B2C MECHANICAL

AN EMPLOYEE OWNED COMPANY

EMPLOYEE SAFETY ORIENTATION BOOKLET

PLUMBING

SAFETY

FIRE

B2C MECHANICAL

AN EMPLOYEE OWNED COMPANY

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For the protection and safety of all employees, the Company has established the following basic rules to prevent accidents and injuries. Compliance with these rules and guidelines is mandatory, as well as compliance with any State Regulated Safety Guideline, Safety Data Sheets (SDS), (manufacturer information & instruction), State and County Health Departments, etc. The following rules and guidelines are given to all new employees, and any updates are provided to current employees.

Be aware of the hazards that lead to injury and waste and consider your own safety as well as that of your fellow employees. "Safety is Everyone's Concern and Responsibility".

All persons shall follow these safe practice rules, render every possible aid to safe operations, and report all unsafe conditions or practices to the foreman or supervisor.

1. Foremen and supervisors shall insist on all employees observing and obeying every rule, regulation, and order as is necessary to the safe conduct of the work and shall take such action as is needed to obtain observance.

2. All employees shall be given frequent accident prevention instructions and training. These are "Tailgate Safety Meetings" to be given at least every 10 working days.

3. Anyone suspected of being under the influence of drugs or intoxicating substances that impair the employee's ability to perform the assigned duties safely shall not be allowed on the job while in that condition and may be requested to obtain a drug or alcohol test.

4. All employees must sign and acknowledge the Company Drug & Alcohol Policy. Therein, the employee will agree to be tested for drugs or alcohol for cause or upon an accident or injury.

5. Report all injuries immediately so arrangements can be made for medical treatment or first aid. Even if you feel you don't need medical treatment, you must report all incidents immediately.

6. Horseplay, scuffling, and other acts, which tend to have an adverse influence on the safety or well-being of the employees, are prohibited.

7. Work shall be well planned and supervised to prevent injuries in the handling of materials and in working together with equipment. Act and perform as a team!

8. No one shall knowingly be permitted or required to work while the employee's ability or alertness is so impaired by fatigue, illness, or other causes that it might unnecessarily expose the employee or others to injury.

9. If you become ill at work and do not feel you can continue, notify your foreman that you need to go home.

10. Employees shall be instructed to ensure that all guards and other protective devices are in proper places and adjusted and shall report any deficiencies promptly to the foreman or supervisor.

11. Be aware of those around you, what they are doing, and where they are.

12. Lift properly! Lift with your legs, not your back.

    a. Face the load squarely, feet should be planted firmly about 10-12 inches apart.
    b. Assume a squatting position with knees bent and tuck your chin.
    c. Grasp with both hands, keep a straight back, and lift by straightening your legs.
    d. Lift slowly and evenly, avoid jerking, twisting, or turning,

13. If an object is too heavy, ask for help!

14. Keep work areas hazard-free, clean up scraps and trash; do not leave tools, materials, or other objects on the ground which might cause others to trip and fall.

15. Walk carefully while on slippery or angled surfaces, areas with trenches, slopes, and in general, all areas of the job site.

16. Work boots are required and have "tread soles." Inappropriate footwear (slick bottom), or thin, badly worn soles shall not be worn.

17. When handling any hazardous materials, be sure to follow prescribed safety procedures and use the required safety equipment.

18. Employees shall clean thoroughly after handling hazardous substances and follow special instructions from authorized sources, such as packaging instructions. For additional product information, refer to the Safety Data Sheets (SDS) available from your supervisor.

19. When using any secondary containers filled by others, ensure that they are labeled as to contents and hazards before using them.

20. Use only approved containers for storage of materials, substances, or flammable liquids.

21. Use eye, ear, and hand protection when operating the following power tools: drills, saws, jackhammers, etc., unless otherwise specified by the manufacturer.

22. Secure all ladders, both when in use and when loaded onto work trucks. Ladder work shall be so arranged that employees can face the ladder and use both hands while climbing.

23. Gasoline shall not be used for cleaning purposes.

24. Report all unsafe conditions! Either to your foreman or supervisor, or by means of the "Safety Suggestion Form," available from your supervisor or the office. Remember, your safety and that of your co-workers depend on your being careful and reporting all unsafe conditions (even those of other subcontractors or the owners). Employees are to stop work if unsafe conditions exist.

25. Housekeeping (jobsite keeping) is one of the first rules of a good accident prevention program. Keep operations, equipment, tools, supplies, etc., in a neat and orderly arrangement.
26. Keep first aid supplies in a sanitary and useable condition, and readily accessible.

27. A minimum of two (2) employees is required to lift and/or move, but not limited to the following items:

    a. Water heater
    b. Gas/rough fab bundles
    c. Backwater vault boxes
    d. Loading/unloading full bundles of copper
    e. Tubs
    f. Mules (pipe machine)
    g. Cast iron kitchen sinks
    h. Hooking up compressors (jackhammers) to a vehicle

28. Anytime a load is too big or awkward, ask a fellow employee or supervisor for help when lifting.

29. Operating machinery with all guards in place. Tampering with safety devices such as skill saw guards or chain saw chain guards is cause for immediate disciplinary action.

30. Hard hats are required during all top out work where exposure to falling objects such as unfinished ceilings, framing, roofing, and scaffolding is present.

31. Extension ladders must extend 3 feet over the leading edge and be secured from movement.

32. Protruding nails immediately pulled from forms and scrap wood.

33. Work areas kept dry and free from electrical and slip hazards.

34. Fire extinguisher equipment is located within the immediate area.

35. Stop work-All employees are empowered to stop work if unsafe conditions or actions are identified.

36. Employees working at grade or at the same surface as exposed protruding reinforcing steel or other similar projections shall be protected against the hazard of impalement by guarding all exposed ends that extend up to 6 feet above grade or other work surfaces, with protective covers, or troughs.

Code of Safe Work Practices

Plumbing, and Fire Division
Section 3

Use of Tools and Equipment

1. Do not operate any power tools, machinery, or equipment unless you have been trained to do so.
2. Do not watch an arc welder.
3. All tools and equipment shall be maintained in good condition.
4. Damaged tools or equipment shall be removed from service and tagged "DEFECTIVE".
5. Pipe wrenches (also known as Stillson wrench) shall not be used as a substitute for other wrenches. Only appropriate tools shall be used for the job.
6. Wrenches shall not be altered by the addition of handle extensions or "cheaters."
7. Files shall be equipped with handles and not used to punch or pry.
8. A screwdriver shall not be used as a chisel.
9. Portable electric tools shall not be lifted or lowered by means of the power cord. Ropes shall be used.
10. Electric cords shall not be exposed to damage from vehicles driving over them.
11. Hand tools are the property of each truck. The person and crew assigned to the truck are responsible for these tools.
12. Keep tools clean. Do not leave tools scattered around where you or others could trip on them or break them.
13. All electric tools must be properly grounded.
14. Guards on all tools must be kept in proper operating conditions at all times.
15. Lock out/Tag out-never operate any power equipment that is locked out/tag out.

Machinery and Vehicles

1. Only trained and authorized persons shall operate machinery or equipment.
2. Loose or frayed clothing, or long hair, dangling ties, finger rings, etc., shall not be worn around moving machinery or other sources of entanglement.

3. Shut off machinery when being serviced, repaired, or adjusted while in operation, nor shall oiling of moving parts be attempted, except on equipment that is designed or fitted with safeguards to protect the person performing the work.

4. Where appropriate, lock-out tag-out procedures will be used.

5. All equipment operators will wear seat belts and ear protection.

6. Do not attempt to get on or off a moving piece of equipment.

7. Always settle cutting edges of blades, dozers, buckets, booms, etc. to the ground before leaving equipment for any reason.

8. Smoking or using open-flame devices is prohibited around flammable liquids, gases, and any and all equipment that use them.

9. Fire extinguishers should be placed in a conspicuous and accessible location. (Usually behind the seat of each work truck.)

10. Employees shall not work under vehicles supported by jacks or chain hoists, without protective blocking that will prevent injury if jacks or hoists should fail.

11. Air hoses shall not be disconnected at compressors until hose line has been bled.

12. All excavations shall be visually inspected before backfilling, to ensure that it is safe to backfill.

13. Excavating equipment shall not be operated near tops of cuts, banks, and cliffs if employees are working below.

14. Tractors, bulldozers, scrapers, and carryalls shall not operate where there is the possibility of overturning in dangerous areas like edges of deep fills, cut banks, and steep slopes. Keep equipment away from edges of banks or slopes!

15. When loading where there is a probability of sliding or movement, the wheels or treads of loading equipment should be turned in the direction which will facilitate escape and avoid danger.

Hand & Portable Power Tools

1. All hand-held powered drills, fastener drivers, grinders with wheels greater than 2" diameter, disc sanders, belt sanders, reciprocating saws, sabre saws, and similar power tools are equipped with a momentary off/on control and may have a lock-on control provided that turn off can be accomplished with a single motion of the same finger or fingers that turns it on.

2. All other hand-held power tools, such as circular saws, chain saws, and percussion tools with positive accessory holding means, are equipped with a constant pressure switch that will shut off power when the pressure is released.

3. Electrical cords are not used for hoisting or lowering tools.

4. All worn or damaged tools are promptly repaired or replaced.

5. All electrically powered tools shall be properly grounded.

6. Gasoline-powered tools are used in well-ventilated areas only.

7. Do not wear gloves when operating power tools that have exposed rotary or moving parts. Gloves can easily become caught in spinning shafts, belts, chains, drill bits, or other moving components, pulling hands into the machine and causing severe injury.

8. Never reach into or near moving parts without shutting the machine down.

9. Lock out and disconnect power before adjusting or making repairs.

10. Keep machine guards in place and ensure they are in good condition.

11. Always wear safety glasses or goggles to protect against flying debris.

12. Use earplugs or earmuffs for high-noise tools.

Ladders

1. ALWAYS follow the manufacturer's recommendations for proper use.

2. Inspect ladders before each use.

3. Wear shoes with slip-resistant soles, clean mud, and other slippery substances off your shoes/ladder rungs before climbing the ladder. Tie, block, or otherwise secure the ladder to prevent it from being displaced.

4. When climbing and descending on ladders always face the ladder and keep 3 alternate contact points (two feet and one hand or two hands and one foot).

5. Ladders are not to be used as platforms or scaffold supports.

6. Only use extension ladders to access and come down from elevated landings and work surfaces. Extend the ladder used for access at least 36 inches above the elevated landing or work surface.

7. DO NOT use damaged or defective ladders or ladders inappropriate for the specific job.

8. NEVER take your extension ladder apart and ALWAYS use your ladder in the way it was intended or seek an appropriate alternative.

9. When moving an extension ladder always retract the "fly" section(s).

10. Portable ladders are equipped with non-skid safety feet and need to be placed on a stable base.

11. Make sure the hinges on stepladders are fully open and locked.

12. Store ladders to protect them from weathering effects.

Forklifts

1. Only company-trained and certified employees can operate a power industrial truck (forklift).
2. Forklifts need to be inspected daily prior to use, or after each shift when used around the clock.
3. Make sure the load is balanced and fully secure to prevent a forklift from tipping over
4. Ensure both forks are as far under the load as possible before lifting
5. Drive with the load as low as safely possible
6. Pay attention to posted speed limits and warning signs
7. Always look in the direction you're traveling; if a load blocks the view ahead, travel in reverse
8. Steer clear of areas where forklifts are prohibited or restricted
9. Keep an eye out for signs, floor marking, and other warnings for pedestrians and forklifts
10. Use the horn at intersections and in areas where pedestrians may be present.

Grading & Excavation

1. All tractors manufactured after October 25, 1976, must be equipped with ROPS and a seatbelt.
2. Guards are in place on all moving parts on tractors, power take-offs, and other equipment.
3. Seat belts are always used when operating tractors.
4. Parking brakes are always set when leaving equipment.
5. Make sure employees do not tamper with guards.
6. No rider(s) with equipment operator unless the rider is being trained or assisting and the rider is in a safe position.
7. The equipment is clear before starting up.
8. Engines and power sources are deactivated before maintenance servicing begins.
9. Equipment is kept at least 20 feet away from power lines.
10. Vehicles are turned off before refueling.
11. No smoking during the refueling process.
12. Avoid fuel vapor inhalation during refueling.
13. Hearing protection is worn while operating equipment.
14. Walls of trenches and excavations are shored, benched, or sloped to avoid cave-ins.
15. Spoils are at least 2 feet away from the edge of any excavation.
16. Excavations have proper clearance from building foundations, retaining walls, and sidewalks.
17. Safety barricades set around excavations.
18. Call utility companies (811) before digging.
19. No person shall ride in power shovels, backhoe buckets, or other equipment not designated for that purpose.
20. Haulage and grading vehicle equipped with functioning back-up alarm

Oxyacetylene Cutting Tools

1. When using oxyacetylene torches, make sure that a multipurpose dry-chemical fire extinguisher is readily available and in working condition. It is recommended that a 10 lb. (4A.40BC) portable extinguisher be on hand.

2. When using a torch indoors, use it only in a well-ventilated place.

3. Wear welding goggles and protective clothing. Keep gloves, hands, and clothing free of oil and grease. Wear gloves to handle hot metal.

4. Avoid breathing toxic fumes like galvanized metal fumes, and some paint fumes.

5. Use welding shield for jobs on jobsites that can be seen from passersby.

6. Do not leave a burning torch unattended.

7. Cut or weld at least 5 feet away from cylinders.

8. Always use regulators; do not use oxygen or acetylene directly from cylinders. Be sure that the regulators used are of the proper design for the cylinder.

9. Use flint lights, **NOT MATCHES**, for lighting the torch.

10. Use hoses designated for oxygen and acetylene only.

11. Do not use oil on regulators, torches, fittings, or any equipment surface that may come in contact with oxygen. Be especially careful not to oil or grease oxygen fittings. These substances will ignite with a violent explosion.

12. Do not use compressed oxygen to clean off clothing, as compressed oxygen is not compressed air. Oxygen speeds up combustion, and if clothes become oxygen-soaked, they will need only a spark to burst into flames.

13. Do not breathe compressed oxygen directly from the cylinder or hose.

14. Use soap and a paintbrush to test connections for leaks.

15. Do not use acetylene at pressures higher than 15 pounds per square inch (psi). Acetylene becomes unstable and highly explosive when pressure is over 15 psi.

16. Do not cut or weld directly on gravel or concrete.

17. Keep heat, flames, and sparks away from combustibles.

18. Do not cut or weld on containers that have been used to store combustible materials unless containers have been properly cleaned and purged. Containers that fall into this category are ones that once contained nitrogen, carbon dioxide, or argon.

Air Conditioning and Refrigeration

The main safety hazards when working with air conditioning and refrigeration are Freon, electrical components, displaced oxygen levels due to large Freon leaks, and heavy components and equipment. Any hazardous condition encountered must be reported to your supervisor.

When transferring large volumes of Freon (larger than 30 lb. container) and/or working in a confined space, oxygen detectors should be used. Respiratory equipment (oxygen bottle and mask) should be readily available when working with, loading, or recovering Freon due to the hazard of phosgene gas, and odorless, green toxin.

The following steps are necessary of a major Freon leak occur:

1. Evacuate the area immediately.

2. Call 911. The Company will contact agencies requiring notification (Local Fire Authority, etc.)

3. Contact Environmental Health Services

4. Radio your supervisor to notify him/her of the situation.

EMPLOYEE ACKNOWLEDGMENT FORM
CODE OF SAFE WORK PRACTICES

I _____ (print), hereby acknowledge that I have received, read, and understand the "Code of Safe Practices" for the Company.

I agree to conform to all Company practices, rules, and regulations relating to safe work performance.

I understand that my failure to follow these safety procedures will result in disciplinary action up to and including discharge.

I further understand that:

1. It is my responsibility to report all unsafe conditions or violations of the Code of Safe Practices to my supervisor or other management personnel in order to minimize the potential of injury to my fellow workers.

2. I am encouraged to inform my immediate supervisor of any hazards at the worksite without fear of reprisal, and should my assistance create any such action or related intimidation, that I am encouraged to contact his/her supervisor or Safety Manager.

_____ _____
(Signature of Employee) (Date)

_____ _____
(Signature of Supervisor) (Date)

COPIES TO: PERSONNEL FILE & EMPLOYEE FILE

Heat Illness Prevention Plan

Section 4.4

Purpose

The purpose of this program is to ensure that all Brass2Copper Mechanical (B2C) employees working in outdoor places of employment or in other areas where environmental risk factors for heat illness are present are protected from heat illness and knowledgeable of heat illness symptoms, methods to prevent illness, and procedures to follow if symptoms occur.

References

Nevada Department of Business and Industry, Division of Industrial Relations, Occupational Safety & Health Administration

Guidance for Nevadan Business related to the Health Illness National Emphasis Program (Dated May 4, 2022)

Nevada Department of Business and Industry, Division of Industrial Relations, Occupational Safety & Health Administration

Guidance for Regulation R131-24AP: Heat Illness Prevention (Dated January 29, 2025)

Responsibilities

Responsibilities for the successful implementation of this program shall be as follows:

Managers / Supervisors

Responsible for implementing the program, including the necessary leadership, direction, enforcement, and resources to assure its effectiveness.

Safety Manager and/or Safety Coordinator

Safety managers will assist managers and supervisors by periodically auditing the employees' work environment for program effectiveness and compliance issues. They will also assist in any required corrective measures.

Employee

Employees shall report to their supervisors immediately should they encounter workplace conditions that may require them to implement all or part of this procedure.

General Requirements

Under OSHA law, employers are responsible for providing workplaces free of known safety hazards, including protecting workers from extreme heat.

1. **PROVISIONS OF WATER**

Water is a key preventive measure to minimize the risk of heat-related illnesses.

Employees shall have access to potable drinking water that meets the requirements, including, but not limited to, that it be fresh, pure, suitable, and cool, and provided to employees free of charge. The water should be as close as practicable to the areas where employees work.

Where the water supply is not plumbed or continuously supplied, water shall be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for drinking for the entire shift. Work sites may begin the shift with smaller quantities of water if they have effective procedures for replenishment during the shift, as needed to allow employees to drink one quart or more per hour without leaving the site without a water supply at any time.

Encourage frequent water consumption. “High heat” means when temperatures reach 95 degrees or above. Procedures include observing employees, closely supervising new employees, and reminding all workers to drink water.

The following procedures shall be followed to ensure access to sufficient quantities of potable drinking water.

Brass2Copper Mechanical requires each employee on a job site to have at least 2 gallons of water at the beginning of each shift.

a. The designated person will bring at least one drinking water container (5 to 10 gallons each) to the site so that at least 2 quarts per employee are available at the start of the shift. When the predicted temperature equals or exceeds 90°F, the designated person will provide enough drinking water so that each employee can drink at least 1 quart per hour and encourage them to do so.

b. The designated person will bring bags of disposable cups to the job site to ensure that enough cups are available for each worker and that they are kept clean until used.

c. As part of the Company’s Effective Replenishment Procedures, the designated person will check the water level of all containers every 30 minutes and more frequently when the temperature exceeds 95°F. When the water level within a container drops below 50%, the container will be refilled with cool water. To accomplish this task, the designated person will carry 1-2 additional 5-gallon water containers to replace water as needed.

d. When the temperature exceeds 95 degrees, the designated person will carry ice in separate containers, which will be added to the drinking water when necessary to keep it cool.

e. The designated person will check the work site and place the water as close as possible to the workers, not less than 50 feet from them. If field terrain prevents this, the designated person will bring bottled water or individual containers (in addition to disposable cups and water containers) so workers can have readily accessible drinking water.

f. The designated person will ensure that the water containers are relocated to follow along as the crew moves so that drinking water is readily accessible.

g. The designated person will be responsible for cleaning the water containers and ensuring they are kept in sanitary condition (the Company provides all necessary cleaning supplies).

h. The company will reimburse the designated person for any cost incurred in filling up their water containers as needed daily or purchasing necessary disposable cups or cleaning supplies. The Company will furnish the designated person with expense reimbursement forms and issue reimbursement checks with each payroll period (if the person has turned in the appropriate form).

i. The designated person will point out to the workers daily the location of the water coolers and remind them to drink water frequently. When the temperature exceeds or is expected to exceed

90°F, the designated person will hold a brief 'tailgate' meeting each morning to review with employees the importance of drinking water, the number and schedule of water and rest breaks, and the signs and symptoms of heat illness.

j. The designated person will use audible devices (such as whistles or air horns) to remind employees to drink water.

k. When the temperature equals or exceeds 95°F or during a heat wave, the designated person will increase the number of water breaks and remind workers throughout the work shift to drink water.

l. During employee training, frequent water drinking will be stressed.

2. **ACCESS TO SHADE AND PREVENTATIVE RECOVERY PERIOD**

Access to rest, shade, or other cooling measures is an important preventive step to minimize the risk of heat-related illnesses.

Employees suffering from heat illness or believing a preventative recovery period is needed shall be provided access to shade that is either open to the air or provided with ventilation or cooling for at least five minutes. Such access to shade shall always be available.

a. Whenever acceptable sources of shade, such as houses, construction trailers, storage bins or trees, are not readily available and within a 2.5 minute walk away from the workers, the designated person will bring at least one canopy or other portable shade structure to the site, to accommodate at least 25 percent of the employees on the shift and either chairs, benches, sheets, towels or any other items to allow employees to sit and rest without contacting the bare ground, and will ensure that the shade structure is open and placed within a 2.5 minute walk away from the workers when the temperature equals or exceeds 90°F When the temperature is below 90°F, the shade structure will be brought to the site and opened upon workers' request.

b. Employees can access construction trailers or other air-conditioned buildings whenever possible. The interior of a vehicle may not be used to provide shade unless the vehicle is air-conditioned, and the air conditioner is on.

c. The designated person will point out the daily location of the shade structures to the workers and allow and encourage employees to take a preventive cool-down rest in the shade whenever they need to protect themselves from overheating. Such access to shade shall always be permitted. The shade area shall be as close as practicable to where employees work

d. The designated person will ensure that the shade structures are relocated to follow along with the crew and double-check that they are as close as practical to the employees, so that access to shade is always provided.

e. The amount of shade present shall be at least enough to accommodate the number of employees on recovery or rest periods, so that they can sit in a normal posture fully in the shade without having to be in physical contact with each other.

f. Subject to the same specifications, the amount of shade present during meal periods shall be at least enough to accommodate the number of employees who remain onsite during the meal period.

g. In situations where it is unsafe to provide shade (for example, winds of more than 40 mph), the designated person will document how this determination was made and what steps will be taken to provide shade upon request.

h. The designated person is expected to know the forecast as of 5:00 p.m. the previous day and ensure that shade is present at the beginning of the shift and throughout the day whenever the predicted high equals or exceeds 90°F.

i. When the temperature exceeds or is expected to exceed 90°F, the designated person will hold a brief 'tailgate' meeting each morning to review with employees the importance of cool-down

rest in the shade, drinking water, the number and schedule of water and rest breaks and the signs and symptoms of heat illness.

j. An employee taking a preventive cool-down rest will be monitored and asked if he or she is experiencing symptoms of heat illness. The employee will be encouraged to remain in the shade and will not be ordered back to work until any signs or symptoms of heat illness have abated, but in no event less than 5 minutes in addition to the time needed to access the shade.

k. If an employee exhibits signs or reports symptoms of heat illness while taking a preventative cool-down rest or during a preventative cool-down rest period, the employer shall provide appropriate first aid or emergency response.

3. MONITORING THE WEATHER

a. Supervisors should monitor weather conditions year-round using resources such as the National Weather Service, the Weather Channel, AccuWeather, a local broadcast station, or the NIOSH Heat Safety Tool app on a cell phone or other supported device.

b. Special attention should be given to days when the National Weather Service issues heat warnings or heat advisories:

- Heat Advisory: A Heat Advisory is issued within 12 hours of the onset of extremely dangerous heat conditions. This Advisory's general rule of thumb is that the maximum heat index temperature is expected to be 100°F or higher for at least 2 days, and nighttime air temperatures will not drop below 75°F.

- Heat Wave: A heat wave is forecasted when the daily maximum temperature exceeds 95°F or when the daily maximum temperature exceeds 90°F and is 9°F or more above the maximum reached on proceeding days.

- Excessive Heat Warning: An Excessive Heat Warning is issued within 12 hours of the onset of extremely dangerous heat conditions. The general rule of thumb for this Warning is that the maximum heat index temperature is expected to be 105°F or higher for at least 2 days, and nighttime air temperatures will not drop below 75°F.

- Excessive Heat Watch: Heat watches are issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. They are used when the risk of a heat wave has increased, but their occurrence and timing are still uncertain.

- Excessive Heat Outlook: Outlooks are issued when the potential exists for an excessive heat event in the next 3-7 days. They provide information to those who need considerable lead time to prepare for the event.

c. Work scheduling and the type of work performed must respect the forecast and be modified, as necessary, to prevent heat illness. When the temperature equals or exceeds 90 degrees Fahrenheit, outdoor activities will be modified as much as reasonably feasible.

4. HANDLING A HEAT WAVE

During a heat wave or heat spike (a sudden increase in daytime temperature of 9 degrees or more), the workday will be cut short, rescheduled, or, if possible, ceased for the day.

a) If schedule modifications are not possible and workers have to work during a heat wave, the designated person will hold a tailgate meeting to reinforce heat illness prevention with emergency response procedures and review the weather forecast with the workers. In addition, the designated person will institute alternative preventive measures, such as providing workers with increased water and rest breaks, supervising workers to ensure that they stop work and take these breaks, and observing closely all workers for signs and symptoms of heat illness. A tailgate meeting will be held at the start of each workday if the heat wave persists.

b) The designated person will assign each employee a “buddy” to look for signs and symptoms of heat illness and ensure that emergency procedures are initiated when someone displays possible signs or symptoms.

5. **HIGH HEAT PROCEDURES**

The Company will observe additional preventive measures when the temperature equals or exceeds 95°F.

a. The designated person will maintain effective communication by voice, observation, or electronic means so that employees at the worksite can contact a supervisor when necessary. Suppose the designated person cannot be near the workers to observe or communicate with them. In that case, an electronic device, such as a cell phone or text messaging device, may be used for this purpose only if reception in the area is reliable.

b. The designated person will observe employees for alertness and signs and symptoms of heat illness.

c. The Company shall ensure effective employee observation/monitoring by implementing one or more of the following:

1. Supervisor or designee observation of 20 or fewer employees, or

2. Mandatory buddy system, or

3. Regular communication with the sole employee, such as by radio, cellular phone, or,

4. Other effective means of observation

a) The designated person will remind employees to drink plenty of water throughout the work shift.

b) The designated person will, on each worksite, be authorized to call emergency medical services and allow other employees to call for emergency services when no designated employee is available.

c) Pre-shift meetings before the commencement of work to review the high-heat procedures, encourage employees to drink plenty of water, and remind them of their right to rest and cool down when necessary.

6. **HEALTH RISK FACTORS AND ACCLIMATIZATION**

a. Supervisors of new employees and employees not accustomed to working in the heat must lessen the workload and intensity for the first two weeks. Acclimatization must be gradual and deliberate.

b. The acclimatization process must be appropriate and tailored to the individual employee.

c. Supervisors will remind employees before and during the work shift to pace themselves, take frequent breaks in cool shade, and to drink plenty of water.

d. Advise workers that certain medications can increase the risk of heat stress. These include:

- Amphetamines - sometimes prescribed for narcolepsy or attention deficit hyperactivity disorder (ADHD),
- Diuretics - water pills,
- Antihypertensives - blood pressure medication,
- Anticholinergics - for treatment of chronic obstructive pulmonary disease (COPD), and
- Antihistamines - allergy medications

e. Alert workers to the dangers of using illegal drugs and alcohol in hot work environments. Illegal amphetamines, such as methamphetamine, are particularly hazardous when heat stress is present.

f. Alert workers that some conditions, such as pregnancy, fever, gastrointestinal illness, heart disease, and obesity, may increase the risk of heat-related illness.

g. Encourage workers to consult a doctor or pharmacist if they have questions about whether they are at increased risk for heat-related illness because of their health conditions and/or medications.

7. EMERGENCY RESPONSE PROCEDURES

The employer shall implement effective emergency response procedures, including:

a. Ensuring that effective communication by voice, observation, or electronic means is maintained so employees at the work site can contact a supervisor or emergency medical services when necessary. An electronic device, such as a cell phone or text messaging device, may be used for this purpose only if reception in the area is reliable. If an electronic device does not provide reliable communication in the work area.

b. Responding to signs and symptoms of possible heat illness, including but not limited to first aid measures and how emergency medical services will be provided:

1. If a supervisor observes, or any employee reports any signs or symptoms of heat illness in any employee, the supervisor shall take immediate action commensurate with the severity of the illness.

2. If the signs or symptoms indicate severe heat illness (such as, but not limited to, decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior, or convulsions—See Appendix A), the employer must implement emergency response procedures.

3. An employee exhibiting signs or symptoms of heat illness shall be monitored and shall not be left alone or sent home without being offered onsite first aid and/or being provided with emergency medical services following the employer's procedures.

c. Contact emergency medical services and, if necessary, transport employees to where an emergency medical provider can reach them.

d. Ensuring emergency responders can and will be provided with clear and precise directions to the work site as needed.

e. Before assigning a crew to a particular worksite, the designated person will provide workers with a map and clear and precise directions (such as streets or road names, distinguishing features, and distances to major roads) to avoid a delay of emergency medical services.

f. Before assigning a crew to a particular worksite, the designated person will ensure that a qualified, appropriately trained, and equipped person will be available to render first aid if necessary.

g. Before the start of the shift, the designated person will determine if a language barrier is present at the site and take steps to ensure that emergency medical services can be called in an emergency.

h. All foremen and supervisors will carry cell phones or other means of communication to ensure that emergency medical services can be called and check that these are functional at the worksite before each shift.

i. When an employee shows symptoms of possible heat illness, the designated person will immediately keep the stricken employee cool and comfortable once emergency service responders have been called.

j. If a job site is in a remote area, the designated person will designate an employee or employees to physically go to the nearest road or highway where emergency responders can see them. If daylight is diminished, the designated employee(s) shall be given a reflective vest or flashlights to direct emergency personnel to the location of the worksite, which may not be visible from the road or highway.

k. During a heat wave or hot temperatures, workers will be reminded and encouraged to immediately report any signs or symptoms they are experiencing to their supervisor.

l. The Company's training for employees and supervisors will include every detail of these written emergency procedures.

8. **HANDLING SICK EMPLOYEES**

a) When an employee displays possible signs or symptoms of heat illness, the designated person and/or a trained first aid worker will check the sick employee and determine whether resting in the shade and drinking cool water will suffice or if emergency service providers need to be called. The designated person will stay with the sick worker or assign an employee or employees to stay with the ill worker until he or she has recovered and/or emergency responders arrive. Call emergency service providers if no trained first aid worker is available at the site.

b) Call emergency service providers immediately if an employee displays signs or symptoms of heat illness and does not get better after drinking cool water and resting in the shade. Signs or symptoms of heat illness include the following:

1. Dehydration, which may cause muscle cramping.

2. Incoherent speech.

3. Convulsions.

4. Red and hot face.

5. Weakness and tiredness.

6. Mental confusion.

7. Irritable or erratic behavior.

8. Heat rash, a red cluster of pimples or small blisters, often occurs on the neck, chest, groin, under the breasts, or in elbow creases. It can disrupt sleep and work performance and lead to an infection.

9. Heat cramps: painful muscle spasms in the stomach, arms, legs, and other body parts.

10. Fainting, sudden dizziness, light-headedness, or unconsciousness.

11. Heat exhaustion. Signs or symptoms of heat exhaustion include heavy sweating, painful muscle cramps, extreme weakness and/or fatigue, nausea and/or vomiting, dizziness and/or headache, body temperature normal or slightly high, fainting, pulse fast and weak, breathing fast and shallow, and clammy, pale, cool, and/or moist skin.

12. Heatstroke. Signs or symptoms of heatstroke include no sweating (because the body cannot release heat or cool down), mental confusion, delirium, convulsions or dizziness; hot and dry skin, uncontrollable muscle twitching, rapid and weak pulse, throbbing headache, shallow breathing, seizures, unconsciousness and coma.

While the ambulance is in route, initiate first aid, cool the worker, place him or her in the shade, remove excess layers of clothing, place an ice pack in the armpits and joint area, and fan the employee. Do not let a sick worker leave the site, as he or she can get lost or die (when not being transported by ambulance and treatment has not been started by paramedics) before reaching a hospital!

C. If an employee does not look OK and displays signs or symptoms of severe heat illness (loss of consciousness, incoherent speech, convulsions, red and hot face, heat exhaustion, or heatstroke), and the worksite is located more than 20 minutes from a hospital, call emergency service providers, communicate the signs and symptoms of the sick employee, and request an Air Ambulance.

9. **TRAINING**

Employees

1. Employees who work in outdoor places or in other areas where environmental risk factors for heat illness are present shall receive training in the following topics:

d. Environmental and personal risk factors for heat illness.

e. Procedures for identifying, evaluating, and controlling exposure to environmental risk factors for heat illness.

f. The importance of frequent consumption of hydrating fluids, e.g., up to 1 quart (4 cups of water) per hour, when environmental risk factors for heat illness are present. Particularly when an employee is excessively sweating during the exposure.

g. The importance of acclimatization.

h. Different types of heat illness and the common signs and symptoms of heat illness.

i. The importance of immediately reporting symptoms or signs of heat illness, in themselves or co-workers, to their supervisor.

j. Understanding the procedures for contacting emergency medical services in the event of severe heat illness and, if necessary, for transporting employees to a point where emergency medical services can reach them.

k. Procedures for ensuring that, in an emergency, clear and precise directions to the work site can and will be provided to emergency responders.

Supervisors

1. Supervisors of employees who work in outdoor places or in other areas where environmental risk factors for heat illness are present shall receive training on the following topics:

a. The training information required of the employees, detailed above.

b. Procedures supervisors are to follow to implement the provisions of this program.

c. Procedures the supervisor shall follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures.

10. **APPENDICES**

Appendix A – Symptoms of Heat-Related Illnesses; Appendix B – Document Revision History

Appendix A – Symptoms of Heat-Related Illnesses

HEAT-RELATED ILLNESSES	
WHAT TO LOOK FOR	**WHAT TO DO**
HEAT STROKE = Life-Threatening Medical Emergency	
• High body temperature (103o F or higher) • Hot, red, dry, or damp skin • Fast, strong pulse • Headache • Dizziness • Nausea • Confusion, altered mental status, slurred speech • Seizures • Losing consciousness (passing out)	• Call 911 right away – heat stroke is a life- threatening medical emergency • Move the person to a cooler place • Remove unnecessary clothing, including shoes and socks • Help lower the person's temperature with cool cloths or a cool bath • Do not give the person anything to drink
HEAT EXHAUSTION (may advance to heatstroke, if not treated)	
• Heavy sweating • Cold, pale, and clammy skin • Fast, weak pulse • Nausea or vomiting • Muscle cramps • Tiredness or weakness • Dizziness or lightheadedness • Headache • Fainting (passing out)	• Move to a cool place • Loosen your clothes • Put cool, wet cloths on your body or take a cool bath • Sip water **Get medical help right away if:** • You are throwing up • Your symptoms get worse • Your symptoms last longer than 1 hour
HEAT CRAMPS	
• Heavy sweating during intense exercise • Muscle pain or spams	• Stop physical activity and move to a cool place • Drink water or a sports drink • Wait for cramps to go away before you do any more physical activity **Get medical help right away if:** • Cramps last longer than 1 hour • You're on a low-sodium diet • You have heart problems
HEAT SYNCOPE (FAINTING)	
• Fainting • Dizziness or lightheadedness	• Stop physical activity and move to a cool place • Drink water or a sports drink
HEAT RASH	
• Red clusters of small blisters that look like pimples on the skin (usually on the neck, chest, groin, or in skin folds)	• Stay in cool, dry place • Keep the rash dry • Use powder (like baby powder) to soothe the rash
SUNBURN	
• Painful, red, and warm skin • Blisters on the skin	• Stay out of the sun until your sunburn heals • Put cool cloths on sunburned areas or take a cool bath • Put moisturizing lotion on sunburned areas • Do not break blisters

Appendix B – Document Revision History

Date of Review: 6/28/2019	
Section	**Change**
All	New Document
Date of Review: 02/03/2025	
Section	**Change**
6	Added guidance for health risk factors
Date of Review:	
Section	**Change**

Emergency Action Plan

Section 3.1

Purpose

To establish and implement requirements associated with the safe evacuation of all employees from the work environment during an emergency.

References

OSHA 1926.35, 1910.38

Responsibilities

Managers / Supervisors

Shall be responsible for the implementation of the program including, the necessary leadership, direction, enforcement, and resources that will assure the program's effectiveness.

Safety Manager

Shall assist Managers and Supervisors by auditing the employees work environment for compliance issues and then will assist in the correction effort. This individual will conduct training for employees.

Employees

Shall have read and understand their responsibilities with respect to reporting emergencies, responding to emergency notifications, and evacuating to their required designated location.

Owner Requirements

An owner, client, or general contractor may require the Company to follow the provisions of a site specific Emergency Action Plan as a contractual requirement or site condition. In such instances, we shall follow the provisions of such plan incorporating these minimum requirements.

Escape Procedures

Emergency Action Plan

Section 3.1

Escape procedures will be the same for all company locations. First and foremost, it's your responsibility to get all the available fire escape information about the location you are in. Take note of the nearest exit near you, and make sure it is unobstructed and unlocked. Make sure that there is sufficient fire protection, as automated sprinklers and or fire extinguishers. If you have guests, vendors, equipment suppliers, technicians, maintenance personal, or any other persons inform them about the escape plan, and ensure they know the appropriate escape routes from every room while they are visiting.

Physically challenged employees will be assigned an employee to assist them in the evacuation of the building. Managers are responsible for assigning an employee to provide assistance in the event of an emergency.

At the first sign of danger, calmly stop what you are doing, evacuate the area in a calm and orderly fashion using the designated escape route, and proceed to your pre-determined meeting area.

Critical Plant Operations

Critical Plant Operations are considered an operation that will add dangerous elements to an emergency or will cause additional damage to the plant after an emergency has been contained and controlled or has passed.

Management will work with the Fire Department to delegate the shut down of any Critical Plant Operations.

Employee Accountability

Management will take a local count at their designated meeting area to determine if any persons are missing from. The employee count will be used as an accountability check, incase of an emergency.

Rescue and Medical

Fire Department

Emergency Action Plan

Section 3.1

In the event of an emergency, follow sitespecific emergency procedures. If the situation is life threatening, call 911 first, then contact your supervisor or manager to alert them to the situation and take the proper evacuation actions as laid out in the Emergency Action Plan. Remember that no fire is too small to call the Fire Department.

Hazardous Materials

Upon learning about the hazardous material spill, follow site-specific procedures. If there is not a site-specific procedure, dial 911 for immediate assistance. The Fire Department will assess the severity of the situation and help determine if more assistance is needed.

Contact to Explain Duties

In the event that a person or persons needs further information, an explanation of their duties under the Emergency Action Plan or the need for general help, the Safety Manager can be contacted or refer to *Appendix A*, entitled Emergency Contact Information.

Notification System

The employee notification system provides warning for necessary emergency action and proper reaction time for safe escape of employees from workplace or the immediate work area.

The employee notification system shall be at a high enough decibel level to be perceived above any ambient noise.

In the case of a Fire, Explosion, or Chemical Spill, the sounded notification will be distinctive and recognizable as a signal to employees to evacuate the building in the manner laid out in the Emergency Action Plan.

In the case of a Tornado or Severe Weather, after the distinctive and recognizable notification, the weather severity will be announced so the employees will be able to take the proper actions as laid out in the Emergency Action Plan.

Evacuation

Emergency Action Plan

Section 3.1

In the case of a Fire, Explosion, or Chemical Spill, the escape procedures listed in the Emergency Action Plan shall be followed to evacuate all employees and have them retreat to their designated meeting area.

In the case of a Tornado or Severe Weather, the escape procedures listed in the Emergency Action Plan shall be followed to ensure proper sheltering for all employees. Following set escape routes, employees shall meet in their designated shelter location.

Training

The Emergency Action Plan shall be reviewed with each employee covered by the plan at the following times:

1. Initially when the Emergency Action Plan is developed,
2. When a person is hired after the implementation date of the Emergency Action Plan,
3. Whenever the employee's responsibilities or designated actions under the Emergency Action Plan change, and
4. Whenever the Emergency Action Plan is changed.

Appendices

Appendix A – Emergency Contact Information

Emergency Contact Information
Appendix A

Emergency Action Plan

Section 3.1

Contact List	Phone Number	Cell Number

Public Service	Emergency	Non-Emergency
Fire Department	9-1-1	
Police Department	9-1-1	

Hospitals/Clinics

Ambulance/Medical Transport	Emergency	Non-Emergency
POISON Control		1-800-222-1222

After Hours Contact List

HOW TO RESPOND TO A 911 EMERGENCY SITUATION

YOU CAN HELP SAVE A LIFE

- Knowing what to do if a co-worker is injured or suddenly becomes seriously ill can make the difference between life and death
- This is especially important on job sites
- When responding to an emergency, it's critical that you:
  -Do not panic
  -Take control of the situation
  -Reassure the person if they are conscious
  -Know how to call 911
  -Act quickly to help the person until emergency medical personnel arrive

ASSESSING AN ACCIDENT SITUATION

1. Immediately determine whether you or the injured person is in any additional danger.
2. Don't move an injured person unless he is in immediate danger. Moving an injured person can result in further broken bones, paralysis, or even death.

CALLING FOR EMERGENCY HELP

1. If anyone is nearby, have that person call for emergency medical help while you stay with the victim.
2. If you are alone with the person and he is breathing, call 911, then return to the scene. Let the person know that medical help is coming, and instruct him not to move.
3. If the person isn't breathing and you have been trained in CPR, immediately call 911 and administer CPR.
4. When calling, the 911 operator will ask you:
   A. Your name, the telephone number from which you are calling.
   B. Information on the nature of the emergency
   C. Specific instructions on how to get to the victim.
5. While you're on the phone, have someone go out to the cross streets to meet emergency personnel and direct them to the location of the victim.

WHAT TO DO UNTIL HELP ARRIVES

1. Keep the person as still and comfortable as possible
2. If you've had First Aid training, use whatever items are in your first aid kit that may be needed.
3. Call your supervisor or manager immediately.

Fire Prevention Plan (FPP)

Section 6

Purpose

This Fire Prevention Plan (FPP) is in place at this company to control and reduce the possibility of fire and to specify the type of equipment to use in case of fire. This plan addresses the following issues:

1. Major workplace fire hazards and proper handling and storage procedures for hazardous materials.

2. Potential ignition sources and their control.

3. The type of fire protection equipment necessary to control each major hazard.

4. Procedures to control accumulations of flammable and combustible waste materials.

The plan is closely tied to the Emergency Action Plan where procedures are described for emergency evacuation procedures and exit route assignments, procedures to account for all employees after emergency evacuation has been completed, and rescue and medical duties for those employees who perform them. Please see the Emergency Action Plan for this information.

References

OSHA 1926.150; 1910.38 & 1910.155

Responsibilities

Managers / Supervisors

Shall be responsible for the implementation of the program including, the necessary leadership, direction, enforcement, and resources that will assure the program's effectiveness.

Safety Managers

Shall assist Managers and Supervisors by auditing the employees work environment for compliance issues and then will assist in the correction effort. This individual will conduct training for employees.

Employees

Shall have read and understand their responsibilities with respect to fire prevention in the work environment.

Fire Prevention Plan (FPP)

Section 6

Fire Hazards

Fire can be represented by a simple equation: Fire = Ignition Source + Fuel + Oxygen. Without any one of these three elements, a fire cannot start. Likewise, during a fire, if you take away any one of these three elements, you can successfully put out a fire. It is the company's intent to prevent these three elements from reacting to produce a fire.

Fire prevention measures involving proper handling and storage of hazardous materials include:

1. Objects shall be stacked orderly and solidly, floors or shelves shall not be overloaded.
2. Materials stored indoors shall not be placed at least 36 inches below sprinkler deflectors.
3. Breakables and heavy objects shall be stored on low shelves. Objects shall not be hung over shelves causing a falling object hazard.
4. Fire extinguishers, electricals, vents, or exits shall not be blocked.
5. Flammables and combustibles shall be separated by their properties.
6. Corrosives shall be stored away from flammables.
7. Flammables shall be stored in approved containers.
8. Combustible material stored outside shall be piled no higher than 20 feet.
9. Report leaks of flammables or combustibles to your supervisor immediately upon observation.
10. Eating or smoking around flammables and combustibles is prohibited
11. Properly dispose of unneeded flammables and combustible.
12. When a flammable is spilled, clean up with approved spill supplies
13. Filling gas cans on a pick-up bed is prohibited.

Prevent the accumulation of flammable and combustible waste materials.

1. Oil soaked rags must be in self-closing metal containers and emptied on a daily basis.
2. Limit inventory of flammable and combustible materials to the minimum.

3. Substitute a less hazardous substance when possible.

4. A fire watch shall be available to sound an alarm or operate a fire extinguisher.

Potential Ignition Sources

Flammable or combustible materials and other fuel sources may not ignite on their own without an external source of ignition. Typical ignition sources involve heat. A number of ignition sources can be found in industry: electrical, heating, and welding / cutting equipment; open flames; sparks; smoking; hot surfaces like boilers and furnaces; hot substances like molten metal; sparks and static; friction; and bombs and arson. Other ignition sources include lightning, static, spontaneous ignition, heat-producing chemical reactions, and radiant heat.

Fire Protection Equipment

The National Fire Protection Association (NFPA) has classified fires into four types:

1. Class A - this common fire involves ordinary materials like wood, paper, rubber, and plastics. The extinguishing agent is water or dry chemicals.

2. Class B - flammable liquids, gases, and greases make up this class and the extinguishing agent is carbon dioxide or dry chemicals.

3. Class C - is an electrical fire. Carbon dioxide or dry chemicals extinguish this fire.

4. Class D - this fire is caused by combustible metals. Special techniques rather than fire extinguishers put this fire out.

Use the appropriate fire extinguisher only on fires for which that fire extinguisher is designed. Using the wrong agent on a fire may increase the intensity of the fire.

Normally, 20lb. ABC fire extinguishers shall be provided on each project. All extinguishers shall be conspicuously located. Each extinguisher will be subject to a monthly visual inspection by a Company employee and inspected annually by a certified fire extinguisher inspection service, or when they have been discharged or damaged.

A minimum of one 20 lb. ABC extinguisher shall be located within 35 ft. of all hot work operation and / or heat-producing equipment. A minimum of one 5 lb. ABC extinguisher shall be located in the cab and / or operator station of all cranes and any trucks over 10,000 lbs.

Other types of fire protection equipment or systems can be broken into four categories:

1. Portable fire suppression equipment including standpipe and hose systems.

2. Fixed fire suppression equipment including: automatic sprinkler systems and fixed extinguishing systems.

3. Fire detection systems.

4. Employee alarm systems including: manual pull box alarms, public address systems, radio, or telephone.

Maintenance of Equipment/Systems

Manufacturer's recommendations should be followed to assure proper maintenance procedures. Fire extinguishers require maintenance, testing, and monthly visual inspections. In many cases, a qualified contractor performs the actual servicing, maintenance, and testing on alarm systems, fire diction systems, and fixed fire suppression equipment.

Housekeeping Procedures

The company controls accumulations of flammable and combustible waste materials and residues so that they do not contribute to a fire. The following procedures have been developed to eliminate or minimize the risk of fire due to improperly stored or disposed of materials.

1. Storing oily rags in specially designed containers.

2. Keeping the floors free of paper or saw dust.

3. Storing all flammables in fire cabinets when not in use.

4. Limiting inventory of flammable and combustible materials to the minimum of the processes.

5. Substitute a less hazardous substance when possible.

6. Electrical wiring and equipment maintenance.

7. Sweeping up combustibles before welding.

8. Having a fire watch is available to sound an alarm or operate a fire extinguisher.

9. Accumulations are removed from the workplace on a daily (24-hour) basis.

Fire Prevention Plan (FPP)

Section 6

Fire Protection Equipment

The Supervisor provides training for each employee who is required to use fire protection equipment. Employees shall not use fire protection equipment without appropriate training.Training,before an individual is assigned responsibility to fight a fire, includes:

1. Types of fires.
2. Types of fire prevention equipment.
3. Location of fire prevention equipment.
4. How to use fire prevention equipment.
5. Limitations of fire prevention equipment.
6. Proper care and maintenance of assigned fire prevention equipment.

Employees must demonstrate an understanding of the training and the ability to use the equipment properly before they are allowed to perform work requiring the use of the equipment.

If the Supervisor has reason to believe an employee does not have the understanding or skill required the employee must be retrained. The Supervisor certifies in writing that the employee has received and understands the fire protection equipment training.

Training

Fire Prevention Plan

At the time of a fire, employees should know what type of evacuation is necessary and what their role is in carrying out the plan. In cases where the fire is large, total and immediate evacuation of all employees is necessary. In smaller fires, a partial evacuation of nonessential employees with a delayed evacuation of others may be necessary for continued operation.

Training, conducted on initial assignment, includes:

1. Fire hazards to which an employee is exposed.
2. What to do if employee discovers a fire.

3. Demonstration of alarm, if more than one type exists.
4. How to recognize fire exits.
5. Evacuation routes.
6. Assisting employees with disabilities.
7. Measures to contain fire.
8. Head count procedures (see EAP for details).
9. Return to building after the "all-clear" signal.

SAFE PRACTICE GUIDELINES FOR TORCH BRAZING

PURPOSE

The purpose of this document is to provide checklists of safe practice guidelines for Torch Brazing operations for the prevention and protection of personnel from injuries and illnesses and the protection of equipment and property.

SCOPE

This document describes safe practices for Torch Brazing operations and is for use as a reference by brazing personnel before, during and after brazing operations are performed.

BEFORE BRAZING OPERATIONS

This section provides a checklist with steps that need to be performed prior to Torch Brazing operations to ensure personnel and equipment safety.

Hot Work Authorization

Prior to Torch Brazing in a location not designated for such purpose, inspection and authorization by a designated management representative shall be required.

Use Personal Protective Equipment (PPE)

Appropriate protective clothing for Torch Brazing should provide sufficient coverage and minimize the risk of ignition, burning and radiation. Cotton clothing should be chemically treated, as required, to reduce combustibility (e.g. treated with fire retardant). Leather is also acceptable.
Sleeves, collars and pockets must be kept buttoned. Pants and shirt cuffs should be eliminated. All clothing should be free of grease or oil and ragged edges.

The following must be worn for Torch Brazing Operations:

- ✓ Welding cap
- ✓ Hard hat
- ✓ Goggles or safety glasses with filter lenses of shade number 3 or 4
- ✓ Flame resistant welding jacket or apron
- ✓ Heat-resistant gloves in good condition, dry, free from oil or grease
- ✓ Ear plugs
- ✓ Respirator* (when applicable)
- ✓ Flame resistant pants
- ✓ Safety toe workbooks

Respiratory protection may be needed for heating plated or coated material, or when there is inadequate ventilation. Refer to OSHA 29 CFR, Section 1910.134. Respiratory Protection Standard and ANSI Z88.2 American National Standard for Respiratory Protection.

Verify Work Environment is Safe

Torch Brazing equipment should be operated only in areas free of conditions or materials that could be hazardous to the operator or others. Prior to starting Torch Brazing operations, personnel must inspect the work area to ensure it is safe and free of hazards.

Identify hazards in the work area (e.g. spills, confined spaces, unventilated areas, improperly stored equipment, objects that may cause injury, etc.)
Read precautionary labels or signs to be aware of hazards
Move away from hazards, if possible
Ensure additional protective equipment is available (fire blankets, fire extinguishers, water hose or buckets)
If exposure to combustible materials exist within 35 feet of Torch Brazing operations, designate a fire watch.
Ensure adequate ventilation is available
Verify locked out, tagged out procedure is in place to prevent inadvertent operation of machinery while brazing
Identify escape routes and keep them clear

Confined spaces: If Torch Brazing operations will be performed in a confined space, the space must be tested and determined not to present an oxygen deficient or oxygen enriched atmosphere, a hazard of fire or explosion, or an atmosphere hazardous to life, and a trained second person equipped for rescue must be present outside the confined space at all times.

Verify Equipment is Safe for Use

All equipment must be maintained and operated according to the manufacturer's instructions and the standard ANSI Z49.1 Safety in Welding, Cutting and Allied Processes. Prior to using the equipment, personnel must verify it is in suitable condition for use.

1. Verify that brazing equipment, high pressure cylinders, hoses, and other apparatus are placed ergonomically safe so as not to present a hazard to personnel in the work area.

2. Verify gas cylinders are secured or located where they are not likely to be knocked over or struck by falling objects.

3. Verify cylinders, valves, couplings, regulators, hoses and apparatus are free from oil, grease and other flammable or explosive substances.

4. Verify gas cylinders are away from anything that can be used for grounding electrical circuits.

5. Verify LPG and Acetylene cylinders are secured vertically, with valve end up.

6. Verify Compressed Gas cylinders have the protective cap in place at all times, except when in use or connected and ready for use*
7. Verify Acetylene cylinders are not depleted below 50 PSI.

8. Verify cylinders are placed away from excessive heat or open flames.

9. Remove damaged or defective cylinders from the work area

10. Check equipment tags. If equipment has been tagged for maintenance, check with appropriate personnel prior to use as it may not be in suitable working conditions

11. Inspect hoses for any visible damage If damaged hoses, place a tag and move them away from the work area

12. Purge hoses before lighting as they main contain explosive mixture of residual gasses

13. Test for leaks from regulator to cylinder connection all the way to hose to torch connection, including torch valves. Use an approved oil-free leak detection fluid or with a soap mixture only if approved leak detection fluid is not readily available

14. Verify torch tips are not clogged or restricted as this may cause flashback

15. Verify flashback arrestors are in place

- *Short gas cylinders (2ft or less) do not have protective caps.*

DURING BRAZING OPERATIONS

This section provides a checklist with steps that need to be performed at the start, during and at the end of Torch Brazing, to ensure personnel and equipment safety.

Starting brazing:

1. Verify filler metal is clean, dry and readily accessible

2. Use an approved torch for brazing

3. Use an approved lighter for lighting oxyfuel gas torch

Setting regulators and lighting the torch:

1. Stand to the side of the cylinder valves and regulators and open the oxygen gas valve 1/8 turn and hold until pressure is indicated on the regulator gauge and the needle on the gauge stops moving.

2. Then open the oxygen cylinder valve completely

3. Open oxygen valve at the torch 1/4 turn

4. Adjust the regulator to required working pressure and purge the line.

5. Close the oxygen valve at the torch.

6. Stand to the side of the cylinder valves and regulators and open the fuel gas valve, maximum 1-1/2 turns.

7. Open fuel gas valve at the torch 1/8 to 1/4 turn.

8. Adjust the regulator and purge the line.

9. Ignite the gas with an approved lighter.

10. Continue to open the fuel valve slowly until the flame is about to leave the end of the tip and all heavy carbon soot has cleared.

11. Open the oxygen valve at the torch until a neutral flame has been set

During brazing:

1. Stay aware of your surroundings.

2. Watch residual torch flames at all times, as it could affect surroundings

At the end:

1. Close fuel gas torch valve first.

2. Close oxygen torch valve second.

3. Set torch down in an area clear of any potential fire hazards (i.e. any items that could melt or go on fire as the torch tip is still hot).

4. Cylinder valves must be closed once all brazing operations have been completed, or prior to moving to a different location (see Section V)

AFTER BRAZING OPERATIONS

This section provides a checklist with steps that need to be performed after all brazing operations have been completed (i.e. end of shift), to ensure personnel and equipment safety.

Equipment shutdown sequence:

1. Close fuel gas cylinder valve

2. Close oxygen cylinder valve
3. Open fuel gas valve at torch to bleed the line
4. Watch the fuel gauge pressure drop to zero
5. Close the fuel gas valve at the torch
6. Screw out fuel regulator handle or knob to release tension on internal parts
7. Open oxygen valve at torch to bleed the line
8. Watch the oxygen gauge pressure drop to zero
9. Close the oxygen valve at the torch
10. Screw out fuel regulator handle or knob to release tension on internal parts
11. Verify cylinders are properly secured in the upright position
12. Verify equipment has not been damaged during brazing operations
13. Tag and remove damaged equipment from service
14. Report to supervisor for repairs

Equipment Storage and Handling:

1. If cylinders are not on a cylinder cart designed for gas cylinders, before moving the cylinders, remove regulators and install protective cap.
2. If storing empty cylinders, segregate fuel gas cylinders and oxygen cylinders minimum 20 ft. separation required or block wall.
3. Designate empty cylinders with a tag or mark.
4. Verify cylinder valves are closed.
5. Verify gas composition sticker is visible.
6. Verify storage area is properly labeled with non-smoking signs and other precautionary labels.
7. Verify storage area is away from radiators and sources of heat.
8. For storage areas inside buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20 feet from highly combustible materials such as oil or excelsior, away from elevators, stairs or gangways.

REFERENCES

ANSI Z49.1:2012 Safety in Welding, Cutting and Allied Processes
OSHA 29 CFR 1910.253 Oxygen-fuel Gas Welding and Cutting
AWS C4.3/C4.3M:2018 Recommended Practices for Oxyfuel Gas Heating Torch Operation
AWS Brazing Handbook, Fifth Edition

Excavation / Trenching

Section 15

Purpose

The Company has developed the following policy and associated safe work practices for the protection of employees, the employees of others, and company assets.

References

OSHA 1926.650

Responsibilities

Managers / Supervisors

Shall ensure that excavation and trenching work performed by employees and subcontractors under their control is in accordance with the provisions of this program. Managers / Supervisors, or their designee, shall serve as the competent person while employees work in or adjacent to an excavation / trench. This individual shall also be responsible for:

1. Holding a pre-entry orientation for all employees.

2. Identifying and understanding the scope of work.

3. Recognizing anticipated hazards and implement controls as applicable.

4. Assuring that emergency procedures have been established for the work.

Safety Manager

Shall assist Managers and Supervisors by providing applicable employee training, technical assistance, and other resources. The Safety Manager shall also periodically audit projects to ensure that the program is being followed. This individual shall communicate any deficiencies to the Job Superintendent at the time of observation and establish corrective action immediately.

Employee

Shall be responsible for understanding their responsibilities with respect to this program and accountable for their workplace actions.

Definitions

Excavation / Trenching

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Accepted Engineering Practices

Procedures compatible with the standards of practice required of a registered professional engineer.

Benching

A method of protecting employees from cave-ins by excavating the sides of an excavation to form a series of horizontal levels or steps, usually with vertical or near vertical sides surfaces between levels. Benching is only allowed in Type A or B soils.

Competent Person

An individual who is capable of identifying existing and predictable hazards or working conditions that are hazardous, dangerous to employees, and whom has the authorization to take prompt corrective measures to eliminate or control hazards and conditions.

Confined Space

Is a space that, by design and / or configuration has limited openings for entry and exit, unfavorable natural ventilation, may contain, or produce hazardous substance, and is not intended for continuous employee occupancy.

Excavation

An **Excavation** is a man-made cut, cavity, trench, or depression in an earth surface that is formed by earth removal. A **Trench** is a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth of a trench is greater than its width, and the width (measured at the bottom) is not greater than 15 ft. If a form or other structure installed or constructed in an excavation reduces the distance between the form and the side of the excavation to 15 ft. or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.

Hazardous atmosphere

An atmosphere that by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic or otherwise harmful and capable of causing death, illness, or injury to persons exposed to it.

Ingress and Egress

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Defines “entry” and “exit”, respectively. In trenching and excavation operations, they refer to the provision of safe means for employees to enter or exit an excavation or trench.

Protective System

Refers to the method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, and from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems capable of providing the required protection.

Registered Professional Engineer

An individual who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer who is registered in any state is deemed to be a “registered professional engineer” within the meaning of OSHA‘s Subpart P when approving designs for “manufactured protective systems” or “tabulated data” to be used in interstate commerce.

Shield System

Refers to a structure that is able to withstand the forces imposed on it by a cave-in and thereby protect personnel within the structure. Shields can be permanent structures or can be portable and moved along as the work progresses. Shields used in trenches are usually referred to as “trench boxes”.

Shoring System

Refers to structures such as hydraulic, mechanical, or timber shoring systems that support the sides of an excavation or trench.

Sloping System

A method of protecting employees from cave-ins by excavating the sides of an excavation at varying angles away from the excavation dependant upon the soil type, environmental conditions of exposure, and the application of surcharge loads.

Surcharge Loads

Additional loading placed on or adjacent to the top of an excavation sidewall. Examples of such loads are those imposed by backhoes, cranes, other vehicle traffic, and excavated soil (spoils).

Support System

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Refers to structures such as underpinning, bracing, and shoring that provide support to an adjacent structure or underground installation or to the sides of an excavation or trench.

Surcharge

Means an excessive vertical load or weight caused by a spoil, overburden, vehicles, equipment, or activities that may affect trench stability.

Tabulated Data

Tables and charts approved by a registered professional engineer and used to design and construct a protective system.

Underground Installations

Include, but are not limited to, utilities (sewer, telephone, fuel, electric, water, and other product lines), tunnels, shafts, vaults, foundations, and other underground fixtures or equipment that may be encountered during excavation or trenching work.

General Requirements

Underground Installations

1. For excavation or trench work at an Owner's facilities, the Superintendent or their designee shall coordinate the work by:

    a. Contacting the Owner's representative at least 24 hours in advance of the work.

    b. Contact Digger's Hotline directly, or through Owner's Representative at least 24 hours in advance of the scheduled work, or as local ordinances require otherwise.

    c. Request and maintain a copy or document the reference I.D. number provided by the issuing agency for the excavation or trench.

    d. Arrange for the Owner's Representative to assist in locating and isolating energy sources prior to digging.

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2. For excavation or trench work in a Right of Way or on public or municipal property, the Superintendent or their designee shall coordinate such work by:

    a. Contact Digger's Hotline directly at least 24 hours in advance of the scheduled work, or as local ordinances require otherwise.

    b. Request and maintain a copy or document the reference I.D. number provided by the issuing agency for the excavation or trench.

    c. Assist utility companies and other applicable personnel by communicating the scope and duration of the work.

    d. Excavation or trench work that proceeds without a response from a representative from a utility owner shall only be performed if:

        i. Electronic detection equipment is utilized to locate underground installations, and
        ii. The excavation or trench work is performed manually (hand-digging) for locating the exact position for a buried obstacle.

3. For open excavations, the Superintendent or their designee shall assure:

    a. Underground systems or lines are protected, supported, or removed to protect employees entering excavations.

    b. Energized lines and / or systems are structurally protected from physical damage due to the excavation, work process, or backfilling operations.

Employees **shall never** disconnect, sever, or disengage a Utility Owner's line or system. This includes abandoned lines or systems as well. If a line or system is to be taken out of service or removed from service, the Utility:

4. Owner or their designee shall take such action.

5. Utility Owner's use specific color codes to delineate various types of underground utilities. Those color codes, as identified by the American Public Works Association (APWA) is provided in *Appendix A* of this section for referral.

6. An Excavation Permit, shown as *Appendix B* of this policy, shall be completed prior to all excavation or trenching activities by the superintendent or their designee. It shall serve as a guide to safely create the excavation or trench & to satisfactorily protect employees, equipment and other assets while work is being completed. A new permit should be completed whenever conditions change.

Access and Egress

Trench excavations greater than 4 ft. in depth require a means of access and egress through the use of:

1. Stairways

2. Ladders, or

3. Ramps

If structural ramps are to be used as an access and egress method, they shall be designed and constructed in accordance with specifications issued and signed by a registered professional engineer. Regardless of the access and egress method chosen, it shall be so located as to not require more than 25 feet of lateral travel for employees.

Vehicle Traffic

Employees exposed to vehicle traffic must be provided and wear high visibility vests meeting applicable ANSI requirements.

Falling Materials

Employees are not permitted to work underneath overhead loads handled by lifting or digging equipment. Employees shall stand a safe distance away from any vehicle being loaded or unloaded to avoid being struck by spillage or falling materials.

Protective Warning Systems for Mobile Equipment, Employees and the General Public

1. When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation and the operator does not have a clear and direct view of the excavation, a warning system shall be utilized such as barricades, hand or mechanical systems, or stop logs. If possible, the adjacent grade around an excavation or trench shall be sloped away.

2. If the edge of an excavation or trench presents a fall hazard of 6' or greater to employees, employees of others, or the general public, a standard handrail system or other similar barricade shall be installed to eliminate the fall hazard.

3. Any excavation or trench that presents injury to the public and other individuals or presents an opportunity for motor vehicle damage if left open until the next shift or day, shall be protected by a barricade or other suitable method that prevents entry. In dimly lighted areas, the excavation or trench perimeter shall be outfitted with temporary lighting, which promotes high visibility. Warning signs shall also be posted periodically on the perimeter of the trench or excavation stating "Danger – Do Not Enter" or "Danger - No Unauthorized Entry".

Hazardous Atmospheres

For trenches and excavations greater than 4 ft. in depth, the following requirements shall be followed prior to employee entry:

1. Atmospheric testing shall be conducted by a competent person and documented on the Excavation Log, listed as *Appendix C* of this section. This testing shall include air monitoring for oxygen deficiency and flammable gases at a minimum.

2. Air monitoring shall be conducted more often than initial entry should work conditions change and it can be reasonable expected that air quality could change.

3. Emergency rescue equipment shall be made available immediately adjacent to the excavation or trench where hazardous atmospheric conditions exist or can be reasonably be expected to develop.

Water Accumulation Hazards

Excavations where water accumulates shall be considered as an excavation meeting the definition of Type C soil composition (See Soil Composition Section). Employees are not to enter or perform work unless adequate precautionary measures have been implemented, which can include:

1. Special support or shield systems that will prevent cave-ins.

2. Dewatering efforts such as pumps that effectively control water accumulation.

3. The use of a safety harness and lifeline.

If water is controlled or prevented from accumulating by the use of dewatering equipment, such equipment shall be monitored by a competent person to ensure proper operation.

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Where excavation interrupts the natural drainage of surface water, diversion ditches or other effective means must be used.

Adjacent Structures

Excavations below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees must not be permitted except when:

1. A support system such as underpinning is provided to ensure the safety of employees and the stability of the structure, or:

    a. The excavation is in stable rock, or

    b. A registered professional engineer has the determination that the structure is far enough away from the excavation
    activity, or

    c. A registered professional engineer has determined the excavating will not present a hazard to employees.

2. Sidewalks, pavements and other structures are not to be undermined. A support system or other method of protection must be provided to protect employees and the general public from possible collapses into the excavation.

Inspections

The competent person shall conduct daily inspections of the excavation or trench and document the results of such inspection on the Excavation Permit listed in this section. These documented inspections may be required more often than daily as conditions warrant. If the competent person finds evidence of a potential cave-in or other hazardous conditions, he shall immediately remove all exposed employees from the excavation until the situation has been corrected.

Spoils

All excavated earth (spoil) must be placed no closer than 2 ft. from the surface edge of the excavation, measured from the nearest base of the spoil to the cut. This distance should not be measured from the

crown of the spoil deposit. The distance requirement ensures that loose rock or soil from the temporary spoil will not fall on employees in the trench.

Soil Classification

OSHA categorizes soil and rock deposits into four types; Stable Rock and Types A through C. These categories, by definition, are listed below:

Stable Rock

Is natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed. It is usually defined by a rock name such as granite or sandstone. Determining whether a deposit of this type may be difficult unless it is known whether cracks exist and whether or not the cracks into or away from the excavation.

Type A Soils

Cohesive soils with an unconfined compressive strength of 1.5 tons per square foot or greater. Examples of Type A cohesive soils are often clay, silty clay, sandy clay, clay loam, and, in some cases, silty clay loam and sandy clay loam. (No soil is Type A if it is fissured, is subject to vibration of any type, has been previously disturbed, is part of a sloped, layered system where the layers dip the excavation on a slope of 4 horizontal to 1 vertical (4H:1V) or greater, or has seeping water.

Type B Soils

Cohesive soils with an unconfined compressive strength greater than .5 tsf; or granular cohesionless soils including: angular gravel, silt, silt loam; previously disturbed soils unless otherwise classified as Type C soils that meet the unconfined compressive strength or cementation requirements of Type A soils but are fissured or subject to vibration; dry unstable rock, or; material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V), but only if the material would otherwise be classified as Type B.

Type C Soils

Cohesive soils with an unconfined compressive strength of .5 tsf or less. Examples of Type C soils include granular soils such as gravel, sand and loamy sand, submerged soil, soil from which water is freely seeping, and submerged rock that is not stable. Also included in this classification is material in a sloped, layered system where the layers dip into the excavation or have a slope of four horizontal to one vertical (4H:1V) or greater.

Excavation / Trenching

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Methods of Evaluating Soil Type (Visual and Manual)

The competent person shall determine the soil type prior to the installation of an excavation or trench protective system. The following visual and manual tests to determine soil composition are considered acceptable as defined by OSHA 1926.652, which defines visual and manual tests as:

Visual Tests

Visual analysis is conducted to determine qualitative information regarding the excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil taken as samples from excavated material. The visual test process includes:

1. Observing samples of the soil excavated and the soil in the sides of the excavation. Estimating the range of particle sizes and the relative amounts of the particle sizes. Soil that is primarily composed of coarse grain sand or gravel is considered granular material.

2. Observing the site of the opened excavation and the surrounding area. Crack-like openings could indicate fissured soil, as would chunks of spalling (chipping) off a vertical side. Small spalls are evidence of moving ground and are indications of potentially hazardous conditions.
3. Observing soil as it is excavated. Soil that breaks up easily and does not stay in clumps is considered granular.

4. Observing the area within and adjacent to the excavation to identify evidence of underground structures and previously undisturbed soil.

5. Observing the area within and adjacent to the excavation to identify layered systems. Examine layered systems to determine whether the layers slope toward the excavation. Estimate the degree of slope of the layers.

6. Observing the sides and the area adjacent to the excavation for surface water or ground water, or the location of the water table.

7. Observing the area within and adjacent to the excavation for sources of vibration that may effect the stability of the excavation face.

Manual Tests

There are three common types of manual tests used to classify soil composition, which are as follows:

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1. Plasticity Test,

2. Dry Strength Test, and

3. Thumb Penetration Test

Each test is described below:

Plasticity Test

1. Mold a moist or wet ball of the soil into a ball.

2. Attempt to roll it into threads as thin as 1/8“ in diameter. Cohesive soil can be rolled successfully into threads without crumbling. For example, if at least a 2” length thread can be held on one end without tearing, the soil is cohesive.

Dry Strength Test

1. If the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it is granular.

2. If the soil is dry and falls into clumps which break into smaller clumps, but the smaller clumps can only be broken up with difficulty, it may be clay in any combination with gravel, sand or silt.

3. If the dry soil breaks into clumps which do not break up into small clumps and which only can be broken up with difficulty, and there is no visual indication the soil is fissured, the soil may be considered unfissured.

Thumb Penetration Test

1. Type A soils with an unconfined compressive strength of 1.5 tsf can be readily indented by the thumb, however, they can only be penetrated by the thumb with very great effort.

2. Type B soils with an unconfined compressive strength greater than .5 tsf, but less than 1.5 tsf may be indented by the thumb and molded with moderate force.

3. Type C soils with an unconfined compressive strength .5 tsf or less can be easily penetrated by the thumb and can be molded by light finger pressure.

4. If a pocket penetrometer is used, all other tests must still be completed due to occasional erroneous readings from hard, dry soil samples.

Protective Systems

Every employee in an excavation shall be protected from cave-ins by an adequate protective system, unless:

1. The excavation is made entirely in stable rock; or

2. Excavations are less than 5 ft. in depth and examination by a competent person provides no indication of a potential cave-in. 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.

Protective systems consist of one, and in some instances, a combination of the following:

1. Sloping

2. Benching

3. Shoring, such as timber or metal

4. Shielding, such as a trenchbox

All sloping of excavations shall be performed in accordance with Table 16-1, which illustrates the sloping requirements for each soil type, if this is the protection method chosen:

Table 16-1, Maximum Allowable Slopes

Soil or Rock Type	Maximum Allowable Slopes (H:V)[1] for Excavations Less thank 20 Feet Deep[3]
Stable Rock	Vertical (90 Deg.)
Type A[2]	¾: 1 (53 Deg.)
Type B	1:1 (45 Deg.)
Type C	1 ½:1 (34 Deg.)

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1. Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal.
   Angles have been rounded off.

2. A short-term maximum allowable slope of ½H:1V (63 degrees) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be ¾H:1V (53 degrees).

3. Sloping or benching for excavations greater than 20 feet depth shall be designed by a registered professional engineer.

Appendix D of this section, entitled Slope Configurations, provides specific details for various configurations of sloping, benching, and shielding of an excavation or trench. It shall be used as the minimum requirements for the design and implementation of a protective system for an excavation or trench. If a sloping, benching, or shielding system, or a combination of any of the above, shall be used utilizing other tabulated data outside of the requirements, identified in *Appendix C*, it shall be designed and approved by a registered professional engineer. A signed copy of such protective system shall be maintained at the job site. All shoring and shielding protective systems designed and approved by a registered professional engineer shall be signed and maintained at the job site. If the Company rents, leases, or purchases a manufactured shoring or shield system, it shall be installed accordance to the manufacturer's specifications and recommendations. A copy of the manufacturer's specifications, recommendations, and limitations shall be maintained at the job-site and available for review.

Subcontractors

Subcontractors shall have a written excavation and trenching program that meets or exceeds the provisions established in this section. If a subcontractor does not have such a program, they shall not perform any work until they adopt the Company program and have received training on the contents including responsibilities and expectations.

Training

All applicable employees shall receive training on the contents of this program upon new hire and annually thereafter. Re-training shall be conducted if an unsafe behavior or practice is observed or an observation reveals that an employee clearly does not understand the provisions of this program.

Excavation / Trenching

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Appendices

Appendix A – APWA Uniform Color Code

Appendix B – Excavation Permit

Appendix C – Daily Excavation Log

Appendix D – Slope Configurations

STRETCHING & FLEX PROGRAM

BENEFITS OF STRETCHING

Make stretching a part of your daily routine.

STRETCHING INCREASES FLEXIBILITY.

Flexible muscle can improve your daily performance. Tasks such as lifting packages and bending to tie your shoes become easier and less tiring.

STRETCHING IMPROVES THE RANGE OF MOTION OF YOUR JOINTS.

A good range of motion keeps you in better balance, which will help keep you mobile and less prone to injury from falls – especially as you age.

STRETCHING IMPROVES CIRCULATION.

Stretching increases blood flow to you muscles. Improved circulation can speed recovery after muscle injuries.

STRETCHING CAN PROMOTE BETTER POSTURE.

Frequent stretching keeps your muscle from getting tight, allowing you to maintain proper posture and minimize aches and pains.

STRETCHING MAY HELP PREVENT INJURY.

Preparing your muscles and joints for activity can protect you from injury, especially if your muscles or joints are tight.

Make stretching a part of your daily routine!

STRETCHING & FLEX PROGRAM

STRETCHING ESSENTIALS

Walking Warm-up: Perform 1 – 3 minutes of walking in place or brisk walking, then stop and begin the stretching routine. If walking in a heavy traffic area, be aware of moving equipment. This exercise may not be appropriate for some individuals with back, leg, foot, or hip problems.

TARGET MAJOR MUSCLE GROUPS.

When you're stretching, focus on your calves, thighs, hips, lower back, neck and shoulders. Also, stretch muscles and joints that you routinely use at work or play.

WARM UP FIRST.

Stretching muscles when they're cold increases your risk of injury, including pulled muscles. Warm up by walking while gently pumping your arms.

HOLD EACH STRETCH FOR A MINIMUM OF 15-30 SECONDS.

It takes time to lengthen tissues safely. Hold your stretches for at least 15-30 seconds and up to 60 seconds for additional flexibility. That can seem like a long time, so keep an eye on your watch. Then repeat the stretch on the other side.

DON'T BOUNCE.

Bouncing as you stretch can cause small tears in the muscle. These tears can leave scar tissue as the muscle heals, which tightens the muscle even further – making you less flexible and more prone to pain.

FOCUS ON A PAIN-FREE STRETCH.

Expect to feel tension while you're stretching. If it hurts, you've gone too far. Back off to the point where you don't feel any pain, then hold the stretch.

RELAX AND BREATHE FREELY.

Don't hold your breath while you're stretching

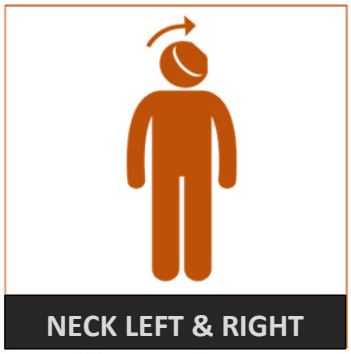
B2C MECHANICAL
AN EMPLOYEE OWNED COMPANY

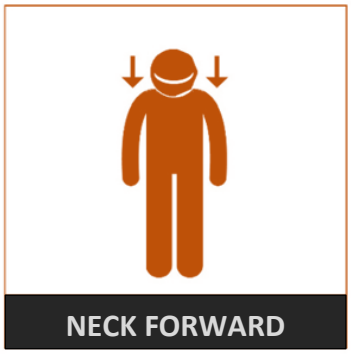
STRETCHING & FLEX PROGRAM

STRETCH

Take time to stretch every day!

Do these stretches regularly to reduce fatigue & avoid injury:


NECK LEFT & RIGHT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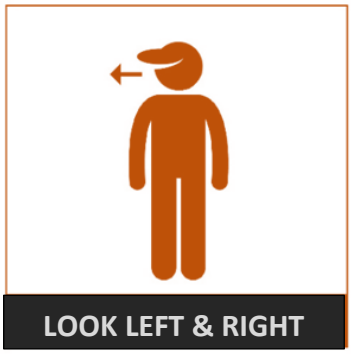
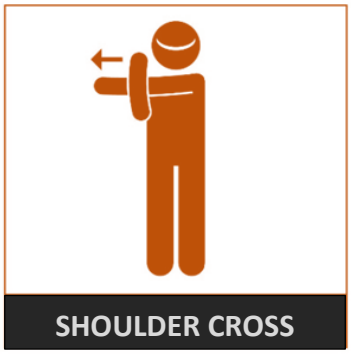

LOOK LEFT & RIGHT

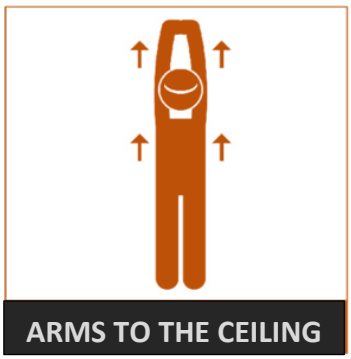

SHOULDER CROSS


ELBOW BEHIND HEAD


ARMS TO THE SIDE


QUAD & FLEXOR


CALF STRETCH


ARMS TO THE CEILING

Fall Prevention and Protection

Section 13

Purpose

The Company has developed the following Fall Prevention and Protection Program to protect all company personnel from falls and fall exposures. All employees working on Company projects or in production facilities and exposed to falls of 6 feet or greater shall be protected from falls through engineering, administrative, or personal protective equipment controls.

References

29 CFR 1926.501, 1926.106

Responsibilities

Managers / Supervisors

Shall be responsible for the implementation of the program including, the necessary leadership, direction, enforcement, and resources that will assure the program's effectiveness.

Safety Manager

Shall assist Mangers and Supervisors by providing training, resources, and technical assistance in support of this program. In addition, they shall also periodically audit projects and production facilities to assure these rules have been implemented and enforced.

Employee

Shall be responsible for inspecting and utilizing fall protection equipment when they are exposed to a fall or fall hazard, six feet or greater, above or adjacent to a walking or working surface. Employees shall be responsible for observing these rules and accountable for their workplace actions.

Project Pre-Planning

The key to this Fall Prevention and Protection Program is in the evaluation of anticipated tasks for fall hazards and exposures. This evaluation shall be done by a competent person trained in the recognition of fall hazards. Whenever feasible, they shall research the implementation of a suitable or otherwise feasible engineering control to eliminate the fall hazard when such hazard exists. If no such fall prevention system is feasible, this individual(s) shall implement a fall protection system that will satisfactorily safeguard any employee that may be exposed to the fall hazard. For the purposes of this policy, Fall Prevention and Fall Protection Systems are defined as follows:

Fall Prevention and Protection

Section 13

Fall Prevention

Elimination of falls of 6 feet or greater during all phases of applicable work tasks by means of implementing permanent or semi-permanent floors, walls, stairways, scaffolding platforms, guardrail systems, aerial lifts, etc.

Fall Protection

Selecting and installing a fall protection system to eliminate falls of 6 feet or greater by means of an approved personal fall protection system or equipment when a fall prevention system cannot be implemented.

Walking / Work Surface Fall Protection Requirements

Any employee who is working or walking on a surface (horizontal or vertical) 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 a guard rail system, safety net, or personal fall arrest system. These surfaces include, but are not limited to:

1. Unprotected sides and edges,
2. Ramps, runways, and other walkways,
3. Roof work, low and steep slope roofs,
4. Hoist bays,
5. Excavations,
6. Pre-cast concrete sections,
7. Holes and pits,
8. Dangerous and elevated equipment,
9. Formwork and reinforcing steel,
10. Overhead bricklaying,
11. Wall openings.

Fall Prevention and Protection

Section 13

General Requirements for Fall Protection

At least one of or a combination of the following fall protection systems shall be used at heights greater than 6' (or less if conditions warrant):

1. Guardrail systems
2. Warning line systems
3. Personal fall arrest system
4. Safety net system
5. Safety monitoring system
6. Fall Protection Plan

The Manager / Supervisor shall ensure that all employees have received training for the type of fall protection they will be utilizing. They shall also determine if the walking or working surface has sufficient strength and or structural integrity for the loads imposed or for anchorage connection applications. This individual or their designee, upon procurement of personal protective equipment and / or systems shall assure that it conforms to all applicable ANSI / ASTM Standards.

Dangerous Equipment

Each employee working less than 6 feet above dangerous equipment shall be protected from falling into or onto dangerous equipment by a guardrail system or by equipment guards.

Each employee working 6 feet or more above dangerous equipment shall be protected from fall hazards by a guardrail system, personal fall arrest system, or safety net system.

Guardrail System Requirements

1. Guardrails shall have a top edge member at 42 inches (plus or minus 3 inches) above a walking working surface.
2. Midrails shall be installed at a height midway between the top edge of the guardrail system and the walking working level (approximately 21 inches).

3. Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 lbs. applied within 2 inches of the top edge of the rail in any outward or downward direction.

4. Guardrail systems shall be surface to prevent injuries from punctures, lacerations, or snagging of clothing. Ends of top and midrails are not to overhang past the terminal post except when by doing so does not constitute a projection hazard.

5. Steel or plastic banding, manila, or synthetic rope shall not be used as top or midrail construction materials.

6. Guardrail systems at holes are to be erected on all unprotected sides or edges. Guardrail systems used at hoisting areas require a gate or removable section placed across the access opening when hoisting operations are not taking place.

7. Guardrail systems placed at points of access, such as ladderways, are to be provided with a gate or offset so a person cannot walk directly into the hole.

8. Top and midrails must be a minimum of at least ¼ inch nominal diameter or thickness to prevent cuts or lacerations.

9. Wire rope top rails are to be flagged with a high visibility material at no more than 6 feet intervals.

Specific Guardrail Construction Material Requirements

Wood Railings

1. Posts shall be of at least 2 inch by 4 inch stock with spacing no greater than 8 foot centers.

2. The top rail must be no less than 2 inch by 4 inch stock.

3. The mid rail must be no less than 1 inch by 6 inch stock.

Pipe Railings

1. Posts and top and mid rails shall be at least 1-½ inch diameter.

2. Posts spaced not more than 8 feet on center.

Structural Steel Railings

1. Posts and top and midrails shall be of 2 inches by 3/8 inch angle stock.

2. Posts spaced not to exceed 8 feet on center.

Wire Rope Railings

1. Top and midrails are to be a minimum of 3/8 inch diameter and smooth to prevent any laceration or snagging of clothing.

2. Deflection is not to exceed 3 inches in any direction.

3. Ends of wire rope are to be looped and appropriately secured with 3 wire rope fasteners.

Toe Boards

1. Are to be of nominal 4-inch wood width or 4 inches minimum in vertical height from top edge to the level of the floor.

2. Securely fastened in place and have not more than ¼ inch clearance above floor level.

3. Shall be made of a substantial material, either solid or with opening not to exceed over 1 inch in greatest dimension.

Wire Rope Perimeter Guard Rails

1. A safety railing of ½ inch wire rope shall be installed at approximately 42 inches high, around all temporary-planked or temporary metal-decked floors of tier buildings and other multi-floored structures during structural steel assembly.

2. All turn back connections shall be affixed with 3 wire rope fasteners.

3. Once the permanent floor is in place, mid cables and toe boards shall be added.

Warning Line Systems

Warning line systems are barriers erected on a roof to warn employees they are approaching an unprotected side or edge and delineates an area where roofing work may take place without the use of a guardrail or personal fall arrest system.

When used, warning line systems shall comply with the following requirements:

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1. Erect warning lines around all sides of the roof work area.

2. Warning lines shall be erected not less than 6 feet from the roof edge.

3. When mechanical equipment is being used, the warning line shall be placed not less than 6 feet from the roof edge which is parallel to the direction of the mechanical equipment operation, and not less than 10 feet from the roof edge perpendicular to the direction of mechanical equipment operation.

4. Points of access, material handling, storage areas, and hoisting areas are to be connected to the work area by an access path formed by two warning lines. When not in use, a rope, wire, chain, or other barricade, equivalent in strength and height to the warning line, is to be placed across the path at the point where the path intersects the warning line erected around the work area, or the path is to be offset so a person cannot walk directly into the work area.

Warning line construction specifications shall consist of:

1. Rope, wire, or chain flagged at not more than 6 foot intervals with high-visibility material.

2. Lowest point of the warning line is not less than 34 inches and no higher than 39 inches from the walking / working surface.

3. Stanchions are capable of resisting, with lines attached, a force of at least 16 lbs. applied horizontally without tipping over.

4. Rope, wire, or chain shall have a minimum tensile strength of at least 500 lbs.
5. Lines attached at each stanchion are to be constructed so that pulling on one section of line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

Low and Steep Sloped Roof Work

For the purposes of this policy, a low sloped roof is that of a 4 to 12 pitch or less. A steep sloped roof is that of a greater than 4 to 12 pitch. The requirements for each type are listed as follows:

Low Sloped Roofs

Employees working on this type of surface and exposed to unprotected sides and edges 6 feet or more above a lower level shall be protected by:

1. Guardrail systems.

2. Personal fall arrest systems.

3. Combination of a warning line system and guardrail, personal fall arrest system, or a safety monitoring system.

4. Safety monitoring systems can only be used on roofs 50 feet or less in width.

Steep Sloped Roofs

Employees working on this type of surface and exposed to unprotected sides and edges 6 feet or more above a lower level shall be protected by:

1. Guardrail systems with toe boards.

2. Personal fall protection.

Floor, Roof, and Hole Openings

Floor, roof, and hole openings shall be affixed with covers that meet the following requirements:

1. Any hole 2 inches or greater in least dimension in a floor, roof, or other walking / working surface shall be protected with a cover. The cover must be capable of supporting, without failure, at least twice the maximum intended load.

2. Covers located in roadways and vehicular aisles shall be capable of supporting, without failure, at least twice the maximum axle load of the largest vehicle expected to cross over the cover.

3. All other covers shall be capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed at any time.

4. Covers shall be secured to prevent accidental displacement.

5. Covers are to be marked with the word “hole” or “cover” to provide warning of the hazard.

Personal Fall Arrest System Requirements

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When engineering controls or other feasible fall prevention systems cannot be implemented to eliminate fall exposures, the Company will provide suitable fall arrest systems and / or personal protective equipment to protect employees from fall hazards of 6 feet or greater.

The requirements for personal fall arrest systems and / or equipment are as follows:

1. When personal fall arrest systems are utilized, 100% tie-off shall be maintained at all times.

2. Employees will be required to utilize full body harnesses as part of the fall arrest system. D-rings shall have a minimum tensile strength of 5,000 lbs.

3. Lanyards and vertical lifelines must have a minimum breaking strength of 5,000 lbs. Snap hooks are to be of the locking type and used only in conjunction with a full body harness attached at the D-ring located in the center of the employee's back.

4. When vertical lifelines are used, each employee is to be attached to separate lifeline that is protected from being cut or damaged.
5. All personal fall arrest systems are to be used only for employee protection and no other purpose.

6. Anchorages for attachment of personal fall arrest equipment must be capable of supporting a minimum of 5,000 lbs. per employee.

7. Personal fall arrest systems, when stopping a fall, shall:

    a. Limit maximum arresting force on an employee to 1,800 lbs. when used with a full body harness.

    b. Be rigged so an employee cannot free fall more than 6 feet, nor come into contact with a lower level.

    c. Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3 feet 6 inches.

8. Personal fall arrest systems and components subjected to impact loading shall be removed from service and not used again, unless inspected and determined by a competent person to be undamaged and suitable for reuse.

9. A means of retrieval / rescue must be available in the event of a fall.

10. Personal fall arrest systems may not be attached to guard rail systems. When used adjacent to hoisting areas, they shall be rigged so the person can only go as far as the edge of the walking / working surface to eliminate the hazard (fall restraint).

11. All equipment used in the personal fall arrest system(s) shall be inspected prior to use for wear, damage, and other deterioration.

Controlled Access Zones (CAZ)

If used, the Company shall conform to the following provisions:

1. Erect and maintain control lines to restrict access to leading edges with fall exposures of 6 feet or greater.

2. When control lines are used, they shall be erected not less than 6 feet nor more than 25 feet from the unprotected or leading edge.

3. The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected edge.

4. The control line shall be connected on each side to a guard rail system or wall.

5. Control lines shall consist of ropes, wires, tapes, or equivalent materials and support stanchions as follows:

    a. Each line shall be flagged or otherwise clearly marked at not more than 6 feet intervals with a high visibility material.

    b. Each line shall be rigged and supported in such a way that its lowest point is not less than 39 inches nor more than 45 inches from the walking / working surface.

    c. Each line shall have a minimum breaking strength of 200 lbs.

* These requirements are not inclusive of specific rules for overhand bricklaying operations.

Safety Monitoring Systems

If used, the Company shall designate a competent person to monitor the safety of all applicable employees. This safety monitor shall:

1. Be competent to recognize fall hazards.

2. Warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner.

3. Be located on the same walking / working surface and within visual distance of the employee(s) being monitored.
4. Be positioned close enough to communicate orally with employee(s).

5. Not have other responsibilities which could take the monitor's attention from the monitoring function.

Mechanical equipment shall not be stored in areas where safety monitoring systems are being used to monitor employees engaged in roofing operations on low-sloped roofs.

No employee, other than an employee engaged in roofing work (on low-sloped roofs) or an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.

Each employee working in a (CAZ) shall be directed to promptly comply with fall hazard warnings from safety monitors.

Working Over or Near Water

Employees working over or near water, where the danger of drowning exists, shall be provided with Coast Guard approved life preservers.

Prior to and after each use, the life preservers shall be inspected for defects that would alter their strength or buoyancy.

Ring buoys with at least 90 feet of line shall be provided and be readily available for emergency rescue operation. The distance between ring buoys shall not exceed 200 feet.

At least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water.

Training

Each employee who will be exposed to a fall hazard is to be trained by a competent person. The training shall address the fall prevention and protection systems available for use, recognition of fall hazards, and instruction on how to minimize such hazard. All employees shall receive fall prevention and protection training upon new hire, as applicable.

Retraining shall be conducted whenever there is a change in the work environment warranting such training, change in the types of fall protection systems and / or equipment being used, or when the employee(s) demonstrate a lack of comprehension, understanding, or proficiency with fall prevention and protection systems or equipment. All fall prevention and protection training shall be documented to include:

the name of the employee trained, date of the training, and the signature of the instructor conducting such training.

Stairways and Ladders

Section 17

Purpose

The Company has developed the following policy for the construction, when applicable, and safe use of stairways and ladders for all projects and fixed facilities.

References

OSHA 1926.1050, 1910.27

Responsibilities

Managers / Supervisors

Shall be responsible for the implementation of the program including, the necessary leadership, direction, enforcement, and resources that will assure the program's effectiveness.

Safety Manager

Shall assist Managers and Supervisors by providing employee training, resources, or technical information with respect to this program.

Employees

Shall be responsible for understanding all applicable aspects of this program, utilize safe work practices associated with stairways and ladders, and be accountable for their workplace actions.

General Requirements

1. A stairway or ladder shall be provided at all personnel points of access where there is a break in elevation of 19 inches or more, and no ramp, runway, sloped embankment or personal hoist is provided.

2. Employees shall not use any spiral stairway that will not be a permanent part of the structure on which construction work is being performed.

3. When a building or structure has only one point of access between levels, that point of access shall be kept clear to permit free passage of employees. When work must be performed or equipment must be used such that free passage at that point of access is restricted, a second point of access shall be provided and used.

4. When a building or structure has two or more points of access between levels, at least one point of access shall be kept clear to permit free passage of employees.

5. All stairway and ladder fall protection systems required by these rules must be installed and comply with all applicable requirements before employees begin work that requires them to utilize stairways or ladders and their respective fall protection systems.

Stairways

The following requirements apply to all stairways as indicated:

1. Stairways that will not be a permanent part of the structure on which construction work is being performed shall have landing of not less than 30 inches in the direction of travel and extend at least 22 inches in width at every 12 feet of vertical rise.

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

3. Riser height and tread depth shall be uniform within each flight of stairs, including any foundation structure used as one or more treads of the stairs.

4. Where doors or gates open directly on a stairway, a platform shall be provided that extends at least 20 inches beyond the swing radius of the door.

5. Metal pan landings and/or treads shall be secured in place before filling with concrete or other materials.

6. All parts of stairways shall be free of hazardous projections such as protruding nails.

7. 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 have been filled in with wood or other suitable material capable of supporting the intended loads. All treads and landings must be replaced when worn below the top edge of the pan.

8. Except during construction of the actual stairways, 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.

9. Temporary treads must be made of wood or other solid material and installed the full width and depth of the stair.

10. Slippery conditions on stairways shall be eliminated unsafe access and/or egress.

Stair Rails and Handrails

The following requirements apply to all stairways as indicated:

1. Stairways having four or more risers or rising more than 30 inches, whichever is less must have a least one handrail. A stair rail must be installed along each unprotected side or edge. When the top edge of a stair rail system also serves as a handrail, the height of the top edge must not be more than 37 inches nor less than 36 inches from the upper surface of the stair rail to the surface of the tread.

2. Winding or spiral stairways must be equipped with a handrail to prevent using areas where the tread width is less than 6 inches.

3. Mid rails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members must be provided between the top rail and stairway steps of the stair rail system.

4. Mid rails, when used, must be located midway between the top of the stair rail system and the stairway steps.

5. Screens or mesh, when used, must extend from the top rail to the stairways step and along the opening between top rail supports.
6. Intermediate vertical members, such as balusters, when used, must not be more than 19 inches apart.

7. Other intermediate structural members, when used, must be installed such that there are no openings more than 19 inches wide.

8. Handrails and the top rails of the stair rail system shall be capable of withstanding, without failure, a force of at least 200 pounds applied within 2 inches of the top edge in any downward or outward direction, at any point along the top edge.

9. The height of handrails must not be more than 37 inches nor less than 30 inches from the upper surface of the handrail to the surface of the tread.

10. Stair rail systems and handrails must be so surfaced in order to prevent injuries from punctures or lacerations, and to prevent snagging of clothing.

11. Handrails must provide an adequate handhold for employees to grasp to prevent falls.

12. The ends of stair rail systems and handrails shall be constructed so as not to constitute a projection hazard.

13. Temporary handrails must have a minimum clearance of 3 inches between the handrail and walls, stair rail systems, and other objects.

14. Unprotected sides and edges of stairway landings shall be protected with standard guard rail systems.

Fixed Ladders

Ladders that will be part of a permanent structure shall be designed and installed in accordance with the following minimum requirements:

1. The minimum design live load shall be a single concentrated load of 200 pounds. The number and position of additional concentrated live-load units of 200 pounds each as determined from anticipated usage of the ladder shall be considered in the design.

2. All ladder rungs shall have a minimum of 3/4's inch for metal ladders. The distance between rungs and cleats shall not exceed 12 inches and be uniform throughout the ladder.

3. Rungs, steps, cleats, and steps shall be free of sharp edges, splinters, burrs, or other hazardous projections.

4. Metal ladders shall be painted or otherwise treated to resist corrosion and rusting when locations subject ladders to such condition.

5. For ladders without cages or wells, a clear width of at least 15 inches shall be provided each way from centerline of the ladder, except when cages or wells are necessary.

6. The distance from the centerline of rungs, cleats, or steps to the nearest permanent object in back of the ladder shall not be less than 7 inches, except when unavoidable obstructions are encountered.

7. The distance from the centerline of the grab bar to the nearest permanent object in back of the grab bars shall not be less than 4 inches.

8. The step across distance from the nearest edge of the ladder to the nearest edge of equipment or structure shall not be more than 12 inches, or less than 2 ½ inches.

9. Cages or wells shall be provided on ladders of more than 20 feet to a maximum unbroken length of 30 feet.

10. Cages shall extend a minimum of 42 inches above the top of the landing unless other acceptable protection is provided.

11. Cages shall extend down the ladder to a point not less than 7 feet not more than 8 feet above the base of the ladder.
12. Cages shall not extend less than 27 inches nor more than 28 inches from the centerline of the rungs of the ladder. Cages shall not be less than 27 inches in width. Vertical cage bars shall be located at a maximum spacing of 9 ½ inches on center.

13. When ladders are used to ascend to heights exceeding 20 feet, except for chimneys, landing platforms shall be provided for each 30 feet of height or fraction thereof, except that, where no cage, well, or ladder safety device is provided, landing platforms shall be provided for each 20 feet of height or fraction thereof. Each ladder section shall be offset from adjacent sections.

14. All landing platforms shall be equipped with standard railings and toe boards, so arranged to give safe access to the ladder. Platforms shall not be less than 24 inches in width and 30 inches in length.

Portable Ladders

The following requirements apply to all portable ladders as indicated:

1. All self-supporting and non self-supporting ladders must be able to support four times the maximum intended load.

2. All ladders shall have visible duty ratings identified on the equipment.

3. Portable ladders shall not be tied or fastened together to create longer sections.

4. A metal spreader or locking device must be provided on each stepladder to effectively hold the front and back sections in the open position when the ladder is being used.

5. Extension ladders shall be secured at the top to an adjacent structure, at a minimum, to prevent tipping. If securing the ladder is not feasible, a co-worker shall be used to steady the ladder while it is occupied.

6. All job-made ladders, if permitted, shall be constructed in accordance with applicable OSHA requirements.

7. Ladder components shall be so surfaced to prevent injury from punctures or lacerations and to prevent snagging of clothing.

8. Wood ladders shall not be coated with any opaque coating, except for identification or warning labels, which may be placed on a side rail.

9. Ladders made of conductive materials shall not be used if electrical hazards are present.

10. The rungs and steps of ladders must be corrugated, knurled, dimpled, or coated with a skid resistant material to minimize slipping.

Ladder Usage

The following requirements apply to safe work practices when using ladders:

1. When portable ladders are used for access to an upper landing surface, the side rails must extend at least 3 feet above the upper landing surface. The ladder must be secured, and a grasping device, such as a grab rail, must be provided to assist workers in mounting and dismounting the ladder. A ladder extension must not deflect under a load that would cause the ladder to slip off its support.

2. Ladders must be maintained free of oil, grease, and other slipping hazards.

3. Ladders must not be loaded beyond the maximum intended load for which they were built, nor beyond their manufacturer's rated capacity.

4. Non-self supporting ladders must be used at an angle where the horizontal distance from the top support to the foot of the ladder is approximately one-quarter of the working length of the ladder.

5. Job-made ladders (wood) with spliced side rails must be used at an angle where the horizontal distance is one-eighth the working length of the ladder.

6. Fixed ladders must be used at a pitch no greater than 90 degrees from the horizontal, measured from the back side of the ladder.

7. Portable 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 slippery surfaces.

8. Ladders placed in such areas such as passageways, doorways, or driveways where they can be displaced by workplace activities or traffic must be secured to prevent accidental movement, or a barricade must be used to keep traffic or activities away from the ladder.

9. The area around the top and bottom of ladders shall be kept clear of materials, equipment, and/or tools.

10. The top step on step ladders shall not be used for work, inspection, or any other activity.

11. Ladders made of conductive materials shall not be used if electrical hazards are present.

12. Cross-bracing on the rear section of step ladders shall not be used for climbing unless the ladder is designed for that purpose.

13. Ladders shall be inspected by a competent person for visible defects on a periodic basis and after any incident that could affect their safe usage.

14. All employees shall face the ladder for all climbing and descending activities.

15. Each employee shall maintain three points of contact while ascending and descending the ladder.

16. All employees utilizing ladders must not carry any object or load that could cause loss of balance subjecting them to a fall.

17. Employees subjected to fall hazards of 6 feet or greater while working on a ladder shall wear a safety harness and lanyard and tie-off to a secure anchorage point consistent with the requirements outlined in the Section 13 of this manual entitled Fall Prevention and Protection.

Inspections

All ladders shall be inspected prior to each use. Specifically, the user shall evaluate the following items and take the necessary actions for defective or deficient ladder components:

1. Portable ladders with structural defects, such as: broken or missing rungs, cleats, steps, broken or split rails, corroded components, or other faulty or defective components, must immediately be marked defective, or tagged with “Do Not Use” or similar language, and be destroyed or withdrawn from service until they can be repaired.

2. Fixed ladders with structural defects, such as: broken or missing rungs, cleats, steps, broken or split rails, corroded components, must be tagged “Do Not Use” until they can be repaired.

3. Ladder repairs must restore the ladder to a condition meeting its original design criteria before the ladder is returned to use. Repairs must be under the supervision or directly performed by a competent person.

Training

All applicable employees shall receive training on the stairway and ladder program, which shall include instruction on:

1. The nature of fall hazards in the workplace,

2. The correct procedures for erecting, maintaining, inspecting, and disassembling the fall protection systems to be used, and

3. The proper construction, use, placement, and other safe work practices associated with stairways and ladders.

This training shall be provided initially upon date of hire as applicable and periodically thereafter.