

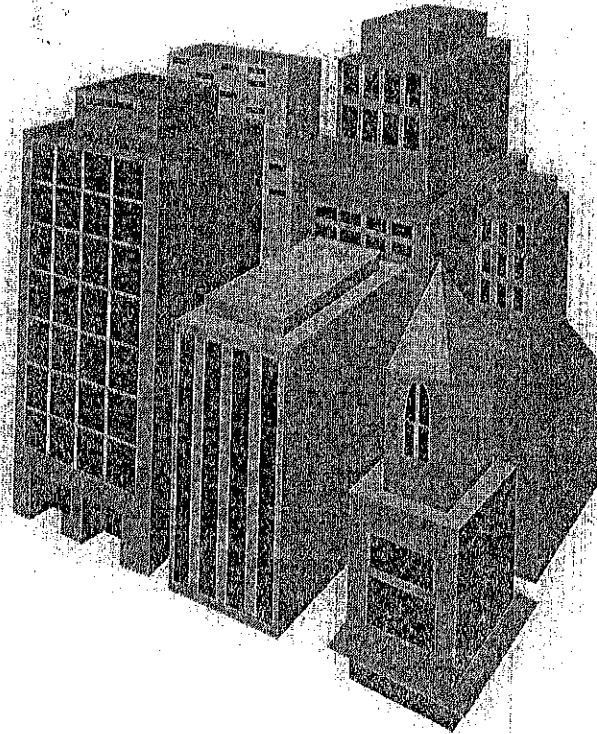


George H. Pastor & Sons

GENERAL CONTRACTING

Three Generations of Quality

OSHA SAFETY PROGRAM



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SAFETY AND HEALTH POLICY

George H. Pastor & Sons Company believes that **NO JOB OR TASK IS MORE IMPORTANT THAN WORKER HEALTH AND SAFETY.**

If a job represents a potential safety or health treat, every effort will be made to plan a safe way to do the task.

Every procedure must be a safe procedure. Shortcuts in safe procedures by either foreman or workers will not be tolerated.

If a worker observes any unprotected job, which may pose a potential threat to their health or safety, he or she must inform management and management must take adequate precautions.

IF A JOB CANNOT BE DONE SAFELY IT WILL NOT BE DONE.

OUR FUTURES ARE ONLY BUILT THROUGH OUR PEOPLE. WE AIM TO PROTECT THEM.

Craig Pastor V.P.

SAFETY AND HEALTH OBJECTIVES

George H. Pastor & Sons Company plans to achieve worker safety and health through the following:

- A. Using a qualified safety person.
- B. Making regular job site safety inspections.
- C. Enforcing the use of safety equipment.
- D. Following safety procedures and rules.
- E. Providing on-going safety training.
- F. Enforcing safety rules and using appropriate discipline.

JOB SITE INSPECTIONS

The safety person or other designated person will tour each job site and observe potential safety/health hazards, including the potential hazards of confined spaces and develop a plan for safeguarding this company's workers which may include the following:

1. Removing the hazard.
2. Guarding against the hazard as required by MIOSHA.
3. Providing personal protective equipment and enforcing its use.
4. Training workers in safe work practices.
5. Coordinating protection of workers through other contractors.

All record of all safety inspections and correctional steps will be kept.

CONTRACTOR SAFETY PERSON

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is the designated person to administer the safety and health program for this organization.
The responsibilities for this position are as follows:

1. Being knowledgeable of potential job hazards.
2. Assuring compliance with MIOSHA construction safety and health standards requirements.
3. Making regular safety inspections.
4. Establishing safety procedures.
5. Correlating regular safety training with lead persons.
6. Maintaining safety records.

SAFETY RULES

ALL OF OUR SAFETY RULES MUST BE OBEYED. FAILURE TO DO SO WILL RESULT IN STRICT DISCIPLINARY ACTION BEING TAKEN.

1. Keep your mind on your work at all times. No horseplay on the job. Injury or termination or both can be the result.
2. Personal safety equipment must be worn as prescribed for each job, using the following prescribed rules.
3. Precautions are necessary to prevent sunburn and to protect against burns from hot materials.
4. If any of you body should come in contact with an acid or caustic substance, rush to the nearest water available and flush the affected part. Secure medical aid immediately.
5. Watch where you are walking. Don't run.
6. The use of illegal drugs or alcohol or being under the influence of the same on the project shall be cause for termination. Inform your supervisor if taking strong prescription drugs that warn against driving or using machinery.
7. Do not distract the attention of fellow workers. Do not engage in any act which would endanger another employee.
8. Sanitation facilities have been or will be provided for use. Defacing or damaging these facilities is forbidden.
9. A good job is a clean job, and a clean job is the start of a safe job. So keep your working area free from rubbish and debris.
10. Do not use a compressor to blow dust or dirt from your clothes, hair, or hands.
11. Never work aloft if you are afraid to do so, if you are subject to dizzy spells, or if you are apt to be nervous or sick.
12. Never move an injured person unless it is absolutely necessary. Further injury may result. Keep the injured as comfortable as possible and utilize job site first-aid equipment until an ambulance arrives.
13. Know where fire fighting equipment is located and be trained on how to use it.
14. Lift correctly - with legs, not the back. If the load is too heavy GET HELP. Stay fit. Control your weight. Do stretching exercises. Approximately twenty percent of all construction related injuries result from lifting materials.
15. Do not enter an area which has been barricaded.
16. If you must work around power shovels, trucks, and dozers, make sure operators can always see you. Barricades are required for cranes.
17. Never oil, lubricate, or fuel equipment while it is running or in motion.
18. Barricade danger areas. Guard rails or perimeter cables may be required.
19. Never throw anything "overboard". Someone passing below may be seriously injured.
20. Open fires are prohibited.
21. Never enter a manhole, well, shaft, tunnel or other confined space which could possibly have a nonresponsive atmosphere because of lack of oxygen, or presence of toxic or flammable gas, or has a possibility of engulfment by solids or liquids. Make certain a qualified person tests the confined area with an appropriate detector before entry, that the necessary safety equipment is worn. Standby person may be required to be stationed at the entrance. See confined space details.

JOB SAFETY TRAINING

- A. After inspecting a job site, the safety person or other designated person will identify and evaluate all potential hazards for:
 1. Injury Severity potential.
 2. Probability of an accident.
- B. This person will also appraise the skill and knowledge level of exposed workers.
- C. Appropriate Training will be given.
 1. Hazards will be pointed out.
 2. Necessary precautions will be explained.
 3. The higher the hazard the more detailed will be the training.
 4. Plus any additional or more thorough training listed below.
- D. Records will be maintained for all training sessions with descriptions of topics covered and names of workers trained.

PERSONAL PROTECTIVE EQUIPMENT

Project manager is to assess the workplace and determine hazards present and to decide the use of PPE. After determining PPE, provide training in the use of PPE for employees.

Training requirements are;

- Reasons necessary
- How it will protect them
- Limitations
- When and how to wear PPE
- Identify signs of wear
- How to clean and disinfect
- Useful life and how to dispose of PPE

Examples:

- Eye..... Safety glasses, goggles
- Face..... Face shields
- Head..... Hard Hats
- Feet..... Safety Shoes
- Hands and arms..... Gloves
- Bodies..... Vests
- Hearing..... Earplugs, earmuffs

➤ Head Protection

Head protection is required when working in areas where there is possible danger of head injury from impact or falling/flying objects or from electrical shock and burns.

Head protection used against impact and penetration of falling and flying objects shall meet the specification contained in ANSI (American National Standards Institute), Z89.1-1969, Safety Requirements for Industrial Head Protection.

Head protection used for protection of employees exposed to high voltage electrical shock and burns must meet the specifications contained in ANSI Z89.2-1971.

Class G (formerly Class A)

- General service-mining, building construction, shipbuilding, lumbering, and manufacturing
- Good impact protection though limited in voltage protection

Class E (formerly Class B)

- Electrical work
- Protect against falling objects and high-voltage shock and burns

Class C

- Designed for comfort, but offers limited protection
- Protects the head when bumped against fixed objects, but does not protect for falling objects or electrical shock

(ANSI Z89.1-1997)

Hearing Protection

If an employee's noise exposure exceeds an 8-hour time-weighted average (TWA) sound level of 90dBA then hearing protection is needed.

When it is not feasible to reduce the noise levels or duration of exposures to those specified in Table D-2, Permissible Noise Exposures, in 1926.52, ear protective devices shall be provided and used.

Ear protective devices inserted in the ear must be fitted or determined individually by a competent person.

Plain cotton is not an acceptable protective device.

Examples are:

- Ear muffs
- Earplugs
- Canal Caps

TABLE D-2 - PERMISSIBLE NOISE EXPOSURES

Duration per day, hours	Sound level dBA slow response
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 or less	115

► **Foot protection**

Foot protection is necessary when following is present;

- Heavy objects, such as barrels or tools which could roll onto or fall on employees feet
- Sharp objects such as nails or spikes that might pierce ordinary shoes
- Molten metal that might splash onto feet
- Hot or wet surfaces
- Slippery surfaces

Safety shoes would be required on site if any of these conditions are prevalent.

► **Hand protection**

Hand protection is necessary when the following is present;

- Burns
- Bruises
- Abrasions
- Cuts
- Punctures
- Fractures
- Amputations
- Chemical exposures

Types and uses of gloves:

Durable - made of metal mesh, leather, or canvas

- Protects against cuts, burns, and heat

Fabric and coated fabric

- Protects against dirt and abrasions

Chemical and liquid resistant

- Protects against burns, irritation, and dermatitis

Rubber

- Protects against cuts, lacerations, and abrasion
- Nitrile gloves-solvents, harsh chemicals, fats and petroleum products and also provides excellent resistance to cuts and abrasions
- Butyl gloves-highest permeation resistance to gas or water vapors

Kevlar

- Protects against cuts, slashes and abrasions

Stainless steel mesh

- Protects against cuts and lacerations

Eye and face protection

Eye protection is necessary if there is dust or other flying particles, including metal shavings or sawdust.

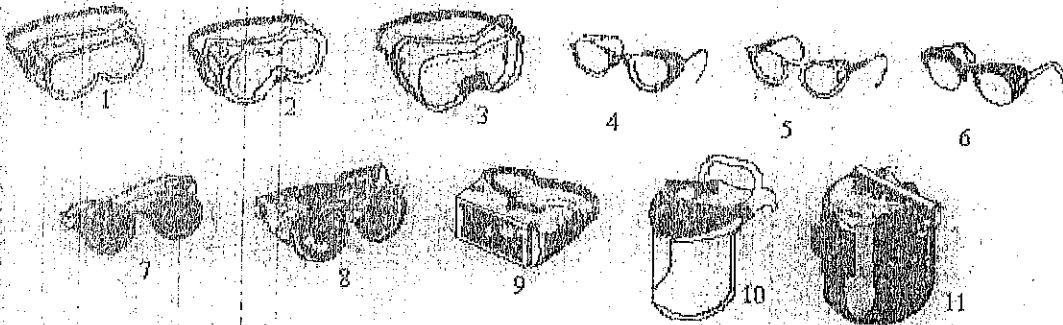
- Corrosive gases, vapors, and liquids are present.
- Molten metal is present that has the possibility of splashing.
- Potentially infectious materials such as blood or hazardous liquid chemicals that could potentially splash.
- Intense light from welding and lasers

Selection of eye ware

- ✓ Protect for specific hazards
- ✓ Comfortable to wear
- ✓ Cannot restrict vision or movement
- ✓ Durable and easy to clean and disinfect
- ✓ Does not interfere with the function of other required PPE
- ✓ ANSI Z87.1 (OSHA requires it in 1926.102)

Employees who wear eyeglasses

- Regular glasses do NOT provide required protection
- Proper choices would include:
 - Prescription glasses with side shields and protective lenses
 - Goggles that fit comfortably over corrective glasses though cannot disturb the glasses
 - Goggles that incorporated corrective lenses mounted behind protective lenses



1. GOGGLES, Flexible Fitting - Regular Ventilation
2. GOGGLES, Flexible Fitting - Hooded Ventilation
3. GOGGLES, Cushioned Fitting - Rigid Body
4. SPECTACLES, Metal Frame, with Side shields (1)
5. SPECTACLES, Plastic Frame - with Side shields (1)
6. SPECTACLES, Metal-Plastic Frame - with Side shields (1)
7. WELDING GOGGLES, Eyecup Type - Tinted Lenses (2)
- 7A. CHIPPING GOGGLES, Eyecup Type - Clear Safety Lenses
8. WELDING GOGGLES, Coverspec Type - Tinted Lenses (2)
- 8A. CHIPPING GOGGLES, Coverspec Type - Clear Safety Lenses
9. WELDING GOGGLES, Coverspec Type - Tinted Plate Lens (2)
10. FACE SHIELD (Available with Plastic or Mesh Window)
11. WELDING HELMETS (2)

Footnote(1) Non-side shield spectacles are available for limited hazard use requiring only frontal protection.

Footnote(2) See Table E-2, in paragraph (b) of this section, Filter Lens Shade Numbers for Protection Against Radiant Energy.

Body Protection

Provide protective clothing for parts of the body that is exposed to possible injury, major causes of body injuries include

- intense heat,
- splashes of hot metals and other hot liquids
- impacts from tools
- machinery and materials,
- cuts
- hazardous chemicals
- radiation

Types of body protection

- vests
- aprons
- jackets
- coveralls
- body suits

FALL PROTECTION

- ❖ Guardrails
- ❖ Personal Fall Arrest Systems (PFAS)
- ❖ Safety Net

Duty to have fall protection

"Unprotected sides and edges." Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet 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.
per 1926.501(b)(1)

- ❖ Falls are the *leading cause of fatalities* in the construction industry.
- ❖ An average of *362 falls occurred each year* from 1995 to 1999, with the trend on the increase.
- ❖ Select the appropriate fall protection system for the situation.
- ❖ Properly install and construct safety systems.
- ❖ Use safe work procedures.
- ❖ Workers will be trained in proper selection, use and maintenance of fall protection systems.

PROHIBITED

- ❖ Body belts used for fall arrest are PROHIBITED.
- ❖ Non-locking snap hooks as part of a personal fall arrest systems and positioning device systems are PROHIBITED.

Leading Edge Work

When working near a leading edge, employees must be protect by a fall protection system.

If infeasible, or creates a *greater hazard* then a **Fall Protection Plan** must be implemented.

Holes and Skylights

Workers must be protected from falling through, tripping, or stepping into, and also objects falling through.

- ❖ Must be protected by covers
- ❖ Withstand twice expected load
- ❖ Secured
- ❖ Marked with 'HOLE' or 'COVER'

Formwork and Rebar

Workers must be protected by FPS when above 6 feet.

Ramps, Runways, Walkways

Workers must be protected with guardrail systems.

Excavations

Workers and others need to be protected from excavations by the use of guardrails, fences or barricades if excavation, if the excavation is not readily seen.

Dangerous Equipment

Less than six feet fall height above dangerous equipment workers must be protected with guardrail systems or by equipment guards.

Overhand Bricklaying

Workers must be protected with FPS or work within a *Controlled Access Zone (CAZ)*

CAZ definition means an area in which certain work may take place without the use of guardrails systems, personal fall arrest systems, or safety net systems and *access to the zone is controlled*.

- Only bricks and mortar within four feet of edge
- Remove debris at regular intervals

➤ Overhand Bricklaying from supported scaffolds

- Guardrail or personal fall arrest system is required on all sides except the where work is being performed

"Roofing" Work

- No material within six feet of edge unless guardrails
- Materials piled near edge stable and self supporting

Low-Sloped Roofs

Low sloped roofs, rise four units or less for every run of 12 units

Workers must be protected by

- Fall Protection System
- FPS in combination with *warning line*
- Warning line with *safety monitoring*

Steep Roofs

Steep sloped roofs, rise four units or more for every run of 12 units, and when the sides and edges 6 feet or more above lower levels, protection is needed.

Workers must be protected by

- Guardrail systems with toe boards
- Safety nets systems
- Personal fall arrest systems

Precast Concrete

Workers above 6 feet need to be protected by *fall protection system* or by a *fall protection plan*

Wall Openings

If a wall opening is 6 feet or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface, then workers need to be protected with a fall protection system (FPS)

Falling Objects

To protect workers from falling objects workers must follow the above PPE guideline, also toe boards, screens or guardrails, or canopy and barricades must be utilized.

- Enough toe board to protect those below
- 50 pounds strong downward & outward
- At least 3 ½ inches high
- Tools & equipment cannot be piled higher than toe boards
 - Unless a panel or screen is used to eliminate falling object hazards

Safety Systems

Safety monitoring system

Safety system: in which a competent person is responsible for recognizing and warning employees of fall hazards.

Warning line system

A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect workers in the area.

Guardrail system

- Top rail, mid-rail, and toe board
- Top rail 42" (plus or minus 3 inches)
- Toeboard minimum 3 ½ inches high
- Must withstand 200 pound force
- Appendix B of the standard provides guidance
- Surfaced to prevent injury
- No projection hazard at rail ends
- All rails at least ¼" thick
- Mid-rails
 - Required if no wall or parapet at least 21 inches high
 - Install midway between top rail and working level
 - Screens and mesh run all along entire opening
 - Balusters, when used, not more than 19 inches apart

Safety Nets

- Installed a maximum of 30 feet below working level
- 400 pound drop test or certified by employer or CP
- Extends sufficiently from outer edge
- Inspected weekly
- Objects removed within shift
- Border rope strength of 5000 pounds

Personal Fall Arrest Systems (PFAS)

- NO body belts for fall arrest!
- Body belts for positioning systems only
- Snaphooks
 - Not to be engaged directly
 - To webbing, rope, or wire rope
 - To each other
 - To a de-icing to which another snaphook or other connector is attached
 - To a horizontal lifeline
- Anchorage
 - Secure point of attachment for lifelines, lanyards or deceleration device
 - If used for attachment of personal fall arrest equipment it must be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached
 - Part of a complete PFAS which maintains a safety factor of at least two
 - Under the supervision of a qualified person
- Horizontal lifelines
 - Designed, installed, and used, under the supervision of a qualified person
 - Part of a complete PFAS
 - Maintains a safety factor of at least two
 - Devices used to connect to a horizontal lifeline which could become vertical must be capable of locking in both directions on the lifeline
- Lanyard
 - Cannot be made of natural fiber rope
 - Must be protected against damage by cuts or abrasions
 - Each employee must be provided a separate lanyard
 - Lanyards must have a minimum breaking strength of 5,000 pounds
- Requirements:
 - Limit max. arresting force on an employee to 1,800 pounds when used with a body harness
 - Be rigged such that an employee can neither free fall more than 6 feet, nor contact any lower level
 - Bring an employee to a complete stop and limit max. deceleration distance a worker travels to 3.5 feet
 - Attachment point is center of wearers back or above the head
 - PFAS used only for fall protection
 - If subject to impact loading, examined by competent person

- Prompt rescue provided
- Inspected prior to each use
- Not attached to guardrail systems
- At hoist areas, allow movement to edge only

Positioning Systems

- Limit free fall to two feet
- Anchorage can handle at least 3,000 pounds

Warning Lines

- Erected around all sides of roof
- Erected at least six feet from edge if no mechanical equipment is used

Warning Lines

- Points of access formed by two warning lines
- When access not in use, closed off
- Consist of ropes, wires, or chains, and supporting stanchions
- Flagged at least every six feet
- Lowest point (including sag) is no less than 34 inches
- Resists 16 outwardly directed pound force at 30 inches
- Minimum tensile strength of 500 pounds
- Pulling between stanchions will not take up slack in other sections
- Only roofing work employees allowed between roof edge and warning line
- Protect workers from mechanical equipment on roofs

Controlled Access Zone

- Where leading edge and other operations are taking place the controlled access zone shall be defined by a **control line**
- At least six feet from leading edge
- Not more than 25 feet from leading edge
- For precast concrete operations, control line six to sixty feet from edge
- Extends entire length of leading edge
- Connected at ends to guardrail or wall
- Flagged or marked at least every six feet
- 39 to 45 inches high
- 200 pound breaking strength
- Control line can be used instead of guardrail system along leading edge to protect non-leading edge workers

Safety Monitors

- Must be a CP to recognize fall hazards
- Warns employees when:
 - Unaware of hazards
 - Acting in unsafe manner
- Same surface and within sight of workers
- Close enough to workers to be heard
- No other responsibilities
- Mechanical equipment not used where safety monitoring system being used
- Only roofers allowed in area
- Employees must comply with warnings

Fall Protection Plan

- Leading edge work
- Precast concrete
- Residential roofing
- Prepared by qualified person
- Specific to site
- Changes made by qualified person
- Plan kept at site
- Implemented by competent person
- Documents why conventional fall protection is infeasible
- Discuss measures used to protect workers
- Identifies all controlled access zones
- Where no other measures are used a safety monitor must be used
- Identify all CAZ employees
- If an employee falls, review plan to prevent reoccurrence

Training

- ✦ For each employee who might be exposed to falls
- ✦ Trained by competent person
- ✦ Covers fall hazards in work area
- ✦ Covers procedures for FPS to be used
- ✦ The use and operation of all safety systems

Certification

- ✦ Training must be certified
- ✦ Latest training certification maintained and available!

Scaffolds

Scaffolds

- * Supported Scaffolds
- * Suspended scaffolds
- * Aerial lifts

If a worker is on a scaffold and can fall more than 10 feet, they need to be protected by:

- Guardrails and/or
- Personal fall arrest systems (PFAS)

Guardrails

- * Install along open sides & ends
- * Front edge of platforms cannot be more than 14 inches from the work, unless using guardrail and/or PFAS
- * Top rails need to be 38 to 45 inches in height
- * Mid-rail halfway between top rail and platform
- * Toeboards need to be at least 3-1/2 inches high

PFAS can be used instead of guardrails on some scaffolds

Use PFAS & guardrails on suspension scaffolds

Use PFAS on erectors and dismantlers where feasible

Barrier the area below scaffold to deny entry into the area

Use panels or screens if material is stacked higher than toeboard

Catch or nets need to be erected below a scaffold to contain or deflect falling objects

Due to serious risk of electrocution, check the clearance distances listed in the standard

Ensure scaffold have good, solid support

Use appropriate scaffold construction methods

Proper scaffold access

Properly use a competent person

Platforms must:

- Be fully planked or decked with no more than 1 inch gaps
- Be able to support its weight & 4 times maximum load
- Be at least 18 inches wide
- Have no large gaps in front edge of platforms

- Each abutted end of plank must rest on a separate support surface
- Overlap platforms at least 12 inches over supports, unless restrained to prevent movement
- Use scaffold grade wood
- Fully planked between front upright and guardrail support
- Component pieces used must match and be of the same type

Erection stable and level ground

Lock wheel and braces

No paint on wood platforms

Scaffold height

- The height of the scaffold should not be more than four times its minimum base dimension unless guys, ties, or braces are used

Each end of a platform, unless cleated or otherwise restrained by hooks, must extend over its support by at least 6 inches

Supported scaffold

- Platforms supported by legs, outrigger beams, brackets, poles, uprights, posts, & frames
- Restrain from tipping by guys, ties, or braces
- Scaffold poles, legs, posts, frames, and uprights must be on base plates and mud sills or other firm foundation

Proper scaffold access

- Provide access when scaffold platforms are more than 2 feet above or below a point of access
- Permitted types of access:
 - Ladders, such as portable, hook-on, attachable, stairway type, and built-ins
 - Stair towers
 - Ramps and walkways
- May use building stairs and come out window
- No access by cross braces
- When using ladders, bottom rung no more than 24 inches high
- Can use some end frames
- Can access from another scaffold, structure or hoist

Suspension scaffolds

- Rope supporting scaffold must be capable of supporting 6 times the load
- Secure/tie to prevent swaying
- Support devices must rest on surfaces that can support four times the load
- Competent person
 - Evaluate connections to ensure the supporting surfaces can support the load
 - Inspect ropes for defects before shift
- PFAS must have anchors independent of the scaffold support system

Moving scaffolds

- Workers can't be on a moving scaffold unless:
 - Surface is level
 - Height to base ratio is 2 to 1
 - Outriggers are installed on both sides of scaffolds
- Workers cannot be on scaffold part beyond the wheels
- Competent person must be on site to supervise

Don't work on snow or ice covered platforms or during storms or high winds

Use tag lines on swinging loads

Protect suspension ropes from heat and acid

Overhead Bricklaying from supported scaffolds

- Guardrail or personal fall arrest system is required on all sides except the where work is being performed

Shore scaffolds and Lean-to scaffolds are **NOT** allowed

Competent Person

Duties are:

- ✓ Identifying and properly correcting hazards
- ✓ Determine safety of work on scaffolds during storms or high winds
- ✓ Train workers to recognize hazards
- ✓ Select qualified workers to conduct work
- ✓ Inspect scaffolds for visible defects before each shift and after any alterations
- ✓ Must replace or repair defective parts immediately

Scaffold Erection

- Can only be erected, moved, dismantled or altered under the supervision of a competent person.

Training of workers

- Workers must be trained on scaffold hazards and procedures to control the hazards, must include:
 - Nature of electrical, fall, and falling object hazards
 - How to deal with electrical hazards and fall protection systems
 - Proper use of the scaffold
 - Scaffold load capacities
 - Retrain workers as necessary

Main hazards of scaffolds

- " Falls from elevation
- " Bad planking
- " Scaffold collapse
- " Getting struck by falling tools or debris
- " Electrocutation

Fire Protection

* "Combustible liquid" means any liquid having a flash point at or above 140 deg. F., and below 200 deg. F.

* "Flammable liquid" means any liquid having a flash point below 140 deg. F.

Safety can is an approved container, of not more than 5 gallons capacity, having a spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure.

Minimum 10B extinguisher within 50 feet of 5 gallons flammable liquid or 5 pounds flammable gas

Extinguishers inspected and maintained in accordance with NFPA No. 10A-1970

Types of Fires

- Class A- ordinary materials such as paper, wood, cloth
- Class B- flammable liquids or combustible liquids such as gasoline, paint, thinners, propane, and kerosene
- Class C- electrical equipment fires, appliances, switches, and panels
- Class D- certain metals such as magnesium, sodium, which could explode!

* Maintain access to firefighting equipment at all times

* Conspicuously located

* Periodically inspected

* Defective replaced

* Fire brigade provided as warranted by project

* Provide water supply to protect against combustibles

Alarm system established for emergencies:

-Alert employees

-Alert fire department

Reporting instructions conspicuously posted by phones and worker entrances

Fire extinguishers:

-Fire extinguisher provided every 3000 sq. ft.

-In protected areas travel distance to extinguisher \leq 100 feet

-Minimum one extinguisher per floor

-Multi-story at least one near stairway

How to use a portable fire extinguisher

P- Pull the pin

A- Aim nozzle at the base of flames

S- Squeeze the trigger


S- Sweep the extinguisher from side to side, covering the area of the fire with the extinguishing agent

Inspections

Look for:

- Type of extinguisher
- Labeling
- Pins in place?
- Charged?
- Heft test
- Hydrostatic test per NFPA 10A 1970

Table F-1 FIRE EXTINGUISHERS DATA

	WATER TYPE				FOAM	CARBON DIOXIDE	DRY CHEMICAL			
	STANDARD PRESSURE		STANDARD HIGH PRESSURE				ULTRA-FINE	ULTRA-FINE	ULTRA-FINE	ULTRA-FINE
	CLASS A	CLASS B	CLASS A	CLASS B			CLASS C	CLASS C	CLASS C	CLASS C
ULTRA-FINE	YES	YES	YES	YES	YES	NO	NO	NO	YES	YES
STANDARD	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES
ULTRA-FINE	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES
SPECIAL EXTINGUISHING AGENTS APPROVED BY RECOGNIZED TESTING										
ULTRA-FINE	20-40	20-40	20-40	20-40	20-40	20-40	20-40	20-40	20-40	20-40
STANDARD	20-40	20-40	20-40	20-40	20-40	20-40	20-40	20-40	20-40	20-40
ULTRA-FINE	20-40	20-40	20-40	20-40	20-40	20-40	20-40	20-40	20-40	20-40
MAINTENANCE	CHARGE BY PRESSURE	CHARGE BY PRESSURE	CHARGE BY PRESSURE	CHARGE BY PRESSURE	CHARGE BY PRESSURE	CHARGE BY PRESSURE	CHARGE BY PRESSURE	CHARGE BY PRESSURE	CHARGE BY PRESSURE	CHARGE BY PRESSURE

- No piles within ten feet of buildings
- Fire extinguisher provided within 100 feet

Indoor storage:

- No obstruction to EXIT's
- Appropriate management of all fire hazard materials
- Separate non-compatibles
- Three feet clearance maintained to sprinklers
- Maximum 25 gallons stored outside of flammable materials storage cabinet
- Cabinets labeled "Flammable-Keep Fire Away"

Flammable liquids less than 1-gallon requires safety can

Flammables not stored near exits or stairways

Dispensing 5-gallons or more, segregate 25 feet from other operations

- Or 1-hour firewall
- Ventilation \leq (less than or equal to) 10% LEL (Lower explosive limit)
- Electrical bonding required for container transfer
- Dispensing units have to be protected against collision damage
- Containers must be closed when not in use

Electrical Safety

Dangers of electricity

- ✦ About 5 workers are electrocuted about every week
- ✦ The cause of 12% of young workers workplace deaths
- ✦ Takes very little electricity to cause harm
- ✦ Significant risk of causing fires

Electrical injuries

Four main types:

- ✦ Direct
 - ✦ Electrocution or death due to electrical shock
 - ✦ Electrical shock
 - ✦ Burns
- ✦ Indirect:
 - ✦ Falls

LOW VOLTAGE DOES NOT MEAN LOW HAZARD

Hazard Overhead Power Lines

Usually not insulated

Equipment that can contact power lines:

- ✦ Crane
- ✦ Ladder
- ✦ Scaffold
- ✦ Backhoe
- ✦ Scissors lift
- ✦ Raised dump truck bed
- ✦ Aluminum paint roller

Control Overhead Power Lines

- ✦ Stay at least 10 feet away
- ✦ Post warning signs
- ✦ Assume that lines are energized
- ✦ Use wood or fiberglass ladders, not metal
- ✦ Power line workers need special training and PPE

Safe work practices

To protect workers from electrical shock:

- ✦ Use barriers and guards to prevent passage through areas of exposed energized equipment
- ✦ Pre-plan work, post hazard warnings and use protective measure
- ✦ Keep working spaces and walkways clear of cords
- ✦ Use special insulated tools when working on fuses with energized terminals
- ✦ Don't use worn or frayed cords and cables
- ✦ Don't fasten extension cords with staples, hang them from nails, or suspend them by wire
- ✦ Avoid wet conditions
- ✦ Only use extension cords of the three-prong type
- ✦ Use ground fault circuit interrupters at all times
- ✦ Check the electrical grounding system daily

To prevent electrical hazards:

- ✦ Plan your work with others
- ✦ Plan to avoid falls
- ✦ Plan to lock-out and tag-out equipment
- ✦ Remove jewelry
- ✦ Avoid wet conditions and overhead power lines

Personal Protective Equipment:

- ✦ Proper foot protection
- ✦ Rubber insulating gloves, hoods, sleeves, matting, and blankets
- ✦ Hard hat (insulated nonconductive)

Signs

Signs and symbols must be visible while work is being performed and promptly covered up or removed when the hazards no longer exist.

Danger signs

- ✦ Danger signs (see Figure G-1) shall be used only where an immediate hazard exists.
- ✦ Danger signs shall have red as the predominating color for the upper panel; black outline on the borders; and a white lower panel for additional sign wording.

Caution signs

- ✦ Caution signs (see Figure G-2) shall be used only to warn against potential hazards or to caution against unsafe practices.
- ✦ Caution signs shall have yellow as the predominating color; black upper panel and borders; yellow lettering of "caution" on the black panel; and the lower yellow panel for additional sign wording. Black lettering shall be used for additional wording.

Standard color of the background shall be yellow; and the panel, black with yellow letters. Any letters used against the yellow background shall be black. The colors shall be those of opaque glossy samples as specified in Table 1 of American National Standard Z53.1-1967.

Figure G-1

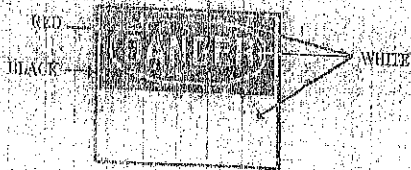
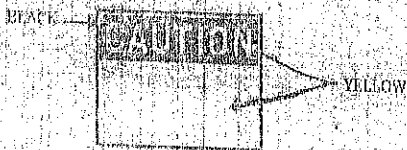


Figure G-2



Exit signs

Exit signs, when required, shall be lettered in legible red letters, not less than 6 inches high, on a white field and the principal stroke of the letters shall be at least three-fourths inch in width.

Safety instruction signs

Safety instruction signs, when used, shall be white with green upper panel with white letters to convey the principal message. Any additional wording on the sign shall be black letters on the white background.

Directional signs

Directional signs, other than automotive traffic signs specified in paragraph (g) of this section, shall be white with a black panel and a white directional symbol. Any additional wording on the sign shall be black letters on the white background.

Traffic signs

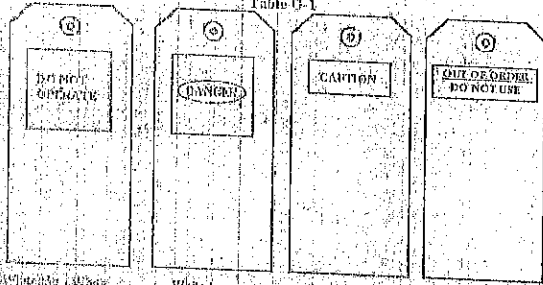
Construction areas shall be posted with legible traffic signs at points of hazard.

Accident Prevention Tags

Accident prevention tags are temporary means of warning employees of an existing hazard. Though are not to be used in place of or as a substitute for accident prevention signs.

Specifications for accident prevention tags similar to those in Table G-1 shall apply.

Table G-1



Back (Inch background)	Shiny Colors (Ink)	Copy Specification (Letter)
White	Red	Do Not Operate
White	Black and Red	Danger
Yellow	Black	Caution
White	Black	Out of Order Do Not Use

Additional rules:

The employer shall comply with ANSI Z35.1-1968 and Z35.2-1968 with respect to rules not specifically prescribed in this subpart.

Flaggers

Signaling by flaggers and the use of flaggers, including warning clothing must conform to Part VI of the Manual of Uniform Traffic Control Devices, incorporated by reference in 1926.200(g)(2).

Crane and hoist signals

Regulations for crane and hoist signaling are found in a relevant American National Standards Institute Standard.

All use of signs must conform to the regulations and standards of OSHA 1926.200

Barricades

Barricades for protection of employees must conform to part VI of the Manual on Uniform Traffic Control Devices, incorporated by reference in 1926.200(g)(2)

Stairways and Ladders

Stairways:

- 1. There must be a stairway or ladder at points of access where there is an elevation break on 19 inches or more
- 2. At least one point of access must be kept clear
- 3. Rails must be able to withstand a force of 200 pounds
- 4. Handrails—Stairways with four or more risers, or higher than 30 inches must be equipped with at least one handrail
- 5. Stair rails—stairways with four or more risers or more than 30 inches high must have a stair rail along each unprotected side or edge
- 6. Must have uniform riser height and tread depth, with less than a 1/4 inch variation
- 7. Only use pan stairs if filled with filler material at least to the top of each pan.

- ✱ Unprotected sides of landings must have standard 42 inch guardrail systems
- ✱ Where doors or gates open directly on a stairway, provide a platform that extends at least 20 inches beyond the swing of the door.
- ✱ Fix slippery conditions before using.
- ✱ Spiral staircases that are not a permanent part of the structure on which construction work is being performed.
- ✱ Metal pan landings and metal pan treads, when used, must be secured in place before filling with concrete or other material.
- ✱ Training program shall be provided to all employees using ladders and stairways, as necessary. Training should cover hazards and how to minimize them.
 - Employer shall ensure that each employee has been trained by a competent person in the following areas, as needed:
 - nature of fall hazards in the work area
 - correct procedures for erecting, maintaining and disassembling the fall protection systems to be used
 - proper construction, use, placement, and care in handling of all stairways and ladders
 - maximum intended load-carrying capacities of ladders

Ladders

Ladders must be kept in a safe condition

- ✱ Keep the area around the top and bottom of a ladder clear
- ✱ Ensure rungs, cleats, and steps are level and uniformly spaced
- ✱ Ensure rungs are spaced 10 to 14 inches apart
- ✱ Keep ladders free from slipping hazards
- ✱ Use ladders only for their designed purpose
- ✱ Step ladders shall not be used as a straight ladder.
- ✱ Ladders must extend three feet above landing on roof for proper use.
- ✱ Don't tie ladders together to make longer sections, unless designed for such use
- ✱ Don't load ladders beyond the maximum load for which they were built, nor beyond the manufacturer's rated capacity
- ✱ Secure ladders to prevent accidental movement due to workplace activity
- ✱ Only use ladders on stable and level surfaces, unless secured
- ✱ Do not use ladders on slippery surfaces unless secured or provided with slip-resistant feet
- ✱ Inspect before use for cracks, dents, and missing rungs
- ✱ Design or treat rungs to minimize slipping
- ✱ Side rails—at least 1 1/2 inches apart
- ✱ Must support 4 times the max load
- ✱ Don't paint ladders
- ✱ Don't use an opaque covering (like varnish) on a wood ladder
- ✱ Side rails must extend at least 3 feet above the upper landing surface
- ✱ DO NOT use the top or top step of a ladder as a step
- ✱ Competent person must inspect ladders for visible defects, like broken or missing rungs
- ✱ Tag out defective ladders immediately
- ✱ If ladder is repairable, it can be put back into service after repair
 - If not, cut the ladder in half length wise and dispose of properly

- Face the ladder when going up or down
- Use at least one hand to grab the ladder when going up or down
- Do not carry any object or load that could cause you to lose balance

First Aid

- First aid services and provisions for medical care shall be made available by the employer for every employee covered by these regulations.
 - Sub Part D
- Employer shall insure 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
- First aid supplies shall be easily accessible when required
- Contents of first aid kit shall be placed in a weatherproof container w/ 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
- In areas where 911 is not available, the telephone numbers of the physicians, hospitals, or ambulances shall be conspicuously posted
- Employer shall provide adequate washing facilities for employees engaged in the application of paints, coating, herbicides, or insecticides, or in other operations where contaminants may be harmful to the employees
- Lavatories shall be made available in all places of employment
- Each lavatory shall be provided with hot & cold running water, or tepid running water.
- Hand soap or similar cleaning agents shall be provided
- Individual hand towels or sections thereof, of cloth or paper, warm air blower or clean individual sections of continuous cloth toweling, convenient to the lavatories, shall be provided
- "Eating and drinking areas" No employees shall be allowed to consume food or beverages neither in a toilet room nor in any area exposed to a toxic material

Toilets

Toilets shall be provided for employees according to table D-1.

Table D-1

Number of employees	
20 or less	1
20 or more	1 toilet seat and 1 urinal per 40 workers.
200 or more	1 toilet seat and 1 urinal per 50 workers.

Under temporary field conditions, provisions shall be made to assure not less than one toilet facility is available

Job site, not provided with a sanitary sewer, shall be provided with one of the following toilet facilities unless prohibited by local codes:

Privies (where their use will not contaminate ground or surface water)

- Chemical toilets
- Re-circulating toilets
- Combustion toilets

Tools - Hand and power

Hazards of working with hand and power tools, objects that fall, fly, are abrasive, or splash

Harmful dusts, fumes, mists, vapors, and gases

Frayed or damaged electrical cords, hazardous connections and improper grounding

- Maintain tools regularly
- Use right tool for the job
- Inspect before use
- Operate according to manufacturers' instructions
- Use the right PPE
- Use guards
- DO NOT USE:
 - Wrenches when jaws are sprung
 - Impact tools (chisels and wedges) when heads have mushroomed
 - Tools with loose, cracked or splintered handles
 - A screwdriver as a chisel
 - Tools with taped handles - they may be hiding cracks
- Use PPE, safety goggles and gloves
- Keep working area floor clean and free of debris and tripping or slipping hazards
- Keep cutting tools sharp

Power tools

- Must be fitted with guards and safety switches
- Extremely hazardous when used improperly
- Do not operate power tools and equipment until you have been properly instructed in the safe work methods and become authorized to use them
- Different types, determined by their power source:
 - Electric
 - Pneumatic
 - Liquid fuel
 - Hydraulic
 - Powder-actuated
- Hand-held power tools must be equipped with either
 - Constant pressure switch
 - On-Off switch
- Disconnect tools when not in use, before servicing and cleaning, and when changing accessories

- Keep people not involved in the work away from the work
- Secure work with clamps or a vise, freeing both hands to operate the tool
- Don't hold the switch button while carrying a plugged-in tool
- Keep tools clean and sharp
- No loose clothing, jewelry or hair, can be caught in moving parts
- Remove damaged electric tools and tag them "Do No Use"
- Don't carry portable tools by the cord
- Don't use electric cords to hoist or lower tools
- Don't yank cord or hose to disconnect it
- Keep cords and hoses away from heat, oil, and sharp edges
- Electric tools must
 - Have a 3-wire cord plugged into a grounded receptacle
 - Be double insulated, or
 - Be powered by a low-voltage isolation transformer
- Operate tools within design limits
- Use gloves and safety shoes
- Store in a dry place
- Don't use in wet locations unless approved for that
- Keep work areas well lit
- Ensure cords don't present a tripping hazard
- Be sure that all guards are in place
- Do not remove, displace, damage, or destroy any safety device or safeguard furnished or provided for use on the job; nor interfere with the use thereof
- Compressed air cleaning
 - Don't use compressed air for cleaning
 - Except where reduced to < 30 p.s.i. with effective chip guarding and PPE

➤ Abrasive Wheel

- Equip with guards that cover the spindle end, nut, & flange projections to prevent fragments being thrown off
- Maintain proper alignment with the wheel
- Don't exceed the strength of fastenings
- Guard so the a minimal amount of the wheel is exposed
- Before mounting wheels, inspect damage and perform sound or ring test to ensure free from cracks or defects
- Fit the wheel on the spindle freely
- Tighten the spindle nut enough to hold the wheel in place without distorting the flange
- Let the tool come up to speed prior to grinding or cutting
- Don't stand in front of the wheel as it comes up to full speed
- Use eye and/or face protection
- Keep work rests not more than an 1/8th inch from wheel surface
- This prevents jamming the work between the wheel and the rest, which may cause the wheel to break
- Don't adjust wheel while it's rotating

Guarding

- Guard exposed moving parts of power tools
- Guard belts, gears, shafts, pulleys, sprockets, spindles, flywheels, chains, or other moving parts
- Never remove a guard when a tool is in use
- Point of operation is where the work is actually being performed on the materials – it must be guarded
- Machine guards must protect the operator and others from:
 - Point of operation
 - In-running nip points
 - Rotating parts
 - Flying chips and sparks

Powder-Actuated Tool Safety Tips

- Don't use in explosive or flammable atmosphere
- Inspect tool before use to ensure:
 - It's clean
 - That moving parts operate freely
 - The barrel is free from obstructions and has the proper shield, guard, and attachments
- Don't load the tool unless using immediately
- Don't leave a loaded tool unattended
- Keep hands clear of the barrel end
- Never point the tool at anyone
- Store unloaded in a locked box

Jacks

- To set up a jack, ensure:
 - The base is on a firm, level surface
 - It's centered
 - The jack head is placed against a level surface
 - You apply the lift force evenly
- Lubricate and inspect jacks regularly
- The manufacturer's rated capacity must be marked on all jacks and must not be exceeded
- All jacks must have a stop indicator that is not exceeded
- Blocking
 - Immediately block the load after it is lifted
 - Put a block under the base of a jack when the foundation is not firm
 - Place a jack between the jack cap and load if the cap might slip

Equipment/Vehicles

- * When operating or work around equipment
- * Nobody but the operator shall be allowed to ride on equipment unless proper seating is provided
- * Never use cell phones, radios, CD players, MP3s and iPods while operating equipment
- * Secure equipment before using employer-provided communication equipment
- * Secure unattended equipment
- * Have audible back-up alarms for large equipment
- * Spotter to direct operator if visibility is restricted
- * Keep adequate clearance behind the vehicle
- * Always pay attention to equipment backing up

Work Zone Safety

- * Traffic control plan is needed
- * Traffic control devices must be used inside the work zone
- * First warning should be 4-8 times (in feet) the speed limit (in mph)
- * Flaggers and others need high visibility, reflective clothing and training
- * Reflective materials are critical!
- * ANSI/ISEA 107-2004 specifications: Class 1, 2, 3, or E

Confined Space

- * All employees required to enter into confined or enclosed spaces *shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required.*
- * Either general mechanical or local exhaust ventilation meeting the requirements of paragraph (a) of this section shall be provided *whenever welding, cutting, or heating is performed in a confined space.*
- * If sufficient ventilation cannot be achieved without blocking the means of access, employees will be protected by air-line respirators in the confined space.
- * An employee will be assigned outside of such confined space to maintain communication with those working in the confined space and to aid in an emergency
 - * Must have pre-planned rescue procures that can be put into effect immediately
- * "Lifelines" When a welder must enter a confined space through a manhole or other small opening, means shall be provided for quick removal in case of emergency.
 - * Lifelines must be attached so as not to jam the welder's body in a small exit
- * Where oxygen deficiency or a hazardous atmosphere exists or could reasonably exist, the atmosphere in the excavation shall be tested before employees enter excavations greater than 4 feet in depth.

CONFINED SPACE ENTRY

1. No employee shall enter areas defined below without authorization:
 - A. A space that is NOT DESIGNED FOR CONTINUOUS EMPLOYEE OCCUPANCY; and
 - B. Is large enough and so configured that a person can bodily enter into and perform assigned work; and
 - C. Has LIMITED or RESTRICTED means for ENTRY or EXIT; and
 - D. May have a POSSIBLE HAZARODUS ATMOSPHERE that may expose employees to the risk of death, incapacitation, impairment of ability to self rescue caused by
 - i. Flammable gas
 - ii. Airborne combustibile dust
 - iii. Atmospheric oxygen concentration below 19.5 or above 23.5%
 - iv. A toxic atmosphere or substance
 - v. Danger of engulfment

NO ENTRY UNTIL AN AUTHORIZED PERSON EVALUATES THE AREA, AND AUTHORIZES ENTRY.

GENERAL CONFINED SPACE ENTRY PROCEDURE

- A. There shall be no unauthorized entry into a confined space by any person.
- B. An authorized person shall examine, test and evaluate a potential entry space and determine if it is a "NON-PERMIT SPACE" and meets the following requirements:
 - a. It does NOT contain any atmospheric hazards or dangers of engulfment capable of causing death or serious physical harm;
 - b. The space has been PROVEN SAFE, has been VERIFIED, DOCUMENTED, and has a CERTIFIED GUARANTEE of a safe environment.
- C. If the conditions in #2 have been satisfied, the ALTERNATE ENTRY PROCEDURE may be followed.
- D. If conditions in #2 are not met and has any of the following, the PERMIT ENTRY PROCEDURE must be followed:

THE SPACE:

- A. Contains or has a potential to contain a HAZARDOUS ATMOSPHERE.
- B. Contains a material that has a potential for ENGULFING an entrant.
- C. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging wall or by a floor which slopes downward and tapers to a smaller cross section; or
- D. Contains any other recognized serious safety or health hazard.

Illumination

Construction areas, ramps, runways, corridors, offices, shops, and storage areas shall be lighted to not less than the minimum illumination to the intensities on Table D-3 while work is in progress.

TABLE D-3 MINIMUM ILLUMINATION INTENSITIES IN FOOT-CANDLES

Foot-Candles	Area of Operation
5	General construction area lighting.
3	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: warehouses, corridors, hallways, and exitways.
5	Tunnels, shafts, and general underground work areas. (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved cap lights shall be acceptable for use in the tunnel heading.)
10	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lifts and active store rooms, mess halls, and indoor toilets and workrooms.)
30	First aid stations, infirmaries, and offices.

For areas or operations not covered above, refer to the American National Standard A11.1-1955, R1973, for recommended values.

Excavations

Protection of workers

- Workers should be protected from cave-in by using an adequately designed protective system.
- Protective systems must be able to resist all expected loads to the system
 - A well designed protective system
 - Correct design of sloping and benching systems
 - Correct design of support systems, shield systems, and other protective systems
 - Plus
 - Appropriate handling of materials and equipment
 - Attention to correct installation and removal
 - Equals protection of employees at excavations

Cave-ins are the greatest risk

Proper protective systems will be designed and constructed

- Slopes and configurations of sloping and benching systems
- Support systems, shield systems, and other protective systems
 - Utilizing the following:
 - Shield
 - Shoring
 - Sloping
 - Factoring in the following:
 - Soil classification
 - Depth of cut
 - Water content of soil
 - Changes due to weather and climate
 - Other operations in the vicinity

To protect workers

- Slope or bench the sides of the excavation
- Support the sides of the excavation
- Place a shield between the side of the excavation and the work area
- Other hazards include:
 - ▲ Asphyxiation due to lack of oxygen
 - ▲ Inhalation of toxic materials
 - ▲ Fire
 - ▲ Moving machinery near the edge of the excavation can cause a collapse
 - ▲ Accidental severing of underground utility lines
 - ▲ Most accidents occur in trenches 5-15 feet deep
 - ▲ There is usually no warning before a cave-in

Means of egress from trench excavations

- Stairway, ladder, ramp or other safe means of egress
 - Must be located in excavations that are 4 feet or more in depth
 - No more than 25 feet of lateral travel for employees is allowed

Walkways

- Provided where workers or equipment are required to cross over excavations
- Guardrails that comply with 1926.502(b) will be provided where walkways are 6 feet or more above lower levels

Cranes

Barricades around the crane and the swing radius is required

- ❖ A simple barrier is acceptable
- ❖ Must mark off the cranes swing radius
- ❖ Best practice would to keep all unnecessary workers away from the area while lifting

Comply with manufacturer's specifications

- Beginning of each shift
 - Operate hoist motion up & down to determine if normal operating speeds available
 - Raise hook to upper end of travel slowly to test limit switch
 - If overhead type, operate trolley & bridge travel
 - Observe drift after power release to determine brake adjustment
- Requirements
 - Rated load capacities conspicuously posted
 - Warnings visible to operator while at the control station
 - Hand signals those prescribed by ANSI standard for the type of crane in use
 - Illustration of the signals posted at the job site

Competent person must inspect all machinery and equipment

- Prior to each use and during use
- Deficiencies shall be repaired, or defective parts replaced, before continued use.

Daily inspection

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

Cranes only allowed to be operated by properly-trained personal only

DO NOT lift loads over people, warn personnel of approaching loads

DO NOT make side pulls, lift all loads vertically

DO NOT use limit switches as normal stopping devices

Crane use must comply with the above stated rules and also CFR 1926.550 Subpart N

Steel Erection

Approval to begin steel erection

- Before erection begins, controlling contractor provide steel erector with **written notifications**:
 - Concrete in footing, wall is 75% cured
- Steel erection contractor cannot begin until receiving notification from the controlling contractor

Controlled Decking Zone (CDZ)

- An area in which work may take place without the use of guardrail systems, personal fall arrest systems, fall restraint systems, or safety net systems
- Access to the zone is controlled
- Established in an area of the structure over 15 and up to 30 feet above a lower level
- CDZ shall not be more than 90 feet wide and 90 feet deep from any leading edge
- Marked by the use of control lines or equivalent
- Unsecured decking in a CDZ is a maximum 3,000 square feet
- Each employee working in a CDZ shall have completed CDZ training in accordance with 1926.761

Site layout

- Controlling contractor must ensure that the following is provided and maintained
 - Adequate access roads
 - A firm properly graded area

Hoisting and rigging

- Crane operator has final call
- "Qualified rigger" inspects rigging prior to each shift
- CANNOT ride the ball
- Only connectors and riggers are allowed under loads and loads rigged to prevent unintentional displacement
- All loads need to be rigged by a qualified rigger
- When using a Christmas tree lift, there is a MAXIMUM of 5 levels, lifted at one time

Structural steel assembly

- MAXIMUM of 8 floors between erection floor and uppermost permanent floor
- MAXIMUM of 4 floor unfinished bolting
- Fully decked or nets within two floors or 30 feet under erection work
- Metal deck openings turned down
- Holes cut immediately prior to filling
- No shear connectors on beams until walking surface installed
- Plumbing up to ensure stability of structure
- Installed **brace** constructions are placed on structure
 - Removed only with approval of competent person
- No hoisting using bundle straps or bands

- ✦ Loose items secured
- ✦ Laid decking joists according to 757(e)(4)
- ✦ Secure at end of shift if necessary
- ✦ Holes covered
- ✦ Covers secured
- ✦ Twice anticipated load
- ✦ Marked 'cover' or 'hole'
 - ✦ Smoke dome or skylight fixtures that have been installed, are not considered covers unless they meet the strength requirements
- ✦ Decking holes around columns protected
- ✦ Decking laid tight and immediately secured
- ✦ Placed for full structural support
- ✦ Derrick floors fully planked and bolted

Column anchorage

- ✦ 4 anchor bolts per column
- ✦ W/O 300 lb. eccentric gravity load from 18 inches at column top
- ✦ Columns set on floors, plates, or packs adequate to transfer construction loads
- ✦ Evaluated by CE to determine if bracing is needed
- ✦ Structural engineer of record must approve any repair or modifications to anchor rods
- ✦ Written notification from CC prior to column erection for any repair or modification

Beams and columns

- ✦ Two bolts per connection prior to releasing hoisting line
- ✦ Solid web members for diagonal bracing on bolt wrench tight min
- ✦ Requires one bolt to remain connected for double connections unless seat or equivalent used
- ✦ Seats for double connections shall be designed for the load during the double connection process
- ✦ Column splices to withstand 300 lb. force from 18 inches

Fall protection

- ✦ All must be protected at heights greater than 2 stories or 30 feet, including connectors and deckers
- ✦ Perimeter cables required as soon as decking is installed
- ✦ Between 15 and 30 feet, fall protection required for all, except the following
 - ✦ Deckers in controlled decking zone (CDZ)
 - ✦ Connectors
 - ✦ Connectors must be provided and wear equipment necessary to be able to be tied-off, or to be provided with other means of fall protection
- ✦ Guardrail systems and safety net systems must meet 1926.502 criteria

All steel erection must comply with the above rules and 1926 Subpart R-Steel Erection.

SAFETY DISCIPLINE

A. Three-Step System

First violation: Written warning; copies to employee and employee's file.

Second violation: Written warning; suspension for ½ or full day without pay.

Third violation: Written report for file and immediate termination.

B. Four-Step System

First violation: Oral warning; notation for personnel file.

Second violation: Written warning; copy for file or Personnel Office.

Third violation: Written warning; one day suspension; or termination if warranted.

Fourth violation: Written warning and one-week suspension, or termination if warranted.

C. A record will be maintained of all discipline.

EMERGENCY PROCEDURES

In case of an emergency on site following procedures should be instituted at each site:

1. Method of communication should be determined at each site, telephone, radio, etc.
2. Emergency telephone numbers should be posted:
 - a. Police
 - b. Fire
 - c. Medical Response Team
3. Post near communication station the address of your site.
4. Post names of first aid responders on site.
5. Designate person to direct emergency crews to site of emergency.

POWER LOCKOUT PROCEDURE

Lockout procedures for George H. Pastor & Sons Company

I. PURPOSE

The purpose of this procedure is to assure that employees are protected from unintended machine motion or unintended release of energy which could cause injury.

II. MANAGEMENT RESPONSIBILITIES

- A. Each supervisor shall train new employees and periodically instruct all of their employees regarding provisions and requirements of this lockout procedure.
- B. Each supervisor shall effectively enforce compliance of this lockout procedure including the use of corrective disciplinary action where necessary.
- C. Each supervisor shall assure that the locks and devices required for compliance with the lockout procedure are provided to their employees.
- D. Prior to setting up, adjusting, repairing, servicing, installing, or performing maintenance work in equipment, machinery, tools, or processes, the supervisor shall determine and instruct the employees of the steps to be taken to assure they are not exposed to injury due to unintended machine motion or release of energy.

III. EMPLOYEE RESPONSIBILITY

- A. Employees shall comply with the lockout procedure.
- B. Employees shall consult with their supervisor or other appropriate knowledgeable management personnel whenever there are any questions regarding their protection.
- C. Employees shall obtain and care for the locks and other devices required to comply with the lockout procedure.

IV. GENERAL

- A. The power source of any equipment, machine, tool, or process to be set-up, adjusted, repaired, serviced, installed, or where maintenance work is to be performed and unintended motion or release of energy could cause personal injury, such a power source shall be locked out by each employee doing the work. Sources of energy, such as springs, air hydraulic and steam shall be evaluated in advance to determine whether to retain or relieve the pressure prior to starting the work.
- B. Safety locks are for the personal protection of the employees and are only to be used for locking equipment.
- C. Safety locks, adapters, and "Danger Tags" can be obtained from a supervisor.
- D. Equipment locks and adapters can be obtained from a supervisor. The sole purpose of the "Equipment" lock and adaptor is to protect the equipment during periods of time when work

has been suspended or interrupted. The locks are not to be used as a substitute for the employee's personal safety lock.

- E. Personal locks shall contain a tag with employee's name on it.
- F. One key of every lock issued shall be retained by the employee to whom it was issued and the only other key to the lock shall be retained by the superintendent.
- G. Employees shall request assistance from their supervisor if they are unsure of where or how to lockout equipment.
- H. Any questions concerning the lockout procedure should be directed to the employee's supervisor.

V. LOCKING OUT AND ISOLATING THE POWER SOURCE

- A. Equipment, machines, or processing main disconnect switches shall be turned off and locked in the off position only after the electrical power is shut off at the point of operator control. Failure to follow this procedure may cause arcing and possible an explosion.
- B. Equipment/tools connected to over a 110 volt source of power by a plug-in cord shall have a locking device applied to the plug attached to the cord leading to the machine to be considered locked out.
- C. Equipment/tools connected to a 110 volt source of power by a plug-in cord shall be considered locked out if the plug is disconnected and tagged with a "do not start tag."
- D. After locking out the power source, the employee shall try the equipment, machine, or process controls to ensure no unintended motion will occur, or test the equipment, machine or process by use of appropriate test equipment to determine that the energy isolation has been effective.
- E. When two or more employees work on the same equipment, each is responsible for attaching his/her lock. Safety locks and adaptors are to be fixed on levers, switches, valves, etc. in the non-operative (off) position.
- F. An employee who is assigned to a job and upon arrival finds an "Equipment Lock," "Adaptor" and "Danger Tag" affixed to the equipment shall take the following action:
 1. Affix his/her personal lock to the "Equipment Adaptor."
 2. Determine who placed the equipment out of service and contact all parties who have locks on the equipment to determine if the assignment to be performed would affect their safety. The assignment will proceed only if safe to do so with all parties involved.
 3. Try the controls to ensure no unintended motion will occur before starting work or qualified personnel shall test the equipment, machine, or process by use of appropriate test equipment to determine that the energy isolation has been effective. (Such testing equipment is only to be employed by trained qualified personnel.)

VI. REMOVING TEST AND ADJUSTMENTS DURING LOCKOUT

- A. Power may be turned on when it is required to perform tests or adjustments. All of the rules pertaining to removing locks and restoring power shall be followed. The equipment or process shall again be locked out if it is necessary to continue work after completing the tests or adjustments.
- B. If the employee leaves the job before its completion, such as job reassignment, the employee shall remove his/her personal lock and adaptor and replace it with an "Equipment" lock and adaptor. In addition, the employee will prepare and attach a "Danger Tag" indicating the reason

the equipment is locked out (should more than one employee be assigned to the job, the last employee removing his/her lock will be responsible for affixing the "Equipment" lock, adaptor and the "Danger Tag").

- C. Upon completion of the work, each employee will remove his/her lock, rendering the machine operable when the last lock is removed.
- D. The employee responsible for removing the last lock, before doing so, shall assure that the guards have been replaced, the equipment, machine, or process is cleared for operation, and appropriate personnel notified that power is being restored. This employee is also responsible for removing the "Equipment" lock and returning it to the supervisor.

11. EMERGENCY SAFETY LOCK REMOVAL

- A. The superintendent, or other designated management person, will be authorized to remove an employee's lock under the following conditions:
 - 1. Receipt of a written request signed by the appropriate supervisor which shall state the reason the employee is not able to remove the lock.
 - 2. The supervisor is responsible for making certain all the requirements for restoring power are followed.

2. As an alternative to requesting an MSDS from the employer the employee may obtain a copy from the Department of Public Health.

D. Attendance will be taken at training sessions. These records will be kept by the Site Superintendent.

E. Before any new hazardous chemical is introduced into the workplace, each employee will be given information in the same manner as during the safety class.

V. HAZARDOUS NON-ROUTINE TASKS

A. On occasion, employees are required to do work in hazardous areas (e.g. confined spaces). Prior to starting work in such areas, each employee will be given information about the hazards involved in their areas.

This information will include:

1. Specific chemical hazards.
2. Protection/safety measures the employee is required to take to lessen risks.
3. Measures the company has taken to lessen the hazards, including ventilation, respirators, the presence of another employee, and emergency procedures.

B. It is the policy of George H. Pastor & Sons that no employee will begin work in a confined space or any non-routine task, without first receiving a safety briefing.

VI. INFORMING CONTRACTORS

A. It is the responsibility of the Site Superintendent to provide any other contractors with information regarding employees exposed to our chemicals with the following information:

1. Hazardous chemicals with which they may come in contact.
2. Measures the employees should take to lessen the risks.
3. Where to get MSDSs for all hazardous chemicals.

B. It is the responsibility of the Site Superintendent to obtain chemical information from contractors when they will expose our employees to hazardous chemicals which they may bring into our workplace.

VII. PIPE AND PIPING SYSTEMS

A. Information on the hazardous contents of pipe and piping shall be readily available.

WRITTEN HAZARD COMMUNICATION PROGRAM

GENERAL

The following hazard communication program has been established for George H. Pastor & Sons. This program will be available for review by all employees.

I. HAZARD DETERMINATION

George H. Pastor & Sons will be relying on Material Safety Data Sheets from suppliers to meet determination requirements.

II. LABELING

- A. The Site Superintendent will be responsible for seeing that all containers coming in are properly labeled.
- B. All labels shall be checked for:
 1. Identity
 2. Hazard
 3. Name and address of responsible party
- C. Each Sub Contractor shall be responsible for see that all portable containers used in their work areas are labeled with identity and hazard warning.

III. MATERIAL SAFETY DATA SHEETS (MSDS)

- A. The Project Manager will be responsible for compiling the master MSDS file. It will be kept by Site Superintendent.
- B. Copies of MSDSs for all hazardous chemicals to which employees may be exposed will be kept in a file at the job site trailer.
- C. MSDSS will be available for review to all employees during each work shift.
- D. The Site Superintendents will be provided with the required MIOSHA Right-To-Know posters within five (5) days of new or revised MSDSs.

IV. EMPLOYEE INFORMATION TRAINING

- A. The Project Manager shall coordinate and maintain records of training conducted by the Site Superintendent.
- B. Before starting work, or as soon as possible thereafter, each new employee will attend a safety class conducted by the Site Superintendent. In that class, each employee will be given information on:
 1. Chemicals and their hazards in the workplace.
 2. How to lessen or prevent exposure to these chemicals.
 3. What the company has done to lessen or prevent workers' exposure to these chemicals.
 4. Procedures to follow if they are exposed.
 5. How to read and interpret labels and MSDSs.
 6. Where to locate MSDSSs and from whom they may obtain copies.
- C. The employee will be informed that:
 1. The employer is prohibited from discharging, or discriminating against, an employee who exercises the rights regarding information about hazardous chemicals in the workplace.

CARING FOR BITES AND STINGS

Insect Bites	Spider Bite/ Scorpion Sting	Marine Life Stings	Snake Bites	Animal Bites
<p>Stinger may be present</p> <p>Pain</p> <p>Swelling</p> <p>Possible allergic reaction</p>	<p>Bite Mark</p> <p>Swelling</p> <p>Pain</p> <p>Nausea and vomiting</p> <p>Difficulty breathing or swallowing</p>	<p>Possible marks</p> <p>Pain</p> <p>Swelling</p> <p>Possible allergic reaction</p>	<p>Bite Mark</p> <p>Pain</p>	<p>Bite Mark</p> <p>Bleeding</p>
<p>Remove stinger - scrape it away or use tweezers</p> <p>Wash wound</p> <p>Cover</p> <p>Apply a cold pack</p> <p>Watch for signals for allergic reaction</p>	<p>Wash wound</p> <p>Apply a cold pack</p> <p>Get medical care to receive antivenin</p> <p>Call local emergency number, if necessary</p>	<p>Initially, soak area in salt water</p> <p>Apply cold pack or paste of baking soda or meat tenderizer</p> <p>Call local emergency number if necessary</p>	<p>Wash wound</p> <p>Keep bitten part still and lower than the heart</p> <p>Call local emergency number</p>	<p>If bleeding is minor - wash wound</p> <p>Control bleeding</p> <p>Apply antibiotic ointment</p> <p>Cover</p> <p>Get medical attention if wound bleeds severely or if you suspect animal has rabies</p> <p>Call local emergency number or contact animal control personnel</p>

Scaffolds

- Supported Scaffolds
- Suspended scaffolds
- Aerial lifts

If a worker is on a scaffold and can fall more than 10 feet, they need to be protected by:

- Guardrails and/or
- Personal fall arrest systems (PFAS)

Guardrails

- Install along open sides & ends
- Front edge of platforms cannot be more than 14 inches from the work, unless using guardrail and/or PFAS
- Top rails need to be 38 to 45 inches in height
- Midrails halfway between top rail and platform
- Toeboards need to be at least 3-1/2 inches high

PFAS can be used instead of guardrails on some scaffolds

Use PFAS w/ guardrails on suspension scaffolds

Use PFAS on erectors and dismantlers where feasible

Barriera the area below scaffold to deny entry into the area

Use panels or screens if material is stacked higher than toeboard

Canopy or netting to be erected below a scaffold to contain or deflect falling objects

Due to serious risk of electrocution, check the clearance distances listed in the standard

• Must scaffold have good, solid support

• Use appropriate scaffold construction methods

• Proper scaffold access

• Proper use by competent person

• Platforms must:

- Be fully planked or decked with no more than 1 inch gaps
- Be able to support its weight & 4 times maximum load
- Be at least 18 inches wide
- Have no large gaps in front edge of platforms
- Each abutted end of plank must rest on a separate support surface
- Overlap platforms at least 12 inches over supports, unless restrained to prevent movement
- Use scaffold grade word

- Fully planked between front upright and guardrail support
- Component pieces used must match and be of the same type

Erection stable and level ground

Lock wheel and braces

No paint on wood platforms

Scaffold height

- The height of the scaffold should not be more than four times its minimum base dimension unless guys, ties, or braces are used

Each end of a platform, unless cleated or otherwise restrained by hooks, must extend over its support by at least 6 inches

Supported scaffold

- Platforms supported by legs, outrigger beams, brackets, poles, uprights, posts, & frames
- Reseal from tipping by guys, ties, or braces
- Scaffold poles, legs, posts, frames, and uprights must be on base plates and mud sills or other firm foundation

Open Scaffold access

- Provide access when scaffold platforms are more than 2 feet above or below a point of access

Permitted types of access:

- Ladders, such as portable, hook-on, attachable, stairway type, and built-ins
- Stair towers
- Ramps and walkways

• May use building stairs and come-out window

• No access by cross braces

• When using ladders, bottom rung no more than 24 inches high

• Can use some end frames

• Can access from another scaffold, structure or hoist

Suspension scaffolds

- Rope supporting scaffold must be capable of supporting 6 times the load
- Secure tie to prevent swaying
- Support devices must rest on surfaces that can support four times the load
- Competent person
 - Evaluate connections to ensure the supporting surfaces can support the load
 - Inspect ropes for defects before shift
- PRAC must have anchors independent of the scaffold support system

Moving scaffolds

- Workers can't be on a moving scaffold unless:

- Surface is level
- Height to base ratio is 2 to 1
- Outriggers are installed on both sides of scaffolds.

- Workers cannot be on scaffold part beyond the wheels
- Competent person must be on site to supervise

Don't work on snow or ice covered platforms or during storms or high winds

Use tag lines on swinging loads

Protect suspension ropes from heat and acid

Overhead Bricklaying from supported scaffolds

- Chain rail or personal fall arrest system is required on all sides except the where work is being performed

Shore scaffolds and Lean-to scaffolds are NOT allowed

Competent Person

Duties are

- ✓ Identifying and properly correcting hazards
- ✓ Determining safety of work on scaffolds during storms or high winds
- ✓ Train workers to recognize hazards
- ✓ Select qualified workers to conduct work
- ✓ Inspect scaffolds for visible defects before each shift and after any alterations
- ✓ Must replace or repair defective parts immediately

Scaffold Erection

- Can only be erected, moved, dismantled or altered under the supervision of a competent person

Training of workers

Workers must be trained on scaffold hazards and procedures to control the hazards; must include:

- Nature of electrical, fall, and falling object hazards
- How to deal with electrical hazards and fall protection systems
- Proper use of the scaffold
- Scaffold load capacities
- Retrain workers as necessary

Main Hazards of scaffolds

- Falls from elevation
- Fall planking
- Scaffold collapse
- Getting struck by falling tools or debris
- Electrocuttion

Steel erection

Controlled Decking Zone-CDZ

- An area in which work may take place without the use of guardrail systems, personal fall arrest systems, fall restraint systems, or safety net systems.
- Access to the zone is controlled
- Established in an area of the structure over 15 and up to 30 feet above a lower level
- CDZ shall not be more than 90 feet wide and 90 feet deep from any leading edge
- Marked by the use of control lines or equivalent
- Unsecured decking in a CDZ is a maximum 3,000 square feet
- Each employee working in a CDZ shall have completed CDZ training in accordance with 1926.761

Approval to begin steel erection

- Before erection begins, controlling contractor provide steel erector with **written notifications**:
 - Concrete in footing, wall, is 75% cured
- Steel erection contractor cannot begin until receiving notification from the controlling contractor

Site layout

- Controlling contractor must ensure that the following is provided and maintained:
 - Adequate access roads
 - A firm, properly graded area

Rigging & Drilling

- Crane operator has final call
- "Qualified rigger" inspects rigging prior to each shift
- CANNOT ride the ball
- Only connectors and riggers are allowed under loads and loads rigged to prevent unintentional displacement
- All loads need to be rigged by a qualified rigger
- When using a Christmas tree lift, there is a MAXIMUM of 5 levels, lifted at one time

Structural steel assembly

- MAXIMUM of 8 floors between erection floor and uppermost permanent floor
- MAXIMUM of 4 floor unfinished bolting
- Fully decked or nets within two floors or 30 feet under erection work
- Metal deck openings turned down
- Holes cut immediately prior to filling
- No shear connectors on beams until walking surface installed
- Plumbing up to ensure stability of structure
- Installed **before** constructions are placed on structure:
 - Removed only with approval of competent person
- No hoisting using bridle straps or bands
- Loose items secured
- Wind locking joists according to 757(e)(4)

- * Secure at end of shift if necessary
- * Holes covered
- * Covers secured
- * Twice anticipated load
- * Marked "cover" or "hole"
 - * Smoke dome or skylight fixtures that have been installed, are not considered covers unless they meet the strength requirements
- * Decking holes around columns protected
- * Decking laid tight and immediately secured
- * Placed for full structural support
- * Deck floors fully planked and bolted

Column Anchorage

- * 4 anchor bolts per column
- * Withstand 300 lb eccentric gravity load from 18 inches at column top
- * Columns set on floors, plates, or packs adequate to transfer construction loads
- * Evaluated by CP to determine if bracing is needed
- * Structural engineer of record must approve any repair or modifications to anchor rods
- * Written notification from CC prior to column erection for any repair or modification

Double End Columns

- * Two bolts per connection prior to releasing hoisting line
- * Solid web members for diagonal bracing on bolt wrench tight min
- * Requires one bolt to remain connected for double connections unless seat or equivalent used
- * Seats for double connections shall be designed for the load during the double connection process
- * Column splices to withstand 300 lb force from 18 inches

Fall Protection

- * All must be protected at heights greater than 2 stories or 30 feet, including connectors and deckers
- * Perimeter cables required as soon as decking is installed
- * Between 15 and 30 feet fall protection required for all, except the following
 - * Deckers in controlled decking zone (CDZ)
 - * Connectors
 - * Connectors must be provided and wear equipment necessary to be able to be tied-off, or to be provided with other means of fall protection
- * Guardrail systems and safety net systems must meet 1926.502 criteria

All steel erection must comply with the above rules and 1926 Support R-Steel Erection

FALL PROTECTION

- * Guardrails
- * Personal Fall Arrest Systems (PFAS)
- * Safety Net

Do you have fall protection

"(Unprotected sides and edges." Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet 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. per 1926.501(b)(1)

- 1 Falls are the *leading cause of fatalities* in the construction industry.
- 2 An average of *162 falls occurred each year* from 1995 to 1999, with the trend on the increase.
- 3 Select the appropriate fall protection system for the situation
- 4 Properly install and construct safety systems.
- 5 Use safe work procedures.
- 6 Workers will be trained in proper selection, use and maintenance of fall protection systems.

PROHIBITED

- 1 Body belts used for fall arrest are PROHIBITED.
- 2 Non-locking snap hooks as part of a personal fall arrest systems and positioning device systems are PROHIBITED.

Leading Edge Work

- 1 When working near a leading edge, employees must be protect by a fall protection system.
- 2 If infeasible, or creates a *greater hazard* then a Fall Protection Plan must be implemented.

Holes and Skylights

Workers must be protected from falling through, tripping, or stepping into, and also objects falling through.

- 1 Must be protected by covers
- 2 Withstand twice expected load
- 3 Secured
- 4 Marked with "HOLE" or "COVER"

Formwork and Rebar

Workers must be protected by FPS when above 6 feet.

Ramps, Runways, Walkways

Workers must be protected with guardrail systems.

Excavations

Workers and others need to be protected from excavations by the use of guardrails, fences or barricades if excavation, if the excavation is not readily seen.

Dangerous Equipment

Less than six feet fall height above dangerous equipment workers must be protected with guardrail systems or by equipment guards.

Overhand Bricklaying

Workers must be protected with PPS or work within a *Controlled Access Zone (CAZ)*. CAZ definition means an area in which certain work may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems and *access to the zone is controlled*.

- Only bricks and mortar within four feet of edge
- Remove debris at regular intervals

"Roofing" Work

- No material within six feet of edge unless guardrails
- Materials piled near edge stable and self-supporting

Low-Sloped Roofs

Low-sloped roofs rise four units or less for every run of 12 units.

Workers must be protected by

- Fall Protection System
- PPS in combination with *warning line*
- Warning line with *safety monitoring*

Steep Roofs

Steep-sloped roofs rise four units or more for every run of 12 units, and when the sides and edges 6 feet or more above lower levels, protection is needed.

Workers must be protected by

- Guardrail systems with toe boards
- Safety nets systems
- Personal fall arrest systems

Precast Concrete

Workers above 6 feet need to be protected by *fall protection system* or by a *fall protection plan*.

Wall Openings

If a wall opening is 6 feet or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface, then workers need to be protected with a fall protection system (FPS).

Falling Objects

To protect workers from falling objects workers must follow the above PPE guideline, also toe boards, screens or guardrails, or canopy and barricades must be utilized.

- Enough toe board to protect those below
- 50 pounds strong downward & outward
- At least 3 1/2 inches high
- Tools & equipment cannot be piled higher than toe boards
 - Unless a panel or screen is used to eliminate falling object hazards

Safety Systems

Safety monitoring system

A safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

Warning line system

A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect workers in the area.

Guardrail system

- Top rail, mid-rail, and toe board
- Top rail 42" (plus or minus 3 inches)
- Toe board minimum 3 1/2 inches high
- Must withstand 200 pound force
- Appendix B of the standard provides guidance
- Surfaced to prevent injury
- No projection hazard at rail ends
- All rails at least 1/4" thick

Midrails

- Required if no wall or parapet at least 21 inches high
- Install midway between top rail and working level
- Screens and mesh run all along entire opening
- Balusters, when used, not more than 19 inches apart

Safety Nets

- Installed a maximum of 30 feet below working level

- 200 pound drop test or certified by employer or CP
- Extends sufficiently from outer edge
- Inspected weekly
- Objects removed within shift
- Border rope strength of 5000 pounds

Personal Fall Arrest Systems (PFAS)

- No body belts for fall arrest!
- Body belts for positioning systems only
- Snaphooks
 - Not to be engaged directly
 - To webbing, rope, or wire rope
 - To each other
 - To a dee-ring, to which another snaphook or other connector is attached
 - To a horizontal lifeline
- Anchorage
 - Secure point of attachment for lifelines, lanyards or deceleration device
 - If used for attachment of personal fall arrest equipment, it must be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached
 - Part of a complete PFAS which maintains a safety factor of at least two
 - Under the supervision of a qualified person
- Horizontal lifelines
 - Designed, installed, and used, under the supervision of a qualified person
 - Part of a complete PFAS
 - Maintains a safety factor of at least two
 - Devices used to connect to a horizontal lifeline which could become vertical must be capable of locking in both directions on the lifeline
- Lanyard
 - Cannot be made of natural fiber rope
 - Must be protected against damage by cuts or abrasions
 - Each employee must be provided a separate lanyard
 - Lanyards must have a minimum breaking strength of 5,000 pounds
- Requirements
 - Limit max. arresting force on an employee to 1,800 pounds when used with a body harness
 - Be rigged such that an employee can neither free fall more than 6 feet, nor contact any lower level
 - Bring an employee to a complete stop and limit max. deceleration distance a worker travels to 3.5 feet
 - Attachment point is center of wearers back or above the head
 - PFAS used only for fall protection
 - If subject to impact loading, examined by competent person
 - Prompt rescue provided
 - Inspected prior to each use
 - Not attached to guardrail systems

- At hoist areas, allow movement to edge only.

Positioning Systems

- Limit free fall to two feet
- Anchorage can handle at least 3,000 pounds

Warning Lines

- Erected around all sides of roof
- Erected at least six feet from edge if no mechanical equipment is used

Warning Lines

- Points of access formed by two warning lines
- When access not in use, closed off
- Consist of ropes, wires, or chains, and supporting stanchions
- Flagged at least every six feet
- Lowest point (including sag) is no less than 34 inches
- Resists 16 outwardly directed pound force at 30 inches
- Minimum tensile strength of 500 pounds
- Pullage between stanchions will not take up slack in other sections
- Only roofing work employees allowed between roof edge and warning line
- Protect workers from mechanical equipment on roofs

Controlled Access Zone

- Where leading edge and other operations are taking place the controlled access zone shall be defined by a **control line**
- At least six feet from leading edge
- Not more than 25 feet from leading edge
- For precast concrete operations, control line six to sixty feet from edge
- Extends entire length of leading edge
- Connected at ends to guardrail or wall
- Flagged or marked at least every six feet
- 30 to 45 inches high
- 200 pound breaking strength
- Control line can be used instead of guardrail system along leading edge to protect non-leading edge workers

Hoist Monitors

- Must be a CP to recognize fall hazards
- Warns employees when:
 - Unaware of hazards
 - Acting in unsafe manner
- Same surface and within sight of workers
- Close enough to workers to be heard
- No other responsibilities

- Mechanical equipment not used where safety monitoring system being used
- Only roofers allowed in area
- Employees must comply with warnings

Fall Protection Plan

- Leading edge work
- Precast concrete
- Residential roofing
- Prepared by qualified person
- Specific to site
- Changes made by qualified person
- Plan kept at site
- Implemented by competent person
- Documents why conventional fall protection is infeasible
- Discuss measures used to protect workers
- Identifies all controlled access zones
- Where no other measures are used a safety monitor must be used
- Identify all CAZ employees
- If an employee falls, review plan to prevent recurrence

Training

- All employees who might be exposed to falls
- Trained by competent person
- Covers fall hazards in work area
- Covers procedures for PPS to be used
- The use and operation of all safety systems

Certification

- Training must be certified
- Latest training certification maintained and available

Safety and health objectives

- ✓ Job site inspections
- ✓ Contractor safety person
- ✓ Safety rules
- ✓ Job safety training
- ✓ Personal protective equipment
- ✓ Fall protection
- ✓ Scaffolds
- ✓ Fire protection
- ✓ Electrical safety
- ✓ Signs
- ✓ Stairways and ladders
- ✓ First aid
- ✓ Toilets
- ✓ Tools – Hand & Power
- ✓ Equipment/Vehicles
- ✓ Work zone safety
- ✓ Confined space
- ✓ Confined space entry
- ✓ General confined space entry procedure
- ✓ Illumination
- ✓ Excavations
- ✓ Cranes
- ✓ Safety Discipline
- ✓ Emergency procedures
- ✓ Power lockout procedure
- ✓ Written hazard communication plan

Stairways

There must be a stairway or ladder at points of access where there is an elevation break on 19 inches or more.
At least one point of access must be kept clear.

Rails must be able to withstand a force of 200 pounds.

Handrails - Stairways with four or more risers, or higher than 30 inches must be equipped with at least one handrail.

Chimneys - Stairways with four or more risers or more than 30 inches high must have a stair rail along each unprotected side or edge.

Must have uniform riser height and tread depth, with less than a 1/4 inch variation.

Openings between treads must be filled with filler material at least to the top of each panel.

Unprotected sides of landings must have standard 42 inch guardrail systems.

When doors or gates open directly on a stairway, provide a platform that extends at least 20 inches beyond the swing of the door.

Check for any conditions before using

ladders.

Landings must be kept in a safe condition.

DO

Keep the area around the top and bottom of a ladder clear.

Ensure rungs, cleats, and steps are level and uniformly spaced.

Ensure rungs are spaced 10 to 14 inches apart.

Keep ladders free from slipping hazards.

Use ladders only for their designed purpose.

DON'T

Join ladders together to make longer sections, unless designed for such use.

Use single rail ladders.

Do not load beyond the maximum load for which they were built, nor beyond the manufacturer's rated capacity.

Secure ladders to prevent accidental movement due to workplace activity.

Only use ladders on stable and level surfaces, unless secured.

Do not use ladders on slippery surfaces unless secured or provided with slip-resistant feet

Inspect before use for cracks, dents, and missing rungs

Design or treat rungs to minimize slipping

Side rails - at least 1 1/2 inches apart

Must support 4 times the max load

Don't paint ladders

Don't use an opaque covering (like varnish) on a wood ladder

Side rails must extend at least 3 feet above the upper landing surface

Do NOT use the top or top step of a ladder as a step

Someone else must inspect ladders for visible defects, like broken or missing rungs,

and/or defective ladders immediately

If ladder is repairable, can be put back into service after repair

Run out the ladder in half-lengthwise and dispose of properly

Face the ladder when going up or down

Use one hand to grab the ladder when going up or down

Don't carry any object or load that could cause you to lose balance

Work with feet

Stairway or ladder must be provided at all personnel points of access where there is a break in elevation of 19" or more and there is no ramp, runway, sloped embankment, or personnel hoist provided

Staircases that are not a permanent part of the structure on which construction work is being performed

Temporary stairs must be provided with a double cleated ladder or two or more separate ladders shall be provided when they are the only means of access or exit or when serving simultaneous two-way traffic

Temporary stairs shall have landings not less than 30 inches in the direction of travel and extend at least 22 inches width at every 12 feet or less of vertical rise

Stairs shall be installed between 30 degrees and 50 degrees from horizontal

Metal pan landings and metal pan treads, when used, must be secured in place before filling with concrete or other material

Training program shall be provided to all employees using ladders and stairways, as necessary, covering hazards and how to minimize them

Signs	Owner	Emergency Services	Emergency Services	Emergency Services
<p>Swelling</p> <p>possible allergic reaction</p> <p>Swelling</p> <p>possible allergic reaction</p>	<p>Swelling</p> <p>possible allergic reaction</p> <p>Difficulty breathing or swallowing</p>	<p>Swelling</p> <p>possible allergic reaction</p>	<p>Swelling</p> <p>Pain</p>	<p>Bleeding</p>
<p>Remove stinger, scrape it away or use tweezers</p> <p>Wash wound</p> <p>Apply a cold pack</p> <p>Cover</p> <p>Apply a cold pack</p> <p>Watch for signs of allergic reaction</p>	<p>Wash wound</p> <p>Apply a cold pack</p> <p>Get medical care to receive antivenom</p> <p>Call local emergency number, if necessary</p>	<p>Initially soak area in salt water</p> <p>Apply cold pack or paste of baking soda or meat tenderizer</p> <p>Call local emergency number if necessary</p>	<p>Wash wound</p> <p>Keep bitten part still, and lower than the heart</p> <p>Call local emergency number</p>	<p>If bleeding is minor, wash wound</p> <p>Control bleeding</p> <p>Apply antibiotic ointment</p> <p>Cover</p> <p>Get medical attention if wound bleeds severely or if you</p> <p>Call local emergency number or contact animal control</p>

Employer shall ensure that each employee has been trained by a competent person in the following areas, as needed:

- nature of fall hazards in the work area
- correct procedures for erecting, maintaining and disassembling the fall protection systems to be used
- proper construction, use, placement, and care in handling of all stairways and ladders
- max. intended load-carrying capacities of ladders

Part 10

First aid services and provisions for medical care shall be made available by the employer for every employee covered by these regulations.

Sub part D

Employer shall insure 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.

First aid supplies shall be easily accessible when required.

Contents of first aid kits shall be placed in a weatherproof container w/ 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 insure that the expended items are replaced.

Where a 9-1-1 is not available, the telephone numbers of the physicians, hospitals, or ambulances shall be conspicuously posted.

Employer shall provide adequate washing facilities for employers engaged in the application of paints, coating, varnishes or specialties, or in other operations where contaminants may be harmful to the employees.

Lavatories shall be made available in all places of employment.

Each lavatory shall be provided with hot & cold running water, or tepid running water.

Hand soap or similar cleaning agents shall be provided.

Individual hand towels or sections thereof, of cloth or paper, warm air blower or clean individual sections of continuous cloth toweling, convenient to the lavatories, shall be provided.

"No eating and drinking areas" No employees shall be allowed to consume food or beverages neither in a toilet room nor in any area exposed to a toxic material.

Table 1

Table shall be provided for employees according to table D-1.

Under temporary field conditions, provisions shall be made to assure not less than one toilet facility is available. Job sites, not provided w/ a sanitary sewer, shall be provided with one of the following toilet facilities unless prohibited by local codes:

Privies (where their use will not contaminate ground or surface water)

Chemical toilets

Recirculating toilets

Combustion toilets

Head Protection

Head protection is required when working in areas where there is possible danger of head injury from impact or falling/flying objects or from electrical shock and burns.

Head protection used against impact and penetration of falling and flying objects shall meet the specification contained in ANSI (American National Standards Institute) Z89.1-1969, Safety Requirements for Industrial Head Protection.

Head protection used for protection of employees exposed to high voltage electrical shock and burns must meet the specifications contained in ANSI Z89.2-1971.

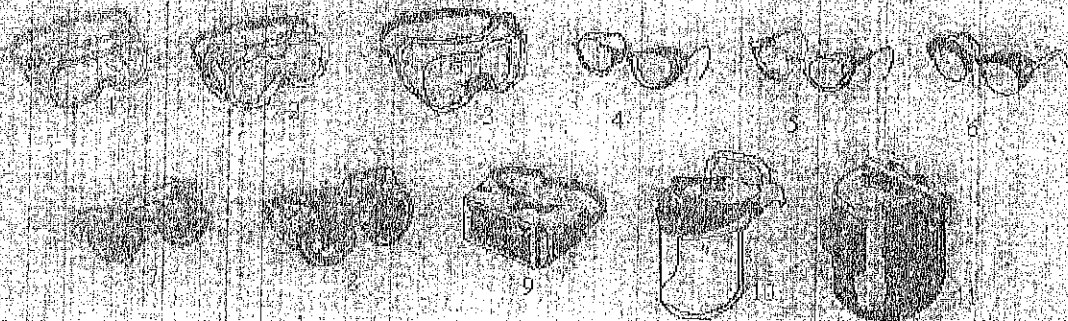
Hearing Protection

When it is not feasible to reduce the noise levels or duration of exposures to those specified in Table D-2, Removable Noise Exposures, in 1926-52, ear protective devices shall be provided and used.

Ear protective devices inserted in the ear must be fitted or determined individually by a competent person.

Ear cotton is not an acceptable protective device.

Eye and Face Protection



- | | | | |
|----|---------|-------------------------------------|---------------------|
| 1. | GOOGLES | Flexible Fitting | Regular Ventilation |
| 2. | GOOGLES | Flexible Fitting | Hooded Ventilation |
| 3. | GOOGLES | Cushioned Fitting | Rigid Body |
| 4. | GOOGLES | Metal Frame with Side Shields (1) | |
| 5. | GOOGLES | Plastic Frame with Side Shields (1) | |

- 5. SPECTACLES, Metal-Plastic Frame - with Sideshields (1)
- 7. WELDING GOGGLES, Eyecup Type - Tinted Lenses (2)
- 7A. CHIPPING GOGGLES, Eyecup Type - Clear Safety Lenses
- 8. WELDING GOGGLES, Coverspec Type - Tinted Lenses (2)
- 8A. CHIPPING GOGGLES, Coverspec Type - Clear Safety Lenses
- 9. WELDING GOGGLES, Coverspec Type - Tinted Plate Lens (2)
- 10. FACE SHIELD (Available with Plastic or Mesh Window)
- 11. WELDING HELMETS (2)

Footnote (1) Non-side shield spectacles are available for limited hazard use requiring only frontal protection.

Footnote (2) See Table E-2, in paragraph (b) of this section, Filter Lens Shade Numbers for Protection Against Radiant Energy.

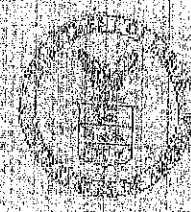
Applications

Operation	Hazards	Recommended protectors: Bold type numbers signify preferred protection
Acetylene Burning, Acetylene Cutting, Acetylene Welding	Sparks, harmful rays, molten metal, flying particles.....	7, 8, 9.
Chemical Handling	Splash, acid burns, fumes.....	2, 10 (For severe exposure add 10 over 2)
Chipping	Flying particles.....	1, 3, 4, 5, 6, 7A, 8A.
Electric (arc) Welding	Sparks, intense rays, molten metal.....	9, 11 (11 in combination with 4, 5, 6. In tinted lenses advisable)
Furnace Operations	Glare, heat, molten metal.....	7, 8, 9 (For severe exposure add 10)
Grinding Light	Flying particles.....	1, 3, 4, 5, 6, 10.
Grinding Heavy	Flying particles.....	1, 3, 7A, 8A (For severe exposure add 10)
Laboratory	Chemical splash, glass breakage.....	2 (10 when in combination with 4, 5, 6)

Machining.....	Flying particles.....	1, 3, 4, 5, 6, 10.
Molten metals.....	Heat, glare, sparks, splash.....	7, 8, (10 in combination with 4, 5 or 6, in tinted lenses)
Spot welding.....	Flying particles, sparks.....	1, 3, 4, 5, 6, 10

Eye Protection

Table 1 FIRE EXTINGUISHERS DATA

 CLASSIFICATION WATER TYPE FOAM CARBON DIOXIDE DRY CHEMICAL	WATER TYPE				FOAM	CARBON DIOXIDE	DRY CHEMICAL			
	STORAGE PRESSURE	CARTRIDGE OPERATED	WATER PUMP OPERATED	SCREW OPERATED	FOAM	KEY	STORAGE PRESSURE	STORAGE PRESSURE	STORAGE PRESSURE	STORAGE PRESSURE
	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO
CLASS I WATER PUMP OPERATED MAINTENANCE ONLY	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES
CLASS II STANDARD OPERATED GASOLINE, OIL, WAXES, GREASE, BITUMENS, LUBRICANTS	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES
CLASS III HIGH TRUCK, LOW TRUCK MOTOR VEHICLES	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES
CLASS IV SPECIAL PURPOSE FLAMMABLE METALS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

SPECIAL EXTINGUISHING AGENTS APPROVED BY RECOGNIZED TESTING										
APPROVED FOR OPERATION	ACQUAER 20° - 40°	TURKISH 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°
MAINTENANCE	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°	FLUOROCHEM 20° - 40°

Signs

Danger Signs

Danger Signs (see Figure C-1) shall be used only where an immediate hazard exists.

Warning signs shall have red as the predominating color for the upper panel; black outline on the borders; and a white lower panel for additional sign wording.

Caution signs

Caution signs (see Figure G-2) shall be used only to warn against potential hazards or to caution against unsafe practices.

Caution signs shall have yellow as the predominating color; black upper panel and borders; yellow lettering of "caution" on the black panel; and the lower yellow panel for additional sign wording. Black lettering shall be used for additional wording.

Standard color of the background shall be yellow, and the panel, black with yellow letters. Any letters used against the yellow background shall be black. The colors shall be those of opaque glossy samples as specified in Table 1 of American National Standard Z53.1-1967.

Figure G-1

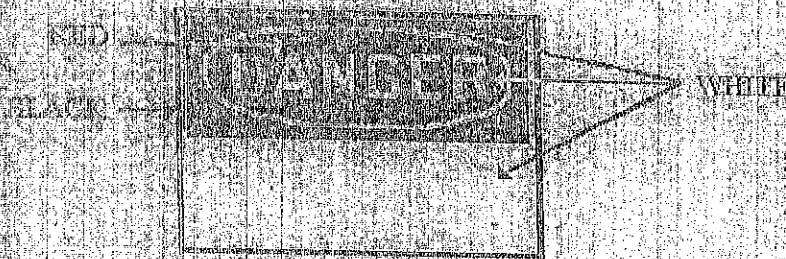
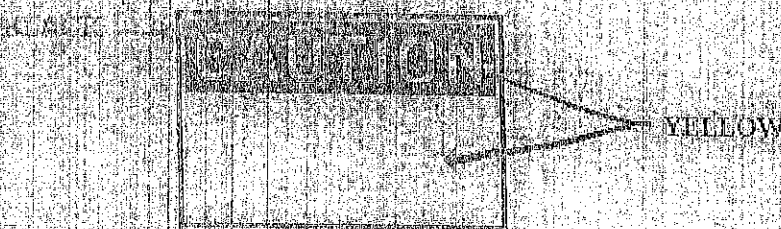


Figure G-2



Sign size

Signs, when required, shall be lettered in legible red letters, not less than 6 inches high, on a white field and the vertical stroke of the letters shall be at least three-fourths inch in width.

Signs and symbols

Safety instruction signs, when used, shall be white with green upper panel with white letters to convey the principal message. Any additional wording on the sign shall be black letters on the white background.

Directional signs

Directional signs, other than automotive traffic signs specified in paragraph (g) of this section, shall be white with a black panel and a white directional symbol. Any additional wording on the sign shall be black letters on the white background.

Traffic signs

Construction areas shall be posted with legible traffic signs at points of hazard.

§ 1926.200(a)(2)

Signs and devices

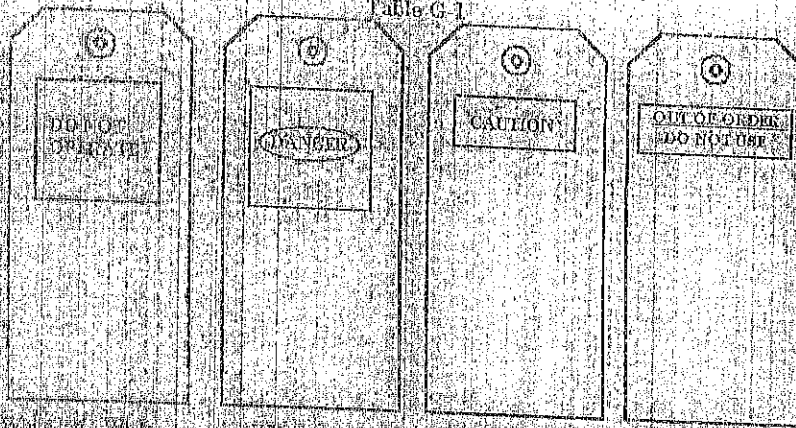
All traffic control signs or devices used for protection of construction workers shall conform to Part VI of the Manual of Uniform Traffic Control Devices (MUTCD), 1988 Edition, Revision 3, September 3, 1993, FHWA-SA-94-027 or Part VI of the Manual of Uniform Traffic Control Devices, Millennium Edition, December 2000, FHWA, which are incorporated by reference. The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 16 CFR part 11. You may obtain a copy of the Millennium Edition from the following organizations: American Traffic Safety Services Association, 45 Riverside Parkway, Suite 100, Fredericksburg, VA 22406-1022; Telephone: 1-800-231-4123; FAX: (540) 368-1722; www.atssa.com; Institute of Transportation Engineers, 1699 14th Street, NW, Suite 300 West, Washington, DC 20005-3438; FAX: (202) 289-7722; www.ite.org; and American Association of State Highway and Transportation Officials, www.aashto.org; Telephone: 1-800-231-5375; FAX: 1-800-525-5502. Electronic copies of the 1988 Edition MUTCD, Revision 3, are available for downloading at <http://mutcd.fhwa.dot.gov/mcd-millennium>. Electronic copies of the 2000 Edition MUTCD, Revision 3, are available for downloading at <http://www.fdot.gov/doc/highway/workzones>. Both documents are available for inspection at the OSHA Docket Office, Room N2627, U.S. Department of Labor, 200 Constitution Avenue, NW, Washington, DC 20210 or at the Office of the Federal Register, 800 North Capitol Street, NW, Suite 700, Washington, DC.

Accident prevention tags

Accident prevention tags shall be used as a temporary means of warning employees of an existing hazard, such as defective tools, equipment, etc. They shall not be used in place of, or as a substitute for, accident prevention signs.

Specifications for accident prevention tags similar to those in Table G-1 shall apply.

Table G-1



White tag, White letters on a black square	White tag, White letters on red oval with a black border	Yellow tag, Yellow letters on black background	White tag, White letters on a black background
Basic Block (Background)	Safety Colors (INK)	Copy specification (Letters)	
White	Red	Do Not Operate	
White	Black and Red	Danger	
Yellow	Black	Caution	
White	Black	Out of Order, Do Not Use	

ANSI Z35.1-1968, American National Standards Institute (ANSI) Z35.1-1968, Specifications for Accident Prevention Signs, and Z35.2-1968, Specifications for Accident Prevention Tags, contain rules which are additional to the rules prescribed in this section. The employer shall comply with ANSI Z35.1-1968 and Z35.2-1968 with respect to rules not specifically prescribed in this subpart.

Flagging. Signaling by flaggers and the use of flaggers, including warning garments worn by flaggers shall conform to Part VI of the Manual on Uniform Traffic Control Devices, (1988 Edition, Revision 3 or the Millennium Edition), which are incorporated by reference in §1926.200(g)(2).

Crane and hoist signals. Regulations for crane and hoist signaling will be found in applicable American National Standards Institute standards.

TABLE F-4

Heating appliances	Minimum clearance (inches)		
	Sides	Rear	Chimney Connector
Room heater, circulating type	12	12	18
Room heater, radiant type	36	36	18

TABLE D-3 - MINIMUM ILLUMINATION INTENSITIES IN FOOT-CANDLES

Foot-Candles	Area of Operation
5	General construction area, lighting
3	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: warehouses, corridors, hallways, and exitways.
5	Tunnels, shafts, and general underground work areas. (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved cap lights shall be acceptable for use in the tunnel heading.)
10	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lots, and active store rooms, mess halls, and indoor toilets and workrooms.)
30	First aid stations, infirmaries, and offices.

Work with hand and power

Use care when working with hand and power tools, objects that fall, fly, are abrasive, or splash

Harmful dusts, fumes, mists, vapors, and gases

Frayed or damaged electrical cords, hazardous connections and improper grounding

Maintain tools regularly

Use right tool for the job

Inspect before use

Operate according to manufacturers' instructions

Use the right PPE

Use guards

DO NOT USE:

Wrenches when jaws are sprung

Impact tools (chisels and wedges) when heads have mushroomed

Tools with loose, cracked or splintered handles

A crowbar as a chisel

Tools with taped handles - they may be hiding cracks

Use PPE, safety goggles and gloves

Keep working area floor clean and free of debris and tripping or slipping hazards

Keep cutting tools sharp

Must be fitted with guards and safety switches

Extremely hazardous when used improperly

Different types, determined by their power source:

- Electric
- Pneumatic
- Liquid fuel
- Hydraulic
- Powder-actuated

Hand-held power tools must be equipped with either:

- Constant pressure switch
- On-Off switch

Disconnect tools when not in use, before servicing and cleaning, and when changing accessories

Keep people not involved in the work away from the work

Secure work with clamps or a vise, freeing both hands to operate the tool

Down hold the switch button while carrying a plugged-in tool

Keep tools clean and sharp

No loose clothing, jewelry or hair, can be caught in moving parts

Remove damaged electric tools and tag them "Do No Use"

Don't carry portable tools by the cord

Don't use electric cords to hoist or lower tools

Don't yank cord or hose to disconnect it

Keep cords and hoses away from heat, oil, and sharp edges

Electric tools must

- Have a 3-wire cord plugged into a grounded receptacle
- Be double-insulated, or
- Be powered by a low-voltage isolation transformer

Operate tools within design limits.

Use gloves and safety shoes

Store in a dry place.

Don't use in wet locations unless approved for that

Keep work areas well lit

Ensure cords don't present a tripping hazard

Compressed air cleaning

- Don't use compressed air for cleaning
- Except where reduced to less than 30 p.s.i. with effective chip guarding and PPE

Equipment

When operating or work around equipment;

Don't use cell phones, radios, CD players, MP3s and iPods while operating equipment

Secure attachment before using employer-provided communication equipment

Secure unattended equipment

Confined Space

All employees required to enter into confined or enclosed spaces shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required.

Either general mechanical or local exhaust ventilation meeting the requirements of paragraph (a) of this section shall be provided *whenever welding, cutting, or heating is performed in a confined space.*

If sufficient ventilation cannot be achieved without blocking the means of access, employees will be protected by air-line respirators in the confined space.

An employee will be assigned outside of such confined space to maintain communication with those working in the confined space and to aid in an emergency.

- Must have pre-planned rescue procedures that can't be put into effect immediately.

Lifelines: When a welder must enter a confined space through a manhole or other small opening, means shall be provided for quick removal in case of emergency.

- Lifelines must be attached so as not to jam the welder's body in a small exit.

Where oxygen deficiency or a hazardous atmosphere exists or could reasonably exist, the atmosphere in the excavation shall be tested before employees enter excavations greater than 4 feet in depth.

POWER LOCKOUT PROCEDURE

Lockout procedures for George H. Pastor & Sons Company

I. PURPOSE

The purpose of this procedure is to assure that employees are protected from unintended machine motion or unintended release of energy which could cause injury.

II. MANAGEMENT RESPONSIBILITIES

- A. Each supervisor shall train new employees and periodically instruct all of their employees regarding provisions and requirements of this lockout procedure.
- B. Each supervisor shall effectively enforce compliance of this lockout procedure including the use of corrective disciplinary action where necessary.
- C. Each supervisor shall assure that the locks and devices required for compliance with the lockout procedure are provided to their employees.
- D. Prior to setting up, adjusting, repairing, servicing, installing, or performing maintenance work in equipment, machinery, tools or processes, the supervisor shall determine and instruct the employees of the steps to be taken to assure they are not exposed to injury due to unintended machine motion or release of energy.

III. EMPLOYEE RESPONSIBILITY

- A. Employees shall comply with the lockout procedure.
- B. Employees shall consult with their supervisor or other appropriate knowledgeable management personnel whenever there are any questions regarding their protection.
- C. Employees shall obtain and care for the locks and other devices required to comply with the lockout procedure.

IV. GENERAL

- A. If the power source of any equipment, machine, tool, or process to be set up, adjusted, repaired, serviced, installed, or where maintenance work is to be performed and unintended motion or release of energy could cause personal injury, such a power source shall be locked out by each employee doing the work. Sources of energy, such as springs, air, hydraulic and steam shall be evaluated in advance to determine whether to retain or relieve the pressure prior to starting the work.
- B. Safety locks are for the personal protection of the employees and are only to be used for locking equipment.
- C. Safety locks, adapters, and "Danger Tags" can be obtained from a supervisor.
- D. Equipment locks and adapters can be obtained from a supervisor. The sole purpose of the "Equipment" lock and adapter is to protect the equipment during periods of time when work has been suspended or interrupted. The locks are not to be used as a substitute for the employee's personal safety lock.
- E. Personal locks shall contain a tag with employee's name on it.
- F. One key of every lock issued shall be retained by the employee to whom it was issued and the only other key to the lock shall be retained by the superintendent.

G. Employees shall request assistance from their supervisor if they are unsure of where or how to lockout equipment.

H. Any questions concerning the lockout procedure should be directed to the employee's supervisor.

V. LOCKING OUT AND ISOLATING THE POWER SOURCE

A. Equipment, machines, or processing main disconnect switches shall be turned off and locked in the off position only after the electrical power is shut off at the point of operator control. Failure to follow this procedure may cause arcing and possible an explosion.

B. Equipment/tools connected to over a 110 volt source of power by a plug-in cord shall have a locking device applied to the plug attached to the cord leading to the machine to be considered locked out.

C. Equipment/tools connected to a 110 volt source of power by a plug-in cord shall be considered locked out if the plug is disconnected and tagged with a "do not start tag."

D. After locking out the power source, the employee shall try the equipment, machine, or process controls to ensure no unintended motion will occur, or test the equipment, machine or process by use of appropriate test equipment to determine that the energy isolation has been effective.

E. When two or more employees work on the same equipment, each is responsible for attaching his/her lock. Safety locks and adaptors are to be fixed on levers, switches, valves, etc. in the non-operative (off) position.

F. An employee who is assigned to a job and upon arrival finds an "Equipment Lock," "Adaptor" and "Danger Tag" affixed to the equipment shall take the following action:

1. Affix his/her personal lock to the "Equipment Adaptor."
2. Determine who placed the equipment out of service and contact all parties who have locks on the equipment to determine if the assignment to be performed would affect their safety. The assignment will proceed only if safe to do so with all parties involved.
3. Try the controls to ensure no unintended motion will occur before starting work or qualified personnel shall test the equipment, machine, or process by use of appropriate test equipment to determine that the energy isolation has been effective. (Such testing equipment is only to be employed by trained qualified personnel.)

VI. PERFORMING TEST AND ADJUSTMENTS DURING LOCKOUT

A. Power may be turned on when it is required to perform tests or adjustments. All of the rules pertaining to removing locks and restoring power shall be followed. The equipment or process shall again be locked out if it is necessary to continue work after completing the tests or adjustments.

B. If the employee leaves the job before its completion, such as job reassignment, the employee shall remove his/her personal lock and adaptor and replace it with an "Equipment" lock and adaptor. In addition, the employee will prepare and attach a "Danger Tag" indicating the reason the equipment is locked out. (Should more than one employee be assigned to the job, the last employee removing his/her lock will be responsible for affixing the "Equipment" lock, adaptor and the "Danger Tag".)

C. Upon completion of the work, each employee will remove his/her lock, rendering the machine operable when the last lock is removed.

D. The employee responsible for removing the last lock, before doing so, shall assure that the guards have been replaced, the equipment, machine, or process is cleared for operation, and appropriate personnel notified that power is being restored. This employee is also responsible for removing the "Equipment" lock and returning it to the supervisor.

VII. EMERGENCY SAFETY LOCK REMOVAL

A. The superintendent, or other designated management person, will be authorized to remove an employee's lock under the following conditions:

1. Receipt of a written request signed by the appropriate supervisor which shall state the reason the employee is not able to remove the lock.
2. The supervisor is responsible for making certain all the requirements for restoring power are followed.

Head Protection

Head protection is required when working in areas where there is possible danger of head injury from impact or falling/flying objects or from electrical shock and burns.

Head protection used against impact and penetration of falling and flying objects shall meet the specification contained in ANSI (American National Standards Institute) Z89.1-1969, Safety Requirements for Industrial Head Protection.

Head protection used for protection of employees exposed to high voltage electrical shock and burns must meet the specifications contained in ANSI Z89.2-1971.

Hearing Protection

When it is not feasible to reduce the noise levels or duration of exposures to those specified in Table D-2, Permissible Noise Exposures, in 1926.52, ear protective devices shall be provided and used.

Ear protective devices inserted in the ear must be fitted or determined individually by a competent person.

Wool cotton is not acceptable as a protection device and is not to be used.

Eye and Face Protection

Cranes

Comply with manufacturer's specifications

- Beginning of each shift
 - Operate hoist motion up & down to determine if normal operating speeds available
 - Raise hook to upper end of travel slowly to test limit switch
 - If overhead type, operate trolley & bridge travel
 - Observe drift after power release to determine brake adjustment.
- Requirements
 - Rated load capacities conspicuously posted
 - Warnings visible to operator while at the control station
 - Hand signals those prescribed by ANSI standard for the type of crane in use
 - Illustration of the signals posted at the job site

Competent person must inspect all machinery and equipment

- Prior to each use and during use.
- Deficiencies shall be repaired, or defective parts replaced, before continued use.

Daily inspection

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

Cranes only allowed to be operated by properly trained personnel only

DO NOT lift loads over people, warn personnel of approaching loads

DO NOT make side pulls, lift all loads vertically

DO NOT use limit switches as normal stopping devices

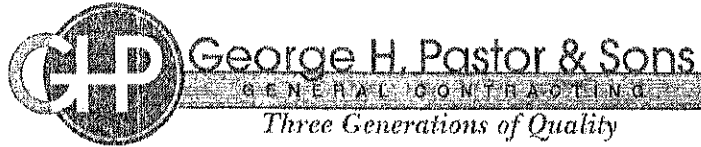
Cranes must comply with the above stated rules and also CFR 1926.550 Subpart N

Means of egress from trench excavations

- Stairway, ladder, ramp or other safe means of egress
 - Must be located in excavations that are 4 feet or more in depth
 - No more than 25 feet of lateral travel for employees is allowed

Walkways

Provided where workers or equipment are required to cross over excavations, guard rails that comply with 1926.502(b) will be provided where walkways are 6 feet or more above lower levels.



**CONSTRUCTION SAFETY PROGRAM
FOR:**

George H. Pastor & Sons

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SAFETY AND HEALTH POLICY

George H. Pastor & Sons Company believes that **NO JOB OR NO TASK IS MORE IMPORTANT THAN WORKER HEALTH AND SAFETY.**

If a job represents a potential safety or health threat, every effort will be made to plan a safe way to do the task.


Every Procedure must be a safe procedure. Shortcuts in safe procedures by either foremen or workers will not be tolerated.

If a worker observes any unprotected job, which may pose a potential threat to their health or safety, he or she must inform management and management must take adequate precautions.

IF A JOB CANNOT BE DONE SAFELY IT WILL NOT BE DONE.

OUR FUTURES ARE ONLY BUILT THROUGH OUR PEOPLE. WE AIM TO PROTECT THEM.

Expanded


Craig Pastor V.P.

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- 21 POWERED INDUSTRIAL TRUCKS VS PEDESTRIANS
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SAFETY AND HEALTH OBJECTIVES

George H. Pastor & Sons Company plans to achieve worker safety and health through the following:

- A. Using a qualified safety person.
- B. Making regular job site safety inspections.
- C. Enforcing the use of safety equipment.
- D. Following safety procedures and rules.
- E. Providing on-going safety training.
- F. Enforcing safety rules and using appropriate discipline.

JOB SITE INSPECTIONS

The safety person or other designated person will tour each safety/health hazards, including the potential hazards of each safeguarding this company's workers which may include:

Update

.1
plan for

1. Removing the hazard.
2. Guarding against the hazard as required by MIOSHA.
3. Providing personal protective equipment and enforcing its use.
4. Training workers in safe work practices.
5. Coordinating protection of workers through other contractors.

A record of all safety inspections and correctional steps will be kept.

CONTRACTOR SAFETY PERSON



Gary Balsom P. M.

is the designated person to administer the safety and health program for this organization. The responsibilities for this position are as follows:

1. Being knowledgeable of potential job hazards.
2. Assuring compliance with MIOSHA construction safety and health standards.
3. Making regular safety inspections.
4. Establishing safety procedures. *Reslo*
5. Correlating regular safety training with lead persons.
6. Maintaining safety records.

PERSONAL PROTECTIVE EQUIPMENT

1. Head protection will be worn on job sites when there are potentials of falling objects, hair entanglement, burning, or electrical hazards.
2. Eye protection will be worn when there are potentials of hazards from flying objects or particles, chemicals, arching, glare, or dust.
3. Protective footwear shall be worn to protect from falling objects, chemicals, or stepping on sharp objects. Athletic or canvas-type shoes shall not be worn.
4. Protective gloves or clothing shall be worn when required to protect against a hazard.
5. Harnesses and lanyards shall be utilized for fall protection as required in MIOSHA Construction Safety Standards.

SAFETY RULES

ALL OF OUR SAFETY RULES MUST BE OBEYED. FAILURE TO DO SO WILL RESULT IN STRICT DISCIPLINARY ACTION BEING TAKEN.

1. Keep your mind on your work at all times. No horseplay on the job. Injury or termination or both can be the result.
2. Personal safety equipment must be worn as prescribed for each job, such as: safety glasses for protection, hard hats at all times within the confines of the construction area where there is a potential for falling materials or tools, gloves when handling materials, and safe shoes are necessary for protection against foot injuries.
3. Precautions are necessary to prevent sunburn and to protect against burns from hot materials.
4. If any part of your body should come in contact with an acid or caustic substance, rush to the nearest water available and flush the affected part. Secure medical aid immediately.
5. Watch where you are walking. Don't run.
6. The use of illegal drugs or alcohol or being under the influence of the same on the project shall be cause for termination. Inform your supervisor if taking strong prescription drugs that warn against driving or using machinery.
7. Do not distract the attention of fellow workers. Do not engage in any act which would endanger another employee.
8. Sanitation facilities have been or will be provided for use. Defacing or damaging these facilities is forbidden.
9. A good job is a clean job, and a clean job is the start of a safe job. So keep your working area free from rubbish and debris.
10. Do not use a compressor to blow dust or dirt from your clothes, hair, or hands.
11. Never work aloft if you are afraid to do so, if you are subject to dizzy spells, or if you are apt to be nervous or sick.
12. Never move an injured person unless it is absolutely necessary. Further injury may result. Keep the injured as comfortable as possible and utilize job site first-aid equipment until an ambulance arrives.
13. Know where firefighting equipment is located and be trained on how to use it.
14. Lift correctly – with legs, not the back. If the load is too heavy GET HELP. Stay fit. Control your weight. Do stretching exercises. Approximately twenty percent of all construction related injuries result from lifting materials.

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15. Nobody but operator shall be allowed to ride on equipment unless proper seating is provided
16. Do not use power tools and equipment until you have been properly instructed in the safe work methods and become authorized to use them.
17. Be sure that all guards are in place. Do not remove, displace, damage, or destroy any safety device or safeguard furnished or provided for use on the job, nor interfere with the use thereof.
18. Do not enter an area which has been barricaded.
19. If you must work around power shovels, trucks, and dozers, make sure operators can always see you. Barricades are required for cranes.
20. Never oil, lubricate, or fuel equipment while it is running or in motion.
21. Before servicing, repairing, or adjusting any powered tool or piece of equipment, disconnect it, lock out the source of power, and tag it out.
22. Barricade danger areas. Guard rails or perimeter cables may be required.
23. Trenches over five feet deep must be shored or sloped as required. Keep out of trenches or cuts that have not been properly shored or sloped. Excavations less than 5 ft. may also require cave in protection in some instances.
24. Use the "four and one" rule when using a ladder. y four feet of
height. *correct?*
25. Portable ladders in use shall be equipped with ad, blocked or
otherwise secured. Step ladders shall not be used as a straight ladder.
26. Ladders must extend three feet above landing on roof for proper use.
27. Defective ladders must be properly tagged and ren
28. Keep ladder bases free of debris, hoses, wires, matu *Memo*
29. Build scaffolds according to manufacturers' 410SHA
Construction Safety Standard Part 12 – Scaffolding. *- 200 ft*
30. Scaffold planks shall be properly lapped, cleated or wise secured to prevent shifting.
31. Use only extension cords of the three-prong type. Use ground fault circuit interrupters at all times and when using tools in wet atmosphere (e.g. outdoors) or with any temporary power supply. Check the electrical grounding system daily.

32. The use of harnesses with safety lines when working from unprotected high places is mandatory. Always keep your line as tight as possible.
33. Never throw anything "overboard." Someone passing below may be seriously injured.
34. Open fires are prohibited.
35. Know what emergency procedures have been established for your job site. (location of emergency phone, first aid kit, stretcher location, fire extinguisher locations, evacuation plan, etc.)
36. Never enter a manhole, well, shaft, tunnel or other confined space which could possibly have a nonrespirable atmosphere because of lack of oxygen, or presence of toxic or flammable gas, or has a possibility of engulfment by solids or liquids. Make certain a qualified person tests the confined area with an appropriate detector before entry, that the necessary safety equipment is worn. Standby person may be required to be stationed at the entrance.

JOB SAFETY TRAINING

- A. After inspecting a job site, the safety person or other designated person will identify and
 1. Evaluate all potential hazards for:
 2. Injury Severity potential.
 3. Probability of an accident.
- B. This person will also appraise the skill and knowledge level of exposed workers.
- C. Appropriate Training will be given.
 1. Hazards will be pointed out.
 2. Necessary precautions will be explained.
 3. The higher the hazard the more detailed will be the training.
- D. Records will be maintained for all training sessions with descriptions of topics covered and names of workers trained.

SAFETY DISCIPLINE

A. Three-Step System

First violation: Written warning; copies to employee and employee's file.

Second violation: Written warning; suspension for ½ or full day without pay.

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Third violation: Written report for file and immediate termination.

B. Four-Step System

First violation: *Misconduct* Personnel file.

Second violation: *Violation* Personnel Office.

Third violation: Written warning; one day suspension, or termination if warranted.

C. A record will be maintained of all discipline.

POWER LOCKOUT PROCEDURE

Lockout procedures for George H. Pastor & Sons Company.

I. PURPOSE

The purpose of this procedure is to assure that employees are protected from unintended machine motion or unintended release of energy which could cause injury.

II. MANAGEMENT RESPONSIBILITIES

- A. Each supervisor shall train new employees and periodically instruct all of their employees regarding provisions and requirements of this lockout procedure.
- B. Each supervisor shall effectively enforce compliance of this lockout procedure including the use of corrective disciplinary action where necessary.
- C. Each supervisor shall assure that the locks and devices required for compliance with the lockout procedure are provided to their employees.
- D. Prior to setting up, adjusting, repairing, servicing, installing, or performing maintenance work in equipment, machinery, tools, or processes, the supervisor shall determine and instruct the employees of the steps to be taken to assure they are not exposed to injury due to unintended machine motion or release of energy.

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III. EMPLOYEES RESPONSIBILITY

- A. Employees shall comply with the lockout procedure.
- B. Employees shall consult with their supervisor or other appropriate knowledgeable management personnel whenever there are any questions regarding their protection.
- C. Employees shall obtain and care for the locks and other devices require to comply with the lockout procedure.

VI. GENERAL

- A. The power source of any equipment, machine, tool, or process to be set-up, adjusted, repaired, serviced, installed, or where maintenance work is to be performed and unintended motion or release of energy could cause personal injury, such a power source shall be locked out by each employee doing the work.. Sources of energy, such as springs, air hydraulic and steam shall be evaluated in advance to determine whether to retain or relieve the pressure prior to starting the work.
- B. Safety locks are for the personal protection of the employees and are only to be used for locking equipment.
- C. Safety locks, adapters, and "Danger Tags" can be obtained from a supervisor.
- D. Equipment locks and adapters can be obtained from a supervisor. The sole purpose of the "Equipment" lock and adaptor is to protect the equipment during periods of time when work has been suspended or interrupted. The locks are not to be used as a substitute for the employee's personal safety lock.
- E. Personal locks shall contain a tag with employee's name on it.
- F. One key of every lock issued shall be retained by the employee to whom it was issued and the only other key to the lock shall be retained by the superintendent.
- G. Employees shall request assistance from their supervisor if they are unsure of where or how to lockout equipment.
- H. Any questions concerning the lockout procedure should be directed to the employee's supervisor.

V. LOCKING OUT AND ISOLATING THE POWER SOURCE

- A. Equipment, machines, or processing main disconnect switches shall be turned off and locked in the off position only after the electrical power is shut off at the point of operator control. Failure to follow this procedure may cause arching and possibly an explosion.

- B. Equipment/tools connected to over a 110 volt source of power by a plug-in cord shall have a locking device applied to the plug attached to the cord leading to the machine to be considered locked out.
- C. Equipment/tools connected to a 110 volt source of power by a plug-in cord shall be considered locked out if the plug is disconnected and tagged with a "do not start tag."
- D. After locking out the power source, the employee shall try the equipment, machine, or process controls to ensure no unintended motion will occur; or test the equipment, machine or process by use of appropriate test equipment to determine that the energy isolation has been effective.
- E. When two or more employees work on the same equipment, each is responsible for attaching his/her lock. Safety locks and adaptors are to be fixed on levers, switches, valves, etc. in the non-operative (off) position.
- F. An employee who is assigned to a job and upon arrival finds an "Equipment Lock," "Adaptor" and "Danger Tag" affixed to the equipment shall take the following action:
 1. Affix his/her personal lock to the "Equipment Adaptor."
 2. Determine who placed the equipment out of service and contact all parties who have locks on the equipment to determine if the assignment to be performed would affect their safety. The assignment will proceed only if safe to do so with all parties involved.
 3. Try the controls to ensure no unintended motion will occur before starting work or qualified personnel shall test the equipment, machine, or process by use of appropriate test equipment to determine that the energy isolation has been effective. (Such testing equipment is only to be employed by trained qualified personnel.)

VI. PERFORMING TEST AND ADJUSTMENTS DURING LOCKOUT

- A. Power may be turned on when it is required to perform tests or adjustments. All of the rules pertaining to removing locks and restoring power shall be followed. The equipment or process shall again be locked out if it is necessary to continue work after completing the test or adjustments.
- B. If the employee leaves the job before its completion, such as job reassignment, the employee shall remove his/her personal lock and adaptor and replace it with an "Equipment" lock and adaptor. In addition, the employee will prepare and attach a "Danger Tag" indicating the reason the equipment is locked out (should more than one

employee be assigned to the job, the last employee removing his/her lock will be responsible for affixing the "Equipment" lock, adaptor and the "Danger Tag").

- C. Upon completion of the work, each employee will remove his/her lock, rendering the machine operable when the last lock is removed.
- D. The employee responsible for removing the last lock, before doing so, shall assure that all guards have been replaced, the equipment, machine, or process is cleared for operation, and appropriate personnel notified that power is being restored. This employee is also responsible for removing the "Equipment" lock and returning it to the supervisor.

VII. EMERGENCY SAFETY LOCK REMOVAL

- A. The superintendent, or other designated management person, will be authorized to remove an employee's lock under the following conditions:
 - 1. Receipt of a written request signed by the appropriate supervisor which shall state the reason the employee is not able to remove the lock.
 - 2. The supervisor is responsible for making certain all the requirements for restoring power are followed.

CONFINED SPACE ENTRY

- 1. No employee shall enter areas defined below without authorization:
- 2. A space that is NOT DESIGNED FOR CONTINUOUS EMPLOYEE OCCUPANCY; and
- 3. Is large enough and so configured that a person can bodily enter into and perform assigned work; and
- 4. Has LIMITED or RESTRICTED means for ENTRY or EXIT; and
- 5. May have a POSSIBLE HAZARDOUS ATMOSPHERE that may expose employees to the risk of death, incapacitation, impairment of ability to self rescue caused by:
 - A. Flammable gas
 - B. Airborne combustible dust
 - C. Atmospheric oxygen concentration below 19.5 or above 23.5%
 - D. A toxic atmosphere or substance
 - E. Danger of engulfment

UNTIL AN AUTHORIZED PERSON EVALUATES THE AREA AND AUTHORIZES ENTRY.

GENERAL CONFINED SPACE ENTRY PROCEDURE

1. There shall be no unauthorized entry into a confined space by any person.
2. An authorized person shall examine, test and evaluate a potential entry space and determine if it is a "NON-PERMIT SPACE" and meets the following requirements:
 - a. It does NOT contain any atmospheric hazards or dangers of engulfment capable of causing death or serious physical harm;
 - b. The space has been PROVEN SAFE, has been VERIFIED, DOCUMENTED, and has a CERTIFIED GUARANTEE of a safe environment.
3. If the conditions in #2 have been satisfied, the ALTERNATE ENTRY PROCEDURE may be followed.
4. If conditions in #2 are not met and has any of the following, the PERMIT ENTRY PROCEDURE must be followed:

THE SPACE:

- A. Contains or has a potential to contain a HAZARDOUS ATMOSPHERE.
- B. Contains a material that has a potential for ENGULFING an entrant.
- C. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging wall or by a floor which slopes downward and tapers to a smaller cross section; or
- D. Contains any other recognized serious safety or health hazard.

EMERGENCY PROCEDURES

In case of an emergency on site the following procedures should be instituted at each site:

1. Method of communication should be determined at each site, telephone, radio, etc.
2. Emergency telephone numbers should be posted:
 - a. Police
 - b. Fire
 - c. Medical Response Team

3. Post near communication station the address of your site.

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4. Post names of first aid responders on site.
5. Designate person to direct emergency crews to site of emergency.

WRITTEN HAZARD COMMUNICATION PROGRAM

GENERAL

The following hazard communication program has been established for George H. Pastor & Sons. This program will be available for review by all employees.

I. HAZARD DETERMINATION

George H. Pastor & Sons will be relying on Material Safety Data Sheets from suppliers to meet determination requirements.

II. LABELING

- A. The Site Superintendent will be responsible for seeing that all containers coming in are properly labeled.
- B. All labels shall be checked for:
 1. Identity
 2. Hazard
 3. Name and address of responsible party
- C. Each Sub Contractor shall be responsible for seeing that all portable containers used in their work areas are labeled with identity and hazard warning.

MATERIAL SAFETY DATA SHEETS (MSDS)

- A. The Project Manager will be responsible for compiling the master MSDS file. It will be kept by Site Superintendent.
- B. Copies of MSDSs for all hazardous chemicals to which employees may be exposed will be kept in a file at the job site trailer.
- C. MSDSs will be available for review to all employees during each work shift.
- D. The Site Superintendents will be provided with the required MIOSHA Right-To-Know posters within five (5) days of new or revised MSDSs.

IV. EMPLOYEE INFORMATION TRAINING

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- A. The Project Manager shall coordinate and maintain records of training conducted by the Site Superintendent.
- B. Before starting work, or as soon as possible thereafter, each new employee will attend a safety class conducted by the Site Superintendent. In that class, each employee will be given information on:
1. Chemicals and their hazards in the workplace.
 2. How to lessen or prevent exposure to these chemicals.
 3. What the company has done to lessen or prevent workers' exposure to these chemicals.
 4. Procedures to follow if they are exposed.
 5. How to read and interpret labels and MSDSs.
 6. Where to locate MSDSs and from whom they may obtain copies.
- C. The employee will be informed that:
1. The employer is prohibited from discharging, or discriminating against, an employee who exercises the rights regarding information about hazardous chemicals in the workplace.
 2. As an alternative to requesting an MSDS from the employer the employee may obtain a copy from the Department of Public Health.
- D. Attendance will be taken at training sessions. These records will be kept by the Site Superintendent.
- E. Before any new hazardous chemical is introduced into the workplace, each employee will be given information in the same manner as during the safety class.

V. HAZARDOUS NON-ROUTINE TASKS

- A. On occasion, employees are required to do work in hazardous areas (e.g. confined spaces). Prior to starting work in such areas, each employee will be given information about the hazards involved in these areas.

This information will include:

1. Specific chemical hazards.
2. Protection / safety measures the employee is required to take to lessen risks.

3. Measures the company has taken to lessen the hazards, including ventilation, respirators, the presence of another employee, and emergency procedures.
- B. It is the policy of George H. Pastor & Sons that no employee will begin work in a confined space, or any non-routine task, without first receiving a safety briefing.

VI. INFORMING CONTRACTORS

- A. It is the responsibility of the Site Superintendent to provide any other contractors with information regarding employees exposed to our chemicals with the following information:
1. Hazardous chemicals with which they may come in contact.
 2. Measures the employees should take to lessen the risks.
 3. Where to get MSDSs for all hazardous chemicals.
- B. It is the responsibility of the Site Superintendent to obtain chemical information from contractors when they will expose our employees to hazardous chemicals which they may bring into our workplace.

VII. PIPE AND PIPING SYSTEMS

- A. Information on the hazardous contents of pipe and piping shall be readily available.

Minutes from my safety meeting

Today's date is:

Who's attending?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

What are the issues and hazards?

Write down any safety or health issues that you talk about. Include recent accident investigations and hazards involving tools, equipment, the work environment, and work practices. Use the other side if you need more space.

Minutes from my safety meeting

... continued

Three blank horizontal lines for initial notes.

TOPIC

A column of approximately 18 horizontal lines for recording meeting topics.

Minutes from my safety meeting

Today's date is:

Who's attending?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

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Minutes from my safety meeting

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Minutes from my safety meeting

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Minutes from my safety meeting

... continued

TOPIC

Minutes from my safety meeting

Today's date is:

Who's attending?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

What are the issues and hazards?

Write down any safety or health issues that you talk about. Include recent accident investigations and hazards involving tools, equipment, the work environment, and work practices. Use the other side if you need more space.

Minutes from my safety meeting

... continued

Three blank horizontal lines for writing.

TOPIC

Twenty horizontal lines for writing under the 'TOPIC' header.

Connie Waddle

From: "Connie Waddle" <cwaddle@ghpastor.com>
 To: "Jim Mc Ferran" <jmcferran@msn.com>; <jpastor@ghpastor.com>; <cpastor@ghpastor.com>; <tpastor@ghpastor.com>; "Linda Pastor" <lpastor@ghpastor.com>; "steve saleh" <ssaleh@ghpastor.com>; "Michele Saleh" <msaleh@ghpastor.com>; <rpastor@ghpastor.com>; "cwaddle" <cwaddle@ghpastor.com>
 Cc: <wd219@aol.com>
 Sent: Friday, September 23, 2011 11:52 AM
 Attach: KMBT35020110923113549.pdf
 Subject: Fw: [Image File] Connie,KMBT350, #417

George H. Pastor & Sons

September 23, 2011

WEEKLY OSHA MEETING UPDATE TO WEEK 1

Dear team members:

The first Osha meeting ideas generator sent out yesterday to help superintendents have a topic for OSHA meetings assumed everyone knew the basics. But if not, the safety meeting agenda should always cover the safety equipment required: hard hats, proper footwear, eye protection when necessary, ear protection ECT. The meetings should also include that tools should not be tampered with, they are designed to protect, if a tool is damaged it should be repaired professionally or replaced. Anyone on the site should know where to find the first aid kit, fire extinguisher, phone numbers for the fire n rescue and have directions to the nearest emergency facility. It could be a matter of life and death. The meeting should also cover any site-specific hazards, any accidents, faulty equipment and upcoming meetings. There is also an attachment for anyone attending the meetings and what was discussed to sign. Any superintendent or staff of George H. Pastor & sons with any other suggestions please forward them to cwaddle@ghpastor.com.

Remember short cuts lead to short lives or sometimes just short fingers.

Thanks once again for your assistance in this critical matter,

Your management team at Pastors

Safety First

.....

George H Pastor & Sons

August 17, 2012

WEEKLY OSHA MEETING IDEAS

To all superintendents:

The weather is changing though out the country and this means subcontractors and their employees are doing different things to accommodate the changes. Depending upon what part of the country you are working, they may be wearing gloves, rain gear, sweat shirts, jackets, coats, hats and long sleeves that can all lead to potential danger on a job site. Here are a few reminders of the potential dangers sleeves getting caught in tools and other mechanical mechanisms, hats catch on fire and get caught in things too, strings are also dangerous so go over all these things and their potential dangers.

Remember too that the kids are back in school and may not be paying attention to job site equipment.

Weather and leaves are also potential hazards on a job. Wet, icy, and snowy jobs can be quite dangerous so go over with everyone the dangers of these conditions and don't forget things get buried in leaves including kids playing, tools, and building materials, so be safe and keep your jobsites safe. These are just thought starters for your weekly OSHA meetings.

The forth thing you may be a topic at your OSHA meeting are fires New Mexico and Virginia are experiencing forest fires and here in Michigan leaf burning can be dangers.

Here is a story to tell to remind people that bad habits might not be dangerous every time but it only takes one time too injure or kill someone.

Newport News-Newport police say a construction worker was fatally injured (killed) after he was run over by a piece of heavy equipment.

The victim was identified by police as 34-year-old Kirk Patrick Giesey of Hampton. They said he was riding on the scoop portion of a front-end loader before he was found dead today.

When you read stories like this, you scratch your head and wonder "what was he thinking?" However, there are probable some habits each of us has that are not that dissimilar in terms of safety. How about you? What risks do you take each and every day here at work?

Today, reflect on one of those bad habits you may have and make an effort to change your behavior. They say that if you can focus on breaking a habit for 21 days, it will be gone. Do it for you and your loved ones



.....

August 17, 2012

Page 2

Stay safe and keep everyone else safe,

WEEKLY MEETINGS ARE KEY TO SAFETY

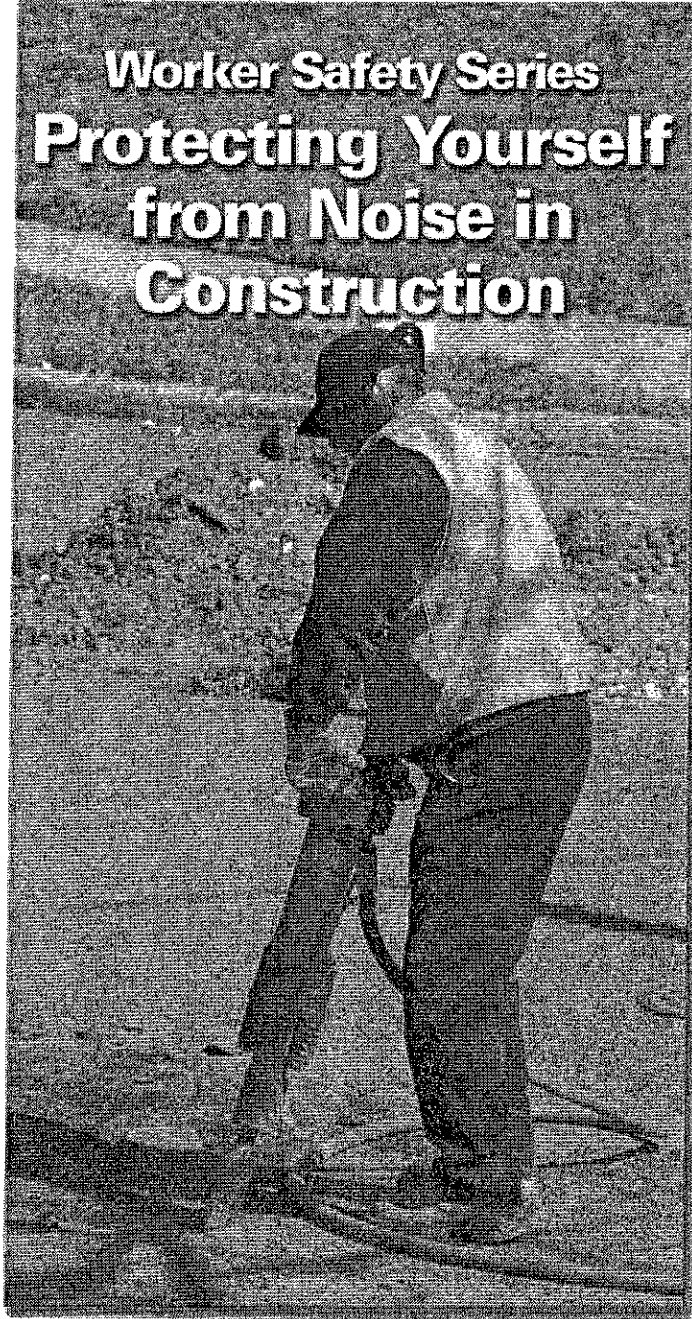
Thanks your management team at Pastors.

Safety First

OSHA[®] POCKET GUIDE

Occupational Safety and Health Administration
www.osha.gov

Worker Safety Series Protecting Yourself from Noise in Construction



OSHA 3498-12N 2011

If you are a construction worker, this pocket guide is written for you. Small contractors should also find this information helpful. You are encouraged to go to the references in this document and to the OSHA website for more information.

This guidance document is not a standard or regulation, and it creates no new legal obligations. The guidance is advisory in nature, informational in content, and is intended to help construction workers and supervisors understand and reduce noise exposure on job sites. Employers are required to comply with safety and health standards as issued and enforced by either the Federal Occupational Safety and Health Administration (OSHA), or an OSHA-approved State Plan. In addition, Section 5(a)(1) of *The Occupational Safety and Health Act*, the General Duty Clause, requires employers to provide their workers with a workplace free from recognized hazards likely to cause death or serious physical harm. Employers can be cited for violating the General Duty Clause if there is such a recognized hazard and they do not take reasonable steps to prevent or abate the hazard. However, failure to implement these guidelines is not, in itself, a violation of the General Duty Clause. Citations can only be based on standards, regulations, and the General Duty Clause.

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Why is job site noise control important to me?

Exposure to high levels of noise can cause permanent hearing loss. Neither surgery nor a hearing aid can help correct this type of hearing loss. Construction sites have many noisy operations and can be a significant source of noise exposure.

Loud noise can also reduce work productivity and contribute to workplace accidents by making it difficult to hear warning signals. Hearing loss from loud noise limits your ability to hear high frequencies, understand speech, and reduces your ability to communicate, which can lead to social isolation. Hearing loss can affect your quality of life by interfering with your ability to enjoy socializing with friends, playing with your children or grandchildren, or participating in other activities.

Damage to your hearing **can be prevented**, but once permanent noise-induced hearing loss occurs, it **cannot be cured** or reversed. Hearing loss usually occurs gradually, so you may not realize it is happening until it is too late.

Noise can also **affect your body in other ways**. A recent study found that workers persistently exposed to excessive occupational noise may be two-to-three times more likely to suffer from serious heart disease than workers who were not exposed.¹

¹Gan, W. et al., Exposure to Occupational Noise and Cardiovascular Disease in the United States: NHANES 1999-2004, *Occup Environ Med* doi: 10.1136/oem.2010.055269.

You may have hearing loss if:

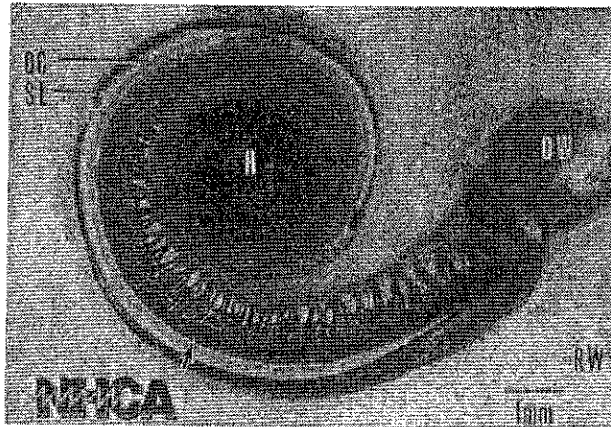
- You have a hard time hearing people in groups or meetings or if there is background noise.
- People sound as if they are mumbling.
- You have to ask people to repeat what they say.
- You have trouble understanding others on the telephone.
- You have ringing or noises in one or both ears.
- You have trouble hearing back-up alarms or the ringing of a cell phone.

How does hearing damage happen?

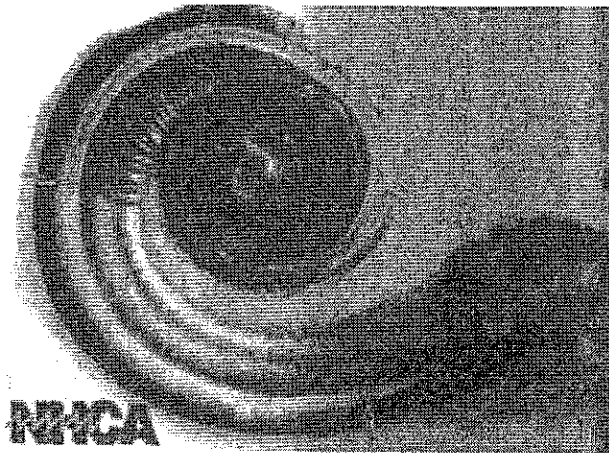
A one-time exposure to a sudden powerful noise, such as an explosion, may damage your hearing instantly. Prolonged exposures to loud noise can lead to a gradual, but permanent, loss of hearing.

Damage can occur within the ear at noise levels similar to that of running a lawn mower for eight hours. At first, this may cause a temporary loss of hearing that may last as long as 14-16 hours. With repeated exposure to high noise levels and periodic exposures to very high noise levels (e.g., with the use of nail guns), as is common at most construction job sites, your hearing may not fully recover. More often, the loss of hearing occurs slowly over time from exposure to moderate levels of noise. When that happens, the hearing loss becomes permanent. This is why workplace noise is sometimes referred to as a stealth long-term hazard – because it is a painless, gradual process.

Hearing loss occurs when cilia, tiny hair cells that line the inner ear, are damaged. At first, the damage happens to the cilia that receive the higher frequencies. Gradually, noise damages more of the ear and affects how speech is heard. If you hear muffled or distorted speech sounds, that may be an indication that a substantial hearing loss has already occurred.



Healthy inner ear lined with cilia, tiny hair cells that help you hear.



Inner ear showing damage to the cilia.

In addition to hearing loss, you also may experience ringing in the ears. This is called *tinnitus*, and can occur even without other apparent hearing loss.

How do I know if my tools or job site are too noisy?

Sound intensity is measured in decibels. When decibels are adjusted for how the ear senses sound, the sound level intensity is measured as dBA. Decibels are measured on a logarithmic scale, which means that a small increase in the number of decibels results in a huge change in the amount of noise and the potential damage to a person's hearing. So, if the level increases by 3 dBA this doubles the amount of the noise and reduces the recommended amount of exposure time by half.

Sound Level Meter and Noise Dosimeter

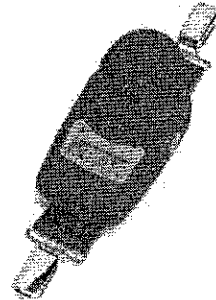
Safety and health inspectors measure sound or noise levels using a device called a *sound level meter*. The microphone is positioned at the user's ear level. Equipment that is determined to be loud can be labeled with a hazardous noise sticker.

OSHA uses *noise dosimeters* to document the average noise exposure over your working day or of a particular task for part of your workday.

OSHA recommends that workplace noise levels be kept below 85 dBA as an 8-hour time-weighted average. As the noise level increases, it damages your hearing more quickly.



Sound level meter



Dosimeter

Images courtesy of Casella CEL Inc., Amherst, NH.

Research indicates that your hearing can be damaged by regular 8-hour exposures to 85 dBA. When noise is as loud as 100 dBA (like a jackhammer or stud welder), it can take repeated exposures of as little as 1 hour per day to damage your hearing.

The National Institute for Occupational Safety and Health (NIOSH) has recommended that all worker exposures to noise should be controlled below a level equivalent to 85 dBA for eight hours to minimize occupational noise-induced hearing loss. NIOSH has found that significant noise-induced hearing loss occurs at the exposure levels equivalent to the OSHA PEL based on updated information obtained from literature reviews. NIOSH also recommends a 3 dBA exchange rate so that every increase by 3 dBA represents a doubling of the amount of the noise and halves the recommended amount of exposure time.

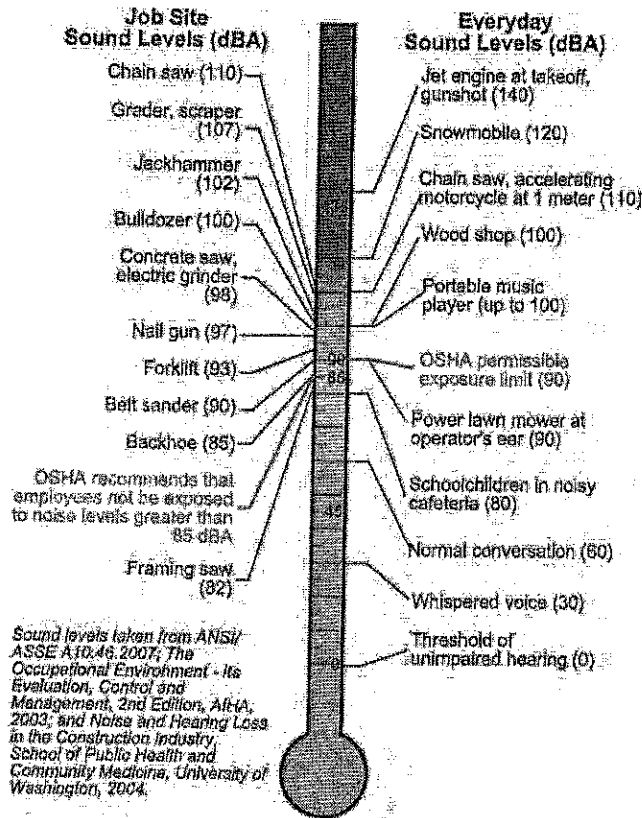
2-3 Foot Rule and Noise Indicator

When a sound level meter is not available, you should use the 2-to-3 foot rule: Stand about an arm's length away from your coworker: If you have to raise your voice to be heard 2-3 feet away, you should assume that the sound level is at or above 85 dBA.

A personal noise indicator is a warning device. It indicates if your immediate exposure is less than or greater than 85 dBA. It flashes green if the sound level is under 85 dBA and red when above 85 dBA.

Sound Level Chart

Equipment and daily activities at construction job sites can expose workers to high levels of noise. Sound levels on the chart below are listed in decibels (dBA) – the larger the number, the higher the volume or decibel level. How loud the noise is (volume), how long the noise lasts, and how close you are to the noise are all important in determining the hazard.



What can be done about job site noise levels?

Plan Ahead

One of the best ways to reduce exposure to hazardous noise on a work site is by planning for potential exposure before activities start. When jobs produce high noise levels, there are ways to reduce your exposure other than or in addition to hearing protectors.

For instance, your employer or supervisor can buy materials to build sound barriers or schedule noisy activities during hours when fewer people are working. Your employer can also rent or buy quieter equipment.

Your employer should hold daily or weekly safety meetings to discuss ways to limit high noise levels and other hazards. During safety meetings, the general contractor can ask subcontractors to describe the planned tasks for the day or week where hazardous noise might be generated, as well as what equipment will be used; you can use these opportunities to talk about ways to limit exposure.

Even changes in the noise level that seem small (e.g., 3 dBA) are actually significant reductions in the noise.

Here are some specific ways to limit exposure:

- Plan to make or use prefabricated noise barriers.
- Ask your employer to buy or rent quieter equipment/tools.
- Limit the hours you work in hazardous noise areas.

- Identify equipment and work areas where signs can be posted to make other workers aware of high noise areas.
- Use hearing protection to supplement noise reduction.

Noise Control at the Job Site

The work site is where workers can have the most impact by working with employers to identify hazardous equipment, conduct hazard assessments, and apply the control process explained below. Employer support for providing supplies (acoustical insulation, extension cords, pre-fabricated noise barriers), hand tools, and sufficient set-up time are essential.

Noise Hazard Control Process

The easiest way to help lower noise levels at your work site is to remember a three-step noise hazard control process:

Reduce It: Reduce the noise by using the quietest equipment available. For example, choose a smaller, quieter generator.

Move It: Move the equipment farther away with the use of extension cords, additional welding leads, and air hoses (following current OSHA standards). Noise levels go down as we increase our distance from a noisy object. Move the generator farther away or face it in a direction that is away from where most people are working. If you are not required to be in a high noise area, move to a quieter area.

Block It: Block the noise by building temporary barriers of plywood or other on-site materials to keep the noise from reaching

workers. Place a five-sided, oversized wooden box over the generator. Add fire-resistant acoustical absorbing material (foam) inside the box. If the generator sits on soil or sand, that will help absorb some of the noise.

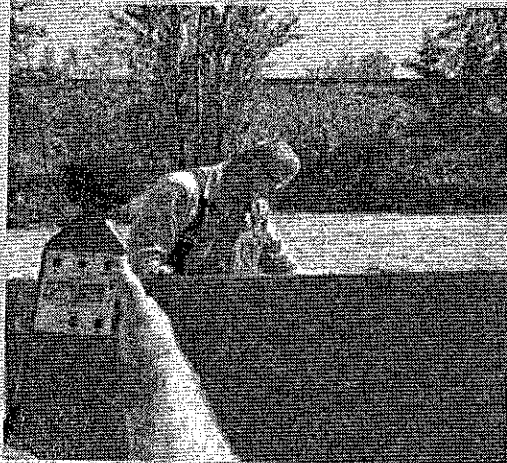


Photo courtesy of Build It Smart

Building a plywood barrier

Maintain and Retrofit Equipment

Proper maintenance of equipment and tools can result in lower noise levels. Changing seals, lubricating parts, using sharp blades and bits, installing mufflers, and replacing faulty or worn equipment or parts can reduce the noise levels significantly on the job site.

Do you know of equipment on your job site that could benefit from regular maintenance to reduce noise levels? Your employer should ensure that there is a regular maintenance program and that everyone follows the maintenance schedule.

AT A GLANCE OSHA®

The Occupational Safety and Health Act of 1970 (OSHA Act) was passed to protect workers from being killed or seriously harmed at work. This law created the Occupational Safety and Health Administration (OSHA), which sets and enforces protective workplace safety and health standards. OSHA also provides information, training, and assistance to employers and workers. Under the OSHA Act, employers have the responsibility to provide a safe workplace.

RIGHTS AND RESPONSIBILITIES

Employers must:

- Follow all relevant OSHA safety and health standards.
- Find and correct safety and health hazards.
- Inform employees about chemical hazards through training, labels, alarms, color-coded systems, chemical information sheets, and other methods.
- Notify OSHA within 8 hours of a workplace fatality or when three or more workers are hospitalized (1-800-321-OSHA [6742]).
- Provide required personal protective equipment at no cost to workers.*
- Keep accurate records of work-related injuries and illnesses.
- Post OSHA citations, injury and illness summary data, and the OSHA "Job Safety and Health - It's The Law" poster in the workplace where workers will see them.
- Not discriminate or retaliate against any worker for using their rights under the law.

Employees have the right to:

- Working conditions that do not pose a risk of serious harm.
- Receive information and training (in a language workers can understand) about chemical and other hazards, methods to prevent harm, and OSHA standards that apply to their workplace.
- Review records of work-related injuries and illnesses.
- Get copies of test results done to find and measure hazards in the workplace.
- File a complaint asking OSHA to inspect their workplace if they believe there is a serious hazard or that their employer is not following OSHA rules. When requested, OSHA will keep all identities confidential.
- Use their rights under the law without retaliation or discrimination. If an employee is fired, demoted, transferred or discriminated against in any way for using their rights under the law, they can file a complaint with OSHA. This complaint must be filed within 30 days of the alleged discrimination.

* Employers must pay for most types of required personal protective equipment.

OSHA STANDARDS

OSHA standards are rules that describe the methods employers are legally required to follow to protect their workers from hazards. Before OSHA can issue a standard, it must go through a very extensive and lengthy process that includes substantial public engagement, notice and comment. The agency must show that a significant risk to workers exists and that there are feasible measures employers can take to protect their workers.

Construction, General Industry, Maritime, and Agriculture standards protect workers from a wide range of serious hazards. These standards limit the amount of hazardous chemicals workers can be exposed to, require the use of certain safe practices and equipment, and require employers to monitor certain workplace hazards.

Examples of OSHA standards include requirements to provide fall protection, prevent trenching cave-ins, prevent exposure to some infectious diseases, ensure the safety of workers who enter confined spaces, prevent exposure to such harmful substances as asbestos and lead, put guards on machines, provide respirators or other safety equipment, and provide training for certain dangerous jobs.

Employers must also comply with the General Duty Clause of the OSH Act. This clause requires employers to keep their workplaces free of serious recognized hazards and is generally cited when no specific OSHA standard applies to the hazard.

INSPECTIONS

Inspections are initiated without advance notice, conducted using on-site or telephone and facsimile investigations, performed by highly trained compliance officers, and based on the following priorities:

- Imminent danger.
- Catastrophes – fatalities or hospitalizations.
- Worker complaints and referrals.
- Targeted inspections – particular hazards, high injury rates.
- Follow-up inspections.

On-site inspections can be triggered by a complaint from a current worker or their representative if they believe there is a serious hazard or that their employer is not following OSHA standards or rules. Often the best and fastest way to get a hazard corrected is to notify your supervisor or employer.

When an Inspector finds violations of OSHA standards or serious hazards, OSHA may issue citations and fines. A citation includes methods an employer may use to fix a problem and the date by when the corrective actions must be completed.

Employers have the right to contest any part of the citation, including whether a violation actually exists. Workers only have the right to challenge the deadline for when a problem must be resolved. Appeals of citations are heard by the Independent Occupational Safety and Health Review Commission.

HELP FOR EMPLOYERS

OSHA offers free confidential advice. Several programs and services help employers identify and correct job hazards as well as improve their injury and illness prevention programs.

Free On-Site Consultation

OSHA provides a free service, On-Site Consultation, for **small businesses** with fewer than 250 workers at a site (and no more than 500 employees nationwide). On-site Consultation services are separate from enforcement and do not result in penalties or citations. Each year, OSHA makes more than 30,000 consultation visits to small businesses to provide free compliance assistance. By working with the OSHA Consultation Program, certain exemplary employers may request participation in OSHA's Safety and Health Recognition Program, SHARP. To locate the OSHA Consultation Office nearest you, visit www.osha.gov or call 1-800-321-OSHA (6742).

Compliance Assistance

OSHA has Compliance Assistance Specialists throughout the nation who can provide general information about OSHA standards and compliance assistance resources. Contact your local OSHA office for more information.

Cooperative Programs

OSHA offers cooperative programs to help prevent fatalities, injuries, and illnesses in the workplace. **Alliance Program** – OSHA works with groups committed to worker safety and health to develop compliance assistance resources and educate workers and employers. **Challenge Program** – This program helps employers and workers improve their safety and health management systems and implement an effective system to prevent fatalities, injuries, and illnesses. **OSHA Strategic Partnership Program (OSPP)** – Partnerships are formalized through tailored agreements designed to encourage, assist, and recognize partner

efforts to eliminate serious hazards and achieve model workplace safety and health practices.

Voluntary Protection Programs (VPP) – The VPP recognize employers and workers in private industry and federal agencies who have implemented effective safety and health management systems and maintain injury and illness rates below national Bureau of Labor Statistics averages for their respective industries. In VPP, management, labor, and OSHA work cooperatively and proactively to prevent fatalities, injuries, and illnesses.

INFORMATION AND EDUCATION

OSHA Training Institute

The OSHA Training Institute (OTI) Education Centers are a national network of nonprofit organizations authorized by OSHA to deliver occupational safety and health training to private sector workers, supervisors, and employers.

Information and Publications

OSHA has a variety of educational materials and electronic tools available on its website at www.osha.gov. These include Safety and Health Topics Pages, Safety Fact Sheets, Expert Advisor software, copies of regulations and compliance directives, videos and other information for employers and workers. OSHA's software programs and eTools walk you through safety and health issues and common problems to find the best solutions for your workplace.

OSHA's extensive publications help explain OSHA standards, job hazards, and mitigation strategies and provide assistance in developing effective safety and health programs.

For a listing of free publications, visit OSHA's website at www.osha.gov or call 1-800-321-OSHA (6742).

QuickTakes

OSHA's free, twice-monthly online newsletter, *QuickTakes*, offers the latest news about OSHA initiatives and products to assist employers and workers in finding and preventing workplace hazards. To sign up for *QuickTakes*, visit OSHA's website at www.osha.gov and click on *QuickTakes* at the top of the page.

Who Does OSHA Cover

Private Sector Workers

OSHA covers most private sector employers and workers in all 50 states, the District of Columbia, and other U.S. jurisdictions either directly through Federal OSHA or through an OSHA-approved State

Program. State-run programs must be at least as effective as the Federal OSHA program.

State and Local Government Workers

State and local government workers are not covered by Federal OSHA, but they do have protections in states that operate their own programs. The following states have approved State Programs: AK, AZ, CA, CT, HI, IA, IL, IN, KY, MD, MI, MN, NC, NJ, NM, NV, NY, OR, SC, TN, UT, VA, VT, WA, WY, Puerto Rico and the Virgin Islands.

Connecticut, Illinois, New Jersey, New York and the Virgin Islands programs cover public sector (state and local government) workers only. Federal OSHA covers private sector workers in these jurisdictions.

Federal Government Workers

OSHA's protection applies to all federal agencies. Although OSHA does not fine federal agencies, it does monitor federal agencies and responds to workers' complaints.

Not Covered by the OSH Act

Self-employed workers, and workers whose hazards are regulated by another federal agency (for example, the Mine Safety and Health Administration, Federal Aviation Administration, and Coast Guard).

CONTACT OSHA

For questions or to get information or advice, to report an emergency, report a fatality or catastrophe, order products, or to file a complaint, contact your nearest OSHA office, visit www.osha.gov or call OSHA at 1-800-321-OSHA (6742), TTY 1-877-889-5627.

For assistance, contact us.

We are OSHA. We can help.

It's confidential.



U.S. Department of Labor
Hilda L. Solis, Secretary of Labor

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Worker Safety Series **Construction**



OSHA 3262-05N 2005

WORKER SAFETY SERIES

Construction

Nearly 6.5 million people work at approximately 252,000 construction sites across the nation on any given day. The fatal injury rate for the construction industry is higher than the national average in this category for all industries.

Potential hazards for workers in construction include:

- Falls (from heights);
- Trench collapse;
- Scaffold collapse;
- Electric shock and arc flash/arc blast;
- Failure to use proper personal protective equipment; and
- Repetitive motion injuries.

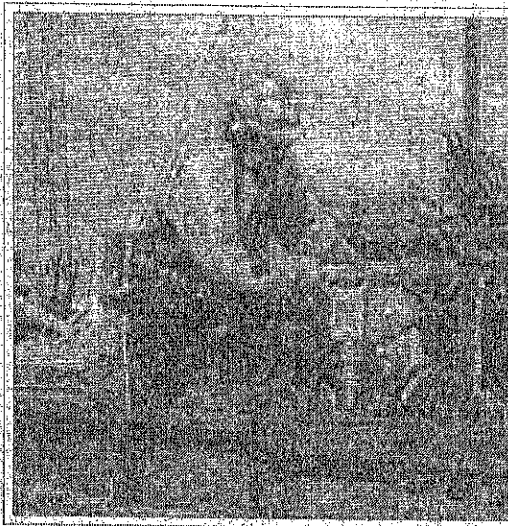


**Occupational Safety and
Health Administration**
U.S. Department of Labor
www.osha.gov

Hazards & Solutions

For construction, the 10 OSHA standards most frequently included in the agency's citations in FY 2004 were:

1. Scaffolding
2. Fall protection (scope, application, definitions)
3. Excavations (general requirements)
4. Ladders
5. Head protection
6. Excavations (requirements for protective systems)
7. Hazard communication
8. Fall protection (training requirements)
9. Construction (general safety and health provisions)
10. Electrical (wiring methods, design and protection)



Scaffolding

Hazard: 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.

Solutions:

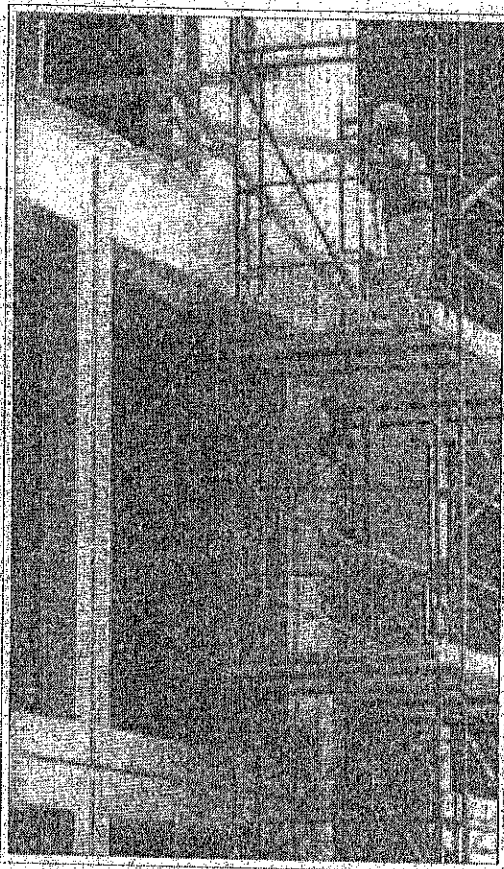
- Scaffold must be sound, rigid and sufficient to carry its own weight plus four times the maximum intended load without settling or displacement. It must be erected on solid footing.
- Unstable objects, such as barrels, boxes, loose bricks or concrete blocks must not be used to support scaffolds or planks.
- Scaffold must not be erected, moved, dismantled or altered except under the supervision of a competent person.
- Scaffold must be equipped with guardrails, midrails and toeboards.
- Scaffold accessories such as braces, brackets, trusses, screw legs or ladders that are damaged or weakened from any cause must be immediately repaired or replaced.
- Scaffold platforms must be tightly planked with scaffold plank grade material or equivalent.
- A "competent person" must inspect the scaffolding and, at designated intervals, reinspect it.
- Rigging on suspension scaffolds must be inspected by a competent person before each shift and after any occurrence that could affect structural integrity to ensure that all connections are tight and that no



Occupational Safety and
Health Administration

damage to the rigging has occurred since its last use.

- Synthetic and natural rope used in suspension scaffolding must be protected from heat-producing sources.
- Employees must be instructed about the hazards of using diagonal braces as fall protection.
- Scaffold can be accessed by using ladders and stairwells.
- Scaffolds must be at least 10 feet from electric power lines at all times.



Fall Protection

Hazard: Each year, falls consistently account for the greatest number of fatalities in the construction industry. A number of factors are often involved in falls, including unstable working surfaces, misuse or failure to use fall protection equipment and human error. Studies have shown that using guardrails, fall arrest systems, safety nets, covers and restraint systems can prevent many deaths and injuries from falls.

Solutions:

- Consider using aerial lifts or elevated platforms to provide safer elevated working surfaces;
- Erect guardrail systems with toeboards and warning lines or install control line systems to protect workers near the edges of floors and roofs;
- Cover floor holes; and/or
- Use safety net systems or personal fall arrest systems (body harnesses).



Ladders

Hazard: Ladders and stairways are another source of injuries and fatalities among construction workers. OSHA estimates that there are 24,882 injuries and as many as 36 fatalities per year due to falls on stairways and ladders used in construction. Nearly half of these injuries were serious enough to require time off the job.

Solutions:

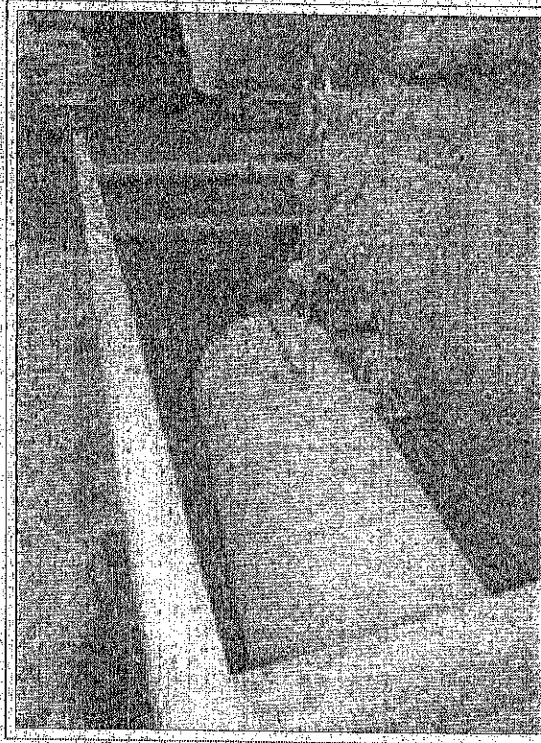
- Use the correct ladder for the task.
- Have a competent person visually inspect a ladder before use for any defects such as:
 - Structural damage, split/bent side rails, broken or missing rungs/steps/cleats and missing or damaged safety devices;
 - Grease, dirt or other contaminants that could cause slips or falls;
 - Paint or stickers (except warning labels) that could hide possible defects.
- Make sure that ladders are long enough to safely reach the work area.
- Mark or tag ("Do Not Use") damaged or defective ladders for repair or replacement, or destroy them immediately.
- Never load ladders beyond the maximum intended load or beyond the manufacturer's rated capacity.
- Be sure the load rating can support the weight of the user, including materials and tools.
- Avoid using ladders with metallic components near electrical work and overhead power lines.

Stairways

Hazard: Slips, trips and falls on stairways are a major source of injuries and fatalities among construction workers.

Solutions:

- Stairway treads and walkways must be free of dangerous objects, debris and materials.
- Slippery conditions on stairways and walkways must be corrected immediately.
- Make sure that treads cover the entire step and landing.
- Stairways having four or more risers or rising more than 30 inches must have at least one handrail.



Trenching

Hazard: Trench collapses cause dozens of fatalities and hundreds of injuries each year. Trenching deaths rose in 2003.

Solutions:

- Never enter an unprotected trench.
- Always use a protective system for trenches 5 feet deep or greater.
- Employ a registered professional engineer to design a protective system for trenches 20 feet deep or greater.
- Protective Systems:
 - Sloping to protect workers by cutting back the trench wall at an angle inclined away from the excavation not steeper than a height/depth ratio of 1½:1, according to the sloping requirements for the type of soil.

SLOPING: Maximum allowable slopes for excavations less than 20 ft. (6.09 m) based on soil type and angle to the horizontal are as follows:

TABLE V-2.1. ALLOWABLE SLOPES

Soil type	Height/Depth ratio	Slope angle
Stable Rock (granite or sandstone)	Vertical	90°
Type A (clay)	¾:1	53°
Type B (gravel, silt)	1:1	45°
Type C (sand)	1½:1	34°
Type A (short-term) (For a maximum excavation depth of 12 ft.)	½:1	63°

Source: OSHA Technical Manual, Section V, Chap. 2, Excavations: Hazard Recognition in Trenching and Shoring (Jan. 1999).

- Shoring to protect workers by installing supports to prevent soil movement for trenches that do not exceed 20 feet in depth.
- Shielding to protect workers by using trench boxes or other types of supports to prevent soil cave-ins.
- Always provide a way to exit a trench--such as a ladder, stairway or ramp--no more than 25 feet of lateral travel for employees in the trench.
- Keep spoils at least two feet back from the edge of a trench.
- Make sure that trenches are inspected by a competent person prior to entry and after any hazard-increasing event such as a rain-storm, vibrations or excessive surcharge loads.



Cranes

Hazard: Significant and serious injuries may occur if cranes are not inspected before use and if they are not used properly. Often these injuries occur when a worker is struck by an overhead load or caught within the crane's swing radius. Many crane fatalities occur when the boom of a crane or its load line contact an overhead power line.

Solutions:

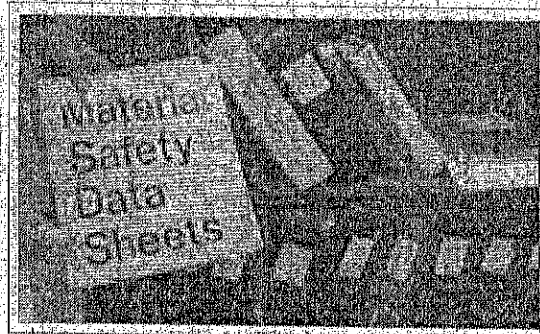
- Check all crane controls to insure proper operation before use.
- Inspect wire rope, chains and hook for any damage.
- Know the weight of the load that the crane is to lift.
- Ensure that the load does not exceed the crane's rated capacity.
- Raise the load a few inches to verify balance and the effectiveness of the brake system.
- Check all rigging prior to use; do not wrap hoist ropes or chains around the load.
- Fully extend outriggers.
- Do not move a load over workers.
- Barricade accessible areas within the crane's swing radius.
- Watch for overhead electrical distribution and transmission lines and maintain a safe working clearance of at least 10 feet from energized electrical lines.

Hazard Communication

Hazard: Failure to recognize the hazards associated with chemicals can cause chemical burns, respiratory problems, fires and explosions.

Solutions:

- Maintain a Material Safety Data Sheet (MSDS) for each chemical in the facility.
- Make this information accessible to employees at all times in a language or formats that are clearly understood by all affected personnel.
- Train employees on how to read and use the MSDS.
- Follow manufacturer's MSDS instructions for handling hazardous chemicals.
- Train employees about the risks of each hazardous chemical being used.
- Provide spill clean-up kits in areas where chemicals are stored.
- Have a written spill control plan.
- Train employees to clean up spills, protect themselves and properly dispose of used materials.
- Provide proper personal protective equipment and enforce its use.
- Store chemicals safely and securely.

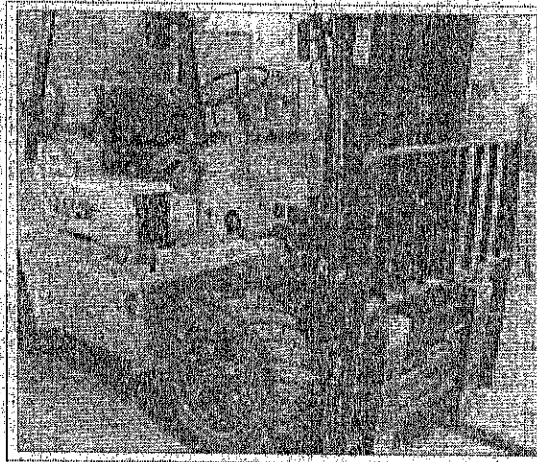


Forklifts

Hazard: Approximately 100 employees are fatally injured and approximately 95,000 employees are injured every year while operating powered industrial trucks. Forklift turnover accounts for a significant number of these fatalities.

Solutions:

- Train and certify all operators to ensure that they operate forklifts safely.
- Do not allow any employee under 18 years old to operate a forklift.
- Properly maintain haulage equipment, including tires.
- Do not modify or make attachments that affect the capacity and safe operation of the forklift without written approval from the forklift's manufacturer.
- Examine forklift truck for defects before using.
- Follow safe operating procedures for picking up, moving, putting down and stacking loads.



- Drive safely--never exceed 5 mph and slow down in congested or slippery surface areas.
- Prohibit stunt driving and horseplay.
- Do not handle loads that are heavier than the capacity of the industrial truck.
- Remove unsafe or defective forklift trucks from service.
- Operators shall always wear seatbelts.
- Avoid traveling with elevated loads.
- Assure that rollover protective structure is in place.
- Make certain that the reverse signal alarm is operational and audible above the surrounding noise level.

Head Protection

Hazard: Serious head injuries can result from blows to the head.

Solution:

- Be sure that workers wear hard hats where there is a potential for objects falling from above, bumps to their heads from fixed objects, or accidental head contact with electrical hazards.



Safety Checklists

The following checklists may help you take steps to avoid hazards that cause injuries, illnesses and fatalities. As always, be cautious and seek help if you are concerned about a potential hazard.

Personal Protective Equipment (PPE)

Eye and Face Protection

- Safety glasses or face shields are worn anytime work operations can cause foreign objects getting into the eye such as during welding, cutting, grinding, nailing (or when working with concrete and/or harmful chemicals or when exposed to flying particles).
- Eye and face protectors are selected based on anticipated hazards.
- Safety glasses or face shields are worn when exposed to any electrical hazards including work on energized electrical systems.

Foot Protection

- Construction workers should wear work shoes or boots with slip-resistant and puncture-resistant soles.
- Safety-toed footwear is worn to prevent crushed toes when working around heavy equipment or falling objects.

Hand Protection

- Gloves should fit snugly.

- Workers wear the right gloves for the job (for example, heavy-duty rubber gloves for concrete work, welding gloves for welding, insulated gloves and sleeves when exposed to electrical hazards).

Head Protection

- Workers shall wear hard hats where there is a potential for objects falling from above, bumps to their heads from fixed objects, or of accidental head contact with electrical hazards.
 - Hard hats are routinely inspected for dents, cracks or deterioration.
 - Hard hats are replaced after a heavy blow or electrical shock.
 - Hard hats are maintained in good condition.
-

Scaffolding

- Scaffolds should be set on sound footing.
- Damaged parts that affect the strength of the scaffold are taken out of service.
- Scaffolds are not altered.
- All scaffolds should be fully planked.
- Scaffolds are not moved horizontally while workers are on them unless they are designed to be mobile and workers have been trained in the proper procedures.
- Employees are not permitted to work on scaffolds when covered with snow, ice, or other slippery materials.
- Scaffolds are not erected or moved within 10 feet of power lines.
- Employees are not permitted to work on scaffolds in bad weather or high winds.

unless a competent person has determined that it is safe to do so.

- Ladders, boxes, barrels, buckets or other makeshift platforms are not used to raise work height.
- Extra material is not allowed to build up on scaffold platforms.
- Scaffolds should not be loaded with more weight than they were designed to support.

Electrical Safety

- Work on new and existing energized (hot) electrical circuits is prohibited until all power is shut off and grounds are attached.
- An effective Lockout/Tagout system is in place.
- Frayed, damaged or worn electrical cords or cables are promptly replaced.
- All extension cords have grounding prongs.
- Protect flexible cords and cables from damage. Sharp corners and projections should be avoided.
- Use extension cord sets used with portable electric tools and appliances that are the three-wire type and designed for hard or extra-hard service. (Look for some of the following letters imprinted on the casing: S, ST, SO, STO.)
- All electrical tools and equipment are maintained in safe condition and checked regularly for defects and taken out of service if a defect is found.
- Do not bypass any protective system or device designed to protect employees from contact with electrical energy.

- Overhead electrical power lines are located and identified.
- Ensure that ladders, scaffolds, equipment or materials never come within 10 feet of electrical power lines.
- All electrical tools must be properly grounded unless they are of the double insulated type.
- Multiple plug adapters are prohibited.

Floor and Wall Openings

- Floor openings (12 inches or more) are guarded by a secured cover, a guardrail or equivalent on all sides (except at entrances to stairways).
- Toeboards are installed around the edges of permanent floor openings (where persons may pass below the opening).

Elevated Surfaces

- Signs are posted, when appropriate, showing the elevated surface load capacity.
- Surfaces elevated more than 48 inches above the floor or ground have standard guardrails.
- All elevated surfaces (beneath which people or machinery could be exposed to falling objects) have standard 4-inch toeboards.
- A permanent means of entry and exit with handrails is provided to elevated storage and work surfaces.
- Material is piled, stacked or racked in a way that prevents it from tipping, falling, collapsing, rolling or spreading.

Hazard Communication

- A list of hazardous substances used in the workplace is maintained and readily available at the worksite.
- There is a written hazard communication program addressing Material Safety Data Sheets (MSDS), labeling and employee training.
- Each container of a hazardous substance (vats, bottles, storage tanks) is labeled with product identity and a hazard warning(s) (communicating the specific health hazards and physical hazards).
- Material Safety Data Sheets are readily available at all times for each hazardous substance used.
- There is an effective employee training program for hazardous substances.

Crane Safety

- Cranes and derricks are restricted from operating within 10 feet of any electrical power line.
- The upper rotating structure supporting the boom and materials being handled is provided with an electrical ground while working near energized transmitter towers.
- Rated load capacities, operating speed and instructions are posted and visible to the operator.
- Cranes are equipped with a load chart.
- The operator understands and uses the load chart.
- The operator can determine the angle and length of the crane boom at all times.

- Crane machinery and other rigging equipment is inspected daily prior to use to make sure that it is in good condition.
- Accessible areas within the crane's swing radius are barricaded.
- Tag lines are used to prevent dangerous swing or spin of materials when raised or lowered by a crane or derrick.
- Illustrations of hand signals to crane and derrick operators are posted on the job site.
- The signal person uses correct signals for the crane operator to follow.
- Crane outriggers are extended when required.
- Crane platforms and walkways have anti-skid surfaces.
- Broken, worn or damaged wire rope is removed from service.
- Guardrails, hand holds and steps are provided for safe and easy access to and from all areas of the crane.
- Load testing reports/certifications are available.
- Tower crane mast bolts are properly torqued to the manufacturer's specifications.
- Overload limits are tested and correctly set.
- The maximum acceptable load and the last test results are posted on the crane.
- Initial and annual inspections of all hoisting and rigging equipment are performed and reports are maintained.
- Only properly trained and qualified operators are allowed to work with hoisting and rigging equipment.

Forklifts

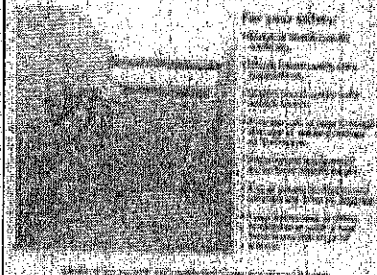
- Forklift truck operators are competent to operate these vehicles safely as demonstrated by their successful completion of training and evaluation.
- No employee under 18 years old is allowed to operate a forklift.
- Forklifts are inspected daily for proper condition of brakes, horns, steering, forks and tires.
- Powered industrial trucks (forklifts) meet the design and construction requirements established in American National Standards Institute (ANSI) for Powered Industrial Trucks, Part II ANSI B56.1-1969.
- Written approval from the truck manufacturer is obtained for any modification or additions which affect capacity and safe operation of the vehicle.
- Capacity, operation and maintenance instruction plates, tags or decals are changed to indicate any modifications or additions to the vehicle.
- Battery charging is conducted in areas specifically designated for that purpose.
- Material handling equipment is provided for handling batteries, including conveyors, overhead hoists or equivalent devices.
- Reinstalled batteries are properly positioned and secured in the truck.
- Smoking is prohibited in battery charging areas.
- Precautions are taken to prevent open flames, sparks or electric arcs in battery charging areas.
- Refresher training is provided and an evaluation is conducted whenever a fork-

lift operator has been observed operating the vehicle in an unsafe manner and when an operator is assigned to drive a different type of truck.

- Load and forks are fully lowered, controls neutralized, power shut off and brakes set when a powered industrial truck is left unattended.
- There is sufficient headroom for the fork-lift and operator under overhead installations, lights, pipes, sprinkler systems, etc.
- Overhead guards are in place to protect the operator against falling objects.
- Trucks are operated at a safe speed.
- All loads are kept stable, safely arranged and fit within the rated capacity of the truck.
- Unsafe and defective trucks are removed from service.

No Entres en una
Trinchera que Carezca
de Protección!

Do Not Enter
an Unprotected
Trench!



For your safety:
 - Never enter a trench unless it is properly shored, shielded, boxed, or trench shields are in place.
 - If you are working in a trench, be sure that the trench is properly shored, shielded, boxed, or trench shields are in place.
 - All trench shoring, shielding, or trench shields must be inspected by a competent person before you enter the trench.
 - If you are working in a trench, be sure that the trench is properly shored, shielded, boxed, or trench shields are in place.

Para su seguridad:
 - Nunca entre en una trinchera a menos que esté correctamente respaldada, protegida, encajonada o protegida con escudos de trinchera.
 - Si está trabajando en una trinchera, asegúrese de que la trinchera esté correctamente respaldada, protegida, encajonada o protegida con escudos de trinchera.
 - Todos los respaldos, escudos o encajonados de trinchera deben ser inspeccionados por una persona competente antes de entrar en la trinchera.
 - Si está trabajando en una trinchera, asegúrese de que la trinchera esté correctamente respaldada, protegida, encajonada o protegida con escudos de trinchera.

OSHA Occupational Safety and Health Administration

OSHA Occupational Safety and Health Administration

Construction Safety & Health Resources

Most resource materials can be found on the OSHA website: www.osha.gov

Publications

Publications can be downloaded or ordered at:
<http://www.osha.gov/pls/publications/pubindex.list>

A Guide to Scaffold Use in the Construction Industry

OSHA Publication 3150 (Revised 2002), 2.1 MB PDF, 73 pages.

Booklet in question-and-answer format highlights information about scaffold safety.

<http://www.osha.gov/Publications/osha3150.pdf>

Concrete and Masonry Construction

OSHA Publication 3106 (Revised 1998), 414 KB PDF, 32 pages.

Details information on OSHA's Concrete and Masonry standard.

<http://www.osha.gov/Publications/osha3106.pdf>

Crystalline Silica Exposure Card for Construction

OSHA Publication 3177 (Revised 2002), 2 pages.

Discusses silica hazards, and what employers and employees can do to protect against exposures to silica.

A Spanish version is also available. OSHA Publication 3179 (Revised 2003), 2 pages.

Excavations

OSHA Publication 2226 (Revised 2002), 533 KB PDF, 44 pages.

A detailed explanation of all aspects of excavation and trenching.

<http://www.osha.gov/Publications/osha2226.pdf>

Fall Protection in Construction

OSHA Publication 3146 (Revised 1998), 177 KB PDF, 43 pages.

<http://www.osha.gov/Publications/osha3146.pdf>



Occupational Safety and Health Administration

Ground-Fault Protection on Construction Sites

OSHA Publication 3007 (Revised 1998), 100 KB
PDF, 31 pages.

Booklet on ground-fault circuit interrupters for safe use of portable tools.

<http://www.osha.gov/Publications/osha3007.pdf>

Lead in Construction

OSHA Publication 3142 (Revised 2003), 610 KB
PDF, 38 pages.

Describes hazards and safe work practices concerning lead.

<http://www.osha.gov/Publications/osha3142.pdf>

OSHA Assistance for the Residential Construction Industry

Many OSHA standards apply to residential construction for the prevention of possible fatalities. This web page provides information about those standards and the hazards present in residential construction. It was developed in cooperation with the National Association of Home Builders (NAHB) as part of the OSHA/NAHB Alliance.

<http://www.osha.gov/SLTC/residential/index.html>

Selected Construction Regulations (SCOR) for the Home Building Industry (29 CFR 1926)

OSHA Publication (Revised 1997), 1.2 MB PDF,
224 pages.

Provides information on safe and healthful work practices for residential construction employers; identifies OSHA standards applicable to hazards found at worksites in the residential construction industry.

<http://www.osha.gov/Publications/scor1926.pdf>

Stairways and Ladders

OSHA Publication 3124 (Revised 2003), 155 KB
PDF, 15 pages.

Explains OSHA requirements for stairways and ladders.

<http://www.osha.gov/Publications/osha3124.pdf>

Working Safely in Trenches

OSHA Publication 3243 (2005), 2 pages.
Provides safety tips for workers in trenches. A Spanish version is on the reverse side.
http://www.osha.gov/Publications/trench/trench_safety_tips_card.pdf

Crane Safety

Safety and Health Topics: Crane, Derrick and Hoist Safety -- Hazards and Possible Solutions

December 2003. One page.
OSHA website index provides references to aid in identifying crane, derrick and hoist hazards in the workplace.
<http://www.osha.gov/SLTC/cranehoistsafety/recognition.html>

Electrical Hazards

Control of Hazardous Energy (Lockout/Tagout)

OSHA Publication 3120 (Revised 2002), 174 KB PDF, 45 pages.
This booklet presents OSHA's general requirements for controlling hazardous energy during service or maintenance of machines or equipment.
<http://www.osha.gov/Publications/osha3120.pdf>

Controlling Electrical Hazards

OSHA Publication 3075 (Revised 2002), 349 KB PDF, 71 pages.
This publication provides an overview of basic electrical safety on the job.
<http://www.osha.gov/Publications/osha3075.pdf>

Safety and Health Topics: Lockout/Tagout

OSHA website index to information about lockout/tagout, including hazard recognition, compliance, standards and directives, Review Commission and Administrative Law Judge Decisions, standard interpretations and compliance letters, compliance assistance and training.
<http://www.osha.gov/SLTC/controlhazardousenergy/index.html>



Occupational Safety and
Health Administration

Hazard Communication

Hazard Communication: Foundation of Workplace Chemical Safety Programs

OSHA website index for resources on hazard communication.

<http://www.osha.gov/SLTC/hazardcommunications/index.html>

Frequently Asked Questions for Hazard Communication

OSHA, 6 pages.

Website questions and answers on hazard communication.

<http://www.osha.gov/html/faq-hazcom.html>

Hazard Communication Standard

OSHA Fact Sheet No. 93-26 (1993), 3 pages.

Highlights protections under OSHA's Hazard Communication Standard.

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FACT_SHEETS&p_id=151

Hazard Communication Guidelines for Compliance

OSHA Publication 3111 (2000), 112 KB PDF, 33 pages.

This document aids employers in understanding the Hazard Communication standard and in implementing a hazard communication program.

<http://www.osha.gov/Publications/osh3111.pdf>

Chemical Hazard Communication

OSHA Publication 3084 (1998), 248 KB PDF, 31 pages.

This booklet answers several basic questions about chemical hazard communication.

<http://www.osha.gov/Publications/osh3084.pdf>

NIOSH Pocket Guide to Chemical Hazards

Handy source of general industrial hygiene information on several hundred chemicals/classes for workers, employers and occupational health professionals.

<http://www.cdc.gov/niosh/npg/npg.html>

Material Handling

Materials Handling and Storage

OSHA Publication 2236 (Revised 2002), 559 KB PDF, 40 pages.

A comprehensive guide to hazards and safe work practices in handling materials.

<http://www.osha.gov/Publications/osha2236.pdf>

Personal Protective Equipment

Personal Protective Equipment

OSHA Publication 3155 (2003), 305 KB PDF, 44 pages.

Discusses equipment most commonly used for protection for the head, including eyes and face and the torso, arms, hands, and feet. The use of equipment to protect against life-threatening hazards is also discussed.

<http://www.osha.gov/Publications/OSHA3155/osha3155.html>

Safety and Health Topics: Personal Protective Equipment

OSHA website index to hazard recognition, control and training related to personal protective equipment. <http://www.osha.gov/SLTC/personalprotectiveequipment/index.html>

Toxic Metals: Cadmium

Safety and Health Topics: Cadmium

OSHA website index to recognition, evaluation, control, compliance and training related to Cadmium.

<http://www.osha.gov/SLTC/cadmium/index.html>

Electronic Construction Resources

OSHA eTools and Expert Advisors can be found on OSHA's website: <http://www.osha.gov>

eTools

Construction: Preventing Fatalities. Construction can be a safe occupation when workers are aware of the hazards, and an effective safety

and health program is used. This eTool will help workers identify and control the hazards that commonly cause the most serious construction injuries. A Spanish translation of this eTool is also available.

Scaffolding: Supported Scaffolds and Suspended Scaffolds. These eTools provide illustrated examples of safe scaffolding use. Hazards are identified as well as the controls that keep those hazards from becoming tragedies.

Solutions for Electrical Contractors. This eTool describes common hazards that electrical contractors may encounter and possible solutions for these hazards. The eTool was developed in cooperation with the Independent Electrical Contractors (IEC) as part of the OSHA-IEC Alliance.

Steel Erection. America's 56,000 steel erectors suffer 35 fatal accidents per year, a rate of one death per 1,600 workers. OSHA estimates that 30 of those deaths as well as nearly 1,150 annual lost-workday injuries can be averted by compliance with provisions of the Steel Erection standard, developed with industry and labor through negotiated rulemaking. To that end, this eTool has been created to educate employers and workers.

OSHA's Expert Advisors

The Asbestos Advisor: This computer program provides an introduction to the scope and logic of the regulations for general industry, construction and maritime.

Lead in Construction Advisor: This computer program provides an introduction to the scope and logic of the regulations regarding occupational exposure to lead and summary guidance to facilitate compliance.

Construction Industry Cooperative and State Programs



Voluntary Protection Programs

OSHA recognizes Voluntary Protection Programs (VPP) worksites for their excellent safety and health management systems.

OSHA Construction

OSHA has announced an OSHA Construction program to address the unique needs of the industry. The goal of this program is to make VPP more accessible to construction employers, especially small construction employers and to maintain the high standards of VPP while expanding participation to broad construction industry categories such as short-term projects, mobile workforces, general contractors and sub-contractors. Pilot programs in these categories have shown beneficial results for participants.

OSHA Challenge

OSHA has created the Challenge Pilot to provide greater opportunities to eligible employers interested in working with OSHA to create safer and healthier workplaces. The pilot is designed to reach and guide employers and companies in all major industry groups who are strongly committed to improving their safety and health management systems and interested in pursuing recognition in VPP. OSHA Challenge provides participants a guide or roadmap to

improve performance and ultimately the opportunity to take part in the VPP Merit or Star programs.



Alliance Program

Alliances enable organizations committed to workplace safety and health to collaborate with OSHA to prevent injuries and illnesses in the workplace.

OSHA has a number of national and regional or area office alliances that impact the construction industries. The details of these alliances can be found on www.osha.gov under Alliances.



OSHA Strategic Partnership Program

Partnerships are voluntary, cooperative relationships between OSHA and groups of employers, employees and employee representatives (sometimes including other stakeholders and sometimes involving only one employer) that encourage, assist and recognize efforts to eliminate serious hazards and achieve a high level of worker safety and health. National construction partnerships include AMEC Construction, Associated Builders and Contractors (ABC) and the National Ready-Mixed Concrete Association. In addition to the national partnerships, OSHA

has had nearly 170 regional strategic partnerships with the construction industry since the program's start in 1998.

State Programs

Twenty-six States and territories operate their own occupational safety and health programs under plans approved by Federal OSHA. Twenty-two of these programs cover both private sector and public (State and local government) employees; four cover public employees only. States may have somewhat different requirements and procedures for the construction industry, but they are required to be at least as effective as Federal OSHA. All State Plans offer a VPP program and have additional cooperative programs parallel to OSHA's Alliance and Strategic Partnership programs. A list of States with approved plans may be found at www.osha.gov.

Consultation

Every state offers a free, on-site consultation program to help small employers find and fix hazards and establish effective safety and health management systems. Funded primarily by OSHA, consultation is provided at no cost to small employers and is delivered by state authorities through professional safety and health consultants. More information on OSHA's Consultation Program appears on the agency's website at www.osha.gov.

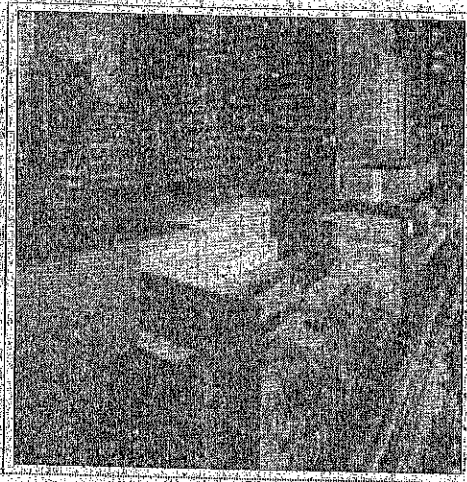
Success Stories

Partnership Reduced Injuries during Art Museum Renovation

In 2002, OSHA and AMEC Construction developed a partnership to prevent injuries at the \$425 million rebuilding/renovation construction project for New York City's renowned Museum of Modern Art (MoMA).

The partnership covered some 220 employees and 17 employers who worked to more than double MoMA's space and expand facilities for special exhibitions, public programs, educational outreach and scholarly research.

AMEC employees completed more than 800,000 hours in 2003 and racked up two impressive safety and health statistics: the number of Days Away Restricted and Transferred (DART) percentage was 90 percent below the national average for their standard industrial classification (SIC) code and the Total Case Incident Rate (TCIR)



was 92 percent below the national average for their SIC.

Best practices used included daily safety inspections conducted at the site and any hazards identified were corrected immediately. Inspection results were discussed at safety committee meetings. Each employee knew that a safety issue would be dealt with promptly when it came to management's attention. Additionally, an on-site incentive encouraged safe workplace practices.

The right combination of best safety management practices, partnering between OSHA and AMEC Construction, and a DART percentage 90 percent below the national average are fitting achievements for a new and better home for the world's leading collection of modern and contemporary art.

Fatalities Prevented, Injuries Minor, Workers' Comp Costs Slashed

Turner Construction and OSHA Teamed Up on Wisconsin Stadium Project

Teamwork at the Green Bay Packers' Lambeau Field is not just for professional football players. A partnership between Turner Construction and OSHA made teamwork in achieving health and safety a top priority for construction workers building and expanding the stadium.

In 2003, the \$295 million renovation of the Lambeau Field stadium was completed, more than doubling the size of the previous stadium. Seating capacity was increased from 60,890 to over 72,000.

Partnering with OSHA paid off. There were fewer serious injuries for workers and a more than 20 percent cut in workers' compensation costs for the contractor.

The partnership had three goals:

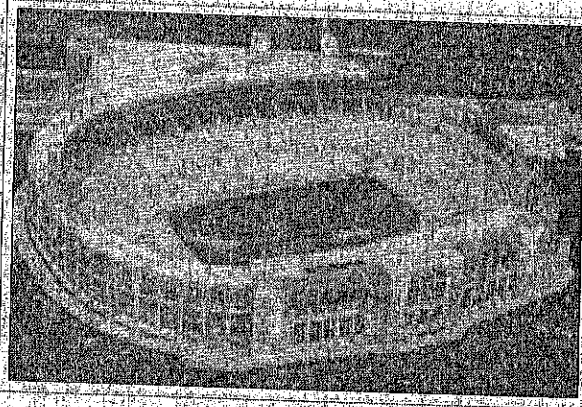
- All contractors have an effective safety and health program;
- All hazards corrected daily after daily audits are conducted; and
- Increase the level of training for supervisors and employees.

The work was more hazardous than typical steel erections because stadiums are curved and angular in shape. Also, construction and demolition activities were taking place simultaneously, often within a few feet of each other.

Several potential serious accidents were avoided by requiring all contractors' safety and health programs to establish a requirement of 100 percent fall protection at or above six feet.

One worker on the project slipped off a steel beam located six stories above ground. Thanks to his use of full fall protection, serious injury -- or possible death -- was avoided. He was back at work shortly after his rescue. Less than two months later, a second worker slipped from a beam, but also escaped injury because of his fall protection equipment. Like his coworker, he returned to work the same day. An ironworker and a carpenter also fell and were saved by their harnesses.

A significant achievement included 4,300 workers completing OSHA's 10-hour construction training. An added benefit for the industry is that these employees are bringing their safety training to other sites where they are now working.





**Occupational Safety and
Health Administration**
U.S. Department of Labor
www.osha.gov

Employers are responsible for providing a safe and healthful workplace for their employees. OSHA's role is to assure the safety and health of America's workers by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual improvement in workplace safety and health.

This informational booklet provides a general overview of a particular topic related to OSHA standards. It does not alter or determine compliance responsibilities in OSHA standards or the *Occupational Safety and Health Act of 1970*. Because interpretations and enforcement policy may change over time, you should consult current OSHA administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the Courts for additional guidance on OSHA compliance requirements.

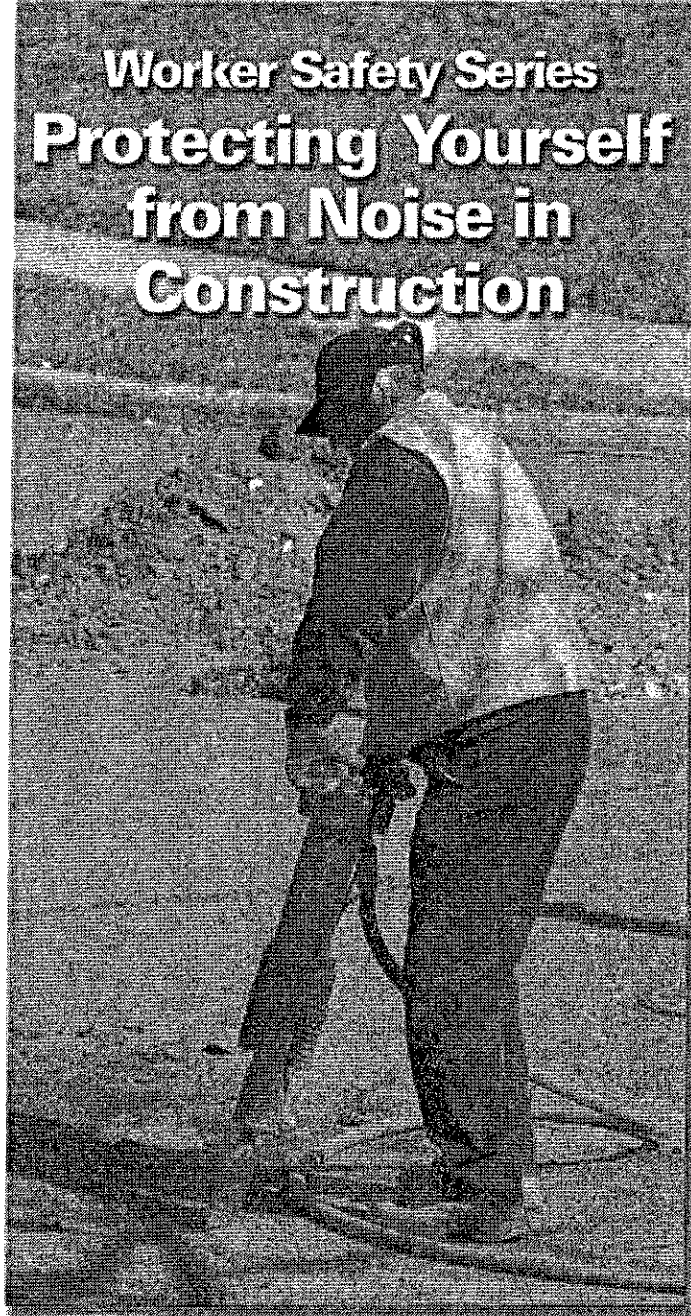
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This information is available to sensory impaired individuals upon request. Voice phone: (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.

OSHA[®] POCKET GUIDE

Occupational Safety and Health Administration
www.osha.gov

Worker Safety Series Protecting Yourself from Noise in Construction



OSHA 3498-12N 2011

If you are a construction worker, this pocket guide is written for you. Small contractors should also find this information helpful. You are encouraged to go to the references in this document and to the OSHA website for more information.

This guidance document is not a standard or regulation, and it creates no new legal obligations. The guidance is advisory in nature, informational in content, and is intended to help construction workers and supervisors understand and reduce noise exposure on job sites. Employers are required to comply with safety and health standards as issued and enforced by either the Federal Occupational Safety and Health Administration (OSHA), or an OSHA-approved State Plan. In addition, Section 5(a)(1) of *The Occupational Safety and Health Act*, the General Duty Clause, requires employers to provide their workers with a workplace free from recognized hazards likely to cause death or serious physical harm. Employers can be cited for violating the General Duty Clause if there is such a recognized hazard and they do not take reasonable steps to prevent or abate the hazard. However, failure to implement these guidelines is not, in itself, a violation of the General Duty Clause. Citations can only be based on standards, regulations, and the General Duty Clause.

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Why is job site noise control important to me?

Exposure to high levels of noise can cause permanent hearing loss. Neither surgery nor a hearing aid can help correct this type of hearing loss. Construction sites have many noisy operations and can be a significant source of noise exposure.

Loud noise can also reduce work productivity and contribute to workplace accidents by making it difficult to hear warning signals. Hearing loss from loud noise limits your ability to hear high frequencies, understand speech, and reduces your ability to communicate, which can lead to social isolation. Hearing loss can affect your quality of life by interfering with your ability to enjoy socializing with friends, playing with your children or grandchildren, or participating in other activities.

Damage to your hearing **can be prevented**, but once permanent noise-induced hearing loss occurs, it **cannot be cured** or reversed. Hearing loss usually occurs gradually, so you may not realize it is happening until it is too late.

Noise can also **affect your body in other ways**. A recent study found that workers persistently exposed to excessive occupational noise may be two-to-three times more likely to suffer from serious heart disease than workers who were not exposed.¹

¹Gan, W. et al., Exposure to Occupational Noise and Cardiovascular Disease in the United States: NHANES 1999-2004, *Occup Environ Med* doi: 10.1136/oem.2010.055269.

You may have hearing loss if:

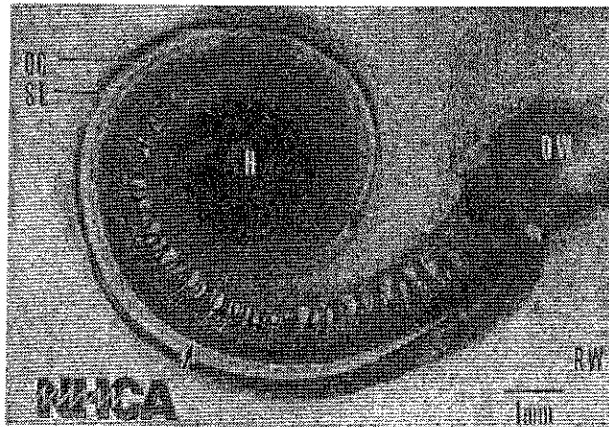
- You have a hard time hearing people in groups or meetings or if there is background noise.
- People sound as if they are mumbling.
- You have to ask people to repeat what they say.
- You have trouble understanding others on the telephone.
- You have ringing or noises in one or both ears.
- You have trouble hearing back-up alarms or the ringing of a cell phone.

How does hearing damage happen?

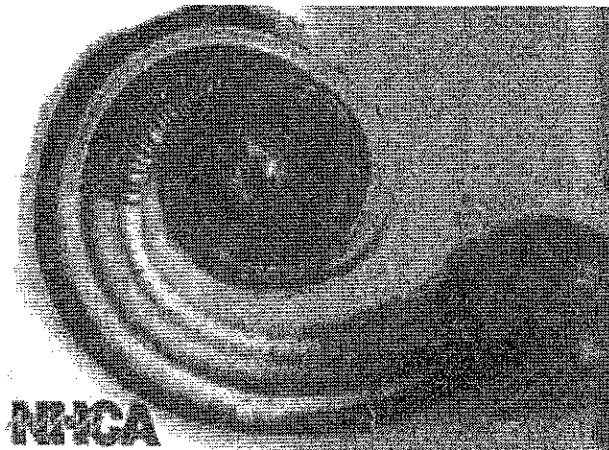
A one-time exposure to a sudden powerful noise, such as an explosion, may damage your hearing instantly. Prolonged exposures to loud noise can lead to a gradual, but permanent, loss of hearing.

Damage can occur within the ear at noise levels similar to that of running a lawn mower for eight hours. At first, this may cause a temporary loss of hearing that may last as long as 14-16 hours. With repeated exposure to high noise levels and periodic exposures to very high noise levels (e.g., with the use of nail guns), as is common at most construction job sites, your hearing may not fully recover. More often, the loss of hearing occurs slowly over time from exposure to moderate levels of noise. When that happens, the hearing loss becomes permanent. This is why workplace noise is sometimes referred to as a stealth long-term hazard – because it is a painless, gradual process.

Hearing loss occurs when cilia, tiny hair cells that line the inner ear, are damaged. At first, the damage happens to the cilia that receive the higher frequencies. Gradually, noise damages more of the ear and affects how speech is heard. If you hear muffled or distorted speech sounds, that may be an indication that a substantial hearing loss has already occurred.



Healthy inner ear lined with cilia, tiny hair cells that help you hear.



Inner ear showing damage to the cilia.

In addition to hearing loss, you also may experience ringing in the ears. This is called *tinnitus*, and can occur even without other apparent hearing loss.

How do I know if my tools or job site are too noisy?

Sound intensity is measured in decibels. When decibels are adjusted for how the ear senses sound, the sound level intensity is measured as dBA. Decibels are measured on a logarithmic scale, which means that a small increase in the number of decibels results in a huge change in the amount of noise and the potential damage to a person's hearing. So, if the level increases by 3 dBA this doubles the amount of the noise and reduces the recommended amount of exposure time by half.

Sound Level Meter and Noise Dosimeter

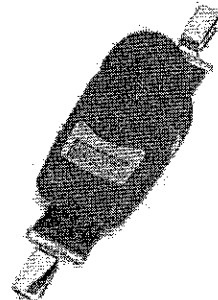
Safety and health inspectors measure sound or noise levels using a device called a *sound level meter*. The microphone is positioned at the user's ear level. Equipment that is determined to be loud can be labeled with a hazardous noise sticker.

OSHA uses *noise dosimeters* to document the average noise exposure over your working day or of a particular task for part of your workday.

OSHA recommends that workplace noise levels be kept below 85 dBA as an 8-hour time-weighted average. As the noise level increases, it damages your hearing more quickly.



Sound level meter



Dosimeter

Images courtesy of Casella CEL Inc., Amherst, NH.

Research indicates that your hearing can be damaged by regular 8-hour exposures to 85 dBA. When noise is as loud as 100 dBA (like a jackhammer or stud welder), it can take repeated exposures of as little as 1 hour per day to damage your hearing.

The National Institute for Occupational Safety and Health (NIOSH) has recommended that all worker exposures to noise should be controlled below a level equivalent to 85 dBA for eight hours to minimize occupational noise-induced hearing loss. NIOSH has found that significant noise-induced hearing loss occurs at the exposure levels equivalent to the OSHA PEL based on updated information obtained from literature reviews. NIOSH also recommends a 3 dBA exchange rate so that every increase by 3 dBA represents a doubling of the amount of the noise and halves the recommended amount of exposure time.

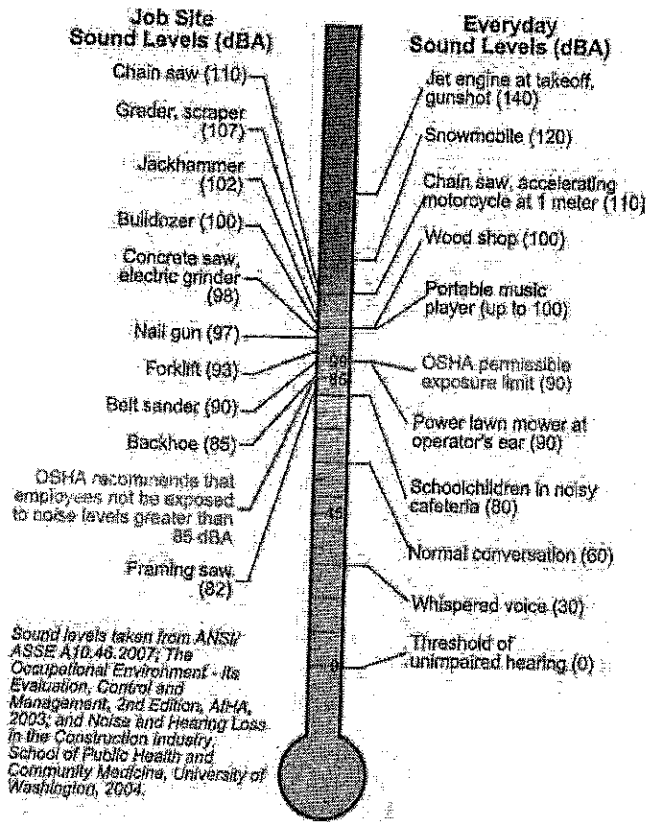
2-3 Foot Rule and Noise Indicator

When a sound level meter is not available, you should use the 2-to-3 foot rule: Stand about an arm's length away from your coworker: If you have to raise your voice to be heard 2-3 feet away, you should assume that the sound level is at or above 85 dBA.

A personal noise indicator is a warning device. It indicates if your immediate exposure is less than or greater than 85 dBA. It flashes green if the sound level is under 85 dBA and red when above 85 dBA.

Sound Level Chart

Equipment and daily activities at construction job sites can expose workers to high levels of noise. Sound levels on the chart below are listed in decibels (dBA) – the larger the number, the higher the volume or decibel level. How loud the noise is (volume), how long the noise lasts, and how close you are to the noise are all important in determining the hazard.



What can be done about job site noise levels?

Plan Ahead

One of the best ways to reduce exposure to hazardous noise on a work site is by planning for potential exposure before activities start. When jobs produce high noise levels, there are ways to reduce your exposure other than or in addition to hearing protectors.

For instance, your employer or supervisor can buy materials to build sound barriers or schedule noisy activities during hours when fewer people are working. Your employer can also rent or buy quieter equipment.

Your employer should hold daily or weekly safety meetings to discuss ways to limit high noise levels and other hazards. During safety meetings, the general contractor can ask subcontractors to describe the planned tasks for the day or week where hazardous noise might be generated, as well as what equipment will be used; you can use these opportunities to talk about ways to limit exposure.

Even changes in the noise level that seem small (e.g., 3 dBA) are actually significant reductions in the noise.

Here are some specific ways to limit exposure:

- Plan to make or use prefabricated noise barriers.
- Ask your employer to buy or rent quieter equipment/tools.
- Limit the hours you work in hazardous noise areas.

- Identify equipment and work areas where signs can be posted to make other workers aware of high noise areas.
- Use hearing protection to supplement noise reduction.

Noise Control at the Job Site

The work site is where workers can have the most impact by working with employers to identify hazardous equipment, conduct hazard assessments, and apply the control process explained below. Employer support for providing supplies (acoustical insulation, extension cords, pre-fabricated noise barriers), hand tools, and sufficient set-up time are essential.

Noise Hazard Control Process

The easiest way to help lower noise levels at your work site is to remember a three-step noise hazard control process:

Reduce It: Reduce the noise by using the quietest equipment available. For example, choose a smaller, quieter generator.

Move It: Move the equipment farther away with the use of extension cords, additional welding leads, and air hoses (following current OSHA standards). Noise levels go down as we increase our distance from a noisy object. Move the generator farther away or face it in a direction that is away from where most people are working. If you are not required to be in a high noise area, move to a quieter area.

Block It: Block the noise by building temporary barriers of plywood or other on-site materials to keep the noise from reaching

workers. Place a five-sided, oversized wooden box over the generator. Add fire-resistant acoustical absorbing material (foam) inside the box. If the generator sits on soil or sand, that will help absorb some of the noise.



Photo courtesy of Buford Smart

Building a plywood barrier

Maintain and Retrofit Equipment

Proper maintenance of equipment and tools can result in lower noise levels. Changing seals, lubricating parts, using sharp blades and bits, installing mufflers, and replacing faulty or worn equipment or parts can reduce the noise levels significantly on the job site.

Do you know of equipment on your job site that could benefit from regular maintenance to reduce noise levels? Your employer should ensure that there is a regular maintenance program and that everyone follows the maintenance schedule.

ATTENTION OSHA®

The Occupational Safety and Health Act of 1970 (OSHA Act) was passed to prevent workers from being killed or seriously harmed at work. This law created the Occupational Safety and Health Administration (OSHA), which sets and enforces protective workplace safety and health standards. OSHA also provides information, training, and assistance to employers and workers.

Under the OSHA Act, employers have the responsibility to provide a safe workplace.

RIGHTS AND RESPONSIBILITIES

Employers must:

- Follow all relevant OSHA safety and health standards.
- Find and correct safety and health hazards.
- Inform employees about chemical hazards through training, labels, alarms, color-coded systems, chemical information sheets and other methods.
- Notify OSHA within 8 hours of a workplace fatality or when three or more workers are hospitalized (1-800-321-OSHA (6742)).
- Provide required personal protective equipment at no cost to workers.
- Keep accurate records of work-related injuries and illnesses.
- Post OSHA citations, injury and illness summary data, and the OSHA "Job Safety and Health - It's The Law" poster in the workplace where workers will see them.
- Not discriminate or retaliate against any worker for using their rights under the law.

* Employers must pay for most types of required personal protective equipment.

Employees have the right to:

- Working conditions that do not pose a risk of serious harm.
- Receive information and training (in a language workers can understand) about chemical and other hazards, methods to prevent harm, and OSHA standards that apply to their workplace.
- Review records of work-related injuries and illnesses.
- Get copies of test results done to find and measure hazards in the workplace.
- File a complaint asking OSHA to inspect their workplace if they believe there is a serious hazard or that their employer is not following OSHA rules. When requested, OSHA will keep all identities confidential.
- Use their rights under the law without retaliation or discrimination. If an employee is fired, demoted, transferred or discriminated against in any way for using their rights under the law, they can file a complaint with OSHA. This complaint must be filed within 30 days of the alleged discrimination.

OSHA STANDARDS

OSHA standards are rules that describe the methods employers are legally required to follow to protect their workers from hazards. Before OSHA can issue a standard, it must go through a very extensive and lengthy process that includes substantial public engagement, notice and comment. The agency must show that a significant risk to workers exists and that there are feasible measures employers can take to protect their workers.

Construction, General Industry, Maritime, and Agriculture standards protect workers from a wide range of serious hazards. These standards limit the amount of hazardous chemicals workers can be exposed to, require the use of certain safe practices and equipment, and require employers to monitor certain workplace hazards.

Examples of OSHA standards include requirements to provide fall protection, prevent trenching cave-ins, prevent exposure to some infectious diseases, ensure the safety of workers who enter confined spaces, prevent exposure to such harmful substances as asbestos and lead, put guards on machines, provide respirators or other safety equipment, and provide training for certain dangerous jobs.

Employers must also comply with the General Duty Clause of the OSH Act. This clause requires employers to keep their workplaces free of serious recognized hazards and is generally cited when no specific OSHA standard applies to the hazard.

INSPECTIONS

Inspections are initiated without advance notice, conducted using on-site or telephone and facsimile investigations, performed by highly trained compliance officers, and based on the following priorities:

- Imminent danger.
- Catastrophes — fatalities or hospitalizations.
- Worker complaints and referrals.
- Targeted inspections — particular hazards, high injury rates.
- Follow-up inspections.

On-site inspections can be triggered by a complaint from a current worker or their representative if they believe there is a serious hazard or that their employer is not following OSHA standards or rules. Often the best and fastest way to get a hazard corrected is to notify your supervisor or employer.

When an inspector finds violations of OSHA standards or serious hazards, OSHA may issue citations and fines. A citation includes methods an employer may use to fix a problem and the date by when the corrective actions must be completed.

Employers have the right to contest any part of the citation, including whether a violation actually exists. Workers only have the right to challenge the deadline for when a problem must be resolved. Appeals of citations are heard by the Independent Occupational Safety and Health Review Commission.

HELP FOR EMPLOYERS

OSHA offers free confidential advice. Several programs and services help employers identify and correct job hazards, as well as improve their injury and illness prevention programs.

Free On-Site Consultation

OSHA provides a free service, On-Site Consultation, for small businesses with fewer than 250 workers at a site (and no more than 500 employees nationwide). On-site Consultation services are separate from enforcement and do not result in penalties or citations. Each year, OSHA makes more than 30,000 consultation visits to small businesses to provide free compliance assistance. By working with the OSHA Consultation Program, certain exemplary employers may request participation in OSHA's Safety and Health Recognition Program, SHARP. To locate the OSHA Consultation Office nearest you, visit www.osha.gov or call 1-800-321-OSHA (6742).

Compliance Assistance

OSHA has Compliance Assistance Specialists throughout the nation who can provide general information about OSHA standards and compliance assistance resources. Contact your local OSHA office for more information.

Cooperative Programs

OSHA offers cooperative programs to help prevent fatalities, injuries, and illnesses in the workplace. **Alliance Program** — OSHA works with groups committed to worker safety and health to develop compliance assistance resources and educate workers and employers. **Challenge Program** — This program helps employers and workers improve their safety and health management systems and implement an effective system to prevent fatalities, injuries, and illnesses. **OSHA Strategic Partnership Program (OSPP)** — Partnerships are formalized through tailored agreements designed to encourage, assist, and recognize partner

efforts to eliminate serious hazards and achieve model workplace safety and health practices.

Voluntary Protection Programs (VPP) – The VPP recognize employers and workers in private industry and federal agencies who have implemented effective safety and health management systems and maintain injury and illness rates below national Bureau of Labor Statistics averages for their respective industries. In VPP, management, labor, and OSHA work cooperatively and proactively to prevent fatalities, injuries, and illnesses.

INFORMATION AND EDUCATION

OSHA Training Institute

The OSHA Training Institute (OTI) Education Centers are a national network of nonprofit organizations authorized by OSHA to deliver occupational safety and health training to private sector workers, supervisors, and employers.

Information and Publications

OSHA has a variety of educational materials and electronic tools available on its website at www.osha.gov. These include Safety and Health Topics Pages, Safety Fact Sheets, Expert Advisor software, copies of regulations and compliance directives, videos and other information for employers and workers. OSHA's software programs and eTools walk you through safety and health issues and common problems to find the best solutions for your workplace.

OSHA's extensive publications help explain OSHA standards, job hazards, and mitigation strategies and provide assistance in developing effective safety and health programs.

For a listing of free publications, visit OSHA's website at www.osha.gov or call 1-800-321-OSHA (6742).

QuickTakes

OSHA's free, twice-monthly online newsletter, *QuickTakes*, offers the latest news about OSHA initiatives and products to assist employers and workers in finding and preventing workplace hazards. To sign up for *QuickTakes*, visit OSHA's website at www.osha.gov and click on *QuickTakes* at the top of the page.

Who Does OSHA Cover

Private Sector Workers

OSHA covers most private sector employers and workers in all 50 states, the District of Columbia, and other U.S. jurisdictions either directly through Federal OSHA or through an OSHA-approved State

Program. State-run programs must be at least as effective as the Federal OSHA program.

State and Local Government Workers

State and local government workers are not covered by Federal OSHA, but they do have protections in states that operate their own programs. The following states have approved State Programs: AK, AZ, CA, CT, HI, IA, IL, IN, KY, MD, MI, MN, NC, NJ, NM, NV, NY, OR, SC, TN, UT, VA, VT, WA, WY, Puerto Rico and the Virgin Islands.

Connecticut, Illinois, New Jersey, New York and the Virgin Islands programs cover public sector (state and local government) workers only. Federal OSHA covers private sector workers in these jurisdictions.

Federal Government Workers

OSHA's protection applies to all federal agencies. Although OSHA does not fine federal agencies, it does monitor federal agencies and responds to workers' complaints.

Not Covered by the OSH Act:

Self-employed workers; and workers whose hazards are regulated by another federal agency (for example, the Mine Safety and Health Administration, Federal Aviation Administration, and Coast Guard).

CONTACT OSHA

For questions or to get information or advice, to report an emergency, report a fatality or catastrophe, order products, or to file a complaint, contact your nearest OSHA office, visit www.osha.gov or call OSHA at 1-800-321-OSHA (6742), TTY 1-877-889-5627.

For assistance, contact us.

We are OSHA. We can help.

It's confidential.



U.S. Department of Labor
Hilda L. Solis, Secretary of Labor

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Worker Safety Series Construction



OSHA 3252-05N 2005

Construction

Nearly 6.5 million people work at approximately 252,000 construction sites across the nation on any given day. The fatal injury rate for the construction industry is higher than the national average in this category for all industries.

Potential hazards for workers in construction include:

- Falls (from heights);
- Trench collapse;
- Scaffold collapse;
- Electric shock and arc flash/arc blast;
- Failure to use proper personal protective equipment; and
- Repetitive motion injuries.



**Occupational Safety and
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Hazards & Solutions

For construction, the 10 OSHA standards most frequently included in the agency's citations in FY 2004 were:

1. Scaffolding
2. Fall protection (scope, application, definitions)
3. Excavations (general requirements)
4. Ladders
5. Head protection
6. Excavations (requirements for protective systems)
7. Hazard communication
8. Fall protection (training requirements)
9. Construction (general safety and health provisions)
10. Electrical (wiring methods, design and protection)



Scaffolding

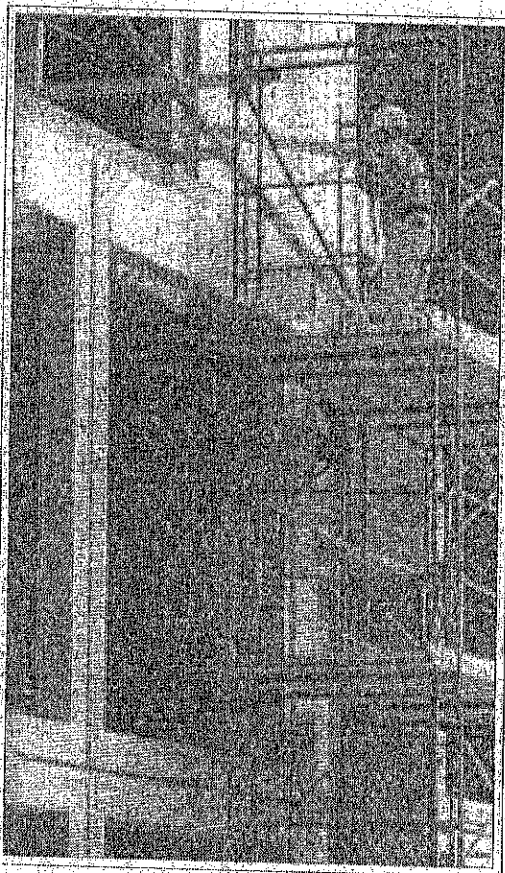
Hazard: When scaffolds are not erected or used properly, fall hazards can occur. About 2.3 million construction workers frequently work on scaffolds. Protecting these workers from scaffold-related accidents would prevent an estimated 4,500 injuries and 50 fatalities each year.

Solutions:

- Scaffold must be sound, rigid and sufficient to carry its own weight plus four times the maximum intended load without settling or displacement. It must be erected on solid footing.
- Unstable objects, such as barrels, boxes, loose bricks or concrete blocks must not be used to support scaffolds or planks.
- Scaffold must not be erected, moved, dismantled or altered except under the supervision of a competent person.
- Scaffold must be equipped with guardrails, midrails and toeboards.
- Scaffold accessories such as braces, brackets, trusses, screw legs or ladders that are damaged or weakened from any cause must be immediately repaired or replaced.
- Scaffold platforms must be tightly planked with scaffold plank grade material or equivalent.
- A "competent person" must inspect the scaffolding and, at designated intervals, reinspect it.
- Rigging on suspension scaffolds must be inspected by a competent person before each shift and after any occurrence that could affect structural integrity to ensure that all connections are tight and that no

damage to the rigging has occurred since its last use.

- Synthetic and natural rope used in suspension scaffolding must be protected from heat-producing sources.
- Employees must be instructed about the hazards of using diagonal braces as fall protection.
- Scaffold can be accessed by using ladders and stairwells.
- Scaffolds must be at least 10 feet from electric power lines at all times.



Fall Protection

Hazard: Each year, falls consistently account for the greatest number of fatalities in the construction industry. A number of factors are often involved in falls, including unstable working surfaces, misuse or failure to use fall protection equipment and human error. Studies have shown that using guardrails, fall arrest systems, safety nets, covers and restraint systems can prevent many deaths and injuries from falls.

Solutions:

- Consider using aerial lifts or elevated platforms to provide safer elevated working surfaces;
- Erect guardrail systems with toeboards and warning lines or install control line systems to protect workers near the edges of floors and roofs;
- Cover floor holes; and/or
- Use safety net systems or personal fall arrest systems (body harnesses).



Ladders

Hazard: Ladders and stairways are another source of injuries and fatalities among construction workers. OSHA estimates that there are 24,882 injuries and as many as 36 fatalities per year due to falls on stairways and ladders used in construction. Nearly half of these injuries were serious enough to require time off the job.

Solutions:

- Use the correct ladder for the task.
- Have a competent person visually inspect a ladder before use for any defects such as:
 - Structural damage, split/bent side rails, broken or missing rungs/steps/cleats and missing or damaged safety devices;
 - Grease, dirt or other contaminants that could cause slips or falls;
 - Paint or stickers (except warning labels) that could hide possible defects.
- Make sure that ladders are long enough to safely reach the work area.
- Mark or tag ("Do Not Use") damaged or defective ladders for repair or replacement, or destroy them immediately.
- Never load ladders beyond the maximum intended load or beyond the manufacturer's rated capacity.
- Be sure the load rating can support the weight of the user, including materials and tools.
- Avoid using ladders with metallic components near electrical work and overhead power lines.

Stairways

Hazard: Slips, trips and falls on stairways are a major source of injuries and fatalities among construction workers.

Solutions:

- Stairway treads and walkways must be free of dangerous objects, debris and materials.
- Slippery conditions on stairways and walkways must be corrected immediately.
- Make sure that treads cover the entire step and landing.
- Stairways having four or more risers or rising more than 30 inches must have at least one handrail.



Trenching

Hazard: Trench collapses cause dozens of fatalities and hundreds of injuries each year. Trenching deaths rose in 2003.

Solutions:

- Never enter an unprotected trench.
- Always use a protective system for trenches 5 feet deep or greater.
- Employ a registered professional engineer to design a protective system for trenches 20 feet deep or greater.
- Protective Systems:
 - Sloping to protect workers by cutting back the trench wall at an angle inclined away from the excavation not steeper than a height/depth ratio of 1½:1, according to the sloping requirements for the type of soil.

SLOPING: Maximum allowable slopes for excavations less than 20 ft. (6.09 m) based on soil type and angle to the horizontal are as follows:

TABLE V-2-1. ALLOWABLE SLOPES

Soil type	Height/Depth ratio	Slope angle
Stable Rock (granite or sandstone)	Vertical	90°
Type A (clay)	1:1	53°
Type B (gravel, silt)	1:1	45°
Type C (sand)	1½:1	34°
Type A (short-term)	1:1	63°

(For a maximum excavation depth of 12 ft.)

Source: OSHA Technical Manual, Section V, Chap. 2, Excavations: Hazard Recognition in Trenching and Shoring (Jan. 1999).

- Shoring to protect workers by installing supports to prevent soil movement for trenches that do not exceed 20 feet in depth.
- Shielding to protect workers by using trench boxes or other types of supports to prevent soil cave-ins.
- Always provide a way to exit a trench--such as a ladder, stairway or ramp--no more than 25 feet of lateral travel for employees in the trench.
- Keep spoils at least two feet back from the edge of a trench.
- Make sure that trenches are inspected by a competent person prior to entry and after any hazard-increasing event such as a rain-storm, vibrations or excessive surcharge loads.



Cranes

Hazard: Significant and serious injuries may occur if cranes are not inspected before use and if they are not used properly. Often these injuries occur when a worker is struck by an overhead load or caught within the crane's swing radius. Many crane fatalities occur when the boom of a crane or its load line contact an overhead power line.

Solutions:

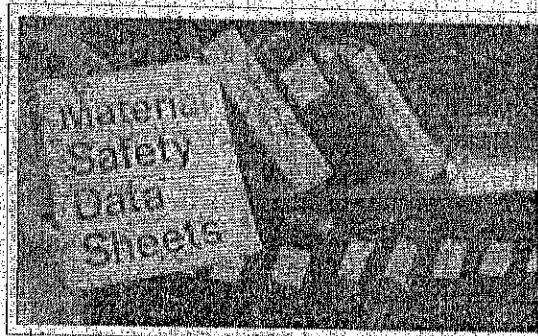
- Check all crane controls to insure proper operation before use.
- Inspect wire rope, chains and hook for any damage.
- Know the weight of the load that the crane is to lift.
- Ensure that the load does not exceed the crane's rated capacity.
- Raise the load a few inches to verify balance and the effectiveness of the brake system.
- Check all rigging prior to use; do not wrap hoist ropes or chains around the load.
- Fully extend outriggers.
- Do not move a load over workers.
- Barricade accessible areas within the crane's swing radius.
- Watch for overhead electrical distribution and transmission lines and maintain a safe working clearance of at least 10 feet from energized electrical lines.

Hazard Communication

Hazard: Failure to recognize the hazards associated with chemicals can cause chemical burns, respiratory problems, fires and explosions.

Solutions:

- Maintain a Material Safety Data Sheet (MSDS) for each chemical in the facility.
- Make this information accessible to employees at all times in a language or format that are clearly understood by all affected personnel.
- Train employees on how to read and use the MSDS.
- Follow manufacturer's MSDS instructions for handling hazardous chemicals.
- Train employees about the risks of each hazardous chemical being used.
- Provide spill clean-up kits in areas where chemicals are stored.
- Have a written spill control plan.
- Train employees to clean up spills, protect themselves and properly dispose of used materials.
- Provide proper personal protective equipment and enforce its use.
- Store chemicals safely and securely.



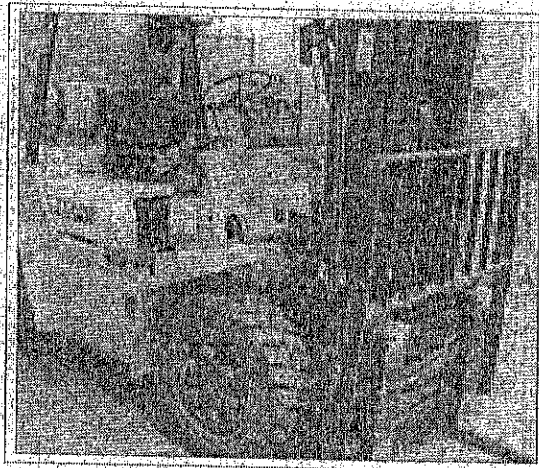
OSHA
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Forklifts

Hazard: Approximately 100 employees are fatally injured and approximately 95,000 employees are injured every year while operating powered industrial trucks. Forklift turnover accounts for a significant number of these fatalities.

Solutions:

- Train and certify all operators to ensure that they operate forklifts safely.
- Do not allow any employee under 18 years old to operate a forklift.
- Properly maintain haulage equipment, including tires.
- Do not modify or make attachments that affect the capacity and safe operation of the forklift without written approval from the forklift's manufacturer.
- Examine forklift truck for defects before using.
- Follow safe operating procedures for picking up, moving, putting down and stacking loads.



- Drive safely--never exceed 5 mph and slow down in congested or slippery surface areas.
- Prohibit stunt driving and horseplay.
- Do not handle loads that are heavier than the capacity of the industrial truck.
- Remove unsafe or defective forklift trucks from service.
- Operators shall always wear seatbelts.
- Avoid traveling with elevated loads.
- Assure that rollover protective structure is in place.
- Make certain that the reverse signal alarm is operational and audible above the surrounding noise level.

Head Protection

Hazard: Serious head injuries can result from blows to the head.

Solution:

- Be sure that workers wear hard hats where there is a potential for objects falling from above, bumps to their heads from fixed objects, or accidental head contact with electrical hazards.



Safety Checklists

The following checklists may help you take steps to avoid hazards that cause injuries, illnesses and fatalities. As always, be cautious and seek help if you are concerned about a potential hazard.

Personal Protective Equipment (PPE)

Eye and Face Protection

- Safety glasses or face shields are worn anytime work operations can cause foreign objects getting into the eye such as during welding, cutting, grinding, nailing (or when working with concrete and/or harmful chemicals or when exposed to flying particles).
- Eye and face protectors are selected based on anticipated hazards.
- Safety glasses or face shields are worn when exposed to any electrical hazards including work on energized electrical systems.

Foot Protection

- Construction workers should wear work shoes or boots with slip-resistant and puncture-resistant soles.
- Safety-toed footwear is worn to prevent crushed toes when working around heavy equipment or falling objects.

Hand Protection

- Gloves should fit snugly.

- Workers wear the right gloves for the job (for example, heavy-duty rubber gloves for concrete work, welding gloves for welding, insulated gloves and sleeves when exposed to electrical hazards).

Head Protection

- Workers shall wear hard hats where there is a potential for objects falling from above, bumps to their heads from fixed objects, or of accidental head contact with electrical hazards.
- Hard hats are routinely inspected for dents, cracks or deterioration.
- Hard hats are replaced after a heavy blow or electrical shock.
- Hard hats are maintained in good condition.

Scaffolding

- Scaffolds should be set on sound footing.
- Damaged parts that affect the strength of the scaffold are taken out of service.
- Scaffolds are not altered.
- All scaffolds should be fully planked.
- Scaffolds are not moved horizontally while workers are on them unless they are designed to be mobile and workers have been trained in the proper procedures.
- Employees are not permitted to work on scaffolds when covered with snow, ice, or other slippery materials.
- Scaffolds are not erected or moved within 10 feet of power lines.
- Employees are not permitted to work on scaffolds in bad weather or high winds.

unless a competent person has determined that it is safe to do so.

- Ladders, boxes, barrels, buckets or other makeshift platforms are not used to raise work height.
- Extra material is not allowed to build up on scaffold platforms.
- Scaffolds should not be loaded with more weight than they were designed to support.

Electrical Safety

- Work on new and existing energized (hot) electrical circuits is prohibited until all power is shut off and grounds are attached.
- An effective Lockout/Tagout system is in place.
- Frayed, damaged or worn electrical cords or cables are promptly replaced.
- All extension cords have grounding prongs.
- Protect flexible cords and cables from damage. Sharp corners and projections should be avoided.
- Use extension cord sets used with portable electric tools and appliances that are the three-wire type and designed for hard or extra-hard service. (Look for some of the following letters imprinted on the casing: S, ST, SO, STO.)
- All electrical tools and equipment are maintained in safe condition and checked regularly for defects and taken out of service if a defect is found.
- Do not bypass any protective system or device designed to protect employees from contact with electrical energy.

- Overhead electrical power lines are located and identified.
- Ensure that ladders, scaffolds, equipment or materials never come within 10 feet of electrical power lines.
- All electrical tools must be properly grounded unless they are of the double insulated type.
- Multiple plug adapters are prohibited.

Floor and Wall Openings

- Floor openings (12 inches or more) are guarded by a secured cover, a guardrail or equivalent on all sides (except at entrances to stairways).
- Toeboards are installed around the edges of permanent floor openings (where persons may pass below the opening).

Elevated Surfaces

- Signs are posted, when appropriate, showing the elevated surface load capacity.
- Surfaces elevated more than 48 inches above the floor or ground have standard guardrails.
- All elevated surfaces (beneath which people or machinery could be exposed to falling objects) have standard 4-inch toeboards.
- A permanent means of entry and exit with handrails is provided to elevated storage and work surfaces.
- Material is piled, stacked or racked in a way that prevents it from tipping, falling, collapsing, rolling or spreading.

Hazard Communication

- A list of hazardous substances used in the workplace is maintained and readily available at the worksite.
- There is a written hazard communication program addressing Material Safety Data Sheets (MSDS), labeling and employee training.
- Each container of a hazardous substance (vats, bottles, storage tanks) is labeled with product identity and a hazard warning(s) (communicating the specific health hazards and physical hazards).
- Material Safety Data Sheets are readily available at all times for each hazardous substance used.
- There is an effective employee training program for hazardous substances.

Crane Safety

- Cranes and derricks are restricted from operating within 10 feet of any electrical power line.
- The upper rotating structure supporting the boom and materials being handled is provided with an electrical ground while working near energized transmitter towers.
- Rated load capacities, operating speed and instructions are posted and visible to the operator.
- Cranes are equipped with a load chart.
- The operator understands and uses the load chart.
- The operator can determine the angle and length of the crane boom at all times.

- Crane machinery and other rigging equipment is inspected daily prior to use to make sure that it is in good condition.
- Accessible areas within the crane's swing radius are barricaded.
- Tag lines are used to prevent dangerous swing or spin of materials when raised or lowered by a crane or derrick.
- Illustrations of hand signals to crane and derrick operators are posted on the job site.
- The signal person uses correct signals for the crane operator to follow.
- Crane outriggers are extended when required.
- Crane platforms and walkways have anti-skid surfaces.
- Broken, worn or damaged wire rope is removed from service.
- Guardrails, hand holds and steps are provided for safe and easy access to and from all areas of the crane.
- Load testing reports/certifications are available.
- Tower crane mast bolts are properly torqued to the manufacturer's specifications.
- Overload limits are tested and correctly set.
- The maximum acceptable load and the last test results are posted on the crane.
- Initial and annual inspections of all hoisting and rigging equipment are performed and reports are maintained.
- Only properly trained and qualified operators are allowed to work with hoisting and rigging equipment.

Forklifts

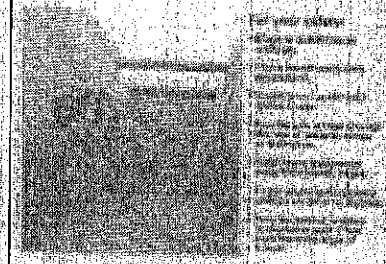
- Forklift truck operators are competent to operate these vehicles safely, as demonstrated by their successful completion of training and evaluation.
- No employee under 18 years old is allowed to operate a forklift.
- Forklifts are inspected daily for proper condition of brakes, horns, steering, forks and tires.
- Powered industrial trucks (forklifts) meet the design and construction requirements established in American National Standards Institute (ANSI) for Powered Industrial Trucks, Part II ANSI B56.1-1969.
- Written approval from the truck manufacturer is obtained for any modification or additions which affect capacity and safe operation of the vehicle.
- Capacity, operation and maintenance instruction plates, tags or decals are changed to indicate any modifications or additions to the vehicle.
- Battery charging is conducted in areas specifically designated for that purpose.
- Material handling equipment is provided for handling batteries, including conveyors, overhead hoists or equivalent devices.
- Reinstalled batteries are properly positioned and secured in the truck.
- Smoking is prohibited in battery charging areas.
- Precautions are taken to prevent open flames, sparks or electric arcs in battery charging areas.
- Refresher training is provided and an evaluation is conducted whenever a fork-

lift operator has been observed operating the vehicle in an unsafe manner and when an operator is assigned to drive a different type of truck.

- Load and forks are fully lowered, controls neutralized, power shut off and brakes set when a powered industrial truck is left unattended.
- There is sufficient headroom for the fork-lift and operator under overhead installations, lights, pipes, sprinkler systems, etc.
- Overhead guards are in place to protect the operator against falling objects.
- Trucks are operated at a safe speed.
- All loads are kept stable, safely arranged and fit within the rated capacity of the truck.
- Unsafe and defective trucks are removed from service.

No Entres en un Trenchero que Carece de Protección!

Do Not Enter an Unprotected Trench!



Do Not Enter an Unprotected Trench!

It is extremely dangerous to enter a trench that is not properly protected. If you are not protected, you can fall and suffer serious injury or death. Always make sure of your safety before entering a trench. Use a lifeline and safety harness. Never work alone in a trench. Always have a coworker who can help you in case of an emergency. Never work in a trench that lacks protection.

OSHA Occupational Safety and Health Administration
 U.S. Department of Labor
 200 Constitution Avenue, N.W.
 Washington, D.C. 20036-3300
 (202) 219-4600

OSHA
 Occupational Safety and Health Administration

Construction Safety & Health Resources

Most resource materials can be found on the OSHA website: www.osha.gov

Publications

Publications can be downloaded or ordered at:
<http://www.osha.gov/pls/publications/pubindex.list>

A Guide to Scaffold Use in the Construction Industry

OSHA Publication 3150 (Revised 2002), 2.1 MB
PDF, 73 pages.

Booklet in question-and-answer format highlights information about scaffold safety.

<http://www.osha.gov/Publications/osh3150.pdf>

Concrete and Masonry Construction

OSHA Publication 3106 (Revised 1998), 414 KB
PDF, 32 pages.

Details information on OSHA's Concrete and Masonry standard.

<http://www.osha.gov/Publications/osh3106.pdf>

Crystalline Silica Exposure Card for Construction

OSHA Publication 3177 (Revised 2002), 2 pages.

Discusses silica hazards, and what employers and employees can do to protect against exposures to silica.

A Spanish version is also available. OSHA Publication 3179 (Revised 2003), 2 pages.

Excavations

OSHA Publication 2226 (Revised 2002), 533 KB
PDF, 44 pages.

A detailed explanation of all aspects of excavation and trenching.

<http://www.osha.gov/Publications/osh2226.pdf>

Fall Protection in Construction

OSHA Publication 3146 (Revised 1998), 177 KB
PDF, 43 pages.

<http://www.osha.gov/Publications/osh3146.pdf>



Occupational Safety and
Health Administration

Ground-Fault Protection on Construction Sites

OSHA Publication 3007 (Revised 1998), 100 KB PDF, 31 pages.

Booklet on ground-fault circuit interrupters for safe use of portable tools.

<http://www.osha.gov/Publications/osha3007.pdf>

Lead in Construction

OSHA Publication 3142 (Revised 2003), 610 KB PDF, 38 pages.

Describes hazards and safe work practices concerning lead.

<http://www.osha.gov/Publications/osha3142.pdf>

OSHA Assistance for the Residential Construction Industry

Many OSHA standards apply to residential construction for the prevention of possible fatalities. This web page provides information about those standards and the hazards present in residential construction. It was developed in cooperation with the National Association of Home Builders (NAHB) as part of the OSHA-NAHB Alliance.

<http://www.osha.gov/SLTC/residential/index.html>

Selected Construction Regulations (SCOR) for the Home Building Industry (29 CFR 1926)

OSHA Publication (Revised 1997), 1.2 MB PDF, 224 pages.

Provides information on safe and healthful work practices for residential construction employers; identifies OSHA standards applicable to hazards found at worksites in the residential construction industry.

<http://www.osha.gov/Publications/scor1926.pdf>

Stairways and Ladders

OSHA Publication 3124 (Revised 2003), 155 KB PDF, 15 pages.

Explains OSHA requirements for stairways and ladders.

<http://www.osha.gov/Publications/osha3124.pdf>

Working Safely in Trenches

OSHA Publication 3243 (2005), 2 pages.

Provides safety tips for workers in trenches. A

Spanish version is on the reverse side.

http://www.osha.gov/Publications/trench/trench_safety_tips_card.pdf

Crane Safety

Safety and Health Topics: Crane, Derrick and Hoist Safety -- Hazards and Possible Solutions

December 2003. One page.

OSHA website index provides references to aid in identifying crane, derrick and hoist hazards in the workplace.

<http://www.osha.gov/SLTC/cranehoistsafety/recognition.html>

Electrical Hazards

Control of Hazardous Energy (Lockout/Tagout)

OSHA Publication 3120 (Revised 2002), 174 KB

PDF, 45 pages.

This booklet presents OSHA's general requirements for controlling hazardous energy during service or maintenance of machines or equipment.

<http://www.osha.gov/Publications/osha3120.pdf>

Controlling Electrical Hazards

OSHA Publication 3075 (Revised 2002), 349 KB

PDF, 71 pages.

This publication provides an overview of basic electrical safety on the job.

<http://www.osha.gov/Publications/osha3075.pdf>

Safety and Health Topics: Lockout/Tagout

OSHA website index to information about lockout/tagout, including hazard recognition, compliance, standards and directives. Review

Commission and Administrative Law Judge

Decisions, standard interpretations and compliance letters, compliance assistance and training.

<http://www.osha.gov/SLTC/controlhazardousenergy/index.html>

Hazard Communication

Hazard Communication: Foundation of Workplace Chemical Safety Programs

OSHA website index for resources on hazard communication.

<http://www.osha.gov/SLTC/hazardcommunications/index.html>

Frequently Asked Questions for Hazard Communication

OSHA, 6 pages.

Website questions and answers on hazard communication.

<http://www.osha.gov/html/faq-hazcom.html>

Hazard Communication Standard

OSHA Fact Sheet No. 93-26 (1993), 3 pages.

Highlights protections under OSHA's Hazard Communication standard.

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FACT_SHEETS&p_id=151

Hazard Communication Guidelines for Compliance

OSHA Publication 3111 (2000), 112 KB PDF, 33 pages.

This document aids employers in understanding the Hazard Communication standard and in implementing a hazard communication program.

<http://www.osha.gov/Publications/osh3111.pdf>

Chemical Hazard Communication

OSHA Publication 3084 (1998), 248 KB PDF, 31 pages.

This booklet answers several basic questions about chemical hazard communication.

<http://www.osha.gov/Publications/osh3084.pdf>

NIOSH Pocket Guide to Chemical Hazards

Handy source of general industrial hygiene information on several hundred chemicals/classes for workers, employers and occupational health professionals.

<http://www.cdc.gov/niosh/npg/npg.html>

Material Handling

Materials Handling and Storage

OSHA Publication 2236 (Revised 2002), 559 KB PDF, 40 pages.

A comprehensive guide to hazards and safe work practices in handling materials.

<http://www.osha.gov/Publications/osha2236.pdf>

Personal Protective Equipment

Personal Protective Equipment

OSHA Publication 3155 (2003), 305 KB PDF, 44 pages.

Discusses equipment most commonly used for protection for the head, including eyes and face and the torso, arms, hands, and feet. The use of equipment to protect against life-threatening hazards is also discussed.

<http://www.osha.gov/Publications/OSHA3155/osha3155.html>

Safety and Health Topics: Personal Protective Equipment

OSHA website index to hazard recognition, control and training related to personal protective equipment. <http://www.osha.gov/SLTC/personalprotectiveequipment/index.html>

Toxic Metals: Cadmium

Safety and Health Topics: Cadmium

OSHA website index to recognition, evaluation, control, compliance and training related to Cadmium.

<http://www.osha.gov/SLTC/cadmium/index.html>

Electronic Construction Resources

OSHA eTools and Expert Advisors can be found on OSHA's website: <http://www.osha.gov>

eTools

Construction: Preventing Fatalities. Construction can be a safe occupation when workers are aware of the hazards, and an effective safety

and health program is used. This eTool will help workers identify and control the hazards that commonly cause the most serious construction injuries. A Spanish translation of this eTool is also available.

Scaffolding: Supported Scaffolds and Suspended Scaffolds. These eTools provide illustrated examples of safe scaffolding use. Hazards are identified as well as the controls that keep those hazards from becoming tragedies.

Solutions for Electrical Contractors. This eTool describes common hazards that electrical contractors may encounter and possible solutions for these hazards. The eTool was developed in cooperation with the Independent Electrical Contractors (IEC) as part of the OSHA-IEC Alliance.

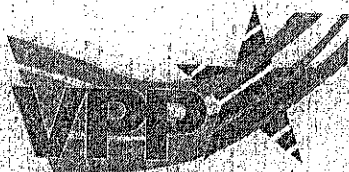
Steel Erection. America's 56,000 steel erectors suffer 35 fatal accidents per year, a rate of one death per 1,600 workers. OSHA estimates that 30 of those deaths as well as nearly 1,150 annual lost-workday injuries can be averted by compliance with provisions of the Steel Erection standard, developed with industry and labor through negotiated rulemaking. To that end, this eTool has been created to educate employers and workers.

OSHA's Expert Advisors

The Asbestos Advisor: This computer program provides an introduction to the scope and logic of the regulations for general industry, construction and maritime.

Lead in Construction Advisor: This computer program provides an introduction to the scope and logic of the regulations regarding occupational exposure to lead and summary guidance to facilitate compliance.

Construction Industry Cooperative and State Programs



Voluntary Protection Programs
An OSHA Cooperative Program

Voluntary Protection Programs

OSHA recognizes Voluntary Protection Programs (VPP) worksites for their excellent safety and health management systems.

OSHA Construction

OSHA has announced an OSHA Construction program to address the unique needs of the industry. The goal of this program is to make VPP more accessible to construction employers, especially small construction employers and to maintain the high standards of VPP while expanding participation to broad construction industry categories such as short-term projects, mobile workforces, general contractors and sub-contractors. Pilot programs in these categories have shown beneficial results for participants.

OSHA Challenge

OSHA has created the Challenge Pilot to provide greater opportunities to eligible employers interested in working with OSHA to create safer and healthier workplaces. The pilot is designed to reach and guide employers and companies in all major industry groups who are strongly committed to improving their safety and health management systems and interested in pursuing recognition in VPP. OSHA Challenge provides participants a guide or roadmap to

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improve performance and ultimately the opportunity to take part in the VPP Merit or Star programs.



Alliance Program

Alliances enable organizations committed to workplace safety and health to collaborate with OSHA to prevent injuries and illnesses in the workplace.

OSHA has a number of national and regional or area office alliances that impact the construction industries. The details of these alliances can be found on www.osha.gov under Alliances.



OSHA Strategic Partnership Program

Partnerships are voluntary, cooperative relationships between OSHA and groups of employers, employees and employee representatives (sometimes including other stakeholders and sometimes involving only one employer) that encourage, assist and recognize efforts to eliminate serious hazards and achieve a high level of worker safety and health. National construction partnerships include AMEC Construction, Associated Builders and Contractors (ABC) and the National Ready-Mixed Concrete Association. In addition to the national partnerships, OSHA

has had nearly 170 regional strategic partnerships with the construction industry since the program's start in 1998.

State Programs

Twenty-six States and territories operate their own occupational safety and health programs under plans approved by Federal OSHA. Twenty-two of these programs cover both private sector and public (State and local government) employees; four cover public employees only. States may have somewhat different requirements and procedures for the construction industry, but they are required to be at least as effective as Federal OSHA. All State Plans offer a VPP program and have additional cooperative programs parallel to OSHA's Alliance and Strategic Partnership programs. A list of States with approved plans may be found at www.osha.gov.

Consultation

Every state offers a free, on-site consultation program to help small employers find and fix hazards and establish effective safety and health management systems. Funded primarily by OSHA, consultation is provided at no cost to small employers and is delivered by state authorities through professional safety and health consultants. More information on OSHA's Consultation Program appears on the agency's website at www.osha.gov.

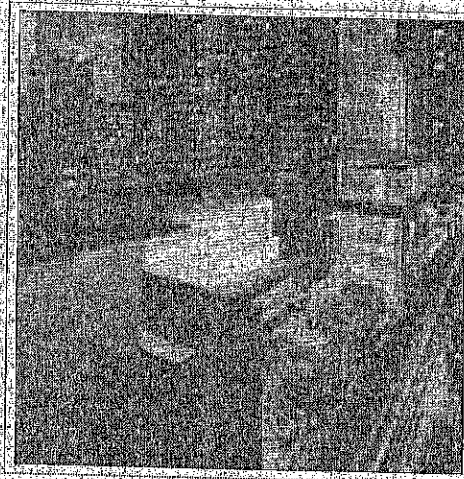
Success Stories

Partnership Reduced Injuries during Art Museum Renovation

In 2002, OSHA and AMEC Construction developed a partnership to prevent injuries at the \$425 million rebuilding/renovation construction project for New York City's renowned Museum of Modern Art (MoMA).

The partnership covered some 220 employees and 17 employers who worked to more than double MoMA's space and expand facilities for special exhibitions, public programs, educational outreach and scholarly research.

AMEC employees completed more than 800,000 hours in 2003 and racked up two impressive safety and health statistics: the number of Days Away Restricted and Transferred (DART) percentage was 90 percent below the national average for their standard industrial classification (SIC) code and the Total Case Incident Rate (TCIR)



was 92 percent below the national average for their SIC.

Best practices used included daily safety inspections conducted at the site and any hazards identified were corrected immediately. Inspection results were discussed at safety committee meetings. Each employee knew that a safety issue would be dealt with promptly when it came to management's attention. Additionally, an on-site incentive encouraged safe workplace practices.

The right combination of best safety management practices, partnering between OSHA and AMEC Construction, and a DART percentage 90 percent below the national average are fitting achievements for a new and better home for the world's leading collection of modern and contemporary art.

Fatalities Prevented, Injuries Minor, Workers' Comp Costs Slashed

Turner Construction and OSHA Teamed Up on Wisconsin Stadium Project

Teamwork at the Green Bay Packers' Lambeau Field is not just for professional football players. A partnership between Turner Construction and OSHA made teamwork in achieving health and safety a top priority for construction workers building and expanding the stadium.

In 2003, the \$295 million renovation of the Lambeau Field stadium was completed, more than doubling the size of the previous stadium. Seating capacity was increased from 60,890 to over 72,000.

Partnering with OSHA paid off. There were fewer serious injuries for workers and a more than 20 percent cut in workers' compensation costs for the contractor.

The partnership had three goals:

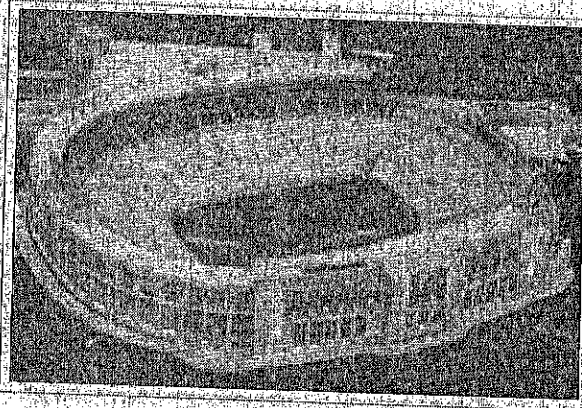
- All contractors have an effective safety and health program;
- All hazards corrected daily after daily audits are conducted; and
- Increase the level of training for supervisors and employees.

The work was more hazardous than typical steel erections because stadiums are curved and angular in shape. Also, construction and demolition activities were taking place simultaneously, often within a few feet of each other.

Several potential serious accidents were avoided by requiring all contractors' safety and health programs to establish a requirement of 100 percent fall protection at or above six feet.

One worker on the project slipped off a steel beam located six stories above ground. Thanks to his use of full fall protection, serious injury -- or possible death -- was avoided. He was back at work shortly after his rescue. Less than two months later, a second worker slipped from a beam, but also escaped injury because of his fall protection equipment. Like his coworker, he returned to work the same day. An ironworker and a carpenter also fell and were saved by their harnesses.

A significant achievement included 4,300 workers completing OSHA's 10-hour construction training. An added benefit for the industry is that these employees are bringing their safety training to other sites where they are now working.



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U.S. Department of Labor
www.osha.gov

Employers are responsible for providing a safe and healthful workplace for their employees. OSHA's role is to assure the safety and health of America's workers by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual improvement in workplace safety and health.

This informational booklet provides a general overview of a particular topic related to OSHA standards. It does not alter or determine compliance responsibilities in OSHA standards or the *Occupational Safety and Health Act of 1970*. Because interpretations and enforcement policy may change over time, you should consult current OSHA administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the Courts for additional guidance on OSHA compliance requirements.

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Occupational Safety and Health Act of 1970
"To assure safe and healthful working conditions for working men and women; by authorizing enforcement of the standards developed under the Act; by assisting and encouraging the States in their efforts to assure safe and healthful working conditions; by providing for research, information, education, and training in the field of occupational safety and health..."

This informational booklet is intended to provide an overview of frequently used OSHA standards in the Construction industry. This publication does not itself alter or determine compliance responsibilities, which are set forth in OSHA standards themselves and the *Occupational Safety and Health Act*.

Employers and employees in the 27 states and territories that operate their own OSHA-approved workplace safety and health plans should check with their state safety and health agency. Their state may be enforcing standards and other procedures that, while "at least as effective as" federal standards, are not always identical to the federal requirements. For more information on states with OSHA-approved state plans, please visit:
<http://www.osha.gov/dcsp/osp/index.html>

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Foreword

The Construction Industry Digest contains summaries of the most frequently used standards in the construction industry. The standards are presented alphabetically followed by the reference to the appropriate regulation. With few exceptions, standards in this digest are from *Title 29 of the Code of Federal Regulations (CFR)*, Part 1926.

Remember, this booklet is only a digest of basic applicable standards and should not be considered as a complete substitute for any provisions of the *Occupational Safety and Health Act of 1970 (OSH Act)*, or for any standards issued under the OSH Act. The requirements discussed in this publication are summarized and abbreviated. The actual source standards are referenced at the end of each topic discussed; consult the CFR for a more complete explanation of the specific standards listed.

General

Employers have the responsibility to provide a safe workplace. **Employers MUST provide their employees with a workplace that does not have serious hazards and follow all relevant OSHA safety and health standards.**

Employers must comply with specific standards. All employers in the construction industry must also have injury and illness prevention programs.

Contractors and employers who do construction work must comply with standards in 29 CFR 1926. Subpart C, *General Safety and Health Provisions*, as well as other specific sections of these standards, include the responsibilities for each contractor/ employer to initiate and maintain injury and illness prevention programs, provide for a competent person to conduct frequent and regular inspections, and instruct each employee to recognize and avoid unsafe conditions and know what regulations are applicable to the work environment. Employees must be provided training in a language and vocabulary they can understand.

OSHA Worksite Investigations

OSHA conducts on-site inspections of worksites to enforce the OSHA law that protects workers and their rights. Inspections are initiated without advance notice, conducted using on-site or telephone and facsimile investigations, and performed by highly trained compliance officers. Worksite inspections are conducted based on the following priorities:

- Imminent danger;
- A fatality or hospitalizations;
- Worker complaints and referrals;
- Targeted inspections – particular hazards, high injury rates; and
- Follow-up inspections.

Inspections are conducted without employers knowing when or where they will occur. The employer is not informed in advance that there will be an inspection, regardless of whether it is in response to a complaint or is a programmed inspection.

Frequently Used Standards in Construction

Access to Medical and Exposure Records

Each employer shall permit employees, their designated representatives, and OSHA direct access to employer-maintained exposure and medical records. The standard limits access only to those employees who are, have been (including former employees), or will be exposed to toxic substances or harmful physical agents. **1910.1020 made applicable to construction by 1926.33**

Each employer must preserve and maintain accurate medical and exposure records for each employee. Exposure records and data analyses based on them are to be kept for 30 years. Medical records are to be kept for at least the duration of employment plus 30 years. Background data for exposure records such as laboratory reports and work sheets need to be kept for only 1 year. **1910.1020(b)(3), .1020(d)(1)(i), and .1020(d)(1)(ii)**

Records of employees who have worked for less than 1 year need not be retained after employment if they are provided to the employee upon the termination of employment. First-aid records of one-time treatment need not be retained for any specified period. **1910.1020(d)(1)(i)(B) and (C)**

Aerial Lifts

Aerial lifts, powered or manual, include, but are not limited to, the following types of vehicle-mounted aerial devices used to elevate personnel to jobsites above ground: extensible boom platforms, aerial ladders, articulating boom platforms, and vertical towers. **1926.453(a)(1)**

When operating aerial lifts, employers must ensure that employees are

- Trained,
- Authorized,
- Setting brakes,
- Positioning outriggers on pads or a solid surface,
- Not exceeding boom and basket load limits,
- Attached to the boom or basket with a restraint device or personal fall arrest system,

- Standing firmly on the floor of the basket,
- Not climbing on the edge of the basket or using ladders, planks, or other devices for a work position. **1926.453(b) and 1926.454**

In addition, manufacturers (or the equivalent, such as a nationally recognized testing laboratory) must certify in writing that all modifications to aerial lifts conform to applicable OSHA and ANSI A92.2-1969 provisions, and are at least as safe as the equipment was before modification. **1926.453(a)(2)**

Air Tools

Pneumatic power tools shall be secured to the hose in a positive manner to prevent accidental disconnection. **1926.302(b)(1)**

Safety clips or retainers shall be securely installed and maintained on pneumatic impact tools to prevent attachments from being accidentally expelled. **1926.302(b)(2)**

The manufacturer's safe operating pressure for all fittings shall not be exceeded. **1926.302(b)(5)**

All hoses exceeding 1/2-inch (1.3-centimeters) inside diameter shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure. **1926.302(b)(7)**

Asbestos

Each employer who has a workplace or work operation where exposure monitoring is required must perform monitoring to determine accurately the airborne concentrations of asbestos to which employees may be exposed. **1926.1101(f)(1)(i)**

Employers also must ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter of air (f/cc) as an 8-hour time-weighted average (TWA). **1926.1101(c)(1)**

In addition, employers must ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1 f/cc as averaged over a sampling period of 30 minutes. **1926.1101(c)(2)**

Respirators must be used during (1) all Class I asbestos jobs; (2) all Class II work where an asbestos-containing material is not removed substantially intact; (3) all Class II and III work not using wet methods, except on sloped roofs; (4) all Class II and III work without a negative exposure assessment; (5) all Class III jobs where thermal system insulation or surfacing asbestos-containing or presumed asbestos-containing material is cut, abraded, or broken; (6) all Class IV work within a regulated area where respirators are required; (7) all work where employees are exposed above the PEL or STEL; and (8) in emergencies. **1926.1101(h)(1)(i) through (viii)**

The employer must provide and require the use of protective clothing – such as coveralls or similar whole-body clothing, head coverings, gloves, and foot coverings – for

- Any employee exposed to airborne asbestos exceeding the PEL or STEL,
- Work without a negative exposure assessment, or
- Any employee performing Class I work involving the removal of over 25 linear or 10 square feet (10 square meters) of thermal system insulation or surfacing asbestos containing or presumed asbestos-containing materials. **1926.1101(i)(1)**

The employer must provide a medical surveillance program for all employees who – for a combined total of 30 or more days per year – engage in Class I, II, or III work or are exposed at or above the PEL or STEL; or who wear negative-pressure respirators. **1926.1101(m)(1)(i)**

Belt Sanding Machines

Belt sanding machines shall be provided with guards at each nip point where the sanding belt runs onto a pulley. **1926.304(f), incorporated from ANSI 01.1-1961, Section 4.9.4**

The unused run of the sanding belt shall be guarded against accidental contact. **1926.304(f), incorporated from ANSI 01.1-1961, Section 4.9.4**

Chains (See Wire Ropes, Chains, and Ropes)

Chemicals (See Gases, Vapors, Fumes, Dusts, and Mists; Asbestos; Lead; Silica; and Hazard Communication)

Compressed Air, Use of

Compressed air used for cleaning purposes shall be reduced to less than 30 pounds per square inch (psi) and then only with effective chip guarding and personal protective equipment. This requirement does not apply to concrete form, mill scale, and similar cleaning operations. **1926.302(b)(4)**

Compressed Gas Cylinders

Valve protection caps shall be in place and secured when compressed gas cylinders are transported, moved, or stored. **1926.350(a)(1)**

Cylinder valves shall be closed when work is finished and when cylinders are empty or are moved. **1926.350(a)(8)**

Compressed gas cylinders shall be secured in an upright position at all times, except if necessary for short periods of time when cylinders are actually being hoisted or carried. **1926.350(a)(9)**

Cylinders shall be kept far enough away from the actual welding or cutting operations so that sparks, hot slag, or flame will not reach them. When this is impractical, fire-resistant shields shall be provided. Cylinders shall be placed where they cannot become part of an electrical circuit. **1926.350(b)(1) through (2)**

Oxygen and fuel gas pressure regulators, including their related gauges, shall be in proper working order while in use. **1926.350(h)**

Concrete and Masonry Construction

No construction loads shall be placed on a concrete structure or portion of a concrete structure unless the employer determines, based on information received from a person who is qualified in structural design, that the structure or portion of the structure is capable of supporting the loads. **1926.701(a)**

No employee shall be permitted to work under concrete buckets while buckets are being elevated or lowered into position. **1926.701(e)(1)**

To the extent practical, elevated concrete buckets shall be routed so that no employee or the fewest number of employees is exposed to the hazards associated with falling concrete buckets. **1926.701(e)(2)**

Formwork shall be designed, fabricated, erected, supported, braced, and maintained so that it is capable of supporting – without failure – all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork. **1926.703(a)(1)**

Forms and shores (except those used for slabs on grade and slip forms) shall not be removed until the employer determines that the concrete has gained sufficient strength to support its weight and superimposed loads. Such determination shall be based on compliance with one of the following:

- The plans and specifications stipulate conditions for removal of forms and shores, and such conditions have been followed, or
- The concrete has been properly tested with an appropriate American Society for Testing Materials (ASTM) standard test method designed to indicate the concrete compressive strength, and the test results indicate that the concrete has gained sufficient strength to support its weight and superimposed loads. (ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428; (610) 832-9585). **1926.703(e)(1)(i) through (ii)**

A limited access zone shall be established whenever a masonry wall is being constructed. The limited access zone shall conform to the following:

- Established prior to the start of construction of the wall,
- Equal to the height of the wall to be constructed plus 4 feet (1.2 meters), and shall run the entire length of the wall,
- Established on the side of the wall that will be unscaffolded,
- Restricted to entry by employees actively engaged in constructing the wall. No other employees shall be permitted to enter the zone,

- Remain in place until the wall is adequately supported to prevent overturning and to prevent collapse; where the height of a wall is more than 8 feet (2.4 meters), the limited access zone shall remain in place until the requirements of paragraph (b) of this section have been met. **1926.706(a)(1) through (5)**

All masonry walls more than 8 feet (2.4384 meters) in height shall be adequately braced to prevent overturning and to prevent collapse unless the wall is adequately supported so that it will not overturn or collapse. The bracing shall remain in place until permanent supporting elements of the structure are in place. **1926.706(b)**

Confined Spaces

All employees required to enter into confined or enclosed spaces must be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of required protective and emergency equipment. The employer shall comply with any specific regulations that apply to work in dangerous or potentially dangerous areas. Confined or enclosed spaces include, but are not limited to, storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open top spaces more than 4 feet deep (1.2 meters) such as pits, tubs, vaults, and vessels. **1926.21(b)(6)(i) through (ii)**

Cranes and Derricks

Before assembly or use of a crane, ground conditions must be firm, drained, and graded so that the equipment manufacturer's specifications for adequate support and degree of level are met. **1926.1402(b)**

A competent person must begin a visual inspection prior to each shift during which the equipment will be used, which must be completed before or during the shift. The inspection must consist of observation for apparent deficiencies. **1926.1412(d)(1)**

A qualified person must conduct a comprehensive inspection at least every 12 months. **1926.1412(f)(1)**

The employer must comply with all manufacturer procedures applicable to the operational functions of

equipment, including its use with attachments.
1926.1417(a)

Hand signal charts must be either posted on the equipment or conspicuously posted in the vicinity of the hoisting operations. **1926.1422**

A personal fall arrest system is permitted to be anchored to the crane/derrick's hook (or other part of the load line) where a qualified person has determined the set-up and rated capacity of the crane/derrick (including the hook, load line, and rigging) meets or exceeds the requirements in §1926.502(d)(15) and no load is suspended from the load line when the personal fall arrest system is anchored to the crane/derrick's hook (or other part of the load line). The equipment operator must be at the work site and know the equipment is being used for this purpose. **1926.1423(j)**

Where available, hoisting routes that minimize the exposure of employees to hoisted loads must be used, to the extent consistent with public safety.
1926.1425(a)

The employer must ensure that, prior to operating any equipment covered under Subpart CC, the person operating the equipment is qualified or certified to operate the equipment. Exceptions: operation of derricks, sideboom cranes, and equipment with a rated hoisting/lifting capacity of 2,000 pounds or less. **1926.1427(a)(1) through (3)**

On equipment with a rated hoisting/lifting capacity of 2,000 pounds or less the employer must train each operator, prior to operating the equipment, on the safe operation of the type of equipment the operator will be using. **1926.1441(e)**

Demolition

Prior to permitting employees to start demolition operations, a competent person shall make an engineering survey of the structure to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure. A similar survey of any adjacent structure where employees may be exposed shall be

completed. The employer shall have in writing evidence that such a survey has been performed. **1926.850(a)**

During balling or claiming operations, employers shall not permit any workers in any area that can be adversely affected by demolition operations. Only those workers necessary for the performance of the operations shall be permitted in this area at any other time. **1926.859(a)**

Disposal Chutes

Whenever materials are dropped more than 20 feet (6 meters) to any exterior point of a building, an enclosed chute shall be used. **1926.252(a)**

When debris is dropped through holes in the floor without the use of chutes, the area where the material is dropped shall be enclosed with barricades not less than 42 inches high (106.7 centimeters) and not less than 6 feet (1.8 meters) back from the projected edges of the opening above. Warning signs of the hazard of falling material shall be posted at each level. **1926.252(b)**

Note: During demolition, **1926.852** applies to chutes and **1926.853** applies to the removal of materials through floor openings.

Diving

The employer shall develop and maintain a safe practice manual, and make it available at the dive location for each dive team member. **1910.420(a) made applicable to construction by 1926.1080**

The employer shall keep a record of each dive. The record shall contain the diver's name, his or her supervisor's name, date, time, location, type of dive (scuba, mixed gas, surface supply), underwater and surface conditions, and maximum depth and bottom time. **1910.423(d)(1)(i) through (vi) made applicable to construction by 1926.1083**

Each dive team member shall have the experience or training necessary to perform assigned tasks safely. **1910.410(a)(1) made applicable to construction by 1926.1076**

Each dive team member shall be briefed on the tasks, safety procedures, unusual hazards or environmental conditions, and modifications made to the operating procedures. **1910.421(f) made applicable to construction by 1926.1081**

The dive shall be terminated when a diver requests it, the diver fails to respond correctly, communication is lost, or when the diver begins to use the reserve breathing gas. **1910.422(i)(1) through (4) made applicable to construction by 1926.1082.**

Drinking Water

An adequate supply of potable water shall be provided in all places of employment. **1926.51(a)(1)**

Portable drinking water containers shall be capable of being tightly closed and equipped with a tap. **1926.51(a)(2)**

Using a common drinking cup is prohibited. **1926.51(a)(4)**

Where single service cups (to be used but once) are supplied, both a sanitary container for unused cups and a receptacle for used cups shall be provided. **1926.51(a)(5)**

Electrical Installations

Employers must provide either ground-fault circuit interrupters (GFCIs) or an assured equipment grounding conductor program to protect employees from ground-fault hazards at construction sites. The two options are detailed below.

- All 120-volt, single-phase, 15- and 20-ampere receptacles that are not part of the permanent wiring must be protected by GFCIs. Receptacles on smaller generators are exempt under certain conditions, or
- An assured equipment grounding conductor program covering extension cords, receptacles, and cord- and plug-connected equipment must be implemented. The program must include the following:
 - A written description of the program,
 - At least one competent person to implement the program,

- Daily visual inspections of extension cords and cord- and plug-connected equipment for defects. Equipment found damaged or defective shall not be used until repaired,
- Continuity tests of the equipment grounding conductors or receptacles, extension cords, and cord- and plug-connected equipment. These tests must generally be made every 3 months,
- Equipment that does not meet the above requirements may not be used,
- Required tests shall be recorded. **1926.404(b)(1)(i) through (iii)(e)**

Light bulbs for general illumination must be protected from breakage, and metal shell sockets must be grounded. **1926.405(a)(2)(ii)(E)**

Temporary lights must not be suspended by their cords, unless they are so designed.
1926.405(a)(2)(ii)(F)

Portable lighting used in wet or conductive locations, such as drums, tanks, and vessels, must be operated at no more than 12 volts or must be protected by a ground-fault circuit interrupter (GFCI).
1926.405(a)(2)(ii)(G)

Extension cords must be of the three-wire type. Extension cords and flexible cords used with temporary and portable lights must be designed for hard or extra hard usage (for example, types S, ST, and SO). **1926.405(a)(2)(ii)(J)**

Flexible cords must be connected to devices and fittings so that strain relief is provided which will prevent pull from being directly transmitted to joints or terminal screws. **1926.405(g)(2)(iv)**

Listed, labeled, or certified equipment shall be installed and used in accordance with instructions included in the listing, labeling, or certification.
1926.403(b)(2)

Electrical Work Practices

Employers must not allow employees to work near live parts of electrical circuits, unless the employees are protected by one of the following means:

- Deenergizing and grounding the parts,
- Guarding the part by insulation,
- Any other effective means. **1926.416(a)(1)**

In work areas where the exact location of underground electrical power lines is unknown, employees using jack hammers, bars, or other hand tools that may contact the lines must be protected by insulating gloves. **1926.416(a)(2)**

Barriers or other means of guarding must be used to ensure that workspace for electrical equipment will not be used as a passageway during periods when energized parts of equipment are exposed. **1926.416(b)(1)**

Work spaces, walkways, and similar locations shall be kept clear of cords. **1926.416(b)(2)**

Worn or frayed electric cords or cables shall not be used. **1926.416(e)(1)**

Extension cords shall not be fastened with staples, hung from nails, or suspended by wire. **1926.416(e)(2)**

Equipment or circuits that are deenergized must be rendered inoperative and must have tags attached at all points where the equipment or circuits could be energized. **1926.417(b)**

Excavating and Trenching

The estimated location of utility installations – such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work – shall be determined prior to opening an excavation. **1926.651(b)(1)**

Utility companies or owners shall be contacted within established or customary local response times, advised of the proposed work, and asked to establish the location of the utility underground installations prior to the start of actual excavation. When utility companies or owners cannot respond to a request to locate underground utility installations within 24 hours (unless a longer period is required by state or local law), or cannot establish the exact location of these installations, the employer may proceed,

provided the employer does so with caution, and provided detection equipment or other acceptable means to locate utility installations are used.

1926.651(b)(2)

When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by safe and acceptable means. While the excavation is open, underground installations shall be protected, supported, or removed, as necessary, to safeguard employees. **1926.651(b)(3) through (4)**

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 5 feet (1.5 meters) in depth and examination of the ground by a competent person provides no indication of a potential cave-in. **1926.652(a)(1)(i) through (ii)**

Protective systems shall have the capacity to resist, without failure, all loads that are intended or could reasonably be expected to be applied or transmitted to the system. **1926.652(a)(2)**

Employees shall be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations. Protection shall be provided by placing and keeping such materials or equipment at least 2 feet (0.6 meters) from the edge of excavations, or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary. **1926.651(j)(2)**

Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a *competent person* for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated. **1926.651(k)(1)**

Where a *competent person* finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety. **1926.651(k)(2)**

A stairway, ladder, ramp, or other safe means of egress shall be located in trench excavations that are 4 feet (1.2 meters) or more in depth so as to require no more than 25 feet (7.6 meters) of lateral travel for employees. **1926.651(c)(2)**

Each employee at the edge of an excavation 6 feet deep (1.8 meters) or more in depth shall be protected from falling by guardrail systems, fences, barricades when the excavations are not readily seen because of plant growth or other visual barrier. **1926.501(b)(7)(i)**

Exits

Exits must be free of all obstructions so they can be used immediately in case of fire or emergency. **1926.34(c)**

Explosives and Blasting

Only authorized and qualified persons shall be permitted to handle and use explosives. **1926.900(a)**

Explosives and related materials shall be stored in approved facilities required under the applicable provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR Part 55, Commerce in Explosives. (See Subpart K.) **1926.904(a)**

Smoking and open flames shall not be permitted within 50 feet (15.2 meters) of explosives and detonator storage magazines. **1926.904(c)** Procedures that permit safe and efficient loading shall be established before loading is started. **1926.905(a)**

Eye and Face Protection

Eye and face protection shall be provided when machines or operations present potential for eye or face injury. **1926.102(a)(1)**

Eye and face protective equipment shall meet the requirements of ANSI Z87.1-1968, *Practice for Occupational and Educational Eye and Face Protection*. **1926.102(a)(2)**

Employees involved in welding operations shall be furnished with filter lenses or plates of at least the proper shade number as indicated in Table E-2. **1926.102(b)(1)**

Table E-2 – Filter Lens Shade Numbers for Protection Against Radiant Energy – 1926.102(b)(1)

Welding operation	Shade Number
Shielded metal-arc welding 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	10
Gas-shielded arc welding (nonferrous) 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	11
Gas-shielded arc welding (ferrous) 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	12
Shielded metal-arc welding 3/16-, 7/32-, 1/4-inch diameter electrodes	12
5/16-, 3/8-inch diameter electrodes	14
Atomic hydrogen welding	10-14
Carbon-arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 inch to 6 inches	4 or 5
Heavy cutting, over 6 inches	5 or 6
Gas welding (light), up to 1/8-inch	4 or 5
Gas welding (medium), 1/8- to 1/2-inch	5 or 6
Gas welding (heavy), over 1/2-inch	6 or 8

Employees exposed to laser beams shall be furnished suitable laser safety goggles that will protect for the specific wave length of the laser and the optical density adequate for the energy involved. **1926.102(b)(2)(i)**

Fall Protection

Employers are required to assess the workplace to determine if the walking/working surface on which employees are to work have the strength and structural integrity to safely support workers. Employees are not permitted to work on those surfaces until it has been determined that the surfaces have the requisite strength and structural integrity to support the workers. **1926.501(a)(2)**

Where employees are exposed to falling 6 feet (1.8 meters) or more from an unprotected side or edge, the employer must select either a guardrail system, safety net system, or personal fall arrest system to protect the worker. **1926.501(b)(1)**

A personal fall arrest system consists of an anchorage, connectors, body harness and may include a lanyard, deceleration device, lifeline, or a suitable combination of these. Body belts used for fall arrests are prohibited. **1926.500(b) and 1926.502(d)**

Each employee in a hoist area shall be protected from falling 6 feet (1.8 meters) or more by guardrail systems or personal fall arrest systems. If guardrail systems (or chain gate or guardrail) or portions thereof must be removed to facilitate hoisting operations, as during the landing of materials, and a worker must lean through the access opening or out over the edge of the access opening to receive or guide equipment and materials, that employee must be protected by a personal fall arrest system. **1926.501(b)(3)**

Each employee on walking/working surfaces shall be protected from falling through holes (including skylights) more than 6 feet (1.8 m) above lower levels, by personal fall arrest systems, covers, or guardrail systems erected around such holes. **1926.501(b)(4)(ii)**

Each employee on ramps, runways, and other walkways shall be protected from falling 6 feet or more to lower levels by guardrail systems. **1926.501(b)(6)**

Each employee at the edge of an excavation 6 feet deep (1.8 meters) or more in depth shall be protected from falling by guardrail systems, fences, barricades when the excavations are not readily seen because of a visual barrier. **1926.501(b)(7)(i)**

Each employee at the edge of a well, pit, shaft, and similar excavation 6 feet (1.8 meters) or more in depth shall be protected from falling by guardrail systems, fences, barricades, or covers. **1926.501(b)(7)(ii)**

Each employee performing overhand bricklaying and related work 6 feet (1.8 meters) or more above lower levels, on surfaces other than scaffolds, shall be protected by guardrail systems, safety net systems,

or personal fall arrest systems, or shall work in a controlled access zone. All employees reaching more than 10 inches (25.4 centimeters) below the level of a walking/working surface on which they are working shall be protected by a guardrail system, safety net system, or personal fall arrest systems. **1926.501(b)(9)**

Each employee engaged in roofing activities on low-slope roofs with unprotected sides and edges 6 feet (1.8 meters) or more above lower levels shall be protected from falling by guardrail, safety net, or personal fall arrest systems or a combination of a:

- Warning line system and guardrail system,
 - Warning line system and safety net system,
 - Warning line system and personal fall arrest system, or
 - Warning line system and safety monitoring system.
- On low-slope roofs 50 feet (15.2 meters) or less in width, the use of a safety monitoring system without a warning line system is permitted.

1926.501(b)(10)

Each employee on a steep roof with unprotected sides and edges 6 feet (1.8 meters) or more above lower levels shall be protected by guardrail systems with toeboards, safety net systems, or personal fall arrest systems. **1926.501(b)(11)**

Fall Protection, Falling Objects

When an employee is exposed to falling objects, the employer must ensure that each employee wear a hard hat and erect toeboards, screens, or guardrail systems; or erect a canopy structure and keep potential fall objects far enough from the edge of the higher level; or barricade the area to which objects could fall. **1926.501(c)(1) and (2)**

Fall Protection, Wall Openings

Each employee working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is 6 feet (1.8 meters) or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches (1 meter) above the walking/working surface must be protected from falling by the use of a guardrail system, a safety net system, or a personal fall arrest system. **1926.501(b)(14)**

Fire Protection

A fire protection program is to be followed throughout all phases of the construction and demolition work involved. It shall provide for effective firefighting equipment to be available without delay, and designed to effectively meet all fire hazards as they occur. **1926.150(a)(1)**

Firefighting equipment shall be conspicuously located and readily accessible at all times, be periodically inspected, and be maintained in operating condition. **1926.150(a)(2) to (4)**

A fire extinguisher, rated not less than 2A (acceptable substitutes are a 1/2-inch diameter garden-type hose not to exceed 100 feet capable of discharging a minimum of 5 gallons per minute or a 55-gallon drum of water with two fire pails), shall be provided for each 3,000 square feet (270 square meters) of the protected building area, or major fraction thereof. Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 100 feet (30.5 meters). **1926.150(c)(1)(i) to (iii)**

The employer shall establish an alarm system at the worksite so that employees and the local fire department can be alerted for an emergency. **1926.150(e)(1)**

Flaggers

High-visibility clothing

For daytime work, the flagger's vest, shirt, or jacket shall be orange, yellow, strong yellow-green or fluorescent versions of these colors. For nighttime work, similar outside garments shall be retroreflective. The retroreflective material shall be orange, yellow, white, silver, strong yellow-green, or a fluorescent version of one of these colors and shall be visible at a minimum distance of 1,000 feet. The retroreflective clothing shall be designed to identify clearly the wearer as a person and be visible through the full range of body motions. **Part VI of the Manual on Uniform Traffic Control Devices made applicable to construction by 1926.201(a) and 1926.200(g)(2)**

Hand-signaling procedures

The STOP/SLOW paddle, which gives drivers more positive guidance than red flags, should be the primary hand-signaling device. Flag use should be limited to emergencies and at low-speed and/or low-volume locations that can best be controlled by a single flagger.

The following methods of signaling with STOP/SLOW paddles should be used:

- To Stop Traffic – The flagger shall face traffic and extend the STOP sign paddle in a stationary position with the arm extended horizontally away from the body. The free arm should be raised with the palm toward approaching traffic.
- To Direct Stopped Traffic to Proceed – The flagger shall face traffic with the SLOW paddle held in a stationary position with the arm extended horizontally away from the body. The flagger should motion with the free hand for traffic to proceed.
- To Alert or Slow Traffic – The flagger shall face traffic with the SLOW sign paddle held in a stationary position with the arm extended horizontally away from the body. The flagger may motion up and down with the free hand, palm down, indicating that the vehicle should slow down.

The following methods of signaling with a flag should be used:

- To Stop Traffic – The flagger shall face traffic and extend the flag staff horizontally across the traffic lane in a stationary position, so that the full area of the flag is visible hanging below the staff. The free arm should be raised with the palm toward approaching traffic.
- To Direct Stopped Traffic to Proceed – The flagger shall face traffic with the flag and arm lowered from view of the driver. With the free hand, the flagger should motion traffic to proceed. Flags shall not be used to signal traffic to proceed.
- To Alert or Slow Traffic – The flagger shall face traffic and slowly wave the flag in a sweeping motion of the extended arm from shoulder level to straight down, without raising the arm above a horizontal position.

Flammable and Combustible Liquids

Only approved containers and portable tanks shall be used for storing and handling flammable and combustible liquids. **1926.152(a)(1)**

No more than 25 gallons (94.7 liters) of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet. No more than three storage cabinets may be located in a single storage area. **1926.152(b)(1) and (3)**

Inside storage rooms for flammable and combustible liquids shall be of fire-resistant construction, have self-closing fire doors at all openings, 4-inch (10 centimeter) sills or depressed floors, a ventilation system that provides at least six air changes within the room per hour, and electrical wiring and equipment approved for Class 1, Division 1 locations. **1926.152(b)(4)**

Storage in containers outside buildings shall not exceed 1,100 gallons (4,169 liters) in any one pile or area. The storage area shall be graded to divert possible spills away from buildings or other exposures, or shall be surrounded by a curb or dike. **1926.152(c)(1) and (3)**

Outdoor portable tanks shall be located at least 20 feet (6 meters) from any building. **1926.152(c)(4)(i)**

Storage areas shall be free from weeds, debris, and other combustible materials not necessary to the storage. **1926.152(c)(5)**

Flammable liquids shall be kept in closed containers when not actually in use. **1926.152(f)(1)**

Conspicuous and legible signs prohibiting smoking shall be posted in service and refueling areas. **1926.152(g)(9)**

Forklifts (See Powered Industrial Trucks)

Gases, Vapors, Fumes, Dusts, and Mists

Exposure to toxic gases, vapors, fumes, dusts, and mists at a concentration above those specified in Appendix A, shall be avoided. **1926.55(a) and 1926.55 Appendix A**

The employer shall perform a pre-startup safety review for new facilities and for modified facilities when the modification is significant enough to require a change in the process safety information. **1926.64(i)(1)**

The employer shall establish and implement written procedures to maintain the ongoing integrity of process equipment. **1926.64(j)(2)**

Radiation, Ionizing

Pertinent provisions of the Nuclear Regulatory Commission (NRC) Standards for Protection Against Radiation (10 CFR Part 20) relating to protection against occupational radiation exposure shall apply. **1926.53(a)**

Any activity that involves the use of radioactive materials or X-rays, whether or not under license from the Nuclear Regulatory Commission, shall be performed by competent persons specially trained in the proper and safe operation of such equipment. **1926.53(b)**

Railings

Top edge height of top rails or equivalent guardrail system members shall have a vertical height of approximately 42 inches (106.6 centimeters), plus or minus 3 inches (7.6 centimeters) above the walking/working level. **1926.502(b)(1)**

Guardrail systems shall be surfaced so as to prevent injury to an employee, with a strength to withstand at least 200 pounds (90 kilograms), the minimum requirement applied in any outward or downward direction, at any point along the top edge. **1926.502(b)(3) and (6)**

A stair railing shall be of construction similar to a standard railing with a vertical height of not less than 36 inches (91.5 centimeters) from the upper surface of top rail to the surface of tread in line with face of riser at forward edge of tread. **1926.1052(c)(3)(i)**

Recordkeeping: Recording and Reporting Requirements

Within 8 hours after the death of any employee or report of the inpatient hospitalization of three or more

employees, as the result of a work-related incident, you must report this to the closest OSHA office, or call (800) 321-6742. **1904.39(a) and (b)(7)**

If your company had more than 10 employees at any time during the last calendar year, you must keep the OSHA injury and illness records using the OSHA Forms 300, 300-A, and 301 or the equivalent form. **1904.1(a)(2) and 1904.29(a) and (b)(4)**

If your company had 10 or fewer employees at all times during the last calendar year, you do not need to keep OSHA injury and illness records unless OSHA or the Bureau of Labor Statistics informs you in writing that you must keep these records. **1904.1(a)(1)**

Each recordable injury or illness must be entered on the OSHA Forms 300 and 301 within 7 days of receiving the information. **1904.29(b)(3)**

OSHA injury and illness records must be kept for all projects. If the project is 1 year or longer a separate OSHA 300 log must be kept. If the projects are less than 1 year, these projects may be placed on one OSHA 300 log that covers all short-term projects. These records may be kept at a central location as long as the information is transferred within 7 days. **1904.30(a), (b)(1) and (2)**

The OSHA 300 log must be verified, certified by a company executive, and posted at the end of each calendar year. The log must be posted no later than February 1 of the following year and remain posted until April 30. **1904.32 (a) and (b)**

The OSHA 300 and 301 logs must be kept for 5 years following the year to which they relate. **1904.33(a) and 1904.44**

Reinforced Steel

All protruding reinforced steel, onto and into which employees could fall, shall be guarded to eliminate the hazard of impalement. **1926.701(b)**

No employee (except those essential to the post-tensioning operations) shall be permitted to be behind the jack during tensioning operations. **1926.701(c)(1)**

Reinforcing steel for walls, piers, columns, and similar vertical structures shall be adequately supported to prevent overturning and to prevent collapse.

1926.703(d)(1)

Employers shall take measures to prevent unrolled wire mesh from recoiling. Such measures may include, but are not limited to, securing each end of the roll or turning over the roll. **1926.703(d)(2)**

Respiratory Protection

In emergencies, or when feasible engineering or administrative controls are not effective in controlling toxic substances, appropriate respiratory protective equipment shall be provided by the employer and shall be used. **1910.134(a)(1) made applicable to construction by 1926.103**

Employers must select a NIOSH-certified respirator. The respirator must be used in compliance with the conditions of its certification. **1910.134(d)(1)(ii) made applicable to construction by 1926.103**

Respiratory protective devices shall be appropriate for the hazardous material involved and the extent and nature of the work requirements and conditions. **1910.134(d)(1)(i) made applicable to construction by 1926.103**

Employees required to use respiratory protective devices shall be thoroughly trained in their use. **1910.134(k) made applicable to construction by 1926.103**

Respiratory protective equipment shall be inspected regularly and maintained in good condition. **1910.134(h) made applicable to construction by 1926.103**

Rollover Protective Structures (ROPS)

Rollover protective structures (ROPS) apply to the following types of materials handling equipment: all rubber-tired, self-propelled scrapers, rubber-tired frontend loaders, rubber-tired dozers, wheel-type agricultural and industrial tractors, crawler tractors, crawler-type loaders, and motor graders, with or without attachments, that are used in construction

work. This requirement does not apply to sideboom pipelaying tractors. **1926.1000(a)(1)**

Safety Nets

Safety nets must be installed as close as practicable under the walking/working surface on which employees are working, but in no case more than 30 feet (91.4 meters) below such level. When nets are used on bridges, the potential fall area from the walking/working surface to the net shall be unobstructed. **1926.502(c)(1)**

Safety nets and their installations must be capable of absorbing an impact force equal to that produced by the drop test. **1926.502(c)(4)**

Saws

Band Saws

All portions of band saw blades shall be enclosed or guarded, except for the working portion of the blade between the bottom of the guide rolls and the table. **ANSI 01.1-1961, incorporated by reference to construction by 1926.304(f)**

Band saw wheels shall be fully encased. **ANSI 01.1-1961, incorporated by reference to construction by 1926.304(f)**

Portable Circular Saws

Portable, power-driven circular saws shall be equipped with guards above and below the base plate or shoe. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work, and shall automatically return to the covering position when the blade is removed from the work. **1926.304(d)**

Circular saws shall have a constant pressure switch that will shut off the power when the pressure is released. **1926.300(d)(3)**

Radial Saws

Radial saws shall have an upper guard that completely encloses the upper half of the saw blade. The sides of the lower exposed portion of the blade

shall be guarded by a device that will automatically adjust to the thickness of and remain in contact with the material being cut. **1926.304(g)(1)**

Radial saws used for ripping shall have nonkickback fingers or dogs. **ANSI 01.1-1961, incorporated by reference to construction by 1926.304(f)**

Radial saws shall be installed so that the cutting head will return to the starting position when released by the operator. **ANSI 01.1-1961, incorporated by reference to construction by 1926.304(f)**

Swing or Sliding Cut-Off Saws

All swing or sliding cut-off saws shall be provided with a hood that will completely enclose the upper half of the saw. **ANSI 01.1-1961, incorporated by reference to construction by 1926.304(f)**

Limit stops shall be provided to prevent swing or sliding type cut-off saws from extending beyond the front or back edges of the table. **ANSI 01.1-1961, incorporated by reference to construction by 1926.304(f)**

Each swing or sliding cut-off saw shall be provided with an effective device to return the saw automatically to the back of the table when released at any point of its travel. **ANSI 01.1-1961, incorporated by reference to construction by 1926.304(f)**

Inverted sawing of sliding cut-off saws shall be provided with a hood that will cover the part of the saw that protrudes above the top of the table or material being cut. **ANSI 01.1-1961, incorporated by reference to construction by 1926.304(f)**

Table Saws

Circular table saws shall have a hood over the portion of the saw above the table, so mounted that the hood will automatically adjust itself to the thickness of and remain in contact with the material being cut. **1926.304(h)(1)**

Circular table saws shall have a spreader aligned with the blade, spaced no more than 1/2-inch (1.27-centimeters) behind the largest blade mounted in the saw. This provision does not apply when grooving,

dadoing, or rabbeting. **ANSI 01.1-1961, incorporated by reference to construction by 1926.304(f)**

Circular table saws used for ripping shall have nonkickback fingers or dogs. **ANSI 01.1-1961, incorporated by reference to construction by 1926.304(f)**

Feeder attachments shall have the feed rolls or other moving parts covered or guarded so as to protect the operator from hazardous points. **1926.304(e)**

Scaffolds, General Requirements

Scaffolds shall be erected, moved, dismantled, or altered only under the supervision and direction of a competent person. **1926.451(f)(7)**

Scaffolds are any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage), used for supporting employees or materials or both. **1926.450(b)**

Each employee who performs work on a scaffold shall be trained by a person qualified to recognize the hazards associated with the type of scaffold used and to understand the procedures to control or minimize those hazards. The training shall include such topics as the nature of any electrical hazards, fall hazards, falling object hazards, the maintenance and disassembly of the fall protection systems, the use of the scaffold, handling of materials, the capacity and the maximum intended load. **1926.454(a)**

Fall protection (guardrail systems and personal fall arrest systems) must be provided for each employee on a scaffold more than 10 feet (3.1 meters) above a lower level. **1926.451(g)(1)**

Each scaffold and scaffold component shall support without failure its own weight and at least 4 times the maximum intended load applied or transmitted to it. Suspension ropes and connecting hardware must support 6 times the intended load. Scaffolds and scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less. **1926.451(a)(1), (a)(4), (f)(1)**

The scaffold platform shall be planked or decked as fully as possible. **1926.451(b)(1)**

The platform shall not deflect more than 1/60 of the span when loaded. **1926.451(f)(16)**

The work area for each scaffold platform and walkway shall be at least 18 inches (46 centimeters) wide. When the work area must be less than 18 inches (46 centimeters) wide, guardrails and/or personal fall arrest systems shall still be used. **1926.451(b)(2)(ii)**

Access must be provided when the scaffold platforms are more than 2 feet (0.6 m) above or below a point of access. Direct access is acceptable when the scaffold is not more than 14 inches (36 centimeters) horizontally and not more than 24 inches (61 centimeters) vertically from the other surfaces. Crossbraces shall not be used as a means of access. **1926.451(e)(1) and (e)(8)**

A competent person shall inspect the scaffold, scaffold components, and ropes on suspended scaffolds before each work shift and after any occurrence which could affect the structural integrity and authorize prompt corrective action. **1926.450 (b), 451(f)(3)**

Scaffold, Bricklaying

Employees doing overhand bricklaying from a supported scaffold shall be protected by a guardrail or personal fall arrest system on all sides except the side where the work is being done. **1926.451(g)(1)(vi)**

Scaffold, Erectors and Dismantlers

A competent person shall determine the feasibility for safe access and fall protection for employees erecting and dismantling supported scaffolds. **1926.451(e)(9) and (g)(2)**

Scaffold, Fall Arrest Systems

A personal fall arrest system consists of an anchorage, connectors, a body harness, a lanyard, and may include a deceleration device. Anchorages used for attachment shall be capable of supporting at least 5,000 pounds (22.2 kN) per employee attached or shall be designed, installed, and used under the

supervision of a qualified person as part of a complete personal fall arrest system which maintains a safety factor of at least two. Personal fall arrest systems used on scaffolds must be attached by lanyard to a vertical lifeline, horizontal lifeline, or scaffold structural member. **1926.502(d)(15) and 1926.451(g)(3)**

Vertical or horizontal lifelines may be used. **1926.451(g)(3)(ii) through (iv)**

Lifelines shall be independent of support lines and suspension ropes and not attached to the same anchorage point as the support or suspension ropes. **1926.451(g)(3)(iii) and (iv)**

Employees must be tied off when working from an aerial lift. Fall restraint systems or personal fall arrest systems may be used. The use of personal fall arrest systems must comply with Subpart M. **1926.453(b)(2)(v) and 1926.502(d)**

Scaffold, Guardrails

Guardrails shall be installed along all open sides and ends of platforms before the scaffold is released for use by employees other than the erection and dismantling crews. Guardrails are not required on the front edge of a platform if the front edge of the platform is less than 14 inches (36 centimeters) from the face of the work. For plastering and lathing, the distance is 18 inches (46 centimeters) or less from the front edge. When outrigger scaffolds are attached to supported scaffolds the distance is 3 inches (8 centimeters) or less from the front edge of the outrigger. **1926.451(b)(3) and (g)(4)**

The toprail for scaffolds must be 38 inches (0.97 meters) to 45 inches (1.2 meters) from the platform. Midrails are to be installed approximately halfway between the toprail and the platform surface. **1926.451(g)(4)(ii) and (iii)**

Toeboards or other barriers are to be used to protect employees working below. **1926.451(h)**

When screens and mesh are used for guardrails, they shall extend from the top edge of the guardrail

system to the scaffold platform, and along the entire opening between the supports. **1926.451(g)(4)(v)**

Crossbracing is not acceptable as an entire guardrail system but is acceptable for a toprail when the crossing point of the two braces is between 38 inches (0.9 meters) and 48 inches (1.3 meters) above the work platform and for midrails when between 20 inches (0.5 meters) and 30 inches (0.8 meters) above the work platform. The end points of the crossbracing shall be no more than 48 inches (1.3 meters) apart vertically. **1926.451(g)(4)(xv)**

Scaffolds, Mobile

Scaffolds shall be braced by cross, horizontal, or diagonal braces, or a combination thereof. Scaffolds must be plumb, level, and squared. All brace connections must be secured. **1926.452(w)(1)**

Each employee on a scaffold more than 10 feet above a lower level shall be protected from falling to that lower level by use of guardrail systems or personal fall arrest systems. **1926.451(g)(1), (g)(1)(vii), and (g)(4)**

Scaffold, Planking

Scaffold planking shall be capable of supporting without failure its own weight and at least 4 times the intended load. Solid sawn wood, fabricated planks, and fabricated platforms may be used as scaffold planks, following the recommendations by the manufacturer or a lumber grading association or inspection agency. Tables showing maximum permissible spans, rated load capacity, nominal thickness, etc., are in Appendix A of Subpart L (1)(b) and (c). **1926.451(a)(1)**

Scaffolds, Supported

Supported scaffolds are platforms supported by legs, outrigger beams, brackets, poles, uprights, posts, frames, or similar rigid support. The structural members, poles, legs, posts, frames, and uprights, shall be plumb and braced to prevent swaying and displacement. **1926.451(b) and (c)(3)**

Supported scaffolds poles, legs, posts, frames, and uprights shall bear on base plates and mud sills, or on another adequate firm foundation. **1926.451(c)(2)**

Either the manufacturer's recommendation or the following placements shall be used for guys, ties, and braces: install guys, ties, and braces at the closest horizontal member to the 4:1 height and repeat vertically with the top restraint no further than the 4:1 height from the top:

Vertically

Every 20 feet (6.1 meters) or less for scaffolds less than 3 feet (0.9 meters) wide;

Every 26 feet (7.9 meters) or less for scaffolds more than 3 feet (0.9 meters) wide;

Horizontally

At each end;

At intervals not to exceed 30 feet (9.1 meters) from one end. **1926.451(c)(1)(ii)**

Scaffolds, Suspension (Swing)

Each employee more than 10 feet (3.1 meters) above a lower level shall be protected from falling by guardrails and a personal fall arrest system when working from single or two-point suspended scaffolds and self-contained adjustable scaffolds that are supported by ropes. **1926.451(g)(1)(ii) and (iv)**

Each employee 10 feet (3.1 meters) above a lower level shall be protected from falling by a personal fall arrest system when working from a boatswain's chair, ladder jack, needle beam, float, or catenary scaffolds. **1926.451(g)(1)(i)**

Lifelines shall be independent of support lines and suspension ropes and not attached to the same anchorage point as the support or suspension ropes. **1926.451(g)(3)(iii) and (iv)**

A competent person shall inspect the ropes for defects prior to each workshift and after every occurrence which could affect a rope's integrity, evaluate the direct connections that support the load, and determine if two-point and multi-point scaffolds are secured from swaying. **1926.451(d)(3)(i), (d)(10), (d)(18), (f)(3)**

The use of repaired wire rope is prohibited. **1926.451(d)(7)**

Tiebacks shall be secured to a structurally sound anchorage on the building or structure.

1926.451(d)(3)(ix)

Tiebacks shall not be secured to standpipes, vents, other piping systems, or electrical conduit.

1926.451(d)(3)(ix) and (d)(5)

A single tieback shall be installed perpendicular to the face of the building or structure. Two tiebacks installed at opposing angles are required when a perpendicular tieback cannot be installed.

1926.451(d)(3)(x)

Only those items specifically designed as counterweights shall be used. Sand, gravel, masonry units, rolls of roofing felt, and other such materials shall not be used as counterweights. **1926.451(d)(3)(ii) and (iii)**

Counterweights used for suspended scaffolds shall be made of materials that can not be easily dislocated. **1926.451(d)(3)(ii)**

Counterweights shall be secured by mechanical means to the outrigger beams. **1926.451(d)(3)(iv)**

Signs, Signals, and Barricades (See Flaggers)

Construction areas shall be posted with legible traffic signs at points of hazard. **1926.200 (g)(1)**

Barricades for protection of employees shall conform to Part 6 of the *Manual on Uniform Traffic Control Devices*. **1926.202**

Silica

Appropriate engineering controls, personal protective equipment, respirators, and work practices shall be used to protect employees from crystalline silica.

1926.55(a) and (b) and OSHA National Emphasis Program on Crystalline Silica 1/24/2008

Stairs

A stairway or ladder must be provided at all worker points of access where there is a break in elevation of 19 inches (48.3 centimeters) or more and no ramp, runway, sloped embankment, or personnel hoist is provided. **1926.1051(a)**

Except during construction of the actual stairway, skeleton metal frame structures and steps must not be used (where treads and/or landings are to be installed at a later date), unless the stairs are fitted with secured temporary treads and landings. **1926.1052(b)(2)**

When there is only one 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. **1926.1051(a)(3)**

When there are more than two points of access between levels, at least one point of access must be kept clear. **1926.1051(a)(4)**

All stairway and ladder fall protection systems must be provided and installed as required by the stairway and ladder rules before employees begin work that requires them to use stairways or ladders and their respective fall protection systems. **1926.1051(b)**

Stairways that will not be a permanent part of the structure on which construction work is performed must have landings at least 30 inches deep and 22 inches wide (76.2 x 55.9 centimeters) at every 12 feet (3.6 meters) or less of vertical rise. **1926.1052(a)(1)**

Stairways must be installed at least 30 degrees, and no more than 50 degrees, from the horizontal. **1926.1052(a)(2)**

Where doors or gates open directly onto a stairway, a platform must be provided, and the swing of the door shall not reduce the effective width of the platform to less than 20 inches (50.8 centimeters). **1926.1052(a)(4)**

Except during construction of the actual stairway, stairways with metal pan landings and treads must not be used where the treads and/or landings have not been filled in with concrete or other material, unless the pans of the stairs and/or landings are temporarily filled in with wood or other material. All treads and landings must be replaced when worn below the top edge of the pan. **1926.1052(b)(1)**

Stairways having four or more risers, or rising more than 30 inches in height (76.2 centimeters), whichever

is less, must have at least one handrail. A stairrail also must be installed along each unprotected side or edge. **1926.1052(c)(1)(i) through (ii)**

Midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members must be provided between the top rail and stairway steps of the stairrail system. **1926.1052(c)(4)**

Midrails, when used, must be located midway between the top of the stairrail system and the stairway steps. **1926.1052(c)(4)(i)**

The height of handrails must not be more than 37 inches (93.9 centimeters) nor less than 30 inches (76.2 centimeters) from the upper surface of the handrail to the surface of the tread in line with face of riser at forward edge of tread. **1926.1052(c)(6)**

When the top edge of a stairrail system also serves as a handrail, the height of the top edge must not be more than 37 inches (94 cm) nor less than 36 inches (91.5 cm) from the upper surface of the stairrail system to the surface of the tread, in line with face of riser at forward edge of the tread. **1926.1052(c)(7)**

Temporary handrails must have a minimum clearance of 3 inches (7.6 centimeters) between the handrail and walls, stairrail systems, and other objects. **1926.1052(c)(11)**

Unprotected sides and edges of stairway landings must be provided with guardrail systems. **1926.1052(c)(12)**

Steel Erection

Each employee engaged in a steel erection activity who is on a walking/working surface with an unprotected side or edge more than 15 feet (4.6 meters) above a lower level shall be protected from fall hazards by guardrail systems, safety net systems, personal fall arrest systems, positioning device systems or fall restraint systems. **1926.760(a)(1)**

Connectors more than two stories or 30 feet (9.1 meters) above a lower level, whichever is less, shall be protected by guardrail systems, safety net systems, personal fall arrest systems, positioning

devices systems, or fall restraint systems.
1926.760(b)(1)

Connectors at heights over 15 feet and up to 30 feet above a lower level shall be provided with a personal fall arrest system, positioning device system, or fall restraint system and wear the equipment necessary to be tied off; or be provided with other means of protection from fall hazards in accordance with 1926.760(a)(1). **1926.760(b)(3)**

Training shall be provided for all employees exposed to fall hazards. Special training shall be provided to connectors, workers in controlled decking zones, and those rigging for multiple lifts. **1926.761(c)**

Steel erection begins when written notification that the concrete in the footings, piers, and walls or the mortar in the masonry piers and walls has attained the strength to support the loads imposed during steel erection. **1926.752(b)**

Shear connectors (such as headed steel studs, steel bars or steel lugs), reinforcing bars, deformed anchors or threaded studs shall not be attached to the top flanges of beams, joists or beam attachments so that they project vertically from or horizontally across the top flange of the member until after the metal decking, or other walking/working surface, has been installed. **1926.754(c)(1)**

Columns shall be anchored by a minimum of four anchor rods (anchor bolts). **1926.755(a)(1)**

Solid web structural members shall be secured with at least two bolts per connection before being released from the hoisting line. **1926.756(a)(1)**

Open web joists must be field bolted at each end of the bottom chord before being released from the hoisting line. **1926.757(a)(1)(iii)**

Decking shall be laid tightly and secured.
1926.754(e)(5)

Controlled decking zones shall be clearly marked and access limited to only those employees engaged in leading edge work. **1926.760(c)(2) and (3)**

Cranes used in steel erection shall be inspected prior to each shift by a competent person. Routes for suspended loads shall be planned to ensure no employee is required to work directly under the load except for connecting or hooking or unhooking. Hooks with self-closing latches shall be used. All loads shall be rigged by a qualified rigger. Multiple lifts shall hoist a maximum of five members. **1926.753(c)(1)(i), (d)(1) and (e)(1)(ii)**

Storage

All materials stored in tiers shall be secured to prevent sliding, falling, or collapsing. **1926.250(a)(1)**

Aisles and passageways shall be kept clear and in good repair. **1926.250(a)(3)**

Storage of materials shall not obstruct exits. **1926.151(d)(1)**

Materials shall be stored with due regard to their fire characteristics. **1926.151(d)(2)**

Tire Cages

A safety tire rack, cage, or equivalent protection shall be provided and used when inflating, mounting, or dismounting tires installed on split rims, or rims equipped with locking rings or similar devices. **1926.600(a)(2)**

Toeboards

Toeboards, when used to protect workers from falling objects, shall be erected along the edge of the overhead walking/working surface. **1926.502(j)(1)**

Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds (222 N) applied in any downward or outward direction at any point along the toeboard. **1926.502(j)(2)**

A standard toeboard shall be at least 3 1/2 inches (9 centimeters) in height and may be of any substantial material either solid or open, with openings not to exceed 1 inch (2.54 centimeters) in greatest dimension. **1926.502(j)(3)**

Administrative or engineering controls must be implemented whenever feasible to comply with Threshold Limit Values. When engineering and administrative controls are not feasible to achieve full compliance, protective equipment or other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed. Any equipment and technical measures used for this purpose must first be approved for each particular use by a competent industrial hygienist or other technically qualified person. Whenever respirators are used, their use shall comply with 1910.134, made applicable to construction by 1926.103. **1926.55(b)**

General Duty Clause

Hazardous conditions or practices not covered in an OSHA standard may be covered under Section 5(a)(1) of the *Occupational Safety and Health Act of 1970*, which states: "Each employer shall 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."

Grinding

All abrasive wheel bench and stand grinders shall be equipped with safety guards that cover the spindle ends, nut and flange projections, and are strong enough to withstand the effects of a bursting wheel. **1926.303(b)(1), (2), and (c)(1)**

An adjustable work rest of rigid construction shall be used on floor and bench-mounted grinders, with the work rest kept adjusted to a clearance not to exceed 1/8-inch (0.3 centimeters) between the work rest and the surface of the wheel. **1926.303(c)(2)**

All abrasive wheels shall be closely inspected and ring-tested before mounting to ensure that they are free from cracks or other defects. **1926.303(c)(7)**

Portable abrasive wheel tools used for external grinding shall be provided with safety guards, except when the wheels are 2 inches (5 centimeters) or less in diameter or the work location makes it impossible (then a wheel equipped with safety flanges shall be used). **1926.303(c)(3)**

Portable abrasive wheel tools used for internal grinding shall be provided with safety flanges, except when the wheels are 2 inches (5 centimeters) or less in diameter or the wheel is entirely inside the work. **1926.303(c)(4)**

Hand Tools

All hand and power tools and similar equipment, whether furnished by the employer or employee, shall be maintained in a safe condition. Employers shall not issue or permit the use of unsafe hand tools. **1926.300(a) and 1926.301(a)**

Wrenches shall not be used when jaws are sprung to the point that slippage occurs. Impact tools shall be kept free of mushroomed heads. The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the tool. **1926.301(b) through (d)**

Electric power operated tools shall either be approved double-insulated, or be properly grounded in accordance with Subpart K of the standard. **1926.302(a)(1)**

Hazard Communication

Employers shall develop, implement, and maintain at the workplace a written hazard communication program for their workplaces. Employers must inform their employees of the availability of the program, including the required list(s) of hazardous chemicals, and material safety data sheets required. **1910.1200(e)(1) and (e)(4) made applicable to construction by 1926.59**

The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged, or marked with the identity of the hazardous chemical(s), the appropriate hazard warnings, and the name and address of the chemical manufacturer, importer, or other responsible party. **1910.1200(f)(1) made applicable to construction by 1926.59**

The employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with the following information:

- Identity of the hazardous chemical(s) contained therein, and
- Appropriate hazard warnings, or alternatively, words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with specific information regarding the physical and health hazards of the hazardous chemical. **1910.1200(f)(5) made applicable to construction by 1926.59**

Chemical manufacturers and importers shall obtain or develop a material safety data sheet for each hazardous chemical they produce or import. Employers shall have a material safety data sheet for each hazardous chemical they use. **1910.1200(g)(1) made applicable to construction by 1926.59**

Employers shall provide employees with information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new hazard is introduced into their work area. Employers shall also provide employees with information on any operations in their work area where hazardous chemicals are present, and the location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by the standard. **1910.1200(h)(1) and (2)(i) through (iii) made applicable to construction by 1926.59**

Employers who produce, use, or store hazardous chemicals at multi-employer workplaces shall additionally ensure that their hazard communication program includes the methods the employer will use to provide other employer(s) with a copy of the material safety data sheet for hazardous chemicals which employees of other employer(s) may be exposed to while working; the methods the employer will use to inform other employer(s) of any precautionary measures for the protection of employees; and the methods the employer will use to inform the other employer(s) of the labeling system used in the workplace. **1910.1200(e)(2) made applicable to construction by 1926.59**

Hazardous Waste Operations

Employers must develop and implement a written safety and health program for employees involved in hazardous waste operations. At a minimum, the program shall have an organizational structure, a comprehensive workplan, standard operating procedures, a site specific safety and health plan (which need not repeat the standard operating procedures), the training program, and medical surveillance program. **1926.65(b)(1)**

A site control program also shall be developed and shall include, at a minimum, a map, work zones, buddy systems, site communications – including alerting means for emergencies – standard operating procedures or safe work practices, and identification of the nearest medical assistance. **1926.65(d)(3)**

Training must be provided for all site employees, their supervisors, and management who are exposed to health or safety hazards before they are permitted to engage in hazardous waste operations. **1926.65(e)(1)(i)**

Head Protection

Head protective equipment (helmets) shall be worn in areas where there is a possible danger of head injuries from impact, flying or falling objects, or electrical shock and burns. **1926.100(a)**

Helmets for protection against impact and penetration of falling and flying objects shall meet the requirements of ANSI Z89.1-1969. Helmets for protection against electrical shock and burns shall meet the requirements of ANSI Z89.2-1971. **1926.100(b) and (c)**

Hearing Protection

Feasible engineering or administrative controls shall be utilized to protect employees against sound levels in excess of those shown in **Table D-2**.

When engineering or administrative controls fail to reduce sound levels within the limits of **Table D-2**, ear protective devices shall be provided and used. **1926.52(b) and .101(a)**

Plain cotton is not an acceptable protective device.
1926.101(c)

In all cases where the sound levels exceed the values shown in Table D-2, a continuing, effective hearing conservation program shall be administered.
1926.52(d)(1)

OSHA considers the following topics to be valuable in a hearing conservation program:

- Monitoring employee noise exposures (to determine if sound levels exceed those shown in **1926.52 Table D-2**),
- Using engineering, work practice and administrative controls, and personal protective equipment measures (see "Training and Hazard Control" **1926.21(b)(2)**),
- Fitting each overexposed employee with appropriate hearing protectors **1926.101(b)**,
- Training employees in the effects of noise and protection measures (see "Training and Hazard Control" **1926.21(b)(2)**),
- Explaining procedures for preventing further hearing loss, and recordkeeping and reporting.

For more information: OSHA describes hearing conservation program requirements for general industry in the General Industry Occupational Noise Exposure standard **1910.95(c) - (o)**.

**Table D-2 - Permissible Noise Exposures -
1926.52(d)(1)**

Duration per day, hours:	Sound Level/dBA slow response
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
1/2	110
1/4 or Less	115

Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level. **1926.52(e)**

Heating Devices, Temporary

When heating devices are used, fresh air shall be supplied in sufficient quantities to maintain the health and safety of workers. **1926.154(a)(1)**

Solid fuel salamanders are prohibited in buildings and on scaffolds. **1926.154(d)**

Highway Work Zones (See Flaggers and Signs, Signals, and Barricades)

Hoists, Material and Personnel

The employer shall comply with the manufacturer's specifications and limitations. **1926.552(a)(1)**

Rated load capacities, recommended operating speeds, and special hazard warnings or instructions shall be posted on cars and platforms. **1926.552(a)(2)**

Hoistway entrances of material hoists shall be protected by substantial full width gates or bars that are painted with diagonal contrasting colors such as black and yellow stripes. **1926.552(b)(2)**

Hoistway doors or gates of personnel hoists shall be not less than 6 feet 6 inches (198.1 meters) high and shall be protected with mechanical locks that cannot be operated from the landing side and that are accessible only to persons on the car. **1926.552(c)(4)**

Overhead protective coverings shall be provided on the top of the hoist cage or platform. **1926.552(b)(3) and (c)(7)**

All material hoists shall conform to the requirements of ANSI A10.5-1969, *Safety Requirements for Material Hoists*. **1926.552(b)(8)**

The requirements of 1926.1431 apply when one or more employees are hoisted using equipment covered by Subpart CC, Cranes and Derricks in Construction.

Hooks (See Wire Ropes, Chains, and Ropes)

Housekeeping

Form and scrap lumber with protruding nails and all

other debris shall be kept clear from all work areas. **1926.25(a)**

Combustible scrap and debris shall be removed at regular intervals. **1926.25(b)**

Containers shall be provided for collection and separation of all refuse. Covers shall be provided on containers used for flammable or harmful substances. Waste shall be disposed of at frequent intervals. **1926.25(c)**

Illumination

Construction areas, aisles, stairs, ramps, runways, corridors, offices, shops, and storage areas shall be lighted to not less than the minimum illumination intensities listed in Table D-3 while any work is in progress. **1926.26**

Table D-3 – Minimum Illumination Intensities in Footcandles

Footcandles: Area of Operation
5.....General construction area lighting
3.....General construction areas, concrete placement, excavation, waste areas, accessways, active storage areas, loading platforms, refueling, and field maintenance areas
5.....Indoor warehouses, corridors, hallways, and exitways
5.....Tunnels, shafts, and general underground work areas (Exception: minimum of 10 footcandles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines-approved cap lights shall be acceptable for use in the tunnel heading)
10.....General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenters shops, rigging lofts and active store rooms, barracks or living quarters, locker or dressing rooms, mess halls, indoor toilets, and workrooms)
30.....First-aid stations, infirmaries, and offices

1926.56(a)

Jointers

A jointer guard shall automatically adjust itself to cover the unused portion of the head and the section of the head on the working side and the back side of the fence or cage. The jointer guard shall remain in contact with the material at all times. **ANSI 01.1-1961, section 4.3.2, incorporated by reference to construction by 1926.304(f)**

Ladders

A ladder (or stairway) must be provided at all work points of access where there is a break in elevation of 19 inches (48.2 centimeters) or more except if a suitable ramp, runway, embankment, or personnel hoist is provided to give safe access to all elevations. **1926.1051(a)**

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 by immediately tagging “DO NOT USE” or marking in a manner that identifies them as defective, or shall be blocked, such as with a plywood attachment that spans several rungs. Repairs must restore ladder to its original design criteria. **1926.1053(b)(16), (17)(i) through (iii) and (18)**

Portable non-self-supporting ladders shall have clear access at top and bottom and be placed at an angle so the horizontal distance from the top support to the foot of the ladder is approximately one-quarter the working length of the ladder. **1926.1053(b)(5)(i) and (b)(9)**

Portable ladders used for access to an upper landing surface must extend a minimum of 3 feet (0.9 meters) above the landing surface, or where not practical, be provided with grab rails and be secured against movement while in use. **1926.1053(b)(1)**

Ladders must have nonconductive siderails if they are used where the worker or the ladder could contact energized electrical conductors or equipment. **1926.1053(b)(12)**

Job-made ladders shall be constructed for their intended use. Cleats shall be uniformly spaced not

less than 10 inches (25.4 centimeters) apart, nor more than 14 inches (35.5 centimeters) apart. **1926.1053(a)(3)(i)**

Wood job-made ladders with spliced side rails must be used at an angle where the horizontal distance is one-eighth the working length of the ladder. **1926.1053(b)(5)(ii)**

Fixed ladders must be used at a pitch no greater than 90 degrees from the horizontal, measured from the back side of the ladder. **1926.1053(b)(5)(iii)**

Ladders must be used only on stable and level surfaces unless secured to prevent accidental movement. **1926.1053(b)(6)**

Ladders must not be used on slippery surfaces unless secured or provided with slip-resistant feet to prevent accidental movement. Slip-resistant feet must not be used as a substitute for the care in placing, lashing, or holding a ladder upon a slippery surface. **1926.1053(b)(7)**

Employers must provide a training program for each employee using ladders and stairways. The program must enable each employee to recognize hazards related to ladders and stairways and to use proper procedures to minimize these hazards. For example, employers must ensure that each employee is trained by a competent person in the following areas, as applicable:

- The nature of fall hazards in the work area,
- The correct procedures for erecting, maintaining, and disassembling the fall protection systems to be used,
- The proper construction, use, placement, and care in handling of all stairways and ladders, and
- The maximum intended load-carrying capacities of ladders used.

In addition, retraining must be provided for each employee, as necessary, so that the employee maintains the understanding and knowledge acquired through compliance with the standard. **1926.1060(a) and (b)**

Lasers

Only qualified and trained employees shall be assigned to install, adjust, and operate laser equipment. **1926.54(a)**

Employees shall wear proper (antilaser) eye protection when working in areas where there is a potential exposure to direct or reflected laser light greater than 0.005 watts (5 milliwatts). **1926.54(c)**

Beam shutters or caps shall be utilized, or the laser turned off, when laser transmission is not actually required. When the laser is left unattended for a substantial period of time – such as during lunch hour, overnight, or at change of shifts – the laser shall be turned off. **1926.54(e)**

Employees shall not be exposed to light intensities in excess of the following: direct staring – 1 microwatt per square centimeter, incidental observing – 1 milliwatt per square centimeter, and diffused reflected light – 2 1/2 watts per square centimeter. **1926.54(j)(1) through (3)**

Employees shall not be exposed to microwave power densities in excess of 10 milliwatts per square centimeter. **1926.54(1)**

Lead

Each employer who has a workplace or operation covered by this standard shall initially determine if any employee may be exposed to lead at or above the action level of 30 micrograms per cubic meter (30 $\mu\text{g}/\text{m}^3$) of air calculated as an 8-hour time-weighted average. **1926.62(d)(1)(i)**

The employer shall assure that no employee is exposed to lead at concentrations greater than 50 micrograms per cubic meter (50 $\mu\text{g}/\text{m}^3$) of air averaged over an 8-hour period (the permissible exposure limit PEL). **1926.62(c)(1)**

Whenever there has been a change of equipment, process, control, personnel, or a new task has been initiated that may result in additional employees being exposed to lead at or above the action level or may result in employees already exposed at or above

the action level being exposed above the PEL, the employer shall conduct additional monitoring. **1926.62(d)(7)**

Training shall be provided in accordance with the Hazard Communication standard and additional training shall be provided for employees exposed at or above the action level. **1926.62(1)**

Prior to the start of the job, each employer shall establish and implement a written compliance program. **1926.62(e)(2)(i)**

Where employees are required to use respirators, the employer must implement a respiratory protection program. **1910.134(b) through (d) (except (d)(iii)), and (f) through (m) made applicable to construction by 1926.62(f)(2)(i)**

Where airborne concentrations of lead equal or exceed the action level at any time, an initial medical examination consisting of blood sampling and analysis shall be made available for each employee prior to initial assignment to the area. **1926.62 Appendix B, viii, paragraph (j)**

Lift Slab

Lift-slab operations shall be designed and planned by a registered professional engineer who has experience in lift-slab construction. Such plans and designs shall be implemented by the employer and shall include detailed instructions and sketches indicating the prescribed method of erection. **1926.705(a)**

Jacking equipment shall be capable of supporting at least two and one-half times the load being lifted during jacking operations. Also, do not overload the jacking equipment. **1926.705(d)**

During erection, no employee, except those essential to the jacking operation, shall be permitted in the building or structure while jacking operations are taking place unless the building or structure has been reinforced sufficiently to ensure its integrity. **1926.705(l)(1)**

Equipment shall be designed and installed to prevent slippage; otherwise, the employer shall institute other measures, such as locking or blocking devices, which will provide positive connection between the lifting rods and attachments and will prevent components from disengaging during lifting operations. **1926.705(p)**

Liquefied Petroleum Gas

Each system shall have containers, valves, connectors, manifold valve assemblies, and regulators of an approved type. **1926.153(a)(1)**

Every container and vaporizer shall be provided with one or more approved safety relief valves or devices. **1926.153(d)(1)**

Containers shall be placed upright on firm foundations or otherwise firmly secured. **1926.153(g) and (h)(11)**

Portable heaters shall be equipped with an approved automatic device to shut off the flow of gas in the event of flame failure. **1926.153(h)(8)**

All cylinder connectors shall be equipped with an excess flow valve to minimize the flow of gas in the event the fuel line becomes ruptured. **1926.153(i)(2)**

Storage of liquefied petroleum gas within buildings is prohibited. **1926.153(j)**

Storage locations shall have at least one approved portable fire extinguisher rated not less than 20-B:C. **1926.153(l)**

Medical Services and First Aid

The employer shall ensure the availability of medical personnel for advice and consultation on matters of occupational health. **1926.50(a)**

When a medical facility is not reasonably accessible for the treatment of injured employees, a person qualified to render first aid shall be available at the worksite. **1926.50(c)**

First-aid supplies when required should be readily available. **1926.50(d)(1)**

In areas where 911 is not available, the telephone numbers of the physicians, hospitals, or ambulances shall be conspicuously posted. **1926.50(f)**

Motor Vehicles and Mechanized Equipment

All vehicles in use shall be checked at the beginning of each shift to ensure that all parts, equipment, and accessories that affect safe operation are in proper operating condition and free from defects. All defects shall be corrected before the vehicle is placed in service. **1926.601(b)(14)**

No employer shall use any motor vehicle, earthmoving, or compacting equipment having an obstructed view to the rear unless:

- The vehicle has a reverse signal alarm distinguishable from the surrounding noise level, or the vehicle is backed up only when an observer signals that it is safe to do so. **1926.601(b)(4)(i) through (ii) and 602(a)(9)(i) through (ii)**

Heavy machinery, equipment, or parts thereof that are suspended or held aloft shall be substantially blocked to prevent falling or shifting before employees are permitted to work under or between them. **1926.600(a)(3)(i)**

Noise (See Hearing Protection)

Personal Protective Equipment

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 the need is indicated for using such equipment to reduce the hazard to the employees. **1926.28(a) and 1926.95(a) through (c)**

Employers must provide most personal protective equipment at no cost to employees. **1926.95(d)(1), see 1926.95(d)(2) through (6) for exceptions**

OSHA requires employers to provide and for employees to use specific types of personal protective equipment in specific standards throughout 29 CFR 1926. These standards include, but are not limited to:

- Foot protection. **1926.96**
- Head protection. **1926.100**

- Hearing protection. **1926.101**
- Eye and face protection. **1926.102**
- Respiratory protection. **1910.134 made applicable to construction by 1926.103**
- Safety belts, lifelines, and lanyards. **1926.104**
- Safety nets. **1926.105**
- Working over or near water (life jackets). **1926.106**
- Personal fall arrest system. **1926.502(d)**
- Protective equipment for use during electrical work. **1926.416 and 1926.951**

Head, hearing, eye and face, safety nets, fall protection, and working over or near water are covered in detail in this digest.

Powder-Actuated Tools

Only trained employees shall be allowed to operate powder-actuated tools. **1926.302(e)(1)**

All powder-actuated tools shall be tested daily before use and all defects discovered before or during use shall be corrected. **1926.302(e)(2) through (3)**

Tools shall not be loaded until immediately before use. Loaded tools shall not be left unattended. **1926.302(e)(5) through (6)**

Power Transmission and Distribution

Existing conditions shall be determined before starting work, by an inspection or a test. Such conditions shall include, but not be limited to, energized lines and equipment, condition of poles, and the location of circuits and equipment including power and communications, cable television, and fire-alarm circuits. **1926.950(b)(1)**

Electric equipment and lines shall be considered energized until determined otherwise by testing or until grounding. **1926.950(b)(2) and .954(a)**

Operating voltage of equipment and lines shall be determined before working on or near energized parts. **1926.950(b)(3)**

Rubber protective equipment shall comply with the provisions of the ANSI J6 series, and shall be visually inspected before use. **1926.951(a)(1)(i) through (ii)**

Protective equipment of material other than rubber shall provide equal or better electrical and mechanical protection. **1926.951(a)(iv)**

Powered Industrial Trucks (Forklifts)

Each powered industrial truck operator must be competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation. **1910.178(l)(1)(i) made applicable to construction by 1926.602(d)**

Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace. **1910.178(l)(2)(ii) made applicable to construction by 1926.602(d)**

Power Transmission, Mechanical

Belts, gears, shafts, pulleys, sprockets, spindles, drums, flywheels, chains, or other reciprocating, rotating, or moving parts of equipment shall be guarded if such parts are exposed to contact by employees or otherwise constitute a hazard. Guarding shall meet the requirement of ANSI B15.1-1953 (R 1958), Safety Code for Mechanical Power Transmission Apparatus. **1926.300(b)(2)**

Process Safety Management of Highly Hazardous Chemicals

Employers shall develop a written plan of action regarding employee participation and consult with employees and their representatives on the conduct and development of process hazards analyses and on the development of the other elements of process safety management. **1926.64(c)(1) through (2)**

The employer, when selecting a contractor, shall obtain and evaluate information regarding the contract employer's safety performance and programs. **1926.64(h)(2)(i)**

The contract employer shall assure that each contract employee is trained in the work practices necessary to safely perform his/her job. **1926.64(h)(3)(i)**

Toilets

Toilets shall be provided according to the following:
20 or fewer persons – one facility; 20 or more persons
– one toilet seat and one urinal per 40 persons; 200 or
more persons – one toilet seat and one urinal per 50
workers. **1926.51(c)(1)**

This requirement does not apply to mobile crews
having transportation readily available to nearby
toilet facilities. **1926.51(c)(4)**

Training and Inspections

The employer shall initiate and maintain such pro-
grams as may be necessary to provide for frequent
and regular inspections of the job site, materials, and
equipment by designated competent persons.
1926.20(b)(1) through (2)

The employer should avail himself of the safety and
health training programs the Secretary provides.
1926.21(b)(1)

The employer shall instruct each employee in the
recognition and avoidance of unsafe conditions and
in the regulations applicable to his work environment
to control or eliminate any hazards or other exposure
to illness or injury. **1926.21(b)(2)**

The use of any machinery, tool, material, or
equipment that is not in compliance with any
applicable requirement of Part 1926 is prohibited.
1926.20(b)(3)

The employer shall permit only those employees
qualified by training or experience to operate
equipment and machinery. **1926.20(b)(4)**

Underground Construction

The employer shall provide and maintain safe means
of access and egress to all work stations.
1926.800(b)(1)

The employer shall control access to all openings to
prevent unauthorized entry underground. Unused
chutes, manways, or other openings shall be tightly
covered, bulkheaded, or fenced off, and shall be
posted with signs indicating "Keep Out" or similar

language. Complete or unused sections of the underground facility shall be barricaded. **1926.800(b)(3)**

Unless underground facilities are sufficiently completed so that the permanent environmental controls are effective and the remaining construction activity will not cause any environmental hazard or structural failure within the facilities, the employer shall maintain a check-in/check-out procedure that will ensure that aboveground designated personnel can determine an accurate count of the number of persons underground in the event of an emergency. **1926.800(c)**

All employees shall be instructed to recognize and avoid hazards associated with underground construction activities. **1926.800(d)**

Hazardous classifications are for "potentially gassy" and "gassy" operations. **1926.800(h)** The employer shall assign a competent person to perform all air monitoring to determine proper ventilation and quantitative measurements of potentially hazardous gases. **1926.800(j)(1)(i)(A)**

Fresh air shall be supplied to all underground work areas in sufficient quantities to prevent dangerous or harmful accumulation of dust, fumes, mists, vapors, or gases. **1926.800(k)(1)(i)**

Washing Facilities

The employer shall provide adequate washing facilities for employees engaged in operations involving harmful substances. Washing facilities shall be near the worksite and shall be so equipped as to enable employees to remove all harmful substances. **1926.51(f)**

Water, Working Over or Near

Employees working over or near water, where the danger of drowning exists, shall be provided with U.S. Coast Guard-approved life jackets or buoyant work vests. **1926.106(a)**

Welding, Cutting, and Heating

Employers shall instruct employees in the safe use of welding equipment. **1926.350(d) and 1926.351(d)**

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 creates a fire hazard. **1926.352(a) through (c) & (f)**

Arc welding and cutting operations shall be shielded by noncombustible or flameproof screens to protect employees and other persons in the vicinity from direct arc rays. **1926.351(e)**

When electrode holders are to be left unattended, the electrodes shall be removed and the holder shall be placed or protected so that they cannot make electrical contact with employees or conducting objects. **1926.351(d)(1)**

All arc welding and cutting cables shall be completely insulated and be capable of handling the maximum current requirements for the job. There shall be no repairs or splices within 10 feet (3 meters) of the electrode holder, except where splices are insulated equal to the insulation of the cable. Defective cable shall be repaired or replaced. **1926.351(b)(1) through (2) and (4)**

Employees performing such operations in the open air shall be protected by filter-type respirators in accordance with the requirements of 1910.134, except that employees performing such operations on beryllium-containing base or filler metals shall be protected with air line respirators in accordance with 1910.134. **1926.353(c)(3)**

Fuel gas and oxygen hose shall be easily distinguishable and shall not be interchangeable. Hoses shall be inspected at the beginning of each shift and shall be repaired or replaced if defective. **1926.350(f)(1) and (3)**

General mechanical ventilation, local exhaust ventilation, air line respirators, and other protection shall be provided, as required, when welding, cutting or heating:

- Zinc, lead, cadmium, chromium, mercury, or materials bearing, based, or coated with beryllium in enclosed spaces,
- Stainless steel with inert-gas equipment,
- In confined spaces, and
- Where an unusual condition can cause an unsafe accumulation of contaminants. **1926.353(b)(1), (c)(1)(i) through (iv), (c)(2)(i) through (iv), (d)(1)(iv), and (e)(1)**

Proper eye protective equipment to prevent exposure of personnel shall be provided. **1926.353(e)(2)**

Wire Ropes, Chains, and Ropes

Wire ropes, chains, ropes, and other rigging equipment shall be inspected prior to use and as necessary during use to ensure their safety. Defective gear shall be removed from service. **1926.251(a)(1)**

Job or shop hooks and links or makeshift fasteners formed from bolts, rods, or other such attachments shall not be used. **1926.251(b)(3)**

When U-bolts are used for eye splices, the U-bolt shall be applied so that the "U" section is in contact with the dead end of the rope. **1926.251(c)(5)(i)**

When U-bolt wire rope clips are used to form eyes, the following table shall be used to determine the number and spacing of clips. **1926.251(c)(5)**

Table H-20 – Number and Spacing of U-Bolt Wire Rope Clips – 1926.251(c)(5)

Improved plow steel rope diameter (inches)	Number of clips		Minimum spacing (inches)
	Drop forged	Other material	
1/2 (1.27 cm)	3	4	3 (7.62cm)
5/8 (.625 cm)	3	4	3-3/4 (8.37 cm)
3/4 (.75 cm)	4	5	4-1/2 (11.43 cm)
7/8 (.875 cm)	4	5	5-1/4 (12.95 cm)
1 (2.54 cm)	5	6	6 (15.24 cm)
1-1/8 (2.665 cm)	6	6	6-3/4 (15.99cm)
1-1/4 (2.79 cm)	6	7	7-1/2 (19.05cm)
1-3/8 (2.915 cm)	7	7	8-1/4 (20.57cm)
1-1/2 (3.81 cm)	7	8	9 (22.86 cm)

Woodworking Machinery

All fixed power-driven woodworking tools shall be provided with a disconnect switch that can be either locked or tagged in the off position. 1926.304(a)

All woodworking tools and machinery shall meet applicable requirements of ANSI 01.1-1961, *Safety Code for Woodworking Machinery*. 1926.304(f)

Complaints, Emergencies and Further Assistance

Workers have the right to a safe workplace. The *Occupational Safety and Health Act of 1970* (OSH Act) was passed to prevent workers from being killed or seriously harmed at work. The law requires employers to provide their employees with working conditions that are free of known dangers. Workers may file a complaint to have OSHA inspect their workplace if they believe that their employer is not following OSHA standards or that there are serious hazards. Further, the Act gives complainants the right to request that their names not be revealed to their employers. It is also against the law for an employer to fire, demote, transfer, or discriminate in any way against a worker for filing a complaint or using other OSHA rights.

To report an emergency, file a complaint, or seek OSHA advice, assistance, or products, call (800) 321-OSHA (6742) or contact your nearest OSHA regional, area, or state plan office listed or linked to at the end of this publication. The teletypewriter (TTY) number is (877) 889-5627. You can also file a complaint online by visiting OSHA's website at www.osha.gov. Most complaints submitted online may be resolved informally over the phone or by fax with your employer. Written complaints, that are signed by a worker or their representative and submitted to the closest OSHA office, are more likely to result in an on-site OSHA inspection.

Compliance Assistance Resources

OSHA can provide extensive help through a variety of programs, including free workplace consultations, compliance assistance, voluntary protection

programs, strategic partnerships, alliances, and training and education. For more information on any of the programs listed below, visit OSHA's website at www.osha.gov or call 1-800-321-OSHA (6742).

Establishing an Injury and Illness Prevention Program

The key to a safe and healthful work environment is a comprehensive injury and illness prevention program.

Injury and illness prevention programs, known by a variety of names, are universal interventions that can substantially reduce the number and severity of workplace injuries and alleviate the associated financial burdens on U.S. workplaces. Many states have requirements or voluntary guidelines for workplace injury and illness prevention programs. In addition, numerous employers in the United States already manage safety using injury and illness prevention programs, and we believe that all employers can and should do the same. Employers in the construction industry are already required to have a health and safety program. Most successful injury and illness prevention programs are based on a common set of key elements. These include management leadership, worker participation, hazard identification, hazard prevention and control, education and training, and program evaluation and improvement. Visit OSHA's website at <http://www.osha.gov/dsg/topics/safetyhealth/index.html> for more information and guidance on establishing effective injury and illness prevention programs in the workplace.

Compliance Assistance Specialists

OSHA has compliance assistance specialists throughout the nation who can provide information to employers and workers about OSHA standards, short educational programs on specific hazards or OSHA rights and responsibilities, and information on additional compliance assistance resources. Contact your local OSHA office for more information.

OSHA Consultation Service for Small Employers

The OSHA Consultation Service provides **free assistance** to small employers to help them identify and correct hazards, and to improve their injury and illness prevention program. Most of these services are delivered on site by state government agencies or universities using well-trained professional staff.

Consultation services are available to private sector employers. Priority is given to small employers with the most hazardous operations or in the most high-hazard industries. These programs are largely funded by OSHA and are delivered at no cost to employers who request help. Consultation services are separate from enforcement activities. To request such services, an employer can phone or write to the OSHA Consultation Program. See the Small Business section of OSHA's website for contact information for the consultation offices in every state.

■ **Safety and Health Achievement Recognition Program**

Under the consultation program, certain exemplary employers may request participation in OSHA's Safety and Health Achievement Recognition Program (SHARP). Eligibility for participation includes, but is not limited to, receiving a full-service, comprehensive consultation visit, correcting all identified hazards, and developing an effective injury and illness prevention program.

Cooperative Programs

OSHA offers cooperative programs to help prevent fatalities, injuries and illnesses in the workplace.

■ **OSHA's Alliance Program**

Through the Alliance Program, OSHA works with groups committed to worker safety and health to prevent workplace fatalities, injuries, and illnesses. These groups include businesses, trade or professional organizations, unions, consulates, faith- and community-based organizations, and educational institutions. OSHA and the groups work together to develop compliance assistance tools and resources, share information with workers and employers, and educate workers and employers about their rights and responsibilities.

- **Challenge Program**

This program helps employers and workers improve their injury and illness prevention program and implement an effective system to prevent fatalities, injuries and illnesses.

- **OSHA Strategic Partnership Program (OSPP)**

Partnerships are formalized through tailored agreements designed to encourage, assist and recognize partner efforts to eliminate serious hazards and achieve model workplace safety and health practices.

- **Voluntary Protection Programs (VPP)**

The VPP recognize employers and workers in private industry and federal agencies who have implemented effective injury and illness prevention programs and maintain injury and illness rates below national Bureau of Labor Statistics averages for their respective industries. In VPP, management, labor, and OSHA work cooperatively and proactively to prevent fatalities, injuries, and illnesses.

OSHA Training Institute Education Centers

The OSHA Training Institute (OTI) Education Centers are a national network of nonprofit organizations authorized by OSHA to conduct occupational safety and health training to private sector workers, supervisors and employers.

Susan Harwood Training and Education Grants

OSHA provides grants to nonprofit organizations to provide worker education and training on serious job hazards and avoidance/prevention strategies.

Information and Publications

OSHA has a variety of educational materials and electronic tools available on its website at www.osha.gov. These include Safety and Health Topics Pages, Safety Fact Sheets, Expert Advisor software, copies of regulations and compliance directives, videos and other information for employers and workers. OSHA's

software programs and eTools walk you through safety and health issues and common problems to find the best solutions for your workplace.

OSHA's extensive publications help explain OSHA standards, job hazards, and mitigation strategies and provide assistance in developing effective safety and health programs.

For a listing of free publications, visit OSHA's website at www.osha.gov or call 1-800-321-OSHA (6742).

QuickTakes

OSHA's free, twice-monthly online newsletter, *QuickTakes*, offers the latest news about OSHA initiatives and products to assist employers and workers in finding and preventing workplace hazards. To sign up for *QuickTakes*, visit OSHA's website at www.osha.gov and click on *QuickTakes* at the top of the page.

Contacting OSHA

To order additional copies of this publication, to get a list of other OSHA publications, to ask questions or to get more information, to contact OSHA's free consultation service, or to file a confidential complaint, contact OSHA at 1-800-321-OSHA (6742), (TTY) 1-877-889-5627 or visit www.osha.gov.

**For assistance, contact us.
We are OSHA. We can help.
It's confidential.**

OSHA Regional Offices

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JFK Federal Building, Room E340
Boston, MA 02203
(617) 565-9860 (617) 565-9827 Fax

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(NJ*, NY*, PR*, VI*)
201 Varick Street, Room 670
New York, NY 10014
(212) 337-2378 (212) 337-2371 Fax

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(DE, DC, MD*, PA, VA*, WV)
The Curtis Center
170 S. Independence Mall West
Suite 740 West
Philadelphia, PA 19106-3309
(215) 861-4900 (215) 861-4904 Fax

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Atlanta, GA 30303
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525 Griffin Street, Room 602
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Region VII

Kansas City Regional Office
(IA*, KS, MO, NE)
Two Pershing Square Building
2300 Main Street, Suite 1010
Kansas City, MO 64108-2416
(816) 283-8745 (816) 283-0547 Fax

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90 7th Street, Suite 18100
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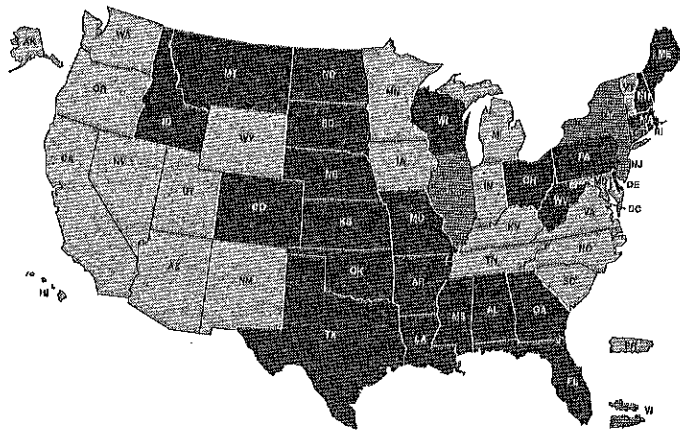
Region X




Seattle Regional Office
(AK*, ID, OR*, WA*)
1111 Third Avenue, Suite 715
Seattle, WA 98101-3212
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*These states and territories operate their own OSHA-approved job safety and health plans and cover state and local government employees as well as private sector employees. The Connecticut, Illinois, New Jersey, New York and Virgin Islands programs cover public employees only. (Private sector workers in these states are covered by Federal OSHA). States with approved programs must have standards that are identical to, or at least as effective as, the Federal OSHA standards.

Note: To get contact information for OSHA area offices, OSHA-approved state plans and OSHA consultation projects, please visit us online at www.osha.gov or call us at 1-800-321-OSHA (6742).

OSHA-Approved State Plans



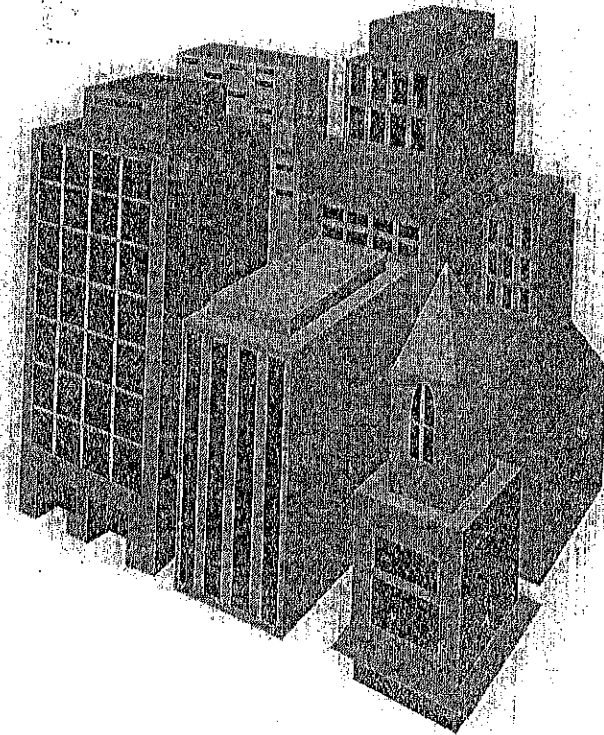
-  OSHA-approved state plans (private sector and public employees)
-  Federal OSHA (private sector and most federal employees)
-  OSHA-approved state plans (for public employees only; private sector employees are covered by Federal OSHA)





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Site Name/City/ Reference		Phone # of Site Supervisor	
Time & Date of Accident/Incident		List of Witnesses:	

Detail of Person completing the form	
Name:	Date:
Job Title:	

Accident	Dangerous Occurrence	Near Miss	Illness
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Mark the one above that is appropriate

Details of the injured Person			
Name of Injured Person:		Date of Birth:	
Did anyone provide first aid ?		Who Provided first aid?	
Did the injured person see a doctor?		If yes what time did they leave the job?	
Address of Injured Person:			
Telephone:		Occupation:	
Employers Name:			
Managers Name:		Telephone:	
Subcontractors Address:			

Accident/Incident Details:	
Location of Accident/Incident	
What work was occurring at the time of the accident/incident	

Summary of the accident/incident and the injury caused (part of body and severity) (attach additional pages if necessary)

Accident/Incident Report Form

Who else was involved? Who witnessed the accident/incident: (state names, employer, contact details. How the person was involved e.g. witness, supervisor etc.)

First Aid Details if any

Additional Comments:

Who was the accident/incident reported to?

What action has occurred since to prevent a reoccurrence?

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Please Take Photos at the Site of the Accident/Incident

Accident/Incident Report Form



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GENERAL CONTRACTING

Three Generations of Quality

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Accident	Dangerous Occurrence	Near Miss	Illness
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Details of the Injured Person

Name of Injured Person:		Date of Birth:	
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Address of Injured Person:

Telephone:		Occupation:	
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Employers Name:

Managers Name:		Telephone:	
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Subcontractors Address:

Accident/Incident Details

Location of Accident/Incident	
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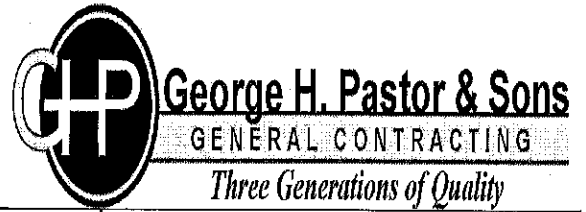
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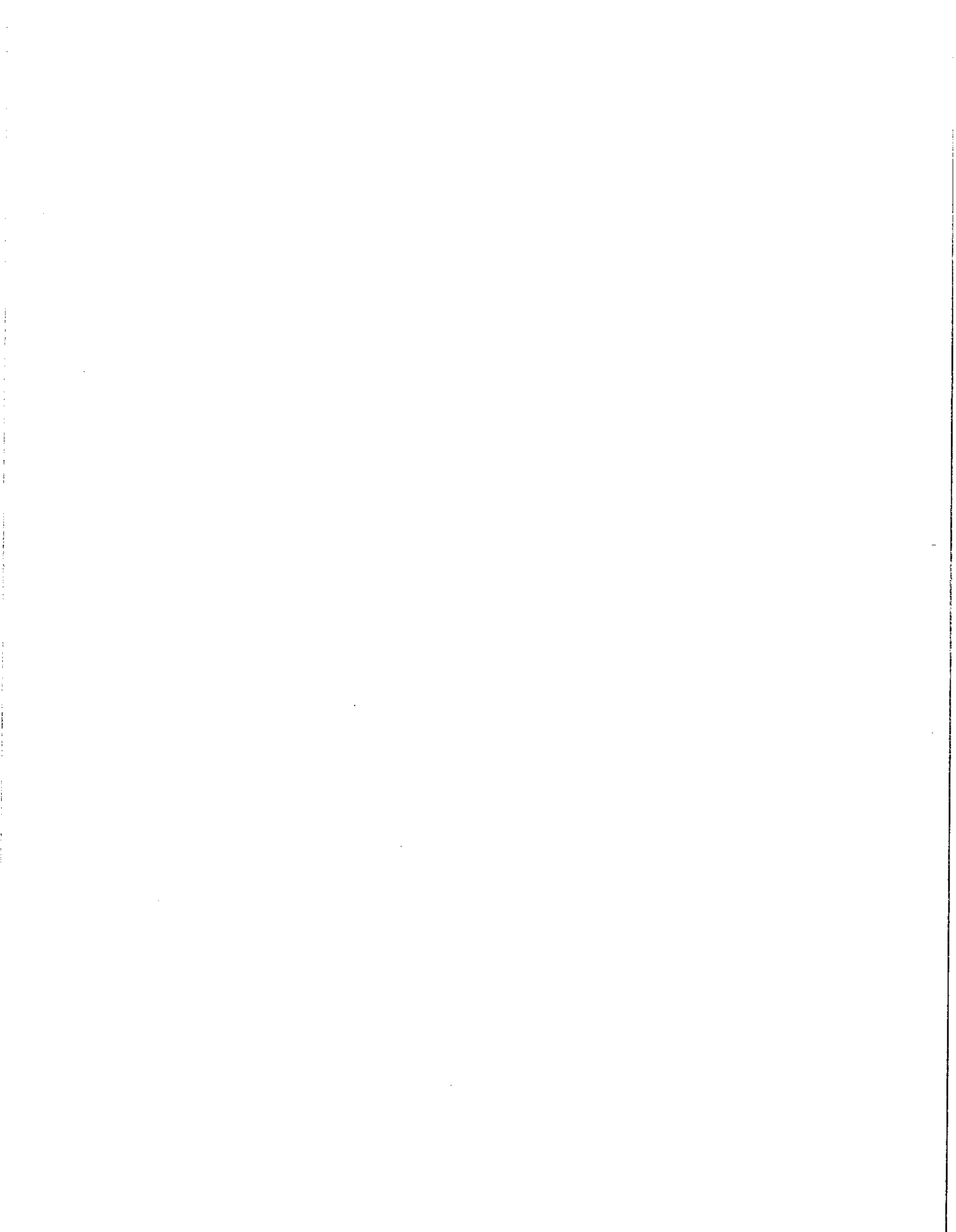
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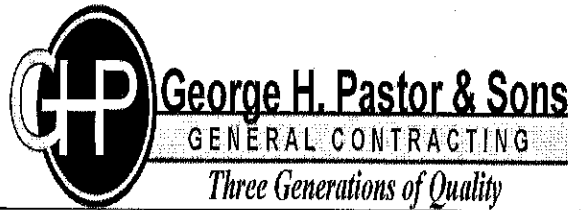
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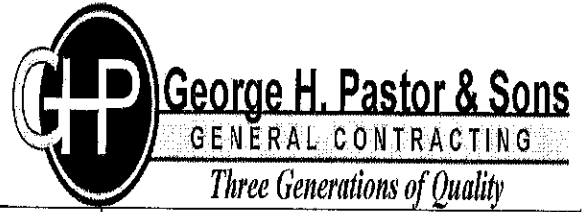
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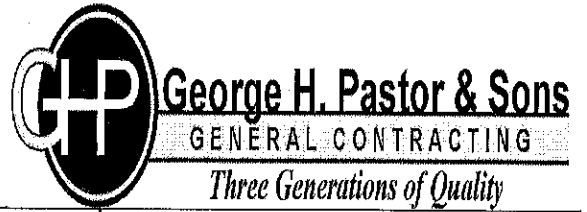
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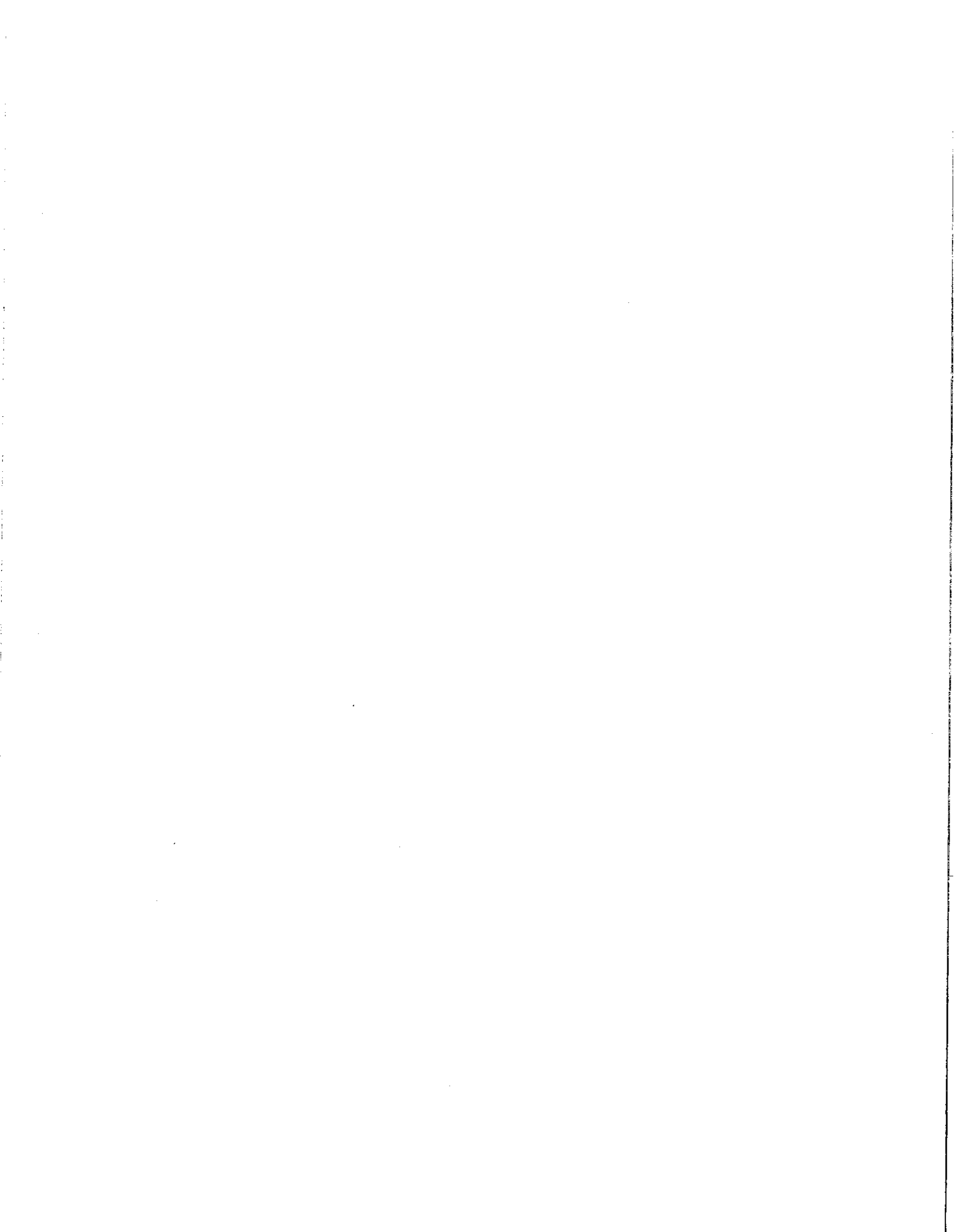
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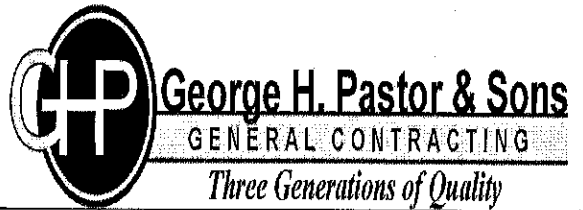
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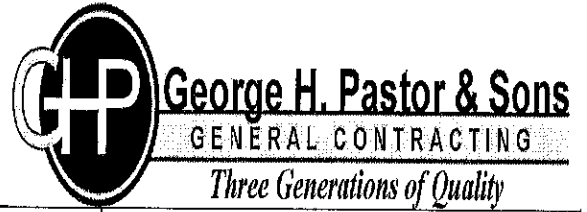
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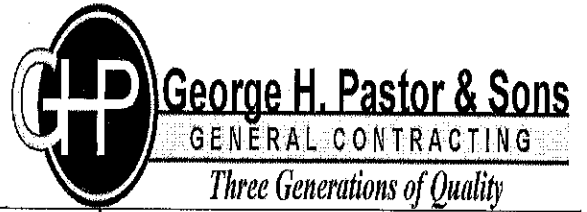
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