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Through the OSHA and SWRInstitute Alliance, the SWRInstitute developed this Field Manual for informational purposes only. It does not necessarily reflect the official views of OSHA, the U.S. Department of Labor or SWRInstitute. 09/2009
This Safety and Health Field Manual is intended to cover some of the basic topics for use on the job site. Knowledge of safety and health standards is essential in reducing work-related injuries and illnesses and in maintaining a safe and healthful work environment. This Field Manual is a product of the Alliance between the Occupational Safety and Health Administration (OSHA) and the Sealant, Waterproofing & Restoration Institute (“SWRInstitute”). Most of the information covered in this Field Manual has been taken directly from OSHA standards, but does not cover all the requirements in the OSHA standards. The specific subsection of the OSHA standard will be listed following the title of each section in this Field Manual. For a more complete understanding of these topics, please review the entire OSHA standard, that can be found at Title 29 Code of Federal Regulations beginning at Part 1910 or OSHA’s website (www.osha.gov).

The sealant, waterproofing and restoration contractor can use this Safety and Health Field Manual to help identify the key hazards and OSHA requirements in this industry. The work performed by sealant, waterproofing and restoration contractors covers one of the widest ranges of activities in the construction industry.

Contractors can use this Field Manual as part of an overall workplace safety and health program that promotes the culture of safety, where everyone takes personal responsibility for their own safety as well as those around them. It is also your responsibility and obligation to work safely and to correct unsafe acts, practices, and or conditions for the protection of yourself and others.

DISCLAIMER
This Safety & Health Field Manual has been prepared by the Sealant, Waterproofing & Restoration Institute (“SWRInstitute”) for use in the field as a quick reference tool of the basic safety and health topics for the job site. SWRInstitute has merely compiled information from industry representatives and from the Occupational Safety and Health Administration (“OSHA”). Accordingly, SWRInstitute, its members, employees and agents expressly disclaim any responsibility whatsoever for the accuracy of the terms, methods, procedures, specifications, views and opinions discussed herein. As there may be other safety and health topics not specifically addressed herein which may apply to a job site, the employer should evaluate all of the factors pertaining to potential hazards at a particular worksite with respect to employee safety and health. This Safety & Health Field Manual should not be considered a substitute for a written Safety & Health Program, as required by OSHA, provisions of the Occupational Safety and Health Act or for any standards issued by OSHA or other federal, state and local agencies. SWRInstitute, its members, employees and agents expressly disclaim any responsibility whatsoever for damages arising from the use, application or reliance on the recommendations and information contained in this Safety & Health Field Manual.

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COMPETENT PERSON – 1926.32(f)

OSHA defines a Competent Person as one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

This term is used in a number of OSHA’s construction standards. For example, the scaffolding standard in section 1926.451(f)(3) requires that “scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold’s structural integrity.”

GENERAL DUTY CLAUSE

The General Duty Clause, Section 5(a)(1) of the Occupational Safety and Health Act, covers serious hazards for which no specific OSHA standard applies. OSHA can issue citations for violations of the General Duty Clause even if an employer is in compliance with OSHA standards.

The General Duty Clause requires that employers:

Must furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees.

DO:
• Identify all hazards at your worksite, including those that may not be covered by specific OSHA standards.
• Conduct regular safety meetings where employees discuss hazards.
• Implement protocols to prevent accidents as a result of these hazards.
• Monitor all hazards in the workplace and jobsites.
DO:

- Keep entire body inside the man basket when maneuvering it near other structures. Hazards include pinch points and trapping your body between the man lift and solid objects.
- Always use 100% tie off procedures while working in the man basket.
- Always move the man basket to another position instead of over reaching the handrails.
- Keep man lift clear of Lines. Getting caught, hooked, or snared could cause the man lift to tip over as it is moved or raised.
- Always use the man lift on sound, stable surfaces.
- Always avoid soft, muddy ground, sand or unstable gravel.
- Always follow manufacturer’s restriction recommendations regarding wind speeds.

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DON’T:

- Do not stand on the handrails to reach the work area.
- Do not overload the man lift. This can cause it to topple over.
  - Many man lifts are rated ONLY for two (2) employees and fifty (50) lbs. of material, tools and equipment.
  - Do not exceed the man lift load rating by pulling up grout lines, concrete pump lines or other heavy weighted lines.
- Do not work directly under the man basket or close to the equipment – it could move at any timecausing injury.
- Do not move the lift while it is in an extended position.
- Do not put a lateral load on the lift.
- Use a ladder or step stool to extend the reach of the man basket.
BARRICADES – 1926.202 & SIGNS -1926.200

Barricades for protection of employees shall conform to portions of the Manual on Uniform Traffic Control Devices for Streets and Highways, relating to barricades. Consideration must be taken on each jobsite to ensure public safety from hazards including:

- Moving Equipment
- Dust
- Exhaust
- Open Holes
- Traffic
- Debris
- Slip Hazards
- Fires
- Noise
- Trip Hazards
- Electrical Shocks
- Men Working
- Vapors/Fumes
- Falling Debris
- Trenches

One or more of the following types of protection should be used based on the hazards present.
Signage can play a crucial role in helping the public understand how to avoid job site hazards.

Signs shall be visible at all times while work is being performed and shall be promptly removed or covered when the hazards no longer exist.

**DO:**
- Provide pedestrians with a safe, convenient travel path that replicates as nearly as possible the most desirable characteristics of sidewalks or footpaths.

**DON’T:**
- Lead pedestrians into direct conflicts with work site vehicles, equipment, or operations.
- Lead pedestrians into direct conflicts with mainline traffic moving through or around the work site.

**COMPRESSED GAS CYLINDERS – 1926.350**

**HANDLING AND STORING CYLINDERS**
- Oxygen and fuel gas cylinders or other flammable materials must be stored separately. The storage areas should be separated by 20ft or by a wall 5ft high with a ½ hour burn rating.
- Inert gas (e.g., helium, argon, nitrogen) cylinders should be stored separately, and all cylinders should be stored with protective caps, and in the vertical position.
- Cylinders must be secured with a chain or other device so they cannot be knocked over accidentally.
- Protective caps should be kept in place at all times, (especially during transport) unless the cylinder is in use. Cylinders should never be lifted by the safety cap or the valve.
GENERAL PRECAUTIONS

• Any cylinder that is leaking or has a bad valve should be replaced the cylinder tagged or identify of the potential problem.

• Acetylene cylinders that are transported in the horizontal position should be allowed to set for 15 minutes or more in the vertical position before use.

• Fire is a constant danger to the welder. Combustible materials should be 35ft or more away from any welding. A fire watch can be provided by any person who knows how to sound the alarm and use a fire extinguisher. (Dry chemical, Type A, B, C fire extinguishers are best suited and can be used on most fires.)

• Hoses must be used only for the gas or liquid for which they were designed. Green hoses are to be used only for oxygen, and red hoses are to be used only for acetylene or other fuel gases. Hoses should also be kept out of the direct line of sparks. Any leaking or bad joints in gas hoses must be replaced.

DO:

• Move cylinders by tilting and rolling them on their bottom edges.
• Store compressed gas cylinders in an upright position at all times.

DON’T:

• Use a damaged or defective cylinder.
• Use oil, grease, lead or other pipe fitting compounds for any joints or on cylinder valves.
• Use full or empty cylinders as rollers or supports
• Attempt to mix gases in a cylinder
• Plug, remove, or tamper with any pressure relief device. Under normal conditions, these containers will periodically vent the product.
• Expose cylinder to an open flame or to any temperature above 125 degrees Fahrenheit.
• Expose cylinders to continuous dampness or store near salt or other corrosive chemicals or fumes. Corrosion may damage cylinders and cause their valve protection caps to stick.
CONFINED SPACE

CONFINED SPACE – 1926.21(b)(6) and 1910.146(b)

OSHA defines a confined space as an area which:

• Is large enough and so configured that an employee can bodily enter and perform assigned work; and

• Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and

• Is not designed for continuous employee occupancy.

OSHA’s construction standard for confined spaces require employees entering confined or enclosed spaces to be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protection and emergency equipment required.

PERMITS

Under OSHA’s general industry standard, confined spaces are classified as either “non-permit required confined spaces” or “permit required confined spaces.”

The OSHA Standard “Permit Required Confined Spaces” requires that employees be protected from life threatening hazards associated with entry into confined spaces.

A Permit Required Confined Space contains or has the potential to contain one or more of the following hazards:

• Atmospheric hazards: Oxygen enrichment or deficiency, flammable / explosive vapors or gases, or toxic vapors and gases.

• Engulfment hazards: Materials within the space that could engulf entrant(s).

• Internal configuration hazards: Spaces whose internal configuration (inwardly converging walls) could trap or asphyxiate entrant(s).

• Other recognized serious safety or health hazards.

Entry Permit: Written document developed by the employer that allows authorized entry into permitted spaces when conditions of the confined entry standards are met.

Entry Supervisor: The person (employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space, authorizing entry, overseeing entry operations, and terminating entry when required. Entry supervisors may also serve as attendants or entrant provided they have received the required training.
TRAINING

Employees associated with entry into confined spaces are required to be trained before any entry is performed into a confined space. The training addresses hazards associated with the spaces and specific hazards contained in the workplace.

Each employee working inside and outside the confined space shall be adequately trained in rescue and cardiac pulmonary resuscitation.

A qualified attendant shall be posted near the entrance for the duration of the work. The qualified attendant shall be in constant communication with the entrants while the job is in progress. The qualified attendant is responsible for: monitoring atmospheric conditions, personnel entry/exit, potential hazards, sign in log, and emergency assistance as needed.

INSPECTION

Inspections associated with hazards of confined space entry are required prior to and during entry.

Air quality testing shall be performed:
- Prior to every entry when the space is vacant;
- After a 10 minute ventilation period (if ventilation is necessary);
- At least hourly for permit-required confined spaces.
- More frequently, if conditions or suspicions warrant.

In addition, air monitors shall be worn by all persons entering the confined space.

RESCUE AND EMERGENCY SERVICES

Employers shall develop and implement procedures and provide rescue and emergency equipment needed to reach a victim(s) within an appropriate time frame.

DO:
- Have a rescue plan in place before entering a confined space
- Have a competent person determine if entry conditions are acceptable to enter a permit space
- Have a competent person must always serve as attendant or entrant as long as they have received adequate and required training
- Have a written document developed by the employer which authorizing entry into spaced which are permitted and that meet the conditions of confined space
- Perform air quality testing prior to and during entry into confined space
- Wear air monitors when entering confined space
DON'T:
- Enter a confined space without proper training or proper supervision
- Enter a confined space without proper air quality testing and without wearing air monitors
- Enter a confined space without verifying that all employees working both inside and outside of the confined space have had rescue training and are able to perform CPR (cardiac pulmonary resuscitation)
- Enter a confined space without reviewing hazard with attendant and signing log that you are entering

DRINKING WATER – 1926.51

An employer is required to provide an adequate supply of potable water in all places of employment. This applies to offices, field offices, and jobsites.

“Potable water” is defined in Section 1926.51: water which meets the quality standards prescribed in the U.S. Public Health Service Drinking Water Standards, published in 42 CFR Part 721, or water which is approved for drinking purposes by the State or local authority having jurisdiction.

Portable containers used to dispense drinking water shall be capable of being tightly closed and equipped with a tap. Water shall not be dipped from an open container.

DO:
- Have an adequate supply of potable water in all places of employment; office, field office, jobsites.
- Provide single service (one time use) drinking cups. Common drinking cups are prohibited.
- Provide a sanitary container for unused cups and a receptacle for used cups.
- Clearly mark the container used to distribute drinking water as to the nature of its contents and that it is not to be used for any other purpose.

DON'T:
- Use outlets for non-potable water such as water for industrial or firefighting purposes for drinking water.
- Allow cross contamination, open or potential, between a system furnishing potable water and a system furnishing non-potable water.
**ELECTRICAL SAFETY** – 1926.400 to 1926.449

*Electric shock can cause serious injuries and death!*

**GENERAL SAFETY PRECAUTIONS:**
Safety to personnel and safe operation of machines and tools should be uppermost in all considerations of using electricity on the job site. Electrical problems are among the most commonly cited OSHA violations. There are many specific standards that address electrical safety. Refer to the OSHA regulations for specific applications.

**THE OSHA CONSTRUCTION STANDARD SAYS:**
1926.404(b) (1) (ii) Ground-fault circuit interrupters. All 120-volt, single-phase 15 and 20-ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure and which are in use by employees, shall have approved fault circuit interrupters for personnel protection.

Examples of GFI’s

![Ground Fault Circuit Interrupters](image)

Ground Fault Circuit Interrupters. The *GFCI* is a fast acting device that senses a small current leakage to ground. Within 1/40 of a second it shuts off the electricity and “interrupts” the current flow. It provides effective protection against shocks and electrocution. *GFCI’s are required for use on all construction sites and projects.* A few variations of GFCI’s are shown above.

**Extension Cords:** Extension cords are convenient ways to provide power to portable equipment. However, they are often misused, resulting in injuries and expensive OSHA fines. Extension cords may only be used for remodeling, maintenance, repair or demolition of buildings and for temporary, holiday needs.

**Electrical Fires:** On construction sites, one type of an electrical fire that may occur is when portable tools overload a power source. If possible to do safely, immediately disconnect the tool or power cord from the power source; this usually results in the electrical fire being extinguished. An extinguishing agent may also be used to ensure the fire is out.
ELECTRICAL SAFETY

DO:

• Provide adequate overload and short-circuit protection for safe operation. The interrupting capacity of all breakers and fuses must be sufficient to clear the fault current rapidly and without damage to itself.

• Provide cord protection for flexible cords and cables passing through doorways or other pinch points.

• Keep a fire extinguisher on work site at ALL times. The standard procedure for fighting electrical fires is to open the circuit and then apply an approved extinguishing agent. A carbon dioxide (CO2) extinguisher offers the advantage of extinguishing the fire, cooling the apparatus, leaving no residue, and having no adverse affect on the insulation and metal parts; it may be used on live circuits. CO2 should not be used in confined spaces, unless a breathing apparatus is used. A dry chemical extinguisher may be used; however it will leave a residue.

DON’T:

• Use Shop Made Cords with Receptacle Boxes. Among the most common electrical violations is when a multiple receptacle box, designed to be surface mounted, is fitted with a flexible cord and is placed on the floor to provide power to various tools or equipment. These are not permitted and should be taken out of service.

• Use a length or size (wire gauge) extension cord that exceeds the max recommended by tool manufacturer.

• Splice extension cords with electrical tape. Splices should be approved permanent splices.
**EXCAVATION AND TRENCHING** – 1926.650 - 652

Each employee in an excavation shall be protected from cave-ins by an adequate protective system except when:

- Excavations are made entirely in stable rock; or
- Excavations are less than 5ft in depth and examination of the ground by a competent person provides no indication of a potential cave-in.

Some of the protective systems for trenches are:

<table>
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<tr>
<td>• Sloped for stability; or</td>
<td>![Sloped Illustration]</td>
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<tr>
<td>• Cut to create stepped benched grades; or</td>
<td>![Cut Illustration]</td>
</tr>
<tr>
<td>• Supported by a system made with posts, beams, shores or planking and hydraulic jacks; or</td>
<td>![Supported Illustration]</td>
</tr>
<tr>
<td>• Supported by a trench box to protect workers in a trench.</td>
<td>![Trench Box Illustration]</td>
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Additionally, excavated or other materials must be at least 2 feet back from the edge of a trench; and

A safe means of egress shall be provided within 25 feet of workers in a trench.
EXCAVATING AND TRENCHING

DO:
• Provide ladders, stairways, ramps or other means of egress in all trenches that are 4ft deep or more.
• Position means of egress within 25 lateral feet of workers.
• Make sure that structural ramps that are used solely for access or egress from trenches are designed by a competent person.
• Use earthen ramps as a means of egress only if a worker can walk them in an upright position and only if they have been evaluated by a competent person.
• Make sure that protective systems for trenches 20 feet deep or greater have been designed by a registered professional engineer.
• Make sure that trenches are inspected by a competent person prior to entry and after any hazard-increasing event such as a rainstorm, vibration or excessive surcharge loads.
• Keep spoils at least 2ft back from the edge of a trench.
• Call the national “Call Before You Dig” number 811 or locally designated number to locate underground utilities.

DON’T:
• Enter an unprotected trench.

These workers are protected from a cave-in and have safe access and egress from the trench.

These workers are not protected from a cave-in, nor do they have any apparent safe access or egress from the trench.
FALL PROTECTION – 1926.500-503

Section 1926.500-503, outlines the requirements for fall protection. Section 29 CFR 1926.501(b)(1) states that “Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems or personal fall arrest systems.” The standard stresses that employers are required to “determine if the walking/working surfaces on which its employees are to work have the strength and structural integrity to support employees safely.” Employers must also provide guardrail systems, safety net systems, or personal fall arrest systems for employees working at heights above 6ft.

There are two types of fall protection systems. A fall restraint system and a fall arrest system.

- A fall restraint system such as a guardrail and a tie off system keeps you from reaching a “fall” point.
- The fall arrest system STOPS you if you’re falling.
- Refer to The Safety Netting Section below for additional Fall Protection methods.

If you are at risk for falling 6 ft or more you should wear the appropriate fall protection equipment. The entire fall arrest system must be capable of withstanding the tremendous impact forces involved in a fall. The person without protection will free fall 4ft in ½ second and 16ft in 1 second!

FIVE PARTS OF A FALL ARREST SYSTEM

1. Anchorage – 5000 lb. minimum
2. Lifeline
3. Rope Grab
4. Lanyard
5. Full Body Harness

NOTE: The first option for Fall Prevention should be a guard rail or similar type of Fall Protection System. The use of a Personal Fall Arrest or Fall Restraint System should be used in lieu of a Fixed Fall Protection Guarding System.
DO:
- Inspect your equipment daily.
- Look for fraying ropes, crack of other defects in hardware.
- Replace defective equipment.
- Make sure you are attached to a Sound Anchorage.
- Replace any equipment, including ropes, involved in a fall.
- Pick an anchorage point that will support 5000 pounds per worker.
- Tie off above your head. A six foot tall person who ties off at the feet could free-fall as much as 12ft.
- If tying off below the waist is the only option, be sure to use a lanyard designed for the greater fall distance.
- Use the shortest lanyard possible. The shorter the tie-off, the shorter the fall. Place your anchorage directly above your work area to avoid potential swing fall hazards

DON'T:
- Use equipment if there is any doubt about the safety of the equipment.
- Tie a knot in the lanyard. This will reduce its strength.
- Use pipes, electrical conduits, light fixtures, or guardrails as anchor points.
- Use any lanyards without double-action snap hooks.
- Join multiple lanyards together to reach an anchorage.
- Allow more than one worker to tie-off to the same anchorage unless it is designed and approved by an engineer.

FIRE EXTINGUISHERS – 1926.150

TYPES OF FIRE EXTINGUISHERS:
- Water – Filled with water and pressurized air.
- Carbon Dioxide – Contains a non-flammable gas extinguishing agent.
- Dry Chemical – Multipurpose, contain a dry powder extinguishing agent.

CHOOSING THE RIGHT FIRE EXTINGUISHER AND THEIR CLASSES:
CLASS A: Class A fires involve common combustibles such as wood, paper, cloth, rubber, trash and plastics. They are common in typical commercial and home settings, but can occur anywhere these types of materials are found.

CLASS B: Class B fires involve flammable liquids’ gases, solvents, oil, gasoline, paint, lacquers, tars and other synthetic or oil-based products. Class B fires often spread rapidly and, unless properly secured, can re-flash after the flames are extinguished.

CLASS C: Class C fires involve energized electrical equipment, such as wiring, controls, motors, data processing panels or appliances. They can be caused by a spark, power surge or short circuit and typically occur in locations that are difficult to reach and see.

NOTE: Although ABC and BC Dry Chemical extinguishers can control a fire involving electronic equipment, the National Fire Code (NFPA 75-1999 edition), Section 6-3-2, specifically advises against dry-chemical extinguishers for fires involving computers or other delicate electronic equipment due to the potential damage from residues.

CLASS D: Class D fires involve combustible metals such as magnesium and sodium. Combustible metal fires are unique industrial hazards which require special dry powder agents.

CLASS K: Class K fires involve combustible cooking media such as oils and grease commonly found in commercial kitchens. The new cooking media formulations used form commercial food preparation require a special wet chemical extinguishing agent that is specially suited for extinguishing and suppressing these extremely hot fires that have the ability to re-flash.

FIRE EXTINGUISHERS ESSENTIALS:

- All fire extinguishers should be inspected monthly by a responsible person.
- All fire extinguishers should be serviced by a qualified technician on a yearly basis.
- Fire extinguishers have operating instructions listed in the name plate; familiarize yourself with them.
- Fire extinguishers of the proper type and size for the exposure shall be readily available.
- Be familiar with the location of fire extinguishers on the job site.
- When fueling equipment, always have a fire extinguishers close by.
- Most fire extinguishers operate using the P.A.S.S. method:
  
  P – Pull the locking pin.
  A – Aim at the base of the flames.
  S – Squeeze the handle.
  S – Sweep back and forth over the burning area.
DO:
• Know the locations of extinguishers on the job site.

DON’T:
• Use water agents on grease and oil fires or use dry chemical extinguishers on electrical devices or anything with metal because it is corrosive.
• Aim at the flames of the fire.
• Stand too close to the fire or even plan to walk on those extinguished areas.
• Put them on areas where fire is most likely to happen making them unreachable.
• Leave them on corridors or any anything that is highly magnetic.
• Violate the standards because even with their presence you might still be at risk or more prone to the dangers of fire.
• Play with the device or even play with its substances use because of the possibility of injuring you.

FIRST AID – 1926.50

The OSHA standard states:
• The employer shall ensure the availability of medical personnel for advice and consultation on matters of occupational health.
• Provisions shall be made prior to commencement of the project for prompt medical attention in case of serious injury.
• In the absence of an infirmary, clinic, hospital, or physician, that is reasonably accessible in terms of time and distance to the worksite, which is available for the treatment of injured employees, a person who has a valid certificate in first-aid training from the U.S. Bureau of Mines, the American Red Cross, or equivalent training that can be verified by documentary evidence, shall be available at the worksite to render first aid.
• First aid supplies shall be easily accessible when required.
• The contents of the first aid kit shall be placed in a weatherproof container with individual sealed packages for each type of item, and shall be checked by the employer before being sent out on each job and at least weekly on each job to ensure that the expended items are replaced.
• Proper equipment for prompt transportation of the injured person to a physician or hospital, or a communication system for contacting necessary ambulance service, shall be provided.
• In areas where 911 is not available, the telephone numbers of the physicians, hospitals, or ambulances shall be conspicuously posted.
Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.

**DO:**
- Make sure emergency numbers are posted by phones.
- Know the location of the closest emergency medical facility.
- Know the location of the nearest first aid kit and know how to use it.
- Try to stop the flow of bleeding until medical help arrives. For deep cuts, elevate the wound while you apply pressure. For more serious wounds, push on the pressure points on the inside of the upper arm and crease of the groin.
- Be aware that a seriously injured person will frequently go into shock. This can be fatal. While you are waiting for help, lay the person down, cover and raise the feet above heart level.
- Place an amputated the limb or body part in a bag with ice and send it to the hospital with the victim.
- Keep the person still and wait for emergency help.
- Flush eyes splashed by chemicals for at least 15 minutes. Then close the eyes, cover them and get medical help. If something is embedded in the eye, keep the person calm until help arrives. Note: Please see Material Safety Data Sheet (“MSDS”).
- Cool burns with cool (not cold) running water or a cool water compress (wet towel or handkerchief). Elevate burned limbs.

**DON’T:**
- Touch blood or other bodily fluids without protective gloves.
- Provide anything to drink to a person in shock.
- Move the victim unless absolutely necessary until you are sure what the injury is and first aid has been rendered.
- Move a person with broken bones. The wrong move can cause serious injury - even death.
- Use ice, lotion or ointment on a burn.
HAZARD COMMUNICATION

HAZARD COMMUNICATION (HAZ COM) – 1926.59
(identical to 1910.1200)

The purpose of OSHA’s hazard communication standard is to ensure that employees understand the hazards of the chemicals they work with, know how to safely use those chemicals and know what protective measures are available to prevent adverse effects from occurring.

A Material Safety Data Sheet (MSDS) provides information the manufacturer of a product considers necessary for you to determine what chemicals are in it and what steps to take to protect yourself when using the product.

MSDSs must be readily accessible to employees at all applicable work locations. MSDSs provide the following information:

**Chemical Identity:** This uses the name that is on the label. This section also tells you who makes or sells it and where they’re located. It may also say when the MSDS was prepared.

**Hazardous Ingredients/Identity.** This area lists all hazardous ingredients which have been determined to be health hazards and which compromise 1% or greater of the composition or any carcinogenic ingredients which comprise 0.1% of the composition will also be listed.

**Physical Data.** This section explains the chemical’s normal appearance and odor. Anything different should alert you to possible danger. This also lists all other physical properties of the product: Boiling point, melting point, vapor pressure and density, etc.

**Fire and Explosion Data.** This section gives you the fire hazard risk. Flash point is the minimum temperature at which a flammable liquid’s vapors could catch fire if they contact a spark or other ignition source. The lower the number, the higher the risk. Flammable limits are the minimum and maximum amounts of vapor in the air (%) that can catch fire. It also gives you information on how to put out the fire.

**Reactivity Data.** This tells you what could happen if this particular chemical is combined with other specific chemicals or air or water. This section also tells if the chemical is stable or unstable and/or if it is incompatible with any other chemicals.

**Health Hazard Data.** Tells how this chemical could affect your health – acute or chronic. Acute happens immediately, for example, if you spill acid on your skin it burns. A chronic injury occurs over time – usually years. For example, inhalation of a chemical day after day, year after year may lead to respiratory problems. Also shown in this section are signs and symptoms of exposure and medical conditions aggravated by exposure. Chemicals can only enter your body one of three ways: inhaling, swallowing and through the skin.
Precautions for Safe Handling and Use. Tells you what to do if there is a spill.

Control Measures. This section tells you how to protect yourself when you work with the chemical. What personal protective equipment is required & when to wear it. This includes: type of respirator, type of protective gloves, eye protection, and other protective clothing or equipment.

HAZCOM SIGNS TO LOOK FOR

DO:
• Use and handle all chemicals in accordance with manufacturers label and within Federal, State and Local regulations.
• Discontinue use of chemicals if wind speeds or weather conditions affect the safety of workers or the public.
• Use MSDS sheets for any chemical being used.
• Use adequate personal protective equipment.
• Remember that employees have both a need and a right to know the hazards and the identities of the chemicals they are exposed to when working.
• Make sure you are properly trained in each chemical that you use.
• Make sure all containers are labeled or properly disposed of.

DON’T:
• Have any eye or skin contact with chemicals.
• Use or store chemicals that are not labeled.
• Use chemicals without proper training and protection.
HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE

HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE – 1926.65 (identical to 1910.120)

OSHA’s Hazardous Waste Operations and Emergency Response (HAZWOPER) standard covers clean up operations or emergency response operations for releases of hazardous substances. A hazardous substance means, by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful, is likely to cause death or injury. Hazardous Materials (HAZ MAT) are regulated by several government agencies including the Environmental Protection Agency (EPA), the Department of Transportation (DOT) and OSHA.

Additional information about hazardous materials is covered under the Hazard Communication (HAZ COM) section of this handbook. Methods for protection against exposure to hazardous materials are covered under the Personal Protective Equipment (PPE) section of this handbook. The transportation of hazardous materials is not covered in this handbook.

The clean up and disposal of hazardous materials requires special training and is strictly regulated.

DO:

• Assure that general site workers engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of HAZWOPER training.
• Develop a written safety and health program for their employees involved in hazardous waste operation. The requirements of the safety and health program are extensive. Refer to 29 CFR 1926.65 for specific HAZWOPER requirements.
• Always have the Material Safety Data Sheet (“MSDS”) available for materials you are using. They may be required in case of an emergency.
• Follow emergency procedures or call 911 in case of an accidental release.

DON’T:

• Use any hazardous material without proper training.
• Attempt to clean up hazardous materials without proper training.
HEARING PROTECTION/OCCUPATIONAL NOISE EXPOSURE – 1926.52

- Exposure to high noise levels can cause hearing loss or impairment.
- There is no cure for noise-induced hearing loss.
- Specifically designed protection is required.
- Waxed cotton, foam, or fiberglass wool ear plugs are self-forming and work as well as most molded ear plugs when inserted properly.
- Plain cotton is ineffective as protection against hazardous noise.
- Earmuffs need to make a perfect seal around the ear to be effective.
- Noise levels of many construction operations frequently exceed 90 dBA.
- When workers are subjected to sound levels listed in the below table, they must wear hearing protection:

<table>
<thead>
<tr>
<th>Sound level (dBA)</th>
<th>Time per day (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>8</td>
</tr>
<tr>
<td>95</td>
<td>4</td>
</tr>
<tr>
<td>100</td>
<td>2</td>
</tr>
<tr>
<td>105</td>
<td>1</td>
</tr>
<tr>
<td>110</td>
<td>½</td>
</tr>
<tr>
<td>115</td>
<td>¼ or less</td>
</tr>
</tbody>
</table>

DO:
- Wear hearing protection when sound levels exceed 90 dBA.
- Train workers to properly use hearing protection devices.

DON’T:
- Reuse disposable ear plugs.
- Use earmuffs as hearing protection if glasses, sideburns, long hair, or facial movements prevent a perfect seal.
HISTOPLASMOSIS

- Histoplasmosis [his-toh-plaz-MOH-sis] is a fungal infection that varies in symptoms and seriousness. Histoplasmosis is caused by Histoplasma capsulatum, a fungus. This fungus comes from the droppings of birds and bats. The fungus can become airborne when disturbed by a variety of construction activities. This health risk can be significant and therefore it is important to prevent exposure to Histoplasmosis.

![Map showing the distribution of histoplasmosis worldwide](image)

**The distribution of histoplasmosis throughout the world (marked white).**

- The fungus produces spores that can be inhaled when they get into the air. Spores are hardy forms of the fungus that can live in the environment for a long time.

- Histoplasmosis usually affects the lungs and causes a short-term, treatable lung infection. When it affects other parts of the body, it is called disseminated histoplasmosis, and can be fatal. Acute histoplasmosis can also spread from the lungs and lead to the disseminated form, especially in persons with weakened immune systems.

![Chest X-ray of a patient with acute pulmonary histoplasmosis](image)
• The histoplasmosis fungus lives in soil, especially soil that is enriched with bat or bird droppings.

• People get histoplasmosis when they breathe in dust that contains the fungus.

• Symptoms of acute disease usually appear in 5 to 18 days after exposure and are tiredness, fever, chills, chest pains, and a dry cough. The chronic lung infection is like tuberculosis and occurs mostly in persons who already have lung disease.

• Histoplasmosis is treatable with fungus-killing medicines.

• The disease does not spread from person to person.

• To prevent histoplasmosis:
  • Avoid exposure to dust from soil that may be contaminated.
  • Avoid disturbing accumulations of bat or bird droppings, as often found in open air clock and bell towers.
  • Have contaminated areas abated prior to working in vicinity.
  • Wear proper personal protective equipment and disposable clothing when working in high-risk areas.

DO:
• Consult the “Histoplasmosis: Protecting Workers at Risk” document prepared by the National Institute for Occupational Safety and Health/National Center for Infection Diseases* for more information on work practices and personal protective equipment that will reduce the risk of infection.
• Have contaminated areas abated to create a safe work atmosphere.

DON’T:
• Work in an area with visible accumulation of bird or bat droppings without proper training and protection.

ADDITIONAL INFORMATION:
• [http://www.dhpe.org/infect/histo.html](http://www.dhpe.org/infect/histo.html)
HOUSEKEEPING

The OSHA standard states:

- During the course of construction, alteration, or repairs, form and scrap lumber with protruding nails, and all other debris, shall be kept cleared from work areas, passageways, and stairs, in and around buildings or other structures.

- Combustible scrap and debris shall be removed at regular intervals during the course of construction. Safe means shall be provided to facilitate such removal.

- Containers shall be provided for the collection and separation of waste, trash, oily and used rags, and other refuse. Containers used for garbage and other oily, flammable, or hazardous wastes, such as caustics, acids, harmful dusts, etc. shall be equipped with covers. Garbage and other waste shall be disposed of at frequent and regular intervals.

DO:

- Secure tools, materials and any other object that can become a falling or dropping hazard.

- Verify toeboards are installed properly to prevent kicking materials off the scaffold or swingstage.

- Regularly inspect the jobsite for hazards in material storage, debris buildup, tripping hazards or other workplace dangers.

- Identify the employees who will pick up waste and debris and define clean-up intervals.

- Verify that signs, signals and barricades are intact and legible.

DON'T:

- Store materials such that they will obstruct exits.

- Allow debris, trash, ice, snow, slippery or other materials to build up on scaffold decks or swing stage platforms.

- Allow stacked material to slide, fall or collapse.

- Store excess material or equipment onsite if avoidable.

- Walk past a hazard. Correct it immediately or notify a qualified person to correct it.
ILLUMINATION (LIGHTING) – 1926.26

Poor lighting on construction sites creates a hazard to employees and civilians and increases the potential for accidents. All means of access and walkways leading to working areas in addition to the working areas themselves must be adequately illuminated.

TEMPORARY LIGHTS SHALL MEET THE FOLLOWING REQUIREMENTS:

- Lights shall be equipped with guards to prevent accidental contact with the bulb (excludes guards that are not required when the construction of the reflector is such that the bulb is deeply recessed).

- Temporary lights shall be equipped with heavy duty electric cords with connections and insulation maintained in safe condition. Temporary lights shall not be suspended by their electric cords. String lights are designed for this means and suspension.

- Splices which have insulation equal to that of the cable are permitted.

- Cords shall be kept clear of working spaces and walkways or other locations in which they are readily exposed to damage or wear.

- Exposed non-current-carrying metal parts of temporary lights furnished by the employer shall be grounded either through a third wire in the cable containing the circuit conductors or through a separate wire which is grounded at the source of the current.

DO:

- Arrange temporary lighting stringers in a way that does not overload branch circuits. Each branch current must be equipped with over current protection of capacity not exceeding the rated current carrying capacity of the cord used.

DON’T:

- Permit employees to enter dark holds, compartments, decks or other spaces without a flashlight or other portable light.

- Use matches or open flames.
The following requirements apply to all ladders:

- A double-cleated ladder or two or more ladders must be provided when ladders are the only way to enter or exit a work area having 25 or more employees, or when a ladder serves simultaneous two-way traffic.
- Ladder rungs, cleats, and steps must be parallel, level, and uniformly spaced when the ladder is in position for use.
- A ladder must have nonconductive side rails if they are used where the worker or the ladder could contact energized electrical equipment.
- Portable and fixed ladders with structural defects such as broken or missing rungs, cleats or steps, broken or split rails, or corroded components shall be withdrawn from service immediately. They must be tagged “Do Not Use” or identified as defective. Repairs must restore ladder to its original design criteria.
- The ladder must be capable of supporting your weight and the weight of any material you will be using.

The following diagrams illustrate the proper ways to set up a ladder & choose the correct ladder for the job:

Ladder should extend 3 feet from above landing.
<table>
<thead>
<tr>
<th>RATING</th>
<th>WORK LOAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra heavy duty (1-A)</td>
<td>300 pounds</td>
</tr>
<tr>
<td>Heavy duty (1)</td>
<td>250 pounds</td>
</tr>
<tr>
<td>Medium duty (II)</td>
<td>225 pounds</td>
</tr>
<tr>
<td>Light duty (III)</td>
<td>200 pounds</td>
</tr>
</tbody>
</table>

**DO:**
- Set up the ladder on the ground floor, or other level stable surface.
- Take your time and climb one rung at a time while using 3 points of contact. 2 feet and 1 hand at all times or 2 hands and 1 foot when climbing.
- Climb down and move the ladder to get proper access to the work area. Keep your belt buckle between the rails.
- Climb all ladders facing the rungs. Use a bucket or other means to lift objects to the work area.
- Look overhead before placing a ladder. Pay special attention to power lines and other electrical hazards.
- Block off or lock the area around the ladder to warn others of your presence.

**DON’T:**
- Place a ladder on unstable surfaces such as boxes, carts, tables, etc.
- Hurry up a ladder to complete a task.
- Overreach beyond the side rails to conduct work.
- Turn your back to the ladder at any time.
- Carry heavy objects up the ladder.
- Assume that the area above the ladder is clear of hazards.
- Tie or fasten ladders together to create longer sections unless they are specifically designed for such use.
LEAD – 1926.62

Lead is hazardous when it gets into the bloodstream where it can move around the body. High exposures over a short period of time or lower exposures spread out over longer time periods can cause lead poisoning. Lead can damage the brain and nervous system, kidneys, and reproductive systems. Lead also contributes to high blood pressure. Most of the absorbed lead is eventually stored in the bones where it may stay for decades. Under certain conditions, the lead stored in the bone may leach slowly into the bloodstream. The early effects of lead poisoning are not specific and resemble the flu symptoms. Lead poisoning is preventable. Many of the health problems caused are reversible if exposure is eliminated or reduced.

Engineering and work practice controls are required to minimize lead exposure. Always follow the compliance program set in place by the employer with regards to preventing prolonged lead exposure.

DO:
• Wash hands and face with soap and water before eating or drinking
• Use showers if provided by employer before leaving a job site. If showers are not provided wash hands, arms and face before returning to street clothes.
• Change into clean clothes and shoes at the job site in designated area before leaving job site. Keep dirty work clothes and shoes separate from clean street clothes.
• Do what you can to lower the amount of lead you breathe in. Use wet cleaning methods. Wet wipe surfaces and wet clean or HEPA vacuum the work area daily.
• Use a respirator if instructed by employer to minimize lead inhalation.
• Contact employer if symptoms of lead poisoning exist.

DON’T:
• Eat, drink, or smoke in the work area. Move to an employer-designated clean area for lunch or breaks.
• Forget to cover work area to keep dust particles/paint chips from settling on surfaces or seeping in to ground water.

Exposure to lead in the waterproofing and restoration industry will typically come from the operation of paint removal as shown in this photo.
The OSHA standard states that the employer is responsible for requiring the wearing of appropriate personal protective equipment in all operations where there is an exposure to hazardous conditions or where this part indicates the need for using such equipment to reduce the hazards to the employees.

**Head Protection:** The hardhat must be used in any work operations, and must meet American National Standards Institute (ANSI) Z89.1 1986 specifications for protection. Faceshields that attach to hardhats provide added protection. A combination that leaves no gap between the shield and the brim of the cap is best. The faceshield must also meet ANSI Z87.1 1989 specifications.

**Eye Protection:** Safety glasses should be standard safety gear when no faceshield is worn, and must meet ANSI Z87.1 1989. Both safety glasses/goggles and a faceshield are advisable.

**Foot Protection:** Footwear worn during site activities are to include leather work boots and rubber boots (or must meet the specific site requirements). Protection against liquid hazardous chemicals requires a boot of neoprene, PVC, butyl rubber, to some other chemical resistant material. With chemical resistant boots, the pant leg should be outside and over the boots to prevent liquids from entering.

Protective footwear should comply with the American Society of Testing Materials (ASTM) Standards: F2412-05 (Standard Test Methods for Foot Protection) and F2413-05 (Standard Specification for Performance Requirements for Foot Protection) in order to provide both impact and compression protection.

**Ear Protection:** Hearing protection is required starting at 90 decibels, regardless of the duration. If a decibel meter is not available, use hearing protection when you have to raise your voice to talk to someone at a normal talking distance. Common forms of hearing protection are ear plugs, and ear muffs.

**Hand Protection – Gloves:** Gloves must resist puncturing and tearing as well as provide the necessary chemical resistance. The type of glove used should be appropriately suited for the specific task.
Body Protection: Clothing to protect the body should consist at a minimum of long work pants and a sleeved shirt. When hazardous liquids, gases, vapors or debris are present, the level of protection needed increases. This may include garments of Tyvek, Nomex, or PVC.

DO:
- Maintain Personal Protective Equipment (PPE) in a clean sanitary, serviceable condition.
- Make sure to have PPE meet applicable recognized performance standards, such as ANSI, National Institute for Occupational Safety and Health, Mine Safety and Health Administration, etc.

DON’T:
- Use PPE in lieu of sound engineering and manufacturing practices
- Use PPE without proper training in its use and limitations.
- Use damaged or inferior equipment.

POWDER ACTUATED TOOLS – 1926.302(e)

Before employees are permitted to use powder actuated tools, they shall have been thoroughly instructed by a competent person. Only employees that have been trained in the operation of the particular tool in use shall be allowed to operate a powder actuated tool.

DO:
- Test powder actuated tools each day before loading to insure that the safety devices are in proper working condition. Any tool found not to be in proper working order shall be immediately removed from service until repairs are made.
- Use tools with the type of shield or muzzle guard appropriate for a particular use.
- Wear Personal Protective Equipment (PPE), such as eye and hearing protection, when using powder actuated fastening tools.
- Before using a tool, inspect it to determine that it is clean, that all moving parts operate freely and that the barrel is free from obstructions.

DON’T:
- Point the tool, whether loaded or not, at any person.
- Load the tool until just prior to the intended firing time.
- Leave tools or powder charges unattended in places where they would be available to unauthorized persons.
• Use a powder actuated tool in an explosive or flammable atmosphere.

• Drive fasteners into very hard or brittle materials such as cast iron, glazed tile, surfaced hardened steel, glass block, live rock, face brick or hollow tile.

• Drive fasteners into soft materials unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying missile hazard on the opposite side.

• Do not drive fasteners into an existing hole unless a positive guide is used to secure accurate alignment.

• Attempt to drive a fastener into a spalled area caused by an unsatisfactory fastening.

POWER TOOLS – 1926.302

Power tools include electric, fuel-powered, hydraulic, pneumatic, and powder actuated tools. Always follow the manufacturer’s instructions on proper use, safety precautions, inspection and troubleshooting procedures. Maintain power tools in a safe condition.

PROPER USE:

• Only trained employees are allowed to operate power tools.

• All power tools must be tested daily before use and all defects must be corrected.

• Employees using hand and power tools who are exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, mists, vapors, or gases must wear the particular personal protective equipment necessary to protect them from the hazard.

• Never carry a tool by the cord.

• Never yank the cord to disconnect it from the receptacle.

• Keep cords away from heat, oil, and sharp edges (including the cutting surface of a power saw or drill).

• Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits, etc.

• Avoid accidental starting. Do not hold fingers on the switch button while carrying a plugged-in tool.

• Use gloves and appropriate safety footwear when using electric tools.

• Store electric tools in a dry place when not in use.
• Do not use electric tools in damp or wet locations unless they are approved for that purpose.
• Keep work areas well lighted when operating electric tools.
• Ensure that cords from electric tools do not present a tripping hazard.
• Remove all damaged portable electric tools from use and tag them: “Do Not Use.”
• Use Double-Insulated Tools.

DO:
• Use tools with the correct shield, guard or attachment recommended by the manufacturer.
• Follow manufacturer’s instructions for proper voltage or safe operating pressure.
• Remove from service any tool found not in proper working order, or that develops a defect during use.
• Ground electric tools appropriately.
• Inspect tools at regular intervals and repair them in accordance with the manufacturer’s specifications.
• Keep labels showing safe use instructions and safety warnings properly affixed to tools and legible.

DON’T:
• Load tools until immediately before use.
• Leave loaded tools unattended.
• Use tools in explosive or flammable environments.
• Override, damage or disable operating switches or safety devices
• Lower or hoist tools using hoses or electrical cord.
• Use defective equipment until properly repaired.

POWERED PLATFORMS – 1910.66

This section covers powered platform installations permanently dedicated to interior or exterior building maintenance of a specific structure or group of structures. This section does not apply to suspended scaffolds (swinging scaffolds) used to service buildings on a temporary basis or to suspended scaffolds used for construction work.

The following are some of the key requirements from the OSHA standard:
• Building owners are required to provide a letter informing that the installation meets the requirements for design, installation, inspections and maintenance.
• Related building supporting structures (Davit Pedestals & Tie Backs) shall undergo periodic inspection by a competent person at intervals not exceeding 12 months.

• The building owner shall keep a certification record of each periodic inspection and test required. The certification record shall include the date of the inspection, the signature of the person who performed the inspection, and the number, or other identifier, of the building support structure and equipment which was inspected. This certification record shall be kept readily available for review by the Assistant Secretary of Labor or the Assistant Secretary’s representative and by the employer.

• Working platforms and their components shall be inspected by the employer for visible defects before every use and after each occurrence which could affect the platform’s structural integrity.

• “Maintenance inspections and tests.” A maintenance inspection and, where necessary, a test shall be made of each platform installation every 30 days, or where the work cycle is less than 30 days such inspection and/or test shall be made prior to each work cycle. This inspection and test shall follow procedures recommended by the manufacturer, and shall be made by a competent person.

• The building owner shall keep a certification record of each maintenance inspection and test performed. The certification record shall include the date of the inspection and test, the signature of the person who performed the inspection and/or test, and an identifier for the platform installation which was inspected. The certification record shall be kept readily available for review by the Assistant Secretary of Labor or the Assistant Secretary’s representative and by the employer.

DO:
• Prior to using the house rig, get a letter from the owner assuring system compliance for design, installation, inspection and maintenance.

• Make sure the house rig has been inspected in the last thirty days and every thirty days during the work.

• Make sure any Davit systems have been inspected and where necessary tested within the last twelve (12) months.

DON’T:
• Do not use a house rig without the proper certifications, inspections and maintenance.

• Do not use Davits and without assurance that the system has past an inspection or test within the last twelve (12) months.
When work has potential to create harmful dusts, fog, fumes, mists, gases, smoke, spray, or vapors, the primary objective is to reduce or eliminate the atmospheric contamination by use of engineering control measures. When engineering controls are not feasible, appropriate respiratory protection must be used.

Where respirators are necessary to protect the health of the employee or whenever respirators are required by the employer, the employer must establish and implement a written respiratory protection program with worksite-specific procedures. The written program must include the following:

- Procedures for selecting respirators for use in the workplace;
- Medical evaluation of employees required to use respirators;
- Fit testing procedures for tight-fitting respirators;
- Procedures for proper use in routine and emergency situations;
- Procedures and schedules for cleaning, disinfecting, storing, inspecting, and otherwise maintaining respirators;
- Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators;
- Training of employees in the respiratory hazards to which they are potentially exposed;
- Training of employees in the proper use and limitations of respirators;
- Determination of contaminants present and appropriate protection required; Cartridge-type respirators require specific cartridges depending on atmospheric conditions present;
- Procedures for regularly evaluating the effectiveness of the program.
SAFETY NETTING – 1926.502(c)

Safety nets are one of several acceptable means of providing fall protection.

PROPER USE:

- Safety nets must be installed as close as practicable under the surface on which employees are working, but in no case more than 30 ft below.
- When nets are used on bridges, the potential fall area must be unobstructed.
- Safety nets must extend outward from the outermost projection of the work surface as follows:

<table>
<thead>
<tr>
<th>Vertical distance from working level to horizontal plane of net</th>
<th>Minimum required horizontal distance of outer edge of net from the edge of the working surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 5 feet</td>
<td>8 feet</td>
</tr>
<tr>
<td>5 to 10 feet</td>
<td>10 feet</td>
</tr>
<tr>
<td>More than 10 feet</td>
<td>13 feet</td>
</tr>
</tbody>
</table>

DO:

- Install safety nets with sufficient clearance to prevent contact with the surface or structures under them when subjected to an impact force equal to the required drop test.
- Verify that the maximum mesh size must not exceed 6 inches by 6 inches. All mesh crossings must be secured to prevent enlargement of the mesh opening, which must be no longer than 6 inches, measured center-to-center.
- Use safety nets or sections thereof that have a border rope for webbing with a minimum breaking strength of 5,000 pounds.
- Use connections between safety net panels that are as strong as integral net components and spaced not more than 6 inches apart.
- Use safety nets that when installed are capable of absorbing an impact force equal to the drop test described in OSHA 1926.502(c)(4)(i).
- Perform the drop-test at the job site after initial installation and before being used, whenever nets are relocated, after major repairs, and at 6-month intervals if left in one place.
- Certify the net if it is unreasonable to perform the drop-test. The employer or a designated competent person must certify that the net and net installation have sufficient clearance and impact absorption by preparing a certification record prior to the net being used as a fall protection system. The certification must include:
  - Identification of the net and net installation.
  - Date that it was determined that the net and net installation were in compliance.
SAFETY NETTING

- Signature of the person making the determination and certification.
- The most recent certification record for each net and net installation must be available at the jobsite for inspection.
- Inspect safety nets for wear, damage, and other deterioration at least once a week, and after any occurrence which could affect the integrity of the system.
- Remove objects such as scrap pieces, equipment, and tools which have fallen into the safety net as soon as possible and at least before the next work shift.
- Instruct crane operators on net locations to reduce the hazard of entangling a moving load in net hardware, cables or safety nets.

DON’T:
- Use defective nets. Remove defective components from service.
- Guess at safety net strength – consult the net manufacturer or fall protection professional if in doubt.
SCAFFOLDS – 1926.451 to 1926.454

Scaffold types and requirements vary greatly from adjustable suspension scaffolds to window jack scaffolds. Consult sections 1926.451 and 1926.452 for exact requirements of each type. Two of the most common types of scaffold are supported scaffolds (built-up) and suspended scaffolds (swing stage).

GENERAL REQUIREMENTS:

• Scaffolds and their components must be capable of supporting at least 4 times the maximum rated load without failure.

• Scaffolds must be designed by a qualified person and constructed and loaded according to that design.

• Every work shift should have a Competent Person who can identify existing and potential hazards and has the authority to take prompt corrective action to eliminate or control the hazard.

• Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold’s structural integrity.

• Scaffolds shall be erected, moved, dismantled, or altered only under the supervision and direction of a competent person qualified in scaffold erection, moving, dismantling or alteration. Such activities shall be performed only by experienced and trained employees selected for such work by the competent person.

• Each employee on a scaffold more than 10ft (3.1 m) above a lower level shall be protected from falling to that lower level by the use of personal fall arrest systems or guardrail systems.

• Each employee who performs work while on a scaffold shall be trained by a qualified person to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards.

• When scaffold platforms are more than 2ft above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers (scaffold stairways/towers), stairway-type ladders (such as ladder stands), ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface shall be used. Cross braces shall not be used as a means of access.
SUPPORT SCAFFOLDS

A supported scaffold is defined as one or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts, frames or similar rigid supports.

SUSPENDED SCAFFOLDS

Suspended scaffolds are platforms suspended by ropes, or other non-rigid means, from an overhead structure. Two-point adjustable suspension scaffolds, also known as swing-stage scaffolds, are perhaps the most common type of suspended scaffold.

The illustration below outlines the counterweight formula for suspended scaffolds:

\[
W = \frac{(L \times a)^4}{b}
\]

- \( W \) = Counterweight
- \( L \) = Load capacity of hoist
- \( a \) = Arm reach
- \( b \) = Backspan distance (Distance between the fulcrum point and the center of the counterweights)
- \( 4 \) = Safety factor (4:1)

Note: Counterweights must be a non-flowable material, and they must be attached to the outrigger beam. Always use flat tieback wire ropes capable of holding the full load.
DO:

• Consult the Codes of Safe Practice published by the Scaffold Industry Association (www.Scaffold.org) and Scaffolding, Shoring and Forming Institute (www.SSFI.org) for guidelines on erection of and safe use of various scaffold types.

• Follow all manufacturers’ instructions and take particular care when combining equipment from multiple manufacturers.

• Inspect the equipment before each use. Do consult your scaffold supplier if in doubt about the equipment.

• Survey the job site for hazards such as exposed electrical wires, obstructions that can overload a suspended scaffold or inadequate or missing tiebacks on rigging devices. Correct these hazards prior to installing or using suspended scaffolds.

• Always wear fall protection.

DON’T:

• Misuse or abuse scaffold equipment.

• Overload scaffold equipment.

• Disable, destroy, modify or remove safety devices.

• Erect, dismantle or alter scaffold systems unless under the supervision of a competent person.

• Take chances. Always wear fall protection equipment and consult your scaffold supplier if unsure about scaffold use.

SILICA – 1926.55

Silicosis is caused by exposure to respirable crystalline silica dust. Crystalline silica is a basic component of soil, sand, granite, and most other types of rock, and it is used as an abrasive blasting agent. Silicosis is a progressive, disabling, and often fatal lung disease. Cigarette smoking adds to the lung damage caused by silica.

EFFECTS OF SILICOSIS

• Lung cancer – Silica has been classified as a human lung carcinogen.

• Bronchitis/Chronic Obstructive Pulmonary Disorder.

• Tuberculosis – Silicosis makes an individual more susceptible to Tuberculosis (“TB”).

• Scleroderma – a disease affecting skin, blood vessels, joints and skeletal muscles.
SILICA

• Possible renal disease.

SYMPTOMS OF SILENOSIS
• Shortness of breath; possible fever.
• Fatigue; loss of appetite.
• Chest pain; dry, nonproductive cough.
• Respiratory failure, which may eventually lead to death.

SOURCES OF EXPOSURE
• Sandblasting for surface preparation.
• Crushing and drilling rock and concrete.
• Masonry and concrete work (e.g., building and road construction and repair).
• Mining/tunneling; demolition work.
• Cement and asphalt pavement manufacturing.

PERMISSIBLE EXPOSURE LIMIT (PEL) This is the airborne concentration of silica above which employees can not be exposed.

PREVENTION OF SILENOSIS

DO:
• Evaluate engineering controls such as dust collection and wet methods to limit the concentrations and exposure to crystalline silica in order to meet the Permissible Exposure Limit (PEL).
• Use water sprays, wet methods for cutting, chipping, drilling, sawing, grinding, etc.
• Substitute non-crystalline silica for blasting material.
• Use respirators approved for protection against silica; if sandblasting, use abrasive blasting respirators.
• Wash hands and face before eating, drinking or smoking away from exposure area.

DON'T:
• Eat, drink or smoke near crystalline silica dust.
• Use compressed air for cleaning surfaces.
• Start removing, cutting, sanding, grinding or disturbing in any fashion, a location that has been determined to containing any level of exposure to crystalline silica without a proper assessment, engineering control measures and proper personal protection to meet the PEL.
STAIRS – 1926.1052

Stairs are a leading source of injuries and fatalities among construction workers each year. Work on and around stairways is hazardous. The following general requirements apply to all stairways used in construction, alteration, repair (including painting and decorating), and demolition of work sites.

TEMPORARY STAIRCASE

• A stairway or ladder must be provided at all worker points of access where there is a break in elevation of 19 inches (48 cm) or more and no ramp, runway, embankment, or personnel hoist is provided.

• When there is only a single point of access between levels, it must be kept clear to permit free passage by workers. If free passage becomes restricted, a second point of access must be provided and used.

• Where there are more than two points of access between levels, at least one point of access must be kept clear.

• All stairway systems required by these rules must be installed and all duties required by the stairway must be performed before employees begin work that requires them to use the stairway.

• Stairways that will not be a permanent part of the structure where construction work is being performed must have landings at least 30 inches deep and 22 inches wide at every 12ft or less or vertical rise.

• Stairways must be installed at least 30 degrees, and no more than 50 degrees, from the horizontal.

• Variations in riser height or stair tread depth must not exceed ¼ inch in any stairway system, including any foundation structure used as one or more treads.

• Where doors or gates open directly into a stairway a platform must be provided that is a minimum of 20 inches in width beyond the swing of the door.

• Metal pan landings and metal pan treads must be secured in place before filling.
Temporary handrails must have a minimum clearance of 3 inches (7.62 centimeters) between the handrail and walls, stair-rail systems, and other objects.

Unprotected sides and edges of stairway landings must be provided with a standard 42-inch (106.68 cm) guardrail system.

**DO:**
- Make sure all stairway parts are free of dangerous projections such as protruding nails.
- Correct slippery conditions on stairways.

**DON’T:**
- Obstruct stairways with construction debris, tools, materials, etc.
- Use stairways that are under construction (i.e., in a repair or build condition).

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**WELDING, CUTTING, & HEATING – 1926.350 to 1926.354**

The employer shall thoroughly instruct employees in the safe use of fuel gas, appropriate use of shielding, personal protective equipment and proper insulating precautions for scaffolds.

**PROPER USE:**

- Proper precautions (isolating welding and cutting, removing fire hazards from the vicinity, providing a fire watch) for fire prevention shall be taken in areas where welding or other hot work is being done. No welding, cutting or heating shall be done where the application of flammable paints or the presence of other flammable compounds or heavy dust concentrations create a fire hazard.

- Fuel gas and oxygen hoses shall be easily distinguishable and cannot be interchangeable.

- General mechanical ventilation, local exhaust ventilation, air line respirators and other protection must be provided when welding, cutting or heating:
  - Zinc, lead, cadmium, chromium, mercury or materials bearing, based or coated with beryllium in enclosed spaces,
  - Stainless steel and inert gas equipment,
  - In confined spaces, and
  - Where an unusual condition can cause an unsafe accumulation of contaminants.
• When welding from suspended platforms:
  • Be sure the platform is grounded to the structure using a conductor at least the same size as the welding machine ground lead.
  • Verify the grounding conductor is not attached in series with the welding process or the work piece.
  • Insulate wire rope at least 4ft above and below the platform to protect from damage by the welding torch or electrode.
  • Insulate wire rope at the suspension point and be sure it does not contact the structure along its entire length.
  • Guide and/or retain the tail line of the suspension wire rope so that it does not become grounded.
WELDING, CUTTING & HEATING

- Use insulated protective covers for the hoists.
- Take care to prevent contact of the weld lead to the platform and its wire ropes.

DO:
- Shield all welding and cutting operations by noncombustible or flameproof screens to protect from direct arc rays.
- Remove electrodes from unattended electrode holders and protect the holder so it cannot make electrical contact with people or conducting objects.
- Use arc welding and cutting cables which are completely insulated, flexible type, capable of handling the maximum current requirements of the job. There shall be no repairs of splices within 10ft of the electrode holder, except where splices are insulated equal to the insulation of the cable.
- Inspect hoses at the beginning of each shift.
- Use proper eye protective equipment to prevent exposure of personnel.

DON'T:
- Use defective cable. Repair it or replace it with new.
- Fail to ground the suspended platform, insulate the wire ropes and hoists.
- Guess at how to weld safely from scaffold or swingstage components. Consult the manufacturer or a reputable scaffold supplier for assistance.

Don’t leave any skin exposed as shown below
WIRE ROPE – 1926.451, 1926.452, 1926.500, 1926.502, and 1926.552

Wire rope is a mechanical system of moving parts intended to support a load. It requires lubrication to operate correctly and begins to deteriorate from the time it is first put in service.

PROPER USE:

• Choose the proper wire rope for the job.
• Make appropriate connections to the structure.
• Inspect the wire rope and its termination point.
• Re-torque J-clamp terminations under load, if using, on suspension wire ropes.
• Handle the wire rope carefully to retain the rope’s strength.
• Suspended scaffold hoists are designed to work only with wire rope of the specified size and construction. Do not make substitutions.
• Wire ropes used with traction hoists must have prepared ends in accordance with the manufacturer’s recommendations.
• Refer to the hoist manufacturer’s Operators Manual for specifications on acceptable terminations.
• Inspect the wire rope prior to use on each shift or as needed during use to ensure safety.

J-clamp

Birdchaged Wire Rope Do Not Use.

Store excess wire on roof
DO:
• Inspect wire ropes for deterioration and remove them from service if damaged.
• Use approved wire rope terminations as specified by the equipment manufacturer.
• Use eye splicing or equivalent means such as J-clamps or swaged fittings.
• Space the J-clamps at approximately 3 to 4 fingers in width.
• Do ensure eye splices and swaged terminations are made by a qualified person.
• Preload wire rope and equipment with the maximum working load, then retighten J-clamps or rigging clamps to manufacturer’s recommendations at initial loading and at the beginning of each work shift.
• Use thimbles at all wire rope suspension terminations.
• Clean, lubricate and handle wire rope in accordance with the wire rope or hoist manufacturer’s recommendations.
• Coil and uncoil wire rope in accordance with the wire rope or hoist manufacturer’s recommendations to avoid kinks and damage.
• Coil extra wire rope at the top of the structure to avoid traffic damage to the free hanging end.
• Be sure wire rope is long enough to reach the lowest possible landing. If it is not, secure the tail line to prevent the platform from running off the suspension rope.

DON’T:
• Use job shop hooks or makeshift fasteners or links.
• Use U-bolts on a swingstage wire rope.
• Loop two wire rope tails together to make a longer suspension wire rope.
• Expose wire rope to fire, temperatures above 200°, the passage of electrical current, corrosive atmospheres or chemicals, or damage from tools or handling.
• Bend or kink the wire rope over a sharp edge.
• Use wire rope that is kinked, birdcaged, corroded, undersized or damaged in any way. If in doubt, throw it out.
For more detailed information refer to the OSHA website, [www.osha.gov](http://www.osha.gov) or call 1-800-321-OSHA (6742)

- General Duty Clause – [www.osha.gov](http://www.osha.gov) ........................ Section 5(a)(1) of the Occupational Safety and Health Act
- Confined Space – [www.osha.gov](http://www.osha.gov) ................................. 1926.21(b)(6) and 1910.146(b)
- Drinking Water – [www.osha.gov](http://www.osha.gov) ................................. 1926.51
- Fall Protection – [www.osha.gov](http://www.osha.gov) ...................................... 1926.500-503
- First Aid – [www.osha.gov](http://www.osha.gov) .................................................. 1926.50
- Hearing Protection – [www.osha.gov](http://www.osha.gov) ................................. 1926.52
- Illumination – [www.osha.gov](http://www.osha.gov) .......................................... 1926.26
- Safety Netting – [www.osha.gov](http://www.osha.gov) ........................................ 1926.502(c)
- Stairs – [www.osha.gov](http://www.osha.gov) .................................................... 1926.1052
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AMERICAN SUBCONTRACTORS ASSOCIATION OF NEW MEXICO
CONFIRMATION OF RECEIPT OF SAFETY AND HEALTH FIELD MANUAL

I acknowledge that I have received a copy of the Safety and Health Field Manual (Field Manual). I acknowledge that I have read and understand the safety and health practices discussed in the Field Manual. I have had an opportunity to ask any questions that I have concerning the information discussed in the Field Manual. I agree to abide by the safety and health practices set forth in the Field Manual.

I understand that the company reserves the right to revise, supplement or rescind any of the safety and health practices outlined in the Field Manual, any portion of the Field Manual, or the entire Field Manual, from time to time, as it deems appropriate in its sole discretion.

_____________________________  _____________________________
Witness  Employee’s Signature

_____________________________
Employee’s Name – Typed or Printed

_____________________________
Date

A copy of this confirmation sheet will be kept in the employee’s personnel file