



LARSEN & TOUBRO LIMITED
HYDROCARBON INTERNATIONAL



TOOL BOX TALK



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TOOL BOX TALK

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Equipment Rollover

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool box Safety Talk

Any piece of heavy equipment can tip over under extreme conditions or if used improperly; i.e., at a high speed, especially going down an incline, or being too near an unstable edge. To help prevent accidents, make sure you are properly trained to operate the equipment and follow these safe work practices:

- Ensure that all equipment used in a location where there is a danger of overturn is equipped with a Rollover Protective Structure (ROPS).
- Always wear the seat belt to take advantage of ROPS protection. To survive an equipment rollover, the operator must remain inside the protective structure.
- Learn to identify those areas where a rollover could happen. Use extra caution when using heavy equipment on steep or hilly terrain.
- Keep in mind that equipment outfitted with ROPS can still roll over. Be prepared to take appropriate control measures.
- Do not try to jump away in a rollover. You could become a victim and be crushed by the ROPS.
- Do not operate equipment in ways for which it was not designed. This could increase the likelihood of a rollover.





Falling Objects

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool box Safety Talk

Among the most common causes of serious work injuries are accidents involving falling objects. You are at risk from falling objects when you are adjacent to cranes, scaffolds etc., or where overhead work is being performed. Injuries can range from minor abrasions to concussions, blindness, or death. Take these precautions to prevent injury:

- Wear a hard hat when operations are being conducted adjacent to and overhead of your work area, or wherever the potential exists for injuries due to falling objects.
- Choose the right hard hat for the job. Hard hats are classified according to protection against impact and penetration hazards, as well as electrical hazards.
- Choose the appropriate hard hat for your application. (Class A, B or C).
- Wear the hat properly. Follow manufacturer information on how to tighten the suspension to achieve a proper fit.
- Inspect the hard hat before each use. Look for signs of wear, cracks, dents, cuts, holes, burns, or other material damage. Inspect the webbing, headband, and suspension attachment points for signs of cuts, tears, and frayed material





Loading Equipment

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool box Safety Talk

Loading equipment onto trailers can cause serious injuries if the equipment slips or falls. Often, the equipment will be just as wide as the trailer and there will be little room for error. No matter what type of equipment you are loading or what type of trailer you are using, follow these general rules:

- Make sure all non-essential Personnel are removed from the loading area.
- Secure the truck or trailer to prevent movement. Use chocks or wheel blocks.
- Verify that the equipment is in line with the trailer. Make sure the trailer is level.
- If you're driving equipment onto a trailer, watch and follow your guide.
- Do not steer sharply.
- Before transit, make sure the weight is evenly distributed on the trailer and the equipment is secured.





Walking / working around Equipment /Vehicles

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool box Safety Talk

The second highest cause of construction-related deaths is being struck by an object. If vehicle safety practices are not observed at your site, you risk being pinned between construction vehicles and walls, struck by swinging backhoes, crushed beneath overturned vehicles, or other similar accidents. If you work near public roadways you risk being struck by trucks or cars. Follow these safety tips to help protect yourself and, if you're driving a vehicle, other workers:

- Drive vehicles or equipment only on roadways or grades that are safely constructed and maintained. Obey all project speed limits.
- Do not drive a vehicle in reverse gear with an obstructed rear view unless it has an audible reverse alarm, or another worker signals that it is safe.
- Make sure that you and all other personnel are in the clear before using dumping or lifting devices.
- Lower or block bulldozer and scraper blades, end-loader buckets, dump bodies, etc., when not in use, and leave all controls in neutral position.
- Set parking brakes when vehicles and equipment are parked, and chock the wheels if they are on an incline.
- Use traffic signs, barricades and flaggers when construction takes place near public roadways.
- If you're working near roadways, make sure you're highly visible in all levels of light. High visibility clothing is required; and if worn for night work, must be of reflective material.





Defensive Driving

In all cases, while operating a motor vehicle, drivers should practice defensive driving techniques. Defensive driving is the art of driving so as to prevent and avoid traffic crashes, regardless of the unsafe conditions and actions created by other drivers and adverse road and or weather conditions

A good defensive driver will practice the following eight techniques

- Glance well ahead in the direction of travel. Look 2 or 3 vehicles ahead to observe driving conditions in front of you. This allows you to consider a condition before you reach it;
- Get the "big picture"; learn to see the entire roadway. Sweep the scene, sides and back. Avoid "tunnel vision". Keep your eyes moving; Position vehicle slightly offset to traffic to increase your field of vision.
- Always allow an escape route, leave a cushion by slowing or moving ahead of the vehicles beside you;
- Keep your vehicle visible and signal your intentions early;
- When stopped prior to making left turns across incoming traffic leave wheels straight to prevent being pushed into oncoming traffic in the event of a rear-end crash;
- When entering intersections practice looking left/right/left. Be sure to come to a full stop before proceeding;
- Learn to compensate for hazards such as weather, debris, potholes, loose gravel, or sand; and
- ALWAYS maintain a cautious driving attitude.
- Remember, when entering a Rotary that Massachusetts law requires you to yield to vehicles already in the Rotary.





Computer Ergonomics

Over the past few decades, computer-based technology has become indispensable in most offices. Along with the proliferation of the technology, concern about healthy, safe, and comfortable use of computers has emerged. Symptoms:

- Muscular Discomfort- pain, aching, loss of coordination, numbness, and stiffness
- Eye Strain- headaches, dizziness, nausea

Preventative Ergonomic Guidelines:

Monitor Configuration:

- Depth- The monitor should be arms length away from you while seated.
- Height- The toolbar at the top of the screen should fall just below eye level; this allows the user to view the screen without causing neck strain from repetitive moving.

Keyboard and Mouse Configuration:

- Keyboard- The keyboard should be set to a height so your forearms are parallel to the floor and make a 90 ° to 110 ° angle with the upper arm. This should allow you to freely type without resting your wrists on ANY hard or soft surface. Most desks require an adjustable keyboard tray to accomplish this.
- Mouse- The mouse should be located on the same plane as the key board (keyboard trays should have a mouse caddy to accommodate the mouse). Determine which mouse causes the least strain on your wrist (conventional, trackball, etc).

Chair Configuration:

- Depth (Seat Pan)- The seat pan should leave roughly a 2-3 finger space between the end of the seat and the back of your legs.
- Height- The chair should be at a height that allows you to place your feet flat on the floor with your thighs perpendicular to your lower legs.
- Lumbar Support- The lumbar support on the chair should contour and rest against the small of your back.
- Backrest Tilt- the Backrest should be at a 90 ° to 110 ° angle when typing.

Preventative Exercise:

- Get up and walk around to stretch your legs for a few minutes on an as needed basis.
- Stretch- wrist, arms, and back periodically while at your workstation
- For our online Ergonomic Evaluation please visit our website





Heat Stress

Living in New England, we have become accustomed to dealing with extreme temperature fluctuations. With this toolbox talk we will define heat stress, and look at the various heat induced illnesses and how to prevent/treat heat stress

What is Heat Stress?

Heat stress occurs when the body is unable to cool itself by sweating.

Heat stress can lead to heat exhaustion or heat stroke

Symptoms of Heat Exhaustion:

- Headache, dizziness, lightheadedness, fainting
- Weakness and moist skin
- Mood changes, irritability, confusion
- Nausea, vomiting

Symptoms of Heat Stroke:

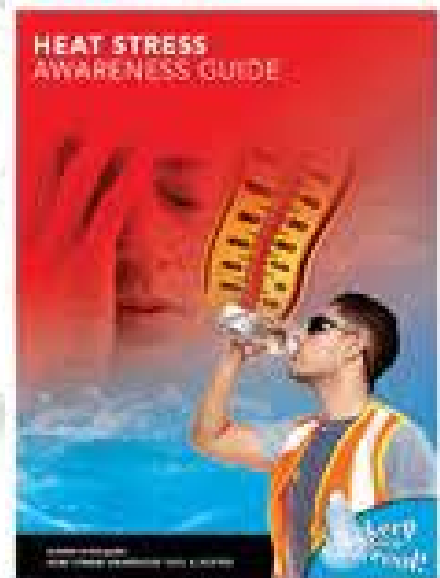
- Dry, hot skin with no sweating
- Mental confusion or loss of consciousness
- Seizures or convulsions
- Can be fatal

Preventing Heat Stress:

- Know signs/symptoms of heat related illnesses
- Block out sun or other heat sources
- Use fans/A.C. units
- In high heat, drink 1 cup of water every 15 minutes
- Wear lightweight, light colored, loose fitting clothes
- Avoid alcohol, caffeinated drinks, or heavy meals
- Wear sunscreen of SPF 15 or >; reapply every 2 hours

How to Treat Heat-Related Illness

- Move worker to cool shaded area
- Loosen or remove heavy clothing
- Provide cool drinking water in small amounts every 2 to 3 minutes until the victim recovers.
- Fan and mist person with water
- Do not give ice to the victim.





Office Safety

With this toolbox talk we will discuss how to keep a clean and safe office environment.

Storage:

A common problem found in offices is a lack of space. But a lack of space should not be used as an excuse to improperly store boxes, copier paper, etc.

- ✓ Storage of Office Materials:
- ✓ Keep all storage of combustible materials (cardboard, paper) to an absolute minimum as they can pose both a fire and trip hazard.
- ✓ Never store combustibles near electrical outlets. Place heavier objects on lower shelves.
- ✓ Ensure all shelves are sturdy and will be able to handle the load Never block hallways, doors, and stairwells with stored office materials There should always be clear access to electrical panels, fire extinguishers, AEDs, and fire pull stations. Scheduled Cleaning:
- ✓ It is a good idea to schedule a few days a year to go through all your paper files and purge un-needed documents.
- ✓ Remove unnecessary objects/supplies/ books from shelving units.
- ✓ Assess if you need more shelving space and order/install what is needed to eliminate floor storage.
- ✓ Take the time to clean and sanitize your workstation as needed.
- ✓ Keyboards and telephones, in particular, should be cleaned and sanitized

General

- ✓ Do not run in corridors, walk
- ✓ Do not read while walking
- ✓ Do not lean back in chairs on two legs.
- ✓ While closing a drawer, close the upper drawer first to prevent accidental hit.
- ✓ Report all defects in furniture e.g. missing casters, screw missing from areas of chairs.

Common Office Injuries:

Slips, Trips and fall are the most common cause of office injuries:

- ✓ Slipping on wet/slick floors (Clean up any spills immediately)
- ✓ Tripping over electrical cords/wires, open cabinet doors (Secure cords/drawers)
- ✓ Damaged flooring (Report any loose tiles, frayed/torn carpeting etc. to Facilities)
- ✓ Objects stored on the floor (Utilize shelf/desk space wherever possible)
- ✓ Using a chair/box for a stepladder (Always use a stepladder)
- ✓ Struck By or Striking Objects:
- ✓ Bumping into doors, open drawers etc.
- ✓ Bumping into other people while walking
- ✓ Struck by suddenly opened doors or falling objects
- ✓ Overexertion and Strains:
- ✓ Picking up a load incorrectly (Refer to our Lifting Safety Toolbox Talk for additional information)
- ✓ Repetitive Stress injuries resulting from your workstation (Refer to our Computer Ergonomics Toolbox Talk for additional information)



Working in the Desert

1. All workers deployed in desert locations must be informed of the following safety procedures preventive measures.

Ambulance request procedures

- ✓ Permit to Work system
 - ✓ Explosive Ordnance Safety Awareness
 - ✓ Personal protective Equipment
 - ✓ Other safety rules & Regulations pertaining to the assigned work.
2. Before driving in the desert, the vehicle must be inspected and equipment required for travelling in the desert must be obtained.
 3. All employees must be prepared for desert weather condition and temperature. The supervisor must inform the employees for desert hazards encountered- during winter (i.e. low temperature, high wind speed, low visibility) and summer.
 4. High wind speed and sand storm may result to poor visibility and the exposure may cause eye injuries. It is advisable to drive with extreme cautions using proper eye protection or stop the vehicle and wait inside till the weather subsides.
 5. There is a possibility of encountering desert animals, reptiles or insects (such as dog packs, snakes, scorpions, etc.) that can be dangerous. Be watchful and do not attempt to catch desert animals, reptiles, or insects.
 6. If someone is bitten or stung by such insects/ reptiles/ animals- immediately inform first aid clinic for assistance. Keep the person calms, lying still. A doctor or paramedic may advice through radio for administering first aid till medical help arrives.
 7. Be aware of explosive ordinance hazards. Do not touch any suspicious items. On noticing any un-identified objects, inform immediately to first aid clinic, who will arranged further actions to the concerned team.





Desert animals, Reptiles, and Insects

1. There are several types of animals, reptiles and insects encountered in the desert, which may be potentially dangerous to human life. Leave all those creatures alone and most often it may not pose any threat to you.
2. Do not feed or befriend wild animals such as dogs or cat. Leaving food out will also encourage mice and rats. Wild animals are sometimes infected with rabies or its contact or biting may transmit infection.
3. Sand Vipers, a poisonous snake, have been found in Desert work areas.
4. Scorpions are also common in desert as are spiders and other insects, which can bite.
5. Report any animal attack, snake bite or scorpion sting to first aid clinic for arranging rescue or medical assistance.

If desert animal or insects bite a person, the following First Aid should be administered:

SNAKE BITE

If the victim is more than 10 minutes from the hospital, place a band above the bite or above the joint closest to the bite.

Do not move the person. Keep the person calm and call for emergency assistance.

SCORPION STING

If it is available, place an ice pack, or ice cube on the sting. Transfer the victim to the nearest hospital.

SPIDER BITE

Ice cubes or an ice pack should be applied at the affected part to relieve pain. The victim should be referred to the hospital for medical attention if required.

DOG OR CAT BITE

The victim should immediate report to the hospital for treat men and medical investigation. The medical officer shall diagnose the bite and notify the detail to the Veterinarian for observation of the animal





Driving Safety

PREPARATION:

Get a tire pressure gauge and know the correct tire pressures for each type of vehicle.

1. Inspect your vehicle every day before driving. Check for lube oil, tire pressure, engine oil, and radiant water. Clean windows, headlights, tail lights and windscreen etc.
2. Tire pressures must be set to the manufacturers recommended pressures. Do not reduce tire pressure to compensate for ambient temperature. If you have to reduce tire pressure to travel through soft sand area, re-inflate when you get back on the graveled or asphalted road. Soft tire flexes more than correctly inflated tires and generates higher tire wall temperature, which can lead to puncture or tire burst.
3. Obey the speed limits on streets as well as on highways.
4. Do not violate signal lights. It is against traffic regulations.
5. Do not exceed speed limit of 45 KM/hr /as posted on sandy roads or diversions roads. Remember it takes longer to stop on sandy road or on graveled road than that on dry pavement.
6. Always wear your seat belt. A seat belt can save your life and prevent serious injuries.
7. Do not attempt to overtake on a single-track road where you cannot see enough clearance ahead to allow safe passage.
8. Do not cause other vehicle to alter the course or speed.
9. Do not make third lane on double track road.
10. Check side view mirrors and shoulder before attempting to change the lane.



Give signals whenever intend to change the lane or where it can help the other road users. Signaling do not give you privilege to change the lane without ensuring the safety of fellow Road users.



Driving in the Desert

1. Before starting the journey, check for fuel, lubricants, engine oil, tires & battery conditions.
2. Carry the following provisions / equipment (as a minimum requirement):
 - ✓ 2 large cans of drinking water (minimum 3 liters per person)
 - ✓ A shovel
 - ✓ A tow rope with eye & shackle at each end
 - ✓ A flashlight
 - ✓ A winter jacket or blanket (as the weather may get cold in night).
3. Notify the supervisor about the route being taken and expected time of return.
4. Take a radio or mobile telephone and keep in touch regularly.
5. When off the road, as far as possible, follow existing tracks and wheel marks.
6. If you see an area ahead, which looks soft sand or marshy land, stop your vehicle on firm ground and do a reconnaissance on foot.
7. In case of vehicle breakdown or it gets stuck, DO NOT leave the vehicle and tries to walk out. Stay with the vehicle except if you can see a roadway or other inhabitation within 1 km. Keep in the shade and keep physical movement to a minimum.
8. Open the trunk and hood of the vehicle so that any passing vehicle or aircraft can see you need assistance.
9. Comply with client safe driving policy and driving procedure.





NOISE

Noise in the workplace may have an adverse effect on both people at work and those in surrounding neighbourhoods. Noise at its worst can affect people's health or cause deafness, at a lower level it is an irritant and an environmental nuisance, as a form of pollution. The polluting effect of noise is a direct result of the location of a site and the working hours

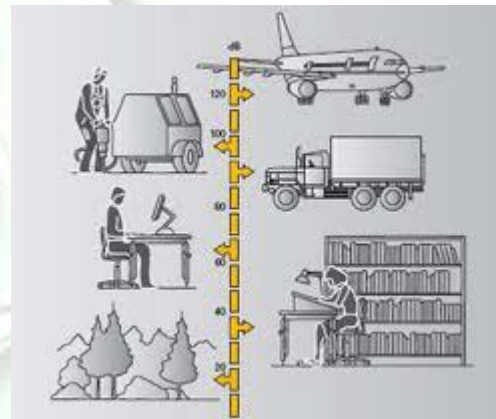
On a construction site noise takes two main forms:-

- ✓ Noise produced by plant and machinery through engines, exhausts, pumps etc.
- ✓ Noise produced in construction processes such as from demolition, piling, scrabbling or the erection of steelworks.

A general reduction in noise on site by the reduction of direct noise sources benefits operators in their working position and will also benefit the environment.

The following ways to reduce noise should always be taken into account on every site. Locate permanent and semi permanent plant away from site boundaries, particularly on site with neighbors within close vicinity.

- ✓ Make use of site huts and stockpiles as noise shields.
- ✓ Limit shouting and radios on site in sensitive areas.
- ✓ Arrange material transfer points away from sensitive buildings and people.
- ✓ Arrange delivery times on site to suit the area e.g. daytime deliveries in residential areas, night time deliveries in inner city areas
- ✓ Use all silencing equipment available and keep panels closed on all generators and compressors
- ✓ Switch of noisy equipment when not needed.
- ✓ Arrange routes for mobile plant so as the amount of reversing required is minimized so as to reduce the amount of reverse warning bleeper's being used.
- ✓ Observe restrictions on working hours.



When erecting a temporary noise screen remember to obscure line of sight (using at least 10 mm plywood or similar material) and minimise gaps in the screen.



WASTE DISPOSAL

The best practice applied to the management and disposal of waste on our sites has two major benefits:-

- ✓ A tidy site has a good image, emphasising safety, efficiency and care for the environment.
- ✓ The minimisation, management and appropriate disposal of waste can be economically beneficial and has numerous environmental benefits.

Compliance with the following points will help to achieve these benefits:-

- ✓ Always follow waste separation procedures by using suitably labeled containers in order to separate waste streams that can be recycled e.g. metals, wood, plastics and paper can all be recycled.
- ✓ Ensure that waste containers are close to the point of work to promote their usage.
- ✓ Avoid the storing of waste adjacent to watercourses as this creates an immediate pollution hazard.
- ✓ Ensure that all contaminated wastes are either stored within suitable containers or membranes to prevent secondary contamination of clean soil or water routes.
- ✓ Remember that clean wastes such as concrete and brick can be used as fill on site.
- ✓ It is not only solid waste that requires consideration, liquid waste spills must also be carefully controlled; wastes such as oil, chemicals and wet concrete should be collected and removed from the site by an appropriate contractor.
- ✓ It is very important that the source of any waste is identified by the waste transfer note which must always accompany the waste
- ✓ When waste is removed from site it is of extreme importance that it is taken away by registered waste management contractors who comply with the Environmental Protection Regulations 1990, (the duty of care regulations). This is of extreme importance as the contractor is responsible for the waste until it has been disposed of properly.





Heavy equipment

Heavy equipment used on construction jobs often creates dangerous conditions. Any moving equipment such as grader, roller, loader, excavator, cranes, and trucks should be respected and avoided. Following instructions must be followed;

- ✓ Do not assume that the operator sees you. You could wind up injured or worse
- ✓ Do not depend on hearing a horn or an alarm to warn you that moving equipment is near. You may not be able to hear the equipment's alarm over other construction noise.
- ✓ When you see the equipment is travelling backwards keep out of the way and stand clear until the operator has completed his maneuver. Never cut across the path behind any equipment while it backing. You could easily trip and fall under the equipment.
- ✓ No operator should back a piece of equipment into area without someone clearing the area and giving signals.
- ✓ Watch out for swinging equipment such as cranes and excavators. There is often pinch-point between the equipment and some obstruction when the unit swings. Make sure there is enough room for workers to pass and if there is not shut off the area to any access.
- ✓ Never walk alongside moving equipment. Keep in clear in case it slides or turns, or the loads shift. Don't walk under loads on cranes and hoists.
- ✓ When you are working near equipment operating near vicinity of power lines, don't touch or come into contact with the equipment frame. There is always a chance that the boom of the equipment may hit the power lines. Warn the operator or supervisor any time you see this possibility and follow the instructions.
- ✓ Never clean, adjust, lubricate, repair or work on a machine that is in operation. Stop the machine before working on.





ACCIDENT INVESTIGATION & REPORTING

In order to prevent injuries and other undesired incidents (i.e. fire, MVA, oil spill, etc.), all accidents/incidents identified must be investigated to determine cause and corrective measures. Many accidents/incidents go unnoticed and few actually cause serious consequences. But, if an accident/incident goes unchecked and occurs frequently, it could eventually cause serious consequences.

Investigation

Reasons accidents should be investigated include:

- ✓ Root Cause Analysis – Determine the systemic root cause of an incident rather than immediately available causes so that effective changes to management systems can be implemented.
- ✓ Prevent similar accidents – Investigations can identify what actions will prevent similar incidents from occurring in the future.
- ✓ Find facts, not faults – Focus efforts on identifying facts rather than finding fault or placing blame on individuals.
- ✓ Detect Incident Trends – Compile data from multiple incidents that may reveal common causes that are dismissed as insignificant when taken alone. Identify existing or emerging trends.
- ✓ Document Facts - Record the incidents and the findings of an investigation.
- ✓ Provide information on costs – Assess the degree of damage and the value of losses.
- ✓ Legal and/or Litigation Requirements – Fulfill legal requirements and/or preparation for potential litigation.

Incident Reporting & Record Keeping

Simply stated, reporting an accident/incident is the first step in the process of preventing recurrence. Supervisors have the primary responsibility to ensure incidents are properly reported up through their managers.



RESPIRATORY PROTECTION

Preparation:

Get samples for all the types of respiratory protection equipment.

Type of Respirator	Use	Limitations
Dust Respirators	To protect from dust nuisance	Check manufacture limitation used while sand / grit blasting, working near crude oil smoke, grinding or sawing wood, etc
Chemical Respirators	To protect from harmful mist or Vapours used when entering vessels, spray-painting or when other toxic elements cannot be removed from the work area.	Check manufacturer limitation
Canister Type Gas Mask	For specific gases specified on canister.	Not to be used for dust, mist, vapour unless approved by manufacturer
Self - Contained Breathing Apparatus (SCBA)	In high concentrations of Toxic gases, Oxygen deficient area, any environment Hazardous to life and emergency escape.	Time limit on usage.

- Respirators are available upon request from your supervisor
- Any employee who is assigned to wear SCBA or supplied air respirator must have been trained to use it.
- Medical approval may be sought for personnel required wearing supplied air respirators.
- Check Fire & Safety Regulations for further details on respirator usage



PERSONAL PROTECTIVE EQUIPMENT

Preparation:

Get samples of all personal protection equipment needed for your job

- Using personal protective equipment is a mandatory requirement for safe execution of work. Personal protective equipment is available with stores. Overalls must be worn all times inside the plant or location of industrial activity (such as GC's, Booster Stations, Tank Farms, and Workshops etc.)
- Safety helmets are required in all fieldwork areas. The only exceptions for not wearing safety helmets are inside offices or while riding inside vehicle, etc
- Eye protection must be worn while - working around blowing sand / pressurized equipment, using spark generating tools, working adjacent to operational equipment, and handling chemicals.
- Cotton, leather and rubber gloves are available and are required as applicable for the type of work being carried out.
- Safety Footwear must be of sound construction, and safety shoe with steel toes are required for various jobs. Sports shoes are not permitted for industrial duty.
- Hearing protection is required while working in noisy areas.
- Respirators are also supplied as necessary or when required by the permit to work. You may request a respirator from your supervisor. Return damaged safety equipment to your supervisor for replacement.





STORAGE & HANDLING OF CHEMICALS

- Material safety data sheets shall be available for all chemicals.
- All chemicals shall be properly stored in a protected and secured area away from other materials storage.
- All toxic substances shall be kept in the specific container with the first aid action clearly explained on container label.
- All personnel handling such chemicals shall be:
 - ✓ Made aware of potential hazards and emergency first aid action
 - ✓ Equipped with appropriate protective clothing such as boots, chemical suits, gloves, safety goggles & respiratory protection device as required
- Chemicals, which are reactive such as acids and solvents, shall not be stored close together.
- Gases or chemicals, which give off vapors, shall be stored in well-ventilated room. The suitable respiratory protection will be used in case entering an area where the presence of toxic vapor or gas is possible.
- Safety shower and eye wash station shall be available in a chemical handling or storage area
- Smoking or bringing any source of ignition in chemical storage area is strictly prohibited.





Competent person

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool box Safety Talk

OSHA requires that a "Competent Person" be responsible for the safety of all workers in a trenching/excavation operation. OSHA defines a Competent Person as "an individual who is capable of identifying existing and predictable hazards or working conditions that are hazardous, unsanitary, or dangerous to employees and who is authorized to take prompt corrective measures to eliminate or control these hazards and conditions." The Competent Person is required to:

- Have training in soil analysis and the use of protective systems, be knowledgeable about OSHA requirements, and have authority to immediately eliminate hazards.
- Inspect the trench, adjacent areas, and any protective systems for possible cave-ins, failure of protective systems, hazardous atmospheres, or other hazardous conditions. Inspections must be performed daily: before work begins, throughout the shift, and after every rainstorm or other hazard-increasing occurrence.
 - ✓ Review a pre-task plan with supervisor on a daily basis.
 - ✓ Assure that the location of underground installations or utilities have been properly located.
 - ✓ Identify and ensure use of adequate protective systems, work methods, and personal protective equipment (PPE) on the excavation site.
 - ✓ Test for low oxygen, hazardous fumes and toxic gases, especially when gasoline engine-driven equipment is running, or the dirt has been contaminated by leaking lines or storage tanks. Insure adequate ventilation or respiratory protection, if necessary.
 - ✓ Provide safe access within 25 feet of workers into and out of the excavation.
- Provide appropriate protections if water accumulation is a problem





Emergency Response Plan

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool box Safety Talk

Trench collapses cause dozens of fatalities and hundreds of injuries each year. Because trench collapse rescues are technical and demanding, it's essential to have an Emergency Response Plan in place before an emergency occurs. Quick and efficient response can save lives. Follow these procedures for emergency preparation;

- Prior to beginning an excavation project, determine and implement procedures for emergency response that is specific for that site. Ensure the plan is part of the overall site safety plan.
- Notify all personnel involved with the project of the emergency response procedures.
- Include at a minimum the following items: procedures for notification of emergency response agencies; responsibilities of individuals on the site; posting of local emergency response agencies; notification of these agencies of the scheduled work prior to commencement; and identification of the nearest accessible telephone, radio, or other methods of communication.
- Where hazardous atmospheric conditions exist or could develop during the course of the work in the excavation,
- Keeps emergency rescue equipment such as a safety harness and line or basket stretcher readily available to personnel working at the excavation site?
- If you are about to be buried in a cave-in, yell to get attention. Cover your face with your arms. Do not struggle to free yourself, just wait calmly for rescue.
- If you are watching someone being buried in a cave-in, do not attempt to rescue them yourself. Never enter the excavation. Follow emergency procedures designated for your work site.
- Review the emergency plan. Make sure new hires and new workers to the site are aware of the emergency response plan





Atmospheric Condition

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool box Safety Talk

One hazard associated with excavation and trenching is the possible presence of hazardous atmosphere. A hazardous atmosphere is an atmosphere that by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen-deficient, toxic, or otherwise harmful may cause death, illness, or injury to persons exposed to it. In excavation work, hazardous atmospheres may be generated as toxic gasses and can be released by the digging or accumulate at the bottom of the trench. To help ensure exposure to hazardous atmospheres, take these steps:

- Ensure that the competent person tests the atmosphere in excavations over 4 feet deep if a hazardous atmosphere exists or could reasonably be expected to exist. A hazardous atmosphere could be expected, for example, in excavations in landfill areas, in excavations in areas where hazardous substances are stored nearby, or in excavations near or containing gas pipelines.
- Conduct testing for atmospheric contaminants before employees enter the trench and on a regular basis to ensure that the trench remains safe.
- Increase the frequency of testing if equipment is operating in the trench or if welding, cutting, or burning is done in the trench. These operations, too, can generate toxic fumes.
- Take precautions to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions may include providing proper respiratory protection or forced ventilation of the workspace.
- Make sure that employees required to wear respirators are trained, fit-tested, and enrolled in the respiratory protection program





Barricades

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool box Safety Talk

An open trench can be a hazard not only to the workers on the site, but also to the public. In many instances, barricades and/or warnings are required to prevent unauthorized or accidental entry. Here are some "barricade basics" to help ensure a safe excavation site for everyone:

- Install barricades, fences, protected walkways and/or signs to protect the public from the excavations site. Install warning systems prior to excavation.
- Install barricades, guardrails, or fences around excavations adjacent to walkways, roads, paths or other traffic areas.
- Install standard guardrails on walkways or bridges used by the general public to cross excavations.
- Install barricades or other means to protect employees from underground utilities left in place during excavation.
- Install a barricade or fence on any excavation left unattended to protect against accidental entry from pedestrians. If the excavation is in a remote location where visitation by residents is unlikely, a barricade of posts and warning tape, with a sign, is sufficient. If the excavation is in a traveled area, however, a physical barrier such as a fence must isolate it.
- Install barricades around the site to help control both vehicular and pedestrian traffic.
- Install a warning system such as a barricade, hand or mechanical signal or stop logs when mobile equipment is operated adjacent to the edge of an excavation





Site Conditions

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool box Safety Talk

No two excavation sites are alike. Each job must be treated individually because conditions vary from job to job, and hazards may vary from job to job. Follow these procedures to help ensure a safe site:

- Conduct a soil test to determine appropriate sloping, benching, and shoring.
- Remove surface encumbrances such as equipment, materials, supplies, trees, brush, boulders and other objects at the surface that could present a hazard to employees working in the excavation.
- Check the location of underground utilities/ installations that may be encountered during excavation before digging. Arrange with the appropriate utility agency for the protection, removal, shutdown, or relocation of underground installations.
- Install barricades and/or warnings to protect employees and the public from the excavation and from vehicular traffic.
- In excavations deeper than four feet with the potential for a hazardous atmosphere or oxygen deficiency check the atmosphere with a gas monitor as often as necessary to ensure the atmosphere remains safe. Provide adequate protection.
- Ensure that workers are protected in excavations where water is accumulating. This protection involves specific shoring, water removal to control the level of accumulating water, use of lifelines and harnesses, and careful monitoring by a competent person.
- Check the stability of adjacent structures or sources of vibration. Do not excavate below the base or footing of a foundation, wall, sidewalk, pavement or other structure unless shoring or bracing is provided to prevent cave-in or the excavation is in stable rock,
- The competent person should check the excavation on a daily basis or as site conditions change





WORKING WITH CEMENT

Health Effects

Cement can cause ill-health mainly by:-

Skin contact: contact with wet cement can cause both burns and dermatitis:

- **Cement burns:** if freshly mixed concrete or mortar gets trapped against the skin, e.g. by falling inside your boots or gloves, very serious skin burns or ulcers can result which can take several months to heal and may need skin grafting;
- **Dermatitis:** skin affected with dermatitis feels itchy and sore and looks red, scaly and cracked. Two sorts of dermatitis can occur:

Irritant dermatitis

- results from direct damage to the skin caused by the combination of wetness, chemical corrosiveness and abrasiveness of cement in concrete and mortar;

Allergic dermatitis

- Results when you become sensitised to chromium salts present in the raw materials used to make cement. Sensitisation to additives such as pigments, epoxy resins and hardeners can also occur.

Eye contact: contact with cement powder or wet cement can cause irritation and inflammation.

Inhalation of dust: high levels of dust can be produced when cement is handled, for example when emptying bags of cement or during their disposal. In the short term, exposure to high levels of cement dust irritates the nose and throat and causes difficulty with breathing. There is uncertainty about the long term effects of breathing in cement dust; chronic chest trouble is possible.

Abrading hardened concrete e.g. in scrubbling or concrete cutting, can give rise to large amounts of inhalable dust which could contain high levels of silica, depending on the aggregate that has been used. By breathing in silica dust you are at an increased risk of developing chest complaints.

Controlling Exposure

Work in a way which minimises the amount of dust produced. So, open bags of cement with care mix carefully etc. Handle dry material in a well-ventilated area.

Personal Protection

You must wear clothing to protect your skin from cement and cement mixtures, e.g.:

- ✓ gloves
- ✓ overalls with long sleeves and full-length trousers
- ✓ waterproof boots

Hygiene

Personal hygiene is important. Adequate welfare facilities are available on site and you should wash your hands and face at the end of a job and before eating, drinking or smoking, and wash your hands before using the toilet.

First Aid

Contaminated skin should be washed with cold running water as soon as possible. Particular attention should be paid to any wound which should be covered with a suitable dressing. Eye contamination should be washed with cold tap water for at least 10 minutes before you should be taken to hospital.



VIBRATION

Vibration White Finger (V.W.F.) can result from the transmission of vibration from a vibrating implement (i.e. road-breakers, chain-saws, riveting guns, etc.) to the hands, occurring as a result of several years of regular exposure.

Primarily, it results in damage to the blood vessels and nerves of the hand resulting in skin blanching (white finger) on exposure to cold, together with pain, pins and needles, numbness and loss of manual dexterity. If you are affected you will suffer symptoms on exposure to cold conditions with the time taken for recovery increasing as the condition develops. The condition may become permanent if early symptoms are not identified and action taken. It is important to recognise that these symptoms do not necessarily occur during or immediately after exposure to vibration but usually occur early in the morning when the weather is cold. Therefore, cold is the primary trigger for the symptoms.

If you smoke you are at increased risk since smoking reduces the supply of oxygenated blood to your hands and fingers.

The main way to prevent V.W.F. is to reduce levels of vibration by careful selection of equipment, the introduction of damping techniques on existing equipment if practicable, the use of alternative work procedures if possible, and to minimise the time working with vibrating machinery by job rotation.

You should also follow these simple precautions:-

- Wear adequate clothing to keep dry and maintain hand and body temperature at an acceptable level, wear suitable gloves to keep your hands warm. Anti vibration gloves are available which can reduce exposure.
- Let the machine do the work and grip the handle as lightly as possible, providing that this is consistent with safe working practice.
- Do not use blunt tools. Keep steels sharp and use the appropriate tool for the job.
- If you smoke and use vibratory equipment you are at increased risk of vibration related disease, since nicotine reduces the blood supply to the hands and fingers.
- Should attacks of white or blue finger or long periods of tingling and/or numbness occur, report this to your Supervisor.
- Inform your Supervisor if abnormal vibration occurs when using your machine.





DUST AND DIRT

Many of the materials that we use have the potential to create dust and dirt.

Fine particles of dust and dirt, once airborne will settle out on the environment and cause a nuisance through soiling of surfaces, as well as causing health problems.

Another common cause of complaint made towards us as a construction company is a direct result of vehicles depositing mud on public highways.

Contaminated or hazardous material such as asbestos require specialist attention in order to comply with legislation, but general dust and dirt can be reduced on site by complying with the following guidelines:

- ✓ Good housekeeping and site planning will help in general to reduce dust and dirt created on site.
- ✓ Store dusty materials in an enclosed area, reducing the potential of wind erosion.
- ✓ Ensure that all dust collecting equipment is properly maintained and is operated efficiently.
- ✓ During periods of dry weather, especially during the summer use fine water sprays in order to dampen down materials, haul roads and vehicle routes.
- ✓ Make use of Wheel wash facilities, especially when leaving the site and using public highways.
- ✓ Sheet vehicles when transporting fine or contaminated materials
- ✓ Keep your vehicle speed low on site especially during periods of dry weather.





ROOFS

Working on roofs carries a high risk of accidents unless proper procedures are followed and precautions taken. Before working on any type of roof you should know the rules set out below and follow them:-

- For work on a roof, risk assessments must be done to determine guardrail and toe board requirements.
- For work on a sloping roof with a pitch of more than 30 degrees (or less than 30 degrees, if it is slippery) crawling ladders or crawling boards must be provided and used.
- There may be circumstances where the use of a safety harness is the only safe way of working. Such a decision will be made by management, and you must use the safety harness in the conditions specified.
- All openings in roofs must be securely covered or suitably guarded by guardrails and toe boards. Any cover provided should either be securely fixed in position or clearly marked to indicate its purpose, for example: "Do not remove cover - hole below". Every year accidents occur when someone lifts a board and then walks down the hole it was covering.
- Access provided to the roof must be checked before use to see that it is safe and sufficient.
- Beware of fragile roofs. If in doubt see your supervisor.





SAFETY PROCEDURES DURING DEMOLITION / DISMANLING

1. Demolition involves dismantling OF storage tanks, buildings, scaffoldings etc. Potential hazards during demolition may result due to use of cranes, rigging / slinging of load, cutting torches, material handling and debris clearance etc.
2. While using a crane during demolition activities the following safety precautions must be adhered to:
 - ✓ The Crane operator & riggers shall have proper training and certification to carry out such work.
 - ✓ The loads must have a tag line to maneuver its movement.
 - ✓ The signal shall be given by a banks man, duly trained and authorized for such work.
 - ✓ No workers shall stand underneath suspended load.
3. When using a cutting torch the following safety precautions need to be adhered to:
 - ✓ Work permits authorization and gas test results are mandatory prior to start torch cutting.
 - ✓ The fire fighting equipment shall be kept within easy reach at worksite. The area may be kept wet preventing hot slag to fall in the vicinity.
 - ✓ Ensure that cut sections will be stable after separation and will not topple, causing damage or injury.
4. When handling and hauling debris or scrap the following precautions must be kept in view:
 - ✓ Always wear hand gloves while handling scrap material.
 - ✓ Take care to avoid back injuries & ask assistance while picking up heavy loads.
 - ✓ All material to be hauled off must be secured properly to prevent load shifting during transportation.
5. Make sure about demolition work scope, its nature and precautionary measures to control potential hazards
6. Special precautionary measure to be taken in demolition work involving ASBESTOS -





Soil Types

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool box Safety Talk

The greatest hazard in excavation and trenching is the risk of a cave-in. Of the deaths resulting from excavation and trenching incidents, the majority are from injuries received during the collapse of the trench. The type of soil in the trench influences the stability of the trench. A soil analysis is critical in determining appropriate sloping, benching, and shoring

- Trench failure can be deadly. Trench failures often occur in multiples, starting with a movement of soil material near the bottom of the trench wall. After the failure of the base, the support of the wall will quickly erode and the wall will collapse. The collapsing soil is extremely heavy and can weigh one and a half tons per cubic yard, producing a tremendous crushing force
- Before excavation, ensure that a "Competent Person" conducts a soil test to determine the stability of the soil.
- Type A soil (clay, salty clay and hardpan) is the most stable.
- Type B soil (silt, sandy loam, medium clay, and unstable dry rock) has medium stability.
- Type C (gravel, loamy sand, soft clay, submerged soil, or dense, heavy, unstable rock) is the least stable, and requires the greatest safety precautions when excavating.
- Stable Rock is a natural, solid mineral material can be excavated with vertical sides and remains intact while exposed.
- After the soil has been classified, use prescribed methods of wall retention, piling, cribbing, sloping, shoring, trench boxing and sheeting to maintain trench and excavation walls. For each trenching or excavation situation, employ the proper sloping, shoring and bracing structures and measures designed specifically for the particular situation.





Grinder Abrasive Saws

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Abrasive saws and grinders are among the most common pieces of machinery used in maintenance shops. They are also among the most dangerous. Operators are at risk of injury from the power source, blade, wheel, or from a disk failure or hazard from flying or airborne particles. Remember, abrasive saws and grinders are cutting tools. A hand or a finger that hits the moving wheel surface is in danger of being mangled or cut off. Fortunately, there are ways to protect yourself from injury and illness when you work with these powerful machines. Take these precautions:

- Visually inspect and ring test new abrasive wheels before mounting.
- Make sure the machine guards are in place and working properly.
- Always leave the wheel in good working order.
- Turn the grinder off when not in use.
- Do not exceed the safe maximum operating speed marked on the blade, wheel or disc.
- Do not wear anything loose that could get caught in the machine, if you're wearing a long-sleeved shirt, button it at the wrist.
- Wear a face shield over safety glasses when using abrasive saws or grinders.





Machine Guarding

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Employee exposure to unguarded or inadequately guarded machines is prevalent in many workplaces. Consequently, workers who operate and maintain machinery suffer approximately 18,000 amputations, lacerations, crushing injuries, abrasions, and over 800 deaths per year. Proper use of machine guards can help protect employee hazards related to the point of operation, power transmission devices, and operating controls. To ensure safety, it's important to use machine guards properly. Take these precautions:

- Do not attempt to by-pass machine guards in an effort to save time. Machine guards are there for your protection.
- Do not remove machine guards, except during repair or maintenance of the machine. Then, always use lockout/ tag out procedures to protect accidental startup.
- Replace machine guards after repair or maintenance.
- Wear eye protection when cutting, sawing, drilling or grinding.
- Avoid wearing loose clothing or jewelry when operating power equipment. These could get caught in machines and drag you or parts of your body into the machinery.
- If using electrical tools always use GFCI protection





Fork Lift

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

A forklift can be one of the most dangerous pieces of equipment in the workplace. A medium-sized forklift weighs about the same as the average dump truck and can cause just as much damage. According the U.S. Bureau of Labor Statistics, an average of 100 workers are killed and 20,000 are injured each year due to forklift mishaps. Forklifts can put workers at risk of being caught between equipment and materials, so take these precautions:

- Setup a controlled access zone. Separate forklift traffic and foot traffic where possible, including having workstations, control panels, and equipment away from forklift traffic aisles, or having barriers.
- Do not operate a forklift unless you are trained and authorized to do so.
- Make sure backup and lifting alarms are operational.
- When operating a forklift, drive slowly and watch out for pedestrians and blind intersections.
- Check maintenance records of forklifts on a monthly basis at a minimum.
- Watch where you place your hands and feet. Be aware of and stay clear of pinch points such as the wheels and lift gears.
- Stay under the overhead guard. Keep your hands and feet inside the forklift and wear the seat belt.
- Do not drive up to anyone standing in front of a bench or other fixed object.
- As a pedestrian, always be aware of the presence of forklifts in the area and keep a safe working distance from them at all times. Even at low speeds, an unexpected movement of the forklift can crush a bystander against a fixed structure or another vehicle





Pinch Point

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

A pinch point is defined as any point where it is possible for a body part to be caught between moving and stationary portions of machinery or equipment. If a person or body part occupies that space during the pinching movement, there is a high probability of injuries such as fractures, amputations, or even death. Be aware of pinch point hazards on your job and take these precautions:

- Prior to use, make sure that all covers and protective shields for equipment and machinery pinch point hazards are in place. Never work around moving machines while the guards are removed.
- De-energize, lock-out, and tag equipment being repaired.
- Be on guard whenever you put your hands, fingers, toes, or feet "between" anything.
- Make sure you have the proper hand clearance when setting down loads or carrying loads through doors.
- Wear gloves that are appropriate for the task. Keep in mind, however, that gloves may cause an additional hazard during some tasks if they get caught in moving parts.
- Avoid wearing jewelry or loose clothing that could be caught in moving parts. Tie back long hair.





5. Working around Cranes

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Crane accidents are a leading cause of death and injury on construction jobs. Workers may be at risk to being struck by loads or equipment or getting caught in between moving equipment, materials and power lines. When working around cranes, take these precautions:

- Stay off and away from cranes unless you are assigned to be on the crane.
- Always wear a hard hat to protect from falling or flying objects.
- Keep clear of the lower hoist block sheaves to prevent fingers or hands from jamming in the sheaves.
- Watch your hand placement on and around suspended loads.
- Know proper hand signals or maintain radio contact.
- Never walk within the swing radius of the crane unless it is absolutely necessary. Make sure the operator knows of your presence.
- Never ride the hook. There are too many things that can go wrong that you can't control.
- Review pre-task crane operations with supervisor.
- Barricade the swing radius of the crane. Maintain at least 10 feet of clearance and use a spotter if necessary.





Compressed Gas Cylinders

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Compressed gas cylinders can be hazardous. Sudden release of the gas can cause a cylinder to become a missile-like projectile, destroying everything in its path. To prevent such a dangerous situation, follow procedures for safe handling:

- Store cylinders in an area specifically designated for that purpose. Ensure that the area is well ventilated, away from sources of heat, and protect cylinders from being struck by another object.
- Do not drop cylinders or allow them to fall. Secure them in an upright position during use and storage,
- Move cylinders with a compressed gas cylinder cart designed for that purpose.
- When moving a cylinder, even for a short distance, ensure that all the valves are closed, the regulator is removed, and the valve cap is installed.
- Do not remove a cylinder cap until the cylinder is secured in place and ready to use. Cylinder caps protect the valve on the top of the cylinder from damage if it is knocked over. Also, if gas is accidentally released through the valve, the cap will vent the gas out of both sides, minimizing the likelihood that the cylinder will topple.
- Before using the gas, install the proper pressure-reducing regulator on the valve and verify that the regulator is working, that all gauges are operating correctly, and that all connections are tight to ensure that there are no leaks.
- When you are ready to use the gas, open the valve with your hands. Never use a wrench or other tool. If you cannot open it with your hands, do not use it.





Maintenance Hazards

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Workers doing maintenance on machinery and equipment are at risk of being struck by machine and or equipment parts and misused tools. Injuries can range from minor cuts and lacerations to serious fractures; puncture wounds, amputations, and fatalities. Take these precautions when performing maintenance:

- Lock out equipment and machinery to render it inoperable during maintenance and repair.
- Wear appropriate protective equipment; i.e. safety goggles, hard hat etc.
- Block and prevent the movement of all equipment being repaired.
- Never tamper with machine guards.
- Always replace guards after making repairs or adjustments to equipment.
- Be sure potential energy is rendered harmless.
When moving equipment use proper lifting techniques





Material Handling Equipment

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Operating heavy construction equipment for moving dirt and other materials can be dangerous. Not only is there a risk of rollover, there is also the potential for hitting or running over other employees. Follow these guidelines to help ensure safety:

- Maintain all safety devices such as ROPS (Rollover Protective Structures) to prevent unintentional lowering of buckets on front-end loaders and other similar equipment.
- Always wear a seat belt.
- Make sure other workers are clear of the loading area and visible to the operator at all times.
- Load the bucket evenly and avoid overloading to prevent turnovers. Check your operator's manual for load capacity.
- Watch where you are going. Avoid holes, rocks, loose fill, or other obstacles which could upset the trailer.
- If working inside buildings, watch for low ceiling beams and doorways to prevent being pinned or crushed between them and the tractor.
- Use the loader only for its specific purpose. Never use it to tow an object or to knock something down. Never allow people to ride in the bucket





9. Rigging Failure

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Every year workers lose their lives as a result of improper rigging or rigging failure that allowed a load to fall while being hoisted. Some deaths occur when the load slips from the rigging, when the rigging breaks and allows the load to fall, and when the load breaks into pieces and falls while being lifted. Always exercise caution when working around

- Inspect all rigging prior to use to minimize the possibility of rigging failure. Look for hazardous conditions such as wire rope deformation, strain, binding, or kinking.
- Do not wrap hoist lines around the load.
- Know the rated capacities of rigging and slinging and use the proper size.
- Ensure that loads are rigged to minimize the potential for dropped loads.
- Do not exceed the load chart capacity while making lifts.
- Determine a safe location to stand to avoid being struck by the load if rigging fails, or the load shifts while making lifts.





Sling Inspection

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

The slings that cranes use to hold suspended loads are a key element in crane operation. If the sling is damaged or defective, the load could drop and strike workers beneath it. Inspect each sling and its fastenings and attachments for damage or defects each day before use. Remove damaged or defective slings from service.

- Ensure that alloy steel chain slings have permanently affixed, durable identification stating size, grade, rated capacity, and reach.
- Inspect slings before each use.
- If synthetic slings show signs of wear such as deep frays or red warning threads are exposed, take the sling from service.
- When inspecting wire rope slings, check the twists or lay of the sling. If ten randomly distributed wires in one lay are broken, or five wires in one strand of a rope lay are damaged, do not use the sling.
- Check for wear or scraping; kinking, crushing, bird caging or any other damage resulting in distortion of the wire rope.
- Look for evidence of heat damage. Remove a sling from use if it's exposed to temperatures of 200 degrees F or higher or there's evidence of heat or wire rope structure damage.





Stacking & storing Materials

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Stacking materials can be dangerous if workers do not follow safety guidelines. Falling materials and collapsing loads can crush or pin workers, causing injuries or death. To help prevent injuries when storing and stacking materials, take the following precautions

- In buildings under construction, avoid placing stored materials near a hoist-way or floor opening, or an exterior wall that doesn't extend above the top of the material.
- Observe height limitations. Stack lumber no higher than needed to handle manually.
- Remove all nails from used lumber before stacking.
- Make sure that stacks are stable and self-supporting.
- Stack bags and bundles in interlocking rows to keep them secure.
- Stack bagged material by stepping back the layers and cross-keying the bags at least every ten layers. To remove bags from the stack, start from the top row first.
- Do not lean material against a vertical surface.
- Do not store pipes and bars in racks that face main aisles to avoid creating a hazard to passersby when removing supplies.
- Make sure the floor/ deck is capable of supporting the weight of the stacked materials





Use of Tag Lines

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Hundreds of people are injured or killed as a result of crane accidents in the United States every year. Many accidents happen as a result of failure to control the load. To help eliminate this risk, use taglines for controlling awkward loads and maneuvering them into difficult positions. For safe use, follow these procedures:

- Use taglines to control loads when their use is practical and will not create additional hazards.
- After securing a load with taglines, stay clear of the path of the load and well forward of the load.
- If it's necessary to guide the load, stay well away from the wheels or tracks of the crane.
- When guiding a load, remain clearly visible to the crane operator at all times.
- Never walk between the suspended load and the crane.
- When working around electrical equipment or lines, make sure the tagline stays clear of the equipment or lines.





Transporting/Unloading Materials

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

There are hundreds of thousands of material handling accidents every year, from small splinters, cuts or scrapes, to crushed fingers, hands and feet, even deaths. Whether moving materials manually or mechanically, help prevent accidents by following these safety guidelines

- When manually moving materials, attach handles and holders to loads to reduce the chances of getting fingers pinched or smashed
- Place support blocks in a manner that keeps your hands from under the load.
- Wear appropriate protective equipment, such as gloves, eye protection, and steel-toed safety shoes
- When mechanically moving materials, avoid overloading. All materials handling equipment has rated capacities that determine the maximum weight the equipment can safely handle and the conditions under which it can handle those weights.
- When picking up items with a powered industrial truck, ensure that the load is centered on the forks and as close to the mast as possible to minimize the potential for the truck tipping or the load falling.
- Never overload a lift truck. This could make the truck hard to control and put it at risk of a tip over.
- Take care when off-loading from a flat trailer with a crane. Make sure you have a means of getting away from the load should it shift or fade. Have proper access to the back of a truck. Use a ladder





Working with cranes

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Crane accidents are one of the leading causes of death and injury in the construction industry today. Fatalities and serious injuries can occur if cranes are not inspected and used properly. Many fatalities can occur when the crane boom, load line or load contact power lines and electrically energize the equipment. Other incidents happen when workers are struck by the load, are caught inside the swing radius, or fail to assemble/ disassemble the crane properly. Use safe work practices to help reduce accidents when working with or around this potentially dangerous equipment.

- Make sure the crane is on a firm/stable surface and level.
- Inspect cranes, rigging and hoists before use to see that all components, such as wire rope, lifting hooks, chains, etc., are in good condition.
- Fully extend outriggers and barricade accessible areas inside the crane's swing radius.
- Watch for overhead electric power lines and maintain a safe working clearance from the lines.
- Use the correct load chart for the crane's current configuration and setup, the load weight and lift path.
- Do not exceed the load chart capacity while making lifts.
- Do not move loads over workers.
- Be sure to follow signals and manufacturer instructions while operating cranes





Fire Extinguisher

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Almost all fires are small in their early stage and can be put out quickly if the proper fire extinguisher is available, and the person discovering the fire has been trained to use the fire extinguisher at hand. There are basically three different types or classes of fire extinguishers, each of which extinguishes specific types of fire.

Class A extinguishers will put out fires in ordinary combustibles, such as wood and paper. Extinguishers that are suitable for Class A fires should be identified by a triangle containing the letter "A." If in color, the triangle should be green.

Class B extinguishers will put out fires in ordinary combustibles, such as wood, paper and plastic. Extinguishers that are suitable for Class B fires should be identified by a square containing the letter "B." If in color, the square should be red.

A class C fire extinguisher is used on fires that involve energized electrical equipment which require the use of electrically nonconductive extinguishing. Extinguishers that are suitable for Class C fires should be identified by a circle containing the letter "C." If in color, the circle should be blue. The presence of the letter "C" indicates that the extinguishing agent is non-conductive.



Every project should have ABC class fire extinguishers during construction. The number of extinguishers required is dependent upon the project size, materials and work activity.

Be familiar with the location of the fire extinguishers on your jobsite



Disposing of Oily Rags

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Oily rags are a serious fire hazard because they can spontaneously combust. Many states regulate the disposal of oily rags as "oily waste." The Environmental Protection Agency (EPA) does not regulate oily rags as waste as long as the rags do not have any free-flowing oil, contain hazardous contaminants, or meet the definition of a characteristic oil hazardous waste. Follow these procedures for safe disposal of oily rags:

- Properly dispose of oily rags or send to a rag cleaning service.
- Oily rags should be placed in an approved and clearly-labeled airtight container. Always keep containers closed securely.
- If the rags are contaminated with other chemicals, especially those that are "hazardous," (heavy metals, toxic chemicals, paint, etc.) do not burn them. Rather, treat the rags as a hazardous waste and dispose of them accordingly.
- If you are unsure whether the rags contain hazardous materials, consult the Material Safety Data Sheet for information proper disposal or contact your supervisor





Spill Clean up

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Chemical spill prevention plans required by state and federal law must include provisions for spill cleanup. The following Best Management Practices will help prevent runoff in the event of a spill:

- Properly clean up and dispose of any spilled substance immediately to protect personnel from potential fire and health hazards and the environment.
- Ensure that no spilled materials are washed into the streets, gutters, storm drains, or creeks.
- If possible, use dry cleaning methods to clean up spills to minimize the use of water.
- Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills.
- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Clean up chemical materials with absorbents, gels, and foams. Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- If the spilled material is hazardous, then used cleanup materials are also hazardous and must be handled as hazardous waste.





Spill Prevention

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Typically, most businesses and public agencies that generate hazardous waste and/or produce transport, or store petroleum products are required by state and federal law to prepare spill control and cleanup plans. A Spill Prevention Plan is applicable to facilities that transport, transfer, and/or store hazardous materials, petroleum products, or fertilizers that can contaminate storm water runoff. Regulations include the following provisions

- Spill response and prevention plans should clearly state measures to stop the source of a spill, contain the spill, clean up the spill, dispose of contaminated materials, and train personnel to prevent and control future spills.
- Spill prevention plans are most applicable to construction sites where hazardous wastes are stored or used.
- The preliminary steps include: (i) identifying potential spill or source areas such as loading and unloading, storage, and processing areas; places that generate dust or particulates; and areas designated for waste disposal; and, (ii) evaluating stationary facilities that include manufacturing areas, warehouses, service stations, parking lots, and access roads.
- Employees must be trained in spill control response procedures, post-spill response procedures and be provided with emergency phone numbers.
- Emergency spill containment and cleanup kits should be located at the facility site. The contents of the kit should be appropriate to the type and quantities of chemical or goods stored at the facility.
- Spill kits must be inspected and maintained in all activity areas.
- Re-fuel equipment in a designated area to minimize contamination. Pay attention to location so that spills would not enter water streams or storm water. Consider dikes or a secondary containment system.





Trash

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Construction sites can present many hazards to employees. Keeping a construction site clean of debris can further reduce hazards. Also, managing waste can contain certain pollutants at their source before they can contaminate the ground or streams via storm water runoff. Use the following Best Management Practices when disposing of trash

- Collect debris from work areas and place in containers on a daily basis.
- Separate potentially hazardous waste from non-hazardous construction site waste and place in approved containers with lids. Hazardous Wastes can include used oil, used oil filters, oily rags and flammable wastes as well as caustics, acids, harmful dusts, etc.
- Do not place collected litter and debris in or next to drain inlets, storm water drainage systems, or bodies of water.



Provide dumpsters to contain the solid waste generated by the project.

- Make sure hazardous wastes are not disposed of in dumpsters designated for construction debris. This could include form oil, sealers, paint, curing compounds etc.
- Remove construction debris and waste from the site as frequently as necessary.
- Do not bury construction waste materials on site.
- Place proper trash receptacles throughout the construction site.
- Pull nails from lumber.
- Remove debris to prevent fire hazards.

A clean jobsite allows for safe movement of workers materials and vehicles



Equipment and Vehicle Leak

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Equipment and Vehicle leaks are potential water and soil pollutants. Rain can wash contaminants to the nearest stream. A car leaking only a few drops a day can contribute to water pollution. For example, one pint of oil can contaminate an area larger than a football field. Follow these steps to reduce pollution caused by vehicle leaks:

- If you see a leak from a vehicle, contain it with a drip pan or absorbent material.
- Repair all fluid leaks as soon as possible to reduce discharge into the environment
- Sweep up leaks using granular, absorbent material such as cat litter. Clean up residue and dispose of it properly.
- Properly dispose of fluids such as solvents, antifreeze, brake fluid, and motor oil.
- Report all leaks to your supervisor.
- Check equipment and vehicles on a daily basis.





Ladder: Climbing

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

OSHA estimates that there are 24,882 injuries and as many as 50 fatalities per year due to falls on stairways and ladders used in construction. When using ladders, be mindful and follow these basic safety rules:

- Make sure rungs and steps are clear of grease, oil, dirt, snow, or ice before climbing.
- Clean muddy or slippery boot soles before climbing a ladder.
- Always face a ladder when climbing up or down.
- Follow the three-point rule: keep at least both feet and one hand or both hands and one foot on the ladder at all times.
- Keep your body centered between the side rails of the ladder so you don't tip over the ladder. A good rule is to always keep your belt buckle inside the rails of a ladder.
- Avoid carrying materials or tools when climbing a ladder. Carry tools up or down in a belt or hoist them in a bag or bucket.
- Never stand on the top two steps of a stepladder and the top four rungs on other Ladders.
- Inspect the ladder before climbing to make sure it is in good shape. Report all defects to your supervisor.
- Do not use any ladder that is defective.





Ladders: Extension Ladders

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Each year, an estimated 50 construction workers are killed by falls from ladders. Falls from extension ladders can be particularly dangerous because people are usually working at greater heights. Follow these safety tips when using extension ladders:

- When choosing an extension ladder, keep in mind that the length of a ladder is different from its usable length. The height these ladders can safely reach is reduced by the angle at which the ladder must be set up.
- Position an extension ladders so that the base of the ladder is one foot away from the wall for every four feet of ladder height. This ratio is important because if the angle is too steep, you can fall backward. If the angle is too horizontal, the ladder can slip out from under you.
- Make sure that both feet are on stable and level surfaces, and that both rails are resting evenly on the resting spot. Secure ladders to prevent accidental movement.
- Make sure side rails are at least three feet above the landing point, or that an adequate grab rail is provided.
- After you set up an extension ladder, lock the top section in place.
- If using multi-section ladders, make sure sections overlap — by at least 3 feet for ladders up to 32 feet, by 4 feet for ladders 32 feet to 48 feet, and by 5 feet for ladders 48 feet to 60 feet.
- When working from an extension ladder, consider using a fall protection system attached to a secure anchor point on the building, especially if doing work that involves pushing, pulling, or prying





Ladders: Fixed

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

A fixed ladder is a ladder permanently attached to a structure, building or equipment. Fixed ladders pose hazards including slippery surfaces, unsure footing, and structural damage. Take these precautions when using fixed ladders:

- Check rungs to ensure that they're free of splinters, sharp edges, burrs or projections that may create a hazard. Reports ail defects promptly.
- Clean muddy or slippery boot soles before mounting a fixed ladder, or any ladder.
- When climbing fixed ladders on towers, tanks, or chimneys, use appropriate ladder safety devices as instructed. A ladder safety device is an appliance that will arrest the fall of an individual working at elevated heights.
- Wait until the other person has exited the ladder before ascending or descending.
- When climbing fixed ladders, follow the same basic rules as with portable ladders.
- Take advantage of landing platforms to rest when climbing or descending from heights.





Ladders: Job Built- Ladder

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

A Job-made ladder is a ladder that is fabricated by employees, typically at the construction site. Job-built ladders must conform to certain standards to ensure safety of the user. While job-built ladders can provide safer solutions than using makeshift arrangements for access, they must be used with care. Here are some tips to help ensure safety when using job-built ladders:

- Do not load ladders beyond the maximum intended load for which they were built.
- Allow only one person at a time on a single-width ladder and no more than two people on a double width ladder, each on a separate side.
- As with all ladders, set job-built ladders on a level, solid surface.
- Keep ladders from passageways, doorways, or driveways where they could be bumped or damaged by adjacent activities, unless the ladder area is barricaded.
- Always secure the ladder at the top and whenever possible, secure or stake the bottom too.
- Job built ladders should be inspected on a regular basis.
- When using a job-built ladder be sure to remove rungs which are over the upper level.





Ladders: Proper Access

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Ladders are one of the biggest hazards of overhead work and result in many accidents. The worker on the ladder is exposed to the risk of a fall, and other workers could slip or trip on the ladder or tools and materials left at the access point. Take these precautions to protect yourself and your co-workers when using ladders to access upper levels:

- Always select a ladder that is the correct length to safely reach the working height.
- Position ladders so that the base of the ladder is one foot away from the wall for every four feet of ladder height.
- Do not tie ladders together to create longer sections.
- When using a ladder to access elevations, make sure that it extends
- Three feet above the landing surface for ease in mounting and dismounting. If this is not possible, secure the ladder and use a grasping device such as a grab rail to assist in mounting and dismounting the ladder.
- Position the ladder so that both feet are resting on a stable, level surface and that both rails are resting evenly against a solid, secure surface. Secure the ladder to prevent movement.
- Keep all access points to ladders clear of tools, materials or debris.
- When using ladders near doors, equipment travel paths or similar areas make sure the area is blocked off to prevent the ladder from being struck or dislodged. Secure straight ladders in place prior to use





Ladders: Tie-offs

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Each year about 50 construction workers are killed by falls from ladders. To ensure safety when working from a ladder or using a ladder to access upper levels, take these precautions;

- When accessing an upper level from a ladder, position the ladder so the side-rails extend at least three feet above the landing point.
- Secure the ladder by tying off to a stationary object.
- Attach the ties to side-rails of the ladder, not the rungs.
- While tying off the top, make sure someone "foots" the bottom or the bottom is tied off.
- If it is not practical to tie off or secure a ladder for whatever reason, make sure the ladder is "footed" at the base by another person with both hands on the side-rails to prevent any movement or overturning of the ladder.





Warning Labels

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Improper use of ladders can lead to serious injury as a result of falls, and in some cases electrocution. Warning labels provide information on hazards and instruction for safe use, plus they describe ladder weight and height limits that help you choose the proper ladder for the job.

- Always read and follow warning labels on ladders.
- Choose the right ladder for the job.
- Do not choose a ladder with height or weight limits that are less than you need to perform the job.
- Follow instructions for safe use.
- Do not remove labels.
- If labels have become worn or damaged, replace them if possible.
- Remove ladder from service if unsure of suitable condition and usability





Ladders: Metal Ladders

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

While all ladders can be hazardous when used incorrectly, metal ladders pose additional risks, particularly when working around electricity. Work safely with metal ladders by taking these steps:

- Inspect the ladder before using to ensure that it free of sharp edges dents, and bent steps, rungs, or rails. If the ladder is defective, remove it from service.
- Do not attempt to straighten a bent metal ladder.
- Make sure metal ladders have slip-resistant rubber or plastic feet.
- Keep rungs free of slippery material (grease, oil, paint, snow ice etc.).
- DO NOT use metal ladders around electrical equipment. Keep at least 10 feet away. Metal ladders conduct electricity.
- If you or the ladder could contact exposed, energized equipment, use a ladder with nonconductive side-rails.
- When working from a metal ladder, use only double-insulated or properly rounded electrical tools.





Ladders: Step Ladder

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

When scaffolds are not erected or used properly, fall hazards can occur. About 2.3 million construction workers frequently work on scaffolds. Protecting these workers from scaffold-related accidents would prevent an estimated 4,500 injuries and 50 fatalities each year. Take these steps to help protect workers and reduce accidents:

- Follow industry guidelines for erecting scaffolds: verify that each scaffold and its components is capable of supporting, without failure, its own weight and at least four times the maximum intended load. Erect and dismantle under the direction of a scaffold competent person.
- Inspect scaffolds daily before use; check footing, guard rails, connectors, fastening, tie-ins and bracing.
- Do not use unstable objects such as barrels, boxes, loose bricks, or concrete blocks to support scaffolds or planks.
- Fully plank platforms on all working levels.
- Install guardrails and toe-boards on all open sides and ends of platforms on scaffolding over 10 feet above floor or ground.
- If a scaffold is more than two feet above or below a level, provide adequate access, such as a ramp, ladder, or steps.
- Do not erect, use, dismantle, alter or move scaffolds so they, or any conductive material handled on them, might come closer than 10 feet to energized overhead power lines.
- Obtain scaffold user training prior to working on scaffolding.
- Inspect all scaffolds prior to use or at least on a daily basis.





Scaffolds: Suspended

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Suspended scaffolds are platforms suspended by ropes, or other non-rigid means, from an overhead structure. Suspended scaffolds include swing stage, multipoint scaffolds, and catenary scaffolds. Suspended scaffolds can pose serious risks if there is a failure in integrity of the structure or the ropes. In addition, workers at heights risk serious injury or death from falls if fall-protection systems are not in place. Follow these tips to help ensure safety:

- Suspended scaffolds must be designed by a competent person.
- Make sure all suspension support devices are resting on surfaces capable of supporting at least four times the intended load. Supporting devices include outrigger beams, cornice hooks, parapet clamps and similar devices.
- Verify that each suspension rope, including connecting hardware, is capable of supporting, without failure, at least 6 times the maximum intended load.
- When inspecting scaffolds for capacity, keep in mind that adjustable suspension scaffolds are designed to be raised and lowered while occupied by workers and materials, and must be capable of bearing their load whether stationary or in motion.
- Restrain outrigger beams to prevent movement.
- To keep a scaffold from falling to the ground, use counterweights and attach them to an acceptable anchor point
- Use fall protection (either a guardrail system or a personal fall arrest system) when working on any scaffold 10 feet or more above a lower level. When working on a suspension scaffold, use both a guardrail and a personal fall arrest system.
- Inspect all scaffolds prior to use or at least on a daily basis





Scaffolds: Safe work Practices

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Failure to follow safe work practices when using scaffolds is a major cause of scaffolding-related accidents. To ensure safety, learn to recognize hazards, and always use these safe work practices:

- Inspect scaffolds before each work shift and after any incident that could affect the structural integrity of the scaffold. Take any questionable scaffold out of service, tag it and report damage or defects immediately.
- Do not load scaffolds beyond their capacity. Keep only the tools and materials you need on the scaffold.
- Keep the platforms and area around the scaffold clear of debris and unneeded equipment, material, and other hazards that could cause a worker to trip or fall.
- Use guardrails and/or personal fall arrest system working on a scaffold that is 10 feet high or higher.
- Maintain proper clearance near power lines (at least 10 feet, plus 4 inches for every kilovolt above 50 kilovolts).
- Wear head protection and other personal protective equipment as necessary.
- Do not work on scaffolds during storms or high winds and clear all ice and snow from the platforms before using them.
- Keep others away from the base of the scaffold while work is occurring overhead





Scaffold : Over Head Hazard

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Workers on scaffolds risk injury from overhead hazards such as falling tools, equipment, and materials and energized overhead power lines. To protect employees from falling objects and electrical shock, take these precautions:

- Install overhead protection when there is risk of exposure to falling objects. Types of overhead protection include toe-boards at edges of platforms, screens, guardrails, debris nets, catch platforms, canopy structures.
- Designate a fall zone under scaffolding with barricades or danger tape to protect employees working below scaffolds.
- Keep scaffolds 10 feet or more from power lines, unless you verify the power lines are de-energized.
- Secure tools and equipment so that they don't become falling objects.
- Always wear approved head and foot protection when working on or around scaffolds.
- Inspect all scaffolds prior to use or at least on a daily basis.
- When stacking materials above toe-boards either secure and / or use a screen.
- Pay attention to material handling while working on scaffolding to avoid contact with energized power lines





Scaffold: Suspended

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Suspended scaffolds are platforms suspended by ropes, or other non-rigid means, from an overhead structure. Suspended scaffolds include swing stage, multipoint scaffolds, and catenary scaffolds. Suspended scaffolds can pose serious risks if there is a failure in integrity of the structure or the ropes. In addition, workers at heights risk serious injury or death from falls if fall-protection systems are not in place. Follow these tips to help ensure safety:

- Suspended scaffolds must be designed by a competent person.
- Make sure all suspension support devices are resting on surfaces capable of supporting at least four times the intended load. Supporting devices include outrigger beams, cornice hooks, parapet clamps and similar devices.
- Verify that each suspension rope, including connecting hardware, is capable of supporting, without failure, at least 6 times the maximum intended load.
- When inspecting scaffolds for capacity, keep in mind that adjustable suspension scaffolds are designed to be raised and lowered while occupied by workers and materials, and must be capable of bearing their load whether stationary or in motion.
- Restrain outrigger beams to prevent movement.
- To keep a scaffold from falling to the ground, use counterweights and attach them to an acceptable anchor point
- Use fall protection (either a guardrail system or a personal fall arrest system) when working on any scaffold 10 feet or more above a lower level. When working on a suspension scaffold, use both a guardrail and a personal fall arrest system.
- Inspect all scaffolds prior to use or at least on a daily basis





Scaffold: Erection/ Dismantling

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Many scaffolding accidents occur during the erecting and dismantling and missing tie-ins or bracing. Always follow OSHA guidelines for erecting and/or dismantling scaffolds and use these safe work practices:

- Erect, move, dismantle, or alter scaffolds only if you are trained and under the supervision of a competent person qualified in such activities.
- Wear fall protection whenever feasible. A qualified person must determine where fall protection is feasible and does not create a greater hazard.
- If using a personal fall arrest system, do not use scaffolds as an anchorage unless authorized to do so by a qualified person.
- Stay on structurally sound and stable portions of the scaffold while erecting or dismantling other portions of the scaffold.
- Unless they can be handed down, use ropes to lower components to the ground when dismantling a scaffold. This prevents the components from being damaged that can occur if tossed down.
- Stage materials to minimize fall hazards and to permit safe access.
- Wear approved head and foot protection





Securing Bolts

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Handling and installation of steel securing bolts presents many safety hazards. Containers used to haul and store connectors are heavy and must be moved in accordance with safe lifting practices. Store containers outside of main walkways or near equipment traffic to prevent them from being knocked over. Keep the area under the steel that is being connected clear of personnel.

- Provide containers for storing and carrying bolts, drift pins, and rivets.
- Secure the containers against accidental displacement when aloft.
- When knocking out bolts or drift pins, provide a means to keep them from falling.
- Securely bolt or fasten into position each structural steel member with at least two (2) bolts before releasing from the load line. Cantilevered or systems engineered steel may require more bolts.
- Anchor all columns by a minimum of four anchor bolts.
- Do not repairs, replace or field modify anchor bolts without the approval of the project structural engineer of record. Always wear approved eye protection





Confined space

1. Entry into any confined space is potentially dangerous due to the possibility of oxygen deficiency, presence of flammable gas, hydrogen sulphide, or other toxic substances
2. Never enter a confined space / vessel until an Entry Permit has been authorized by the concerned asset owner in consultation with Occupational Hygienist / certified gas tester.
3. A confined space / vessel includes tanks, drums, large piping, manhole, pits, or any enclosure that may contain flammable & / or toxic substances or oxygen deficient environment.
4. Any trench deeper than 1.5 meters (e.g. excavation, pit, and sump) should be considered as a confined space.
5. All confined spaces must be ventilated and have a constant flow of air to be maintained. Air blowers can be installed necessary.
6. Gas tests are mandatory before authorizing an entry permit. The gas tests must include the following
 - ✓ Flammable (combustible gas
 - ✓ Oxygen content
 - ✓ Toxic substances, which may be present, such as carbon monoxide, or hydrogen supplied.
7. Gas test limits for a normal vessel entry are: oxygen content more than 19.5%, combustible gas at 0% LEL, and hydrogen sulphide at 0 parts per million.
8. If gas test results are out of the normal range, then special equipment such as respirators, protective clothing and forced air ventilation will be required
9. The results of gas tests and any special precautions must be recorded on the entry permit
10. The frequency of gas test in confined space shall be indicated on the entry permit by authorized gas tester / Occupational Hygienist



Fire Safety

Fire Prevention

“Fire Triangle” identifies three components of any fire:

- ✓ Fuel paper, wood, flammable gas, energised electrical equipment, etc...
- ✓ Energy (heat), sufficient to support combustion. Often refers to as the ignition source.
- ✓ Oxidiser (air)

IF ANYONE OF THESE IS MISSING, A FIRE CANNOT CONTINUE. THEREFORE Prevention is based on eliminating or minimising one of the components of the “Fire Triangle”. Other methods include-office/canteen

- ✓ Heat and/or smoke detectors
- ✓ Automatic fire sprinkler systems
- ✓ Kitchen hood systems (canteen)
- ✓ Building code/materials (Flame retardant materials)

On-the-Job

- ✓ Keep flammables away from ignition sources
- ✓ Utilize flammable storage containers
- ✓ Know your chemical properties (check the MSDS for flammable/combustible information)
- ✓ Do not block fire extinguishers with equipment
- ✓ Practice good housekeeping techniques in work areas
- ✓ Inspect wires for possible damage
- ✓ Know the way out from your work area
- ✓ Know location of the closest manual fire alarm station
- ✓ Know location of closest fire extinguisher
- ✓ In the event of a fire in a work area, try to extinguish it if it is small one. If not, dial the emergency number, evacuate the location or pull the manual alarm station.
- ✓ Review the location of muster area in the event of a building evacuation (utilise a check sheet)
- ✓ Conduct quarterly fire drills (including all shifts on a rotating basis)
- ✓ Exits should be clearly marked and all signs lit and unobstructed

Remember to RACE during a fire

- ✓ Rescue – rescue people in immediate danger
- ✓ Alert – yell out “Code Red”/“Fire”, pull fire alarm, dial emergency phone number
- ✓ Contain – close all doors and windows
- ✓ Extinguish/Evacuate – extinguish small fires, evacuate people

Remember PASS when using an extinguisher

- ✓ Pull the pin
- ✓ Aim the nozzle
- ✓ Squeeze the handle
- ✓ Sweep side to side at the base of the fire



Working on Flow lines

1. The construction and repairing of hydrocarbon service flow lines are considered potentially hazardous due to possible presence of flammable & toxic vapors.
2. It is mandatory to carry out gas test and authorization of Hot Work permit prior to starting any hot or spark potential activities on such pipelines.
3. The flow lines need to be positively isolated, depressurized, decontaminated, flushed or purged as essential preparatory measures prior to authorizing the permit for respective work.
4. Cold cutting of flow lines requires a cold work permit. The equipment used for cold cutting must be intrinsically safe, non-sparking type or cannot create a source of ignition.
5. The permits are to be endorsed by each oncoming shift/ area supervisor after carrying out necessary gas test.
6. Since most flow lines are located in the desert, it is recommended to be careful about possible presence of explosive ordinance in the work area.
7. Remember – DO NOT TOUCH suspicious objects. Any un-identified objects must be immediately reported to Burgan Fire Station, who will arrange further actions through concerned teams.



Hand Tools

1. It is important to maintain hand tools in good working condition. The following precautionary measures will be kept in view:
 - ✓ Wooden handles shall be kept free from splinters and cracks.
 - ✓ Wooden handles for hammers and sledgehammers shall be secured with tapered wedges.
 - ✓ Steel wedges, spanners, hammers, etc, shall be free from burrs.
 - ✓ Non-sparking brass tools, chisels, etc, should be trimmed down to prevent "mushrooming" the head of the tool.
2. Files should have proper handles. Avoid using files with bare tangs.
3. Always wear eye protection while using striking tools.
4. While using a hammer to strike a spanner, chisel, etc, the tool being hit shall not be held by hand. Always hold a striking tool in place with rope, stiff wire loop, or other means to keep the hands away from being hit by the hammer.
5. Following 5 basic safety rules can prevent all hazards involved in the use of tools:
 - ✓ Keep all tools in good condition with regular maintenance (CHECK INSPECTION STICKERS).
 - ✓ Use the right tool for the right job.
 - ✓ Inspect each tool for damage before use.
 - ✓ Operate according to the manufacturer's instructions.
 - ✓ Provide and use the proper PPE.
6. The greatest hazards posed by hand tools result from misuse and improper maintenance. The tool may also become unsafe to use. In fact, it is estimated that hand tool mishaps are responsible for about 1 out of 12 workplace injuries-including cuts and bruises, punctures, fractures, even loss of finger, hand, or eye. Some examples to misuse:
 - ✓ Using a screwdriver as a chisel may cause the tip of the screwdriver to break and fly, hitting the user or other employees.
 - ✓ If a wooden handle on a tool such as a hammer is loose, splintered, or cracked, the head of the tool may fly off and strike the user or another worker.
 - ✓ A wrench must be used if its jaws are sprung, because it might slip.



Power Tools

Precautions

- ✓ Employees have the responsibility for properly using and maintaining tools.
- ✓ Appropriate PPE should be worn due to the hazards that may be encountered while using portable tools.
- ✓ Avoid dangerous environments. Don't use power tools in a damp, wet and/or explosive atmosphere.
- ✓ Around flammable materials, sparks produced by iron and steel hand tools can be ignition source. Where this hazard exists, use spark-resistant tools made from brass, plastic, aluminum, or wood.
- ✓ Employees should be trained in the use of all tools-not just power tools. They should understand the potential hazards as well as the safety precautions

If you're a power tool user:

- ✓ Never carry a tool by the cord or hose.
- ✓ Never yank cord/hoses to disconnect from receptacle.
- ✓ Keep cords/hoses away from heat/oil, sharp edges.
- ✓ Disconnect tools when not in use, before servicing, when changing accessories such as blades/bits cutters.

Employees using electric tools must be aware of several dangers; the most serious is the possibility

Electrocution

Among the chief hazards of electric-powered tools are burns and slight shocks, which can lead to injuries or even heart failure.



Pneumatic Tool Safety

Pneumatic tools offer great versatility and the capability to get a job done quickly and efficiently. As with any energized equipment there is the potential for harm to people or property. With this Spotlight we will discuss basic handling, use and storage techniques that will minimize potential hazards created by these tools.

Proper use of pneumatic tools:

- Read the manufacturer supplied manual before operating the tool.
- Wear appropriate PPE. A baseline of safety glasses/goggles, hearing protection and safety shoes is required. (Face protection, and abrasive gloves may also be needed)
- Never use compressed air for cleaning unless fitted with an attachment to reduce the pressure at the nozzle to 30 psi.
- Never point the nozzle at another person or yourself, rust particles can be discharged from the compressor at a high velocity causing injury

Attachments

- Always double check to ensure the attachment is securely connected to the hose.
- A positive locking device, chain or a short wire attaching the tool and hose is recommended for added protection.
- Attachments that shoot fasteners at pressures greater than 100 psi need to be equipped with a device that only ejects fasteners when the muzzle is pressed up against the work surface.

Hoses

- If using a hose greater than 1/2" diameter, a safety excess flow valve must be installed at the source of the air supply.
- Use hoses that have a minimum working pressure rating of 150% the maximum pressure produced by the compressor.
- Inspect hoses on a regular basis for bulges, cuts, cracks etc.
- Use hoses that are resistant to abrasion, crushing, and cutting.
- Blow any air out of the line before attaching a tool.
- When using hoses, minimize trip hazards and protect the physical
- Condition of the hose to the best of your ability.

Air Compressors

- Do not adjust air pressure greater than the attachments rating
- Drain the tank after 4 hours of use to prevent water build up which could lead to rust.
- Allow engine to completely cool before refueling.
- Only use gas powered compressors in well ventilated areas. Electric compressors need to be plugged into a properly grounded plug (use GFCI when needed).



MOBILE ELEVATING WORK PLATFORMS

The term Mobile Elevating Work Platform (MEWP) covers pedestrian controlled self propelled and power operated mobile elevating work and access platforms.

The MEWP is designed to provide a temporary working platform which can be easily moved from one location to another. It is particularly suitable for short duration work where the use of a ladder would be unsafe and the erection of scaffolding would be time consuming and impracticable.

The main hazards associated with the use of mobile elevating work platforms include:

- ✓ collision with another vehicle
- ✓ parts of the machine encroaching onto a traffic lane
- ✓ proximity of overhead cables
- ✓ falls of persons or materials
- ✓ persons being caught or trapped in moving parts or "nip" points
- ✓ overturning
- ✓ incorrect use

When using an MEWP it is important that you adopt the following precautions:-

- ✓ Ensure that you have seen the manufacturer's records regarding inspection, maintenance and servicing and that it is carried out.
- ✓ Check that all the relevant test certificates and duty charts are provided with the machine.
- ✓ Ensure that before you operate the machine you are trained; this is normally carried out by the supplier and ensure that you are familiar with the manufacturer's operating manual.
- ✓ Ensure the safe working load (SWL), the safe wind speed and safe gradient are displayed on the machine, and adhered to.
- ✓ Ensure the ground is level, firm and the machine is not over any drain, basement, etc. Where rough terrain equipment is used, the manufacturer's requirements on ground conditions must be followed.
- ✓ Ensure you fully deploy the outriggers / stabilisers
- ✓ Never travel with the platform occupied or boom extended, unless specified by the manufacturers.
- ✓ Ensure when you are working adjacent to roadways, railways or other operations / obstructions that you erect barriers, cones, lights, etc.
- ✓ Ensure if working adjacent to overhead power lines that you follow the permit to work provided.
- ✓ Ensure that you wear a safety harness and it is attached to the platform. This is required because most incidents involve people being tipped out.
- ✓ Ensure you wear other protective clothing i.e. safety helmets, safety shoes, etc.
- ✓ Check that all moving parts are properly guarded.
- ✓ Only use the platform and boom for the work for which it was intended.

When not in use, machines should be at ground level and immobilized



Spray Painting

Hazards

- Paint Ingestion
- Eye/skin damage

Controls and precautions to be observed during this work

- Barriers and signs to be posted around Worksite.
- Safety lookout Man to be posted
- Air compressor equipment to be tested and fully functional
- Air Hoses to be properly connected with whip checks
- Full protective clothing to be worn whilst spraying
- Breathing masks to be worn
- Ignition sources to be kept out of worksite
- Sensitive equipment to be masked to prevent damage.
- Lances not to be directed at people
- Hot surfaces are not to be sprayed
- Lances are not to be directed within 1m of Air vent inlets/exhaust outlets
- Spray Painting equipment and lances to be positively grounded against static spark in gas zones.



Use of Chain Saws

Hazards

- Amputation of limbs. Severe operator/assistant lacerations

Controls and precautions to be observed during this work

- All chainsaw operators should have received formal training
- Before using a chainsaw carry out the following checks:
 - ✓ Check guards are in place, in good condition and secure.
 - ✓ Check chain brake operation (if fitted)
 - ✓ Check throttle and interlock for serviceability.
- Ensure you have the required PPE and that it is serviceable. This must include leggings
- Always engage the chain brake and place saw on a secure surface clear of any obstructions before starting.
- Never make adjustments to the chainsaw whilst it is running
- Never place any part of your body in the saw's line of cut
- Before moving with the chainsaw, switch it off, (apply the chain brake), and fit the scabbard over the chain. Carry by front handle with chain facing rearwards
- Maintain a firm grip, using both hands, on the chainsaw when in operation.
- Stop saw motor before fuelling
- Check for fuel leakage and ensure fuel cap is correctly replaced
- Refuel chainsaws in well-ventilated areas and at least 3 metres away from where you are going to use the chainsaw



Guidance to Banks Men

Controls and precautions to be observed during this work

- Any banks men/slingers must be competent, i.e. must have received formal training
- All lifting operations should be suitably planned prior to commencing
- Ensure effective communications are in place
- When a crane is in operation, banks men must not become distracted, and on no account leave the area unless relieved by another competent person.
- Use guide ropes to steady loads where applicable
- Visually inspect all lifting gear daily – if in doubt do not use
- Ensure you are aware of all relevant hazards on site including overhead power lines, excavations
- When using signals then stand where you can clearly see the load, the crane operator can clearly see you, and make your signs clear and distinct using only the approved codes.
- Ensure loads are lifted off the ground, are free, and are correctly slung before hoisting
- Ensure safe working loads (SWL's) are always complied with
- Establish communications with the crane driver where applicable – if you can't see him then use radios
- Always wear a safety helmet and hi-visibility vest
- Always ensure crane hooks are centrally located over loads to reduce swinging when raised. If the crane is travelling, ensure you warn the driver of obstructions, sharp corners, etc



SLIPS, TRIPS AND FALLS

HAZARDS

- Unsafe ladders, steps and scaffolds.
- Slippery surfaces and improper footwear for the working environment.
- Obstructions in and on floors and walkways.
- Poor lighting.
- Access to / from vehicles.

LEARNING POINTS

- Inspect ladders and steps prior to working and ensure that the ladder is set on firm, level ground at the correct incline (1 in 4). Use two hands whilst climbing, do not over reach when working from a ladder. When a harness or fall arrestors are being worn, remember to check the condition of the equipment before use and check that people know how to use them.
- Inspect scaffolds prior to working and ensure that the scaffold is complete, the working platforms are clear from tripping hazards and, in the case of mobile scaffolds, the castors are locked to prevent movement.
- Avoid slips by keeping watch for hazardous working conditions - wet floors, icy areas, oil and grease for example. Promptly clean up the spillage; do not leave it for someone else.
- Avoid trips by maintaining a good standard of housekeeping and ensure that materials are stored and access-ways are kept clear.
- Avoid falls by using fully guarded work platforms. Where this is impracticable, fall arrestors and harnesses must be clipped onto a solid structure at all times whilst working at height. In addition, cherry pickers should be used instead of "beam walking



ERECTING STEEL STRUCTURES

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the Safe way of doing the job.
3. Give the Tool Box Safety Talk

Working with steel poses many fall hazards. Hoisting, connecting, welding, bolting and rigging structural steel are all activities that can put the worker at risk of a fall. Take these precautions to help protect against fall hazards

- Use conventional fall protection (PFAS, safety nets, or guardrail systems) if there is risk of falling more than 15 feet doing most iron work, including bolting, welding etc.) Fall protection may be required at 6 feet on some projects
- Ensure that connectors wear a complete PFAS or other allowable fall protection device and wear equipment necessary for tying off while working at heights over 15 and up to 30 feet. Or two stories, whichever is less. Fall protection may be required at 6 feet on some projects
- A Controlled Decking Zone (CDZ) may be established as a substitute for positive fall protection where metal decking is initially being installed and forms the leading edge of a work area over 15 and up to 30 feet above a lower level. Fall protection may be required at 6 feet on some projects. Allow only employees who are engaged in leading-edge work and properly trained in the hazards involved to enter the CDZ





PROTECTION AGAINST ACCIDENTAL FALL

Preparation:

Have a safety harness and lanyard available to show correct fitting, wearing and its attachment

- The protection against fall is required for persons working at height when a fixed platform or scaffolding cannot be provided.
- In these circumstances, a safety harness must be used where persons can fall from a height of more than 2½ meters (8 feet).
- The safety harness with a lanyard must be of approved type supplied by the manufacturer.
- Lanyards may not be more than 1½ meters (5 feet) in length.
- Safety harness & lanyard must be in good condition and shall be inspected before use.
- The lanyard must be anchored to a suitable fixed point and to the harness. Where free movement is required, a running line is recommended (e.g. when working on top of tanks) to avoid the need of frequent unclip for the harness.
- The protection against fall is also essential while working from a manlift, crane basket, or over open water / crude oil lagoons





GRIT BLASTING

1. Grit blasting on a live equipment or plant can be hazardous and requires proper precautionary measures to control the associated hazards
2. Grit blasting in hazardous / restricted area shall be covered under Hot Work permit, which must be authorized prior to starting the work
3. The persons involved in grit / shot blasting activities must have required training to carry out such works.
4. Filters must be used to prevent entry of oil mist or toxic substance in the air supply hose. Filters should be replaced time to time
5. The couplings on air supply hose shall be properly pinned or wired together to prevent departing under high pressure.
6. The couplings on air supply hose shall be properly pinned or wired together to prevent departing under high pressure.
7. Grit / shot blast nozzles must be equipped with safety release grips, or "dead man grips" so the nozzle will shut off if dropped accidentally.
8. Grit / shot blasting equipment must be properly grounded (earthed) to prevent accumulation of static charges
9. Ensure the provision & use of required protective equipment during the work:
 - ✓ Grit blast hoods must be of approved design and duty.
 - ✓ The workers deployed for assisting in grit blasting shall also wear safety goggles as a minimum protection and face shields must be readily available at site.
 - ✓ Hearing protection is required if noise levels exceed 85 dBA (decibels).
10. Grit blasting areas must be barricaded and partitioned to prevent grit / shot ingress into adjacent work areas
11. Take account of wind direction and speed during grit blasting activities
12. A separate procedure is to be developed involving concerned teams for grit blasting on live wellhead.





Battery Charging

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool box Safety Talk

The charging of Lead-acid batteries can be hazardous. Batteries emit explosive gasses while being charged, plus, battery fluid contains sulfuric acid, which can harm the eyes and skin on contact. Charging batteries is such a common task that many workers take it for granted and fail to use safe procedures. When changing a battery, use common sense and follow all manufacturer safety precautions.

- Charge batteries in a dry, well-ventilated area.
- Wear safety glasses or goggles and gloves when handling/charging batteries.
- Keep flames or sparks away from the battery to avoid contact with explosive gasses. Do not smoke while charging batteries.
- Before charging check the battery electrolyte level. Add distilled water if the electrolyte level is low before charging.
- Be sure to correctly connect positive and negative terminals: positive clamp (red) to positive(+) post and negative clamp (black) to negative (-) post.
- Leave the vent caps in place while charging.
- Immediately after the battery is fully charged, turn off and unplug the charger. Continuing to charge a fully charged battery may severely damage the internal plates and shorten battery life.





ELECTRICAL BURNS

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool Box Safety Talk

Electrical burns occur when current jumps from an electrical outlet, cord, or appliance and passes through your body. Electrical burns cause tissue damage, and are one of the most serious injuries you can receive and need to be treated immediately.

- Burns suffered in electrical incidents can be divided into three types; electrical burns, arc burns, and thermal contact burns. AN three types of burns may be produced simultaneously.
- High voltage contact burns can burn internal tissues while leaving only very small injuries on the outside of the skin where it enters and much larger wound where it exits. Burns suffered in electrical accidents may affect the skin, muscles, and bone.
- High temperatures near the body produced by an electric arc or explosion cause arc or flash burns. They should also be attended to promptly.
- Thermal contact burns occur when skin comes in contact with overheated electric equipment, or when clothing is ignited in an electrical incident.
- If someone receives an electrical burn, seek medical attention immediately. If the victim is still in contact with the energized circuit, shut it off. Do not touch the victim. You do not want to be a victim too.



To prevent electrical burns, use safe work practices, lock out and tag all machines/ equipment/circuits during service, wear proper persona! Protective, and stay at least 10 feet away from overhead power lines



LIGHTNING STRIKES

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool Box Safety Talk

A single stroke of lightning may have 125,000,000 volts of electricity. That's enough power to light a 100-watt light bulb for more than 3 months, or enough to seriously hurt or kill someone. For every five seconds you count, the lightning is one mile away, if you can see a flash and instantly hear thunder, the lightning strike is very close and you should seek shelter immediately. When you see lightning, follow these safety rules:

- If you're outdoors, seek shelter from lightning! Buildings are best for shelter, but if no buildings are available, try to find protection in a cave, ditch, or a canyon. Trees are not good cover! If you're in the woods, look for an area of shorter trees and crouch down away from tree trunks.
- Stay off or away from anything tall or high including rooftops, scaffolding, utility poles and ladders.
- If you're traveling, stay in your vehicle and roll up the windows. Don't touch the metal parts of your vehicle.
- Do not use metal objects outside, such as golf clubs or metal tools.
- If your skin tingles or your hair stands on the end, a lightning strike may be about to happen. Crouch down on the balls of your feet with your feet close together. Keep your hands on your knees and lower your head. Get as low as possible without touching your hands or knees to the ground. **DO NOT LIE DOWN!**



When someone is struck by lightning, get emergency medical help as soon as possible. Often the person can be revived with cardiopulmonary resuscitation (CPR). There is no danger to anyone helping a person who has been struck by lightning - no electric charge remains. Start CPR immediately



Live circuit Panels

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool Box Safety Talk

Circuit panels are typically found in central locations inside buildings and often serve as the point at which electrical power is distributed within a building. Electrical panels or breaker boxes require special safety considerations. Because electrical panels or boxes contain "live" electricity, they require special safety considerations, including the following:

- Assume all electric panels are live.
- Label circuit breakers properly. Do not use tape to secure any breaker in either an on or off position.
- De-energize as much equipment as possible. Use portable floodlight systems for lighting.
- Wear heavy insulated rubber boots and gloves when working around energized wiring.
- Ensure that panel boxes have a cover on them at all times, except when being serviced.
- Do not block panel boxes. There should be at least 36 inches of clear space in front of a panel box.
- Be sure all live parts are covered.



Always use breaker panel blanks in breaker boxes



Over Head Power Lines

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool Box Safety Talk

Overhead power lines at your site are especially hazardous because they carry extremely high voltage. Fatal electrocution is the main risk, but burns and falls from elevations are also hazards. Using tools and equipment that can contact power lines increases the risk. Investigate all construction sites prior to beginning of work to identify possible power line exposures and to establish proper warning and accident prevention controls. Take these precautions when working on or near overhead power lines:

- Unless you know otherwise, assume that overhead lines are energized.
- Stay at least 10 feet away from overhead power lines.
- Be especially careful when using scaffolds, ladders, and equipment around power lines. When dump trucks, cranes, work platforms, or other conductive materials (such as pipes and metal ladders) contact overhead wires, the equipment operator or other workers can be killed.
- Contact the local utility company to de-energize and ground overhead power lines when working near them. They may also provide other protective measures including guarding or insulating the lines.
- Use non-conductive fiberglass ladders when working near power lines. Never store materials and equipment under or near overhead power lines





Wires can mean Death

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool Box Safety Talk

In contemporary wiring, individual wires are run in a sheathed cable or conduit. The white wire is neutral and the green wire is the ground wire. The "hot wire/" is usually black or red, and they are dangerous to touch. To protect from electrical shock, learn hazards associated with basic wiring, and take steps to avoid these hazards.

- Never attempt to handle any wires or conductors until you are absolutely positive that their electrical supply has been shut off. Properly lock out and tag all machines/equipment/circuits to prevent accidental startup.

- You will receive an electrical shock if a part of your body completes an electrical circuit by touching a live wire and ground, or touching a live wire and another wire at a different voltage.

- Consider all electrical wires as "hot" or "live" until verified as safe by a qualified person.

- If you come in contact with an energized wire—and you are also in contact with a grounded path—current will pass through your body. You will receive an electrical shock.



Always test a circuit to make sure it is de-energized before working on it



Working in Electrical Box

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool Box Safety Talk

Electrical hazards - from shock, burns, or electrocution - exist where wires or other electrical parts are exposed. Wires and parts can be exposed if a cover is removed from a wiring or breaker box. When working on or around electrical boxes, take steps to protect yourself and others from electrical hazards.

- Recognize that an exposed electrical component is a hazard.
- Ensure that only licensed electrician's work on electrical systems and equipment that uses or controls electrical power.
- Wear appropriate personal protective equipment (insulated gloves, tools etc.) when working on live circuits.
- Make sure junction boxes, plug receptacles, and switches have tight-fitting covers or plates in place.
- Verify that all unused openings (including conduit knockouts) in electrical enclosures and fittings are closed with appropriate covers, plugs or plates.
- Report damaged electrical enclosures such as switches receptacles and junction boxes.



Do not store anything within three feet of an electrical circuit control enclosure



Electrocution

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool Box Safety Talk

Electricity can, and does kill. Over four hundred workers die each year from contact with electrical energy, the fifth leading cause of workplace deaths. Construction workers, including laborers, electricians, painters, and others account for almost half the total. Take steps to help minimize risk of electrocution:

- Stay at least 10 feet away from overhead power lines.
- Keep all tools and equipment away from high voltage lines. You can get a serious shock if anything you're using or carrying accidentally contacts a line.
- Use ground-fault circuit interrupters (GFCIs) on all 120-volt, single-phase, 10, 15- and 20-ampere receptacles.
- Ground all power supply systems, electrical circuits, and electrical equipment.
- Use double insulated tools.
- Follow safe work practices when working on/with electrical equipment. Use insulated gloves and tools when working with high voltage equipment.



If you find someone who has suffered an electric shock, don't touch the person until power has been disconnected.



Proper use of External Cords

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool Box Safety Talk

An extension cord looks harmless, but most extension cords carry 110 volts of electricity, and 110 volts can kill. Extension cords, if not used correctly, can cause electric shock, fires (from overloading circuits), and even slipping and tripping hazards. Follow these tips for safe use:

- Check that extension cords are correctly rated for the amount electricity they are to carry and are Underwriter Laboratory (UL) approved. Heavy commercial duty cords are the minimum recommended on any construction site.
- Ensure that all extension cords are serviceable and free of exposed wiring and splices, frayed areas, and/or deteriorated insulations. Discard extension cords with broken wires or damaged insulation.
- Connect only one device at a time to extension cords.
- Use extension cords for temporary purposes, not for permanent installation. Where there is a permanent need for an electrical outlet, one should be installed. Always use GFCI's with extension cords.
- Do not tape or splice extension cords.
- Do not place extension cords across walkways or doorways where they could pose a tripping hazard.
- Do not place extension cords under carpets, under doors, or other locations that subject the cord to abrasion or other damage.



Do not drive any vehicle over extension cords



Ground Fault Circuit Interrupter

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool Box Safety Talk

A ground-fault circuit interrupter, or GFCI, is a device that detects a fault failure by comparing the amount of current flowing to electrical equipment with the amount of current returning from the equipment. Whenever the difference is greater than five milliamps, the GFCI trips and thereby interrupts the flow of electricity. GFCI's are designed to shut off electric power quickly enough to prevent an electrical incident.

- In general, install GFCIs in the home and/or workplace in wet or humid environments, high-risk areas such as construction sites, and places where people could come into contact with live equipment.
- Use approved GFCI's for all 120-volt, single-phase, 15- and 20-ampere receptacle outlets on construction sites that are not a part of the permanent wiring of the building.
- Select the right GFCI for the job. The three basic types used in homes and the workplace are the GFI outlet, the GFI circuit breaker, and the portable GFI. All perform the same function but each has different applications and limitations.
- To help ensure safety, limit exposure of connectors and tools to excessive moisture, water, melting ice or rain.
- Test GFCI's monthly to determine that they are working correctly. Never remove the third (ground) wire connection from plugs





Insulated Gloves

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool Box Safety Talk

Electricity is a serious workplace hazard, exposing employees to such dangers as life-threatening electric shock and electrical burns. Personal protective equipment can provide an important line of defense when exposed to electrical hazards.

- Always wear insulated rubber gloves (with canvas or leather outer gloves) when working with high voltage equipment.
- Verify that gloves are of the maximum voltage rating for the job.
- Wear gloves under leather gloves to prevent punctures.
- Make sure gloves fit snugly.
- Inspect gloves daily for holes, tears, punctures, cuts, texture changes, embedded objects etc. If gloves are damaged, do not use them.



Maintain insulated gloves in a safe, reliable condition. Verify that they are periodically inspected and tested as required by OSHA



Lockout/Tag out

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool Box Safety Talk

Lockout/tag out procedures is used to isolate hazardous energy sources from electrical, hydraulic, pneumatic or rotary machinery when service or maintenance work is required. Lockout/tag out devices helps prevent accidental start-up of equipment or machinery, and ensure personal safety from possible energy releases. Take the following steps to help prevent exposure to hazardous energy:

- Know and follow all procedures for lockout/tag out in your workplace.
- Assume at all times that power is "on." This practice ensures a cautious approach that may prevent an accident or injury.
- Lockout and tag all machinery and equipment before performing maintenance.

Do not lock out and tag machinery/equipment unless you are authorized to do so.

Do not attempt to operate any switch, valve, or other energy isolating device bearing a lock or a tag.



Do not remove tags from machines or equipment unless authorized to do so. OSHA regulations state that only the person who applies the lock and/or tag can remove it, except in an emergency.



Portable Generators

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool Box Safety Talk

Portable generators can offer great benefits when electrical power is not readily available. However, every year people die in incidents related to portable generator use. The primary hazards to avoid when using a generator are carbon monoxide (CO) poisoning from the toxic engine exhaust, electric shock or electrocution, and fire. Follow the directions supplied with the generator, and use these safe work practices:

- Always use generators outdoors, away from doors, windows and vents. NEVER use generators inside homes, garages, basements, crawl spaces, or other enclosed or partially enclosed areas, even with ventilation.
- Follow manufacturer's instructions for safe operation.
- Keep the generator dry. Operate on a dry surface under an open, canopy- like structure.
- Plug appliances directly into the generator or use a heavy-duty outdoor- rated extension cord. If using an extension cord, make sure the entire cord is free of cuts or tears, and that the plug has all three prongs, especially a grounding pin.
- NEVER plug the generator into a wall outlet. This practice, known as back feeding, can cause an electrocution risk to utility workers and others served by the same utility transformer. If necessary to connect generator to house wiring to power appliances, have a qualified electrician install appropriate equipment. Or, ask your utility company to install an appropriate transfer switch.
- Before refueling the generator, turn it off and let it cool. Fuel spilled on hot engine parts could ignite.
- Always store fuel outside of living areas and away from any fuel-burning appliance. Store in properly labeled, non-glass containers





Electrical Power Tools

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool Box Safety Talk

Every year, many workers on construction sites suffer electric shock using portable electrical tools and equipment. The nature of the injuries, including those caused by ground faults, ranges from minor injuries to serious, secondary injuries. There also is the possibility of electrocution. A secondary injury occurs when a worker recoils from an electrical shock and, as a result, sustains an injury. To help prevent injury, follow these safety tips when using electrical power tools:

- Always use a Ground Fault Circuit Interrupter to protect against potentially hazardous ground faults.
- Before using any portable electrical tool, inspect the cord for the proper type. Ensure that the tool has either a three-wire cord with ground or is double insulated. Never use a plug that has its ground prong removed.
- Inspect the tool for frayed cords, loose or broken switches, and other obvious problems. Do not use tools that fail this. Remove from service and label "Do Not Use" until repaired.
- Be sure the outlet, extension cord, tools, and work area are clean and dry. Do not use electrical-powered tools in damp or wet locations.
- Verify that the tool is turned "off" before you plug it in or unplug it.
- Disconnect power tools while servicing or storing.
- Do not lower or carry a power tool by its cord





Proper Grounding

Introduction

1. Review any accidents or "near accidents" from the past week.
2. Describe the hazards of the work as they relate to your project. Explain or show the SAFE way of doing the job.
3. Give the Tool Box Safety Talk

"Grounding" a tool or electrical system means intentionally creating a low-resistance path that connects to the earth. When properly done, current from a short or from lightning follows this path, thus preventing the buildup of voltages that would otherwise result in electrical shock, injury, and even death. Proper grounding for both the system and electrical equipment is particularly relevant in construction

Use Ground Fault Interrupters (GFCI) to protect against shocks from ground faults. A GFCI detects current leakage at very low levels (as little as 5 milliamps) and rapidly cuts off the power

- Ground all power supply systems, electrical circuits, and electrical equipment.
- Frequently inspect electrical systems to insure that the path to ground is continuous. Always follow an assured grounding program rules.
- Visually inspect all electrical equipment before use. Take defective equipment out of service.
- Do not remove ground prongs from cord-and plug-connected equipment or extension cords.
- Use double-insulated tools or grounded tools that have an approved three-wire cord with a three-prong plug, insure that the plug is plugged into a properly grounded three-pole outlet.



Never cut off or bend the ground pin of a three-pronged plug. Proper grounding is essential to minimize fire and shock hazards



NEAR UNDERGROUND CABLES

Damage to underground electric cables is a frequent occurrence which can result in fatal or serious injuries. In addition, the interruption to supplies may have both damaging and expensive consequences.

Before commencing any excavation, check with your supervisor that enquiries have been made to see if any cables are in the area (electric, telephone, television, etc.). If so, remember that the location shown on a plan may not necessarily be accurate. You should, for your own safety, always follow the rules given below

- Ask for a cable locating device, in good working order, to be available to locate all underground cables in the working area, you must be trained to use the device.
- Assume all cables are 'live', unless told by your Supervisor that they are dead.
- Hand dig trial holes carefully wherever possible along any indicated line and look for marker tapes or tiles above the cable. Continue to use the cable locator. Finally, establish exact location.
- Once exposed, protect cables from damage, supporting effectively where necessary.
- In the event of accidental damage - even if only apparently superficial - all persons should be kept clear until the Electricity Board has made an examination.
- When backfilling, make sure you have been instructed as to the Board's requirements. Replace marker tapes or tiles in their original positions.
- If you have to use hand-held power tools to break up concrete areas or other paved surfaces, avoid over-penetration. This is a common source of accident when cables are buried underneath.





ELECTRICAL SAFETY

Preparation:

Get a defective extension lead or electric power tool to display / point out the faults.

- All electrical equipment must be in good condition, and inspected prior to its use. Explain the probable common defects, which to be looked for during inspection.
- The plugs on electrical devices must have good prongs without any crack. The electrical cords must not be frayed / exposed / taped. All electrical joints shall be made with proper plugs and sockets.
- Electric cords must be kept away from water and crude oil. Electrical cords must also be protected from fraying when being used on platforms, laid over railings, etc
- Portable electric tools should be double insulated. Double insulated tools have plastic housings. Portable power tools with metal casings have only single insulation and must be grounded prior to use.
- Electric devices must be de-energized and locked out before commencing any work. The inspection & repairing of electrical devices must be performed by a certified electrician.
- Temporary wiring must conform to industry standards. Placing bare wire into outlets is strictly prohibited

