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Department : HSE Team

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Subcon. TOOLBOX Meeting Training Material

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Confined spaces can be deadly spaces

What is a confined space ?

• A confined space is an enclosed or partially enclosed area
that is big enough for a worker to enter

• A small opening or a layout with obstructions can make entry and exit difficult and can complicate rescue procedures.

• Hazardous atmospheres such as toxic gases or lack of oxygen cause the majority of deaths in confined spaces.

• Workers must not enter a confined space until hazards have been identified, workers are trained, and all procedures to eliminate or control the hazards are followed.

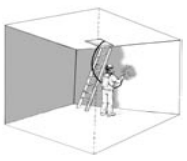
Confined spaces in your workplace

Examples of confined spaces that workers in municipalities and in the construction industry may encounter:

• Electrical, valve, and motor vaults, Storage tanks, Boilers
• Manholes, Pumping stations, Wet wells, Storage bins
• Other similar spaces

The flotation compartment of a barge is a confined space that may not have enough oxygen to sustain life

This process vessel at a pulp mill is a confined space. One worker died inside the vessel from lack of oxygen, and another died with his head in the opening.



This process vessel at a pulp mill is a confined space. One worker died inside the vessel from lack of oxygen, and another died with his head in the opening.

■ Other safety issues

■ Suggestions

■ Employee Participants

(Name) (Signature)

■ Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Evaluating Permit-Required Confined Spaces

Examples of permit-required confined spaces include t

sewers, hoppers, vaults, boilers, silos, pits, vats, bins, pipes and manholes. The leading cause of death in permit-required confined spaces are hazardous atmospheres.

Hazardous Atmospheres

A hazardous atmosphere means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following causes:

- Oxygen concentration below 19.5% or above 23.5%
- Flammable gas, vapor, or mist in excess of 10% of its lower explosive limit (LEL)
- Combustible dust at a concentration that meets or exceeds its LEL

- Atmospheric concentration in excess of any substance's published dose or permissible exposure limit (PEL) which is capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects
- Any other atmospheric condition that is immediately dangerous to life or health

Other safety issues

Suggestions

Employee Participants

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Evaluating Hazardous Atmospheres

Toxic Substances

The most common toxic chemicals in Confined space fatalities are hydrogen sulfide and carbon monoxide.

- **Hydrogen sulfide (H2S)** gas is commonly found in sewers and can be instantly fatal at higher levels in a confined spaces. Disturbing sewage sludge can release hydrogen sulfide gas.

- **Carbon monoxide (CO)** comes from operating internal combustion and propane-powered engines in or near confined spaces. Fatal levels of CO are quickly reached in confined spaces.

- **Other toxic chemicals** can include welding fumes, vapors from liquid residues in storage tanks, or chemical products used in the confined spaces.

Propane powered Manlift in a large tank

- **Chemicals** can quickly reach toxic levels in the air of a confined space especially gases, solvent vapors, or sprayed products.

Other safety issues

Suggestions

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The Entry Team and their Roles

The Entry Supervisor

- Knows the hazard(s), symptoms, and consequences
- Verifies the permit by determining if acceptable entry conditions exist
- Authorizes entry
- Oversees entry operations
- Terminates entry
- Verifies rescue services
- Removes unauthorized individuals
- Serves as attendant (if necessary)

The Attendant

- Knows the hazard(s), symptoms, and consequences
- Aware of potential behavioral effects
- Monitors entrants and maintains count
- Monitors hazards and activities in and outside of the permit space
- Remains outside entry point
- Communicates with entrant(s)
- Controls entry point
- Summons rescuers
- Initiates/performs non-entry rescue if required

The Entrant

- Knows the hazard(s), symptoms, and consequences
- Uses equipment properly
- Communicates regularly with the attendant
- If the unexpected occurs – alert the attendant
- Exits immediately if hazard(s) develops

The entrant(s) and/or their authorized representative must be given the opportunity to observe the atmospheric testing and completion of the permit.

Other safety issues

Suggestions

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Testing initial conditions

Confined spaces may contain explosive, toxic, or oxygen-deficient atmospheres. Whenever possible, test the atmosphere before opening hatches or starting ventilation.

Atmospheric Testing

- Initially and during entry.
- Test for: (1) Oxygen; (2) Flammables; and (3) Toxins.

Detector Tubes

- Sealed glass tubes
- Chemical reaction results in color change
- Specific for the substance of concern
- High error rate (25-30%)

Gas Detection Instruments

- Sensors measure concentrations
- Results in a meter or digital reading; alarms
- Portable multi-gas instruments
- Calibration is critical

The individual conducting the air monitoring must be competent in the proper selection, use (placement, space stratification, etc.),maintenance, limitations (cross-sensitivity and chemical interference), and calibration. Be sure to read the manufacturer's specifications.

Other safety issues

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Suggestions

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Employee Participants

(Name) (Signature)

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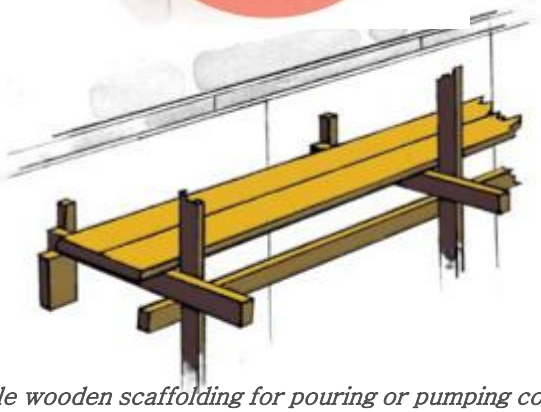
Concrete pouring and pumping

General requirements

- Exposed skin that contacts wet concrete can become extremely irritated.
  In some cases, the irritation is serious enough to result in injuries.
  To prevent exposure, personal protective equipment is required : hard hat, gloves, and safety glasses.
  Wear a long-sleeved shirt to protect against both site hazards and sun exposure.
- Unless working on the ground, pouring and pumping concrete into wall forms must be done from platforms.
  The platforms must be a minimum of 510 mm (20 in.) wide a : top of the

Workers must not walk on top of the formwork



Single-pole wooden scaffolding for pouring or pumping concrete Note: Guardrails may not be required if scaffolding is less than 3 m (10 ft.) above grade.

Other safety issues

Suggestions

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CONCRETE REINFORCING
Bending over at the waist poses MSI risk

Awkward postures such as bending over at the waist are common risk factors for musculoskeletal injury (MSI).

• Rod workers may work in a variety of awkward postures.
One such posture involves bending over at the waist for long periods. Working in awkward postures can increase the risk of MSI.

Examples of MSI risk

- Bending over at the waist
- Maintaining bent posture for long periods
- Reaching away from the body

MSI control options

Raise materials to waist height. This reduces forward bending.

Use a rebar tying machine. It allows workers to tie while standing upright.

Prefabricate steel arrangements. This reduces forward bending.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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CONCRETE REINFORCING
Contact stress to shoulders poses MSI risk

Contact stress to the shoulders is a common risk factor for musculoskeletal injury (MSI).

- Rod workers perform tasks that apply large forces to small areas of the body. Contact stress can increase the risk of MSI.

Examples of MSI risk

- Pressure on shoulder muscles from carrying rebar
- Rough-edged material in contact with soft tissue

MSI control options

Pad the shoulder area. Wide, thick straps or extra fabric reduces pressure and softens the edges of rods packed on the shoulder.

Use the two-person lift procedure. This reduces weight on the shoulder for both workers

Other safety issues

Suggestions

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(Name) (Signature)

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• Manager	

CONCRETE REINFORCING
Overexertion can increase risk of MSI

Overexertion is a common risk factor for musculoskeletal injury (MSI).

- Rod workers perform many strenuous tasks. Some of these tasks include lifting, packing, tying, and shaking out rods. Performing physically demanding tasks all day can increase the risk of MSI.

Examples of MSI risk

- Lifting and carrying heavy loads
  Rough-edged material in contact with soft tissue

Contributing factors:

- Not using available mechanical aids such as cranes
- Lack of mechanical aids
- One-person lifts

MSI control options

Use mechanical aids. They ease the physical burden placed on workers

Plan placement of materials. Distributing smaller bundles of materials closer to where they will be used reduces manual materials handling.

Other safety issues

Suggestions

Employee Participants

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• Manager	

CONCRETE REINFORCING
Overhead reaching can increase risk of MSI

Awkward postures such as overhead reaching are common risk factors for musculoskeletal injury (MSI).

- Working in an overhead reaching position for an extended time increases the risk of injury. Overhead reaching can lead to injuries to the neck, shoulders, and back.
- These injuries are commonly caused by overextension of the muscle groups. Attempting to exert force through stretched muscles can result in strains and sprains.

Example of MSI risk

The worker reaches above his head and exerts force through stretched muscles of the shoulder and back.

MSI control options

A simple platform, step, or ladder brings the work into a more comfortable, safer working height, optimally below shoulder height.

Other safety issues

Suggestions

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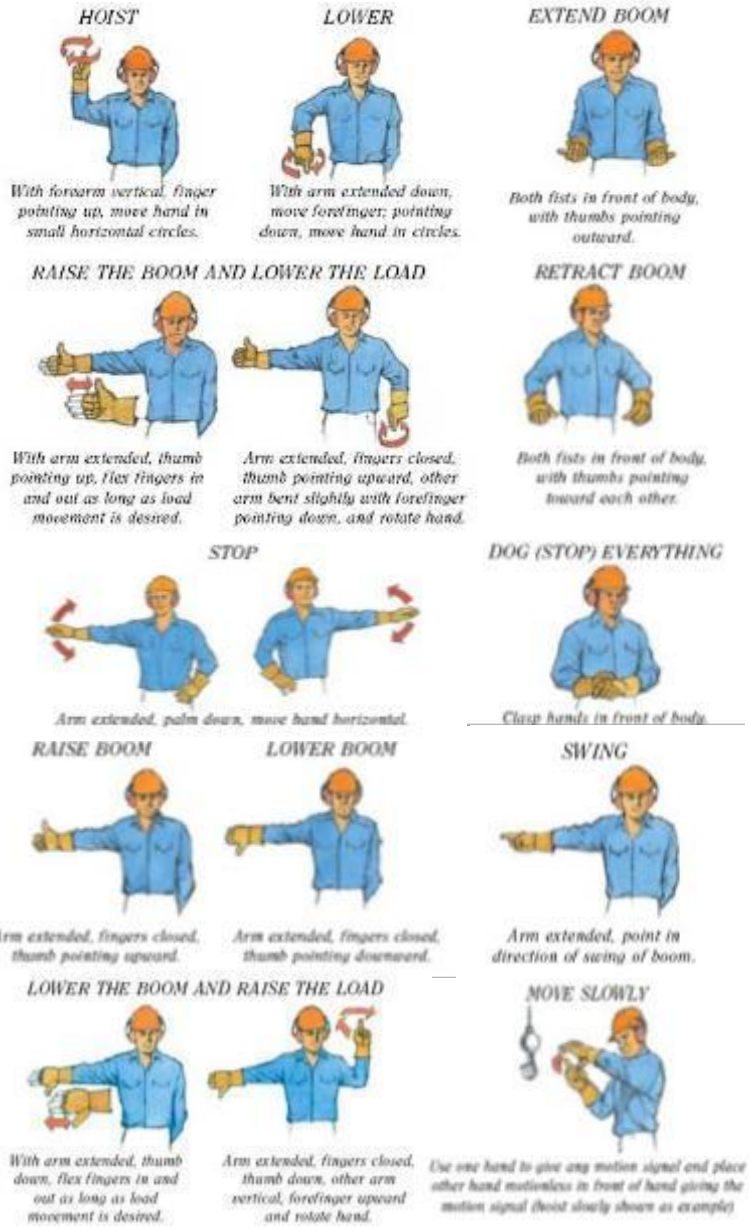
Hand signals for hoist and crane operations

If hand signals are used between a signaler and the operator of a crane or hoist to control hoisting operations,
the following signals should be used:



Other safety issues

Suggestions

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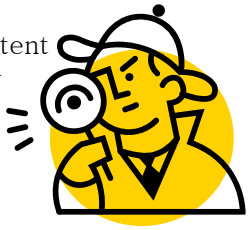
Crane Safety General Requirements

Beginning of each shift

- Operate hoist motion up & down to determine if normal operating speeds available
- Raise hook to upper end of travel slowly to test limit switch
- If overhead type operate trolley & bridge travel
- Observe drift after power release t determine brake adjustment

Cranes and derricks

- Rated load capacities, and recommended operating speeds, special hazard warnings, or instruction, shall be conspicuously posted,
- warnings shall be visible to the operator while he is at his control station.



- The employer shall designate a competent person who shall inspect all machinery and equipment prior to each use, and during use, to make sure it is in safe operating condition.
- Any deficiencies shall be repaired, or defective parts replaced, before continued use

Daily Inspections:

- Operation of crane, controls, movement
- Visual inspection of all lines for leaks
- Check limit switch
- Check brakes for coasting
- Twisted, broken, kinked wire rope
- Deformed, stretched, or cracked hooks
- Observe correct spooling
- Check keepers

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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BASICS OF CRANE SAFETY

• Accessible areas within the swing radius of the rear of the rotating superstructure of the crane, either permanently or temporarily mounted, shall be barricaded in such a manner as to prevent an employee from being struck or crushed by the crane.

• All exhaust pipes shall be guarded or insulated in areas where contact by employees is possible in the performance of normal duties.

• All windows in cabs shall be of safety glass, or equivalent, that introduces no visible distortion that will interfere with the safe operation of the machine

Crane Warning Signs

• This equipment operated by properly trained personnel only.
• Do not lift loads over people, warn personnel of approaching loads.
• Do not make side pulls, lift all loads vertically.
• Do not use limit switches as normal stopping devices.
• Do not operate with damaged, kinked or twisted rope
• Position controls in off position, and open main line switch when leaving crane.

Other safety issues

Suggestions

Employee Participants

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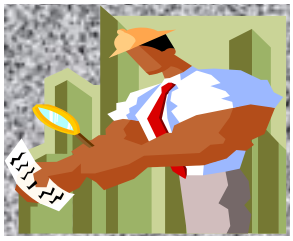
Rigging Requirement

General

• Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to ensure that it is safe.



• Defective rigging equipment shall be removed from service.

• Rigging equipment, when not in use, shall be removed from the immediate work area so as not to present a hazard to employees.


Synthetic Fiber


Metal Mesh


Alloy Steel

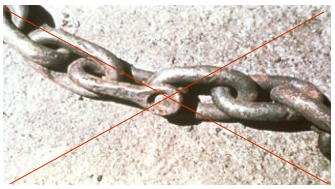

Wire Rope

Alloy Steel Chain

• Welded alloy steel chain slings shall have permanently affixed durable identification stating size, grade, rated capacity, and sling manufacturer.

• Hooks, rings, oblong links, pear-shaped links, welded or mechanical coupling links, or other attachments, when used with alloy steel chains, shall have a rated capacity at least equal to that of the chain.

• Job or shop hooks and links, or makeshift fasteners, formed from bolts, rods, etc., or other such attachments, shall not be used.



Other safety issues

Suggestions

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Wire Rope and Shackles

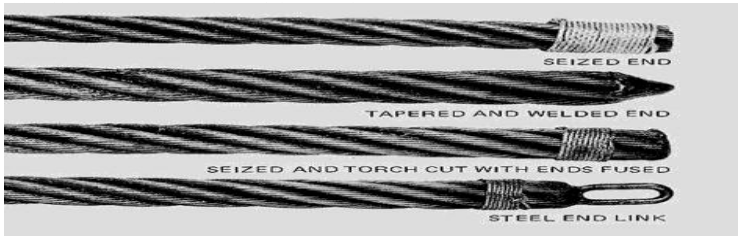
Wire Rope

- U-bolt applied so that the "U" section is in contact with the dead end of the rope.
- Use Table H - 20 to determine number and spacing of clips
- Never shorten slings with knots or bolts
- Protect slings from sharp edges

Never saddle a dead horse

- Wire rope shall not be used if, in any length of eight diameters, the total number of visible broken wires exceeds 10 percent of the total number of wires, or if the rope shows other signs of excessive wear, corrosion, or defect.

- Protruding ends of strands in splices on slings and bridles



Shackles and hooks

- Use Table H - 19
- Use manufacturers recommendations
- Tested to twice the intended safe working load before they are initially put into use. Maintain a record of the dates and results of such tests.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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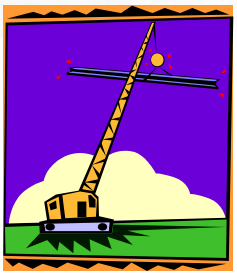
Rules for Rigging Safety

- Know the weight of the load
- Know the center of gravity of the load.
- Make load attachment above the center of gravity of the load.
- Select hitch that will hold and control.
- Know the rated capacity of slings and hardware.



- Select sling best suited for load.
- Inspect all rigging before the lift.
- Protect sling from sharp surfaces.

- Proper calculation of increased tension caused by sling angles (on all rigging components!).
- Allow for D/D ratio on all slings.
- Calculate reductions when using choker hitch.

- Keep personnel clear from lift area.
- Lift load a few inches then check rigging.
- Know limitations of all lifting devices used.
- Lift slowly and stop slowly.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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Crane Tipping Incident

Incident summary

A 50 tone truck mounted crane tipped over while lifting a 36 meter pipe spool into a pipe rack. This resulted in damage to a new pipe rack and the spool that was being lifted. This incident was assessed as high potential as personnel could have been struck by the spool during crane tip over.

Critical factors

- Failure by personnel to follow site procedures
  - No lift study performed
  - A general JSEA was used instead of a specific Job Hazard Analysis (JHA)
- Misunderstanding of alarms
  - A misunderstanding of the crane alarm, which sounded an alarm when 90% capacity had been exceeded, but provided no additional alarm when 100% exceeded

Corrective Actions

- No lifts to exceed 85% load factor
- Safe work procedure to be followed including performing a lift assessment/study for all major lifts
- Procedure : if alarm sounds, lift ceases until it has been retraced and reengineered
- Education for all crane drivers on the revised lifting procedures
- Review and enhance supervision of critical lifts

Other safety issues

Suggestions

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AVOIDING ELECTRICAL SHOCKS

A maintenance mechanic rode 12 feet above the floor, He
did not turn off the power supply to the lights.

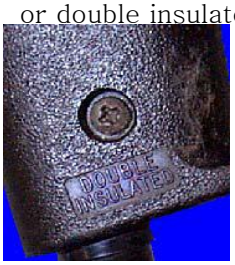
He removed the line fuse from the black wire, which he thought was the "hot" wire.
However, because of a mistake in installation, it turned out that the white wire was the "hot" wire-not the black one.

How is an Electrical Shock Received?

• An electrical shock is received when an electrical current
passes through the body.
The human body has a low resistance To electricity, making it a good conductor, like most metals.
• The most common and serious electrical injuries occur when electrica current flows between the hands and feet.

How Do I Protect Myself from Electrical Shock?

• Always make sure electrical tools are properly grounded
or double insulated.



• Always check to be sure the grounding
system is complete.
• Use heavy duty grounded extension cords. These cords have two layers of
insulation, with reinforcement between
the layers.
• Never work on or around a live electrical circuit.

What Should I do if a Co-Worker is Shocked or Burned by Electricity ?

• Shut off the electrical current if the victim is still in contact
with the energized circuit.
• You should stay with the victim while emergency medical services is contacted.
• If the victim is not breathing, someone trained in CPR
should begin artificial breathing.

Other safety issues

Suggestions

Employee Participants

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Locking out plugged-in electrical equipment

Electricity is the energy source that needs to be locked out most commonly. One of the most common types of electrical machinery and equipment is plugged-in equipment.

Plugged-in equipment

Follow these steps to lock out plugged-in machinery And equipment:

1. Identify the machinery or equipment that needs to be locked out.
2. Shut off the machine or equipment and make sure that all moving parts have come to a complete stop.
3. Unplug the machine.
4. Apply a personal lock to the plug unless the worker doing the maintenance can keep the plug in view and under control while working on the equipment.
5. Test the lockout to make sure it is effective.

Note: In step 4, if the plug is kept under the exclusive and immediate control of one worker at all times while the maintenance work is being done, then a lock may not be required. The worker should have the plug in sight and within reach so that no one else can accidentally plug in the equipment.

Example: Locking out a radial arm saw

Keep the plug in plain view and within reach while performing maintenance.

To lock out a radial arm saw before performing maintenance:

1. Shut off the saw.
2. Unplug the saw.
3. Keep the plug in plain view and within reach while performing maintenance on the saw.

Other safety issues

Suggestions

Employee Participants

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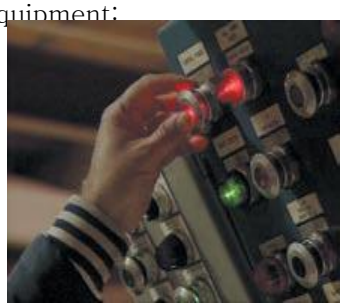
Locking out permanently connected or hard-wired equipment

Electricity is the energy source that needs to be locked out most commonly. One of the most common types of electrical machinery and equipment is permanently connected or hard-wired equipment.

Permanently connected or hard-wired equipment

Follow these five steps to lock out permanently connected
or hard-wired machinery or equipment:

1. Identify the machinery or equipment that needs to be locked out.
2. Shut off the machine and make sure that all moving parts have come to a complete stop.
3. Find the electrical source, and disconnect the machine from the power supply.
4. Apply a personal lock to the energy-isolating device, if required.
5. After ensuring that all workers are in the clear, test the lockout to make sure it is effective.



Push the stop button to stop the machine.

Lock-out/tag-out saves lives.

Test the lockout by pressing the start button.

Access to energy-isolating devices

When an energy-isolating device such as a switch or valve is locked out, the lock must not prevent access to The energy-isolating devices for other equipment. For example, the panel door of a circuit breaker box should not be locked, just the individual breakers. Other workers
may need access to the other devices for their own lockout or maintenance procedures.

Other safety issues

Suggestions

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POWER CABLES

REAL ACCIDENTS :

A foreman with 5 years of experience was repairing the electrical power cable to the conveyor. He disconnected the power to the cable and then taped the damaged section of cable. He instructed a co-worker to turn the power back on while he was holding the repaired section of cable. The repaired area of the cable exploded, throwing the Foreman to the ground and burning his hand.

Electrical burn on hand and arm.

BEST PRACTICES:

- Use lockout/tagout procedures.
- Only qualified persons should work with electrical equipment.
- Splices and repairs must have insulation at least equal to the original power cable.
- Use only Class C fire extinguishers on electrical fires.

Combinations of hazards increase risk.

This extension cord is damaged and should not be used.

WHAT ABOUT OUR SITE ?

- Who does our electrical repairs and maintenance here?
- Can someone explain how our lockout/tagout system works?
- Where are our first-aid kits? What's in them?
- Who's responsible for keeping our kits stocked?

Other safety issues

Suggestions

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ELECTRICAL WORK
Overexertion can increase risk of MSI

Overexertion is a common risk factor for musculoskeletal injury (MSI).
Electricians perform many strenuous tasks. Some of these tasks include handling heavy materials and pulling wire. Performing physically demanding tasks all day can increase the risk of musculoskeletal injury (MSI).

Examples of MSI risk

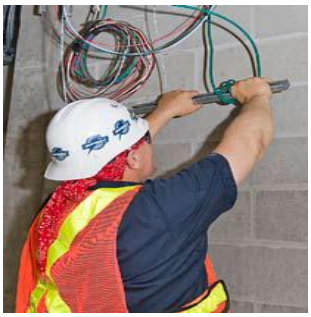
- Lifting and carrying heavy loads
- Pulling wire and cable

Contributing factors:

- Not using available mechanical aids
- Lack of mechanical aids
- One-person lifts

MSI control options

Coordinating the effort makes pulling wire easier.



Using hand tools or spare bits of pipe eases stress to the hands while pulling wire.

Using manual handling devices and tuggers eases the physical burden placed on workers.

Other safety issues

Suggestions

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ELECTRICAL WORK
Overhead reaching can increase risk of MSI

Overhead reaching is a common risk factor for musculoskeletal injury (MSI).
Working for an extended time in an overhead reaching position increases the risk of injury to workers.
Overhead reaching involves awkward postures that may lead to injuries to the neck, shoulders, and back. These injuries Are commonly caused by overextension of the muscle groups. Attempting to exert force through stretched Muscles can result in strains and sprains.

Examples of MSI risk

• Working at ceiling level

MSI control options

Ladders raise your body position so you are closer to the work surface.

Pausing briefly allows the arms, neck, and shoulders to rest.

Rotating through different tasks provides opportunities to rest parts of the body.

Other safety issues

Suggestions

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Power tools and cords

Use of approved equipment does not eliminate all dangers
if the equipment is damaged or is used in adverse conditions, such as in rain or wet areas. Cord-connected portable equipment and supply cords must be maintained in good repair and be suitable for each condition of use.

Class A type ground fault circuit interrupters (GFCI) must be

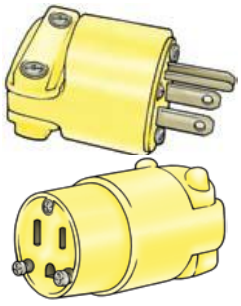
for portable electrical

when working outside or in wet or damp conditions.

GFCI receptacle

Safe work procedures

- Inspect tools, power cords, and electrical fittings for damage prior to each use.
- Switch tools off before connecting to a power supply.
- Disconnect the power supply before making adjustments.
- Grounded tools must have a three-wire cord with a three-prong plug.
- This plug must be plugged into a properly grounded three-pole outlet.
- Do not break off the third (ground) prong on a plug.



Extension cord plugs must not have an open front, and must be a three-prong type.

- Do not overload the circuit by plugging several power cords into one outlet.

Overloads are a major cause of fires.

- Keep power cords away from heat, water, and oil.
- Do not use light-duty power cords for heavy load applications.
- Do not bypass the tool's ON/OFF switch by connecting and disconnecting the power cord.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

EMERGENCY COMMUNICATION

REAL ACCIDENTS :

• It was a dark and quiet night. Then it got exciting. A small
building surrounding a blower for the conveying system caught fire. The plant water truck and local fire department
were called to put out the fire. No injuries were reported.

BEST PRACTICES:

• Every site must have an emergency communications system.
• A designated "competent person" must be at the site when people are working.
• The competent person is in charge during emergencies.
• Emergency telephone numbers must be posted by specific telephones.

WHAT ABOUT OUR SITE ?

• What is our emergency communication plan?
• Do we have different procedures for different emergencies? Fire, medical, power outage
• Who is our competent person? Do we have alternates?
• Where are our emergency contact numbers posted?

Emergency Contents :
911 Fire Department, Emergency Medical, Law Enforcement

■ Other safety issues

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■ Suggestions

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■ Employee Participants

(Name) (Signature)

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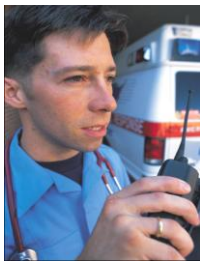
■ Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Rescue and Emergency Services

Arrange for rescue service from an outside source.

Evaluate their ability to respond in a timely manner considering the hazard(s) evaluated and proficiency with rescue-related tasks and equipment.



- "timely" will vary according to the specific hazards involved
- provide the rescue service with access to all permit spaces from which rescue may be necessary so they can develop appropriate rescue plans and practice rescue operations

Arrange for your own employees to provide rescue.

Provide necessary PPE and training in the PPE; training in their assigned rescue duties; training in first aid & CPR; practice simulated permit space rescues at least annually in respective spaces using manikins or actual persons.

Provide for non-entry rescue.

Provide necessary retrieval equipment such as a full body harness and a mechanical device when permit space depths are more than five feet.

- unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant

If a chemical is involved during an emergency, provide the necessary MSDS immediately!

Teams may practice in representative spaces,
or in spaces that are "worst-case" or most restrictive with respect to internal configuration, elevation, and portal size

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Floor and roof openings

Falls from elevation are one of the leading causes of injuries to construction workers.

- Floor and roof openings through which workers could fall must be securely covered or be surrounded by standard guardrails.
- Make sure that covers for floor openings are well-marked and nailed down or otherwise secured.

Example of markings on a plywood cover.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

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Framing-setting trusses

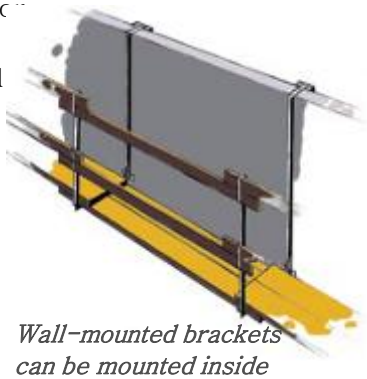
Instructions for truss installers

Builders and truss installers must familiarize themselves with all written instructions, drawings, and documents provided by the truss manufacturer and the building designer. Before truss installation begins, builders and truss installers need to

- Know the truss layout.
- Review individual truss drawings that contain information for placing, erecting, bracing, and connecting trusses.
- Check markings on trusses to ensure proper placement according to design.

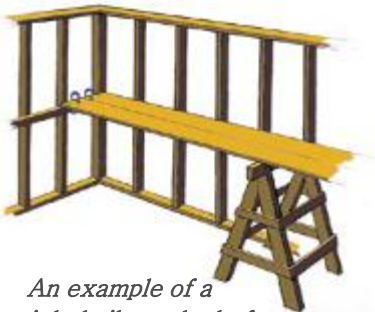
Falls from elevation are one of the leading causes of injuries to construction workers.

- When framing, workers must not walk or work on top plates of interior or exterior walls.
- Wall-mounted brackets and work platforms allow workers to work without walking on the top plate.



Wall-mounted brackets can be mounted inside or outside of the wall.

Workers must not walk on top plates of walls.



An example of a job-built work platform.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

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• Subcon.	
• S/I	
• Manager	

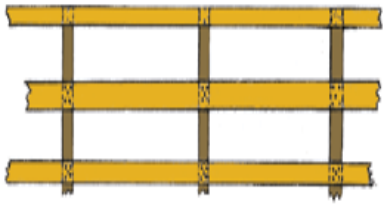
Stairway landings, ramps, and walkways

Falls from elevation are one of the leading causes of injuries to construction workers.

- Builders and truss installers must familiarize themselves
  stairways complete with handrails must be installed before beginning work on the next floor level.
- Stairs with more than four risers must have continuous handrails installed.
- Stairway landings, ramps, and walkways that are 1.2 m (4 ft.) or more above grade must have guardrails.

A temporary stairway with handrails

The slope of work platforms must not exceed one vertical to five horizontal.
Slope work platforms must have cleats spaced no more than 400 mm (16 in.) apart or a non-skid surface.



This image shows a detail of a standard guardrail.

- Workers must be prevented from
  falling when working 3 m (10 ft.) or more above grade.

  Standard guardrails or fall protection equipment must be used for this purpose

Guardrails are required when the work platform is 3 m (10 ft.) or more above grade.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

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• Manager	

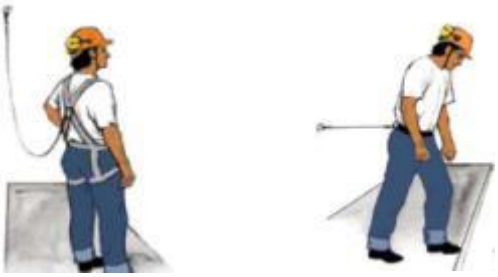
Fall restraint or fall arrest ?

In choosing a fall protection system, you should first consider installing guardrails or barriers. They provide a high degree of protection once installed properly. However, installing guardrails or barriers at a worksite is not always practical. That's when you may need personal fall protection equipment.

Fall restraint systems prevent you from falling

Examples include:

- Work-positioning systems-using either safety belts or full body harnesses that attach you to an anchor and leave both your hands free.
- Travel-restriction systems-personal fall protection equipment used to prevent you from travelling to an edge from which you may fall.



This is an example of a fall arrest and restraint system. The worker cannot fall off the edge.

NOTE: In a fall restraint system, a line is attached to an anchor and to your harness or safety belt in such a way that you cannot fall.

Fall arrest systems protect you after you fall by stopping the fall before you hit the surface below. Examples include:

- Full body harnesses connected by lanyards or lifelines to secure anchors. The harness must be attached to an anchor that is able to withstand 5000 lb. or two times the maximum arrest force.
- Safety nets

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

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Anchors

Selecting an anchor

The selection of a suitable anchor depends on the type of personal fall protection system you use.

- If you use a fall restraint system, your anchor must be capable of supporting at least 800 lb. or the equivalent of four times the weight of the worker.
- If you use a fall arrest system, your anchor must be capable of supporting at least 5000lb.

Alternatively, when the potential arrest forces are known, an anchor capable of supporting the equivalent of two times the maximum arrest force generated by a falling worker is

These are the same anchors installed.

These are examples of various fall protection anchors for slope roof applications.

NOTE : The anchor values above do not apply to horizontal lifeline systems. The potential forces imposed on the anchors of a horizontal lifeline can be much greater than those for personal fall restraint or arrest systems.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

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Inspecting a full body harness

Inspect your harness before each use. Check the buckles, the webbing, and the D-rings. Check the manufacturer's label for additional user information. If the harness is damaged or worn, do not wear it.

Buckles

Many full body harnesses have interlocking buckles called friction buckles. Look for bent, cracked, or nicked buckles. Test the buckles to make sure the coupling is secure.

Webbing

Look for frayed, cracked, cut, burned, or damaged webbing, and loose or broken stitching.

D-rings

Look for bent, cracked, nicked, or gouged rings.

When to use a full body harness

When using personal fall protection equipment, wear a full body harness if you are at risk of falling. A full body harness consists of straps passed over the shoulders, across the chest, and around the legs. In a fall, a full body harness protects you more than a safety belt because the harness distributes the force of impact over a greater area of your body.

This is a full body harness worn to arrest falls. Note that the D-ring is located between the shoulder blades.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

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• Manager	

Horizontal lifelines

Lifeline systems allow the worker to move horizontally along the work surface while being connected to the lifeline.
Horizontal lifelines and their anchors may be subject to extreme forces in the event of a fall. Therefore, all permanently installed horizontal lifelin Systems must be certified by a professional engineer.

Temporary horizontal lifeline systems are acceptable If they are:

- Manufactured for commercial distribution and installed and used according to the written instructions provided, OR
- Installed and used according to the written instructions of a professional engineer, OR

- Installed and used according to each of the following requirements:
  - The horizontal lifeline is a minimum 12 mm (1/2 in.) diameter wire rope with a breaking strength specified by the manufacturer of at least 20,000 lb.
  - The horizontal lifeline is free of splices except at the terminations.
  - End anchors have an ultimate load capacity of at least 16,000 lb..
  - A minimum of 3.5 m (12 ft.) of unobstructed clearance is available below the working surface.
  - No more than three workers are secured to the horizontal lifeline.
  - The horizontal lifeline is positioned so it does not impede the safe movement of workers.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

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How long does it take to fall?

- The Occupational Health and Safety Regulation requires workers to use a fall protection system
  - Where they could fall at least 3 m (10 ft.) or
  - Where a fall from a lesser height may result in serious injury

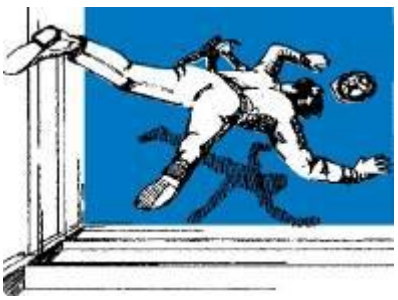
- Workers must be trained thoroughly in the safe use and limitations of personal fall protection equipment including safety belts, harnesses, lanyards, and lifelines.

- Many workers believe that they have time to regain their balance before they fall. This belief is not always correct.

- The following table indicates how far you can fall in just a few seconds:

Time (seconds)	Distance (meters)	Distance (feet)
0.5	1.2	4
1	5	16
2	20	64
3	31	100

- You can still prevent a tragedy. Properly maintained and worn, a safety belt or full body harness attached to a secure anchor could save your life.



You can not have time to grab hold of something safe.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

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• S/I	
• Manager	

Vertical lifelines

Using the right vertical lifeline

The rope used as a vertical lifeline in a personal fall arrest system requires a minimum breaking strength of 6,000 lb.
The reason for a breaking strength greater than that of the anchor is to allow for the eye splices and knots Tied in the rope at the anchor end.
Splices and knots will weaken a rope, so additional capacity of the lifeline is required.

The following are good industry practices for the safe use of a vertical lifeline:

- No knots or splices in the lifeline except at the termination points.
- Attach each lifeline to an independent point of anchorage.
- Only one worker connected to a vertical lifeline.

- The lifeline should extend to within 1.2 m(4 ft.) of the ground or a safe lower landing.
- If the suspended length of a lifeline exceeds 91m(300 ft.), then lanyard length, rope construction, rope strength, and the effects of wind must be taken into account.

Inspecting a vertical lifeline

Before each use, carefully inspect your lifeline to make sure it is in good condition. Look for

- Signs of chafing or abrasion
- Cuts in the yarns or strands
- Any visible deformities that would weaken the rope or interfere with the free movement of the rope grab

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

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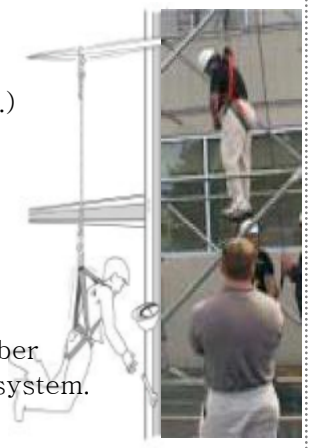
Personal shock absorbers and carabiners

Personal shock absorbers

A shock absorber slows and cushions a fall, reducing the forces of stopping the fall.
Personal shock absorbers are often made of "tear webbing." In a fall, specific stitch patterns in the webbing absorb the force of impact and progressively tear apart.

Warning: The shock absorber may increase the length of the lanyard by as much as 1.2 m (4 ft.) during a fall. Be sure to

- Refer to the label on the shock-absorbing unit to determine the maximum elongation.
- Allow for extra fall distance when you include a shock absorber in your personal fall protection system.



Carabiners

A carabiner is an oblong-shaped connecting device used to attach different components of a personal fall protection system.

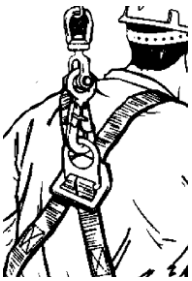


Illustration courtesy of Klein Tools

A carabiner should

- Have gates that are both self-closing and self-locking
- Have a breaking strength of at least 5,000 lb.
- Have the manufacturer's identity and load capacity clearly marked on it

Inspect your carabiner before each use. Make sure it is free of damage, deformities, or excessive wear.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
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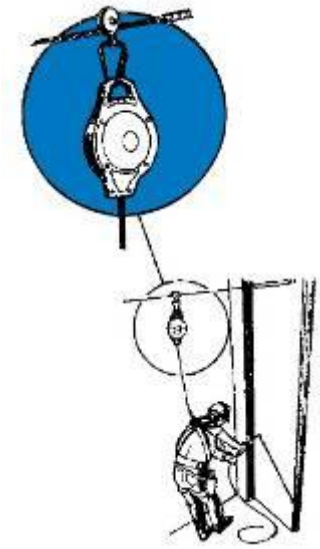
Retractable lifelines

A retractable lifeline is a type of vertical lifeline that works somewhat like a seat belt in a car. The lifeline is coiled inside a protective housing. As you move up or down, the lifeline extends or retracts. The line is under Constant tension and leaves no slack.



The moment you fall, the lifeline locks and stops your fall after a short distance.

Many retractable lifelines have fall indicators on their protective housings. Do not use the lifeline if the Indicator shows that a fall has occurred.
After a fall, the manufacturer or the manufacturer's authorized agent must inspect the lifeline and approve it for continued use.

Always use a retractable lifeline block in the vertical position unless specifically allowed for by the manufacturer.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

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Rope grabs

A rope grab is a device that travels along a lifeline and will lock onto it in the event of a fall.

- Rope used with all rope grabs must be the diameter specified by the manufacturer.
- Ensure the rope grab is installed on the rope in the correct orientation. The top of the device must point toward the anchor.

The two most common types of mechanical rope grabs are automatic and manual.

An automatic (or mobile) rope grab moves freely along the lifeline with you. If you fall, it locks automatically and stops you after a short distance.

Vertical lifelines are designed to be used by only one person and with a rope grab.

- If you use an automatic rope grab, limit your lanyard to 0.6 m (2 ft.) in length.

A manual rope grab does not Move freely with you.
It is always in a locked position on the lifeline and must be repositioned by hand.

- Manual rope grabs are best suited for use in fall restraint systems

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

8. FIRE Extinguishers

Basic fire precautions

Know the location of fire exits and fire alarms.

• Make sure you know

–The location of the fire extinguisher nearest to your work area

– The limitations and proper use of the A, B, C, and D type fire extinguishers

– Which type of fire extinguisher you should use on each type of fire–using the wrong extinguisher (e.g.,water on burning fire) might cause a fire to spread

• Keep fire exits, alarms, and fire fighting equipment free of obstructions at all times.

• In case of fire

– Warn others–yell for help if required.

– Use fire extinguishers if the fire is small.

– If the fire is (or could become) too large to control, call 911 or your local emergency number, and turn on the fire alarm immediately. Post lookouts to direct firefighters to the fire.

• In the case of electrical, propane, or gas fires, the first step is to shut off the supply. Therefore, before commencing work, find out where all the disconnects and main gas valves are located.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

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• Manager	

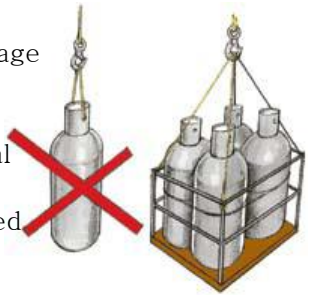
Propane safety

Propane leaks can cause serious fires and explosions. Propane gas, which is heavier than air, may leak and accumulate to create a dangerous environment, as it tends to creep along the ground and collect in low spots.

Propane space heaters

- When using propane space heaters, do not close up a house tightly. Good ventilation is necessary to remove moisture and to prevent a build-up of propane gas.
- Do not use propane heaters where spray-painting of flammable paints is being done.
- Cylinders that are not being used should be stored outdoors.

General propane safety



- Check propane cylinders for damage or corrosion prior to use.
- All propane and burner systems must be provided with a functional regulator.
- Propane cylinders must be secured in a level, upright position during storage, transportation, and use.
- Never apply a flame to cylinders to increase their pressure.
- Do not hoist propane cylinders by their valves or collars.
- During propane use, fire extinguishers must be available.

In the event of a propane fire

- Shut off the propane gas valve if safe to do so.
- Evacuate the area.
- If the propane gas flow cannot be shut off safely
  - Allow the propane gas to burn
  - Evacuate the area, and call the fire department immediately

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Silica dust control during wall and ceiling grinding

Grinding concrete surfaces generates high levels of silica-containing dust. Breathing in this fine dust can cause
a serious and irreversible lung disease called silicosis.

Controlling the dust

Local Exhaust Ventilation (LEV) is available to control the silica dust at ts source. Attachments include shrouds, hose attachments, and HEPA vacuum systems.
The dust is collected within the shroud and drawn into the vacuum, where it is filtered and discharged.

Wall grinding with LEV

To protect yourself you should:

Diamond grinder with vacuum attachment

- Establish a barrier around your work area to restrict unprotected workers from entering
- Whenever possible, use LEV systems to capture and control the dust at its source
- Check to make sure that the vacuum system you are assigned is approved for use with silica dust and is operating properly

- Clean the vacuum and change the filters on a regular basis; when cleaning vacuum systems, safe work procedures must be followed
- When grinding a ceiling, use a tripod designed for this work
- Always wear proper respiratory protection when working around silica dust

Ceiling grinder

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Silica dust control during tuck-point grinding

Grinding mortar generates high levels of silica-containing dust. Breathing in this fine dust can cause a serious lung disease called silicosis. Mortar dust can also contain lead.

Controlling the dust

Specially designed angle grinders and orbital cutting saws are available for tuck-point grinding. These grinders are equipped with Local Exhaust Ventilation (LEV), which captures the silica dust within a shroud at its source, and draws it into a vacuum where it is filtered in a HEPA filter and discharged.

Tuck-point grinding With LEV

To protect yourself you should:

Tuck-point grinder With LEV

- Establish a barrier around your work area to restrict unprotected workers from entering
- Wear proper respiratory and eye protection, and wear coveralls when visible dust is present in the air
- Use LEV systems to capture and control the dust at its source, whenever possible
- Inspect the shroud on your grinder to make sure it is in good condition
- Construct a partial or full enclosure to contain the dust and control its discharge through approved filters when an LEV grinder is not available
- Avoid side-to-side movements of the grinder; the grinder wheel should rotate toward the inlet to the vacuum

Orbital/oscillating cutting saw with LEV

Never blow dust from the cracks or walls; use a vacuum.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Controlling dust when cutting fiber-cement board

Cutting fiber-cement board without the appropriate controls can expose workers to harmful levels of crystalline silica dust. Breathing in this fine dust can cause a serious and irreversible lung disease called silicosis.

Dust control options

Every effort should be made to use cutting methods that minimize airborne silica dust.

- Handheld and stationary electric or pneumatic shears
- Circular saw equipped with a dust collector shroud and vacuum system (HEPA filtered) that captures the fine silica dust

Protected worker cutting fiber-cement board using a circular saw with dust controls

To protect yourself you should:

Worker cutting fiber-cement board outdoors, with a hand-held shear

- Use one of the methods described above for cutting fiber-cement board
- Inspect the dust control equipment before you start work and report any problems to your supervisor

- Follow safe work procedures when cleaning and/or maintaining the equipment
- Always wear an approved respirator when working around silica dust
- Wear approved safety glasses when power cutting cement board

Cutting fiber-cement board with a hand-held shear

Do not use compressed air to blow dust from your clothing or your equipment.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Silica dust control when drilling concrete

Drilling into concrete releases a fine sandy dust, which contains crystalline silica. Breathing in this dust can cause a serious lung disease called silicosis.

Controlling the dust

- Hammer drills are available with attached dust removal systems. These draw dust from the drill end, down the attachment assembly, and collect it in a HEPA filter.
- Dust caps are simple but effective devices that fit on the end of the drill and capture and collect concrete dust.

Drilling using a dust cap

- Wet control methods are also an effective means to reduce dust while drilling.

To protect yourself you should:

- Establish a barrier around your work to restrict unprotected workers from entering the area
- Inspect the dust control devices before use to ensure they are in good condition

Drill with dust removal system

- Clean the attachments on a routine basis to maintain effective dust control and prolong the life of the components
- Wear a disposable N95 respirator or a half-face respirator equipped with 100 series (HEPA) filters when using a dust removal system or cap system

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Silica dust control during stairwell grinding/chipping

Grinding, and other finishing tasks associated with concrete surfaces in stairwells, generate extremely high levels of hazardous silica dust.

Controlling the dust

- LEV equipped with HEPA filters must be used to control the silica dust at its source whenever practical.
- Enclosure structures must be considered when concrete dust cannot be effectively control with the LEV or wetting systems.
- Grinders equipped with water spray attachments are available and should be considered when LEV units are not practical for concrete finishing operations.

Poly enclosure with HEPA "negative air" unit

To protect yourself you should:

- Check with your supervisor to determine if an enclosure structure will be erected and how this is to be done
- Check to make sure that the vacuum system you are assigned is approved for use with silica dust, and is operating properly


Stair grinding with LEV


Grinder with HEPA LEV attachment

- Inspect the shroud on your grinder to make sure it is in good condition; very little visible dust should be released at the shroud; if dust is released, the vacuum may not be working properly
- Coveralls should be worn when finishing in stairwells

Do not use compressed air to blow dust from your clothing or your equipment.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Compressed gas cylinders

Compressed gas cylinders are used in a variety of tasks. While the tasks and gases may vary, the hazards and safe operation and handling practices for gas cylinders are similar.

Safe work practices

- Ensure cylinders are properly marked to indicate their rated pressure and the type of gas they contain.

- The cylinders should be stored in the upright position at all times.

- Gas cylinders should be stored in the open air, out of direct sunlight and away from any sources of ignition.
- Ensure cylinders are not secured to equipment that could become part of an electrical circuit.

Gas gage protection

- Post a “No Smoking” sign near the storage area.
- Keep full cylinders separated from empties.
- Use proper moving equipment like dollies or lifting cradles, or ask for assistance if equipment is not available.

- Gas cylinders can be very heavy, and they can be very dangerous if handled incorrectly.
- Never slide, drag, or drop cylinders
- Remove the regulator and replace the cap, if applicable, before moving cylinders.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Heat exhaustion

Working in the heat and doing heavy physical work can affect the body's cooling system. If your body is unable to
cool itself, you can experience heat stress. In heat exhaustion, your body loses too much water and salt as sweat.

Signs and symptoms

- Shallow breathing
- Increased breathing rate
- Weak, rapid pulse
- Cool, pale, clammy skin
- Sweating
- Weakness, fatigue, dizziness
- Fainting

Treatment

- Move the worker to a cooler environment. If possible, lay
  the worker down, and remove or loosen tight-fitting clothing.
- Cool the worker by sponging with cool water and fanning.
- In most cases, the patient's symptoms will improve dram

Prevention

- Acclimatize your body (gradually expose yourself to heat and work).
- Drink plenty of water (one glass every 20 minutes).
- Wear clean, light-colored, loose-fitting clothing made of breathable fabric.
- Take rest breaks in a cool or well-ventilated area.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Heat stroke

Heat stroke is a life-threatening condition in which the body's core temperature rises above 41°C. The person's mental functions may become disturbed.

Signs and symptoms

- Hot, dry, flushed skin, Seizures
- Absence of sweating
- Increased breathing rate
- Agitation, Confusion
- Irregular pulse
- Decreased level of consciousness
- Shock, Headache
- Nausea and vomiting

Treatment

- Move the worker to the coolest place available.
- Maintain airway, breathing, and circulation as required, and monitor patient until help arrives.

- Remove all outer clothing, and apply cold water to the worker by either dousing or applying wet, cool sheets.
- Notify the first aid attendant, and/or arrange for immediate transportation to medical aid.
- Continue to cool the worker during transport.

Prevention

- Acclimatize your body (gradually expose yourself to heat and work).
- Drink plenty of water (one glass every 20 minutes).
- Wear clean, light-colored, loose-fitting clothing made of breathable fabric.
- Take rest breaks in a cool or well-ventilated area.
- Schedule work to minimize heat exposure.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

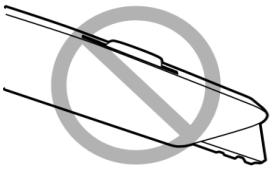
• Date	
• Subcon.	
• S/I	
• Manager	

Knife accidents

REAL ACCIDENTS :

One out of every 30 sand and gravel accidents involves a knife. Just before lunch break on a hot July morning, a 42-year-old laborer with 2 months of experience used a utility knife to cut a conveyor belt.

As he was pulling the knife across the belt toward himself, the blade slipped out of the belt cut. Before he could stop, the blade went into his knee, cutting some of his ligaments.



Don't Use Damaged Knives

BEST PRACTICES:

- Avoid pulling the blade toward your body.
- Wear gloves to protect your hands.
- Position yourself to be out of harm's way in case the knife slips.
- Do not use dull or bent blades

WHAT ABOUT OUR SITE ?

- What types of things are hard to cut without pulling the knife toward you?

Don't Cut Toward Yourself

- Does anyone have a way to cut away from your body in these cases?
- Has anyone seen an accident or near miss with a knife?
- What could the person in this accident have done differently?

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Hammer accidents

REAL ACCIDENTS :

• A mechanic with 15 years of experience severely strained
his back when he swung a sledgehammer to drive a wedge
into a crusher plate and missed the target.
• A new miner was struck on the hand when the head of the

Watch For Tight Spaces When Swinging

Swing From A Stable Position

BEST PRACTICES:

• Wear eye protection. Wear gloves to protect your hands.
• Position yourself and others to be able to let go of the hammer if you miss.
• Position yourself to be balanced.
• Inspect tools before use.

WHAT ABOUT OUR SITE ?

• What jobs are hard to get a good stable position for hammering?
• Why would you let go of the hammer if you miss?
• Has anyone had an accident or near miss with a hammer?
• What do you do differently now? What could the person in the accident have done differently

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Accidents while using bars and prying

REAL ACCIDENTS :

One out of every 25 accidents in sand and gravel mines involves using a pry bar.

• On a very cold January evening, a miner with 1-1/2 years of experience was trying to free a conveyor belt jammed under a hopper. He put the bar under the belt and leaned into it until he felt a sharp pain in his back.

• A mechanic with 1 year of experience was using a pry bar to remove a wheel to change the tire. The bar slipped, crushing his fingers against the truck frame and badly

Pry From A Stable Position

Watch For Tight Spaces When Prying

BEST PRACTICES:

• Wear eye protection. Wear gloves to protect your hands.
• Use the right tool for the job.
• Position yourself to be balanced.
• Do not use damaged bars.

WHAT ABOUT OUR SITE ?

• Are there jobs here that require a bar and have a high risk of pinching or straining?
• Is there a way to hold or use the bar to reduce the risk?
• Has anyone seen an accident or near miss with a bar?
• What could the people in these accidents have done differently?

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Housekeeping

• Floors, platforms, stairs, and walkways must be kept in good repair. Keep them free of slipping and tripping hazards.

• Do not allow waste materials and spills to accumulate in working areas. Maintain an ongoing program of waste disposal.
• Work areas must be well-lit.
• Place, stack, or store materials and equipment so they will not cause injury to workers.

The area within and surrounding the construction site can be very hazardous to workers if debris is allowed to build up.

• Use a waste bin to prevent buildup of rubbish.

• Ensure there are no protruding nails on loose or fixed materials.

• Use danger or caution tape where open trenches or excavations could present a hazard.

• Ensure all ground areas are firm and level where

• scaffolding or ladders are to be placed.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Safe ladder use

Falls from ladders are one of the leading causes of injuries to construction workers

When climbing up or down, workers should:

- Always face the ladder
- Use a three-point contact climbing method as shown at right (two hands and one foot, or one hand and two feet)
- Only one worker at a time is allowed on a single-width ladder

- Workers must not use ladder-type material hoists for roof access unless the hoists are designed for that purpose

- Workers must not work from the top two rungs of a ladder

- Heavy, bulky, or hazardous materials must not be carried when climbing ladders.
- Suitable hoisting equipment must be used for this purpose.

Other safety issues

Suggestions

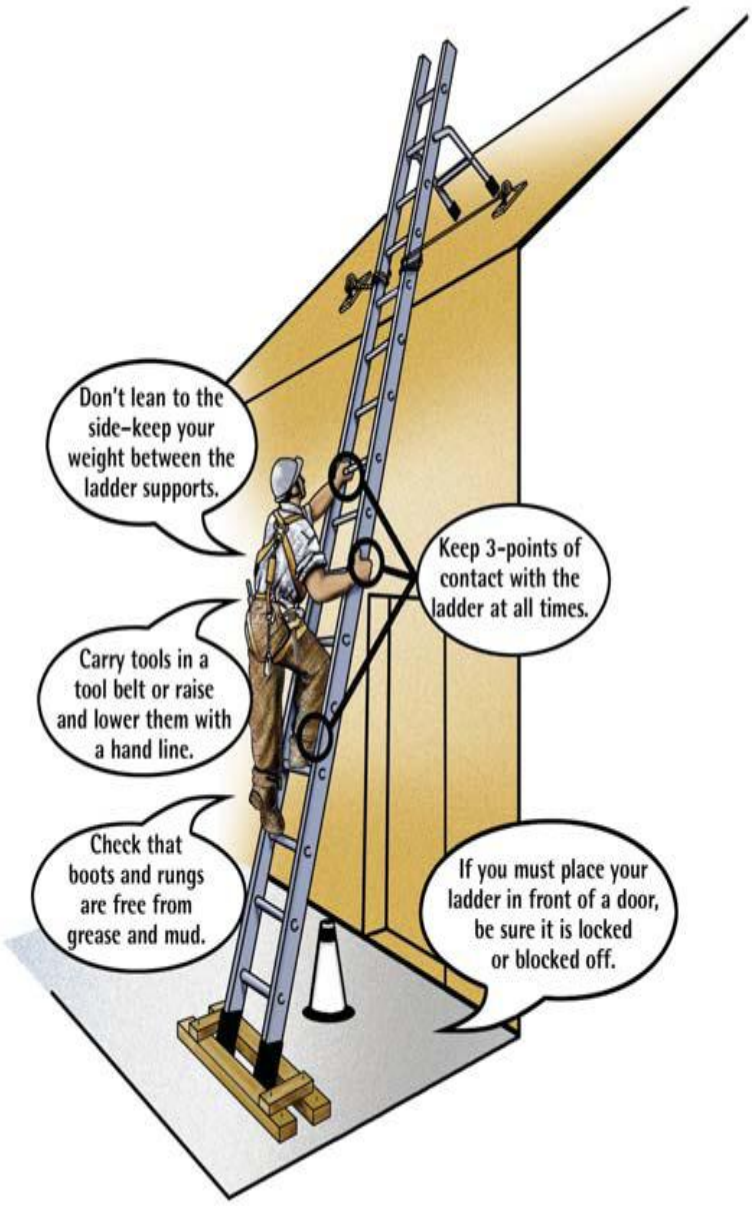
Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Safe ladder use 2



Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

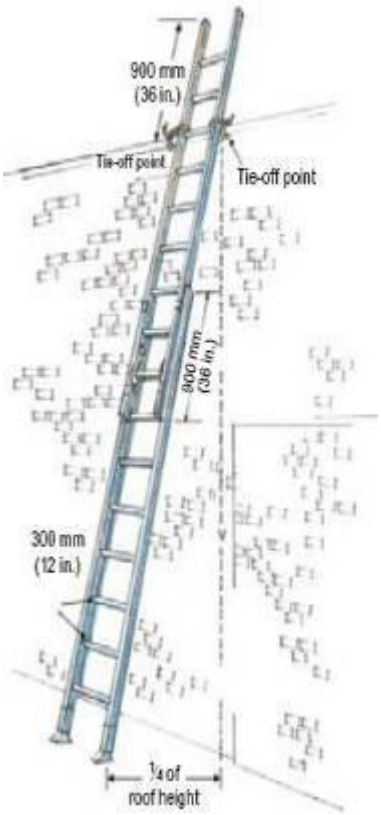
Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Setting up a ladder

Falls from ladders are one of the leading causes of injuries to construction workers.

- Inspect each ladder before use. Ladders with loose, broken, or missing rungs, split or bent side rails, or other defects must be identified and removed from service.
- Ladder tops must rest against a firm structure.
- Ladders must extend about one meter(3feet) above a safe landing or parapet wall.
- Ladders must be set up with a four vertical to one horizontal slope.
- Ladders must be tied, blocked, or otherwise secured to prevent them from slipping.



- The base of a ladder's side rails must rest on a firm, level foundation.
- Watch for overhead power lines before erecting a ladder. Metal, including wire-reinforced wooden ladders, must not be used near energized electrical conductors.

Other safety issues

Suggestions

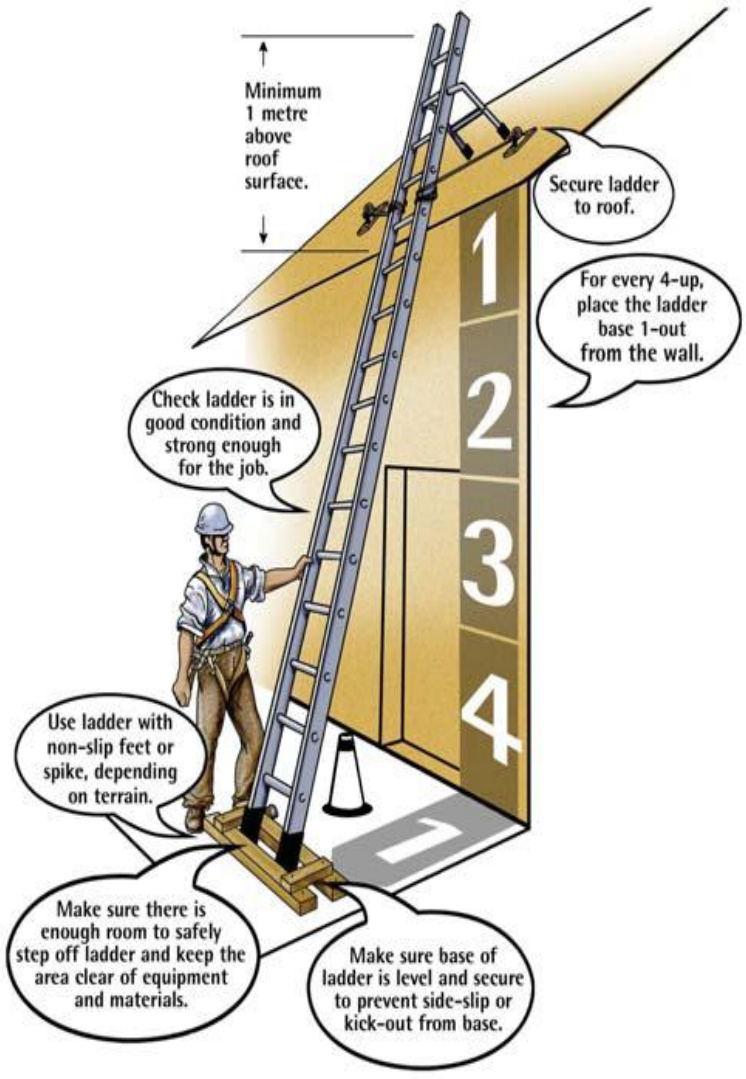
Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Setting up a ladder 2



Other safety issues

Suggestions

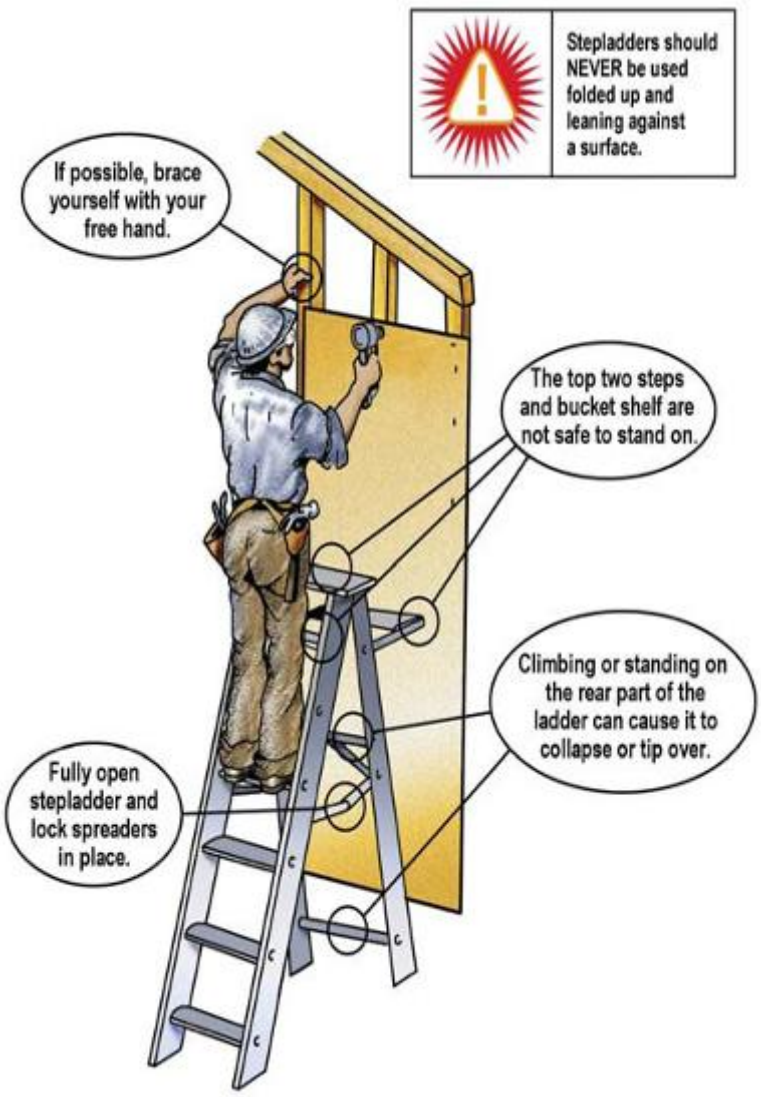
Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Stepladder use



Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

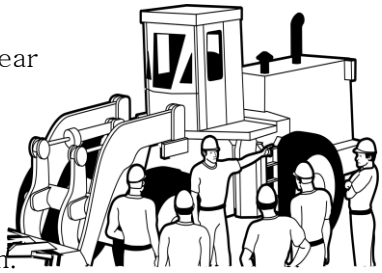
• Date	
• Subcon.	
• S/I	
• Manager	

Working safely with mobile equipment

Excavators, dump trucks, and other mobile equipment play key roles on many construction sites. However, Mobile equipment can pose a risk to nearby workers, especially when the operator cannot see them.

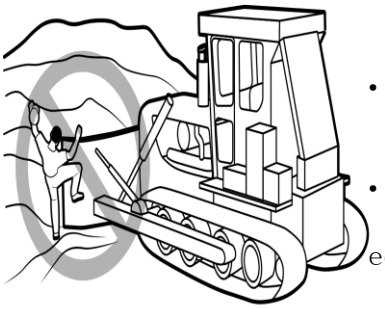
Safe work practices

Operators



- Ensure that workers are clear of the equipment before operating it.
- When operating mobile equipment, carry the load no higher than necessary to avoid limiting your vision.
- Avoid using cell phones while operating mobile equipment.

Nearby workers



- Before starting work, ensure that you are aware of all mobile equipment operating in and around the site.
- Wear high visibility apparel when working with or near mobile equipment.
- Do not take shortcuts across areas where mobile equipment is working.

- Keep in eye contact with the operator when working near moving machinery or equipment.
- If you use a cell phone, be aware that it can distract your attention from hearing or seeing mobile equipment as it moves around the site.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Self-propelled boom lifts

Workers operating self-propelled boom lifts face a risk of injury from

- Falling or tipping over due to slopes, uneven terrain, curbs, holes, or objects on the ground
- Contact with overhead obstructions, including power lines

Safe work practices

- Inspect the equipment before you use it, and as required during use, to ensure it is operating safely.
- Review and update the log book.
- Test equipment before using it to make sure that all safety devices are working properly.
- Any repairs or adjustments necessary for the safe operation of the equipment must be made before the equipment is used.
- Before operating any equipment, be aware of and stay clear of all overhead obstructions and hazards, including high voltage lines.

- Ensure that the supporting surface is firm, level, and clear of depressions or obstructions. Make sure that the wheels are contacting the ground before elevating or repositioning the unit.
- Always wear fall protection when required.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Self-propelled scissor lifts

Self-propelled scissor lifts can cause serious injury if used incorrectly. Both the users and the owners of these lifts are responsible for ensuring safe use.

Safe work practices

- Review the manufacturer's safe operating procedures before use.
- Inspect the equipment before you use it, and as required during use, to ensure it is operating safely.
- Review and update the log book.
- Test equipment before using it to make sure that all safety devices are working properly.

- Any repairs or adjustments necessary for the safe operation of the equipment must be made before the equipment is used.
- Stay clear of all overhead obstructions and hazards, including power lines.

- Use only lifts with controls that are protected from inadvertent operation.
- Ensure that each set of operating controls on the lift has an emergency stop device that is within easy reach of the operator and is clearly labeled STOP.
- Maintain full control of the lift and comply with the laws governing its operation at all times.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Prevention Falls from Equipment or Loads

1. Have you ever climbed onto a forklift or any other machine carrying materials, or operated a machine carrying materials when someone else climbed onto it?
   Tell us what happened.
2. Have you known or heard of anyone who was injured or killed by a forklift or because of a forklift?
   Tell us what happened.
3. Can you think of ways the death of this person could have been prevented ?

Preventing falls from equipment or loads :

- Do not allow anyone to climb onto the raised load on a forklift or other machine.
- Do not use the forks to lift workers.

Other safe working practices with forklifts:

- Do not operate a forklift unless trained and licensed.
- Use seatbelts if they are available.
- Never jump on or off equipment.
- Do not raise or lower the forks while the forklift is moving.
- Never allow passengers to ride on forklifts unless a seat is provided

Unless your job to operate a forklift, Stay off forklifts and forklift loads.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

PROPER LIFTING TECHNIQUE

General:

- Test the weight of the load before lifting by pushing the load along its resting surface.
- If the load is too heavy or bulky, use lifting and carrying aids such as hand trucks, dollies, pallet jacks and carts, or get assistance from a co-worker.
- Never lift anything if your hands are greasy or wet.
- Wear protective gloves when lifting objects with sharp corners or jagged edges.

When lifting:

- Plant your feet. Center body weight to provide a powerful line of thrust and good balance.
- Bend at the knees. Never bend from the waist to pick up objects.
- Lift with your legs. Leg muscles are stronger than back muscles- let your strength work in your favor.
- Get a good grip. Grasp the load firmly. Use gloves if they allow for a better grip.
- Keep it close. Grasp the load firmly and lift towards the belt buckle. Hold the load close to the body to avoid putting pressure on the back.

- Lift smoothly. Raise, carry and lower the load smoothly. Never jerk a load.
- Avoid twisting. If turning is required while lifting or carrying a load, turn the feet and body instead of twisting the back.
- Push. Push rather than pull the load.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Lifting accidents

REAL ACCIDENTS :

One out of every 20 sand and gravel accidents involves lifting. A new worker was up on the platform changing a screen. He lifted the screen cloth then twisted to pull it away from the deck. He felt a sudden, sharp pain in his back.

BEST PRACTICES:

- Plan your lift and clear out the area and travel way before starting.
- Position yourself to lift with your legs without bending or twisting your back.
- Never lift an object without a secure grip. Hold the object close to you.

Don't Bend To Lift

WHAT ABOUT OUR SITE ?

- What tasks require us to lift heavy or awkward objects?
- How could you guess how much something weighs before you lift it? Pick up a corner, push it, read the label.
- What can we use to get a better grip on odd-shaped objects?
- Who can show us what we mean by lifting with the legs?

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

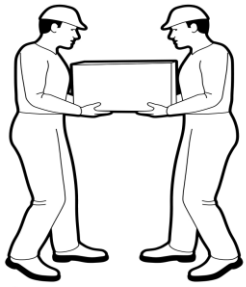
Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Dropping or catching objects

REAL ACCIDENTS :

- At the end of the day, a miner with 4 years of experience went to move a barrel. While lifting the barrel, it slipped from his grip and began to fall. When he tried to catch the barrel, he tore the ligaments in his arm.
- Late in his shift, a new miner was helping another employee lift a screen panel. The other employee let go of the screen panel without warning, leaving his partner carrying the full load, resulting in a severe shoulder strain.



Communicate To Share The Load

Don't Try To Catch A Load

BEST PRACTICES:

- Know the weight of the object you're lifting and know when to get help.
- Communicate with the person helping you. Agree on signals before you lift.
- Have a clear path of travel and place to put an object down.
- Never try to stop a falling object.

WHAT ABOUT OUR SITE ?

- Who remembers what we talked about last week? Was there something we needed to fix?
- What tasks require us to lift heavy or awkward objects?
- Is there a way to avoid lifting these objects?
- Should we have standard signals we should always use here?

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Unsafe travelways

REAL ACCIDENTS :

- A young dispatcher strained her back when she stepped on a uneven surface while carrying a computer through a doorway.
- A laborer strained a muscle in his leg while carrying a skirt board up a flight of stairs.
- The width of the board required him to climb the stairs in an awkward position.

Have A Clear Path

Balance Your Loads

BEST PRACTICES:

- Know the weight of the object you're lifting and know when to get help.
- Never carry an object that obstructs your vision.
- Check the travelway and have a clear path before starting.
- If you slip while carrying, let the object drop.

WHAT ABOUT OUR SITE ?

- What tasks require us to carry large or heavy objects?
- If the object is too big to see over or around or walk normally, what could you do?
- Why should you drop a load if you slip?
- Do you think you'd be more likely to carry out an emergency action if you think about it first?
- Where do we keep lift-assist devices (push cart, hand truck, hoist, forklift)?

Other safety issues

Suggestions

Employee Participants

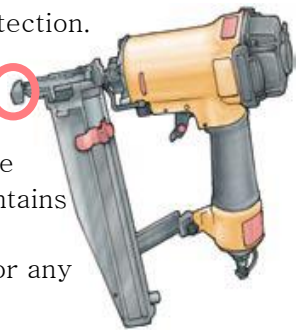
(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Safe use of pneumatic nailing and stapling equipment

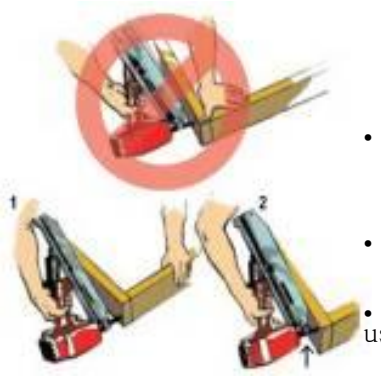
- Permit only trained and experienced workers to operate pneumatic nailing and stapling tools.
- Wear proper eye and hearing protection.



- Always use a work-contacting element that limits the contact area to one as small as practicable
- Always handle the tool as if it contains fasteners
- Do not point the tool at yourself or any other person.

- Inspect the tool before connecting to the air supply.
  - Check safety mechanisms if applicable.
  - Ensure the screws and cylinder caps are securely tightened.

Caution : Too much pressure can cause a nail to go right through the material and could cause serious injury to other workers



- Do not squeeze the trigger unless the nosepiece of the tool is directed at a safe work surface.
- Do not transport or load the tool with your finger on the trigger.
- Do not secure the trigger in the ON position.
- Do not overreach when using the tool.

The bottom two diagrams show the safe sequence for using an air nailer.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Safe use of powered hand drills

• Keep drill vents clear to maintain adequate drill ventilation.
• Keep electrical cords clear of the drilling area.
• Slow the rate of feed before breaking through the surface.

• Keep drill bits sharp at all times.
• Wear proper eye and hearing protection.
• Secure the material being drilled to prevent movement.
• Drill a small pilot hole before drilling large holes.

• Disconnect the power supply before changing or adjusting the drill bit or other attachments.
• Do not use a bent or damaged drill bit.
• Remove the chuck key before connecting the drill to the power supply.

• Do not use high speed steel bits without cooling or lubrication.
• Do not reach under or around material being drilled.
• Do not overreach. Keep proper footing and balance at all times.
• Do not drill with one hand while holding the material with the other.

Other safety issues

Suggestions

Employee Participants

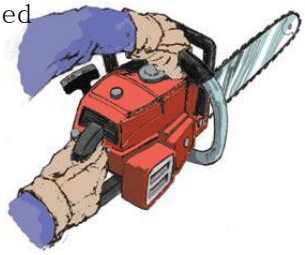
(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Safe use of chainsaws in construction

- Chainsaws for construction must be equipped with a chain break and with anti-kickback chain.
- Permit only trained and experienced workers to operate a chainsaw.
- Never walk around with a saw in the operating mode.
- Make sure the chain brake is functioning.



- Do not attempt to cut anything other than wood with a chainsaw.
- When operating a chainsaw, safety goggles and hearing protection must be worn at all times.

- Do not operate the saw when you are tired.
- Know where the bar tip is at all times.
- Don't allow the cut to bind (close) on the saw chain.

- Trousers or chaps with ballistic nylon pads sewn in provide protection to the legs.
- Hold the saw securely with both hands, with fingers and thumbs around the handles.

Other safety issues

Suggestions

Employee Participants

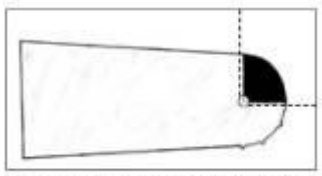
(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Chainsaws - avoiding kickback hazards

The most common and usually most violent kickback occurs when contact is made in the "kickback" zone. Contact in this zone makes the chain bunch up and try to climb out of the cutting track. This often happens when the saw tip makes contact with something beyond the cutting area, such as a tree branch, a log or planks.

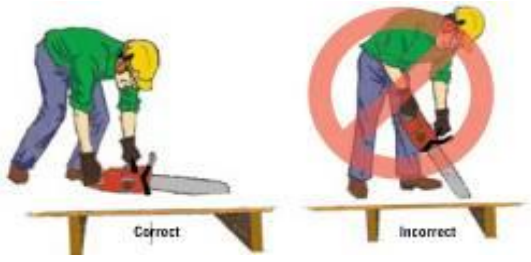


Make sure to avoid contact in the kickback zone (shown in black).

The examples above show how kickback can occur.

Take extra care when making pocket cuts. Start the cut with the underside of the chain tip, then work the saw Down and back to avoid contact with the kickback zone.

Consider the use of a saber (reciprocating) saw to make pocket cuts.



Be particularly careful to avoid contact with nails, piping, or other objects. This is especially important when making a pocket cut through framing lumber such as a subfloor or when cutting used lumber such as shoring, lagging, or blocking timbers.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

Safe use of portable circular saws

• Permit only trained and experienced workers to operate a saw.
• Wear proper eye and hearing protection, and when required, respiratory protection.
• Check the retractable lower blade guard before use.
• Allow the saw to reach full power before cutting.

Electrically operated portable circular saw

• Do not place your hand under the shoe or guard of the saw while the saw is connected to the power supply


Battery-operated portable circular saw

• Make sure the lower blade guard is fully returned before laying down the saw.

• Disconnect the power supply before adjusting or changing the blade.

• Do not force the saw during cutting.
• Do not cut materials without first checking for obstructions or foreign objects such as nails and screws in the cutting path of the saw.
• Do not carry portable circular saws with hands or fingers on the trigger switch.
• Keep all electrical cords clear of the cutting path.

Other safety issues

Suggestions

Employee Participants

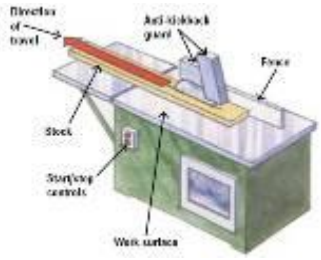
(Name) (Signature)

Record Sheet

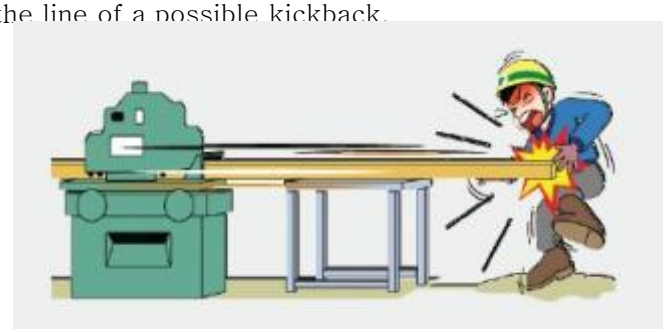
• Date	
• Subcon.	
• S/I	
• Manager	

Safe use of table saws

- Make sure the guard is in place and working correctly.
- Choose the proper saw blade for the type of work being done.



- Keep saw blades clean, sharp, and properly set so they will cut freely without being forced
- Operate the table saw in a non-congested, well-lighted area.
- Feed material into the saw blade counter to the direction of rotation.
- During cutting, keep hands out of the line of the saw cut.
- Keep your body to the side of the saw blade out of the line of a possible kickback.



- Do not perform free-hand sawing. The stock must be held firmly against the miter gauge or rip fence to position and guide the cut.
- Do not reach around or over a moving saw blade.
- Use a push stick when ripping narrow stock.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

• Date	
• Subcon.	
• S/I	
• Manager	

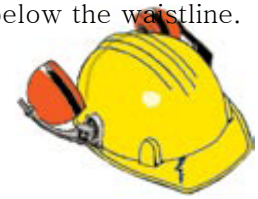
Basic personal protective equipment

All workers must equip themselves with suitable clothing, shirts, and long pants for protection against both the weather and workplace hazards.

Head protection

When entering a construction site, workers must wear approved hard hats. When using a hard hat:

- A chinstrap or ratchet may be required if your job involves constant bending and your head is below the waistline.
- Inspect it regularly.
- Change the suspension harness at least every five years.
- Don't use solvents to clean it.
- Keep it clean.
- Don't use it if it has a crack or a deep gouge.
- Don't throw it around or use it as a hammer.



Foot protection

- Footwear must protect the ankle, sole, and toes.
- It is the worker's responsibility to keep personal safety footwear in good repair. For example, exposed metal toecaps could be hazardous near electricity.
- Keep laces tied up at all times to avoid snagging or tripping.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

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Hearing protection

Residential construction workers are often exposed to on-the-job noise that can permanently damage hearing. It is important to wear hearing protection when exposed to

Type • Roll down foam, Reuseable earplugs Custom molded, Canal caps, Earmuffs





Several factors determine which is the best protector for an individual worker.

- Physical requirements on the job
- Hearing levels of the workers
- Temperature in the workplace
- Use of other personal protective device

Hearing Protection (HP) Checklist

- HP used at 85 dB and you have a significant threshold shift in hearing.

- HP used at 90 dB.
- Dual HP (muff and ear plug) used above105 dB.
- HP worn 100% of time in loud noise.
- You are fitted individually for the most appropriate HP for you.
- Your HP is the most comfortable for you to wear.

Loudness Test

- Insert plug in both ears, cup hands over them and release.
- The earplugs should be blocking enough noise so that covering the ears with your hands results in no significant change in noise level.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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RESPIRATORY PROTECTION

When are Respirators Required?

The tasks of your job may expose you to a number of respiratory hazards that require you to wear a respirator. Processes using high temperatures, such as welding, spray painting generates mists; and confined spaces may have an oxygen deficient atmosphere.

How do Respirators Work?

Particulate respirators :

These respirators only protect against particles (e.g., d

- Filter out dusts, fumes and mists;
- Are usually disposable dust masks or respirators with disposable filters;
- Must be replaced when they become discolored, damaged, or clogged;
- Examples: filtering face-piece or elastomeric respirator.

Chemical cartridge respirators :

Chemical cartridge respirators are effective only if used with the correct cartridge or filter for a particular substance.

- Use replaceable chemical cartridges or canisters to remove the contaminant
- Are color-coded to help you select the right one;
- May require multiple cartridges to prote against multiple hazards.

How to conduct fit checks each and you don a respirator:

Positive Fit Check

- Exhale into the face-piece;
- If you have a good seal positive pressure will build up in the face-piece causing the mask to slightly lift off of your face

Negative Fit Check

- Cover the inlet openings with the palms of your hands;
- Inhale gently;
- If you have a good seal, the face-piece will collapse

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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Putting on your respirator

Adjust the straps so that the respirator fits tightly but does not dig into your face or leave red marks on your skin. The respirator should feel snug but comfortable.

Procedure for putting on a filtering face-piece respirator

Position the straps correctly-one above the ears and over the crown of the head, and the other below the ears and around the neck.

If the respirator has adjustable straps, you can tighten or loosen them without removing the respirator.

If there is a metal nosepiece, mould it around your nose to obtain a proper seal

Procedure for putting on an elastomeric half-facepiece respirator

The respirator should fit tightly, but it should not be uncomfortable or leave red marks on your face.

1. Position head harness

2. Grip straps and tighten

3. Fasten buckle

4. Adjust fit

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

Record Sheet

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• Subcon.	
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Eye and face protection

Eye or face protection must be worn whenever there is a danger to the eyes or face.

Potential Injuries

- Dust, dirt, metal or wood chips entering the eye
- Chemical splashes from corrosive substances, hot liquids, solvents, or other hazardous solutions
- Objects swinging into the eye or face
- Exposure to radiant energy or harmful rays

Selecting Eye Protection

- When selecting suitable eye and face protection, take into consideration the following elements:
- Specific workplace hazards
- Proper fit and comfort
- Proper vision and movement

Types of Eye Protection

- Safety Glasses
  - Eyeglasses with safety frames constructed of metal or plastic and impact-resistant lenses.

- Goggles
  - Tight-fitting eye protection that completely covers the eyes and facial area around the eyes.
- Welding Shields
  - Shields that protect eyes from burns caused by infrared or intense radiant light; also protect the eyes and face from flying sparks, metal splatter

- Face Shields
  - Shields that protect against nuisance dusts and potential splashes or sprays of hazardous liquids.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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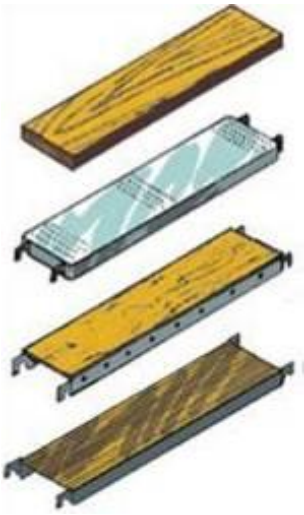
Manufactured scaffold planks

Manufactured scaffold planks are available in various lengths and duty ranges.

These planks must be installed and used according to the manufacturer's and/or supplier's specifications.



Examples of the various types of manufactured planks.

Securing devices for aluminum/plywood platforms.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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Testing procedure for scaffold planks

Scaffold planks must never be overloaded, used as sills, or subjected to any condition that could affect the integrity of the plank as a working platform.

The following is an acceptable method for testing sawn wood scaffold planks:

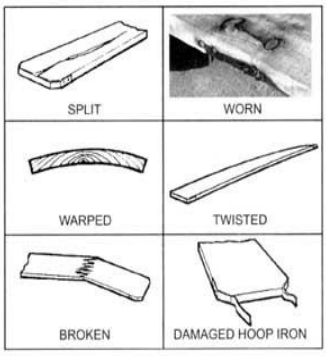
- Place test scaffold plank on two blocks. The block size and test span must be selected from the following table:

Test Span	Block Size
2.1 m (7 ft.) 3 m (10 ft.)	60 mm (23/8 in.) 92 mm (35/8 in.)

To test a plank, have two workers stand on the centre of it.

- Have two workers who together weigh at least 148 kg (325 lb.) stand on the centre of the supported plank. Do not jump up and down on the plank.

- Reject the plank if any of the following events occur:
  - The plank bends enough to contact the ground
  - Cracking sounds are heard (indicating fiber overstressing
  - After removal of the test load the plank fails to return to its original position



To prevent damage, scaffold planks must be handled carefully, used correctly, and stored properly.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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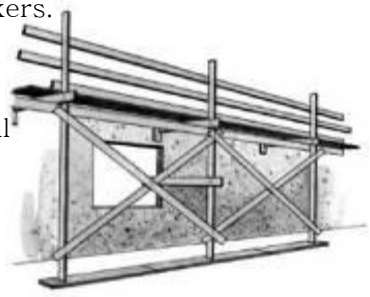
Scaffold requirements

- Scaffold erection and dismantling must be done by, or supervised by, qualified workers.
- The vertical supports of scaffolds must be
  - Placed on a firm base or sill
  - Capable of withstanding superimposed weight from the scaffold and anything placed on the scaffold



This is an example of a typical single-pole wood scaffold for light duty.

- Do not use pallets, boxes, concrete blocks, bricks, or other unstable materials to support scaffolds.

This is an example of a metal guardrail system.

- All scaffolds must be erected plumb and level, and be designed for the intended use
- Scaffolds must be secured to the building structure approximately 4.6 m (15ft.) vertically but not to exceed 6.1 m (20 ft.) vertically and 6.4 m (21 ft.) horizontally.

- Bracing requirements for prefabricated scaffolds must be installed according to the manufacturer's instructions. Bracing for job-built scaffolding must meet standards acceptable to OSHA.

- All scaffolds must be inspected before use by those who will use them, regardless of who erected them. No damaged or weakened scaffold may be used until it has been effectively repaired.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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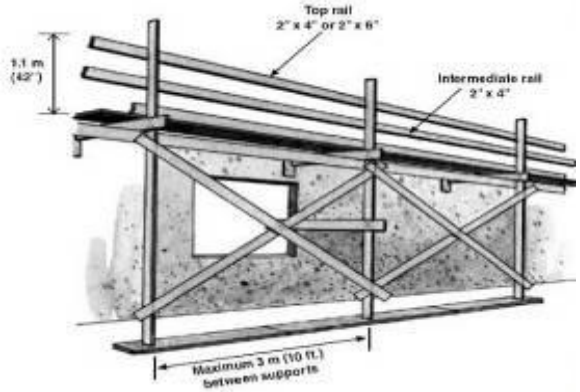
Guardrails for single-pole scaffold (light-duty)

Falls from scaffolds are one of the leading causes of injuries to construction workers.

All scaffolds 3 m (10 ft.) or more above grade must have standard guardrails on their open side.

A standard guard consists of :

- A top rail approximately 1.1 m (42 in.) above the platform.
- An intermediate rail centered at approximately the midpoint of the space between the underside of the top rail and the upper edge of the platform.
- Vertical guardrail supports spaced not more than 3 m (10 ft.) apart for wooden scaffolding.



Standard guardrails must be designed to withstand a static load of 125 lb. applied laterally at any point of the top rail.

Is it really a safe working platform?

Where is the access ladder?

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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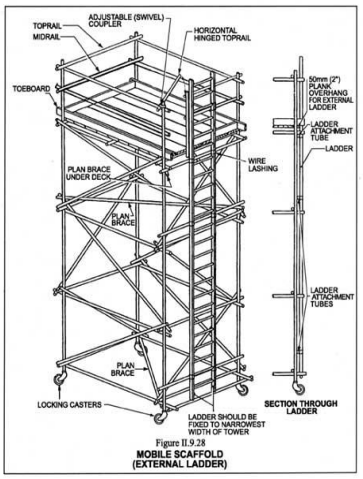
Rolling scaffolds

- The floor or surface on which a rolling scaffold is moved must be
  - Within three degrees of level
  - Free from pits, holes, depressions, or obstructions
  - Able to withstand the superimposed point loading of the casters supporting the scaffold structure and the workers

- No worker is to remain on a rolling scaffold while it is being moved by other workers if the work platform height exceeds twice the minimum base dimension.

- The wheels of rolling scaffolds must have locking devices.

- Height to base dimensions for Mobile Towers.
  - No more than 3.5 times the minimum base dimension when used inside.
  - No more than 3.0 times the minimum base dimension when used outside.



Rolling scaffold

Scaffold parts

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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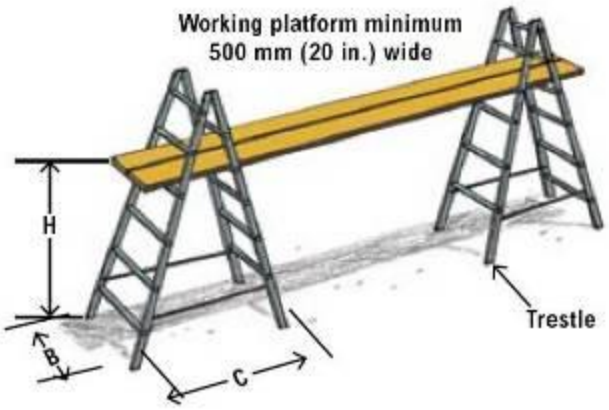
Trestle scaffolds; shore and lean-to scaffolds

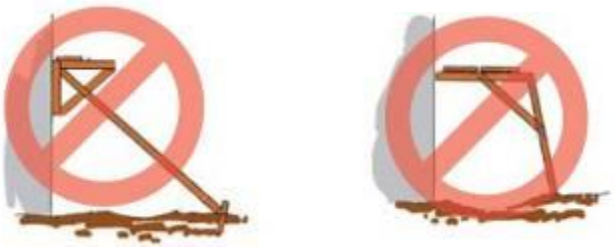
Trestle scaffolds

- Trestle scaffolds can only be used for light-duty work.
- Extensions must not be added to the trestle legs.
- The height of the trestle work platform (H) must not exceed three times the base dimension (B) of the trestle.
- The spread of the trestle legs (C) must be equal to one-half the height of the trestle.
- Stepladders must not be used for trestle scaffolds.



This is an examples of a trestle scaffold.

Shore and lean-to scaffolds



The use of shore scaffolds (top) or lean-to scaffolds (bottom) is PROHIBITED.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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Inspection/Hand over of Scaffold

- All scaffolds must be inspected prior to use after erection and each day.
- All scaffolds must be re inspected after alterations or after severe weather conditions.
- All scaffold must be formally inspected every seven days and entry made on the 'scafftag'.

- Green TAG :
  The scaffold has been built and has been inspected to an acceptable H&S standard and is safe to use.

- YELLOW TAG :
  The scaffold has yet not been built to H&S standard and requires inspection, certification and tagging as acceptable. Only the inspection team should use

- RED TAG :
  This scaffold is not complete, it is either
  being built or dismantled.
  Do not use it for any reason !

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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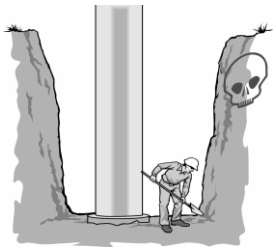
General requirements 1

Excavations

• Excavations are defined to include trenches. The definition of an excavation is a man-made cut, cavity, or depression in the earth's surface (including open-face excavations). More on trenches below

Trench

• Trench excavation means a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet.



General requirements

• Before excavation begins, locate and identify utility services such as electrical gas, steam, water, and sewer in the area.
• Pointed tools cannot be used to probe for underground gas and electrical services.

Underground Installations

• Determine the estimated locations
• Contact the utility or owner
• Proceed cautiously
• Find the exact location
• Support, protect, or appropriately remove the installation in open excavations

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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General requirements 2

Access and Egress

• A safe means of entering and leaving excavations must be provided for workers.

A stairway, ladder, ramp, or other means of egress must be located in trench excavations which are:

- 4ft or more in depth,
- require no more than 25 ft of lateral travel.

Exposure To Vehicular Traffic

• Employees must be provided and wear warning vests or other suitable garments marked with or made of reflectrorized or high visibility materia

Warning System for Mobile Equipment

• A warning system must be utilized when mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have clear and direct view of the edge. Barricades, hand or mechanical signals, or stop logs can be used.

Exposure To Falling Loads

• Employees are not allowed under loads handled by lifting or digging equipment.
• Workers must either stand away or otherwise be protected from any vehicle being loaded or unloaded to avoid spilling or falling material.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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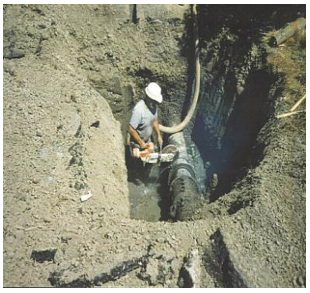
Hazardous Atmospheres

Testing and Controls

- Testing is required where oxygen deficiency (less than 19.5 percent oxygen), or a hazardous atmosphere exists or could reasonably be expected to exist.
- Examples include excavations in landfill areas or in locations where hazardous substances exist

Water Accumulation

- Employees must be properly protected when working in excavations where water has accumulated or is accumulating.



- Precautions will vary with each situation but may include diversion, dewatering (well pointing) systems, special supporting systems, or water removal equipment.

The competent person must monitor water removal equipment.

Stability of Adjacent Structures

- Excavation below the level of the base or footing that could pose a hazard is not permitted except when:

– the excavation is in stable rock,

or

– support system (underpinning) is provided, or

– Registered Professional Engineer approves.

- Support systems such as shoring, bracing, underpinning, screw retention systems, or other engineering must be provided to ensure stability.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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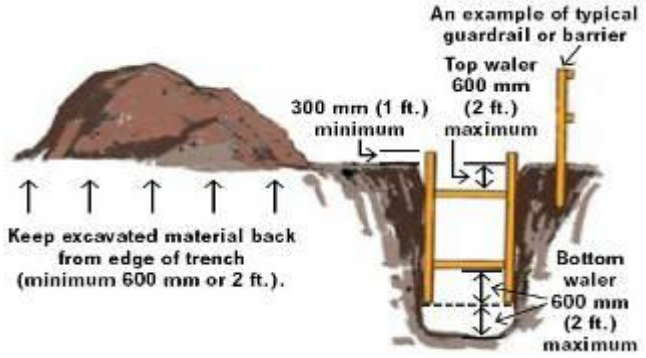
Additional excavation requirements

- Excavation slopes and/or supporting systems must be inspected daily for erosion or deterioration.
- Excavated material must be kept back at least 600 mm (2 ft.) from the edge of any trench excavation and 1.2 m (4 ft.) from any other excavation.
- When necessary, excavations must be covered, or substantial guardrails or barriers must be erected around excavations to prevent workers or other persons from falling into them.



- Vertical supports must extend above the ground level a minimum of 300 mm (1 ft.) and must be no more than 600 mm (2 ft.) up from the bottom of the trench.
- The top waler must be set at 600 mm (2 ft.) down from ground level.
- The bottom waler must be set at 600 mm (2 ft.) up from the bottom of the vertical
- A ladder must be provided when workers are required to enter excavations more than 1.2 m (4 ft.) deep.
- The ladder must extend from the bottom of the excavation to at least 1 m (3 ft.) above ground level and be placed so that it is protected by the shoring.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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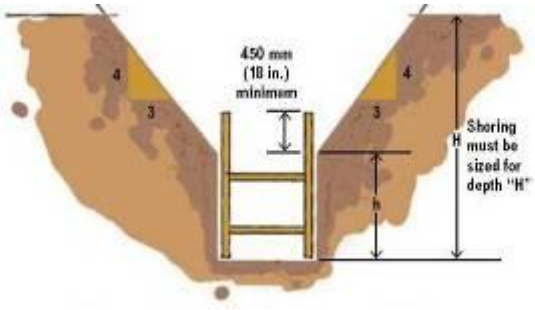
Sloping and shoring requirements

No worker may enter an excavation more than 1.2 m (4 ft.) in depth unless:

- The sides of the excavation are sloped to a safe angle no steeper than three horizontal to four vertical, OR
- The sides have been supported by use of sheet piling or shoring and bracing, OR
- A combination of both sloping and shoring is used, OR
- The sides of the excavation have been sloped or supported in accordance with the written instructions of a professional engineer.

Unshored trench and excavation walls must be sloped flatter than the angle of repose, but in no case steeper than three horizontal to four vertical unless specified in writing by a professional engineer.



This is an example of combined sloping and shoring.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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TRAFFIC CONTROL

REAL ACCIDENTS :

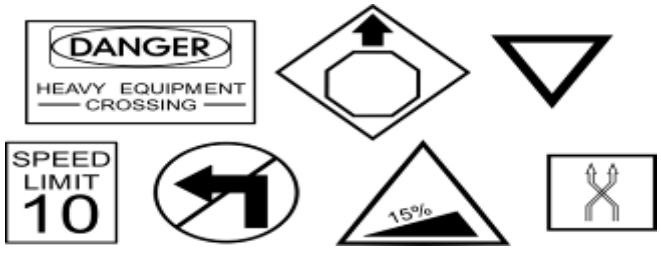
- Just before lunch, a dozer operator was in his 9th hour of operating a loader. While in reverse, he cut across a 2-foot-high bream marking traffic lanes, throwing his body against the arm rest and bruising his pelvis.
- A truck driver was driving his empty truck down a ramp. He missed the corner and struck a gravel pile.

BEST PRACTICES:

- Follow the rules. Watch your speed, stay in lanes.
- Check your equipment (brakes, signals) before each use.
- Check brakes each time you approach a steep grade or elevated dump.
- Never move or change direction without using a warning signal or flagger.

WHAT ABOUT OUR SITE ?

- Where do we post our traffic rules? What are they?
- Where are our high-hazard areas? Is there a way to relieve the hazard?
- Which of our grades require brake checks? Are they posted?
- If you are relieving someone for only a few minutes, do you need to check the equipment?
- What do we do if we observe someone violating traffic rules or operating unsafely?



Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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General welding and cutting requirements

General Requirements

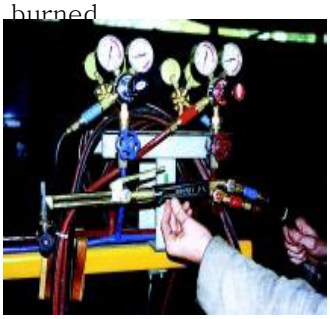
- Whenever possible, move objects to a safe place before heating, cutting, or welding. Remove or effectively screen all fire hazards where the welding job is to take place.
- Keep passageways, ladders, and stairs clear of hoses, cables, and other equipment.
- Do not cut or weld any steel drum or other vessel that might have contained flammables until it has been steam purged and tested. Flushing with water is not sufficient.

All workers engaged in welding or burning operations must wear:

- Flame-retardant work clothing, preferably made of cotton or wool fibers
- Leather gauntlet-type gloves and arm protection
- An apron made of leather or other suitable material for heavy work
- Face protectors and safety eyewear to guard against harmful radiation or particles of molten metal, including when chipping and grinding welds

Others Requirements

- Where possible, recently welded or flame cut work should be marked “HOT” to prevent other workers from being burned.



- Before entering a tank, bin, or any other confined space, follow confined space entry procedures.
- Never take gas cylinders into a confined space
- Protect load-bearing ropes or cables from the effects of welding operations

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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Hand-held grinders

Hand-held grinders can cause serious injury if used incorrectly. By following the safe work practices listed below, you can help reduce the risk of injuring yourself or others while using these powerful tools.

Safe work practices

- Always handle and use equipment with care.
- Keep combustible materials away from the grinding area. Sparks may cause a fire.
- Never remove manufacturers' guards from grinders while operating.
- Ensure grinding wheels/discs are in good condition. Inspect them for chips, cracks, and loose retainers prior to use.
- Grinding generates dust. Protect yourself with proper respiratory protection and ventilation.
- Always check the machine's rated speed against the recommended maximum safe operating speed marked on the wheel or disc.

Personal protective equipment

- Always wear hearing, eye, and face protection that is appropriate for the grinding work you're doing.
- Respiratory protection may be required if your grinding work puts you at risk of inhaling harmful substances

- Secure loose clothing, and remove ties, rings, watches, and other jewelry.
- If you're not sure what type of personal protective equipment you need, ask your supervisor or employer.

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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• S/I	
• Manager	

Bench grinders

Bench grinders can cause serious injury if used incorrectly. By following the safe work practices listed below, you can help reduce the risk of injuring yourself or others while using these powerful tools.

Safe work practices

- Never remove wheel guards from a grinder. They offer protection in case of wheel failure, and protect hands and fingers from injury.
- When work is hand-held, the grinding machine must have an adjustable rest.
- Never grind non-ferrous materials (metals not containing iron) unless the wheel is designed for such use.

- Do not grind on the side of the wheel unless it is designed for such use.
- Do not stand directly in front of a grinding wheel when you start it. Before you begin grinding, allow the wheel to run at operating speed for at least one minute.
- Do not use a wheel that vibrates. Do not force or jam work into the wheel. Do not use a damaged or dropped wheel.

Personal protective equipment

- Always wear hearing, eye, and face protection that is appropriate for the type of grinding work you're doing.
- Respiratory protection may be required if your grinding work puts you at risk of inhaling harmful substances
- Secure loose clothing, and remove ties, rings, watches

Other safety issues

Suggestions

Employee Participants

(Name) (Signature)

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