Training Certification

I, _____, received required training on the following subjects on

_____.

Aerial Lifts
Assured Grounding
Compressed Gases
Confined Spaces
Electrical Safety
Fall Protection
Fire Prevention
Hand and Power Tools
Health hazards
Heavy Equipment
Ladder Safety
Lockout/Tagout
Personal Protective Equipment
Rigging
Scaffolding
Trenching and Excavation
Welding Safety

_____ conducted this training at _____.

_____ _____
Employee Signature Date

_____
Foreman/Trainer Signature

Aerial Lifts

Fall Protection

Scissors Lifts (SKYJACK Mobile Elevating Work Platform) - •Fall protection is not necessary or required unless the railing has been removed.

Aerial Lifts (articulating & telescoping boom lifts) - •Fall protection is required due to potential for being bounced out of lift or from climbing out of the basket.

Tip-Over Hazards

- Do not drive near drop-offs, holes, or loading docks.
- Do not raise platform on uneven or soft surfaces.
- Do not drive onto uneven or soft surfaces when elevated.
- Do not raise platform on slope or drive onto slope when elevated.
- Do not raise platform in windy or gusty conditions.
- Standing on railing to reach work area rather than repositioning the lift.
- Traveling to job location with lift in elevated position.
- Using lift with railing removed.
- Using lift on uneven or sloped surface.
- Using near power lines, junction boxes, etc.
- Battery charging.

Electrocution Hazard

- This machine is not insulated, maintain safe clearances from electrical power lines and apparatus
- You must allow for platform sway, rock, or sag
- This work platform does not provide protection from contact with or proximity to an electrically charged conductor

Other Hazards

- Do not overload
- Do not use without railings and entry gate in place
- Do not use if work platform is not working or parts are damaged
- Do not use near moving vehicles
- Do not stand or sit on guardrails
- Do not use under the influence of alcohol or drugs
- Do not override safety devices
- Do not leave unattended with key in switch
- Do not use ladder or other device to increase size or working height
- Do not use with improperly inflated tires
- Do not use with damaged wheels or tires

Work platform is to be used by trained and authorized operators only. It is the operators responsibility to:

- •Read and understand all caution and danger warnings and operating manual.
- Perform daily maintenance inspection.
- Have all worn or damaged parts replaced.
- Fasten entry gate/chain/bar.
- Use work platform only on hard level surfaces.

Inspect And/Or Test The Following Daily Or At The Beginning Of Each Shift

- Operating and emergency controls
- Safety devices
- Personal protective devices
- Tires and wheels
- Air, hydraulic and fuel system for leaks
- Loose or missing parts

- Cable and wiring harness
- Placards, warnings, control markings and operating manual
- Guardrail system
- Battery fluid level
- Hydraulic reservoir level
- Coolant level

Maintenance Safety

- ❖ Before attempting any repair work, disconnect battery ground negative (-) lead.
- ❖ Properly position safety bar if the scissors assembly is raised.

DANGER

Do not reach through scissors assembly without safety bar properly positioned.

- ❖ Preventative maintenance is the easiest and least expensive type of maintenance.

Assured Equipment Grounding Conductor Program

Scope

The Occupational Safety and Health Administration on December 21, 1976, announced a new standard on Ground Fault Protection on construction sites, effective February 22, 1977. OSHA offers two types of systems to comply with the new standard: The Ground Fault Interrupter System and the Assured Equipment Grounding Program.

-The GFI standard states that all 120-volts, single-phase, 15, 20, and 30 ampere receptacle outlets which are not part of the permanent wiring of the building or structure and which are in use by employees, shall have approved ground fault interrupters for personnel protection. Portable GFI ' S may be used.

-The Assured Equipment Grounding Conductor Program covers all cord sets, receptacles that are not a part of the permanent wiring of the building or structure, and equipment connected by cord and plug, which are available for use by the employees. The following written procedure covers this program.

Function And Responsibilities

The electrical superintendent or his designee(s) shall meet the requirements of this procedure concerning identification. Inspections and testing. He shall have the authority to remove any defective electrical equipment from the work area and render it non-operational until completing repairs.

The electrical superintendent shall assure that all employees are aware of the requirements and their responsibilities with regard to daily inspection to insure integrity.

The warehouse superintendent or his designee(s) shall assure that any new electrical equipment is available for electrical inspection.

The construction manager shall make available facilities and equipment necessary for this program

Assured Equipment Grounding Conductor Program

Daily Inspections are performed by the individuals in a crew or by the foreman. The inspection shall consist of visually inspecting for:

- Frayed or missing insulation
- Missing terminal connection pins
- Damaged housing or covers
- Missing guards
- Any other identifiable hazards

Upon detection of any of the above-listed hazards, the electrical equipment shall be immediately removed from service and brought to the electrical shop for repair. No person other than a qualified electrician may repair this equipment. There are no written reports or documentation required for the daily inspection.

Immediate Inspection and tests are conducted by the electrical! superintendent or his designee(s) and will be required in the following instances:

- Before first use
- After any repairs
- After any damage that can be reasonably suspected to have occurred (Example: when a cord is run over.)

Record the results of Immediate Inspections on the Assured Equipment Grounding Log.

Periodic Inspections and tests must be conducted by the electrical superintendent or his designee(s) and will be required at the following intervals:

- One Month: All portable equipment (such as drills, grinders, saws, drop cords, etc.) and all receptacles
- Three Months: All service wiring on temporary buildings; outside feeders, etc.
- Six Months: Cord sets and receptacles not subject to damage.

Testing requirements for immediate and periodic inspections are identical. There are two tests required.

- All equipment grounding conductors shall be tested for continuity.
- Each receptacle and attachment cap or plug shall be tested for correct attachment of equipment ground conductor. The equipment grounding conductor shall be connected to its proper terminal.

Continuity checks may be conducted by using an ohmmeter or other testing devices that will assure the ground continuity .

Correct attachment tests may be conducted by using a device such as the Woodhead 1750 Receptacle Circuit Tester to assure that the ground wire is connected to the proper tennina1.

Compressed Gases

Examples:

- Chemicals include oxygen, argon, nitrogen, helium, acetylene, hydrogen, nitrous oxide, carbon dioxide, ammonia, chlorine, etc.
- Compressed gases used in bulk systems or portable cylindersIndustry uses include welding, cutting, operating tools, transferring liquids, blowing agents, laboratories, etc.

Hazards:

- Explosion
- Flammability
- Corrosive
- Toxicity
- Reactivity
- Air displacing
- Check MSDS for specific hazards

Labeling:

- Name of the compressed gas
- Hazards of the compressed gas
- National Fire Protection Association (NFPA) labels
- Department of Transportation (DOT) labelsDo not remove any labels

Handling:

- Close the valve and put on the cap
- Do not "walk" cylinder by holding onto valve stem or cap
- Never roll a cylinder on its side
- Use a hand truck with a secure system

Storage:

- Dry, well ventilated, protected from weather
- Away from combustibles, heat sources, electrical systems
- No sparks, smoking, open flames
- Oxygen separated from fuels 20' or firewall at least 5'with a 1 hour rating.
- Upright, secured, valve cap on
- Not in elevators, staircases, hallways, etc
- .Sign requirements

Cylinder Use:

- Upright and secure
- Away from flames, sparks, electricity
- Keep oil, grease, flammables off cylinders
- Open valve by hand, if tools required don't use the cylinder
- Open valve slowly with hand to the side
- Don't tamper with safety devices

Regulators and Gages:

- Regulator and gauge rated for the pressure in the gas system
- Regulator must be compatible with the gas
- Do not exchange gauge from one gas to another
- Thread sealant recommended by manufacturer for application
- Wear eye protection when operating regulator

General Safety:

- Never try to repair
- Tag it, move it outdoors, and keep it away from heat or flame
- Call manufacturer or dealer
- Only accept and use DOT approved cylinders
- Do not drop cylinders
- Protect cylinders from cuts and abrasions
- Don't use cylinders for unintended function such as a roller or support
- Don't tamper with safety valves
- Caps on whenever not in use

Other Gases:

- LPG
- Compressed
- Oxygen
- Acetylene
- Miscellaneous Gases (argon, nitrogen)

Summary:

- Cylinders must always be stored and secured properly
- Use caution when transporting cylinders
- Understand the hazards of a compressed as before using it
- Even compressed air can be dangerous

Confined Space Entry

By definition, a Confined Space has: limited means of egress; can be bodily entered; and/or not been designed for continuous occupancy.

Did you know?

Confined space entry is a leading cause of occupational fatalities in this country.
Standard covers 240,000 workplaces and 12.2 million workers.
Workers make 4.8 million entries/year.
Standard may prevent 85% of fatalities and nearly 11,000 injuries.

A Permit Required Confined Space: contains or has potential to contain a hazardous atmosphere; contains the potential for engulfment; internal configuration that can trap or asphyxiate entrant; and/or any other serious safety or health hazards.

Confined Space Hazards: engulfment, oxygen deficiency (19.5% or less), oxygen enrichment (23.5% or higher), flammable gases or vapors, combustible dusts, toxic substances, IDLH atmospheres, and/or physical hazards.

Test for hazards in this order: Oxygen content, Combustibility/flammability, and Toxic atmospheres. **Entrants must be allowed to observe monitoring.**

Supervisor responsibilities include: Conduct a pre-entry briefing; Ensure that personnel are evacuated when necessary; Ensure that permits are complete and removed when work is finished; Ensure that all necessary equipment is returned to its proper location; and Oversee all necessary confined space activities.

Attendant responsibilities include: attend pre-entry briefing; know the hazards of the space; control access to the space; maintain communication with entrants; not to enter the space for rescue; summon emergency services; and assist rescue efforts from outside the space; remain at the site while entrants are inside; order a space evacuation when conditions warrant such an action; and maintain an accurate count of the number of entrants.

Entrant responsibilities include: attend the pre-entry briefing; know the hazards of the space; and use appropriate equipment properly. Exit the space if: an alarm is activated; communication is lost; unknown exposures are encountered; or ordered to do so by attendant or supervisor.

Authorized person responsibilities include: familiarize themselves with characteristics of spaces; verify that all hazards and sources of energy have been controlled in the space; ensure that confined space permit is posted; and rescind any permit for noncompliance with permit requirements.

Rescuer Responsibilities include: understand the hazards of the space; be certified in emergency first aid and CPR; understand appropriate entry procedures; know how to use rescue equipment; and practice confined space rescues at least annually

Electrical Safety

No work on energized circuits is allowed without express approval from the President, H.R. Allen, Inc.

Electrical Hazards Include: **Electrical Shock, Electrical Explosions, Electrical Burns. These can result in severe injury or death.**

Portable ladders must have non-conductive side rails if they are used where a workers or the ladder could contact exposed energized parts. **Keep all ladder parts at least 10 feet away from Overhead power lines.**

Control circuit devices such as–push buttons –selector switches –interlocks - may not be used as the sole means for de-energizing circuits or equipment.

Check test equipment (Volt-Ohm Meter) on a known live source of same rating to ensure it works before and after checking the circuit on which you will be working.

Extension cords must be heavy duty, in equipped with third (grounding) prong, and have no breaks in the insulation. (Outer insulation where no conductor wire is exposed may be repaired on site. Flexible cords may not be fastened with staples or otherwise hung in such a fashion as could damage the outer jacket or insulation. If insulation is broken or torn exposing conductors, the cord must be discarded or repaired by a certified electrician IAW 29 CFR 1926 Subpart L.)

Portable equipment shall be handled in a manner that will not cause damage. Flexible electric cords connected to equipment may not be used for raising or lowering the equipment.

When energized, electrical rooms must be secured at all times. Doors will not be left open. Locked electrical room doors will not be considered an adequate substitute for proper Lockout/Tagout Procedures.

Portable cord and plug connected equipment and flexible cord sets (extension cords) shall be visually inspected before use on any shift for external defects:

- Loose parts
- Deformed or missing pins
- Damage to outer jacket or insulation
- Evidence of possible internal damage

If there is a defect or evidence of damage to any electrical tools or equipment remove from service immediately.

Ensure hand, cords and receptacles are dry when plugging and unplugging flexible cords and cord and plug connected equipment, if energized equipment is involved.

When Approved for Working with Energized Parts:
Persons working on energized equipment must be trained on special procedures and precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.

1. **When working on energized circuits**
   - ❑ Isolate the area from all traffic
   - ❑ Post signs & barricades

- ❑ Use an attendant
- ❑ Use insulated tool, mats and sheeting
- ❑ Use electrical rubber sheeting to cover nearby exposed circuits

3. Remove all conductive articles of jewelry and clothing, such a watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear.
4. Test instruments, equipment & test leads, cables, power cords, probes, and connectors must be visually inspected for external defects and damage before the equipment is used. Remove any defective items from service.

Fall Protection Training

Hazard Recognition

- ✓ Tripping over tools, materials, etc.
- ✓ Workers not aware of their location
- ✓ Failure to use required fall protection
- ✓ Dropping objects
- ✓ Lifting people with improper equipment
- ✓ Leading Edge Work
- ✓ Excavations

Falling Objects

- ✓ When working above ground:
- ✓ Don't leave tools or materials where they might be kicked over the edge or tripped over.
- ✓ Don't throw items over the edge
- ✓ Wear hard hats when working under an aboveground work area

Other Fall Protection Systems: Training as necessary by Safety Office when using these systems.

- ✓ Safety Nets
- ✓ Warning Areas
- ✓ Limited Access Zones
- ✓ Safety Monitors
- ✓ Covers
- ✓ Toe Boards
- ✓ Fall Protection Plans

Frequently Cited Violations:

Failure to protect workers from falls of 6 feet or more off unprotected sides or edges, e.g. floors and roofs. (1926.501(b)(1); (b)(10); and (b)(11))

Failure to protect workers from falling into or through holes and openings in floors and walls. (1926.501(b)(4) and (b)(14))

Failure to provide guardrails on runways and ramps where workers are exposed to falls of 6 feet or more to a lower level. (1926.501(b)(6))

Purpose Of Personal Fall Arrest System

*Limit maximum arresting force on an employee to 900 pounds (4 KiloNewtons) when used with a body belt;
*Limit maximum arresting force on an employee to 1,800 pounds (8 KiloNewtons) when used with a body harness;
*Be rigged so that an employee can neither free fall more than 6 feet (1.8 meters) nor contact any lower level;
*Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (1.07 meters); and
*Have sufficient strength to withstand twice the potential impact energy of an employee free falling a

Aboveground Working Rules

- ✓ Use a personnel lift only if you're authorized
- ✓ Only authorized employees should work on elevated areas
- ✓ Stay away from edges, unless you are working there
- ✓ Never run when working above ground
- ✓ Listen for verbal warnings

Guardrails

- ✓ Barrier along an open edge 42" + or – 4" high with middle rail halfway up.
- ✓ Toeboard or kick-plate.
- ✓ Withstand force of 200 pounds in any direction.
- ✓ Surfaced to prevent injury.
- ✓ No overhang of terminal posts, unless no injury.
- ✓ Material a minimum of ¼" nominal.
- ✓ Wire rope flagged every 6 feet.
- ✓ Steel/plastic banding not used.
- ✓ If used at hoisting areas, provide chain or gate.
- ✓ Erected around all sides of holes.
- ✓ Points of access have gates.
- ✓ Passage of materials, only two sides removable
- ✓ Ramps or runways along unprotected edge.
- ✓ Inspect frequently when using manila or synthetic rope.

Uses for PFAS

Working above lower level
Worker positioning
Worker restraint
Climbing
Worker riding or lifting
Worker tied to fixed object
Harness properly worn and connected
Lanyard, lifeline, deceleration device
Never use to hoist workers or objects

distance of 6 feet (1.8 meters) or the free fall distance permitted by the system, whichever is less.

Typical Personal Fall Arrest System:

Consists of:

Anchorage Connector
Shock Absorbing Lanyard
Full Body Harness

Requirements for PFAS:

- ✓ The anchorage connector must be attached to a suitable and strong attachment point, must withstand 5,000 pounds per employee.
- ✓ Connectors drop forged, pressed or formed steel.
- ✓ Smooth surface.
- ✓ Dee rings/snap hooks minimum strength 5000 lbs.
- ✓ Snap hooks sized for compatibility with other members, prevent inadvertent opening.
- ✓ Only locking snap hooks.
- ✓ Unless snap hook locking type designed for following applications, do not attach to:
  - Webbing, rope, wire rope
  - Each other
  - D ring with another snap hook
  - Any object incompatibly shaped

Lifelines:

Horizontal - designed/installed by competent person
Vertical/horizontal strength 5000 lbs
Each employee separate line
Protected, cuts/abrasions
Self retracting limit 2' strength = 3000 lbs, more than 2' strength = 5000 lbs
Lanyards, synthetic fiber

Anchorage withstand 5000 lbs or

Designed and installed by qualified person.
Safety factor of at least two.

PFAS Equipment Inspections:

- ✓ Inspect before every use.
- ✓ Cuts, tears, abrasions, stitches coming out.
- ✓ Cracks or burrs.
- ✓ Parts move freely.
- ✓ No alterations.
- ✓ Appropriate labels.
- ✓ Record inspection in a log.

Arresting Forces:

- ✓ The act of falling is not painful.
- ✓ Striking an object or sudden stopping causes pain.
- ✓ Body weight x fall distance.
- ✓ Limiting arresting force to 1800 lbs.
- ✓ Rig to prevent free fall of more than 6 feet or contact with other objects.
- ✓ Limit max decel to 3.5 feet.
- ✓ Sufficient strength for twice anticipated load.
- ✓ Harnesses and equip only for protection.
- ✓ One time use, remove from service.
- ✓ Attach at center of back.
- ✓ Prompt rescue.
- ✓ No guardrail attachment.
- ✓ Limit to edge of hoist area.

Rescue Plan:

Each worksite or facility must have a rescue plan.
Employees must be trained on the plan.
Limit hanging/suspension time.

Fire Prevention/Protection

Fire Protection

Responsibilities: The employer shall be responsible for the development of a fire protection program to be followed throughout all phases of the construction and demolition work, and he shall provide for the firefighting equipment as specified in this subpart. As fire hazards occur, there shall be no delay in providing the necessary equipment.

- Access to all available firefighting equipment maintained at all times.
- Fire Extinguishers/other equipment conspicuously located.
- Periodically inspected, maintained in operating condition. Defective equipment immediately replaced.

Fire Prevention

Ignition hazards

Electrical wiring and equipment
Internal combustion engine
Smoking
Portable battery
Nozzle of air, inert gas, and steam lines or hoses

Open Yard storage

Combustible materials - stacks stable & 20 ft
Driveways – combustible stores, 15 ft wide, clear of trash
Storage site – clean and free of combustible materials, grass, etc
Underground fire – no flammable storage on old land fill
Piling solid and orderly, regular piles. Combustible material not stored outdoors within 10 feet of building or structure.
Portable fire extinguishing, 2A minimum, maximum travel distance to the nearest unit shall not exceed 100 feet

Indoor storage.

Means of exit
Stored, handled, and piled …fire characteristics
Non-compatible materials stored separately
Piled minimize spread of fire internally and permit convenient access
Clearance from sprinkler deflectors.
Clearance lights and heating units
A clearance path of travel fire doors. Material shall not be stored within 36 inches of a fire door opening.

Flammable Liquids

Approved safety containers for the handling and use flammable liquids quantities of 5 gallons or less
Not stored in areas used for exits, stairways, or normally used for the safe passage of people.
No more than 25 gallons stored in a room outside of an approved storage cabinet.
Excess of 25 gallons stored in acceptable or approved cabinet.
Not more than 60 gallons of flammable or 120 gallons of combustible liquids shall be stored in any one storage cabinet.
Approved metal containers
Requirements for wood containers 1926.152(b)(2)(i)
Cabinets shall be labeled in conspicuous lettering, "Flammable-Keep Fire Away."
Clear aisle at least 3 feet wide
No stacking containers over 30 gal capacity
Minimum Quantity – during spraying, etc, only what is needed.

Hand and Power Tool Safety Training

1. All hand and power tools, whether company or employee owned, must be in safe operating condition. (Tools with sprung jaws on adjustable wrenches, mushroomed heads on chisels, etc must be removed from the site.)
2. Power operated tools designed for guards must have these guards in place at all times.
3. Point of operation guards, as required, must be installed and used.
4. Do not hoist electrically operated tools by their cords.
5. Insure proper safety's are installed for all pneumatic tools
6. Never use compressed air for cleaning.
7. Eye protection must be used at all times.
8. Only authorized and trained personnel may use powder-actuated tools.
9. Power tools must be inspected daily for proper wiring and damage. Only Double Insulated Tools or those equipped with grounding plug may be used on the job, do not hoist by cord.
10. Pneumatic Tools –
    a. Secure to hose or whip by positive means.
    b. Safety clips on pneumatic impact tools.
    c. Pneumatic nailers must have positive safety, contact with work surface.
    d. No cleaning with compressed air unless pressure reduced to less than 30 psi.
    e. Manufacturer's safe operating pressure.
    f. No hoisting with hoses.
    g. Safety at pressure source for hoses 1/2" inside diameter or greater.High pressure airless spray guns, trigger safety or diffuser nut.Abrasive blast cleaning nozzles equipped with operating valve must be held open manually. Support provided on which nozzle may be mounted when not in use
11. Fuel powered tools must be turned off when fueling, service, or maintenance.

Powder Activated Tools

•Safety Precautions

–Only trained, authorized personnel
–Use in accordance with operating instructions
–Never point at people
–Never cock tool against your body
–Use stabilizer guard when possible
–Never leave loaded gun unattended. Always unload before cleaning or disassembly
–Appropriate PPE at all times.
–Inspect before use. Do not use malfunctioning or partial tool.
–Arms flexed during use
–Hold perpendicular to work surface and base material when fastening
–Never pry cartridge from magazine strip or tool
–Misfire:
    •Tool against surface for thirty (30) seconds
    •Cartridge not ignited, draw away from surface, pointing away from people
    •Continue to use strip, if cartridge still unused, dispose of properly.
–Never re-drive fasteners
–Never fasten through existing holes
–Always keep tool and cartridges locked away in safe container
–Never fasten in explosive or flammable atmosphere
–Always consult application guidelines for charge and fastener sizes
–Never allow anyone to stand behind or below fastening location

Health & Environmental Hazards

First Aid – At least one provider on site, or medical care by ambulance no more than 15 minutes from job site.

Sanitation – Controlling employer provides bathroom facilities IAW 29 CFR 1926.51. No less than one per jobsite.

Water –

- Potable water - water approved for drinking purposes by the State or local authority having jurisdiction.
  - –adequate supply
  - –container clearly marked
  - –common drinking cup is prohibited
  - –single service cups
- Non-potable water
  - –outlets identified
  - –no cross-connection

Illumination – Minimum required under 229 CFR 1926.26.

Non-ionizing Radiation – Meet requirements of 29 CFR 1926.54 for Lasers.

Noise Exposure – Protection required IAW 29 CFR 1926.51.

Gases, Vapors, Fumes, Dusts, Mists – 29 CFR 1926.55 Exposure of employees to inhalation, ingestion, skin absorption, or contact with any material or substance at a concentration above those specified in the "Threshold Limit Values of Airborne Contaminants for 1970" of the American Conference of Governmental Industrial Hygienists, shall be avoided.

Other Hazards –

- Lead – Paints
- Cadmium – Cigarette smoke, general atmosphere
- Methylenedianiline – Some epoxy paints
- Asbestos – Walls, floors, ceiling tile, and steam pipe insulation in older buildings.
- Other gases – Acetylene, inert gas welding, etc.
- Reptiles – Everywhere in SC.
- Insects – Black Widows, Brown Recluse. Two incidents with HRA employee and Recluse.
- Climate – Dress properly, fluids, acclimate
- Other employees – If you see an unsafe act, report it. Don't let someone else hurt you.
- Equipment – Absolutely no reason for using unsafe/unserviceable equipment. Notify Foreman/PM/Safety of problems

Heavy Equipment

Earthmoving Equipment

Coverage - These rules apply to the following types of earthmoving equipment: scrapers, loaders, crawler or wheel tractors, bulldozers, off-highway trucks, graders, agricultural and industrial tractors, and similar equipment.

General requirements

*Equipment unattended at night, appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors identifying location.

*A safety tire rack, cage, or equivalent protection used when inflating, mounting, or dismounting tires installed on split rims/rims with locking rings or similar devices.

*Heavy machinery, equipment, or parts thereof, which are suspended or held aloft by use of slings, hoists, or jacks shall be substantially blocked or cribbed to prevent falling or shifting. Bulldozer and scraper blades, end-loader buckets, dump bodies, and similar equipment, either fully lowered or blocked when being repaired or not in use. Controls in neutral position, motors stopped and brakes set, unless work being performed requires otherwise.

*When parked, set parking brake. Parking on inclines chock wheels and set the parking brake.

*All cab glass shall be safety glass.

*Comply with the requirements of electrical Safety Policy when working or being moved in vicinity of power lines or energized transmitters.

*Seat belts provided on all equipment.

*Brakes - service braking system capable of stopping and holding the equipment fully loaded.

*Fenders required for all rubber tired vehicles.

*Rollover protective structures (ROPS) required.

*Audible warning devices:.

- ✓ Equipped with a horn, distinguishable from the surrounding noise level
- ✓ Backup alarm distinguishable from the surrounding noise level or an employee signals that it is safe to do so.

*Guard scissor points on all front-end loaders.

Motor Vehicles

Coverage - Motor vehicles as covered by this part are those vehicles that operate within an off-highway jobsite, not open to public traffic.

General requirements

*Equipped with service brake system, an emergency brake system, and a parking brake system. These systems may use common components, and shall be maintained in operable condition.

*Two headlights and two taillights in operable condition.

*Brake lights operable

*Horn installed and operable.

*Do not use motor vehicles equipment having an obstructed view to the rear unless:

- ✓ The vehicle has a reverse signal alarm audible above the surrounding noise level or:
- ✓ The vehicle is backed up only when an observer signals that it is safe to do so.

*Equip vehicles having cabs with windshields and powered wipers. Replace cracked and broken glass. *Equip vehicles operating in areas or under conditions that cause fogging or frosting of the windshields with operable defogging or defrosting devices.

*Haulage vehicles, loaded by cranes, power shovels, loaders, or similar equipment, have cab shield and/or canopy to protect operator from shifting or falling materials.

*Secure tools and material preventing movement when transported in compartments with employees.

*Vehicles transporting employees, adequate number of seats, seat belts, and anchorages firmly secured.

*A positive means of support for raised dump bodies.

*Operating levers controlling hoisting or dumping have latch or device preventing accidental starting.

*Trip handles for tailgates of dump trucks, located insuring the operator is clear.

*Equip all rubber-tired motor vehicles with fenders.

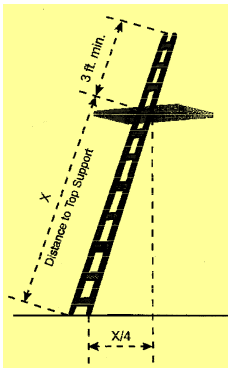
*Check for proper operation of brakes, tires horn, steering, coupling devices, seat belts, and safety devices at the beginning of each shift.

Ladder Safety

Ladders present unique opportunities for unsafe acts and unsafe conditions. Employees using ladders must be trained in proper selection, inspection, use and storage.

Hazards Include

Ladders with missing or broken parts.
Using a ladder with too low a weight rating.
Using a ladder that is too short for purpose.
Using metal ladders near energized electrical equipment.
Using ladders as a working platform.
Objects falling from ladders.



Using Ladders

Place ladders on a secure footing, lashed, or hold them in position.
Ladders used to gain access to a roof or other area shall extend at least 3 feet above the point of support.
Do not use top step or top of a regular stepladder as a step.
Use both hands when climbing and descending ladders.
Never use metal ladders near electrical equipment or energized lines.
The foot of a ladder shall, where possible, be used at such a pitch that the horizontal distance from the top support to the foot of the Ladder is one-quarter of the working length of the ladder (the length along the ladder between the foot and the support).
Always face the ladder when climbing up or down.
Do not splice short ladders together to make long ladders.
Never use ladders in the horizontal position as scaffolds or work platforms.

Inspect Ladders Before Each Use

All rungs and steps free of oil, grease, dirt, etc.
All fittings tight.
Spreaders or other locking devices in place.
Non-skid safety feet in place.
No structural defects, all support braces intact.

DO NOT use broken ladders.

Tag broken ladders "Do Not Use" and remove them from service.

Ladder Storage

Store ladders on sturdy hooks in areas where they cannot be damaged.
Store to prevent warping or sagging.
Do not hang anything on stored ladders.

Procedure to prevent ladder incidents

Place ladder on a clean, slip free level surface.
Extend the ladder 3-4 feet above the top support, if used to access roof or other elevated surface.
Anchor or secure the top of the ladder when the 3-4 foot extension is not possible.
Place the ladder base ¼ the height of the ladder from the wall when using a straight ladder.
Never allow more than one person on a ladder.
Use tool belts or hand lines to carry objects.
Do not lean out from the ladder in any direction.
If you have a fear of heights – don't climb a ladder.
Do not allow others to work under a ladder in use.

Ladder Maintenance

Keep ladders clean.
Never replace broken parts unless provided by the original manufacturer.
Do not attempt to repair broken side rails.
Keep all threaded fasteners properly adjusted.
Select the right ladder for the job.
Inspect ladder before you use it.
Setup the ladder with care.
Climb and descend ladders cautiously.

Face ladder and hold on with both hands.
Carry tools on belt or raise and lower with hand line.
Check shoes and rungs for slippery surfaces.
Use safe practices when working on a ladder.
Always hold on with one hand and never reach too far to either side or rear to maintain balance.
Never climb higher than second step from top on a stepladder or third from the top on a straight ladder.
Never attempt to move, shift, or extend ladder while in use.

Lockout/Tag Out Training

Purpose of the Lockout/Tagout Program: To prevent injury to servicing and/or maintenance employees due to the unexpected energization or startup of machines and equipment, or release of stored energy.

Definitions:

- **Authorized employee**: An employee who locks or tags machines or equipment in order to perform servicing or maintenance.
- **Affected employee**: An employee who is required to use machines or equipment on which servicing is performed under the Lockout/Tagout standard or who performs other job responsibilities in an area where such servicing is performed.
- **Other employees**: All employees who are or may be in an area where energy control procedures may be utilized.
- **Energy source**: Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
- **Lockout device:** Any device that uses positive means, such as a lock, blank flanges and bolted slip blinds, to hold an energy-isolating device in a safe position, thereby preventing the energizing of machinery or equipment.
- **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.
- **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.
- **Tagout device**: Any prominent warning device, such as a tag and a means of attachment, that can be securely fastened to an energy-isolating device to indicate that the machine or equipment to which it is attached may not be operated until the tagout device is removed.

Application Of Controls And Lockout/Tagout Devices

The established procedure of applying energy controls includes the specific elements and actions that must be implemented in sequence . These are briefly identified as follows:

(1) Prepare for shut down,
(2) Shut down the machine or equipment,
(3) Disconnect the energy-isolating device,
(4) Apply the lockout or tagout device,
(5) Render safe all stored or residual energy, and (6) Verify the isolation and deenergization of the machine or equipment.

Removal of Locks and Tags

Before lockout or tagout devices are removed and energy is restored to the machine or equipment, the authorized employee(s) must take the following actions or observe the following procedures:

(1) I**nspect** the work area to ensure that non-essential items have been removed and that machine or equipment components are intact and capable of operating properly;
(2) **Check** the area around the machine or equipment to ensure that all employees have been safely positioned or removed,
(3) **Make sure** that locks or tags are removed **ONLY** by those employees who attached them. (In the very few instances when this is not possible, the device may be removed under the direction of the employer provided that he or she strictly adheres to the specific procedures outlined in the standard); and

(4) **Notify** affected employees **after** removing locks or tags and before starting equipment or machines.

Additional Safety Requirements

Special circumstances exist when (1) machines need to be tested or repositioned during servicing, (2) outside (contractor) personnel are at the worksite, (3) servicing or maintenance is performed by a group (rather than one specific person), and (4) shifts or personnel changes occur during servicing or maintenance.

- **Testing or positioning of machines.** OSHA allows the temporary removal of locks or tags and the reenergization of the machine or equipment **ONLY** when necessary under special conditions -- for example, when power is needed for the testing or positioning of machines, equipment, or components. The reenergization must be conducted in accordance with the sequence of the following steps:
  (1) Clear the machines or equipment of tools and materials,
  (2) Remove employees from the machines or equipment area,
  (3) Remove the lockout or tagout devices as specified,
  (4) Energize and proceed with testing or positioning, and
  (5) Deenergize all systems, isolate the machine or equipment from the energy source, and reapply lockout or tagout devices as specified.

- **Outside personnel (contractors.)** The onsite employer and the outside employer must inform each other of their respective lockout or tagout procedures. Each employer must ensure that his or her personnel understand and comply with all restrictions and/or prohibitions of the other employer's energy control program.
- **Group lockout or tagout.** When servicing and/or maintenance is performed by a crew, craft, department or other group, they must utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.
- **Shift operations.** During shift operations either maintain continuous control of the energy-isolating devices or require that the oncoming shift verify deenergization and lockout/tagout.

Personal Protective Equipment

1926.95(a)

"Application." Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

Required Protective Equipment

Head Protection – At all times when overhead hazard is present. Serviceable, ANSI approved, and worn correctly.
Eye Protection – Safety glasses 100% of the time. Face shield during grinding operations.
Hearing Protection – Available. Worn if deemed necessary by Foreman, Project Manager, Safety.
Hand Protection – Recommended 100%, required when handling sharp or hazardous materials.
Foot Protection – Hard soled shoes/boots required. Leather, steel toes desired.
Respiratory Protection – As required for job/task.
Fall Protection – As required in 29 CFR 1926, Subpart M. Required when working from elevations 6' or more, (10' for scaffolds), boom lifts, bucket trucks, and scissor lifts when guardrails are removed or lowered.

Proper Donning and Fit.

Hardhat – Proper size and adjustment.
Ear Plugs/Ear Muff – Foam earplugs properly inserted. Earmuffs fitted and properly worn.
Safety Glasses – Standard safety glasses. IR protection IAW with OSHA and HRA S& H Program
Gloves – Proper size and fit.
Respirator/Face Mask – IAW OSHA Regulations for hazard encountered.
PFAS – IAW Subpart M and HRA S&H Program

Rigging Safety

Rigging Hazards Crane, sling, or hook could fail if overloaded Load could flip, turn, or release suddenly if not attached correctly People or objects could be struck by the load	Attaching Loads Hoist chain/rope free of kinks or twists Do not wrap hoist chain/rope around the load Attach the load to the load block hook with slings or other approved devices
Hooks Safety latch or clip Load in center of hook's curve Picking up load with the hook's tip causes it to open up and weaken Replace hooks that are bent open or twisted	**Moving the Load** Be sure the hook and hoist are directly over the load Ensure that chains/ropes/slings are not twisted Ensure that the load is well secured and balanced When traveling, keep the load close to the floor
Hoisting Safety Avoid sudden acceleration or deceleration Watch for obstructions Never leave controls with load suspended Do not use cranes for side pulls Never lower the load below the point where less than two full wraps of rope remain on the hoisting drum Never carry loads over people Do not hoist, lower, or travel a load when an employee is on the load or hook When two or more cranes are lifting a load, put one qualified person in charge **Hand Signals**	Sling Types Eye to eye versus endless Steel chains Wire rope or steel cable Metal mesh Fiber rope (natural or synthetic) Synthetic mesh Operator Sling Inspections Each day before use by a trained operator Check slings and attachments for damage Immediately remove damaged and defective slings from service
Sling Rules Never load beyond rated capacity Label properly Never shorten with knots, bolts, or any other device Protect from sharp edges Attach securely to the load Protect hands and fingers Use care when pulling a sling Never drag a sling Do not use a damaged or defective sling	Sling Storage Hang slings on a wall Never leave on the ground Never expose to water, welding sparks, chemicals, etc. Sling Hitches Vertical Choker Basket Sling Angles Ratings based on a vertical hang Slings hung >= 5° angle from vertical Slings used at angles should be checked for capacity **Examples** *Assume 1,000 lb. load lifted with 2 slings Slings vertical: 500 lb. each Slings 45° from vertical: 707 lb. each Slings 60° from vertical: 1,000 lb. each Slings 75° from vertical: 1,930 lb. each

Scaffold Safety

I A competent person inspects scaffolds daily. Correct deficiencies before allowing employees on the scaffold.

Erect scaffolds in accordance with requirements of 29 CFR 1926 Subpart M.

The footing or anchorage for scaffolds must be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Do not use unstable objects such as barrels, boxes, loose brick, or concrete blocks, to support scaffolds or planks.

No scaffold shall be erected, moved, dismantled, or altered except under the supervision of competent persons.

Install guardrails and Toeboards on all open sides and ends of platforms more than 10 feet above the ground or floor. Where guardrails are not installed, employees must use Personal Fall Arrest Systems.

Replace or repair any scaffold including accessories such as braces, brackets, trusses, screw legs, ladders, etc. damaged or weakened from any cause shall be immediately.

Overlap planking of platforms, (minimum 12 inches), or secure preventing movement.

Provide a ladder or equivalent safe access.

Scaffold planks shall extend over their end supports not less than 6 inches nor more than 12 inches.

The poles, legs, or uprights of scaffolds shall be plumb, and securely and rigidly braced to prevent swaying and displacement.

Provide protection for employees on a scaffold exposed to overhead hazards.

Eliminate slippery conditions on scaffolds as soon as possible after they occur.

Using shore or lean-to scaffolds is prohibited.

Materials being hoisted onto a scaffold shall have a tag line.

Do not work on scaffolds during storms or high winds.

Do not allow tools, materials, and debris to accumulate in quantities to cause a hazard.

Trenching Excavation Training

1. Do not enter an excavation unless approved to do so by the Foreman/Competent Person.

2. For trenches four (4) feet deep or more, a means of egress must be provided within twenty-five (25) feet of employees.

3. Protect trenches five (5) feet deep or more by sloping, benching, shoring, or shielding systems.

4. The competent person must determine soil, type before beginning excavation work. If doubt exists as to soil type, use sloping requirements for Class C soil.

5. Use shielding systems IAW 29 CFR 1926 Subpart P to protect employees from falling soil or rock.

6. Use shoring systems or sloping/benching to prevent trench cave-ins.

7. Do not enter shoring or shielding systems while they are being constructed/erected.

8. Pile spoil from excavation a minimum of two (2) feet from the edge of the excavation.

9. Keep all equipment two (2) feet or more from the edge of the excavation.

10. During trenching operations anyone exposed to vehicular or traffic hazards must wear reflectorized/protective clothing or systems.

11. Do not work in trenches where water is present unless adequate protective systems or equipment is provided.

12. Do not work on the slope of a trench above where other employees are working.

13. Do not work under earth moving equipment involved in trenching/excavating operations.

14. Do not undermine structures and sidewalks unless a registered engineer evaluates and determines there is not danger of collapse of these structures.

Welding Safety

•General hazards of welding include:
–Impact
–Penetration
–Harmful dust
–Smoke
–Fumes
–Heat
–Light radiation
•Proper personal protective equipment can protect you from these hazards.
PPE
•Eye and Face Protection – Proper eye and face protection varies depending on the particular task being performed. Helmet, hand shield, goggles and safety glasses or combination of these are acceptable protection in various applications.
•Welding helmets with filter plates are intended to protect users from arc rays and from weld sparks and spatters.
•Appropriate protective clothing will vary with the size, nature and location of the work to be performed.
•Clothing shall provide sufficient coverage and be made of suitable materials to minimize skin burns caused by sparks, spatter or radiation. Covering all parts of the body is recommended to protect against ultraviolet and infrared ray flash burn.
•Materials that can melt or can cause severe burn due to sparks that may lodge in rolled-up sleeves, pockets of clothing or pants cuffs are not recommended
•Flame-resistant gloves, such as leather welder's gloves, are needed to provide heat resistance. A gauntlet cuff offers additional arm protection.
•Other protective clothing would include durable, flame-resistant aprons to provide protection to the front of the body when additional protection is needed.

Exothermic Welding
•Manufacturers recommend discarding Cadweld Crucible molds after 50 welds. Deterioration in their strength and composition makes them less likely to contain weld material safely.
•Do not use exothermic welding for splices requiring high mechanical strength.
•Conduct identification and hazard analysis for Cadweld operations and surrounding areas.
•Wear suitable eye protection when igniting charge material.
•Shield work site to prevent UV exposure to personnel in the area.
•Insure equipment and material being welded are free of moisture. Preheat the ends being welded insuring all moisture is removed.
•Use flint stick(s) for igniting charge. Use of matches or lighters for igniting this material is prohibited.
•Insure suitable/serviceable fire extinguishers are on hand prior to beginning operations.
•Clear the area of all flammable substances prior to beginning welding operations.
•Maintain a safe distance from structures and personnel during welding operations.
•Comply with MSDS for all materials being used in the process.
•In closed areas, provide adequate ventilation to remove fumes and smoke,.
•Wear proper clothing including long sleeves resistant to hot or burning material.
•Operating in confined spaces, suitable respirators must be worn.

•Adequate ventilation depends on the following factors:
–Volume and configuration of the space where the welding operations occur.
–Number and type of operations that are generating contaminants.
–Natural air flow rate where operations are taking place.
–Locations of the welder's and other workers' breathing zones in relation to the contaminants or sources.
-Proper ventilation can be obtained either *naturally* or *mechanically*.
•*Natural ventilation* is considered sufficient for welding and brazing operations if the present work area meets these requirements:
–Space of more than 10,000 sq. ft. is provided per welder.
–A ceiling height of more than 16 ft.
–Welding is not done in a confined space.
–Welding space does not contain partitions, balconies or structured barriers that obstruct cross ventilation.
•*Mechanical ventilation* options generally fall into two basic

•**A *Hot Work Permit*** is required at all times for welding/cutting operations.
•This permit serves as a checklist to ensure precautions are taken to prevent the ignition of flammable or combustible materials in a 35 foot area surrounding the work. On file until project completed.
•This permit must be posted in a visible location at the worksite.
•A fire watch must be in place to ensure a safe condition is maintained by keeping a constant vigil for stray sparks, ignition, or other fire hazards.
•A *Hot Work Permit* will not be issued if any of the following exists:
–Sprinkler protection is impaired.
–Appropriate fire extinguisher is not readily available.
–Combustible or flammable materials are within 35 feet and cannot be moved or protected.
–Floor and wall openings cannot be covered.
–Flammable gases or vapors are present.

categories, l*ow vacuum* and *high vacuum systems.* •*Low vacuum systems* take large volumes of air at low velocities and consists of a hood positioned at a distance from the work area that exhausts the fumes outdoors. •*High vacuum systems* are close-range extractors that are aimed at capturing and extracting fumes as near to the work as possible. These systems are often equipped with a fan that pulls the contaminants into a filtration system and then recirculates the clean air back into the work area.	–Cutting or welding on pipes or other metals can conduct enough heat to ignite nearby combustible materials. –Partitions, walls, ceilings or roofs having combustible coverings (i.e. expanded plastic insulation). –Partitions made of combustible sandwich-type construction. –Any condition that could result in undue hazards by performing the work. Fire Watch •Identified by Foreman before work begins. •ONLY JOB IS FIRE WATCH!! •Do not leave the area. In the event of digestive or renal emergency, insure substitute is appointed and on hand before leaving. •Assist with cleanup and check for fire. •Remain in the area for at least thirty (30) minutes after work is completed. •Sign Hot Work Permit and denote time of final inspection.