work Platform

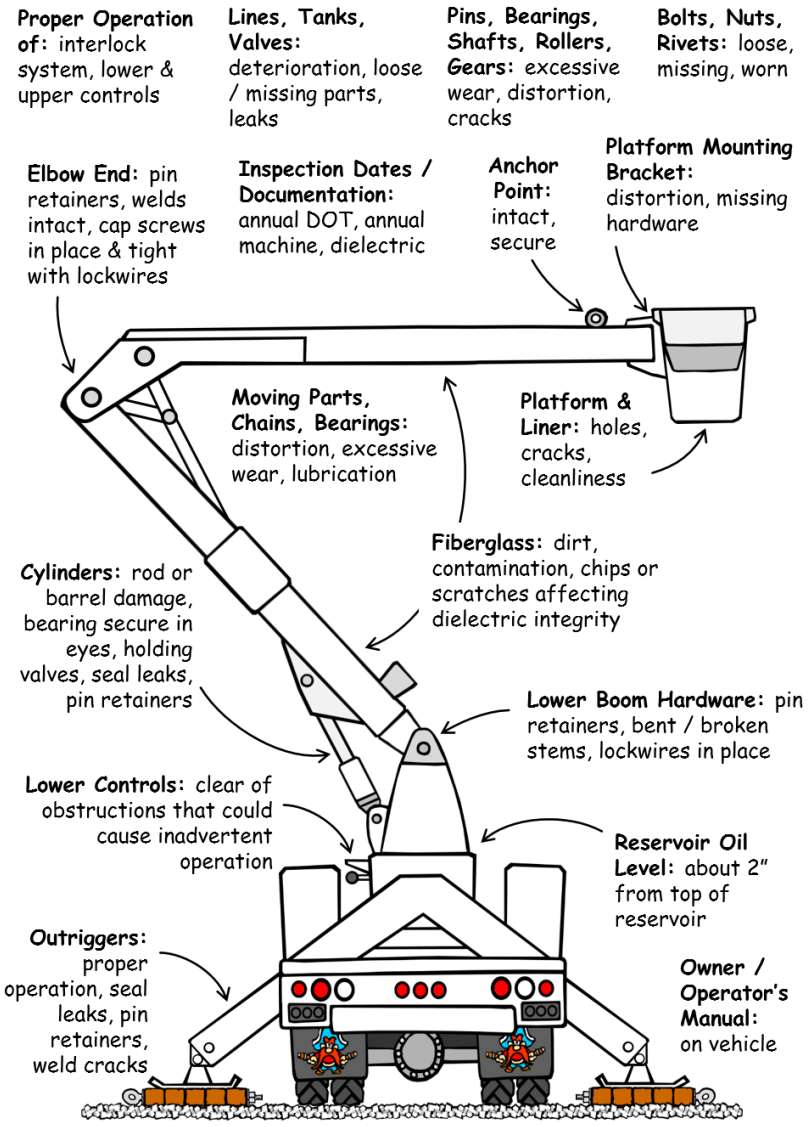
2. All workers in a mobile elevated work platform must wear a body harness attached to the machine's engineered anchorage point.
3. Climbers shall not be worn by employees who are in an elevated aerial work platform.
4. A worker's feet are to remain on the platform floor. Nothing is to be used by the worker in an aerial work platform to increase or extend his/her reach (milk crate, 5-gallon bucket, ladder, etc.).
5. As a rule, generally materials may not be supported by the platform railing or lip.
   a. The platform railings may only support tool boards designed for such a purpose; or used to tether / stabilize equipment and materials that would otherwise tip over while in the platform or present a hazard for the worker or public.
   b. Workers are not permitted to stand or sit on platform railings, lips, or toe boards.

c. Materials may be supported by the platform railing(s) or lip ONLY IF there is no other safer alternative.

6. All Roseville vehicles, when parked or in use, need to have their four-way flashers on at all times. All flashers and strobe lights are to be activated when any aerial devices are being used for overhead work. Safety cones shall be placed off of each corner of every vehicle in use including one (1) on the passenger and driver side of each vehicle. No person(s) should be able to come in contact with or touch any portion of the vehicle when standing outside of the cones-just in case the vehicle was to become energized, whether it is grounded or not.

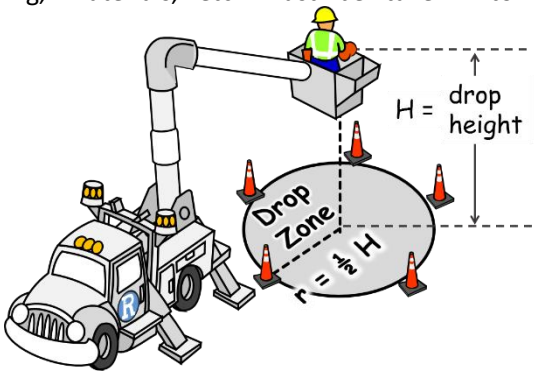
7. Inspect the Aerial Lift prior to use every day.

Key Inspection Points (refer to the Owner's/Operator's Manual):



8. Use of aerial work platforms in windy conditions shall be limited as per manufacturer's recommendations. In the absence of such recommendations, the limit shall be 20mph only when all the following conditions are met:
   a. Outriggers, if so equipped, must be fully extended and on firm ground;
   b. For units without outriggers, the tires must be properly inflated and on firm ground;
   c. The unit must be level fore and aft and side to side;
   d. The unit must be operated on the up-wind side, with the bucket into the wind;
   e. No other loads or shock loads may be imposed on the unit;
   f. Additional forces, such as 'sail effects' shall be considered.
9. Scissor lifts are designed for indoor applications.
   a. They shall not be used for anything other than perfectly level work.
   b. They shall not be used if there is any wind present.
10. Aerial work platforms (insulated or otherwise) are never designed to contact any obstructions.
   a. The insulated portions of bucket trucks are in the event of accidental or unintentional contact and are not intended for intentional energized contact.
11. If equipped with outriggers, then outriggers shall be fully extended as per manufacturer's recommendations and shall remain on solid footing.
   a. When deploying the outriggers, know the manufacturer's recommendations regarding tires contacting the ground. Some manufacturers mandate the tires remain in contact, but noticeably unloaded, with the ground; while others insist the tires NOT be in contact with the ground. Violating manufacturer's instructions can result in an unstable machine and induce a tip over.

12. Wheel chocks shall be installed before using an aerial lift on an incline.
13. Unless designed otherwise, employees shall not ride on the platform while the machine is in travel mode.
14. The platform load limit shall not be exceeded. Total weight of workers, tools, clothing, materials, etc. must be taken into consideration.
15. If possible, consider barricading the Drop Zone within the vicinity of aerial work. If not possible, employ alternative safety measures (e.g. monitor).



CONFINED SPACE ENTRY

General

1. A Confined Space is defined as a space meeting ALL the following:
   a. Large enough and so configured that a person can **bodily** enter and perform assigned work; *and*
   b. Not designated for continuous employee occupancy; *and*
   c. Has a limited or restricted means of entry & exit.
2. A Permit-Required Confined Space is:
   a. A Confined Space with at least 1 recognizable serious safety or health hazard.
3. An Alternate Entry Confined Space is:
   a. A Confined Space where the only recognizable hazard is an actual or potentially hazardous atmosphere that can be mitigated by using forced air ventilation.

4. An Enclosed Space **applies to Qualified Electrical Workers ONLY**.
   a. It is a Confined Space where the only recognizable hazards do not endanger the life of the Entrant nor interfere with an Entrant's escape.
5. Refer to the CSE Booklet or CSE Program for additional information.

Procedure for entering a confined space.

1. Employees need to determine if a permit is required prior to entering the confined space. Refer to Page 1 of the Confined Space Entry Permit and follow the directions applicable to the type of identified Space.
2. Workers not trained in Confined Space Entry are not permitted to enter any type of Confined Space (1926.1207).

CONCRETE CONSTRUCTION

1. Always wear protective gloves and (if necessary) sleeves when working with concrete.
   a. Avoid leaving concrete on the skin for prolonged periods of time. Wash yourself off before drying, cracking, or chemical burns occur.
   b. Never use dielectric rated rubber gloves and sleeves as protection against concrete exposure. Doing so will damage the dielectric integrity of the PPE.
2. Do not work within a wall's fall radius if the wall is not properly supported or if high winds are expected.
3. When involved in or present around concrete pouring procedures, remain conscious of potential engulfment hazards.
4. When necessary to grind or cut into concrete or masonry, use necessary dust control measures (i.e., wet grinding) or respirators to minimize or eliminate exposure to silica and other harmful dusts.

5. Exposed rebar that poses a potential impalement hazard to workers shall be covered with rebar caps.
    a. If working at grade, then rebar caps shall be installed on any vertical rebar extending 42" or less above grade.
    b. If employees are working at elevation, then rebar caps shall be installed on any vertical exposed rebar presenting an impalement hazard.

DEMOLITION

General

1. When removing or wrecking out structures and/or materials in areas that may be in the vicinity of pedestrian and vehicular traffic, utilize effective barricades and barriers to safely detour and reroute such traffic.
2. Prior to resuming daily wreck out procedures from the day before, perform a preliminary check to determine any changes or escalation of hazards that may have occurred overnight.
3. When working in a demolition area, always provide yourself and your co-workers with a safe and expedient exit path.
4. Whenever possible, ALWAYS lower materials to a lower level in a controlled manner; do not airmail. This can be accomplished by using a hand line, digger derrick, crane, elevated work platform, etc.
    a. Airmailing is only permitted when it can be demonstrated to be safer to do so.
5. Always maintain good housekeeping.

ELECTRICAL

General

1. All workers who are expected to work with electrically energized conductors/components of 50V or more (in relation to ground potential) shall be trained as qualified to do so.
2. Energized parts operating at less than 30V or parts that have less than 1mA of current are not required to be de-energized if there will be no increased exposure to electrical hazards.
    a. Unless it creates additional hazards or increases present hazards, electrical parts operating at 30V or more with a current capacity of 1mA or more shall be de-energized.
    b. Lockout/ Tagout procedures shall be required unless it can be demonstrated that the potential energy source is under effective control of a qualified person. Examples of effective control include but are not necessarily limited to:
        i. The equipment has a cord and plug under direct supervision and control of the affected person.
        ii. The electrical panel is located inside a locked room where the affected person has the sole means of entry.
3. Electrical equipment must be placed in an electrically safe working condition prior to any work being performed on it.
    a. This includes disconnecting it from an electrical source, locking it out and/or tagging it out, testing it to ensure the absence of voltage, and electrically grounding it if necessary.
        i. Verify all electrical voltage testing equipment is in proper working order before and after a voltage test is performed.
    b. Refer to the Lockout/ Tagout section for proper procedures to establish an electrically safe condition.
4. The covers on switch boxes and fuse stations are always to be kept closed.

5. Refer to the PPE section regarding arc flash protection.

Electrical Effects on the Human Body

Current Levels (in amps) for MEN & WOMEN		Effects
.0004	.0003	No sensation on the ungloved hand
.0011	.0007	Slight Tingling. This is the Perception Threshold: the least amount of current detectable by the ungloved hand.
.0018	.0012	Non-Painful Shock – muscle control not lost.
.005		GFCI protection is designed to operate in this range. It is intended to activate at .005 amps (or less), killing the power before the worker can be exposed to higher and more painful levels of electrical exposure.
.009	.006	Painful Shock but muscle control not yet lost.
.016	.0105	Painful Shock and the 'Let-Go' Threshold. This your last chance (maybe) to let go. Any higher and your flexor muscles may end up contracting and locking you onto the voltage source.
.023	.015	Painful Shock: muscles contract and breathing becomes difficult. If the extensor muscles contract, the worker may be 'thrown away' from the voltage source. If the flexor muscles contract, well then, the worker is locked onto the voltage source and begins to cook. Generally, it's the flexors that contract because they are typically more developed than extensors.
.1 for 3 seconds		Possible Ventricular Fibrillation: the most serious cardiac rhythm disturbance. This is when the lower chambers of the heart stop pumping and instead quiver, pumping little or no blood. The heart collapses and cardiac arrest follows. Unless addressed immediately, death is probable.
+.1		From here, things just gets worse. Much worse.

Extension Cords

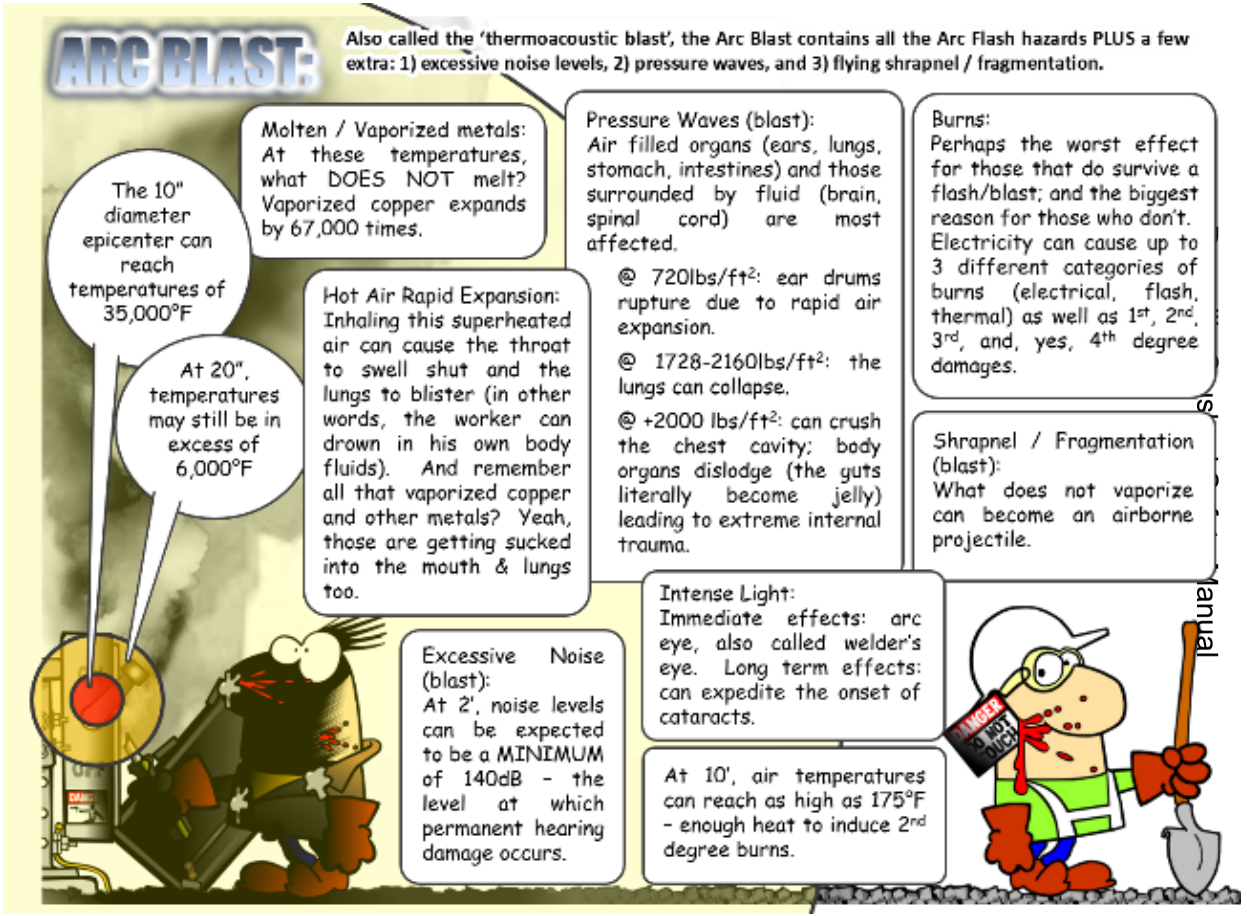
1. Extension cords shall not be used to raise and lower equipment.
2. All extension cords must be three-pronged.
3. Extension cords must be rated for hard usage and outdoor environments.

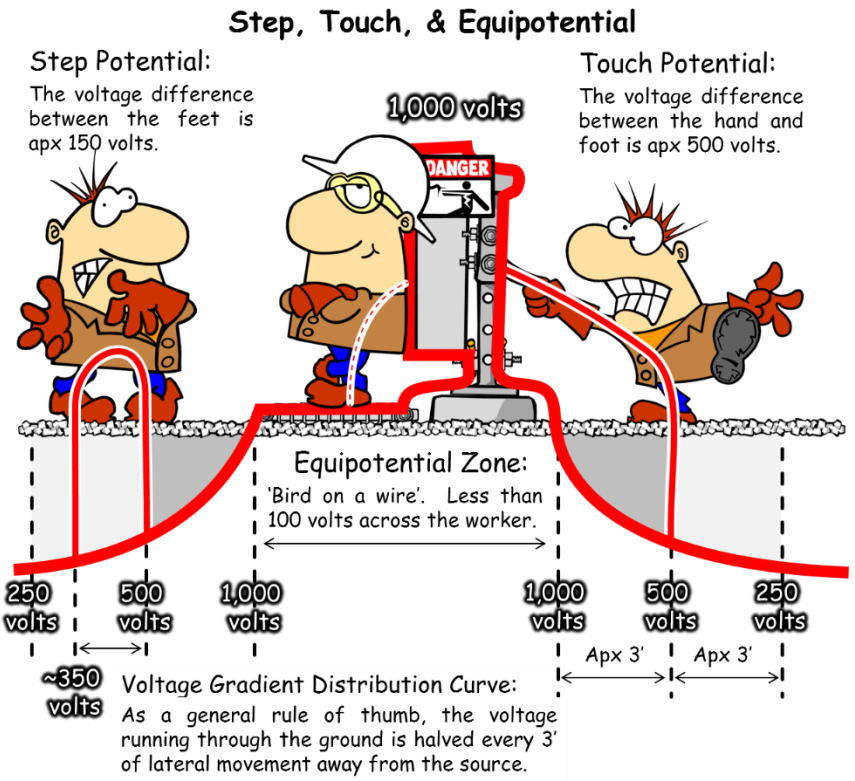
4. Employees must ensure that any replacement plugs, or receptacles installed on extension cords do not de-rate the cord classification.

Extension Cord Code Letters and Their Meanings	
S	Indicates a flexible cord designed for general use.
W	Indicates the cord is rated for outdoor use.
J	Indicates a cord with standard 300 volt insulation. If there is no 'J' in the code, then the cord has the thicker 600 volt insulation designed for heavier use.
P	Indicates parallel wire construction, used in air conditioner cords & household extension cords.
T	Indicates the jacketing is made from thermoplastic.
E	Indicates the jacketing is made from thermoplastic elastomer rubber (TPE).
O	Indicates the cord is oil resistant.

GFCIs

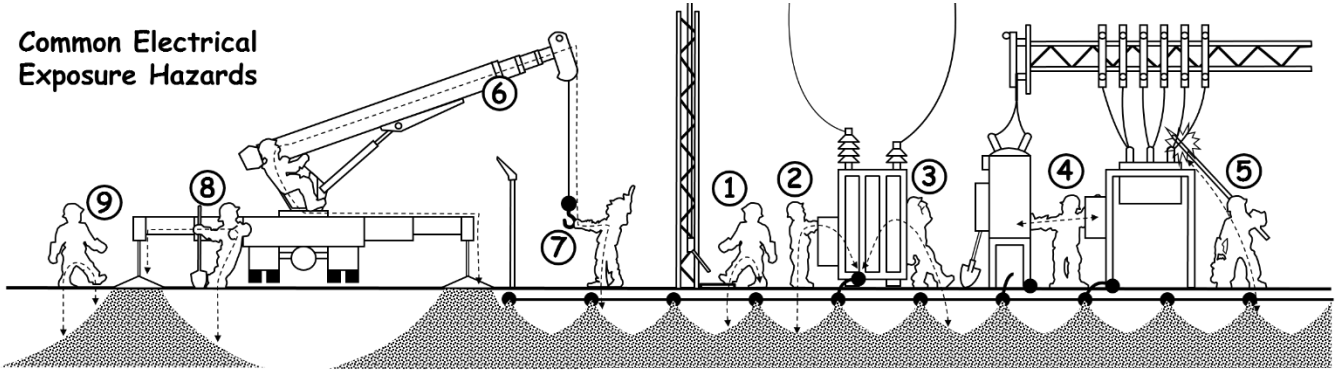
1. All corded electrical equipment used on the jobsite (including extension cords) shall be protected by either fixed or portable GFCI (Ground Fault Circuit Interrupter) Protection.


ARC BLAST:
Also called the 'thermoacoustic blast', the Arc Blast contains all the Arc Flash hazards PLUS a few extra: 1) excessive noise levels, 2) pressure waves, and 3) flying shrapnel / fragmentation.
Molten / Vaporized metals: At these temperatures, what DOES NOT melt? Vaporized copper expands by 67,000 times.
The 10" diameter epicenter can reach temperatures of 35,000°F
At 20", temperatures may still be in excess of 6,000°F
Hot Air Rapid Expansion: Inhaling this superheated air can cause the throat to swell shut and the lungs to blister (in other words, the worker can drown in his own body fluids). And remember all that vaporized copper and other metals? Yeah, those are getting sucked into the mouth & lungs too.
Pressure Waves (blast): Air filled organs (ears, lungs, stomach, intestines) and those surrounded by fluid (brain, spinal cord) are most affected.
@ 720lbs/ft2: ear drums rupture due to rapid air expansion.
@ 1728-2160lbs/ft2: the lungs can collapse.
@ +2000 lbs/ft2: can crush the chest cavity; body organs dislodge (the guts literally become jelly) leading to extreme internal trauma.
Burns: Perhaps the worst effect for those that do survive a flash/blast; and the biggest reason for those who don't. Electricity can cause up to 3 different categories of burns (electrical, flash, thermal) as well as 1st, 2nd, 3rd, and, yes, 4th degree damages.
Shrapnel / Fragmentation (blast): What does not vaporize can become an airborne projectile.
Intense Light: Immediate effects: arc eye, also called welder's eye. Long term effects: can expedite the onset of cataracts.
Excessive Noise (blast): At 2', noise levels can be expected to be a MINIMUM of 140dB – the level at which permanent hearing damage occurs.
At 10', air temperatures can reach as high as 175°F – enough heat to induce 2nd degree burns.
DANGER



Ø – Ø Voltage measured in kV	MAD	
	Ø - Grd	Ø - Ø
.050 - .300	Avoid Contact	
.301 - .750	1' – 1"	1' – 1"
.751 – 5.00	2' – 1"	2' – 1"
5.10 – 15.0	2' – 2"	2' – 3"
15.1 – 36.0	2' – 7"	3' – 0"
36.1 – 46.0	2' – 7"	3' – 3"
46.1 – 72.5	3' – 4"	4' – 0"

Common Electrical Exposure Hazards



① **Step Potential:** is the difference in surface potential experienced by a person bridging a distance with the feet without making direct electrical contact.

② **Touch Potential:** is the potential difference between the surface on which a person may stand and the surface of which a person may touch.

③ **Mesh Potential:** a variant of Touch Potential. This is where a worker increases his ampacity by using the body to make a larger electrical (surface) contact area. This invites larger amounts of current to flow through the body.

④ **Metal-to-Metal Touch Potential:** another variant of Touch Potential. This is the difference in potential between conductive objects or structures that may be bridged by direct hand-to-hand or hand-to-feet contact. This (and Mesh Potential) constitutes the backbone of the argument that workers should not be unnecessarily leaning on / touching / or otherwise molesting any conductive objects, cabinets, fences, etc. in an energized environment.

⑤ **Overhead Contact Potential:** this is the more evident and extreme example of Touch Potential. This is the potential difference between the surface on which a person may be standing and the surface of which the person may be contacting due to the extension of a conductive object. This is why it is a general rule NOT to lift anything above the shoulders when working within close-quartered energized environments such as substations.

⑥ **Transferred Potential:** is an underestimated and special case of touch potential. This is where voltage is transferred across open air gaps from an energy source to an isolated yet conductive object due to magnetic wave radiation. Once this 'isolated' conductive object is 'energized', it now becomes a voltage source potentially exposing workers to all of the previous described hazards, most notably Touch (7), Mesh (8), and Step (9) Potential exposures.

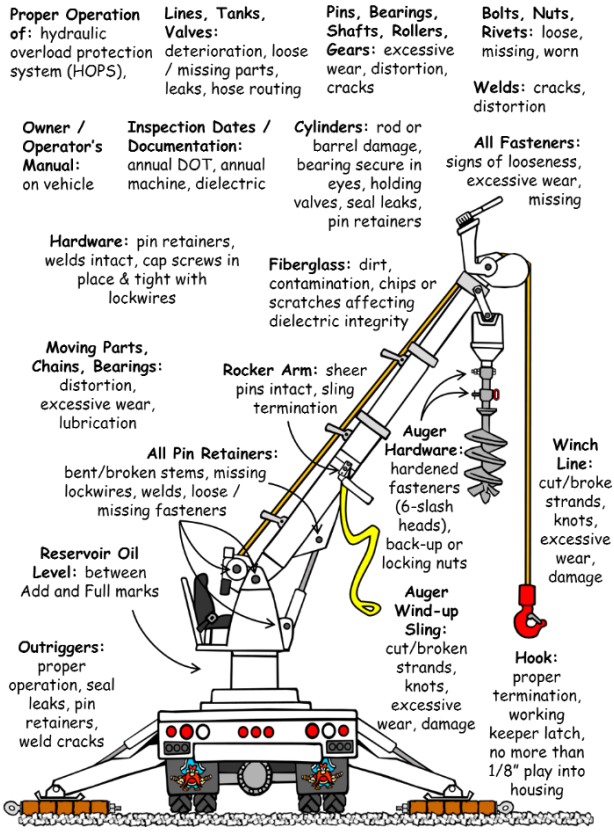
EQUIPMENT, VEHICLES & MACHINERY

General

1. Mobile equipment includes, but is not limited to, forklifts, bulldozers, trenchers, excavators, backhoes, front end loaders, skidders, skid steers, aggregate crusher, screener, belts and directional boring machines.
2. Machine guard and safety devices must not be removed except for the purpose of repairs and must be replaced before starting the machine or motor.
    a. No employee will be permitted to remove any guard installed over the point of operation, power transmission, or moving parts without permission from the supervisor and then only after proper safety procedures have been followed.
3. Cleaning, oiling, greasing, and adjusting of machinery must not be performed while the machine is in operation.
    a. All potential energy sources must be interrupted and rendered to a '0' energy state.
    b. Control devices must be installed to prevent re-energization of the potential energy.
    c. If the energy can be locked out, then it must be locked out. If not, then it must be at least tagged out.
    d. Potential harmful energy exposures may include but not be limited to electricity, hydraulic, pneumatic, chemical, thermal, mechanical, and gravity.
4. Safety lashing shall be provided at connections between tools and hose lines and at all quick make-up type connections.
5. Only qualified maintenance persons authorized by supervision are permitted to repair machinery and equipment.
6. The use of any tool, machinery, or equipment for the personal use of any employee, whether on company time or not, shall not be permitted without prior authorization from Roseville Management.

7. Loose clothing and jewelry (watches, rings, bracelets, etc.) are not to be worn where there are actual or potential hazards for entanglement, caught-between, electrical contact, snagging, etc., where the jewelry or clothing may induce, promote, or compound resulting injuries.
8. All vehicles/equipment shall be inspected prior to operation.

Key Inspection Points (refer to the Owner's/Operator's Manual):



9. If the machine/equipment has a seat belt, then all operators/riders shall wear the provided seat belts.

10. All vehicles, machines and equipment shall be operated in accordance with applicable laws/regulations and must possess a valid driver's and/or operator's license when applicable.
11. Operators must remain seated when operating the equipment.
12. Riders are not permitted on the equipment unless the equipment is designed to accept riders.
13. Workers shall use 3-point contact when mounting / dismounting the vehicle, equipment, or machine.
    a. Employees shall not jump from the vehicle, equipment, or machine.

Wheel Chocks

1. All trailers shall be chocked prior to being disconnected from the vehicle.
2. Any equipment parked on an incline with the engine turned off shall be chocked unless the braking system is designed to sufficiently anchor the equipment.
3. All bucket trucks operated while on an incline shall be chocked.

Jacks / Jack Stands

1. Jacks shall only be used to elevate a vehicle. No less than 2 jack stands shall be used to support a vehicle while maintenance work is conducted. In addition, all the following shall apply:
    a. The vehicle/equipment shall be effectively chocked to prevent inadvertent movement.
    b. If the equipment/vehicle/machinery is positioned on soft, grass, gravel, warm asphalt, excessively cracked/broken asphalt and concrete, or otherwise non-rigid surfaces, then an outrigger pad (or equivalent), as well as any jack stands used, shall be placed beneath the jack prior to operation.
    c. Prior to any worker conducting vehicle maintenance or crawling beneath the vehicle, all the following must be verified:

i. The jack stands (or equivalent) must be effectively locked into position.
ii. Wheel chocks are in position and effective.
iii. The vehicle has achieved maximum stability.

Spotter

1. Use a spotter when a potential visual obstruction exists between the operator, machine, vehicle, load, etc. Examples of instances requiring a spotter may include but are not necessarily limited to when:
    a. The operator is unable to maintain a full view of the intended travel path of the machine, vehicle, equipment, load, etc.; *or*
    b. Backing or maneuvering in congested areas; *or*
    c. The operator is unable to maintain line-of-sight with the load or potential obstructions; *or*
    d. In busy areas where other vehicular or pedestrian traffic is a concern.

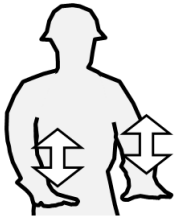
Hand Signals for Spotters

Standard Hand Signals for Spotting & Backing Vehicles & Equipment



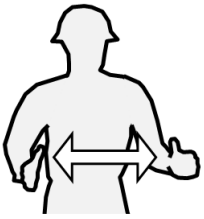
STRAIGHT BACK

Both hands above the head with palms facing one another, waving back.



SLOW

Both hands to the front with palms facing downwards; raise & lower hands



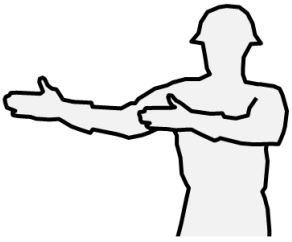
DISTANCE

Both hands to the front with palms facing one another. Indicate distance with hands.



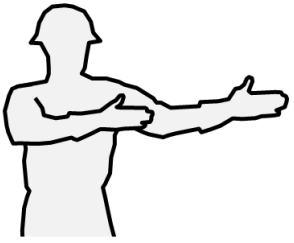
STOP

Both hands crossed at the wrists with hands in fists.



TURN

One or both arms pointing in the direction to turn with index fingers extended.



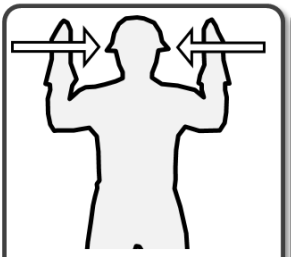
TURN

One or both arms pointing in the direction to turn with index fingers extended

Hand Signals for Operations

Standard Hand Signals for:

- Excavators
- Backhoes
- Cranes
- Digger Derricks



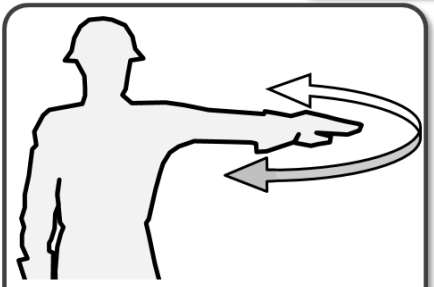
THIS FAR TO GO

With hands raised and open inward, move hands laterally, indicating distance to go.



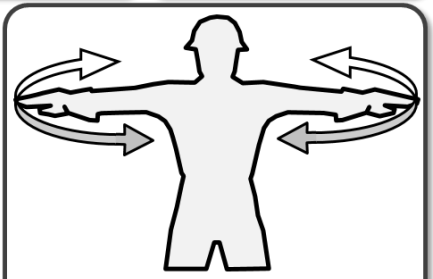
MOVE SLOWLY (slow any function)

Place one hand motionless above the hand giving the motion signal.



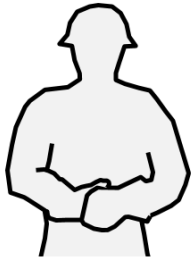
STOP

With either arm extended horizontally, hand open downward, move arm back and forth.



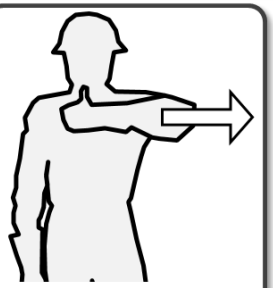
EMERGENCY STOP

With both arms extended horizontally, hands open downward, wave arms back and forth



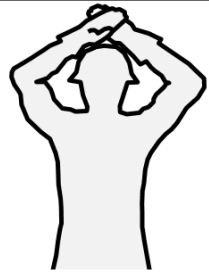
DOG (or hold) EVERYTHING

Clasp hands in front of body.



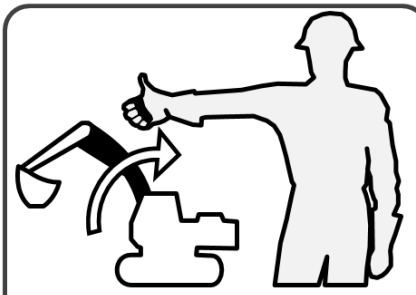
STOP ENGINE

Draw thumb or forefinger across throat.

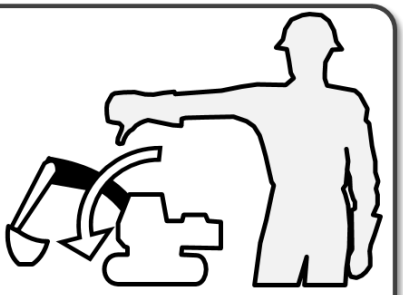


FINISHED WITH MACHINE

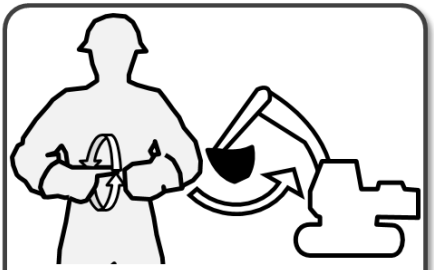
Place arms above head and cross hands.



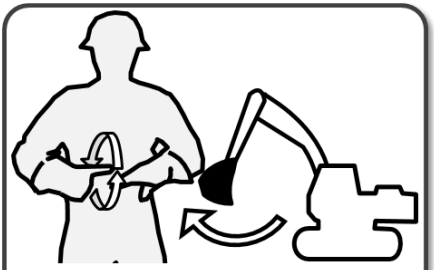
RAISE BOOM (Boom up)
With either arm extended horizontally, fingers closed, thumb pointed upward.



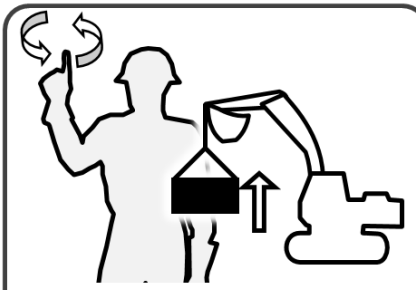
LOWER BOOM (Boom down)
With either arm extended horizontally, fingers closed, thumb pointed downward.



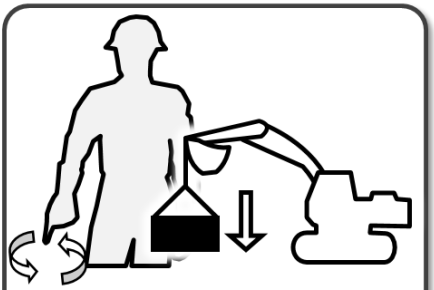
CLOSE BUCKET (Bucket In)
Hold one hand closed and stationary. Rotate other hand in small vertical circle with forefinger pointing horizontally at closed hand.



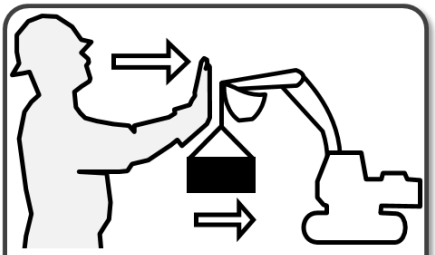
OPEN BUCKET (Bucket Out)
Hold one hand open and stationary. Rotate other hand in small vertical circle with forefinger pointing horizontally at open hand.



RAISE LOAD (Load Up)
With either forearm vertical, forefinger pointing up, move hand in small horizontal circle.

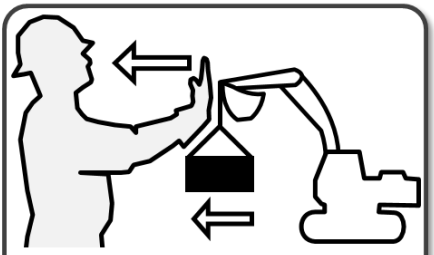


LOWER LOAD (Load Down)
With either arm extended downward, forefinger pointing down, move hand in small horizontal circle.



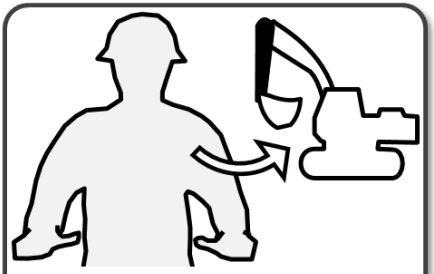
MOVE LOAD IN

With either arm extended, hand raised and open toward direction of movement, move hand in direction of required movement.



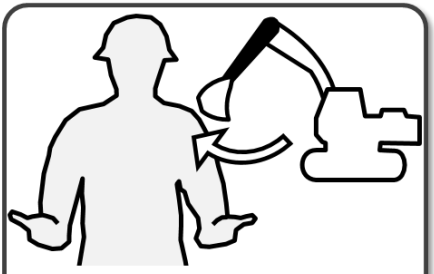
MOVE LOAD OUT

With either arm extended, hand raised and open toward direction of movement, move hand in direction of required movement.



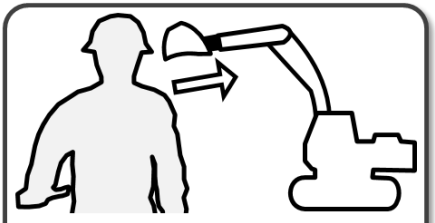
ARM / DIPPERSTICK INWARD (Arm In)

With both hand clenched, point thumbs inward.



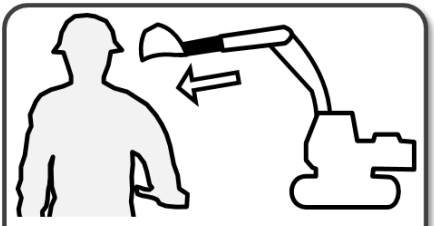
ARM / DIPPERSTICK OUTWARD (Arm Out)

With both hand clenched, point thumbs outward.



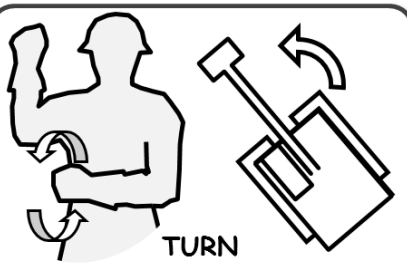
RETRACT TELESCOPIC ARM/DIPPERSTICK

With either arm outstretched horizontally in front of body, close fingers and point thumb in direction of required movement.



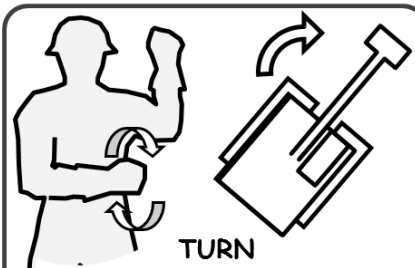
EXTEND TELESCOPIC ARM/DIPPERSTICK

With either arm outstretched horizontally in front of body, close fingers and point thumb in direction of required movement.



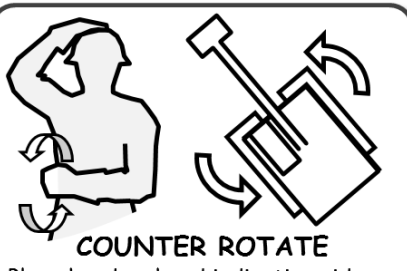
TURN

Raise forearm with closed fist indicating inside of turn. Move other fist in vertical circle indicating direction of track or wheel rotation.



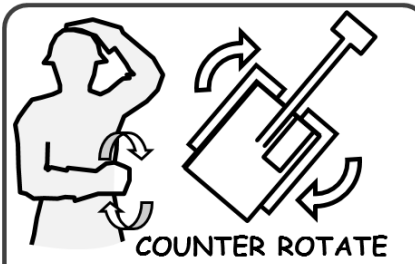
TURN

Raise forearm with closed fist indicating inside of turn. Move other fist in vertical circle indicating direction of track or wheel rotation.



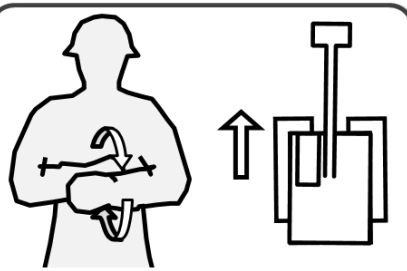
COUNTER ROTATE

Place hand on head indicating side or reverse track or wheel rotation. Move other hand in vertical circle indicating forward rotation of other track or wheel.



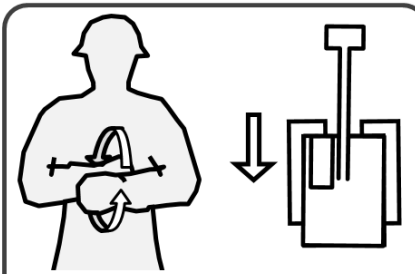
COUNTER ROTATE

Place hand on head indicating side or reverse track or wheel rotation. Move other hand in vertical circle indicating forward rotation of other track or wheel.



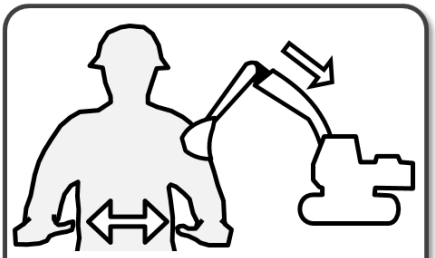
TRAVEL

Move fists in vertical circle about each other in direction of track or wheel rotation.



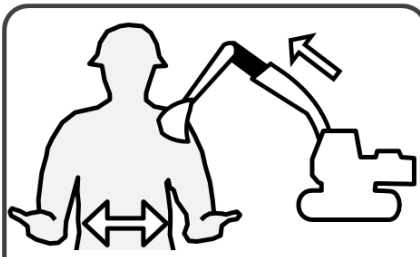
TRAVEL

Move fists in vertical circle about each other in direction of track or wheel rotation.



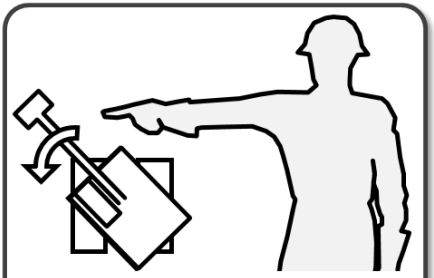
RETRACT TELESCOPIC BOOM (Boom In)

With both hand clenched, point thumbs inward (may move hands back & forth).



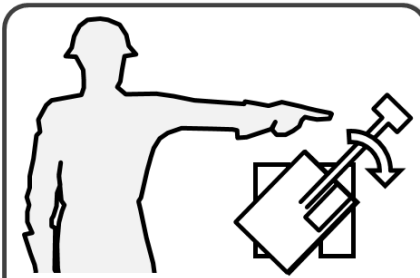
EXTENT TELESCOPIC BOOM (Boom Out)

With both hand clenched, point thumbs outward (may move hands back & forth).



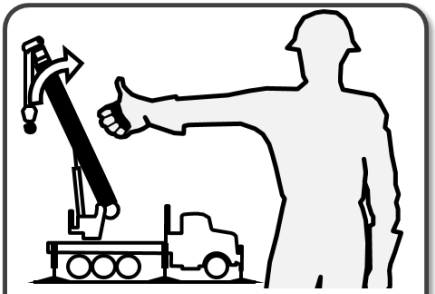
SWING

With either arm extended horizontally, point with forefinger to direction of swing rotation.



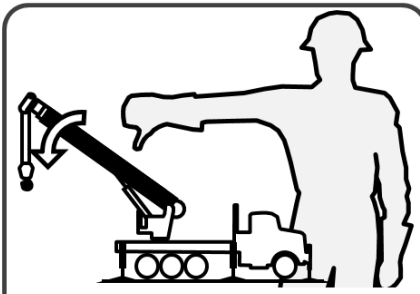
SWING

With either arm extended horizontally, point with forefinger to direction of swing rotation.



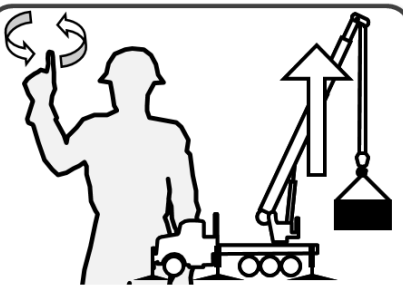
RAISE BOOM (Boom up)

With either arm extended horizontally, fingers closed, thumb pointed upward.



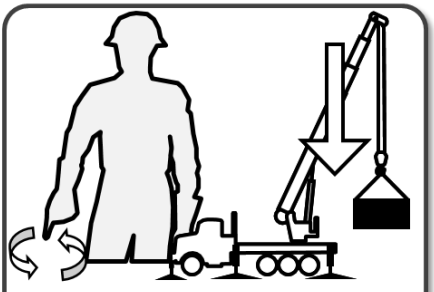
LOWER BOOM (Boom down)

With either arm extended horizontally, fingers closed, thumb pointed downward.



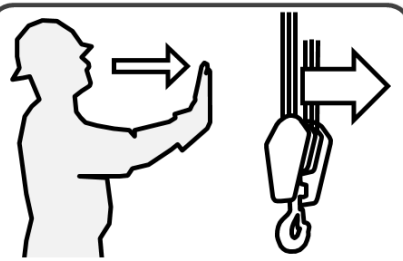
RAISE LOAD (Load Up)

With either forearm vertical, forefinger pointing up, move hand in small horizontal circle.



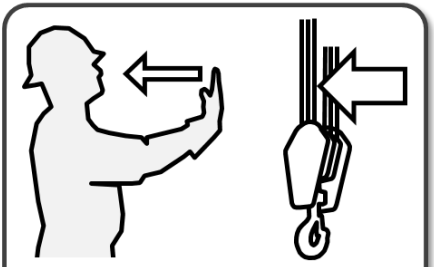
LOWER LOAD (Load Down)

With either arm extended downward, forefinger pointing down, move hand in small horizontal circle.



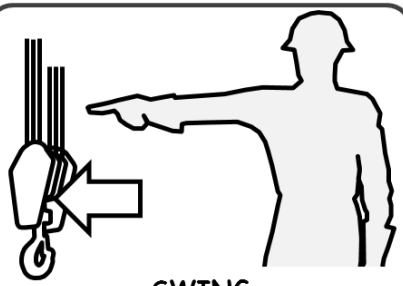
TRAVEL

With either arm extended, hand raised and open toward direction of movement, move hand in direction of required movement.



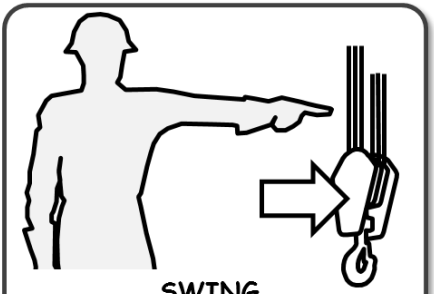
TRAVEL

With either arm extended, hand raised and open toward direction of movement, move hand in direction of required movement.



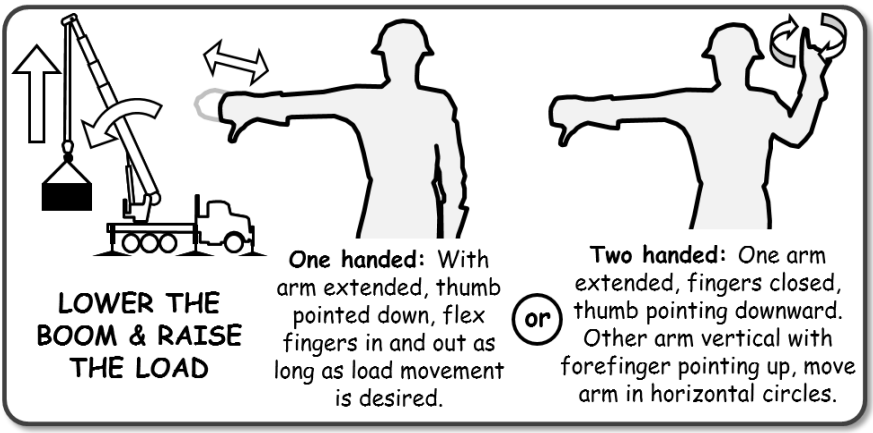
SWING

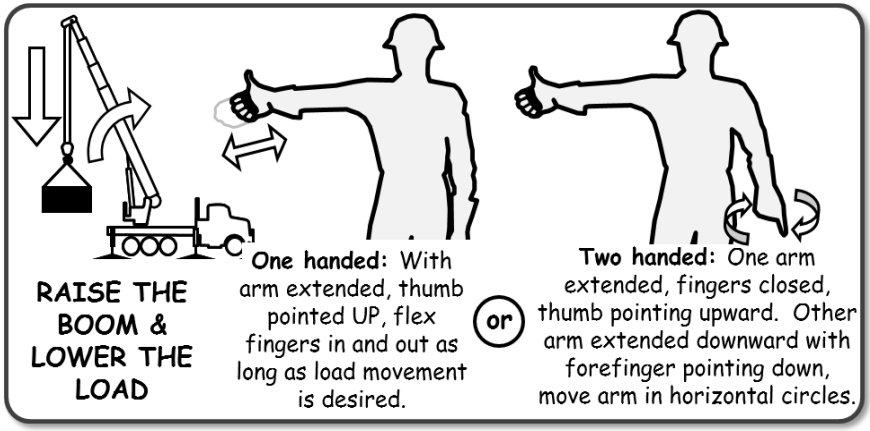
With either arm extended horizontally, point with forefinger to direction of swing rotation.

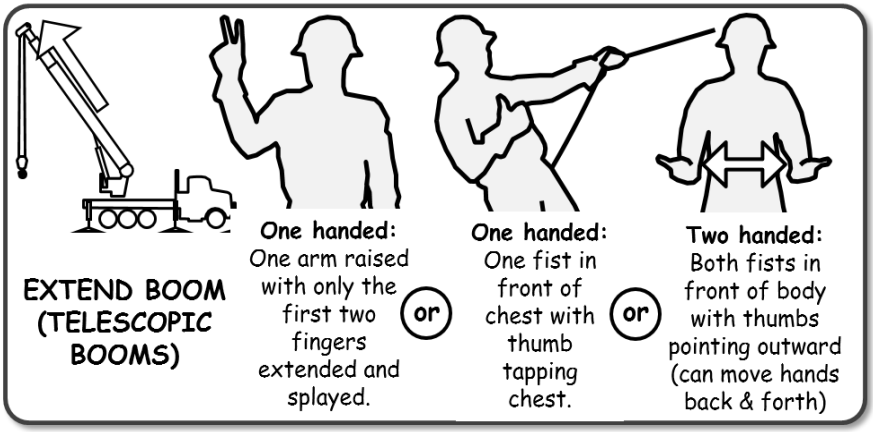


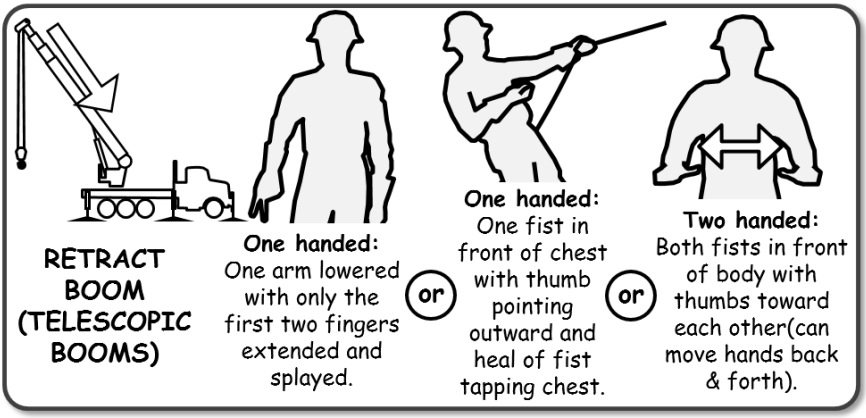
SWING

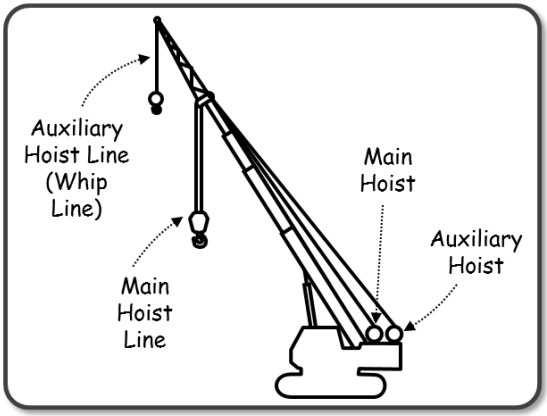
With either arm extended horizontally, point with forefinger to direction of swing rotation.

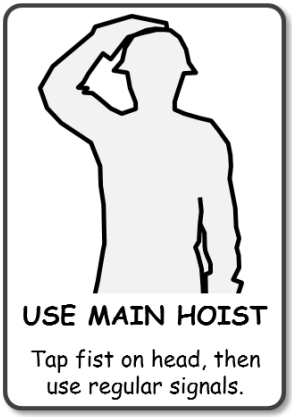

LOWER THE BOOM & RAISE THE LOAD
One handed: With arm extended, thumb pointed down, flex fingers in and out as long as load movement is desired.
or
Two handed: One arm extended, fingers closed, thumb pointing downward. Other arm vertical with forefinger pointing up, move arm in horizontal circles.

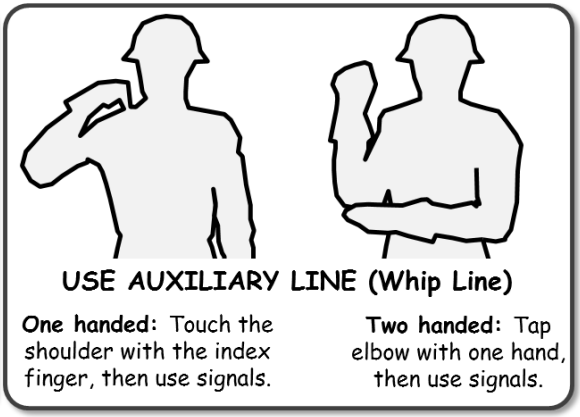

RAISE THE BOOM & LOWER THE LOAD
One handed: With arm extended, thumb pointed UP, flex fingers in and out as long as load movement is desired.
or
Two handed: One arm extended, fingers closed, thumb pointing upward. Other arm extended downward with forefinger pointing down, move arm in horizontal circles.


EXTEND BOOM (TELESCOPIC BOOMS)
One handed: One arm raised with only the first two fingers extended and splayed.
or
One handed: One fist in front of chest with thumb tapping chest.
or
Two handed: Both fists in front of body with thumbs pointing outward (can move hands back & forth)


RETRACT BOOM (TELESCOPIC BOOMS)
One handed: One arm lowered with only the first two fingers extended and splayed.
or
One handed: One fist in front of chest with thumb pointing outward and heal of fist tapping chest.
or
Two handed: Both fists in front of body with thumbs toward each other(can move hands back & forth).


Auxiliary Hoist Line (Whip Line)
Main Hoist
Auxiliary Hoist
Main Hoist Line

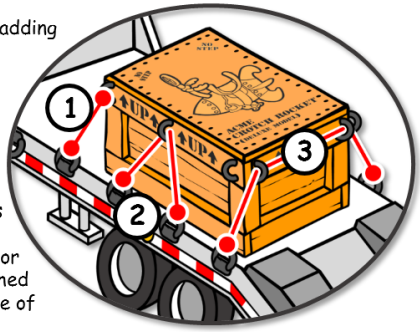

USE MAIN HOIST
Tap fist on head, then use regular signals.


USE AUXILIARY LINE (Whip Line)
One handed: Touch the shoulder with the index finger, then use signals.
Two handed: Tap elbow with one hand, then use signals.

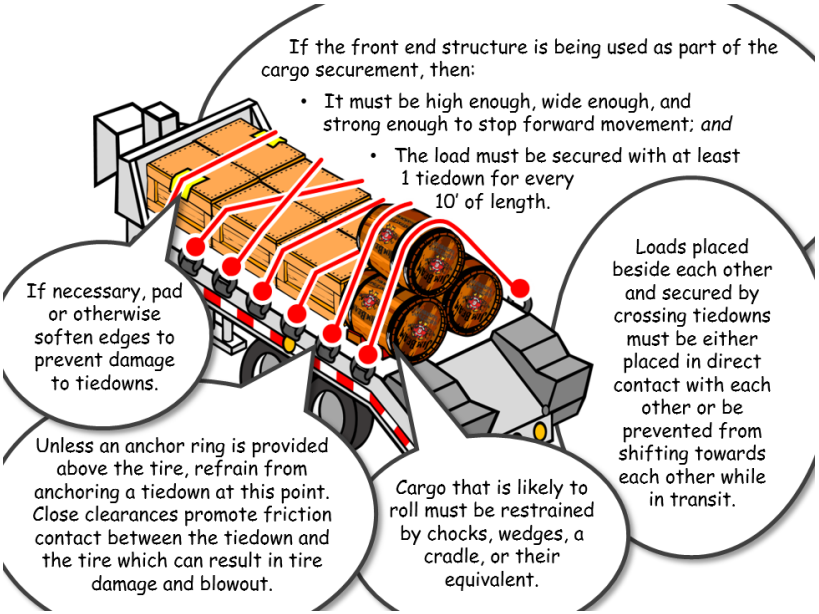
Load Securement

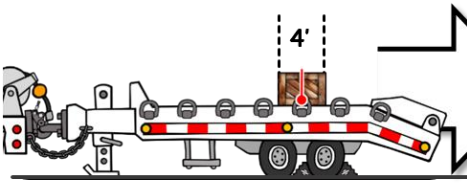
1. Before the vehicle is driven, the load must be properly distributed, adequately secured, and not obscure the driver's view.
2. Loads must be firmly secured using vehicle structures, dunnage, dunnage bags, shoring bars, tiedowns, or a combination of these.
3. The added total of the tiedowns WLL must be at least ½ of the load being secured.

The TOTAL WLL is determined by adding together:



1. ½ the WLL of each tiedown that goes from an anchor point on the vehicle to an anchor point on the load…
2. ½ the WLL of each tiedown that is attached to an anchor point on the vehicle, passes through, over, or around the load, and is then attached to an anchor point on the same side of the vehicle…
3. The WLL of each tiedown that goes from an anchor point on the vehicle, through, over, or around the load, and then attaches to another point on the other side of the vehicle.



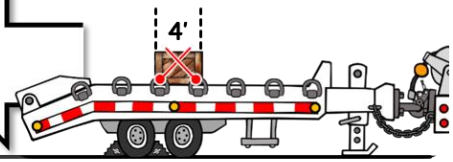


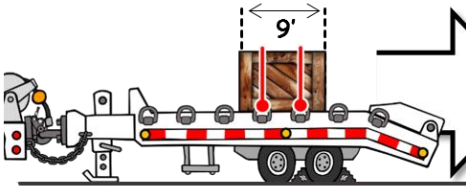
1 tiedown required for loads:

- **Less than 5'** in length; *and*
- **1100 lbs or less** in weight

2 tiedowns required for loads:

- **Less than 5'** in length; *and*
- **More than 1100 lbs** in weight



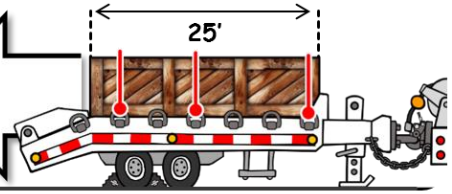


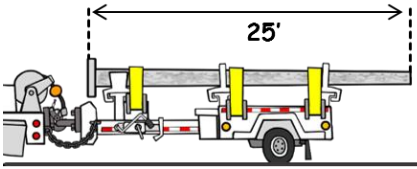
2 tiedowns required for loads:

- **Longer than 5' but shorter than 10'** in length; *and*
- Irrespective of weight

2 tiedowns required for loads:

- **Longer than 10'**; *and*
- **+1 tiedown** for every 10' of load length or fraction thereof



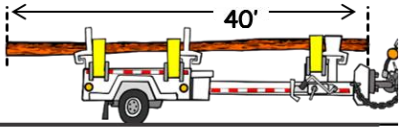


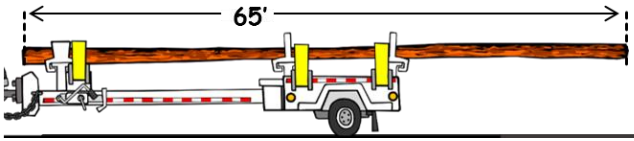
A 25' pole on a pole trailer outfitted with 3 tiedowns

- Use all the tiedowns. You'll be covered by both the '10 foot rule' and by using all the manufacturer's load securement hardware DESIGNED for that trailer.

A 40' load would normally require 4 tiedowns but the trailer is designed to accept a 40' pole and is outfitted with 3 tiedowns.

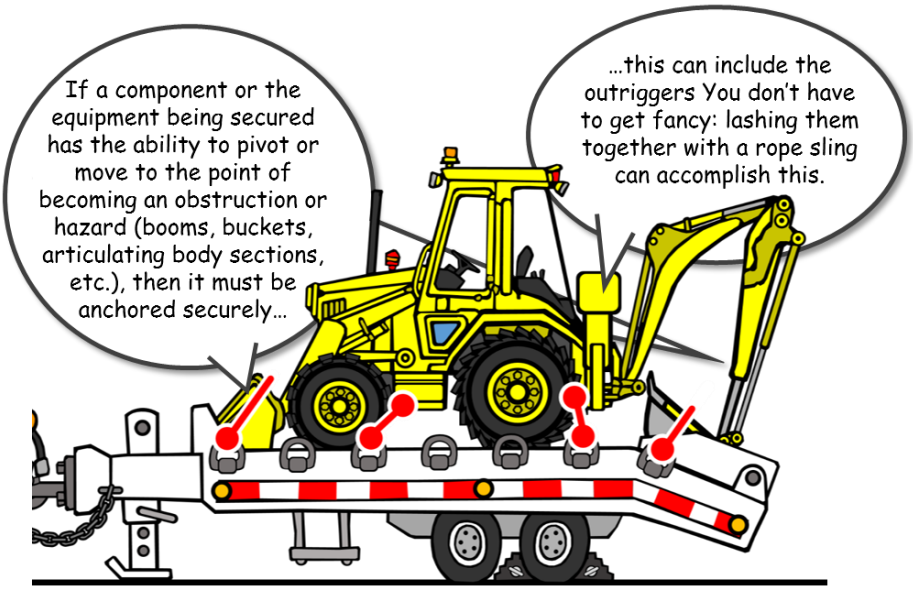
- As long as these 3 tiedowns **'securely and adequately'** anchor the load, then you're golden .



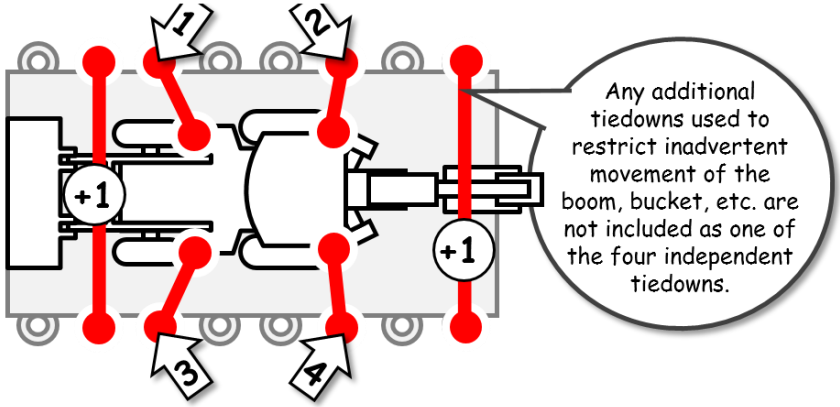


The same applies to longer poles AS LONG AS THAT TRAILER IS DESIGNED TO SUPPORT / HAUL IT.

4. For heavy vehicles, equipment and machinery which operate on wheels or tracks, such as front-end loaders, bulldozers, tractors, and power shovels and which individually weigh 10,000 lb. or more:



Vehicles, equipment, and machinery are required to have no less than 4 independent tiedowns in order to restrict movement as much as possible. NO REEVING OF THE TIEDOWNS IS PERMITTED.



EXCAVATION, TRENCHING, SHORING

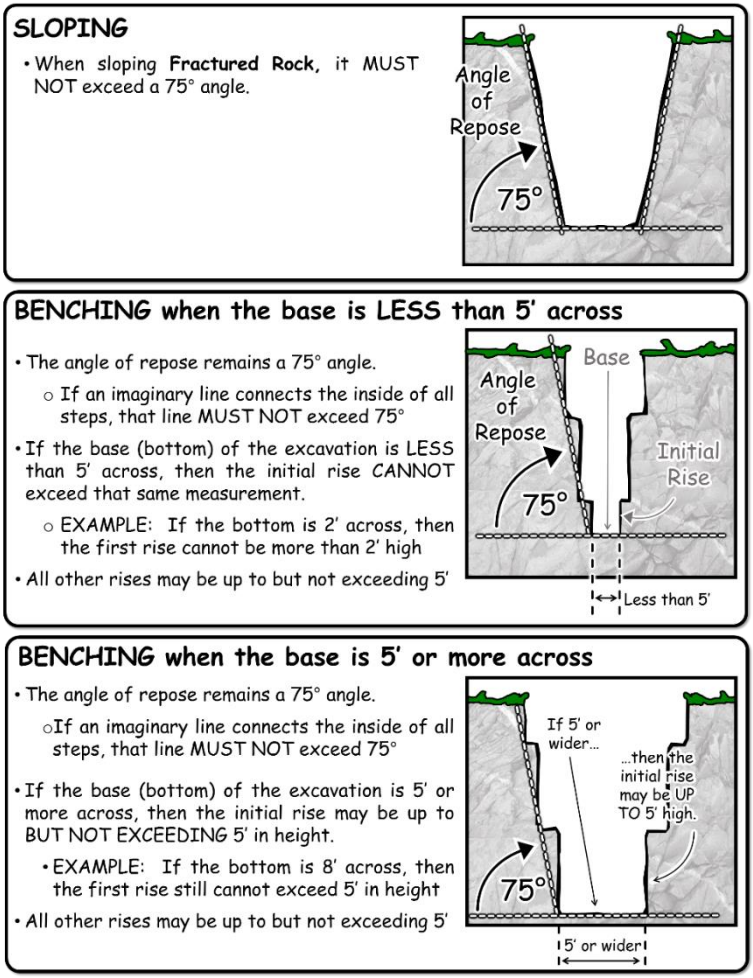
General

1. The qualified/competent person shall perform a daily inspection of potential cave-ins as well as the ongoing integrity of any protective system installed.
2. No employees shall enter any excavation or trench when hazardous conditions exist.
3. Throughout the workday, an excavation / trench shall be inspected for:
    a. Traffic / vibration;
    b. Soil Conditions / presence of fissures, cracks, running soil;
    c. Surface and ground water / water table;
    d. Both overhead and underground utilities;
    e. Weather conditions; and
    f. Protection of an open excavation / trench.
4. If excavating more than a depth of 20 Feet, you must have a site specific engineered shoring design from a registered engineer before commencing work, make sure to contact your Super/GF
5. Spoils piles must be placed *at least* 2' back from the edge of the excavation/trench.
6. All employees working in excavations or trenches must always remain within the protective system.
7. Water must be prevented from accumulating or must be removed prior to allowing employees to enter the excavation/trench.
8. Workers in excavations must maintain a 3-foot horizontal clearance from any actual or potential overhead hanging or suspended obstruction which could pose a struck-by hazard.
9. When active work is not in progress or crews not onsite, excavations, trenches, and holes shall be guarded or covered. Stationary excavations are to be guarded with barriers/barricades placed at least 6' back from the leading edge.

10. Refer to *'Guarding of Walking Work Areas'* regarding the protection of holes.

Benching & Sloping Guide

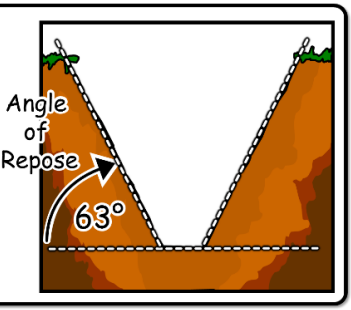
1. **Fractured Rock:**
   - **a.** 1/4: 1 Slope. This is equivalent to approximately 75°.
   - **b.** Fractured Rock may be sloped or benched.



2. **Stiff Soil:**
    a. A minimum penetrometer reading of 2.5 tsf
    b. 1/2 : 1 Slope. This is equivalent to approximately 63°.
    c. Stiff Soil may be sloped or benched.

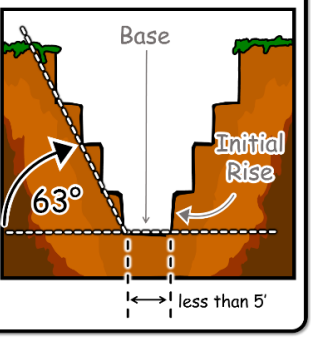
SLOPING

- When sloping **Stiff Soil**, it MUST NOT exceed a 63° angle.



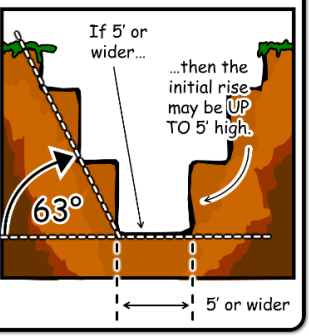
BENCHING when the base is LESS than 5' across

- The angle of repose remains a 63° angle.
    - If an imaginary line connects the inside of all steps, that line MUST NOT exceed 63°
- If the base (bottom) of the excavation is LESS than 5' across, then the initial rise CANNOT exceed that same measurement.
    - EXAMPLE: If the bottom is 2' across, then the first rise cannot be more than 2' high
- All other rises may be up to but not exceeding 5'



BENCHING when the base is 5' or more across

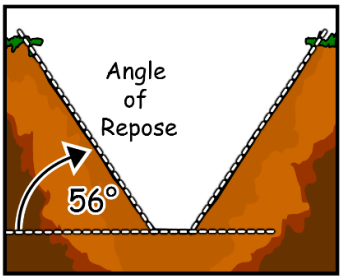
- The angle of repose remains a 63° angle.
    - If an imaginary line connects the inside of all steps, that line MUST NOT exceed 63°
- If the base (bottom) of the excavation is 5' or more across, then the initial rise may be up to BUT NOT EXCEEDING 5' in height.
    - EXAMPLE: If the bottom is 8' across, then the first rise still cannot exceed 5' in height
- All other rises may be up to but not exceeding 5'



3. **Firm Soil** 12' OR LESS IN DEPTH:
    a. A minimum penetrometer reading of 1.5 tsf
    b. 2/3 : 1 Slope. This is equivalent to approximately 56°.
    c. Firm Soil may be sloped or benched.

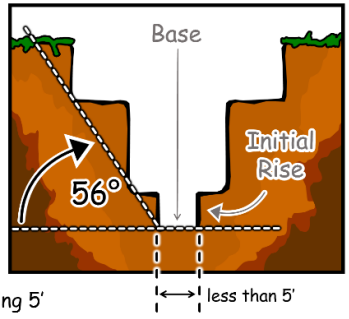
SLOPING

- When sloping **Firm Soil 12' or less in depth**, it MUST NOT exceed a 56° angle.



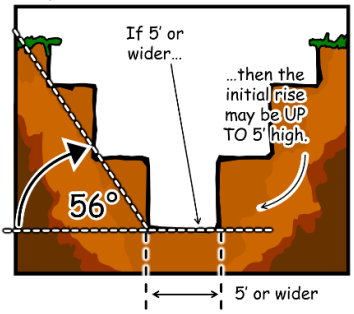
BENCHING when the base is LESS than 5' across

- The angle of repose remains a 56° angle.
    - If an imaginary line connects the inside of all steps, that line MUST NOT exceed 56°
- If the base (bottom) of the excavation is LESS than 5' across, then the initial rise CANNOT exceed that same measurement.
    - EXAMPLE: If the bottom is 2' across, then the first rise cannot be more than 2' high
- All other rises may be up to but not exceeding 5'



BENCHING when the base is 5' or more across

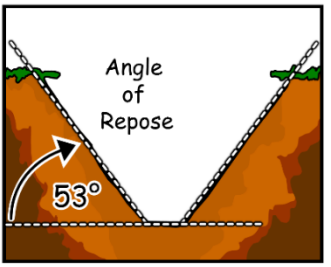
- The angle of repose remains a 56° angle.
    - If an imaginary line connects the inside of all steps, that line MUST NOT exceed 56°
- If the base (bottom) of the excavation is 5' or more across, then the initial rise may be up to BUT NOT EXCEEDING 5' in height.
    - EXAMPLE: If the bottom is 8' across, then the first rise still cannot exceed 5' in height
- All other rises may be up to but not exceeding 5'



4. **Firm Soil** GREATER THAN 12' IN DEPTH:
    - **a.** A minimum penetrometer reading of 1.5 tsf
    - **b.** 3/4 : 1 Slope. This is equivalent to approximately 53°.
    - **c.** Firm Soil may be sloped or benched.

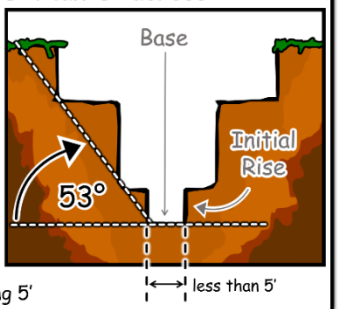
SLOPING

- When sloping **Firm Soil greater than 12' in depth,** it MUST NOT exceed a 53° angle.



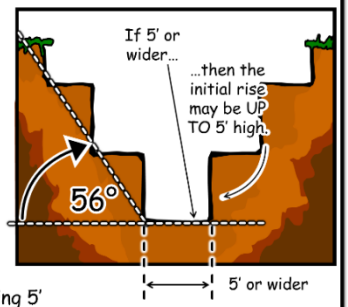
BENCHING when the base is LESS than 5' across

- The angle of repose remains a 53° angle.
    - If an imaginary line connects the inside of all steps, that line MUST NOT exceed 53°
- If the base (bottom) of the excavation is LESS than 5' across, then the initial rise CANNOT exceed that same measurement.
    - EXAMPLE: If the bottom is 2' across, then the first rise cannot be more than 2' high
- All other rises may be up to but not exceeding 5'



BENCHING when the base is 5' or more across

- The angle of repose remains a 53° angle.
    - If an imaginary line connects the inside of all steps, that line MUST NOT exceed 53°
- If the base (bottom) of the excavation is 5' or more across, then the initial rise may be up to BUT NOT EXCEEDING 5' in height.
    - EXAMPLE: If the bottom is 8' across, then the first rise still cannot exceed 5' in height
- All other rises may be up to but not exceeding 5'

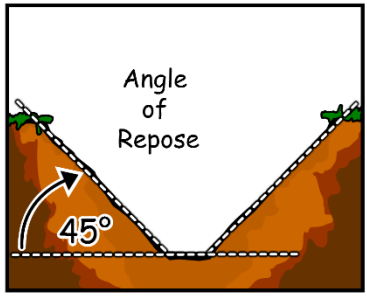


5. Medium Soil – Dry (OSHA Type B):

- **d.** Consists of dry granular soils: dry sand, clay fill, dry sand & clay (loam) mixtures, medium clay.
- **e.** A minimum penetrometer reading of 1.0 tsf
- **f.** 1 : 1 Slope. This is equivalent to approximately 45°.
- **g.** Medium Soil MAY NOT BE benched.

SLOPING ONLY

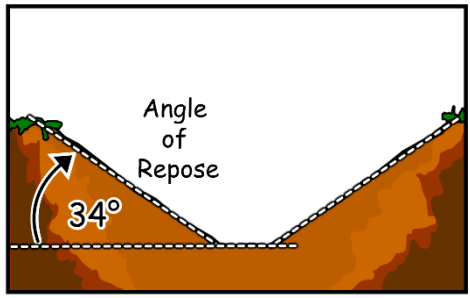
- When sloping **Medium Soil (dry),** it MUST NOT exceed a 45° angle.
- Benching IS NOT PERMITTED.
- This soil MUST be cohesive. If it is wet, then it cannot be considered cohesive. It must be de-rated to the next worse soil condition.



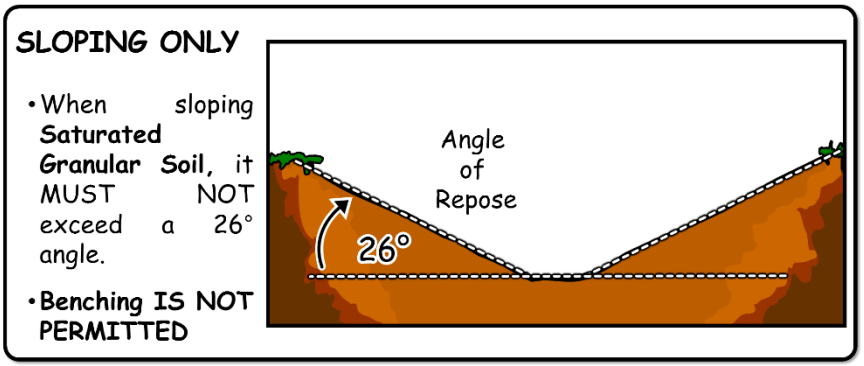
1. **Medium Soil** – Wet (OSHA Type C):
   - **a.** Consists of wet granular soils: rubble or trash fill; firm or medium clays with running sand seams.
   - **b.** 1-1/2 : 1 Slope. This is equivalent to approximately 34°.
   - **c.** Medium Soil **MAY NOT BE** benched.

SLOPING ONLY

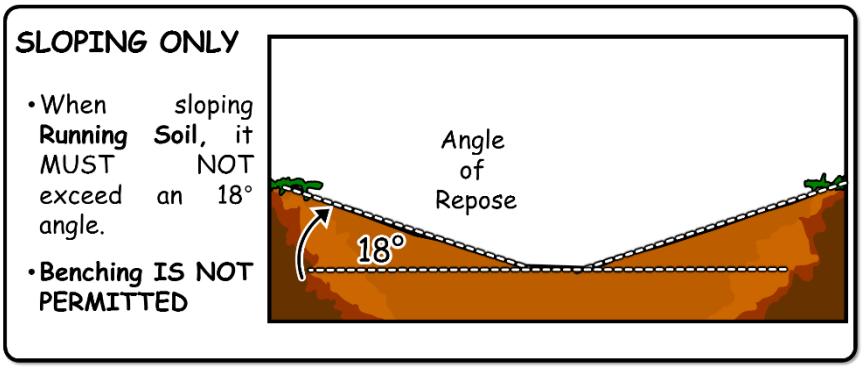
- When sloping **Medium Soil (wet),** it MUST NOT exceed a 34° angle.
- Benching IS NOT PERMITTED.



2. **Saturated Granular Soil:**
   - **a.** Consists primarily of soft clays.
   - **b.** A penetrometer reading of less than 1.0 tsf
   - **c.** 2 : 1 Slope. This is equivalent to approximately 26°.
   - **d.** Saturated Granular Soil **MAY NOT BE** benched.

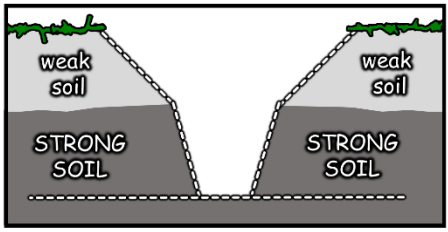


3. **Running Soil**:
   - **a.** Primarily sand or clay.
   - **b.** 3 : 1 Slope. This is equivalent to approximately 18°.
   - **c.** Running Soil **MAY NOT BE** benched.

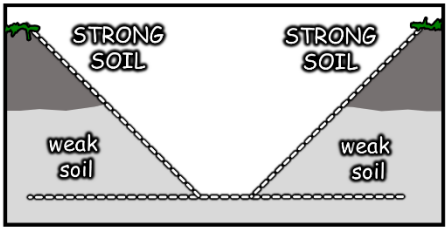


4. Layered Soils:

- If the top layer is a weaker soil type while the bottom layer is a stronger soil type, then both layers may be sloped based on their classifications.



- If the top layer is a stronger soil type while the bottom layer is a weaker soil type, then BOTH layers MUST be sloped based on the WEAKER CLASSIFICATION.



4, 5, 6 Rule

1. Starting at a depth of 4' (and only if workers are expected to be in the excavation/ trench):
   - **a.** A Trenching Log must be documented prior to any workers entering the excavation/trench; *and*
   - **b.** A ladder or ramp must be provided every 25' lateral feet of the excavation/trench to provide workers with a means of entering & exiting.
2. Starting at a depth of 5':
   - **a.** Excavations and trenches shall only be entered by workers trained in Excavation, Trenching, and Shoring; and
   - **b.** All excavations and trenches shall have a protective system installed (benching, sloping, shoring, box, shield, etc.).
     - **i.** Any excavation or trench less than 5' in depth and showing any signs of failure MUST ALSO have a protective system installed (benching, sloping, shoring, box, shield, etc.).

3. Starting at a depth of 6':
    a. Fall Protection may be required.
        i. As long as Roseville workers know of the excavation and it is visible to Roseville workers, then fall protection is not mandatory.
        ii. If other contractors, public pedestrians, etc. are exposed to potential fall hazards, then Roseville workers are to effectively mark the excavation with cones, barrels, tape, rope, etc. located 6' from the leading edge.

Underground Damage Prevention (Miss Dig)

1. Measures to prevent underground utility contact/damage shall be taken when conducting any type of excavation and/or trenching procedures. This may include but not be limited to hand-digging, tic tracing, landowner consultation, etc.
2. Underground Damage Prevention (Miss Dig 811) will then be contacted to create a valid Miss Dig ticket before any digging/excavation work is conducted. (Missdig811.org or call 811)
    a. MISS DIG must be contacted at least 72 hours in advance but not more than 14 days of breaking ground;
    b. Once a ticket has been submitted, Miss Dig has 3 business days to process the request before a valid start date;
    c. After the valid start date, the 21-day ticket life will begin;
    d. Contractors MUST excavate within the first 14 days of the ticket's life to be valid. If digging does not start until past the 14 days, the ticket is considered invalid and a new ticket must be placed;
    e. The MISS DIG ticket is only valid for 21 days, after which another ticket must be secured.
3. MISS DIG Positive Response shall be checked and verified that all utilities have responded and cleared the ticket prior to any mechanical excavation being conducted on site.
    a. Only if all utilities responded with clear codes. Common codes that are used for cleared utilities are 001, 002, 004, 010. Roseville employees can then be permitted to proceed with mechanical

excavation unless evidence (e.g., phone pedestals, manholes, electrical risers, etc.) indicate otherwise;

b. If any utilities respond with codes 000, 003, 999, the ticket is not valid until those remaining utilities respond with a clear code.

Positive Response Codes from MissDig811.org (10/2021)

Positive Response Codes Based on Ticket Type & Status

The Pelican system requires use of comments with every Positive Response code.

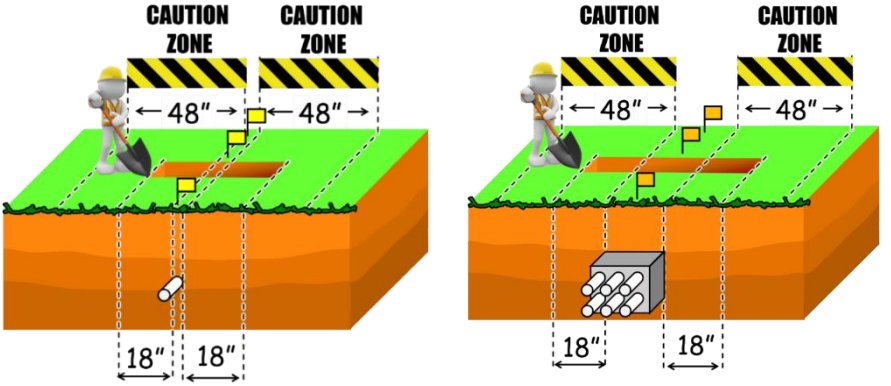
Normal 21-Day, Project 21-Day, Normal 180-Day, Project 180-Day, Short Notice, Emergency, Unmarked Facilities, Additional Assistance, and Destroyed Markings	
001 – NO CONFLICT	Dig with caution following PA 174 requirements: Facility is outside of stated area/scope of excavation.
002 – MARKED	Dig with caution following PA 174 requirements: Facilities have been marked.
003 – NOT COMPLETE	Do NOT dig: Locating was not completed because more time is needed; coordination or assistance required to complete the locating of the facility.
004 – MARKED, UTILITY REQUIRED ON-SITE DURING EXCAVATION	Dig with caution following PA 174 requirements: Facility owner/operator required to be on-site when excavating within noted scope of work for this specific facility.

Auto-Responses (System-Generated): Normal 21-Day, Project 21-Day, Normal 180-Day, Project 180-Day, Short Notice, Emergency, Unmarked Facilities, Additional Assistance, and Destroyed Markings	
000 – RESPONSE PENDING	Do not dig: Legal start date and time has not started. This is a system-generated response.
010 – EXEMPT FROM MARKING	Dig with caution following PA 174 requirements: As defined in PA 174 Section 460.727 Sec. 7 (9. This is a system-generated response.
999 – HAS NOT RESPONDED	Do not dig: Facility owner/operator did not provide a response by the response due date and time. Retransmit ticket for unmarked facilities. This is a system-generated response.

4. If any excavation is to occur within 48” of the utility markings, then employees must hand dig to expose the marked utility.

a. Excavations running parallel to the underground utility shall require employees to hand dig test holes at intervals as often as reasonably necessary to establish the precise location of the utility.

5. Mechanized excavation may only commence once the location of the underground utility has been located (hand exposed).
   a. Hand exposing must be conducted by hand tools and extending to at least 18" on both sides of the facility.



6. Support or bracing of utilities shall be provided that is reasonably necessary to prevent damage to the exposed utilities. Examples are provided in the Trenching Log.
7. Any actual or suspected damage that Roseville Crushed may have caused to any underground utility must be immediately reported to the Supervisor, Safety Manager, or Senior Safety Specialist.
   a. No attempts shall be made to conceal any damage that may have been imposed on underground utilities.
8. In the event of an underground utility contact, Roseville employees shall take all reasonable measures to protect the public and the environment until the utility owner or emergency responders have arrived to take control of the site.

Retransmits

1. The Utility Owner shall be contacted and has **3 hours to respond (Additional Assistance or Unmarked Facilities)** if Roseville employees identify any of the following conditions on a site:
   a. Location of marked utility cannot be determined;
   b. Visible evidence of utility even though there are no visible markings;

c. Lack of a POSITIVE RESPONSE;
d. POSITIVE RESPONSE states the presence of a utility but there are no visible signs;
e. If excavation reveals the presence of an un-marked utility.

2. The Utility Owner shall be contacted and has **24 hours to respond (Damaged Markings)** if Roseville employees identify any of the following conditions on a site:
a. Previous marks are covered or destroyed.

3. The Utility Owner shall be contacted directly and is required to **respond promptly** if Roseville employees:
a. Report the utility as having sustained any actual or potential damage.

FALL PROTECTION

General

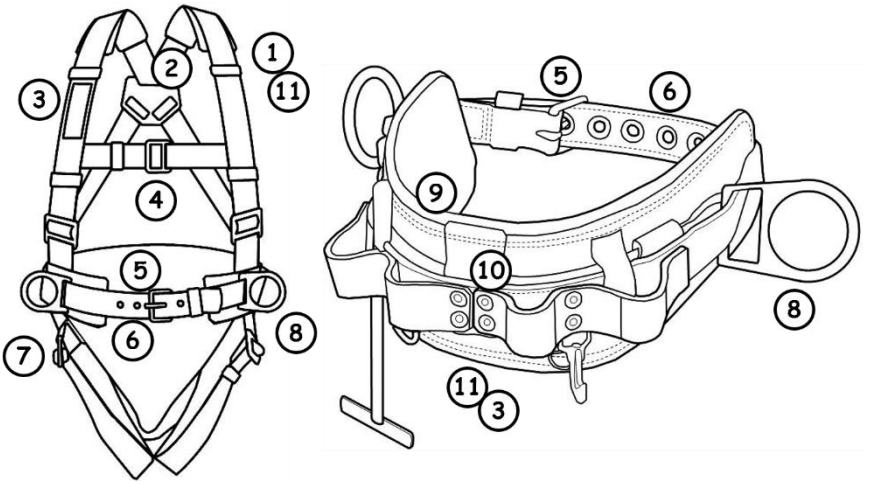
1. Fall protection may include any of the following or a combination of the following: guardrail system, safety net system, personal fall arrest system, tether system.
a. Any employee performing work 6' or more above ground or lower levels shall employ a method of fall protection.
b. Any employee who is working with 6' of an unprotected edge (such as a rooftop) that is 6' above the ground or lower level shall employ fall protection.
i. Unless working on scaffolding, the requirement is 10' or more to the lower level.

2. Workers climbing wood pole structures shall utilize 100% fall protection using a positive fall restraint device (Bashlin Lariat, Buck squeeze, etc.) in addition to the worker's buck strap.

3. Fall arrest shall be attached as to prevent a free fall more than 6'.
a. Fall arrest systems/methods must be attached to a point capable of supporting a static load no less than 5000 lbs.

4. Fall restraint shall be attached to prevent a free fall more than 2'.

a. Fall restraint systems/methods must be attached to a point capable of supporting a static load no less than 3000 lbs.



5. All forms of fall protection shall be inspected prior to use. Inspection shall be documented monthly (like a fire extinguisher) on the manufacturer's inspection tag. Inspect the following:

① *Webbing*

Grasp the webbing with your hands 6 to 8 inches apart. Bend the webbing in an inverted "U". The resulting surface tension makes damaged fibers or cuts easier to see. Follow this procedure for the entire length of the webbing, inspecting both sides of each strap. Watch for:

- *Heat Damage:* Webbing becomes brittle and has a shriveled, brownish appearance once exposed to extreme heat. Fibers will break when flexed.
- *Chemical Damage:* The webbing may change in color usually appearing as a brownish smear or smudge. It will lose its elasticity and cracks will result when it is bent over a mandrel.
- *Molten Metal or Flame Damage:* Webbing strands become fused together. It will have a hard brittle feel while exhibiting hard shiny spots.

- *Paint and Solvent Damage:* When paint penetrates and dries within the webbing strands, it restricts the flexibility and movement of the fibers. Drying agents and solvents in some paints cause chemical damage.

② *D-Ring & Back Pads*

Back pads should not be cracked, broken, or otherwise damaged. If so, this may be evidence that the harness was load impacted. Also, ensure that the harness webbing is weaved THROUGH the base of the D-Ring.

③ *Manufacturer's Label*

All life-rated equipment should have a legible and current manufacturer's label.

④ *Attaching Buckles*

Attachments of buckles and D-rings should be given special attention. Note any unusual wear, frayed, or cut fibers, or distortion of the buckles or D-rings.

⑤ *Tongue Buckle*

Buckle tongues should be free of distortion in shape and motion. They should overlap the buckle frame and move freely back and forth in their socket. The roller should turn freely on the frame. Be sure to check for any distortion or sharp edges.

⑥ *The Tongue & Grommets*

The tongue receives heavy wear from repeated buckling and unbuckling. Inspect for loose, distorted, elongated, or broken grommets – all of which may be indicative of load impacting. The webbing does not to have any additional punched holes.

⑦ *Friction & Mating Buckles*

Inspect for distortion. The outer bars and center bars must be straight. Pay special attention to corners and attachment points of the center bar.

⑧ *D-rings*

Check D-rings for distortion, twists, elongation, cracks, breaks, corrosion, gouges, wear, and rough or sharp edges. D-rings should pivot freely. Inspect to ensure that the harness webbing is weaved THROUGH the base of the D-ring.

⑨ *Leather*

For any leather components, check for dry-rot, cracking, cuts, rot, wear, heat damage, chemical damage, and alterations that may compromise the integrity of the belt. Pay close attention to the leather at junction points: where the leather is used to anchor load-bearing hardware.

⑩ *Metal Components*

(Such as riveting and attachment rings.) Check for distortion, elongation, cracks, breaks, corrosion, gouges, wear, and rough or sharp edges.

⑪ *Stitching*

Stitching SHOULD NOT be popped or frayed. Stitching is what holds you in the harness. If it becomes compromised, you become compromised. Be sure to check stitching for all the same defect characteristics listed under *Webbing.*

6. Snap hooks shall be of the double locking style.

a. Never connect snap hooks to fiber D-Rings of body harnesses. Fiber D-Rings are intended to have a specially designed lanyard choked around it.

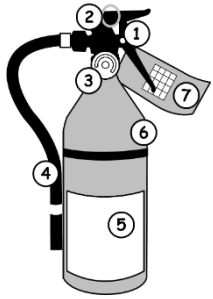
b. Never attach a snap hook to an incompatible D-Ring.

c. Do not connect snap hooks together.

FIRE PROTECTION & PREVENTION

General

1. Plastic fuel containers are not permitted. Fuel containers must be either Type I or Type II safety cans.
   a. Fuel container labels must be legible.
   b. Diesel, oil, gasoline, etc. shall be stored, transported, and used in approved and properly labeled containers only.
   c. No employee is permitted to use flammable solvents in an open container. Flammables must be stored and handled in approved safety containers.
2. Fire extinguishers, sprinklers, or fire exits are not to be blocked by supplies, stock, or parts at any time.
3. Fire extinguishers must be securely anchored to prevent inadvertent movement and subsequent accidental discharge.
4. Fire extinguishers must be regularly inspected to ensure the safety pin is intact and secure. This inspection must be documented on the inspection tag every month.



① *Handle / Trigger*
Are to be aligned correctly so that when an emergency happens, the handle will work properly.

② *Safety Pin*
The pin and tamper seal (if so equipped) are intact. Never replace the missing tie with a zip tie. A zip tie requires 20-50 lbs. of pressure to break. If necessary, utilize a rubber band instead.

③ *Indicator*
Is to be in the green zone – not too high, not too low. Fire extinguishers are intended for one time use only. If the handle and trigger are ever squeezed, this breaks the pressure seal. Once broken, this seal will continue to leak which usually results in a complete loss of pressure within 24 hrs.

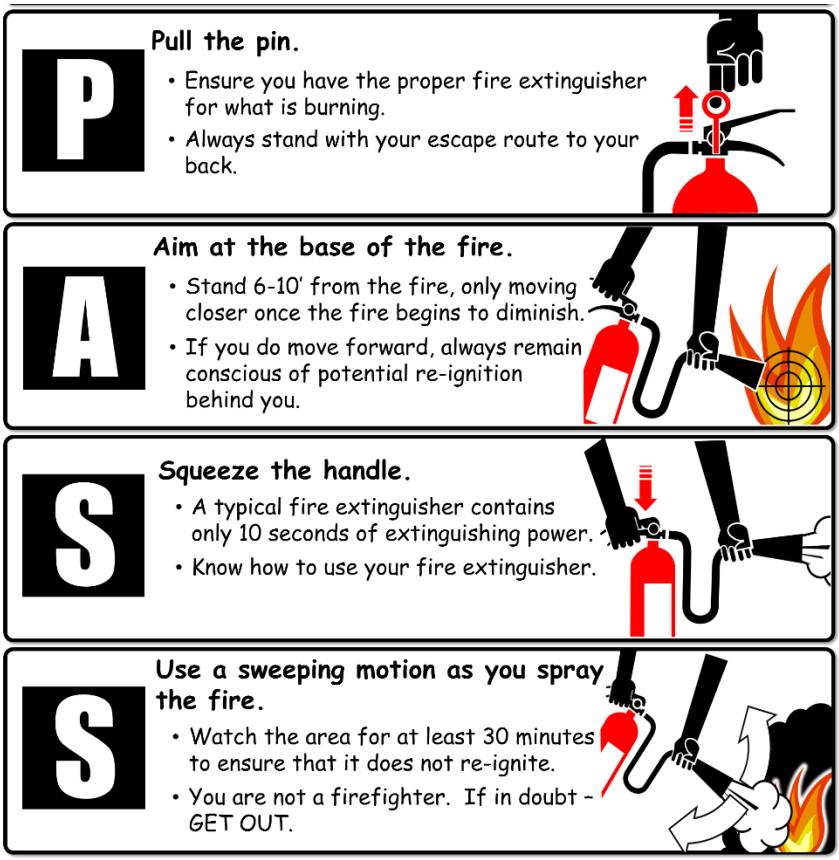
④ *Hose and/or Nozzle*
Should be clear of obstructions and free of cracks. If stored outside or in vehicles, ensure that insects, spiders, bees, or mice have not plugged the hose with nests and debris.

⑤ *Label*
A legible label is required to determine if the correct extinguisher is being used on the fire. It is vital to know what type of extinguisher is being used. Using the wrong extinguishing agent on a fire may result in a violent reaction.

⑥ *Tank*
There are no dents, leaks, rust, chemical deposits, or other signs of abuse/wear.

⑦ *Inspection Tag*
Is to be dated and initialed after each monthly inspection. Annual certifications are required for all fire extinguishers in buildings.

5. How to fight a fire safely:



6. Characteristics of a fire that CAN BE EXTINGUISHED using a portable fire extinguisher:

- **a.** The fire is limited to the original materials ignited;
  - i. A spreading fire can double in size within 30 seconds.
- **b.** It is contained in a wastebasket or other receptacle;
- **c.** The flames are no higher than the worker's head;
- **d.** Heat is being generated but the room temperature is only slightly increased;

e. Smoke may be accumulated on the ceiling, but visibility is good;
f. There is a clear evacuation path behind the worker as he/she uses the extinguisher.

7. Characteristics of a fire that CANNOT BE EXTINSUISHED using a portable fire extinguisher:
a. The fire involves flammable solvents and has spread over more than 60ft^2;
b. It cannot be reached from a standing position;
c. It is partially hidden behind a wall or ceiling;
d. The fire cannot be fought without respiratory protection;
e. The radiated heat is easily felt on exposed skin making it difficult to approach to within 10-15' of the fire;
f. Smoke is filling the room very quickly, decreasing visibility;
g. Fire, heat, or smoke may block an evacuation path.

GUARDING OF WALKING & WORK AREAS

General

1. Employees are to ensure that aisle ways, walkways, and roads are kept free of materials, equipment, and debris.
a. Walkways entering and exiting the work site are to remain obstruction free and, if necessary, roped or barricaded off.
2. All employees are requested to walk – not run while they are in the work area.
3. Fall protection (barriers, barricades, etc.) shall be used where a walk or work area places a worker within 6' of a leading edge of a 6' elevation drop.
4. Unattended holes or openings shall be covered or barricaded to prevent injury or damage to both pedestrian and vehicular traffic.
a. Covers must be capable of supporting twice the anticipated weight.

b. Covers must be secured to prevent movement by weather, equipment, or employees.

c. Covers shall be labeled or marked with the word "HOLE" or "COVER". If it is impractical or infeasible to label the cover, then it shall be barricaded or marked with cones or barricade tape or both.

5. Whenever work is to be performed within 15' of a traveled public roadway, a traffic safety zone based on the Michigan Manual of Traffic Control Devices shall be established.

HAZARD COMMUNICATION

General

1. A copy of the Company's Right to Know / Hazard Communication Program must be readily available to all employees present at each jobsite.

a. Workers are required to know the location of the Safety Data Sheets as well as how to read and interpret them.

2. Flammable liquids and gases shall be separated from O_2 and combustible materials by at least 20' or by way of a fire barrier.

3. Storage and staging areas shall be clearly marked with appropriate signs.

4. Spill kits shall be made readily available on sites containing harmful materials.

5. Employees must know and understand:

a. The labeling system and to how to replace damaged labels; and

b. Where the SDS forms are located and how to read and interpret them.

6. All employees are responsible for ensuring that labels are maintained and legible and SDSs are received for all hazardous products.

a. When items are received by the warehouse manager and/or field personnel, the SDS should be submitted to the Safety Manager or Senior Safety Specialist to be uploaded into the electronic storage location online for all employees to access.

Labels

1. Labels must consist of the required signal words, pictograms, hazards statements and precautionary statements.
2. Manufacturers, importers, and distributors provide hazard information on each container label. If a hazardous substance is transferred to a smaller container, that container should have a label with the same information as the original container.

Safety Data Sheets

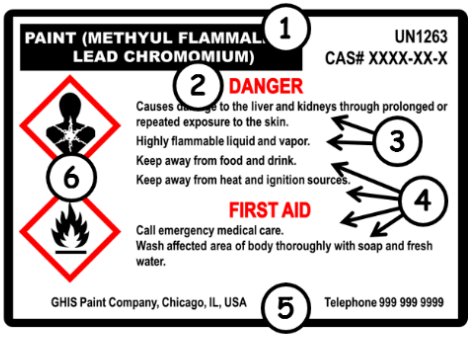
1. A Safety Data Sheet (SDS) is available for all chemicals in the workplace and includes information about what employees need to know to work safely with a product.
2. SDS information is stored at the main office and is available via the QR code reader.
3. Global Harmonizing System referenced below:



GHS Labeling

1. **Product Name or Identifiers.** Identifies the chemical or substance. Should match the product name or identifier used on the SDS.

2. **Indicates Relative Level of Hazard.** DANGER is used for most severe instances while WARNING is less severe.



3. **Hazard Statements.** Phrases that describe the nature of hazardous products and oftentimes the degree of hazard.

4. **Precautionary Statements.** Phrases associated with each hazard statement; describes general preventative, response, storage, or disposal precautions.

5. **Manufacturer Information.** Company name, address, and telephone number.

6. **Pictograms.** Conveys health, physical, and environmental hazard information with red diamond pictograms. May be a combination of 1 to 5 of the available 9 symbols:



Health Hazard: may be: carcinogen; mutagen; cause reproductive / target organ / aspiration toxicity; be a respiratory sensitizer



Flame Over Circle: oxidizers.



Flame: may be: flammable; pyrophoric, self-heating; emit flammable gas; self-reactive; organic peroxides.



Skull & Crossbones: acute toxicity.



Exclamation Mark: potential irritant; skin sensitizer, acute toxicity, narcotic effects, respiratory tract irritant



Exploding Bomb: potential explosive; self-reactive; organic peroxide.



Gas Cylinder: gases under pressure.



Corrosion: potential skin corrosive/burns; eye damage; corrosive to metals.



Environmental (non-mandatory): aquatic toxicity.

4. If an SDS is missing or a hazardous chemical is received without an SDS, employees must contact their supervisor immediately so a request may be submitted to the supplier.
5. The Hazard Coordinators (Safety Manager and Senior Safety Specialist) are responsible for obtaining and maintaining the safety data sheets for the company and ensuring that any new information is passed on to the affected employees.

Containers

1. All chemical containers must be labeled with at least the product name, warning, and manufacturer's address.
2. Diesel, oil, gasoline, etc. shall be stored, transported, and used in approved and properly labeled containers only.
3. No employee is permitted to use flammable solvents in an open container. Flammables must be stored and handled in approved safety containers.

Compressed Gas Cylinders

1. Compressed gas cylinders shall be stored in secured upright positions.
2. The cylinder cap shall be in place when the cylinder is not in use or when it is being moved.
3. Cylinders shall not be stored where they may be struck by vehicles, equipment, machines, etc.
4. Keep all cylinders away from electrical circuits, excessive heat, and sparks.

Lead & Asbestos

1. Roseville employees are not equipped to perform lead or asbestos installation or abatement work.
    a. They are not permitted to remove, handle, or dispose of such materials unless they have received the proper level of training.

b. If employees suspect the presence of lead or asbestos in their work zone, they are to contact their immediate supervisor or Safety Manager immediately.

2. For specific Roseville Hazard Communication, Lead and Asbestos policies, refer to the *Roseville Hazard Communication Program, Roseville Lead Management Program* and/or the *Roseville Asbestos Management Program*.

Silica

1. When working with hand or power tools on sand, stone, rock, concrete, brick, block, and mortar, measures must be taken to minimize or eliminate the creation of airborne silica dust. Methods of accomplishing this are one or a combination of the following:

a. Using a tool with an integrated water delivery system that continuously feeds water to the blade.

b. Using a tool with a commercially available shroud or cowling with a dust collection system.

c. Any other method approved of by the Senior Safety Specialist.

2. Employees shall use the following chart to mitigate the silica hazard based on the work to be performed:

Equipment / Task	***Engineering & Work Practice Control Methods***	***Req'd Resp Protection & Min Assigned Protection Factor (APF)***	
		≤ 4 hrs/shift	***≥ 4 hrs/shift***
(i) Stationary Masonry Saws	Use saw equipped with **integrated water delivery** system that continuously feeds water to the blade Operate and maintain tool in accordance with **manufacturer's instructions** to minimize dust emissions	none	none

Equipment / Task	*Engineering & Work Practice Control Methods*	*Req'd Resp Protection & Min Assigned Protection Factor (APF)*	
		≤ 4 hrs/shift	*≥ 4 hrs/shift*
(ii) Handheld Power Saws (any blade diameter)	Use saw equipped with **integrated water delivery** system that continuously feeds water to the blade Operate and maintain tool in accordance with **manufacturer's instructions** to minimize dust emissions	none	none
	- When used outdoors	none	none
	- When used indoors or in an enclosed area	APF 10	APF 10
(iii) Handheld Power Saws for cutting fiber-cement board (with blade diameter of 8" or less)	For tasks performed outdoors only: Use saw equipped with **commercially available dust collection system** Operate and maintain tool in accordance with **manufacturer's instructions** to minimize dust emissions Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency	none	none

Equipment / Task	*Engineering & Work Practice Control Methods*	*Req'd Resp Protection & Min Assigned Protection Factor (APF)*	
		≤ 4 hrs/shift	*≥ 4 hrs/shift*
(vii) Handheld & Stand-Mounted Drills (including impact and rotary hammerdrills)	Use drill equipped with commercially available shroud or cowling with **dust collection system** Operate and maintain tool in accordance with **manufacturer's instructions** to minimize dust emissions Dust collector must provide the air flow recommended by the tool manufacturer, or greater and have a filter with 99% or greater efficiency and a filter-cleaning mechanism Use a **HEPA**-filtered vacuum **when cleaning holes**	none	none
(x) Jackhammers and handheld powered chipping tools	Use tool with **water delivery system** that supplies a continuous stream or spray of water at the point of impact: - When used outdoors - When used indoors or in an enclosed area OR Use tool equipped with commercially available shroud and **dust collection system**. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism: - When used outdoors - When used indoors or in an enclosed area	none APF 10 none APF 10	APF 10 APF 10 APF 10 APF 10

LADDERS

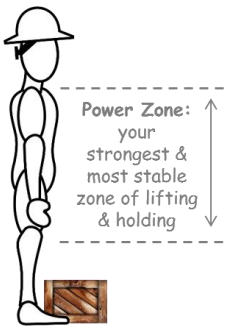
General

1. Ladders shall be used and inspected as per the manufacturer's recommendations.
2. Neither the ladder's weight capacity nor the ladder's traffic (occupancy) capacity shall be exceeded.
3. While ascending and descending, employees shall always maintain 3-point contact with the ladder.
4. Ladders shall be set up on a stable base or otherwise stabilized to ensure that they will not shift while a worker is climbing or working from it.
5. All ladders shall be nonconductive.
6. Extension ladders shall extend at least 3' above the surface that the worker intends to access.
7. Extension ladders shall be set up at a 75 ½° whenever possible (run/rise ratio of 1:4).
8. Step ladders shall not be used as straight ladders or extension ladders.
9. Extension ladders sections may only be separated if permitted by the manufacturer.
10. While working from a ladder, the employee shall
    a. Remain positioned so that the body is facing the ladder;
    b. Always keep their belt buckle and at least one shoulder between the ladder rails. This will contain the employee's center-of-gravity between the rails, preventing the ladder tipping over.

LIFTING (MANUAL LIFTING)

General

1. If it is necessary to move a heavy object along the floor, then push it, don't pull it. The human body can typically push twice as much weight as it can pull.
2. Use mechanical or co-worker assistance if available and when necessary.
3. Most back injuries are the result of improper lifting techniques; the largest injury exposure being when the body is extended over the load. Guidelines for safe lifting include:



Check housekeeping and terrain: ensure the walkway is clear and predetermine your travel path. Survey that path beforehand and mitigate all slip, trip, and fall hazards.



Snuggle up close to the load and take a wide stance. Bend at the knees, not the waist. Bend down with the knees and straddle the load to be lifted.



Get a firm grasp on the load; wearing gloves may cause slippage – use your best judgement. Pull it in close, tuck the pelvis under, and firm up the stomach muscles just before the lift. Hug the object close to the body, take a breath, and…



Push with the leg muscles while keeping the back straight and looking forward. Breathe out while performing a smooth, fluid lift of the load. Don't jerk – you could suffer a moderate to serious strain.



Never twist the body while lifting; pivot the feet and rotate the body as a whole when necessary. Keep the body 'squared-off' with the load, maintaining the heaviest part of the load against your body.



Keep the back straight while walking with the load. Ensure others can see you and you can see them. Again, do not twist: pivot the feet to rotate the body when necessary.

When landing the load, maintain the fundamentals: keep the back straight; bend at the knees, NEVER twist at the waist, and keep the load within your Power Zone. Let gravity do the work – and be sure to keep your fingers out of any pinch points.

LIFTING & RIGGING

General

1. All rigging & lifting equipment and hardware shall be inspected prior to use. Any equipment or hardware showing damage that is deemed unsafe to its use shall be immediately removed from service for repair, replacement, or destruction.
2. Never exceed the WLL of the hardware/equipment or use hardware/equipment outside the manufacturer's recommendations.
3. Wire Rope Clips SHALL NEVER be used in any rigging & lifting applications.

4. *Utility Rated* (rigging & lifting) components shall not be used for employee fall protection.
5. All operators must perform all machine operations within the manufacturer's recommended operating and safety parameters as detailed in the equipment's Owner's Operator's Manual (OOM) and the associated load chart.
6. Employees shall remain constantly alert when working around heavy equipment. The operator cannot be expected to always maintain visual contact with personnel within the immediate proximity of the equipment or its attachments.
7. All operators shall be qualified with the equipment for which they are operating.
8. All operators shall know, within reasonable expectation, the NET weight of the load to be picked.
9. Loads not exceeding 75% of the crane's lift capacity do not require a Critical Lift Plan.
    a. Loads at 75% or more of the crane's lift capacity shall have a Critical Lift Plan documented and approved by a Competent Person prior to picking.
10. When using a crane, the counterweight swing zone shall be barricaded if it poses a potential crushing injury to ground workers.
11. Outrigger pads shall be used beneath float pads.
12. Operators not qualified in Electrical Safety (refer to Part 16) MUST maintain a minimum distance of 20' between any portion of the crane/digger (this includes winch line and load) and any potentially energized conductors/components.
13. When working within proximity of any energized conductors/components:
    a. The machine shall be either electrically grounded or barricaded; *and*
    b. A Ground Monitor must be present to ensure adequate clearance between the equipment/ components (including winch line and rigging) and potentially energized conductors/

components. The Ground Monitor's shall have no other job during the lift that could interfere with his/her observations.

14. If a vehicle/equipment is required to be electrically grounded, then all electrically grounded vehicles/equipment on the job site should be electrically bonded together to prevent workers from making 2 differing points of electrical contact.

15. When a signalperson is used, there shall be only one person giving instructions to the machine operator. However, ANYONE may give an "ALL STOP" signal.

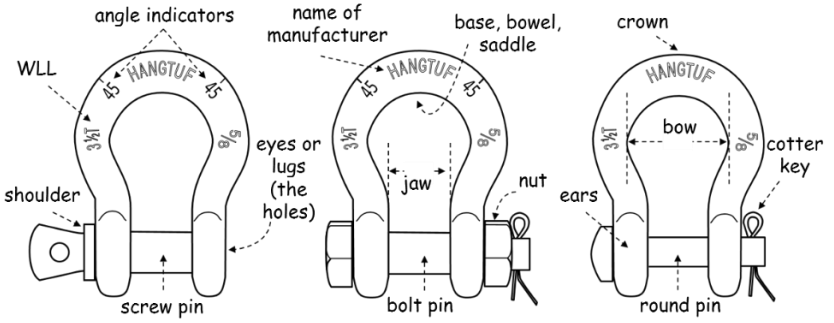
a. For Hand Signals, refer to *Equipment, Vehicles, & Machinery.*

16. In the absence of manufacturer specific instructions, a load lift shall be postponed if wind/gust speeds are in the range of 15-20mph. Above 20mph, the lift is to be canceled.

17. Employees shall never pass beneath a suspended load.

Shackles

1. Round pin shackles SHALL NEVER be used in any lifting applications. Round pin shackles are hardware construction materials intended for direct in-line pulls ONLY.

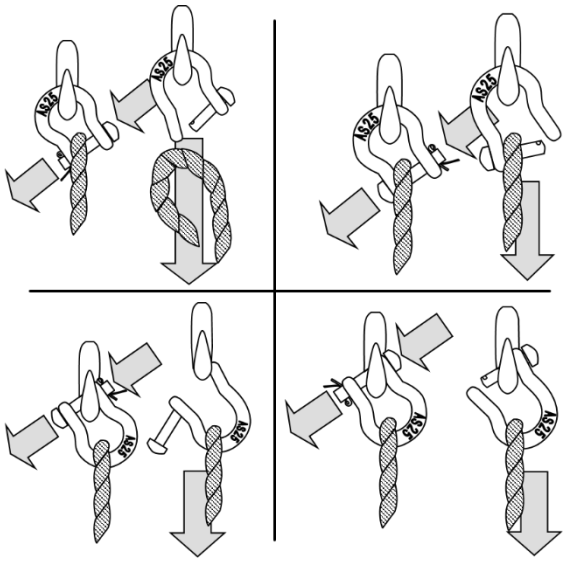


Screw Pin Shackle: Good for lifting applications. Allows for quick & easy removal. Under certain conditions, the pin can back out under load – may require 'mousing'.

Bolt Pin *or* Safety Shackle: Good for lifting. Most secure due to both pin and nut securing pin. Usually for permanent or semi-permanent applications due to labor of pin removal.

Round Pin Shackle: NOT FOR LIFTING due to the fact that only a cotter key is used to secure pin. Any significant side pressure will induce key failure and pin dislodgement.

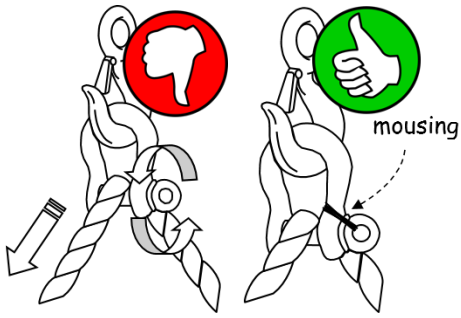
Since the Roundpin Shackle only has a cotter key securing the pin in place, then no matter how the shackle is rigged, the load can always potentially shift and exert full pressure on the key. The key IS NOT designed to keep the pin in place under any side pressures. The result is that the cotter key will deform and dislodge, allowing the ears to spread, and – ultimately – loss of the load.



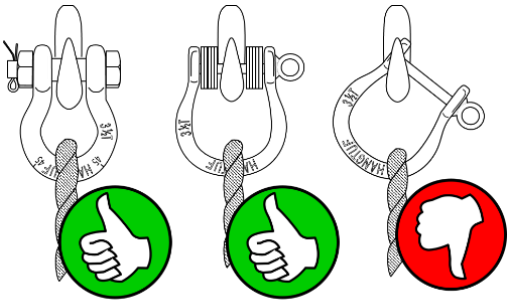
2. Bolts of any kind shall never be used to replace any shackle pin. If the shackle pin is lost, an equivalent shackle pin must be used, or another shackle pin ordered.

3. Avoid reeving screw pin shackles. Install shackles so that the running line does not travel across and potentially loosen the screw pin of a Screw Pin Shackle.

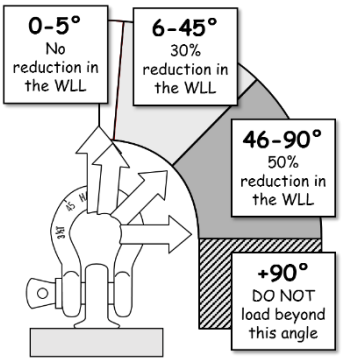
a. If it must be rigged in this fashion, then 'mouse' the pin to the shackle body to prevent it from turning during lifting operations.



4. Center the load in the bow or crown to prevent side loading.
    a. Packing the shackle with washers may be necessary to maintain the bow's position.

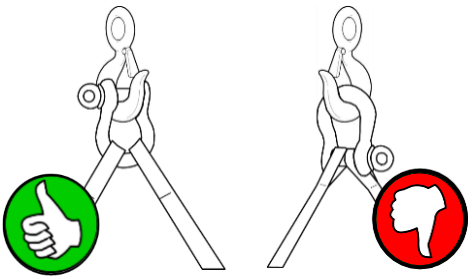


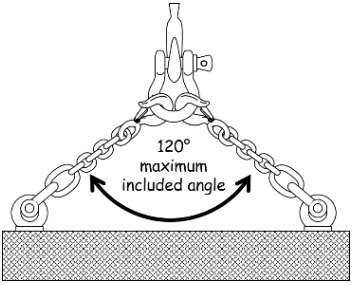
Keep the load centered in the crown or bow.



General Rule-of-Thumb when de-rating Shackle WLLs

5. During any lifting operations, load should be applied in line with the plane of the eye.
    a. If the shackle must be side loaded, know the reduction rating as provided by the manufacturer.
6. Avoid anchoring multiple sling legs to the pin of a shackle. If multiple legs are required to be anchored to a shackle, invert the shackle thereby applying the sling loads to the bow of the shackle.
7. Do not exceed 120° included angle of loading for a shackle.





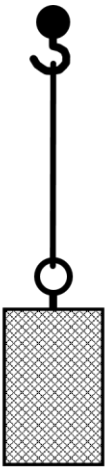
Slings

1. A sling shall not be used for lifting if it exhibits a condition that raises any concern as to its integrity in lifting operations. Conditions may include but not necessarily be limited to:
   - **a.** A missing or has an illegible tag;
   - **b.** Evidence of heat damage;
   - **c.** Having knots;
   - **d.** Fittings are pitted, corroded, crack, bent, twisted, gouged, or broken;
   - **e.** Any other adverse condition, including visible damage.
2. All slings used for lifting shall have a legible tag identifying the rated capacities of that sling:
   - **a.** Vertical Hitch

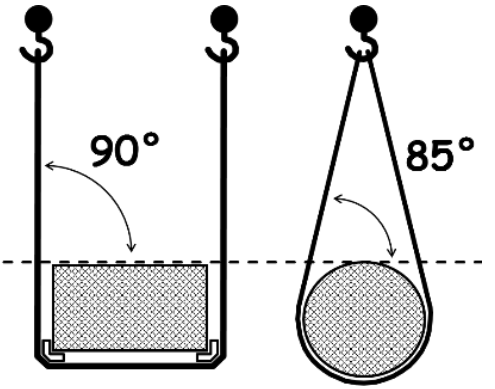
     A vertical hitch is designed to support the full WLL of the sling.
   - **b.** Choker Hitch

     The WLL of a choker hitch is determined by the angle of the choke. The sling's tagged rating for the WLL of the choker is typically based on the 20% reduction of a 135° angle. Tighter angles require greater reductions.
   - **c.** Basket Hitch

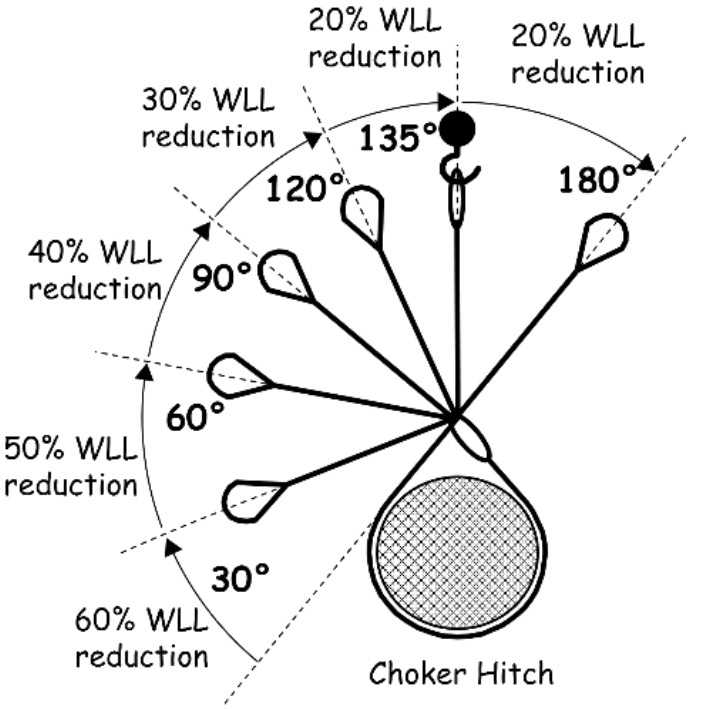
     A basket hitch is generally when the sling is passed around the load and both ends are then connected to the lifting hook. The sling's tagged rating for the WLL of the basket is typically based on an 85-90° vertical angle. Tighter angles require greater reductions.



Vertical Hitch



Basket Hitch



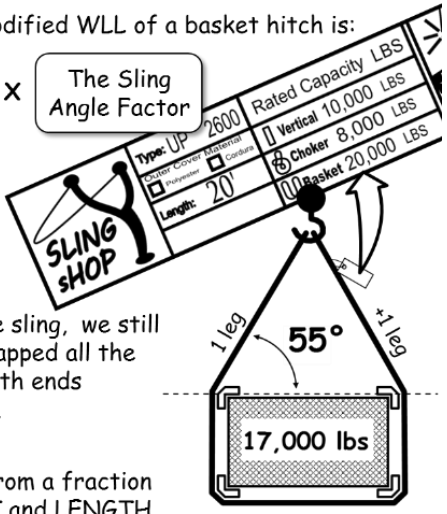
Choker Hitch

3. Avoid bunching slings into a shackle, hook, or other connecting devices. Bunching reduces the sling's WLL as well as its overall expected lifespan.
4. When running slings under tension around any corners, make all attempts to pad the corners. Under tension, ALL corners have the potential of cutting a sling in half.



The formula for determining the Modified WLL of a basket hitch is:

The sling's vertical WLL	x	The number of sling legs	x	The Sling Angle Factor



① **The sling's VERTICAL WLL…**
…will be found on the sling's legible tag. It's listed here as **10,000 lbs.**

② **The number of sling legs…**
…even though this is a single sling, we still have **2** legs, because it's wrapped all the way around the load with both ends connected back to the hook.

③ **The Sling Angle Factor…**
…this is a number derived from a fraction having to deal with HEIGHT and LENGTH. But instead of spending a lot of time discussing and figuring all of that out, we have, instead, the nifty cheat table to the right. This cheat table works for all slings, not just this example.

We find out what our Vertical Angle is for the load being picked. As you can see in the diagram to the upper right, this angle is 55°. So we find 55° under SLING ANGLE in the chart to the right and then use its corresponding SLING ANGLE FACTOR number. For 55°, this number is **0.819**.

(If we can't find our exact angle, then we have to use the next SMALLER ANGLE in order to give us the worst case scenario.)

Sling Angle	Sling Angle Factor
90°	1.000
85°	0.996
80°	0.985
75°	0.966
70°	0.940
65°	0.906
60°	0.866
55°	0.819
50°	0.767
45°	0.707
40°	0.643
35°	0.574
30°	0.500

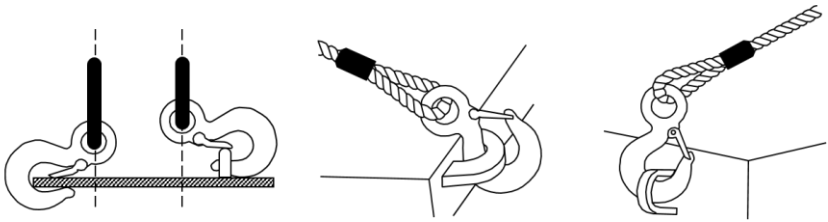
④ **Plug in the numbers and do the math…**

10,000 x 2 x 0.819 = **16,380 lbs**

The load weighs 17,000 lbs but our slings are only good for 16,380 at 55° angles. This reveals the importance of having the ability to determine modified WLLs. If a rigger were to read the sling label above and ASSUME that all basket hitches for this sling were good for 20.000 lbs, then that rigger runs the potential of overloading the rigging hardware and losing the load.

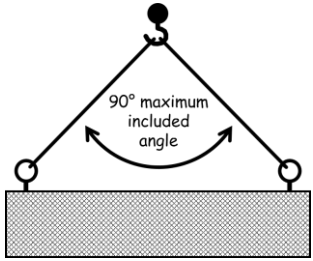
Hooks

1. Any hook designed to be outfitted with a keeper latch, must have a keeper latch.
2. Lifting hooks are designed for in-line loads only; most of the load must be concentrated in the bowl of the hook.
   - **a.** Do not tip load a hook.
   - **b.** Do not side load a hook.
   - **c.** Do not backload a hook.



Examples of: tip loading, back loading, & side loading of a hook.

3. Lifting hooks should not be loaded beyond a 90° included angle.
   - **a.** If multiple slings are required for the load and 90° or less of included angle cannot be maintained, then use a multiple leg bridle sling constructed with a Master Ring or Link.



LOCKOUT / TAGOUT

General

1. When it is time to service or maintain a machine or energized equipment, simply turning it off or unplugging it may not effectively control hazardous energy. All it takes for an accident is one person who mistakenly assumes that the power is off. Lockout / Tagout procedures are the requirements in place to protect workers from hazardous energy when servicing or maintaining machines and/or equipment.
2. Whenever a LOTO procedure is to be conducted, a Competent Person in Charge (PIC) shall be appointed as having sole authority over all phases, aspects, etc. of that specific LOTO procedure.

Procedures to comply with the Lockout / Tagout OSHA standard:

The following steps shall be taken to implement a LOTO procedure.

Step 1: Preparation

- **i.** Determine worksite parameters.
- **ii.** Find all possible sources of potential energy that have the capability to enter the LOTO parameters and potentially expose affected parties and employees must be addressed.
- **iii.** Inform all personnel who may be affected by the LOTO procedure.
- **iv.** Coordinate with supervisors, operators, and other workers to ensure clear communication.

Step 2: Shutdown

- **i.** Familiarize yourself with the equipment to be Locked Out
- **ii.** Follow the proper procedures to de-energize the equipment.

iii. Where possible, all sources of energy potentially exposing affected parties and employees shall be interrupted.

Step 3: Isolation

i. Identify, locate, and isolate equipment from all energy sources.
ii. Where it is not possible to interrupt potential energy exposures, then alternative protective methods shall be implemented to reasonably reduce the exposure risk (non-reclose, barriers, barricades, locked doors, etc.).
iii. All isolation points established in the Shutdown shall be Locked Out and/or Tagged Out.
iv. If lockout is not possible, then a control method shall be implemented if feasible (e.g. electrical grounds, equipotential zones, etc.).
v. All isolation points shall at the very least be Tagged Out.
vi. All locks, controls, tags, and their locations shall be documented and tracked by the LOTO supervisor.

Step 4: Lock Out - Tag Out

i. Use Lock Out devices to secure energy isolation points.
ii. Apply Lock Out devices to switches, valves and other control points.
iii. Attach Tags with clear information about the LOTO procedure, including your name, date, time, and contact information.

Step 5: Stored Energy Check

i. The LOTO supervisor shall verify that all phases of Shutdown - Isolation - LOTO have been completed.
ii. The LOTO supervisor shall verify that all potential energy exposure to parties and employees within the designated parameters of the LOTO procedure has been effectively mitigated or rendered to a ‘0’ energy state.

Step 6: Isolation Verification

i. The LOTO supervisor shall review with all affected parties and employees that all methods and locations of energy source controls have been locked, tagged, and controlled, along with all remaining potential sources of energy as well as their methods of mitigation (non-reclose, barriers, barricades, locked doors, etc.); *and* all methods of energy source controls.

ii. The LOTO supervisor shall secure the names and signatures of all affected parties and employees acknowledging their understanding and adherence to the LOTO procedure.

iii. Any parties and/or employees not having signed shall not be permitted within the affected areas of the LOTO procedure.

Once LOTO is completed:

Work Phase

- Any work to be performed that is associated with a Lockout/Tagout Procedure **shall not** be permitted to begin until all the Steps listed above shall be completed and verified by the LOTO supervisor.

Work Completed Phase

- The LOTO supervisor shall verify that the work phase has been completed or has reached an acceptable level of completion to warrant release or close out of the LOTO procedure.
- The LOTO supervisor shall verify that all tools/materials have been removed from potentially affected areas.

Confirmation & Initial Notification Phase

- The LOTO supervisor shall instruct all parties and employees affected by the LOTO procedure to relocate to a safe area where they shall be accounted for (utilizing their signatures of acknowledgement).

- The LOTO supervisor shall inform all affected parties and employees of the intent (or purpose) of re-energization.
- The LOTO supervisor shall secure the names and signatures of all affected parties and employees acknowledging their understanding and adherence to the release or close out of the LOTO procedure.
- All affected parties and employee signatures MUST be accounted for prior to re-energization. If all signatures are not accounted for, re-energization is not permitted to occur.

Control Removal Phase

- The LOTO supervisor shall dictate and verify the removal of any locks, controls, and/or tags necessary to perform re-energization (or to testing/positioning) of the equipment.
- The LOTO supervisor shall document the removal of any locks, controls, and/or tags necessary to perform the re-energization (or testing/positioning) of the equipment.

Final Notification Phase

- The LOTO supervisor shall inform all affected parties and employees of the intent to re-energize the equipment.

Re-energization Phase

- The equipment is re-energized.
- The LOTO supervisor shall inform all affected parties and employees that the equipment is now energized, treated as energized, and that the LOTO procedure has terminated and is no longer in effect.

Lockout vs. Tagout

1. Lockout is a more reliable means of de-energizing equipment than Tagout and it is the preferred energy control method. If equipment can be locked out, then it must be locked out. However, in some cases, tags are an appropriate safety method. Below are guidelines

to assist employees in deciding between lockout or Tagout to ensure the safety work environment possible.

a. Lock out if:
    i. The energy isolating device can be locked. If the device can be locked, then it must be locked to control hazardous energy.
    ii. Repair or upgrade to the equipment is necessary. Repaired or upgraded equipment must be outfitted with energy isolating devices that will accept lockout devices.
    iii. New equipment is installed. The energy isolating devices for the new equipment must accept lockout devices.
b. Tag out if:
    i. The energy isolating device cannot be locked out. If it cannot be locked-out, then it must be tagged-out to control hazardous energy.
    ii. It can be demonstrated that Tagout procedures will control hazardous energy at least as effectively as lockout procedures. (Additional safeguards in the Tagout procedures shall be included such as opening a second disconnect, blocking a control switch, or removing valve handles to reduce the likelihood of accidentally starting equipment.

MSHA Part 46 Training Plan

General

1. Roseville Crushed does not operate any mines, however Mobile Crushing operations could fall under MSHA if working at a mine site for more than five consecutive days or exposed to frequent/recurring hazards. All employees of the Mobile Crushing division receive new miner or newly hired experienced miner training in accordance with MSHA Part 46 requirements.

2. Company information
    a. Company Name: Roseville Crushed

- **b.** Company Address: 29765 Groesbeck Hwy, Roseville, MI 48066
- **c.** Telephone Number: (586) 778-6860

3. Person(s) Responsible for Training
- **a.** The following employees are responsible for the development, implementation, and evaluation of the training program under MSHA Part 46
- **b.** Trainer(s)
  - **i.** Paul Russ – Foreman
    1. (586) 341-5895
    2. pruss@rosevillecrushed.com
  - **ii.** Joe Friedmann – Operations Manager
    1. (586) 341-7839
    2. jfriedmann@rosevillecrushed.com
  - **iii.** Mitch Coppersmith – Safety Manager
    1. (517) 899-0879
    2. mcoppersmith@rosevillecrushed.com

New Miner Training Program 30 CFR 46.5

30 CFR 46.5(a)(1)

Each new miner will receive no less than 24 hours of training. Miners who have not received the full 24 hours of training will work under the observation of an experienced miner.

30 CFR 46.5(b) (1-7)

Each new miner will receive the following training before the miner begins work. This training will be no less than 4 hours and will also address site-specific hazards.

1. 30 CFR 46.5(b)(1) Introduction to the work environment, including a visit and tour of the mine, or portions of the mine that are representative of the entire mine (walkaround training). The method of mining or operation utilized must be explained and observed.

- **a.** Approximate Time:
  - **i.** 1 Hour to 2 Hours
- **b.** Teaching Methods may include the following:
  - **i.** Site visit and tour of mine or areas of the mine that miner will be working at
  - **ii.** Discussion of course training materials
  - **iii.** Walk-around training and demonstration
  - **iv.** Visual aids
- **c.** Course Training Materials:
  - **i.** Applicable regulations
  - **ii.** Company policies and procedures
  - **iii.** Method of mining or operation utilized
- **d.** Evaluation Procedures:
  - **i.** Observation
  - **ii.** Oral Feedback

2. 30 CFR 46.5(b)(2) Instruction on the recognition and avoidance of electrical hazards and other hazards present at the mine, such as traffic patterns and control, mobile equipment (e.g., haul trucks and front-end loaders), and loose or unstable ground conditions.

- **a.** Approximate Time:
  - **i.** 1 Hour to 2 Hours
- **b.** Teaching Methods may include the following:
  - **i.** Site visit and tour of mine or areas of the mine that miner will be working at
  - **ii.** Discussion of course training materials
  - **iii.** Walk-around training and demonstration
  - **iv.** Training videos
  - **v.** Lecture
- **c.** Course Training Materials:
  - **i.** Company policies and procedures
  - **ii.** Applicable regulations

- **iii.** Qualified Electrical Worker
- **iv.** Temporary Traffic Control
- **v.** Job Hazard Analysis procedures

d. Evaluation Procedures:

- **i.** Tests given after temporary traffic control and qualified electrical worker
- **ii.** Oral feedback and observation during site tour

3. 30 CFR 46.5(b)(3) Review of the emergency medical procedures, escape and emergency evacuation plans, in effect at the mine, and instruction on the fire warning signals and firefighting procedures.

a. Approximate Time:

- **i.** 1 Hour to 2 Hours

b. Teaching Methods may include the following:

- **i.** Site visit and tour of mine or areas of the mine that miner will be working at
- **ii.** Discussion of course training materials
- **iii.** Walk-around training and demonstration

c. Course Training Materials:

- **i.** Company policies and procedures
- **ii.** Applicable regulations
- **iii.** Fire warning signals and firefighting procedures
- **iv.** Escape and emergency evacuation plans

d. Evaluation Procedures:

- **i.** Oral feedback and observation during site tour

4. 30 CFR 46.5(b)(4) Instruction on the health and safety aspects of the tasks to be assigned, including the safe work procedures of such tasks, the mandatory health and safety standards pertinent to such tasks, information about the physical and health hazards of chemicals in the miner's work area, the protective measures a miner can take against these hazards, and the contents of the mine's HazCom program.

- **a.** Approximate Time:
  - **i.** 1 Hour to 2 Hours
- **b.** Teaching Methods may include the following:
  - **i.** Site visit and tour of mine or areas of the mine that miner will be working at
  - **ii.** Discussion of course training materials
  - **iii.** Walk-around training and demonstration
  - **iv.** Practice under close supervision
- **c.** Course Training Materials:
  - **i.** Company policies and procedures
  - **ii.** Applicable regulations
  - **iii.** Safe work procedures
- **d.** Evaluation Procedures:
  - **i.** Oral feedback and observation during site tour

5. 30 CFR 46.5(b)(5) Instruction on the statutory rights of miners and their representatives under the Act.

- **a.** Approximate Time:
  - **i.** 1 Hour to 2 Hours
- **b.** Teaching Methods may include the following:
  - **i.** Discussion of course training materials
  - **ii.** Computer
- **c.** Course Training Materials:
  - **i.** Company policies and procedures
  - **ii.** Applicable regulations
  - **iii.** 1977 Mine Act
- **d.** Evaluation Procedures:
  - **i.** Oral feedback and observation

6. 30 CFR 46.5(b)(6) A review and description of the line of authority of supervisors and miners' representatives and the responsibilities of such supervisors and miners' representatives; and

- **a.** Approximate Time:

i. 1 Hour to 2 Hours

b. Teaching Methods may include the following:
   i. Discussion of course training materials
   ii. Computer

c. Course Training Materials:
   i. Company policies and procedures
   ii. Applicable regulations
   iii. 1977 Mine Act

d. Evaluation Procedures:
   i. Oral feedback and observation

7. 30 CFR 46.5(b)(7) An introduction to Company rules and procedures for reporting hazards
   a. Approximate Time:
      i. 1 Hour to 2 Hours
   b. Teaching Methods may include the following:
      i. Discussion of course training materials
      ii. Computer
   c. Course Training Materials:
      i. Company policies and procedures
      ii. Applicable regulations
      iii. 1977 Mine Act
      iv. Mine communication system
   d. Evaluation Procedures:
      i. Oral feedback and observation

30 CFR 46.5(c)

After each new miner begins work, the miner will receive the following training within 60 calendar days.

1. 30 CFR 46.5(c) Self-rescue and respiratory devices
   a. Approximate Time:
      i. 1 Hour to 2 Hours
   b. Teaching Methods may include the following:

- **i.** Discussion of course training materials
- **ii.** Demonstration

c. Course Training Materials:

- **i.** Company policies and procedures
- **ii.** Applicable regulations
- **iii.** How to use a self-rescue system
- **iv.** How to use a respiratory device

d. Evaluation Procedures:

- **i.** Practical given after training

2. 30 CFR 46.5(c) First Aid

a. Approximate Time:

- **i.** 1 Hour to 2 Hours

b. Teaching Methods may include the following:

- **i.** Discussion of course training materials
- **ii.** Classroom

c. Course Training Materials:

- **i.** Company policies and procedures
- **ii.** Applicable regulations
- **iii.** First Aid
- **iv.** CPR

d. Evaluation Procedures:

- **i.** Written and practical tests are administered after First Aid/CPR training

30 CFR 46.5(d)

No later than 90 calendar days after a new miner begins work at the mine, the miner will receive the balance, if any, of the 24 hours of training on any other subjects that promote occupational health and safety for miners at the mine.

1. If other subjects will be taught based on circumstances or conditions at the mine, an Other Subject(s) form is required to be

filled out and saved to the employee's training records and personnel file.

2. Template:
    a. 30 CFR 46.5(d) Other Subject(s)
        i. Approximate Time:
            1. _ Hour to _ Hours
        ii. Teaching Methods may include the following:
            1.
        iii. Course Training Materials:
            1.
        iv. Evaluation Procedures:
            1.

Newly Hired Experienced Miner Training Program 30 CFR 46.6

30 CFR 46.6(b)

Before a newly hired experienced miner begins work at the mine the employee will be provided training in the following subjects which also address site-specific hazards.

1. 30 CFR 46.6(b)(1) Introduction to the work environment, including a visit and tour of the mine, or portions of the mine that are representative of the entire mine (walkaround training). The method of mining or operation utilized must be explained and observed.
    a. Approximate Time:
        i. 1 Hour to 2 Hours
    b. Teaching Methods may include the following:
        i. Site visit and tour of mine or areas of the mine that miner will be working at
        ii. Discussion of course training materials
        iii. Walk-around training and demonstration
        iv. Visual aids

- **c.** Course Training Materials:
  - **i.** Applicable regulations
  - **ii.** Company policies and procedures
  - **iii.** Method of mining or operation utilized
- **d.** Evaluation Procedures:
  - **i.** Observation
  - **ii.** Oral Feedback

2. 30 CFR 46.6(b)(2) Instruction on the recognition and avoidance of electrical hazards and other hazards present at the mine, such as traffic patterns and control, mobile equipment (e.g., haul trucks and front-end loaders), and loose or unstable ground conditions.

- **a.** Approximate Time:
  - **i.** 1 Hour to 2 Hours
- **b.** Teaching Methods may include the following:
  - **i.** Site visit and tour of mine or areas of the mine that miner will be working at
  - **ii.** Discussion of course training materials
  - **iii.** Walk-around training and demonstration
  - **iv.** Training videos
  - **v.** Lecture
- **c.** Course Training Materials:
  - **i.** Company policies and procedures
  - **ii.** Applicable regulations
  - **iii.** Qualified Electrical Worker
  - **iv.** Temporary Traffic Control
  - **v.** Job Hazard Analysis procedures
- **d.** Evaluation Procedures:
  - **i.** Tests given after temporary traffic control and qualified electrical worker
  - **ii.** Oral feedback and observation during site tour

3. 30 CFR 46.6(b)(3) Review of the emergency medical procedures, escape and emergency evacuation plans, in effect at the mine, and instruction on the fire warning signals and firefighting procedures.
    - **a.** Approximate Time:
        - **i.** 1 Hour to 2 Hours
    - **b.** Teaching Methods may include the following:
        - **i.** Site visit and tour of mine or areas of the mine that miner will be working at
        - **ii.** Discussion of course training materials
        - **iii.** Walk-around training and demonstration
    - **c.** Course Training Materials:
        - **i.** Company policies and procedures
        - **ii.** Applicable regulations
        - **iii.** Fire warning signals and firefighting procedures
        - **iv.** Escape and emergency evacuation plans
    - **d.** Evaluation Procedures:
        - **i.** Oral feedback and observation during site tour
4. 30 CFR 46.6(b)(4) Instruction on the health and safety aspects of the tasks to be assigned, including the safe work procedures of such tasks, the mandatory health and safety standards pertinent to such tasks, information about the physical and health hazards of chemicals in the miner's work area, the protective measures a miner can take against these hazards, and the contents of the mine's HazCom program.
    - **a.** Approximate Time:
        - **i.** 1 Hour to 2 Hours
    - **b.** Teaching Methods may include the following:
        - **i.** Site visit and tour of mine or areas of the mine that miner will be working at
        - **ii.** Discussion of course training materials
        - **iii.** Walk-around training and demonstration

- **iv.** Practice under close supervision

c. Course Training Materials:

- **i.** Company policies and procedures
- **ii.** Applicable regulations
- **iii.** Safe work procedures

d. Evaluation Procedures:

- **i.** Oral feedback and observation during site tour

5. 30 CFR 46.6(b)(5) Instruction on the statutory rights of miners and their representatives under the Act.

a. Approximate Time:

- **i.** 1 Hour to 2 Hours

b. Teaching Methods may include the following:

- **i.** Discussion of course training materials
- **ii.** Computer

c. Course Training Materials:

- **i.** Company policies and procedures
- **ii.** Applicable regulations
- **iii.** 1977 Mine Act

d. Evaluation Procedures:

- **i.** Oral feedback and observation

6. 30 CFR 46.6(b)(6) A review and description of the line of authority of supervisors and miners' representatives and the responsibilities of such supervisors and miners' representatives; and

a. Approximate Time:

- **i.** 1 Hour to 2 Hours

b. Teaching Methods may include the following:

- **i.** Discussion of course training materials
- **ii.** Computer

c. Course Training Materials:

- **i.** Company policies and procedures
- **ii.** Applicable regulations

- **iii.** 1977 Mine Act

d. Evaluation Procedures:

- **i.** Oral feedback and observation

7. 30 CFR 46.6(b)(7) An introduction to Company rules and procedures for reporting hazards

a. Approximate Time:

- **i.** 1 Hour to 2 Hours

b. Teaching Methods may include the following:

- **i.** Discussion of course training materials
- **ii.** Computer

c. Course Training Materials:

- **i.** Company policies and procedures
- **ii.** Applicable regulations
- **iii.** 1977 Mine Act
- **iv.** Mine communication system

d. Evaluation Procedures:

- **i.** Oral feedback and observation

30 CFR 46.6(c)

After each new miner begins work, the miner will receive the following training within 60 calendar days.

3. 30 CFR 46.5(c) Self-rescue and respiratory devices

a. Approximate Time:

- **i.** 1 Hour to 2 Hours

b. Teaching Methods may include the following:

- **i.** Discussion of course training materials
- **ii.** Demonstration

c. Course Training Materials:

- **i.** Company policies and procedures
- **ii.** Applicable regulations
- **iii.** How to use a self-rescue system
- **iv.** How to use a respiratory device

- **d.** Evaluation Procedures:
  - **i.** Practical given after training

4. 30 CFR 46.5(c) First Aid

- **a.** Approximate Time:
  - **i.** 1 Hour to 2 Hours
- **b.** Teaching Methods may include the following:
  - **i.** Discussion of course training materials
  - **ii.** Classroom
- **c.** Course Training Materials:
  - **i.** Company policies and procedures
  - **ii.** Applicable regulations
  - **iii.** First Aid
  - **iv.** CPR
- **d.** Evaluation Procedures:
  - **i.** Written and practical tests are administered after First Aid/CPR training

30 CFR 46.5(d)

No later than 90 calendar days after a new miner begins work at the mine, the miner will receive the balance, if any, of the 24 hours of training on any other subjects that promote occupational health and safety for miners at the mine.

3. If other subjects will be taught based on circumstances or conditions at the mine, an Other Subject(s) form is required to be filled out and saved to the employee's training records and personnel file.

4. Template:

- **a.** 30 CFR 46.5(d) Other Subject(s)
  - **i.** Approximate Time:
    1. _ Hour to _ Hours
  - **ii.** Teaching Methods may include the following:
    1.

iii. Course Training Materials:

1.

iv. Evaluation Procedures:

New Task Training Program 30 CFR 46.7

30 CFR 46.7(a)

Each Miner who is assigned to a new task will be trained in the health and safety aspects and safe work procedures of that new task, before the miner performs the new task. The form below must be completed when new tasks are assigned.

1. Approximate Time:

ii. _ Hour to _ Hours

2. Competent Person:

a. Trainer:

3. Teaching Methods may include the following:

a. Discussion
b. Demonstration
c. Site Tour
d. Practice under close observation

4. Course Training Materials:

a. Job Hazard Analysis (JHA)
b. Safe work procedures
c. Applicable regulations

5. Evaluation Procedures:

a. Oral feedback and observation

30 CFR 46.7(b)

When changes occur in a miner's assigned task that affect the health and safety risks encountered by the miner, the miner will receive training that addresses the change(s) and follow procedures from 30 CFR 46.7(a)

Annual Refresher Training Program 30 CFR 46.8

30 CFR 46.8(a) (1-2)

Miners must be provided with no less than 8 hours of annual refresher training –

1. No later than 12 months after the miner begins work at the mine; and
2. Thereafter, no later than 12 months after the previous annual refresher training was completed.

Annual refresher training is conducted through AIS Equipment:

1. Approximate Time:
    a. 8 Hours
2. Topics:
    a. Miners' Rights
    b. Introduction to the work environment
    c. Personal Protective Equipment
    d. Welding Safety
    e. Task Training
    f. Minning Methods and Equipment
    g. Hazard Awareness
    h. Fall Protection
    i. Equipment Safety
    j. Metal/Nonmetal Fatalities & Violations
    k. First aid/CPR

PERSONAL PROTECTIVE EQUIPMENT (PPE)

General

1. It is the employee's responsibility to see that PPE is in good repair. Any PPE found to be defective or damaged shall be immediately reported to a supervisor and/or the Safety Manager. It is the employee's responsibility to ensure he/she is wearing the appropriate/recommended/required PPE for the specific task being performed. All PPE and/or other methods must be inspected prior to each day's use and immediately after any incident.

Safety Glasses / Face Shield

1. (Z87) Safety glasses with side protection shall always be worn.
2. Task appropriate face shields shall be worn where work being conducted poses a potential Struck-By hazard to the worker's face.
3. Face shields do not necessarily equate to eye protection. If not, then safety glasses MUST be worn in addition to face shields. Refer to the Manufacturer's directions.

Hardhats

1. Hardhats shall be worn on all Roseville job sites unless doing so creates a greater hazard or a detriment to conducting a job procedure where there is no overhead hazard.
    a. The employee is not required to wear a hardhat when working from within the cab of a vehicle, machine, equipment, etc. outfitted with overhead struck-by protection.
2. Metal hardhats are not permitted to be worn on any Roseville job site.
3. A Class E hardhat shall be worn whenever the employee is working an actual or potential electrically energized job site.
4. Hardhats are not permitted to be painted or altered in any way.

New Hire – Green Hard Hat Policy

1. Most incidents/ accidents occur among:
   a. Less experienced workers; and
   b. Experienced workers new to a company.
2. Reasons for this increased rate of incidents / accidents can be attributed to one or more of the following:
   a. Performing unfamiliar tasks;
   b. Performing tasks in an unfamiliar environment.
   c. Not yet integrated to the established crew's dynamic;
   d. Rushing or taking shortcuts on the impulse to impress fellow employees / supervisors;
   e. Unfamiliar with company specific policies and procedures;
   f. Uncomfortable about speaking up; and/or
   g. Unrealistic expectation of performing to the level of an established employee.
3. Upon the discretion of management, new hire employees may be required to wear a green hardhat; the purpose of which is to heighten the awareness of co-workers/ supervisors sharing the same jobsite to:
   a. Reinforce safety rules with the new employees;
   b. Verify that the new employee can conduct an effective hazard assessment regarding expected tasks; and
   c. Verify the new employee's performance and compliance through increased observation.
4. Employees assigned a green hardhat shall be required to wear the green hardhat until deemed it appropriate that they may graduate to a white Roseville hardhat.
   a. This is to be determined by the Competent Person to which the employee reports.
5. A new employee may consult the Competent Person or Human Resources Manager regarding any concerns with the intention of the green hardhat or its policy.

Work Boots

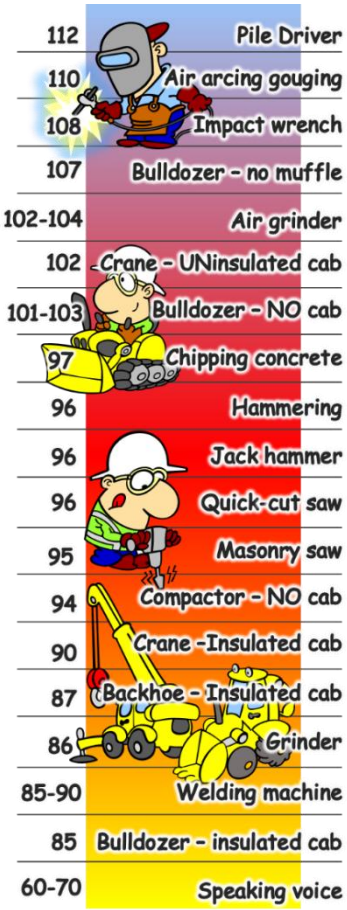
1. Safety toe and puncture resistant work boots shall always be worn. Safety toe and puncture resistant work boots shall have heavy soles and provide the employee with ankle support and sole that is resistant to punctures.
2. No tennis shoes, sandals, or open-toed footwear are permitted on Roseville work sites.
3. Safety toe boots rated EH according to the criteria listed in the ASTM F2413-11 provide protection from inadvertent electrical shock and may be worn in place of dielectric overshoes so long as the safety toe EH boots are in good repair. If there is concern that the dielectric integrity may be compromised or the boots are not EH rated, then they cannot be used in place of dielectric overshoes.

Hand Protection

1. Employees shall wear appropriate hand protection when/where the employee's hands may be exposed to actual or potential hazards such as, but not limited to:
   a. Lacerations, punctures, burns, abrasions, bruises
   b. Struck-By, Caught-In/Between, excessive heat exposure.
2. If the need exists, employees shall be required to wear specific gloves appropriate for specific types of hazards.
3. Cloth or loose-fitting gloves shall not be worn where the potential for an entanglement hazard exists such as: use of tools and machinery with rotating or moving parts (e.g., grinders, drills, lathes, or milling machines).

Hearing Protection

1. Hearing protection shall be worn whenever the worker is exposed to any excessive noise averaging 90dB or greater over a period of 8 hours.
2. When a worksite is determined to expose employees to excessive noise, additional hearing protection such as earmuffs shall be provided. As part of a site-specific plan, if noise exposure is determined to be excessive, a monitoring program shall be devised to identify the noise exposure hazards and prevention techniques and employees shall be trained in the specific hearing protection plan.



Respirators / Breathing Protection

1. Employees are provided filtering face pieces (dust masks) to protect from respiratory hazards.
2. Roseville does not regularly perform work in areas requiring greater protection than a dust mask. However, if any employee encounters a situation in the work zone where additional protection is needed, they are to immediately contact their supervisor and/or the Safety Manager.

3. No employee shall wear any respirator for any reason unless that worker has been approved to so do by the company after that worker has undergone a Medical Fit Test and has taken a Medical Evaluation.

Clothing

1. Long pants (no shorts) are required on all Roseville job sites.
2. Long-sleeved shirts are required on all Roseville job sites, if necessary, in protecting a worker from a recognized hazard. If not necessary, then short sleeved shirts are permitted. Sleeveless and cut-off shirts are not permitted on Roseville job sites.
3. A clean Class 2 Hi-Vis traffic vest, or equivalent Hi-Vis clothing with reflective material, shall be worn properly (closed in front) while on all Roseville job sites when employees are within, or expected to be within 15' of moving traffic. unless operating in an aerial device.

SIGNALS, SIGNS, TAGS & BARRICADES

General

1. Signs, labels, and tags must be legible and clear of obstruction.
2. They are to be always readily visible where hazards exist and promptly removed once the hazard has been eliminated.
3. Signs need to be constructed to withstand the environment and of sufficient size to be seen by all potentially affected parties.
4. Refrain from using barricade tape inside substations; use barricade rope whenever possible. Barricade tape can easily become unanchored and airborne, becoming entangled in and among energized conductors/components thus potentially creating an electrical fault.
5. Refer to the necessary traffic control requirements including but not limited to:
    a. Local municipalities

b. Department of Transportation (DOT) "Standard Specifications for Construction"

c. Michigan Manual on Uniform Traffic Control Devices (MMUTCD)

TOOLS

General

1. Follow all manufacturer's recommended practice, procedures, precautions, and parameters. The correct tool shall always be used for its designed intent.

2. Tools are to be kept in good condition and well maintained. They are to be properly stored when not in use.

3. All tools shall be inspected prior to use.

a. Broken or defective tools are to be red-tagged and removed from service immediately for repair, replacement, or destruction.

4. Wear appropriate and required PPE when operating and using tools.

5. Pneumatic and hydraulic hoses must be fastened and prevented from separation with approved fittings only.

6. When working from an elevation, hand tools must be secured via height appropriate tool lanyards or tether to avoid potential drop hazards.

7. Tools generating heat or sparks must not be used in hazardous atmospheres.

8. Fuel operated tools must be used in well-ventilated areas only due to potential carbon monoxide poisoning. They must be stopped and cooled prior to refueling.

9. There are 4 categories of multi-meters. Know your requirements and use the appropriately rated multi-meter when taking voltage measurements.

Powder Actuated Tools

1. Prior to using powder actuating tools, employees must have specific training relating to that tool.
2. Powder actuated tools are not to be loaded until immediately before use. They shall not be left unattended.

Chainsaws

1. When operating a chainsaw, wear appropriate hand, foot, eye, head, and hearing protection.
2. Chaps are required to be worn unless the operator is working from an elevated platform where the platform walls serve as a barrier between the operator and chain.

Power Tools

1. Power tools shall not have guards removed.
2. Power tools must either be double-insulated or be powered by a three-pronged cord connected to a grounded electrical source.
3. Cords of power tools shall not be used to raise and lower the tool.

Grinders

1. Side guards should cover the spindle, nut, flange, and 75% of the wheel diameter.
2. Bench and pedestal grinders shall be permanently mounted.
3. The RPM rating of the abrasive wheel shall be compatible with the RPM rating of the grinder.
    a. Before abrasive wheels are mounted, they are to be visually inspected, and ring tested.
4. Splash guards shall be mounted on grinders that use coolant to prevent coolant from reaching the employee.

Pneumatic Tools

1. Safety clips or retainers shall be installed on the tools to prevent dies and tools from flying off the barrel.
2. The pressure valve must be shut off before disconnecting the lines from the tools or connections, except when using a quick makeup coupling.
3. Safety fasteners must be at all connections between tools and hose lines and at all quick makeup-type connections to prevent accidental disengagement.
4. The rated pressure capacity of hoses, pipes, filters, valves, and fittings shall be no less than the rated pressure capacity of the tools.
   a. The tool and its accessories shall not be operated at a pressure that is more than the rated capacity.
5. Hoses shall not be used to hoist or lower a pneumatic-powered tool.

Compressed Air

1. Use the lowest possible pressure that will do the job.
2. Employees shall not use compressed air to remove dust from clothing and are to use extra precautions when air hoses are used near the body.
3. Employees shall ensure air compressors are equipped with pressure relief valves and pressure.

WELDING & CUTTING

1. Any work producing spark or flame (brazing, cutting, grinding, soldering, welding, etc.) requires the presence of a properly rated fire extinguisher in the immediate vicinity.
2. Remove all combustible material to a distance of at least 35’ prior to operations.
3. Remove all explosive materials to a distance of at least 50’ prior to operations.

4. Wear the necessary and required PPE when performing Hot Work procedures (FR clothing, leathers, welding mask, etc.).
5. A Fire Watch shall be assigned where:
   a. Locations other than a minor fire may develop;
   b. Combustibles are within 35’ of the work;
   c. Extreme combustibles are within 50’ of the work;
   d. There are openings with 35’ of combustibles; and
   e. There are combustibles on the other sides of a barrier (ceiling, wall, etc.) that could ignite due to conduction.
6. If there is a possibility that a smoldering fire may have started, then the Fire Watch will remain on site and monitor the site for an additional 30 minutes following the completion of the Hot Work.
7. Refer to the section entitled Hazard Communication regarding gas cylinder safety.

DEFINITIONS

-#-

1. ***1st Tier Subcontractor*** – the first-tier contractor is hired by the contractor for the purpose of acquiring supplies or services (including construction) for performance of a prime contract.
2. ***2nd Tier Subcontractor*** – a second-tier contractor is hired by the first-tier contractor to perform specific tasks.
3. ***3rd Tier Subcontractor*** – a third-tier contractor works with the second-tier contractor.
4. ***4' Rule (of Excavation)*** – starting at a depth of 4', a means of access and egress must be provided for every linear 25'.
5. ***5' Rule (of Excavation)*** – starting at 5', a protective system must be installed.
6. ***6' Rule (of Excavation)*** – starting at 6', methods of fall protection *may* have to be considered.

-A-

7. ***Absorption*** - The act or process of a chemical permeating the skin and entering body tissues and the bloodstream.
8. ***Access and Egress*** – (sometimes referred to as 'ingress and egress') means "entry" and "exit" respectively and refers to the safe means for employees to enter or exit an excavation or trench.
9. ***Acclimatization*** – Temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.
10. ***ACM*** – Asbestos Containing Materials. Any material that contains greater than 1% asbestos where the fibers are bound to the parent material through the incorporation of cement, vinyl, asphalt, or some other type of hardening binder.

11. ***Actinolite*** – a type of asbestos that has a poor resistance to chemicals. It is typically prismatic, flat in structure, and elongated, but also comes in forms other than asbestiform.

12. ***Acute Effect*** - An adverse effect on a human or animal body, with severe symptoms developing rapidly and coming quickly to a crisis.

13. ***Acute Toxicity*** - is defined specifically as adverse effects occurring following oral or dermal administration of a single dose of a substance, or multiple doses given within 24 hours, or an inhalation exposure of 4 hours.

14. ***Aerosol*** - Particles (solid or liquid) that remain suspended in air for a period. Aerosols include mist, smoke, fumes, and dusts.

15. ***Affected Employees (or Parties) –*** any Roseville or non-Roseville person or groups of persons who have the potential of being influenced by a designated action, decision, result, hazard, etc.

16. ***Airmailing*** – the intentional uncontrolled decent (throwing or dropping) of tools, material, debris, etc. from an aerial work location (typically above 10').

17. ***Alternate Entry Confined Space –*** a Confined Space (by definition) where the only recognizable hazard is an actual or potentially hazardous atmosphere that can be mitigated using forced air ventilation.

18. ***Amosite*** – a type of asbestos also known as cummingtonite–grunerite or brown asbestos. Its trade name, 'amosite', is an acronym for Asbestos Mines of South Africa (after the Amosa mines). Amosite is straight in shape, brittle in structure, and excellent for use in heat insulation.

19. ***Amphibole Group*** – One of two groups of asbestos regulated by the government. Characterized by straight, needle-like fibers that are more brittle and therefore more limited in their ability to be fabricated. This group contains: crocidolite, amosite, anthophyllite, tremolite, and actinolite asbestos.

20. ***Amputation*** – the traumatic loss of a limb or other external body part; including:
    a. A part that has been severed, cut off, or amputated, either completely or partially.
    b. Fingertip amputations with or without bone loss.

c. Medical amputations resulting from irreparable damage.
d. Amputations of body parts that have since been reattached.
e. Amputations DO NOT INCLUDE avulsions, enucleations, degloving, scalping, severed ears, or broken or chipped teeth.

21. ***Anthophyllite*** – a type of asbestos that is brittle, white, and contains various forms of iron. It has been found to have excellent resistance to chemicals and heat.

22. ***Asbestos –*** a term used to describe 6 types of minerals that occur naturally in the environment as bundles of fibers that can be separated into fine, flexible, durable threads.

23. ***Asbestosis*** – a progressive pulmonary disease with symptoms showing only after irreversible lung damage has occurred.

24. ***Attendant (Confined Space) –*** the employee who remains stationed outside a permit required confined space to monitor the Entrant's status.

25. ***Avulsion –*** when a body structure is torn off by either trauma or surgery. This is like an abrasion but more severe, as body parts such as an eyelid or an ear can be partially or fully detached from the body.

-B-

26. ***Bacteria*** – one-cell organisms responsible for illnesses such as strep throat, urinary tract infections, and tuberculosis.

27. ***Barricade –*** a physical obstruction such as tape, cones, or A-frame-type wood or metal structures intended to provide a proximity warning and to limit access to a hazardous area.

28. ***Barrier –*** a physical obstruction requiring a degree of effort to breach (e.g. concrete barricade, guardrail, etc.), that is intended to prevent access to a potentially hazardous area.

29. ***BBP –*** bloodborne pathogens.

30. ***Benching*** – a method of protecting employees from excavation cave-ins by stepping the walls (as required by OSHA) based on the unconfined compressive strength of the soil.

31. ***Bloodborne Pathogens (BBP)*** – pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

32. ***Bond –*** to electrically connect one potential to another potential (typically through the means of a mechanical jumper) with the goal of eliminating differences of potential.

-C-

33. ***"C" or Ceiling*** – the maximum allowable human exposure limit for an airborne substance; not to be exceeded even momentarily.

34. ***"C"*** – Combustible (as when used in placarding or chemical warning).

35. ***"CA"*** – Corrosive Acid (as when used in placarding or chemical warning).

36. ***Capable of being locked out –*** refers to a device possessing an internal or external mechanical means to or through which a lock may be affixed.

37. ***Carcinogen –*** a substance or agent capable of causing or producing cancer.

38. ***Caution Zone*** – the area within 48 inches of either side of the MISS DIG markings

39. ***Center of Gravity –*** the point on an object at which all the object's weight is concentrated. For symmetrical loads, the center of gravity is at the middle of the load.

40. ***Chemical –*** means any substance or mixture of substances.

41. ***Chilblains*** – are small lesions caused by the inflammation of tiny blood vessels after exposure to cold air. They are often painful and tend to affect skin on hands and feet. Other names for this condition include pernio, perniosis, and cold-induced vascular disorder.

42. ***Chronic effect*** – an adverse effect on a human or animal body, with symptoms which develop slowly over a long period of time, or which recur frequently.

43. ***Chronic Toxicity*** - Adverse effects resulting from repeated doses of or exposures to a substance over a relatively prolonged period.

44. ***Chrysotile –*** A type of asbestos also known as white or green asbestos, from the Greek word meaning "fine, silky hair". It appears curly, whitish fibers and constitutes 95% of the asbestos in use. Chrysotile is mined throughout the world but most of the United States' chrysotile supply comes from Canada, Africa, and the former USSR. Scientists believe this to be the least toxic of all asbestos forms.

45. ***"CL"*** – Corrosive Liquid (as when used in placarding or chemical warning).

46. ***Cleaning*** – removes germs, dirt, and impurities from surfaces or objects. Cleaning works by using soap (or detergent) and water to physically remove germs from surfaces. This process does not necessarily kill germs, but by removing them, it lowers their numbers and the risk of spreading infection.

47. ***CO*** - carbon monoxide: a colorless, odorless, flammable, and very toxic gas produced by the incomplete combustion of carbon; also, a by-product of many chemical processes.

48. ***CO_2*** - carbon dioxide: a heavy, colorless gas, produced by the combustion and decomposition of organic substances and as a by-product of many chemical processes $C0_2$ will not burn and is relatively non-toxic (although high concentrations, especially in confined spaces, can create hazardous oxygen-deficient environments).

49. ***Cold Stress*** – an umbrella term that refers to cold-related illnesses that occur when the body can no longer maintain its normal temperature.

50. ***Combustible*** – a term to classify certain liquids that will burn, based on flash points; generally having a flash point of 100° C (37.8° C) or higher. Non-liquid substances such as wood and paper are classified as "ordinary combustibles".

51. ***Competent Person*** – is a person who can identify 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 those hazards.

52. ***Confined Space*** – a space that MUST meet ALL THREE of the following criteria:
    - **a.** Is large enough and so configured that an employee can bodily enter and perform assigned work; and
    - **b.** Has a limited or restricted means for entry or exit;
    - **c.** Is not designed for continued human occupancy.

53. ***Control*** – a method intentionally and proactively implemented to eliminate, counteract, or mitigate an actual or potential hazard to an acceptable level of risk. There are 3 types of levels of controls (the 'hierarchy of controls'):
    - **a.** *Engineering* – physically changing or altering the work environment to prevent worker exposure. Examples include enclosures, ventilation, guards, safety interlocks, sound dampening materials, radiation shielding, etc.
    - **b.** *Administrative* – policies and procedures implemented by Management, the Safety Dept., etc. to promote safety in the workplace. Examples include written policies, rules, schedules, and training with the goal of reducing duration, frequency, or severity of exposure to hazardous chemicals or situations.
    - **c.** *Personal Protective Equipment (PPE)* – considered the very last line of protection between the worker and the hazard; the least preferred single control method. It is considered an acceptable control method in the following circumstances:
        - **i.** When engineering controls are not feasible or do not eliminate the hazard;
        - **ii.** While engineering controls are being developed;
        - **iii.** When safe work practices do not provide sufficient additional protection;
        - **iv.** During emergencies when engineering controls may not be feasible.
        - **v.** To complement Engineering and/or Administrative controls

54. ***Controlling employer*** – the employer who has general supervisory authority over the worksite including the power to correct safety and health violations or requires others to correct them.

55. ***Correcting Employer*** – the Employer who is assigned the responsibility of installing/maintaining control measures, equipment, or devices.

56. ***Corrosive*** – a liquid or solid that causes visible destruction or irreversible alterations in human skin tissue at the site of contact or, in the case of leakage from its packaging, a liquid that has a severe corrosion rate on steel.

57. ***CPIC*** – 'Competent Person In Charge.' This is the sole authority in charge of every aspect of a designated job site, procedure, etc.

58. ***Creating Employer*** – the employer that causes a hazardous condition that violates a Safety Standard.

59. ***Crocidolite*** – a type of asbestos also known as 'riebeckite' or 'blue asbestoses. It is composed of straight fibers. Most comes from southern Africa and Australia. It is believed to be the most toxic form of all asbestos minerals.

-D-

60. ***Deceleration Distance (DD)*** – the measured length a deceleration device 'breaks out' to while arresting the fall of an employee – from initial activation to final arrest.

61. ***Decomposition*** – the breakdown of a material or substance (by heat, chemical reaction, electrolysis, decay, or other processes) into parts of elements or simpler compounds.

62. ***Degloving*** – is a type of avulsion in which an extensive section of skin is completely torn off the underlying tissue, severing its blood supply. It is so named because the process is like the removal of a glove.

63. ***Dehydration*** – a harmful reduction in the amount of water in the body.

64. ***Detuning Skirt*** – a combination of devices used to make a structure electrically 'invisible' to a nearby AM broadcast tower. This combination of devices tunes the footprint of the obstructing tower to near '0'

rendering it invisible to the AM broadcast tower thereby eliminating any interference of the AM broadcast signal.

65. ***Disinfecting*** – killing germs on surfaces or objects. This process does not necessarily clean dirty surfaces or remove germs, but by killing germs on a surface after cleaning, it can further lower the risk of spreading infection.
66. ***DOT*** – Department of Transportation.
67. ***Due Diligence*** – reasonable efforts taken on behalf of an employee or employer to mitigate a safety concern. Also referred to as 'reasonable care'.
68. ***Dust*** – is mechanically produced solid particles (e.g. from crushing, drilling, grinding, sweeping, or handling of solid materials).
69. ***Dynamic Stability*** – the resulting stability of a vehicle/piece of equipment when variable forces are factored into the situation. These forces include, but are not necessarily limited to: braking, cornering, lifting, tilting, and lowering loads.

-E-

70. ***Enclosed Space*** – a Confined Space (by definition) where the only recognizable hazards do not endanger the life of an Entrant nor interfere with an Entrant's escape. Applicable to qualified electrical workers ONLY.
71. ***Entrant (Confined Space)*** – the employee who is authorized by the entry supervisor to enter a confined space.
72. ***Entry Supervisor*** – the qualified person responsible for determining if conditions are acceptable for the planned permit required confined space entry; authorizing entry; and overseeing operations.
73. ***Enucleation*** – the surgical removal of an eye.
74. ***Environmental Risk Factors for Heat Illness*** – working conditions that create the possibility that a heat illness could occur, including air temperature; relative humidity; radiant heat from the sun and other sources; conductive heat sources such as the ground; air movement;

workload severity and duration; protective clothing and personal protective equipment worn by employees.

75. ***Evaporation Rate*** – the rate at which a particular material will vaporize (evaporate) when compared to the rate of vaporization of a known material. The evaporation rate can be useful in evaluating the health and fire hazards of a material.
    - **a.** FAST evaporating if greater than 3.0.
    - **b.** MEDIUM evaporating if 0.8 to 3.0.
      Examples: 190 proof (95%) Ethyl Alcohol 1.4; VM&P Naphtha = 1.4; MIBK= 1.6.
    - **c.** SLOW evaporating if less than 0.8.
      Examples: Xylene = 0.6; Isobutyl Alcohol =0.6; Normal Butyl Alcohol = 0.4; Water = 0.3; Mineral Spirits = 0.1.

76. ***Excavation*** – any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal.

77. ***Excavation (mechanical)*** – the act of removing earth from the ground through mechanized means (excavator, backhoe, etc.).

78. ***Excavation (soft)*** – the act of removing earth from the ground through a method and technique designed to prevent contact damage to underground facilities. Methods include, but are not necessarily limited to hand-digging; cautious digging with non-mechanical tools; vacuum excavation methods; or use of pneumatic hand tools.

79. ***Excessive Heat Outlooks*** – issued when the potential exists for an excessive heat event in the next 3-7 days.

80. ***Excessive Heat Warning*** – when heat index values are forecast to meet or exceed locally defined warning criteria for at least 2 days (daytime highs of between 105-110° F).

81. ***Excessive Heat Watch*** – when conditions are favorable for an excessive heat event to meet or exceed local Excessive Heat Warning criteria in the next 24 to 72 hours.

82. ***Exposing Employer*** – the employer whose own employees are exposed to the hazard.

83. ***Exposure*** – the actual state of potentially interacting with or being acted upon by a hazard. (MI)OSHA may only cite exposure if:

a. They witness the employee exposed to a hazard; or
b. There exists physical evidence of the employee having been exposed to the hazard (illness, injury, death).

-F-

84. ***"F"*** – Flammable (as when used in placarding or chemical warning).

85. ***Fall Arrest*** – fall protection used to limit an employee's freefall distance to a maximum of 6'. Requires an anchor point able to provide 5000 lbs. of static load.

86. ***Fall Restraint*** – fall protection used to limit an employee's freefall distance to a maximum of 2'. Requires an anchor point able to support 3000 lbs. of static load.

87. ***First-aid*** – any of the following:
    a. Using a nonprescription medication at nonprescription strength.
    b. For medications available in both prescription and non-prescription form, a recommendation by a physician or other licensed health care professional to use a non-prescription medication at prescription strength is considered medical treatment.
    c. Administering tetanus immunizations.
    d. Other immunizations, such as hepatitis B vaccine or rabies vaccine, are considered medical treatment.
    e. Cleaning, flushing, or soaking wounds on the surface of the skin.
    f. Using wound coverings such as bandages, gauze pads, etc.; or using butterfly bandages (e.g. Steri-strips^{tm}).
        i. Other wound closing devices, such as sutures, staples, etc., are considered medical treatment.
    g. Using hot or cold therapy.
    h. Using any nonrigid means of support, such as elastic bandages, wraps, nonrigid back belts, etc.
        i. Devices that have rigid stays or other systems designed to immobilize parts of the body are considered medical treatment.

i. Using temporary immobilization devices while transporting an accident victim, such as splints, slings, neck collars, backboards, etc.
j. Drilling of a fingernail or toenail to relieve pressure; or draining fluid from a blister.
k. Using eye patches.
l. Removing foreign bodies from the eye using only irrigation or a cotton swab.
m. Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs, or other simple means.
n. Using finger guards.
o. Using massages.
    i. Physical therapy or chiropractic treatment is considered medical treatment.
p. Drinking fluids for relief of heat stress.

88. ***Fissure*** – is a break along definite planes of fracture indicating that a soil failure (cave-in) is presently occurring. Complete soil failure can occur within seconds of fissures occurring.

89. ***Fit for Duty*** – physically and mentally able to perform the essential duties and/or functions of his/her job in a safe, secure and productive manner without reasonable accommodation; has received an adequate amount of rest and is without influence of alcohol, drugs, or prescription medication that will affect his/her ability to work safely.

90. ***Flammable*** – a liquid with a flash point below 100° F (37.8° C).

91. ***Flash Point*** – the temperature at which a liquid will give off enough flammable vapor to ignite.

92. ***Freefall Distance (FFD)*** – is unobstructed fall preceding the impediment, engagement, or deceleration mechanics of the employee's fall protection (e.g. harness, lanyard, SRL, decelerator pack, etc.). Freefall is from the start of the fall to the moment the deceleration device begins activating.

93. ***Friable*** – a term used to indicate that an asbestos material can be crumbled, pulverized, or reduced to powder by hand pressure when

dry. When disturbed, friable RACM asbestos crumbles into a dust of microscopic fibers which can remain in the air for long periods of time.

94. ***Frostbite*** – Severe damage to tissues resulting from cold temperature exposure. Ice crystals having formed within skin cells causes the cells to rupture which leads to cell death. There are three stages of frostbite:
    - **a.** 1st degree injury: Similar to mild chilblain with excess blood present in vessels, mild itching, and edema. No blistering or peeling of skin occurs.
    - **b.** 2nd degree injury: characterized by blistering and skin peeling.
    - **c.** 3rd degree injury: characterized by the death of skin tissue and exhibiting open sores.
    - **d.** 4th degree injury includes destruction of connective tissues and bone with gangrene.

95. ***Frostnip*** – a generally reversible condition involving the freezing of top layers of skin tissue.

96. ***Fume*** – solid particles generated by condensation from the gaseous state, generally after volatilization from melted substance (e.g. welding), and often accompanied by a chemical reaction such as oxidation. Gases and vapors are not fumes.

97. ***Fungus*** – a group of spore-producing organisms feeding on organic matter. Fungi can cause skin diseases, such as ringworm and athlete's foot; while other types of fungi can infect the lungs or nervous system.

-G-

98. ***Gas*** – a substance that is in the gaseous state at room temperature and pressure i.e. Natural Gas

99. ***Grounded*** – being effectively bonded to a '0' state of electrical potential, usually meaning 'earth' potential. This may be through a direct connection or the (discouraged) 'daisy-chained' connection.

100. ***Guarded*** – covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails,

screens, mats, or platforms to remove the likelihood of approach or inadvertent contact by persons or objects.

-H-

101. ***Hand-Arm Vibration Syndrome (HAVS)*** – has come to describe the permanent damage to the blood vessels and nerve endings which occur in the fingers, hands, and arms when continually working with portable or mounted vibrating tools and machinery for extended periods of time. Any kind of tool transferring vibrations to the worker can cause this condition regardless of its power supply (i.e. electricity, gas, or air).

102. ***Harness Effects (HEFF)*** – the stretch of the elongation of the body harness in a fall incident. A properly fitted body harness can expect 12-24" of stretch depending on the construction materials

    a. Lanyards typically stretch from 10-18". Connector on each end to connect to the body belt or body harness to a deceleration device, life line or anchorage.

103. ***Hazard*** – is the potential for harm; a condition, event, or circumstance that could lead to or contribute to an unplanned or undesirable event. In practical terms, a hazard is often associated with an undesirable condition or activity that, if left uncontrolled, can result in an injury, illness, or death. Common types of hazards may include but not necessarily be limited to:
    a. *Atmospheric* – the status or condition of an atmosphere that may expose a worker to death, incapacitation, impairment, the inability to self-rescue, injury, or acute illness. Hazardous atmospheres may include but not necessarily be limited to the following:
        i. *Flammable* – containing a gas, vapor, or mist more than 10% of its lower flammable limit (LFL).
        ii. *Combustible* – containing dust at a concentration that meets or exceeds it LFL (typically a concentration which obscures vision at 5' or less).
        iii. *Oxygen deficient* – containing an oxygen concentration below 19.5%.

iv. *Oxygen enriched* – containing an oxygen concentration above 23.5%.

v. *Toxic* – containing a concentration of any substance exceeding PEL.

vi. *IDLH* – any other atmospheric condition that may be Immediately Dangerous to Life or Health.

b. *Behavioral* – reflecting a worker's state of mind. The more common identifiable behavioral hazards of workers include:

i. *Shortcuts / Rushing* – encourages the worker to disregard and potentially circumvent standardized processes and procedures.

ii. *Temper* – leads to poor judgement and erratic behavior which can lead to rushing.

iii. *Assurance* – leads to overconfidence, arrogance, and complacency which can lead to shortcuts.

iv. *Lack of Training / Knowledge* – establishes the worker as unqualified and significantly increases the likelihood that shortcuts will be taken.

v. *Exhaustion / Fatigue* – compromises judgement calls and detriments logical reasoning. Exhaustion and fatigue are gateways to shortcuts, temper, and complacency.

vi. *Complacency* – a feeling of contentment or self-satisfaction, often combined with a lack of awareness of pending trouble or situational awareness.

c. *Caught-Between (Pinch Point, Crush)* – an injury resulting from a person being squeezed, caught, crushed, pinched, or compressed between two or more objects, or between parts of an object.

d. *Chemical (Corrosive)* – a chemical that, when it contacts the skin, metal, or other materials, damages or destroys that material. Acids and bases are examples of corrosives.

e. *Chemical (Flammable)* – a chemical that, when exposed to a heat ignition source, results in combustion. Typically, the lower a chemical's flashpoint and boiling point, the more flammable that chemical.

f. *Chemical (Toxic)* – a chemical that poses a potential exposure to the worker through absorption and/or inhalation. The

amount of chemical exposure is critical in determining hazardous effects.

g. *Engulfment (Drown)* – means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system.

h. *Engulfment (Crush)* – means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can exert enough force on the body to cause death by strangulation, constriction, crushing, or suffocation.

i. *Environment (Public)* – high crime area, heavy traffic, public relations, nature, animals, insects, plants, etc.

j. *Ergonomics (Sprain)* – is a stretched or torn ligament because of overexertion, poor body position, repetitive motion, or trauma. Ligaments are tissues that connect bones at a joint.

k. *Ergonomics (Strain)* – is a stretched or torn tendon or muscle because of overexertion, poor body position, repetitive motion, or trauma. Tendons are soft tissues that attach muscles to bone.

l. *Ergonomics (Human Error)* – a system design, procedure, or equipment that is error-proactive (i.e. a switch that goes up to turn something off).

m. *Excavation (Collapse)* – soil collapse in a trench or excavation as a result of improper or inadequate shoring. Soil type is critical in determining the hazard potential.

n. *Explosion (Combustible)* – a rapid increase in volume and release of energy in an extreme manner, usually with the generation of high temperatures and the release of gases. Supersonic explosions created by high explosives are known as detonations and travel via supersonic shock waves. Subsonic explosions are created by low explosives through a slower burning process known as deflagration.

o. *Explosion (Over Pressurization)* – a sudden and violent release of a large amount of gas/energy due to a significant pressure difference such as a rupture in a boiler or compressed gas cylinder.

p. *Fall (From Height)* – a condition that results in a body impact from an elevated position (i.e. ladder, elevated platform, scaffold, etc.).

q. *Fall (Same Level)* – a condition that results in a body impact on traditional walking surfaces (e.g. slips, trips).

r. *Fire/Heat (Thermal)* – temperatures that can cause burns to the skin or damage to other organs. Fires erupt when the fire triangle is balanced (heat source, fuel, and oxygen) for that chemical, element, etc.

s. *Mechanical/Vibration (Chaffing / Fatigue / Hand-Arm Vibration Syndrome)* – vibration that, through continued and extended use, can cause damage to skin, endurance, nerve endings, blood vessels, etc. (as when operating pneumatic tools, chainsaw, etc.).

t. *Mechanical/Vibration (Mechanical Failure)* – vibration that can cause material fatigue that results in a safety-critical failure (e.g. abraded slings and ropes, weakened hoses and belts).

u. *Mechanical Stress (Mechanical Failure)* – typically occurs when devices:

- **i.** Exceed designed capacity (e.g. overloading, shock loading);
- **ii.** Are inadequately maintained (e.g. lubrication; cleaning and storing of hot sticks); or
- **iii.** Inadequately used (e.g. nylon slings around sharp edges, anchor shackles used in lifting).

v. *Noise (Hearing Loss)* – levels exceeding 85db for more than 8 hours per workday can cause permanent hearing damage.

w. *Noise (Communication)* – levels that may impede the communication of safety-critical information.

x. *Plants, Animals, Insects* – exposure to certain plants, insects, and animals (waste) can result in illness. Attacks can result when animals are predatory or territorial.

y. *Radiation (Ionizing)* – energy frequencies that possess enough power (electron volts) to begin stripping electrons from the body's cells on a molecular level ultimately resulting in DNA damage. Ionizing radiation begins with some ultraviolet light frequencies (including the sun) and continues at increased

frequencies (x-rays and gamma rays). This makes ionizing radiation carcinogenic.

z. *Radiation (Non-Ionizing)* – energy frequencies containing only enough power (electron volts) to resonate (vibrate) skin tissue which generates heat. If exposure continues, the worker may experience signs and symptoms identical to heat-related illness: nausea, headache, etc. Non-ionizing radiation begins with some ultraviolet light and continues through lower frequencies (infrared, radio waves, microwaves). Non-ionizing radiation is not carcinogenic.

aa. *Struck-By (Mass Acceleration, Line-of-Fire)* – an accelerated mass that strikes the worker (i.e. a falling object, a tensioned rope breaking and snapping back at a worker).

bb. *Struck-Against* – an accelerated body or body part contacting a mass (as when a screwdriver slips).

cc. *Temperature Extremes (Hot/Cold)* – resulting in heat stress, exhaustion, or metabolic slow down.

dd. *Visibility (Illumination)* – the lack of lighting.

ee. *Visibility (Line-of-Sight)* – an obstructed field of vision.

ff. *Weather Phenomena* – snow, rain, wind, ice, tornado, hurricane, etc.

104. ***Hazard Assessment*** – is the workplace and process evaluation of the job to be performed. It identifies potential hazard exposures that may be encountered and applies control measures to mitigate those identified hazard exposures. A Job Hazard Analysis and a Pre-job are methods in documenting a Hazard Assessment.

105. ***Hazardous Material*** – in a broad sense, a hazardous material is any substance or mixture of substances having properties capable of producing adverse effects on the health or safety of a human being. A hazardous material has one or more of the following characteristics:

a. Has a flash point below 140° F., or is subject to spontaneous heating;

b. Has a threshold limit value below 500 ppm for gases and vapors, below 500 MG/M3 for fumes, and below 25 mppcf (million particles per cubic foot) for dusts;

c. A single dose oral LD_{50} below 500 mg/kg;

d. Is subject to polymerization with the release of large amounts of energy;
e. Is a strong oxidizing or reducing agent;
f. Causes first degree burns to skin in short time exposure, or is systemically toxic by skin contact; or
g. During normal operations, may product dusts, gases, fumes, vapors, mists, or smokes which have one or more of the above characteristics.

106. ***Heat Advisory*** – when heat index values are forecast to meet locally defined advisory criteria for 1 to 2 days (daytime highs of between 100-105° F).

107. ***Heat Cramps*** – muscular pains and spasms due to heavy exertion. Although heat cramps are the least severe, they are often the first signal that the body is having trouble with the heat.

108. ***Heat Exhaustion*** – an escalation of heat illness. Typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to the vital organs. This results in a form of mild shock. If not treated, the victim's condition will worsen. Body temperature will keep rising and the victim may suffer heat stroke.

109. ***Heat Illness*** – a serious medical condition resulting from the body's inability to cope with a heat load and includes heat cramps, heat exhaustion, heat syncope and heat stroke.

110. ***Heat Index*** – a number in degrees Fahrenheit (F) that tells how hot it feels when relative humidity is added to the air temperature. Exposure to full sunshine can increase the heat index by 15 degrees.

111. ***Heat Strain*** – the body's overall physiological response resulting from heat stress (e.g. sweating, dilated blood vessels, increased heart rate, etc.).

112. ***Heat Stress*** – the net heat load to which a worker is exposed, considering physical exertion, air temperature, humidity, clothing worn, and any other factor that can potentially increase the heat stored by the body.

113. ***Heat Stroke***
    - **a.** Classic – A life-threatening culmination of a heat-related illness condition. The victim's temperature control system, which produces sweat to cool the body, stops working. The body temperature can rise so high that brain damage and death may result if the body is not cooled quickly.
    - **b.** Exertional – Occurs in physically active individuals who will often continue sweating. This prolonged physical exertion coupled with core body temperature rise often leads to acute rhabdomyolysis.

114. ***Heat Syncope –*** A mild form of heat-related illness manifesting itself as fainting. It occurs when the body, to cool itself, causes the blood vessels to dilate to such an extent that blood flow to the brain is reduced. Heat Syncope usually occurs after prolonged standing or sudden rising from a sitting or supine (lying face-up) position.

115. ***Heat Wave*** – A prolonged period of excessive heat, often combined with excessive humidity.

116. ***High-Pressure Injection Injury (HPI)*** – occurs when a gas (compressed air) or liquid (paint, hydraulic fluid, gas, diesel, etc.) is injected under the skin at high pressure. A high-pressure injection injury is a medical emergency.

117. ***Hospitalization*** – the inpatient admission of an employee to a hospital for treatment, observation, or any other reason.

118. ***"HT"*** –Highly Toxic (as when used in placarding or chemical warning).

119. ***Hypothermia*** – means "low heat" and is a potentially serious health condition. It occurs when body heat is lost from being in a cold environment faster than it can be replaced.

-I-

120. ***IDLH*** – immediately Dangerous to Life or Health.

121. ***Immersion hypothermia*** – a specific kind of hypothermia brought on by the body's immersion in cold water. Hypothermia develops much

more quickly than standard hypothermia because water conducts heat away from the body 25 times faster than air.

122. ***Incident*** – An unplanned event which includes, but not necessarily limited to, the following:
    - **a.** Any work-related fatality
    - **b.** Any work-related injury, even if treatment is not required or is initially refused.
      An injury is any wound or damage to the body resulting from an event in the work environment. Examples include, but are not necessarily limited to:
        - **i.** Sprains, strains, tears;
        - **ii.** Lacerations, contusions, abrasions, punctures;
        - **iii.** Burns, corrosions;
        - **iv.** Broken, fractured, or dislocated bones;
        - **v.** Concussion;
        - **vi.** Amputation, avulsion, loss of eye;
        - **vii.** Gunshot or knife wounds.
    - **c.** Any work-related illness
        - **i.** The illness may be acute or chronic.
        - **ii.** The cause of the illness may be attributed to, but not necessarily limited to, an exposure to a substance relating to a particular process, trade, occupation, animal, insect, or plant.
        - **iii.** Examples of a work-related illness may include, but not necessarily limited to:
            - Respiratory conditions associated with breathing hazardous biological agents, chemicals, dust, gases, vapors, or fumes at work. This may include silicosis, asbestosis, pneumonitis, pharyngitis, rhinitis or acute congestion; farmer's lung, beryllium disease, tuberculosis, occupational asthma, reactive airways dysfunction syndrome (RADS), chronic obstructive pulmonary disease (COPD), hypersensitivity pneumonitis, toxic inhalation injury, such as metal fume fever, chronic obstructive bronchitis and other pneumoconiosis; etc.
            - Poisoning includes disorders evidenced by abnormal concentrations of toxic substances in blood, other

tissues, other bodily fluids, or the breath that are caused by the ingestion or absorption of toxic substances into the body. This may include poisoning by lead, mercury, cadmium, arsenic, or other metals; poisoning by carbon monoxide, hydrogen sulfide, or other gases; poisoning by benzene, benzol, carbon tetrachloride, or other organic solvents; poisoning by insecticide sprays such as parathion or lead arsenate; poisoning by other chemicals such as formaldehyde; etc.

- Skin diseases or disorders caused by work exposure to chemicals, plants or other substances. This may include contact dermatitis, eczema, or rash caused by primary irritants and sensitizers or poisonous plants; oil acne; friction blisters, chrome ulcers; inflammation of the skin; etc.
- Hearing loss manifesting as a change in hearing threshold relative to a baseline audiogram of an average of 10dB or more in either ear in 2000, 3000, and 4000 hertz; and the employee's total hearing level is 25 decibels (dB) or more above the audiometric zero (also averaged at 2000, 3000, and 4000 hertz) in the same ear(s).
- Others illnesses including heatstroke, sunstroke, heat exhaustion, heat stress and other effects of environmental heat; freezing, frostbite, and other effects of exposure to low temperatures; decompression sickness; effects of ionizing radiation (isotopes, x-rays, radium); effects of nonionizing radiation (welding flash, ultra-violet rays, lasers); anthrax; bloodborne pathogenic diseases such as AIDS, HIV, hepatitis B or hepatitis C; brucellosis; malignant or benign tumors; histoplasmosis; coccidioidomycosis; etc.

d. Any work-related property damage events (company, private, or public)

e. Near-miss accidents.

i. A near-miss is where property damage and injury did not result; however, if there had been even the slightest shift in time or position, then it can reasonably be expected that either property damage or injury or both would have occurred.

f. Underground utility contact

i. A dig-in or other unintentional contact with an underground utility that, at the very least, may have potentially compromised the integrity of the utility facility.

g. Unplanned outage

i. An interruption of a utility's service. This typically refers to any overhead contact with electrical lines which results in a loss of electricity.

ii. This does not usually refer to a power outage resulting from the damage to an underground electrical line as that would be considered an 'underground utility contact' (the unplanned outage being the RESULT of the underground utility contact).

h. Work-related theft of company, private, or public property.

i. Work-related (chemical) spills or releases.

123. ***Induction –*** a general term used to describe static electricity, electromagnetic coupled induction, and/or capacitive coupled induction. It is a voltage imposed upon a conductive object (conductor, component, vehicle, etc.) from an unconventional outside source (wind, adjacent energized conductors, etc.).

124. ***Ingestion*** – the taking in of a substance through the mouth.

125. ***Inhalation*** – the breathing in of a (gas, vapor, fume, mist, or dust) substance into the lungs.

126. ***Inpatient hospitalization*** – the formal admission of an employee to the inpatient service of a hospital or clinic for care or treatment.

127. ***Isolated (electrically)*** – not readily accessible or exposed to persons or energy sources unless special or intentional means of access are utilized. Isolated DOES NOT negate the potential for atypical or outside sources to impose a force (energy) upon an isolated entity.

-J-

128. ***Job Hazard Analysis*** – an enhanced pre-job.

-L-

129. ***LC_{50}*** – Lethal Concentration. The concentrations of the chemical in air that kills 50% of the test animals during the observation period. LC values usually refer to the concentration of a chemical in air but in environmental studies it can also mean the concentration of a chemical in water.

130. ***LD_{50}*** – Lethal Dose. The amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals. The LD_{50} is one way to measure the short-term poisoning potential (acute toxicity) of a material.

131. ***LEL or LFL*** – lower explosive limit or lower flammable limit of a vapor or gas; the lowest concentration (lowest percentage of the substance in air) that will produce a flash of fire when an ignition source (heat, air, or flame) is present. At concentrations lower than the LEL, the mixture is too "lean" to burn.

132. ***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.

133. ***Lockout device*** – a device that uses a positive means such as a lock, either key or combination type, to hold an energy-isolating device in the safe position and prevent the energization of machine or equipment.

134. ***Lockout / tagout policy*** – a set of guidelines and rules used to develop an effective lockout / tagout procedure.

135. ***(Specific) Lockout / tagout procedure*** – a specific and itemized set of tasks, chronologically listed that, when followed and ultimately completed, is intended to secure a safe work condition.

-M-

136. ***Man (Worker) Rated*** – connecting devices and components rated for employee (fall) protection, not material rigging and lifting. Man Rated connecting devices and components should never be used for materials; and if they are, they shall NEVER again be used for employee (fall) protection.

137. ***Medical treatment*** – the management and care of a patient to combat disease or disorder. Medical treatment does not include:
    a. Visits to a physician or other licensed health care professional solely for observation or counseling; or
    b. The conducting of diagnostic procedures, such as x-rays and blood tests, including the administration of prescription medications used solely for diagnostic purposes (e.g. eye drops to dilate pupils).

138. ***Mesothemlioma*** – a rare form of cancer that affects the thin membranes lining the abdomen and chest.

139. ***MISS DIG*** – A system which serves as a message handling notification service for underground facility owners. The system takes information about planned excavations, distributes that information to its membership. This provides utility owners with the location parameters in which to provide utility markings regarding the proposed excavation.

140. ***Mist*** – an aerosol consisting of liquid particles generated by condensation of a substance from the gaseous to the liquid state.

141. ***MIOSHA*** – Michigan Occupational Safety and Health Administration.

142. ***MMUTCD*** – Michigan Manual of Uniform Traffic Control Devices.

143. ***Mousing*** – is the method of anchoring a screw pin to the shackle ear using a wire, zip tie, etc. to prevent it from unscrewing during rigging and lifting operations.

144. ***Multi-Employer Worksite*** – a worksite in which full-time, part-time, temporary, and/or contract employees, that report to different employers, are conducting operations on the same worksite.

(MI)OSHA recognizes up to 4 types of employees on any job site: Controlling, Creating, Exposing, and Controlling.

145. ***Mutagen*** – a substance or agent capable of altering the genetic material in a living cell.

-N-

146. ***NFPA*** – National Fire Protection Association.

147. ***NIOSH*** – National Institute for Occupational Safety and Health.

148. ***Non-friable*** – a term used to indicate that an asbestos material cannot be crushed or damaged as easily as friable.

149. ***Non-Permit Required Confined Space*** – A Confined Space (by definition) that contains no other recognizable serious safety or health hazard.

150. ***Non-Recordable Injuries and Illness*** – any of the following:

    a. If the employee was present in the work environment as a member of the general public rather than as an employee at the time of injury or illness.
    b. The injury or illness involves signs or symptoms that surface at work but result solely from a non-work-related event or exposure that occurs outside the work environment.
    c. The injury or illness results solely from voluntary participation in a wellness program or in a medical, fitness, or recreational activity such as blood donation, physical examination, flu shot, exercise class, racquetball, or baseball.
    d. The injury or illness is solely the result of an employee eating, drinking, or preparing food or drink for personal consumption whether bought on the employer's premises or brought in.
        i. If the employee is injured by choking on a sandwich while in the employer's establishment, the case would not be considered work-related.
        ii. If the employee is made ill by ingesting food contaminated by workplace contaminants, such as lead, or gets food poisoning from food supplied by the

employer, then the case would be considered work-related.

e. The injury or illness is solely the result of an employee doing personal tasks, unrelated to their employment, at the establishment outside of the employee's assigned working hours.

f. The injury or illness is solely the result of personal grooming, self-medication for a non-work-related condition, or is intentionally self-inflicted.

g. The injury or illness is caused by a motor vehicle accident and occurs on a company parking lot or company access road while the employee is commuting to or from work.

h. The illness is the common cold or flu.

i. Contagious diseases such as tuberculosis, brucellosis, hepatitis A, or plague are considered work-related if the employee is infected at work.

j. Mental illness will not be considered work-related unless the employee voluntarily provides the employer with an opinion from a physician or other licensed health care professional who has appropriate training and experience, such as a psychiatrist, psychologist, psychiatric nurse practitioner, or the like, stating that the employee has a mental illness that is work-related.

151. ***Nuisance Dust*** – Innocuous dust does not cause a serious health condition.

-O-

152. ***"O" or "OX" –*** Oxidizer (as when used in placarding or chemical warning).

153. ***Occupational Exposure (with regards to BBP) –*** reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

154. ***Occupational Injury or Illness*** – an injury or illness resulting from a work incident or from an exposure involving a single incident in the work environment.

a. An occupational injury includes, but is not necessarily limited to: a cut, a fracture, a sprain, or an amputation.

b. An occupational illness (either acute or chronic) includes but is not limited to: a skin disease, a respiratory disorder, or a poisoning.

155. ***Other Potentially Infectious Materials*** – include the following:

a. Human body fluids including semen; vaginal secretions; cerebrospinal fluid; synovial fluid; pleural fluid; pericardial fluid; peritoneal fluid; amniotic fluid; saliva in dental procedures; anybody fluid that is visibly contaminated with blood; and all body fluids in situations where it is difficult or impossible to differentiate between body fluids;

b. Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and

c. HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV- containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

156. ***OOM*** – Owner / Operator's Manual.

157. ***OSHA*** – Occupational Safety and Health Administration.

158. ***Oxidation*** – in a literal sense, oxidation is a reaction in which a substance combines with oxygen provided by an oxidizer or oxidizing agent.

159. ***Oxidizer*** – a substance which yields oxygen readily to stimulate the combustion (oxidation) of organic matter. Chlorate (ClO_3), permanganate (MnO_4), and nitrate (NO_3) compounds are examples of oxidizers; note that all contain oxygen (O).

160. ***Oxidizing Agent*** – a chemical or substance which brings about an oxidation reaction. The agent may:
a. Provide the oxygen to the substance being oxidized (in which case the agent must be oxygen, or contain oxygen), or
b. It may receive electrons being transferred from the substance undergoing oxidation (chlorine is a good oxidizing agent for

electron-transfer purposes, even though it contains no oxygen).

161. ***Oxygen Deficiency*** – concentration of oxygen in the ambient air of less than 19.5% by volume.

162. ***Oxygen Enriched*** – concentration of oxygen in the ambient air of more than 19.5% by volume.

-P-

163. ***"p"*** – Pyriphoric (as when used in placarding or chemical warning).

164. ***PACM*** – Presumed Asbestos Containing Material; more precisely, thermal system insulation and surfacing materials found in buildings constructed prior to 1981.

165. ***Parasite*** – an organism that lives in or on an organism of another species (its host) and benefits by deriving nutrients at the other's expense. Parasites can spread disease through bites or animal feces.

166. ***Parenteral*** – means piercing mucous membranes or the skin barrier through such events as needlesticks, human bites, cuts, and abrasions.

167. ***Pathogen*** – a disease-producing organism that enters the body.

168. ***"PEC"*** – Potentially Explosive Chemical (as when used in placarding or chemical warning).

169. ***PEL*** – Permissible Exposure Limit as established by the Occupational Safety & Health Administration (OSHA).

170. ***Permit Required Confined Space (PRCS)*** – a Confined Space (by definition) that contains an additional recognizable serious safety or health hazard such as:
    a. Engulfment; configuration promoting entrapment; exposed live electrical circuits; unguarded mechanical hazards; animals; noise; vibration; heat/cold; poor visibility; falls; corrosion; etc.

171. ***Personal Risk Factors for Heat Illness*** – are an employee's personal contributing factors increasing that employee's susceptibility to a heat-related illness. Personal risk factors may

include the employee's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat.

172. ***PFAS*** – personal fall arrest system comprising of a body harness, anchor point, and connecting devices.

173. ***Pocket Penetrometer*** – a handheld tool designed to estimate a soil's unconfined compressive strength. It is a small handheld gauge with a tip that is pressed into a soil sample to a depth of apx ¼". This causes a spring to compress and an adjustable slide indicator to display a number indicating the approximate unconfined compressive strength measured in tons per square foot (tsf).

174. ***Positive Response (MISS DIG) –*** a system that records the marking status of MISS DIG membership utilities with regards to a specific MISS DIG ticket number.

175. ***Preexisting condition*** – is an injury or illness having resulted solely from a non-work-related event or exposure that occurred outside the work environment.

176. ***Pre-job*** – an on-site abbreviated job hazard analysis identifying no less than:
    - **a.** Hazards associated with the job;
    - **b.** Work procedures involved;
    - **c.** Special precautions;
    - **d.** Energy source controls;
    - **e.** Personal protective equipment and/or methods.

177. ***Privacy concern case*** – is a recordable injury/illness case containing facts of a personal nature regarding the employee who was injured. As such, (MI)OSHA allows a variance in documenting the type of injury or the injured body part on OSHA recording forms. Privacy Concern Cases include the following:
    - **a.** An injury or illness to an intimate body part or the reproductive system;
    - **b.** An injury or illness resulting from a sexual assault;
    - **c.** Mental illnesses;

d. HIV infection, hepatitis, or tuberculosis;
e. Needlestick injuries and cuts from sharp objects that are contaminated with another person's blood or other potentially infectious material;
f. Any other illness where the employee independently and voluntarily requests that his or her name not be entered on the log;
g. Musculoskeletal disorders (MSDs) are not considered private concern cases.

178. ***Protective System*** – refers to a method of employee protection by securing the walls of excavations and trenches from cave-in or collapse. Examples include sloping, benching, shoring, sheeting, trench box, trench shield, etc.

-Q-

179. ***Qualified Person*** – a person who, by possession of a recognized degree, certification, 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 and work.

-R-

180. ***Reactivity*** – a description of the tendency of a substance to undergo chemical reactions with the release of energy. Undesirable effects – such as pressure buildup, temperature increase, formation of noxious, toxic, or corrosive by-products – may occur because of the reactivity of a substance to heating, burning, direct contact with other materials or other conditions in use or in storage.

181. ***Reasonable Care –*** see 'due diligence'.

182. ***Recordable injuries and illness*** – an injury or illness that meets the (MI)OSHA general recording criteria if it results in any of the following:
a. Death

b. Days away from work
c. Restricted work or transfer to another job
d. Medical treatment beyond first aid
e. Loss of consciousness
f. Other:
  i. A case as meeting the general recording criteria if it involves a significant injury or illness diagnosed by a physician or other licensed health care professional, even if it does not result in death, days away from work, restricted work or job transfer, medical treatment beyond first-aid, or loss of consciousness.
  ii. When, upon evaluating the employee's work duties, it is determined that one or more work-related events or exposures either caused or contributed to the resulting condition.
  iii. When an event or exposure in the work environment has been determined to be the root cause of any of the following, despite a preexisting health condition of the employee:
    - Death
    - Loss of consciousness
    - One or more days away from work
    - One or more days of restricted work
    - One or more days of job transfer
    - Medical treatment
    - A change in medical treatment

183. ***Regulated Waste*** – includes:
a. Liquid or semi-liquid blood or other potentially infectious materials;
b. Contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed;
c. Items that are caked with dried blood or other potentially infectious materials and can release these materials during handling;
d. Contaminated sharps;

e. Pathological and microbiological wastes containing blood or other potentially infectious materials.

184. ***Rhabdomyolysis*** – the breakdown of skeletal muscle often associated with exertional heat stroke.

-S-

185. "***SA"*** – Simple Asphyxiant (as when used in placarding or chemical warning).

186. ***SACM*** – Suspected Asbestos Containing Material. Refers to applications or materials not clearly defined as "presumed" but "suspected" of being asbestos containing.

187. ***Safe work condition*** – a state in which a machine, equipment, or component has been disconnected from energy sources, locked/tagged in accordance with established standards, and tested to ensure all energies have been rendered to a '0' state.

188. ***Safe Zone*** – the area outside 48 inches of either side of the MISS DIG markings.

189. ***Sanitizing*** – lowers the number of germs on surfaces or objects to a safe level, as judged by public health standards or requirements. This process works by either cleaning or disinfecting surfaces or objects to lower the risk of spreading infection.

190. ***SDS*** – Safety Data Sheets.

191. ***Serpentine Group*** – One of the two groups of asbestos regulated by the government. This group is characterized by long, curly fibers that can be woven, and contains chrysotile asbestos.

192. ***Shade –*** The blockage of direct sunlight.

193. ***Shoring*** – a protective system consisting of sheets and jacks and built in place to prevent the cave-in or collapse of an excavation or trench.

194. ***Simple asphyxiant***- a substance or mixture that displaces oxygen in the ambient atmosphere and can thus cause oxygen

deprivation in those who are exposed, leading to unconsciousness and death.

195. ***Sloping*** – a method of protecting employees from excavation cave-ins by slanting the walls to a predetermined angle (as required by OSHA) based on the unconfined compressive strength of the soil.

196. ***Smoke*** - Aerosols, gases, and vapors resulting from incomplete combustion.

197. ***Solubility in Water*** - A term expressing the percentage of a material (by weight) that will dissolve in water at ambient temperature. Solubility information can be useful in determining spill cleanup methods and fire-extinguishing agents and methods for a material. Terms used to express solubility are:
    - **a.** Negligible — Less than 0.1 percent
    - **b.** slight — 0.1 to 1.0 percent
    - **c.** moderate — 1 to 10 percent
    - **d.** appreciable — more than 10 percent
    - **e.** complete — soluble in all proportions

198. ***Source Individual*** – any individual, living, or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to an employee. Examples include, but are not limited to, hospital and clinic patients; clients in institutions for the developmentally disabled; trauma victims; clients of drug and alcohol treatment facilities; residents of hospices and nursing homes; human remains; and individuals who donate or sell blood or blood components.

199. ***Specific Gravity*** – the weight of a material compared to the weight of an equal volume of water; an expression of the density (or heaviness) of the material.

    a. Insoluble materials with specific gravity of less than 1.0 will float in (or on) water. Insoluble materials with specific gravity greater than 1.0 will sink (or go to the bottom) in water. Most (but not all) flammable liquids have a specific gravity less than 1.0 and, if not soluble, will float on water – an important consideration for fire suppression and for clean-up.

200. ***Specific LOTO Work Area*** – is any part of the job parameter that is directly affected by the Specific Lockout/Tagout Procedure. Anyone entering the area may potentially be exposed to a hazard created or presented by the Specific Lockout/Tagout Procedure. Areas may include remote locations away from the primary job site.

201. ***Stability*** – an expression of the ability of a material to remain unchanged. For SDS purposes, a material is stable if it remains in the same form under expected and reasonable conditions of storage or use.

202. ***STEL*** – Short Term Exposure Limit as established by the Occupational Safety & Health Administration (OSHA).

203. ***Sterilize*** – the use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

204. ***Sun Stroke*** – another term for heat stroke.

205. ***Surface Encumbrance*** – a surface object (with regards to an excavation or trench) that has the potential of posing a hazard to employees. Examples include but are not necessarily limited to utilities, foundations, transformer vaults, walkways, bridges, roads, and geologic anomalies.

-T-

206. ***"T"*** – Toxic (as when used in placarding or chemical warning).

207. ***Tagout*** – the placement of a tagout device on 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 tagout device is removed.

208. ***Tagout 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 tagout device is removed.

209. ***Temperature –*** The dry bulb temperature in degrees Fahrenheit is obtainable by using a thermometer to measure the outdoor temperature in an area where there is no shade. While the temperature measurement must be taken in an area with full sunlight, the bulb or sensor of the thermometer should be shielded while taking the measurement, e.g., with the hand or some other object, from direct contact by sunlight.

210. ***TLV*** – Threshold Limit Value. A term used to express the airborne concentration of a material to which nearly all persons can be exposed day after day without adverse effects. TLV can be expressed in three ways:
    a. ***TLV-C*** – the Ceiling exposure limit: the concentration that should not be exceeded even instantaneously.
    b. ***TLV-STEL*** – the Short-Term Exposure Limit, or maximum concentration for a continuous 15-minute exposure period (maximum of four such periods per day, with at least 60 min. between exposure periods, and provided that the daily TLV-TWA is not exceeded).
    c. ***TLV-TWA*** – the allowable Time Weighted Average concentration for a normal 8-hour workday or 40-hour workweek.

211. ***Total Fall Distance (TFD)*** – all-inclusive lateral distance of an employee in a falling incident. Total Fall Distance = freefall distance (FFD) + decelerator breakout (DD) + harness stretch (HEFF) + any lifeline stretches (VEL) + any additional safety factors (i.e. taking into account where the feet may come to rest).

212. ***Toxicity*** – the sum of adverse effects resulting from exposure to a material, generally by inhalation, ingestion, and/or absorption.

213. ***Travel status recordable injuries and illnesses*** – are those that occur while an employee is on work-related travel status if, at the time of the injury or illness, the employee was engaged in work activities "in the interest of the employer."
    a. Examples include travel to and from customer contacts, conducting job tasks, and entertaining or being entertained to transact, discuss, or promote business. Work-related

entertainment includes only entertainment activities being engaged in in the direction of the employer.

214. ***Travel status NON-recordable injuries and illnesses*** – are those that meet any of the following exceptions:
    a. Checked into a hotel or motel for 1 or more days.
    When a traveling employee checks into a hotel, motel, or other temporary residence, they are establishing a "home away from home." When the employee checks into this temporary residence, they are considered as having left the work environment. Any injury or illness occurring after such time must be evaluated for 'work-relatedness' in the same manner as a non-traveling employee.
    When the employee begins work each day, they re-enter the work environment. If reporting to a fixed worksite each day, then any injury or illness sustained during this commute is not considered work-related.
    b. Taking a detour for personal reasons.
    Injuries or illnesses are not considered work-related if they occur while the employee is on a personal detour from a reasonably direct route of travel, that is, has taken a side trip for personal reasons.

215. ***Tremolite*** – a type of asbestos that, in rough form, appears white and chalky. It can be naturally found in other mineral forms aside from asbestiform. It has been the major ingredient in industrial and commercial talc.

216. ***Trench –*** a narrow excavation whose depth is greater than the width, but not wider than 15 feet.

217. ***Trench Box*** – typically a fixed protective structure consisting of interlocking and fitted components installed in an excavation or trench to prevent a cave-in.

218. ***Trench foot*** – a painful condition of the feet caused by long immersion in cold water or mud and marked by blackening and death of surface tissue.

219. ***Trench Shield*** – typically a portable protective structure consisting of interlocking and fitted components installed in an excavation or trench to prevent a cave-in.

220. ***TWA*** – Time Weighted Average exposure; the airborne concentration of a material to which a person is exposed, averaged over the total exposure time-generally the total workday (8 to 12 hours).

-U-

221. ***UEL, UFL*** – Upper Explosive Limit or Upper Flammable Limit of a vapor or gas. The highest concentration (highest percentage of the substance in air) that will produce a flash of fire when an ignition source (heat, arc, or flame) is present. At higher concentrations, the mixture is too "rich" to burn.

222. ***Unconfined Compressive Strength*** – is the maximum pressure, measured in tons per square foot (tsf), that may be applied to unconfined soil before it fails.

223. ***Universal Precautions*** – an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

224. ***Unstable*** – tending toward decomposition or other unwanted chemical change during normal handling or storage.

225. ***Utility Rated*** – connecting devices and components rated for material rigging and lifting, not employee (fall) protection. Utility rated connecting devices and components shall never be used for worker protection.

-V-

226. ***Vapor*** – the gaseous state of a substance that is solid or liquid at room temperature and pressure.

227. ***Vapor Density*** – the weight of a vapor or gas compared to the weight of an equal volume of air. Chemical vapors lighter than air have vapor densities less than 1.0 (e.g. acetylene, methane, hydrogen).

Chemical vapors heavier than air have vapor densities greater than 1.0. (e.g. propane, hydrogen sulfide, ethane, butane, chlorine, sulfur dioxide). Chemical vapors very close to 1.0 have air densities very close to air and can therefore be expected to be found anywhere air can be found (e.g. carbon monoxide).

228. ***Vertical Elongation (VEL)*** – the stretch of lifelines in the event of a fall. This may include the stretch of the lanyard material (not the deceleration device), the vertical lifeline, or horizontal lifeline deviation. Horizontal lifeline deviation is greatly dependent on installation tension, running length, and stanchion placement.

229. ***Virus*** – smaller than bacteria, viruses cause a multitude of diseases ranging from the common cold to AIDS.

-W-

230. ***"~~W~~"*** – use No Water (as when used in placarding or chemical warning).

231. ***Wind Chill*** – the temperature the body feels when air temperature and wind speed (air flow) are combined.

232. ***Workplace Controls (with regards to BBP)*** – controls that reduce the likelihood of exposure by altering the way a task is performed (e.g. prohibiting recapping of needles by a two-handed technique).

233. ***"WR"*** – Water Reactive (as when used in placarding or chemical warning).