



SAFETY CHECKLIST

JOB HAZARD(S) — ELIMINATION/REDUCTION

(Leaks — Overhead Power lines — Hot Surfaces —
Slipping/Tripping — Line Breaks — Falling)

1. Permits
2. Barricade - Warning or Protective
3. Scaffolds - Complete – Incomplete
4. PPE (Acid Suits, Hot Suit, Gloves, Safety Glasses, etc.)
5. Lockout/Tagout Review
6. Safety Shower — Eye Wash
7. Housekeeping
8. Hidden Hazards
 - a. Stability
 - b. Rigging (Softeners — Shackles)
 - c. Lighting
 - d. Low Spots in Lines or Pockets of Liquid
 - e. Access/Egress
9. Proper Safety Equipment (Full Body Harness, GFCI)
10. Proper Tools
11. Job Complete
 - a. Housekeeping
 - b. Properly Stored Equipment
12. Emergency Response
 - a. Wind Direction
 - b. Assembly/Rally Points
 - c. Fume/Fire Alarm Card

To: _____

I have been issued a copy of the
Contractor Safety Handbook.

I will read and abide by all rules and regulations in
the Handbook and any additional safety rules and
regulations that may be required on my job.

Signature _____

Date _____

Craft _____

Company _____

CONTRACTOR SAFETY HANDBOOK

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The provisions of this Handbook are intended to supplement but not replace the provisions of the Occupational Safety and Health Act of 1970 and any regulations issued thereunder. Any deviations from the guidelines and rules set forth in this Handbook shall have prior approval by the Contract Administrator.

This handbook is subject to use outside the United States of America (USA). In those instances, where references have been made to USA regulations or governmental agencies, the user should insert the appropriate local equivalent regulation or agency.

Changes other than editorial are indicated by a vertical rule in the margin of the pages on which they appear. These lines are included as an aid to the user in identifying changes from the previous edition.

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INTRODUCTION

This Handbook sets forth safety guidelines and rules. *It obviously cannot cover every situation and it is not intended to do so.* Each job, regardless of the type of work involved, presents problems that require special alertness, awareness, and good judgment on everyone's part. In addition, the requirements established by the particular site where the work is being performed must be complied with.



In all cases, the safety hazards present shall be reviewed and additional practices established as needed to minimize those hazards. It is everyone's obligation to work safely and to correct unsafe acts, practices, and conditions for the protection of one's self and others.

It is extremely important that each individual understand how to accomplish each task safely . . . and if not known or understood, *stop and ask* before the work begins. If, while working, something changes on the job that was not planned for, *stop and ask* before continuing.

It Takes Action!

SAFETY...

- is performing daily tasks in a safe manner
- is protecting people, equipment, and the environment
- on this job, is ***required!*** During orientation, each contractor employee will be informed of the safety requirements for the site and any specific safety requirements related to the contractor's scope of work.

SAFETY FIRST...LAST...ALWAYS

Before beginning any task, it is important to understand all of the safety considerations of the task to be performed and the necessary precautions to be taken. This can be accomplished through a:

- safety lineup,
- prework checklist, or
- Safety Task Assignment.

SAFETY TASK ASSIGNMENT (STA)

Before assigning an employee a job, new or repetitive, that employee's supervision is responsible for giving that employee STA — that is, showing and explaining the safety precautions and action that must be taken before proceeding with the task.

Each individual is responsible for understanding and following this STA — if not understood, ASK; if not provided by supervision, ASK. If an individual has physical limitations, he/she must inform his/her supervisor.

“Safety is most frequently achieved by dropping the right word to the right person at the right time and by doing so often enough.”

DEFINITIONS

ANSI - American National Standards Institute

Authorized Operator - A qualified and properly trained person assigned by the Contract Supervisor to operate a given vehicle, piece of equipment, or tool.

Competent Person – A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to make prompt corrective measures to eliminate them.

Contract Administrator - The representative of the owner who is responsible for the coordination and completion of the contract.

Contract Supervisor - An experienced supervisor whom the contractor designates to carry out the contractor's supervisory, statutory, and contractual obligations, and to represent the contractor at the work site.

Fall Prevention - The elimination of a fall hazard. Fall prevention, where achievable, is always preferred over fall-protection techniques.

Fall Protection - The use of fall-arrest equipment in conjunction with other measures such as nets or work practices to minimize fall exposure when elimination of the fall hazard was not achievable.

MSDS - Material Safety Data Sheet - A publication, required by federal law, which describes the safe

handling, storage, and disposal of a hazardous material. It gives details on chemical and physical dangers, safety procedures, protective equipment, and emergency response techniques. An MSDS, plus the safety equipment required by the MSDS, must be available to anyone handling the material.

MSHA - Mine Safety and Health Administration.

NIOSH- National Institute for Occupational Safety and Health.

NARF- Non-asbestos respirable fiber.

OSHA- Occupational Safety and Health Act.

Protective Barricades - Barricades that alert personnel to a hazard as well as protect them from it.

Qualified Person - A person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

Shall - Designates a mandatory obligation.

Should - Indicates a strong recommendation.

Warning Barricades - Barricades that alert personnel to a hazard but offer no physical protection.

GENERAL INFORMATION

SITE ENTRY

Personnel, equipment, and materials shall enter and exit the site only through the gate designated. Specific pass procedures and safety orientation shall be followed.

SEARCH

Personnel, vehicles, and equipment are subject to search upon entering or leaving and while on the site premises.

VEHICLES ON SITE ROADS

Operators of vehicles and construction equipment shall observe all site traffic regulations.

PEDESTRIANS

Pedestrians have the right of way. Pedestrians should use walkways where provided. If walkways are not provided, pedestrians should walk on the left side of the road facing oncoming traffic. Shortcuts shall not be taken through operating areas, buildings, or other areas.

RUNNING

Running is permitted only during an emergency.

CAMERAS AND VIDEO RECORDING EQUIPMENT

Cameras and video recording equipment are not permitted on site without the prior approval of the Contract Administrator.

SMOKING

Smoking is permitted only in approved areas. “Strike anywhere” matches are prohibited. Smoking in vehicles on site is prohibited. Smoking materials shall be disposed of in approved containers.

CONDUCT

Horseplay, fighting, gambling, and the possession or use of firearms, ammunition, alcoholic beverages, and illegal drugs are prohibited. Explosives are not allowed except where approved by the Contract Administrator. Individuals are responsible for treating others with dignity and respect. They are accountable for their behavior and for not tolerating any incidents of discrimination or harassment.

EQUIPMENT

All necessary tools and equipment, including personal protective equipment, shall be properly maintained and shall be appropriate for the safe accomplishment of the task. Further, all such equipment shall be used only by employees who have been properly trained and are otherwise qualified to use the tools and equipment safely. The Owner retains the right to refuse or restrict the use of tools, equipment, or chemicals on the site. Owner-provided equipment shall be used by contractor personnel only with documented prior-to-use inspection by Owner and written approval from the Contract Administrator. Contractor’s equipment shall not be used by Owner personnel.

ORDERLINESS

Scrap, trash, and other wastes shall be placed in designated containers. Work areas shall be cleaned up

as the job progresses. Cords and hoses shall be routed, preferably overhead, in a manner that will not present a tripping hazard. All materials, tools, and equipment shall be stored in a stable position (tied, stacked, or chocked) to prevent rolling or falling. Safe access to all work areas and emergency exits shall be maintained.

INSPECTIONS

All work areas shall be checked at the beginning of each shift to ensure safe conditions, and at the end of each shift to be sure that all flames are extinguished and other hazards are properly contained. All applicable federal, state, and local codes shall be followed.

MEDICAL

Site medical facilities, if available, can normally only be used in emergencies in which the severity of the injury requires immediate attention. Immediately report all job-related injuries or hazardous material exposures to the Contract Administrator. Clean up of blood or other body fluids must be handled per OSHA's bloodborne pathogens standard.

RADIOS

Playing of radios at work sites is not permitted. The wearing of radio headphones or earphones is prohibited.

TESTING

New and repaired piping shall be tested in accordance with a procedure furnished by the contractor. Contractor shall submit the procedure to the Contract Administrator for review and acceptance.

TWO-WAY RADIOS (WALKIE-TALKIES) AND CELL PHONES

Two-way radios and cell phones shall not be used on site without the approval of the Contract Administrator. Radios and cell phones used in hazardous areas (Class 1, Division 1 or 2) shall be intrinsically safe and approved by Underwriters Laboratories (UL) or Factory Mutual (FM).

PERSONNEL PROTECTION

Suitable protective equipment required for personnel, such as clothing, eye protection, gloves, respiratory equipment, hard hats, hearing protection, and toe protection shall be provided by the contractor and worn where required.

The contractor shall train and require all its employees to wear appropriate personal protective equipment (PPE) that is maintained in good condition.

Contractor's employees shall not commence work until they are wearing proper protective equipment.

Note: All PPE for United Kingdom and European Member Countries shall be marked "CE."

The contractor can avoid costly delays in proceeding with the work by ensuring that all personnel report with the REQUIRED personal protective equipment.

Rings, bracelets, dangling pierced earrings, long neck chains, and continuous wrist straps shall not be worn near moving machinery or where mechanical, electrical or construction work is being performed. Long neckties (not tucked in), unbuttoned or loose long sleeves, and other loose clothing or items (including hair or beards long enough to be considered a hazard) shall be tied back, tucked in, or secured when working on or near moving machinery or in areas so posted.



CLOTHING

A shirt covering the shoulders and trousers covering the legs and ankles shall be worn at all times.

Complete arm protection may be required on some sites.

Flame-resistant clothing may be required at some locations and shall be worn in all designated areas.

Flame-resistant clothing shall be worn as the outermost garment, properly buttoned or zippered, with sleeves fully extended. Damaged flame-resistant clothing shall not be worn until properly repaired.

HEAD AND SCALP

Hard hats (ANSI Z89.1), in good condition and worn properly, shall be worn under the following conditions:

- In any area posted as a hard hat area.
- Beneath any overhead work, including areas below ladders (e.g., groundman working with a person on a ladder), scaffolds, open gratings, and other openings.
- During work in vessels, manholes or excavations. (See Contract Administrator for requirements.)
- In any other area where a head-bumping hazard is present.

Metal hard hats and “Bump” caps are not acceptable.

EYES AND EARS

Eyes - Before beginning work, every employee should determine the location of the nearest eyewash station or safety shower.

- Safety glasses (ANSI Z87.1) with approved side shields shall be worn by everyone who is (a)

performing mechanical or electrical work, (b) in an area where mechanical or electrical work is being performed, or (c) in an area where chemicals are stored or handled (which includes, but is not limited to, all laboratories). Safety glasses with side shields shall be worn in all designated construction areas and in operating areas that are designated by the Contract Administrator.

- Full-face shields over approved safety glasses or cover-all goggles shall be worn when power chipping, removing or installing ceiling panels, and drilling above shoulder height.
- Full-face shields shall be worn over approved safety glasses handling molten materials (such as lead or tar), grinding, or when performing abrasive cutting or water blasting.
- Special protection shall be worn when handling acids or caustics, or performing abrasive blasting. Consult the Contract Administrator.
- Burning goggles shall be worn when performing all gas welding and burning. They shall have a No. 3 density minimum filter lens and a safety lens on both sides of the filter lens.

Ears - Hearing protection shall be worn in areas where noise levels exceed 90 dBA, where exposure to 85-90 dBA exceeds 8 hours per day, or where posted.

FINGERS, HANDS, AND WRISTS

Gloves, suitable for the task being performed, shall be worn unless the task cannot be performed while wearing gloves or if wearing gloves increases the hazard.

TOES, FEET, AND LEGS

- Industrial-quality leather work shoes, safety shoes (ANSI Z41) or toe protection shall be worn at all times by persons performing mechanical, electrical or construction work or who are in an area where such work is being performed. Safety shoes or toe protection shall also be worn in all areas so posted.
- Rubber boots with safety toe protection should be used on jobs having the potential for chemically hazardous conditions.
- Foot guards shall be worn when using jack hammers, tampers, and similar equipment.
- Shin guards, chaps, spats, etc. should be worn when using some special equipment (such as chain saws and brush hooks) and where snakebites are possible.

RESPIRATORY (Breathing)

Respirators including all disposable styles shall be approved by NIOSH or MSHA. Respirator users shall have a physician's approval, be fit tested, and trained per OSHA 1910.134. Facial hair in the area of the respirator sealing surface or which interferes with the functioning of the valves is prohibited.

SKIN

Before beginning work, every employee shall locate the location of the closest safety shower whenever the possibility exists of exposure to skin irritants. For skin exposures, always flush the affected area for a minimum of 15 minutes and then seek medical attention. Refer to the MSDS for proper PPE requirements.

BACK

Every worker shall know the weight of any object to be lifted. Never try to lift more than can be handled safely. Consider the size, shape, and weight of the load, and get help when needed. Lift with the legs, keeping the back straight, and do not twist or turn while lifting. Back belts and supports are not allowed unless prescribed by a medical professional.

WORK NEAR OR OVER WATER

All workers engaged in activities over or within five feet of water where the potential for drowning exists shall wear an approved life preserver.

JOB REQUIREMENTS

WORKING IN SITE AREAS

Before working in an area not previously discussed or approved during a prework review or where process-related hazards may be present, consult the Contract Administrator for the following information:

- Special instructions.
- Restrictions.
- Permits required.
- Location of lockout.
- Potential changes in work environment, including unexpected liquids or vapors. (Report any such changes to the Contract Administrator immediately.)
- Special training.
- Location of emergency alarms, emergency equipment, eye wash stations, safety showers, evacuation routes, and assembly points for work areas.
- Type of emergency escape equipment available and how to use it.
- Environmental protection.

PERMITS/AUTHORIZATIONS

Written and properly authorized current permits are required *before* work may begin. Permits shall be posted at the worksite when required. **Table 1** lists the permits and authorizations commonly required for work on a site. (Other permits may be needed.)



TABLE 1.**Commonly Required Work Permits/Authorizations**

Type of Permit	When Required
Work Permit	For work of any type
Welding, Open Flame, and Sparking Equipment Permit	For flame- or spark-producing activity
Excavation Permit	For any excavating (including drilling) in earth, roads, parking lots, slabs, and slab floors (including slab floors above-grade in some buildings) and for installing fence posts and grade or lay-out stakes
Confined Space Entry Permit	To enter vessels and confined spaces such as underground manholes
Crane Permit/ Inspection Report	Whenever a crane is used on site
Radiation Permit	Before bringing radioactive sources on site
Roof Permit	To allow access to a roof
Asbestos/Refractory Ceramic Fiber (RCF)/Respirable Fiber Permit	To remove or work with materials containing asbestos, RCFs, or respirable fibers
Process Barricade Structure Modification Permit	To modify an existing, site-approved process barricade
Exhaust System Modification Permit	To add to or delete from existing exhaust ductwork
Line Break Permit	To open any process or service line

TABLE 1. (continued)**Commonly Required Work Permits/Authorizations**

Type of Permit	When Required
Building(s) Services Shutoff Permit	For temporarily shutting off building services, including piping, ventilation, and electrical, that will affect more than one room or area of a building
Blasting Permit	For blasting and handling explosives
Contaminated and Hazardous Equipment and Facilities Release Permit	To repair, transport, scrap, modify, or store any equipment, instrument, piping, ductwork, process units, or other miscellaneous facility that has contacted hazardous materials
Work on Fire Protection Water Pipelines Permit	To modify any fire protection water system
Powder-Actuated Tool Permit	To use powder-actuated or pneumatic fastening tools
Close Proximity Permit	To operate power equipment near power, process, or utility lines
Transformer Room Permit	To work in a transformer room or vault
Electrically Hazardous Task Plan	To perform work on or near exposed energized electrical conductors
Crane-Suspended Work Platforms Permit	To work from a crane-suspended work platform

LOCK-OUT PROCEDURE

The lockout procedure shall be followed to protect persons from injury due to inadvertent operation of power-driven equipment, opening of pipeline valves, exposure to stored energy sources, monorails or rigging equipment, or energizing of electrical circuits. The Owner's operations or maintenance personnel will shut down, prepare, lock out, tag, and verify any piece of equipment to be cleaned, repaired, inspected, or physically altered. Only personnel authorized by the Owner shall make "line breaks" on all process lines and equipment. The Contract Administrator shall explain the lockout procedure.

- Owner's locks and tags shall be the first on and the last off.
- Contractor's employees shall also verify services are shut down, locked out, and tagged for their own protection.
 - Only the Lock-Out Tag specified by the Contract Administrator shall be used. Tags shall not be altered or used for any other purpose.
 - Tags used by the contractor shall include employee name, the contractor's business name, telephone number, and date.
 - Each individual working on the equipment shall put on and remove their own locks and tags.
 - Voltage tests to ensure that a circuit is de-energized shall be performed by a Qualified Person using approved test equipment.
- Contractor personnel shall not operate or manipulate any valve, switch, or equipment, except as directed by the Contract Administrator.

- Any pipe or tube that has been cut or opened shall be capped before locks are removed.
- Exceptions to this procedure shall require written approval of the Contract Administrator directly involved with the work.
- Violations of this procedure shall result in disciplinary action up to and including removal from the site.
- Equipment with lock-out tags attached shall not be removed.

DISMANTLING & REARRANGING (D&R)

Prior to performing D&R work, the following items shall be reviewed by all personnel involved in the D&R task.

GENERAL

1. The accountable engineer has the prime responsibility for controlling and planning all D&R work.
2. A competent person, one capable of identifying existing and predictable hazards, must conduct an engineering survey to determine the exact scope of work and the method for safely executing it.
3. Depending upon the complexity of the work or hazards involved, a written job plan may be required.
4. Employees must be trained in the use of personal protective equipment (PPE) for D&R task(s).
5. All safety procedures pertaining to D&R tasks shall be reviewed prior to starting work.
6. The job shall be stopped, re-evaluated, and a new plan developed if conditions change. No shortcuts!
7. D&R tasks shall be led and performed by qualified personnel who are trained in D&R methodology and D&R procedures.
8. The lock, tag and try procedure is a prerequisite for all D&R work.

PIPE

1. The physical isolation and elimination of stored energy within piping systems or equipment is the primary control for protecting personnel.
2. Before removing any piping systems, ensure that the correct lines are identified, isolated, cleared of hazards, and physically marked.
3. Only employees who have been approved by contractor supervision and trained to make first-line breaks may perform this work.
4. No construction employee may begin making a line break until they have received and acknowledged understanding of specific safety instructions.
5. Give special consideration to the condition of the pipe or equipment prior to rigging and removal.

ELECTRICAL

1. Cables or conductors shall be electrically isolated from their source and disconnected on both ends prior to D&R.
2. If several cables or conductors are being D&R'd, they shall be cut one at a time.
3. Tools used to cut cables shall not be positioned in a way that they may cause inadvertent damage to another cable.
4. Before any cable is cut, continuous visual verification must exist from the end of the cable to the point of the cut.

5. No cable shall be cut inside the boundaries of a cable tray.
6. It must be clear what doors and covers of electrical equipment are to be opened or remain closed during performance of D&R tasks.

ELECTRICAL TOOLS AND TEMPORARY ELECTRICAL EQUIPMENT

Tools and temporary or portable equipment

- Ground Fault Circuit Interrupters (GFCIs) shall be used on all extension cords and portable electrical tools. Deviations, including substitution of an “assured grounding program” in lieu of 100% GFCI protection, may be authorized only by the Owner’s site management.
- GFCIs shall be placed as close to the power source as possible, and shall be tested using the integral test button before *each* use.
- GFCIs shall not be used on temporary lighting circuits.
- Every temporary lamp holder shall have a lamp installed and a lamp guard in place.
- Nonconductive materials shall be used for securing lighting strings to supports.
- All 120 volt electrical receptacles and all extension cords shall have third-wire grounding conductor installed and intact.
- Two-wire double insulated portable electrical tools are acceptable for use if the tool and power cord is approved by a recognized testing laboratory such as Underwriters Laboratory (UL).

Electrical Work

The four types of hazards associated with work on or near energized electrical equipment are:

- shock and burn due to contact or flashover
- electrical flash burn from arc
- blast injury resulting from electrical arc
- upset or shutdown of an operating area

“Prohibited work” (hot work), **“Restricted work”** (proximity work) and **“Limited work”** are not allowed without written approval from Owner’s site management.

“Prohibited work” (hot work) is defined as work that requires intentional hand, body, or tool contact with exposed conductors or circuit parts energized at voltages above 50 volts to any reference point; any work that requires approaching exposed conductors or circuit parts energized at voltages above 50 volts to any reference point with conductive objects; or unguarded body parts closer than the prohibited approach boundary as defined in NFPA 70E.

“Restricted work” (proximity work) is defined as any work that requires conductive objects or body parts to enter the restricted work space, as defined in NFPA 70E, surrounding exposed conductors or circuit parts energized above 50 volts.

“Limited work” is defined as any work other than prohibited or restricted work that requires conductive objects or body parts to enter the limited work space, as defined in NFPA 70E, surrounding exposed conductors or circuit parts energized at voltages above 50 volts.

CRANES

- The Contract Administrator shall be notified before a crane or derrick of any type is used.
- Proof of inspection and/or written certification that material-handling equipment (i.e., equipment used to lift materials) is safe and appropriate for the intended work is required. Operation of this equipment shall be restricted to properly trained personnel, and if requested, proof of training shall be provided to the Contract Administrator.

- Cranes with “live” booms are not permitted on site.
- A load should never be raised or swung over people or an occupied building.
- Tag lines shall be used to control all loads. Tag lines shall not be wrapped around the hands or body.
- Riding on crane hooks or “headache” balls is prohibited.
- At least two wraps of wire rope must remain on the drum when the load hook is in the extreme low position.
- The following requirements also apply:
 - Equipment shall meet the requirements in OSHA 1926.550.
 - Proof of compliance with OSHA 1926.550(6) shall be submitted to the Contract Administrator before equipment may be operated.

MATERIAL HANDLING

(See also RIGGING EQUIPMENT, page 35).

- Riggers and equipment operators shall know the weight to be handled and the capacity and proper use of handling devices (cranes, forklifts, chain hoists, come-alongs, clamps, chokers, and shackles) before proceeding.
- All protruding nails, wires, and ragged metal edges shall be removed or hammered flush before handling.
- Material shall be stacked, stored, or positioned so it can be reached safely by personnel and material-handling equipment. Stored material shall never be walked on.

STABILITY CONTROL - PERSONNEL, MATERIALS, AND EQUIPMENT

Ensure that personnel, material, and equipment are safe from unexpected movement such as falling, slipping, rolling, tripping, or any other uncontrolled motion including that caused by high winds.

- Use fall protection.
- Protect the area below overhead work.
- Immediately salt or sand icy walk areas.
- Immediately clean up all spills and report them to the Contract Administrator.
- Chock all material and equipment as necessary to prevent rolling — pipe, drums, tanks, reels, trailers, and wagons.
- Tie down all light, large surface-area materials that might be moved by the wind.
- When working at heights, secure tools and equipment against falling.
- Do not store materials or tools on girts, ducts, lighting fixtures, beam flanges, suspended ceilings, or similar elevated locations.

ACCESS

- *Do not block* emergency equipment, electrical disconnect switches, breaker panels, or safety showers. Cables, ropes, barricade tape, hoses, or welding leads shall not be attached to such equipment.
- Keep access routes to and from work sites and safety aisles free and clear of obstructions and adequately lighted. The Contract Administrator shall approve access routes for excavations, process areas, and special equipment or areas.

- The Contract Administrator will obtain clearance for the contractor to gain entry onto roofs.

EXCAVATIONS

- An Excavation Permit shall be required before beginning work.
- All excavations must be inspected by a “competent person” as defined by OSHA 1926.650. Inspections must be done daily before entry and after a heavy rain or thaw and must include shoring, shielding or other protective measures.
- A warning or protective barricade shall be provided around every excavation area.
- Excavated materials shall be piled at least three feet back from the edge of the excavation.
- Every excavation shall have at least one safe means for access and egress.
- Excavations shall be shored, sloped, and inspected in accordance with OSHA 1926, Subpart P.
- No one is permitted in an excavation while equipment is working next to the edge.

DUCTWORK

Exhaust ductwork shall always be considered contaminated. Specific protection requirements shall be provided by the Contract Administrator before the contractor starts work.

WORKING IN CONFINED SPACES

A confined space is a space with limited or restricted means of entry or exit and is large enough for an employee to enter and perform assigned work, but is

not designed for continuous employee occupancy. A confined space entry permit, issued by Owner's personnel, is required for any entry into a confined space.

Entrants, attendants, and entry supervisors are required to be trained in their respective responsibilities, in accordance with OSHA 1910.146, before performing activities related to a confined space entry. The responsible Owner's personnel will review the contractor's procedures and plan for the confined space entry and shall ensure the required training has been completed and documented before entry will be allowed.

HAZARDOUS MATERIALS (Corrosives, Flammables, and Toxics)

- All personnel shall be familiar with the hazards of all chemicals in the work place per OSHA 1926, Subpart D, Hazard Communication. Contractor's written program must address:
 - Container labeling and other forms of warnings.
 - Material Safety Data Sheets (MSDS).
 - Employee training based on the chemical inventory list, MSDS, and labeling information.
 - Methods for communicating hazards and protective measures to be followed when hazards are encountered.
- All hazardous materials the contractor intends to use must be approved by the Contract Administrator before they may be brought on site. All materials must be accompanied by an MSDS upon delivery.

- All spills shall be contained, immediately reported to the Contract Administrator, and then promptly cleaned up. Only properly trained employees using appropriate PPE are authorized to clean up any spill. (See SPILL CONTROL, ENVIRONMENTAL PROTECTION.)
- MSDSs shall be on file and readily available.
- Hazardous materials shall be transported, stored, applied, handled, and identified in accordance with federal, state, and local regulations.
- Chemical liquids in quantities of 55 gallons or more shall not be delivered to the site until approved by the Contract Administrator.
- Flammable liquids in quantities of less than 55 gallons shall be in UL or FM “industrial safety” cans identified according to contents. Other hazardous materials shall be kept in approved containers.
- Flammable liquids in quantities of 55 gallons or more shall be stored either in their original, unopened shipping containers or in drums or tanks that are labeled, grounded, and equipped with self-venting bungs and self-closing faucets. Such containers shall be placed inside a barricaded, diked area located at least 20 feet from smoking, welding, burning, and other sources of heat and at least 25 feet from any other building.
- Acids, caustics, flammables, or other hazardous materials shall not be stored, handled, applied, or used without detailed instructions, safety precautions, and proper personal protective equipment.
- Gasoline shall be used only as a motor fuel.

- When process lines that have been in service are disconnected, process materials should be expected to be encountered and personnel should protect themselves accordingly. Where required, acid coat, hood, boots, gloves, etc., should be used. Areas shall be barricaded and standby personnel and emergency procedures and equipment shall be available.

SPILL CONTROL/ENVIRONMENTAL PROTECTION

No materials of any kind shall intentionally be permitted to enter any waterway or to spill onto the ground.

- Settling basins or straw barricading around storm sewers shall be required for all ground breaking or any other condition that, as determined by the Contract Administrator, could cause silt to enter a waterway.
- All spills or releases to the ground or water of any kind must be immediately reported to the Contract Administrator.
- For all fire protection sprinkler run-off, the Contract Administrator should be contacted.

Petroleum Product Spills

The uncontrolled release (spill) of any petroleum product into public waterways is contrary to company policy and is a violation of state and federal law. Oil Pollution Prevention; Non-transportation-related Onshore and Offshore Facilities (40 CFR 112) requires prevention of petroleum spills.

- Spills of any petroleum product on the ground or into ditches must be prevented. Spill potentials include, but are not limited, to those listed in **Table 2.**

TABLE 2.**Spill Potentials for Petroleum Product**

Equipment	Spill Potential
Combustion engines and mobile equipment	Leak in hoses, tubing, fittings Rupture of hoses, tubing Spills during oil change or refueling
Pipe-threading machines, hydraulic punches and benders	Reservoir overflow Rupture or leak in hoses
Containers of petroleum products	Rupture or leak in container Spill during draining of container

- To prevent petroleum product spills onto the ground, containment pans should be placed under equipment whenever feasible.
- If a spill should occur, the following procedure shall be used:
 - Contain the spill.
 - Notify the Contract Administrator immediately.
 - Clean up the spill using an approved absorbent material.
 - Dispose of all contaminated materials as instructed by the Contract Administrator's instructions.

ASBESTOS, NARFs, AND LEAD

Composition of any unknown materials to be removed or otherwise disturbed shall be determined before any work starts. Any task involving materials listed below may require training or certification of personnel,

specialized PPE, and competent (or qualified) supervision. Other crafts and workers in the area must be alerted to the work being performed.

Asbestos

Asbestos-containing material (ACM) is defined as any material containing 1% or more asbestos and shall not be used for new installations or repair work. All applicable national, state, and site regulations for removal, handling, and disposal of ACM shall be followed.

ACM can include, but is not limited to:

- insulation
- floor tiles
- roofing felts, mastics, or flashing
- fireproofing
- Transite
- lab stone
- gaskets

Non-Asbestos Respirable Fibers (NARFs)

Refractory Ceramic Fibers (RCFs) (commonly used for high-temperature applications such as furnace and boiler linings) are recognized as potentially cancer-causing and require special precautions and controls for their installation, removal, and disposal. The Contract Administrator shall be consulted for these procedures. When working with other less-hazardous NARFs, such as fiber glass wool and mineral wool, use the manufacturer's MSDS as a guide.

Lead

Exposure to inorganic lead is regulated by OSHA 1926.62. Materials containing lead include old paint film, solders, etc. When torching, cutting, grinding, or performing other tasks on any lead-containing

materials, the resulting fumes or dust must be considered hazardous. If the task is indoors or in poorly ventilated areas, any lead-containing coating must be removed before burning begins.

- Before cutting, burning, blast cleaning, or otherwise disturbing a paint film, the presence of lead must be determined by field test or laboratory analysis.
- After deciding on the task and tools to be used, the OSHA rule must be followed.

Correct personal hygiene is key to working safely with lead-containing materials. Vacuuming of clothes and thoroughly washing hands, face, and other exposed skin at each break and before handling food should be part of any work plan.

TOOLS

HAND TOOLS

REMINDER:

Gloves and proper hand placement prevent hand injuries.

- Use tools only to do the job for which they were designed.
- Keep hand tools in good operating condition — sharp, clean, oiled, dressed, etc.
- Keep tools that are subject to impact (chisel, star drills, caulking irons, etc.), which tend to “mushroom,” dressed to avoid flying spalls.



- Do not force tools beyond their capacity. Try the next size wrench, heat, penetrating oil, etc. “Cheaters” and job-made tools shall not be used without the Contract Administrator’s permission.
- Use tool holders when driving stakes and wedges and when holding star drills, bull pins, and similar tools.
- Do not carry pointed tools in pockets.

POWER TOOLS

Loose clothing, long hair that is not secured, gloves, rings and other jewelry shall not be worn around

rotating equipment. Sleeves shall either be kept buttoned or rolled up.

- Power tools shall not be operated without proper training and instructions.
- Material shall be secured when power tools are applied to it.
- Each power tool shall be inspected before use for damaged parts, loose fittings, and frayed or cut electrical cords. Defective tools must be tagged and taken out of service.
- Portable electrical equipment and tools shall be grounded unless “double-insulated.” Double-insulated tools must be distinctively marked to indicate the tool uses a double-insulated system.
- Ground Fault Circuit Interrupters (GFCIs) shall be used on all extension cords and portable electrical tools.



- Before adjustment, servicing, or repair of electric or pneumatic tools, electric cords shall be unplugged and airlines shall be deactivated and

bled. In some cases, this may require a lockout to prevent accidental starting. (See “Lock-out Procedures,” page 17.)

- Any pneumatic hose exceeding 1/2-inch ID shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure.
- Machines shall be shut off and brought to a complete stop before removing waste.
- Interlocking devices shall be in good working order and never bypassed.
- All fuel-powered tools used inside buildings or enclosures require special considerations regarding ventilation, noise generation, refueling, etc. Approval shall be obtained from the Contract Administrator before use.
- All tools shall be used with the correct shield, guard, or attachment recommended by the manufacturer.

RIGGING EQUIPMENT

- Use a shackle to hold two or more eyes of a choker on a hook.
- Make sure that hooks have a safety latch or are moused except when properly using a shake-out hook.
- Do not rig from any structural member without the approval of the Contract Administrator.
- Use only rigging equipment designed for the intended use. Never use plate grips, tongs, pipe clamps etc., as substitutes for beam clamps.
- Inspect all hooks, shackles, chain hoists, wire rope, slings, and beam clamps before use. If

anything is defective, take it out of service immediately. Synthetic slings and chokers are particularly subject to damage. Carefully inspect them for cuts and frayed areas and to ensure they have a legible capacity tag or marking.

- Do not load chain-hoists beyond their rated capacity. Chain-hoists are designed so that one person can operate the hand chain to lift the maximum load for the hoist.
- Do not leave unsecured and unattended loads suspended.
- Do not allow any part of the body below a suspended load.
- Do not wrap the load chain around the load.
- Where possible, use softeners to obtain a “bite” on the material being rigged.
- Do not use fiber rope or synthetic slings or chokers in or near operations involving corrosive substances.
- Inspect every rope before each use for excessive broken fibers, wear, and deteriorated strands; take the rope out of service if it is defective.
- Do not use wire rope slings to hoist equipment after the wire rope has been exposed to fire or extreme heat or burned by contact with electricity. Do not use when inspection shows damaged strands, corrosion, or, generally, more than 10 percent of the wires are broken in one lay.
- Use a minimum of three (3) wire rope clips, properly spaced and installed, when forming loop eye splices.
- Use **Table 3** as a guide to safe working loads for wire rope.

- For further information on rigging, see EN-3964, “Hand Rigging Book.”

TABLE 3.

Safe Working Load for Wire Rope*

Safe Working Load (tons) **

Rope Size (Inches)	Straight Pull	Choke Hitch	Basket Hitch
3/8	1.1	0.85	2.2
7/16	1.5	1.2	3.0
1/2	2.0	1.5	4.0
9/16	2.5	1.9	5.0
5/8	3.1	2.3	6.2
3/4	4.4	3.3	8.8
7/8	6.0	4.5	12.0
1	7.7	5.9	15.0

* These figures are for 6 x 37 improved plow steel, fiber core, mechanical eye splice. This chart does not apply to crane reeving.

** In tons of 2,000 lb. with a design factor of 5.

EQUIPMENT

- Always use safe equipment. *It is the responsibility of the user to inspect equipment before using it.* If the equipment becomes defective in any way, place a “DEFECTIVE — DO NOT USE” tag on it and take it out of service.
- Know the limitations of the equipment being used. Do not exceed those limits. Do not use the equipment for anything other than its intended purpose.
- Do not work on equipment, belts, drives, conveyers, or vehicles while they are in operation without special approval. Equipment to be shut down shall be locked, tagged, tested, and tried before work is begun.
- Do not use Owner’s equipment without prior approval of the Contract Administrator.

FALL PREVENTION AND FALL PROTECTION

Fall prevention and fall protection are two terms frequently used to explain the means to control fall hazards. However, the terms fall prevention and protection are different and should be considered separately. Proper fall prevention eliminates a hazardous situation and therefore removes the chance of employee exposure to a fall. Fall protection follows recognition that a hazardous condition cannot be fully or adequately eliminated, and therefore fall-arrest equipment and procedures are needed.

To be effective, fall prevention must be initiated in the construction-planning phase with a close study of operations and tools having fall hazard potential. The basic idea is to map out effective ways to get rid of the fall hazards and minimize the need for fall arrest equipment.

Fall protection is using fall arrest equipment to minimize the detrimental effects of a fall should it occur. When fall arrest equipment is utilized, employee training must be provided before starting work to assure proper use. *Fall arresting systems shall consist of a full body harness, one or two shock-absorbing lanyards, self-locking snap hooks, and adequate anchorage points.* Consult with local or site safety specialists for additional details. Roofing contractors and steel erection contractors shall develop written fall prevention and fall protection plans and review them with the Contract Administrator.

PORTABLE LADDERS

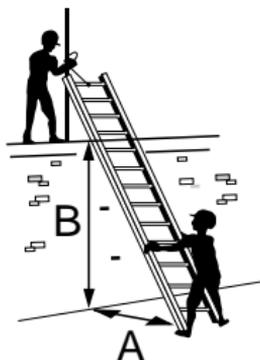
- The user shall inspect every ladder before using it. Remove from service any ladder found defective.
- Painted ladders are not permitted.
- If it is necessary to place a ladder in or behind a doorway, barricade the work area and post warning signs on both sides of the door.
- While ascending and descending a ladder, hold on with both hands. Use a handline to raise or lower materials.
- Keep both feet on the ladder steps or rungs. Do not reach out too far; keep your belt-buckle area inside the side rails of the ladder. Do not place one foot on a line or piece of equipment and the other on a ladder step or rung. Change the position of the ladder as often as necessary to keep within reach of the work.
- Face a ladder when working from it. When it is not possible to work facing a ladder or when performing some tasks requiring both hands, fall

protection should be worn and properly anchored. The local site procedure may be more stringent.

- More than one person on a ladder is not allowed unless the ladder is designed to support more than one person. Never exceed the rated capacity of the ladder.
- Metal ladders shall not be used by persons performing electric welding or working near energized electric lines or services.
- If it is necessary to use a ladder on top of a scaffold or close to the edge of an elevated platform, roof, or floor opening, tie off the ladder and utilize fall protection.
- Under no circumstances should chairs or other furniture be used as ladders.
- Use type 1A ladders (300-lb. rating) as a minimum.
- All ladders shall be inspected by a qualified person.

Straight or Extension Ladders

- Place the ladder so distance A is one-fourth distance B, as shown in this illustration:



- Every ladder shall be equipped with tie-off rope and non-skid safety feet.

- Every ladder shall be adequately tied off or held.
- The top of a straight or extension ladder shall extend at least three feet above the supporting object when the ladder is used as access to an elevated work area.
- After an extension section has been raised to the desired height, ensure that safety dogs or latches are engaged and that the extension rope is secured to a rung on the base section of the ladder.
- The extension section of an extension ladder shall overlap the base section a minimum of three rungs.
- Extension ladders shall not be taken apart to use either section separately.
- Do not work from the top three rungs of any straight or extension ladder.

Stepladders

- Set a stepladder level on all four feet, with spreaders locked in place. A stepladder shall not be used as a straight ladder.
- Do not sit or stand on the top of a stepladder unless the ladder is designed for this purpose.
- On standard design stepladders, do not stand on the step below the top of any stepladder over three feet high.
- Remove tools and equipment from the ladder before moving it.
- Tie off a stepladder when using it close to the edge of an elevated platform, roof, or floor opening, and utilize fall protection.
- Stepladders eight feet tall and taller should be tied off or held when in use. The local site procedure may be more stringent.

SCAFFOLDING

- Before each work shift and after any occurrence that could affect a scaffold's structural integrity, scaffolds and scaffold components shall be inspected by a Competent Person to identify visible defects.
- While erecting and dismantling scaffolds, each component, including decking and planking, must be inspected for defects. Defective components must not be used.
- Personnel shall be trained by a Qualified Person to recognize and control hazards associated with the type of scaffold being used before being assigned work on the scaffold.
- Personnel shall wear fall-arrest equipment, properly tied off, on any scaffold platform not equipped with standard handrails, midrails, or complete decking.
- No one shall ride on a rolling scaffold when it is being moved. All tools and material shall be removed from or secured on the deck before moving.
- Personnel shall not climb on, or work from, any scaffold handrail, midrail, or brace member, but shall use ladders to get onto the scaffold.
- All scaffolds shall be erected level and plumb on a firm base.
- A scaffold shall be tied off at the second lift and every other lift thereafter or shall be stabilized with outriggers when its height is more than three times the smaller dimension of its base. Scaffolds shall also be tied off horizontally every 30 feet.

- Where space permits, all scaffold platforms shall be equipped with standard 42-inch-high handrails rigidly secured (not wired) and standard 21-inch-high midrails, completely decked with safety plank or manufactured scaffold decking, and equipped with rigidly secured toeboards on all four sides. Decking planks shall be secured in place. Planks shall overhang end supports a minimum of 6 inches and a maximum of 12 inches.
- The safe working loads on all scaffolds shall not be exceeded.
- Rolling scaffolds shall be used only on stable, level, smooth surfaces, or the wheels shall be contained in wooden or channel iron runners. Personnel shall watch for overhead clearance when moving a scaffold. Casters shall be pinned.
- Personnel shall not alter any scaffold member by welding, burning, cutting, drilling, or bending.
- Bricks, tiles, blocks, and similar material shall not be stacked higher than 24 inches on the scaffold deck.
- Access to work platforms shall be by portable ladders, hook-on ladders, attachable ladders, stair towers, stairway type ladders, ramps, walkways, or direct access from another scaffold.
 - Ladder type end frames may be used as long as they were designed by the manufacturer to be used as access.
 - Cross braces shall not be used as a means of access.
 - Hook-on and attachable ladders shall be specifically designed for use with the type of scaffold used.

- Portable ladders used shall not be positioned so as to tip the scaffold.
- Rest platforms must be provided at 35-foot (10.7m) intervals.
- Where practical, gates should be provided at work platform entry/exit points. Climbing onto or over or through handrails should be avoided.
- Scaffolds shall be cleared of snow or ice before use.
- Adjusting screws shall not be extended more than 12 inches of thread.
- No rigging shall be done from scaffold handrails, midrails, or braces.
- Parts and sections of welded-end-frame scaffolding made by one manufacturer shall not be used with parts and sections made by another manufacturer.
- Scaffolds under which personnel must pass shall be provided with 1/2-inch mesh, No. 18 gauge wire screen or equivalent between the toeboard and handrail.
- Swinging stages, toothpicks, boatswain (“bos’n”) chairs, floats, and needle beams shall be approved by the Contract Administrator and inspected by a Competent Person before use. Fall protection shall be secured before wearers step onto these scaffolds, and shall not be removed until wearers are clear of the scaffold. Workers shall tie off their fall protection to independent lifelines or the building structure — one lifeline per person.
- Decking:
 - Only planks of 2-inch scaffold grade lumber or laminated wood shall be used.

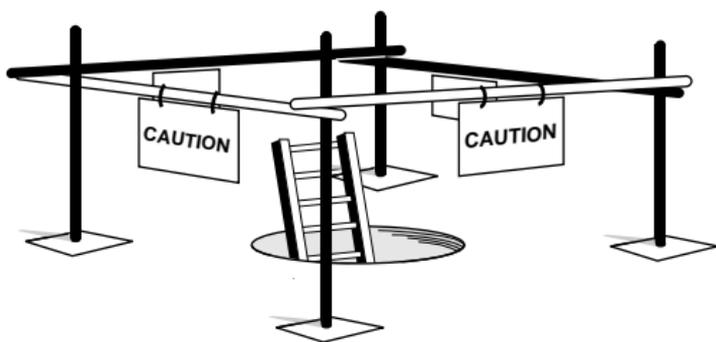
- Scaffolding planks shall be stored on dunnage separately from ordinary lumber and in such a manner as to allow air circulation between layers of boards to assure adequate ventilation for drying. Stacks of scaffold planks must be stored with the top of the stacks covered or in a weather-protected environment to prevent exposure to rain.
- Scaffolding planks shall be used for scaffold decking only.
- Manufactured aluminum decking shall be used for scaffolds only.
- Maximum span of scaffold plank end supports shall not exceed 10 feet.

BARRICADES

Anyone who creates a hazard is responsible for having it barricaded.

Determine whether a warning or a protective type barricade is required.

- Types of Barricades:
 - Warning barricades: Warning barricades call attention to a hazard but offer no physical protection. Examples: yellow and black synthetic tape on stands or posts, plastic or wooden snow fence, saw horse type barricade.
 - Protective barricades: Protective barricades warn as well as provide physical protection and shall be able to withstand 200 lbs of force in any direction with minimal deflection. Examples: wooden post and rail, cable, wooden post and metal chain.



- Guidelines:

- Barricades are required around work areas including areas beneath concrete slab floors that are being drilled or hammered, excavations, holes, openings in floors, roofs, elevated platforms, around overhead work, and wherever necessary to warn people of falling or tripping hazards.
- Barricades shall be 42 inches high and maintained square and level.
- Warning barricades do not physically deter anyone from a hazard, therefore, this type of barricade shall be placed 5 to 6 ft. or more away from a fall hazard. A protective barricade may be placed closer but, when used around a fall hazard, they must have a mid-rail as well as the top rail.
- Barricades shall be erected before a hole is cut or an excavation is dug. Barricades shall be extended as the size of the hole or excavation increases.
- Barricade tape shall not be tied to valves, tubing, instruments, and similar objects. Generally, they should be tied to barricade stands.

- Barricades shall be removed when no longer needed.
- Numerous excavations and work areas in one general area may be barricaded effectively by erecting a barricade around the general area. However, a barricade should not encompass more area than is needed to safely perform the task.
- Blinking lights shall be used on road closures after dark and as required by the Contract Administrator.
- An access opening or gate should be provided where practical.
- Barricade signs shall be fully informative, legible, and visibly displayed.

HOLE COVERS IN FLOORS AND DECKS

- Use of hole covers:
 - All holes or openings through floors or decking at all elevations shall immediately be provided with hole covers or barricades. Material and equipment shall not be stored on a hole cover.
- Placement:
 - Every hole cover shall have an attached sign or be labeled reading: “WARNING — TEMPORARY COVER — DO NOT REMOVE UNLESS AUTHORIZED.”
 - A hole cover shall be cleated, wired, or otherwise secured so it cannot slip sideways or horizontally beyond the hole.
 - Every hole cover shall extend adequately beyond the edge of the hole.

- Material:
 - Three-quarter-inch (3/4") plywood may be used provided that one dimension of the opening is less than 18 inches; otherwise, 2-inch lumber or doubled 3/4-inch plywood is required.

MATERIAL HOISTS

- Hoists shall be operated only by Authorized Operators.
- Hoists shall not be used to transport personnel.
- The weight of the material and capacity of the elevator or hoist shall be known before it is used. Material shall be positioned so it cannot shift and does not extend beyond the cage limits.
- A signal system shall be posted at each landing.
- All signal devices shall be protected against unauthorized or unintentional use, breakage, and interference.
- All landings and openings shall be protected to prevent exposure of hands and bodies.
- Hoists shall comply with local codes. They must be inspected and maintained as specified by the hoist manufacturer.
- The operator of a hoisting engine shall have overhead protection of 2-inch unfinished planking, or its equivalent, supported to develop its full strength.
- Gears, belts, sprockets, drums, sheaves, and contact points between moving parts of power-driven machines, when not guarded by location, shall be enclosed in substantial guards or protected by suitable guardrails.

- Engines shall be stopped and allowed to cool before being refueled. A fire extinguisher shall be present.
- Hoist brakes shall be capable of stopping and holding 150% of the rated hoisting capacity. In addition, a ratchet and pawl shall be provided on the drum to hold the load.
- Adequate signs shall be provided stating that the hoist is for materials lifting only and not for personnel use.

PERSONNEL LIFTING EQUIPMENT

The use of any personnel lifting equipment shall have the approval of the Contract Administrator prior to use. This rule applies to but is not limited to crane-suspended work platforms, manual personnel lifts, power platform lifts, scissors lifts, high-reach lifts, and bucket lifts.

WELDING AND BURNING

- A Welding, Open Flame, and Sparking Equipment Permit shall be obtained from the Contract Administrator before any welding, open flame, or spark-producing work is done. An Authorized Operator shall perform all work of this type.
- Employees performing burning or welding and employees assisting them must be wearing suitable clothing made of natural fiber such as cotton. Arms and hands must also be protected. For clothing suitable to be worn while welding and burning in an area requiring “flame-resistant” clothing, contact the Contract Administrator.
- All exposed combustible materials around and below welding and burning areas shall be removed to a safe location, covered with

fire-retardant material, or protected by containing all sparks and slag in a spark-catcher approved by the Contract Administrator.

- Each welder and burner is responsible for containing sparks and slag. A fire watch may be necessary as specified on the Welding, Open Flame, and Sparking Equipment Permit. Fire watch shall have fire-extinguishing equipment available and be trained in its use and be familiar with facilities for sounding an alarm. They shall extinguish a fire only when obviously within the capacity of the equipment, or otherwise sound the alarm.
- One 2-A:10-B:C (as a minimum), UL-rated, fully charged fire extinguisher shall be provided by the Contractor and shall be within 10 feet of any welding, burning, or open flame work. Personnel shall be trained in the operation and use of the fire extinguisher.
- Hoses and welding leads shall not pass through doorways. If there is no alternative, the door shall be braced open and the hoses and leads protected from damage.
- Welding or burning shall not be done on a closed vessel or tank, or on any vessel or tank previously in use unless it has been decontaminated and approval is given by the Contract Administrator.
- Welding leads, burning hose, and compressed air hose shall be bridged over, or shall be supported a minimum of seven (7) feet above passageways. Leads and hoses shall not be hung from conduit, process lines, sprinkler lines, etc.
- The user before use shall inspect all leads, grounds, clamps, welding machines, hoses, gauges, torches, and cylinders.

- All fittings, couplings, and connections shall be “leak-free.”
- Ventilation shall be adequate for the material being welded or burned. ***Personnel should avoid breathing fumes.*** An exhaust system, blower, or respirator should be used as required. ***Before welding or burning any material that has been painted, the presence of lead must be determined by field test or laboratory analysis.***
- Areas shall be checked 1/2-hour after welding and burning is done to ensure that a safe condition exists.

Welding — Electric

- Make sure that all work has a separate and adequate ground pulled from the machine to the work location. Attach the ground connection to the work piece as close as possible.
- Remove rod from the electrode holder when laying it down. Discard stub ends in a metal container.
- Erect protective screens, or in some other way, shield all arcs and post warning signs in operating areas.
- Turn welding machine off at the end of each workday or when not using it for extended periods.
- Wear an approved welding hood. Use no less than a No. 10 filter with a safety lens on both sides of the filter. Hard hat-hood combination shall be worn in hard hat areas. All skin exposed to the arc must be covered to protect against UV exposure. This includes the hands, arms, neck and face.

- Electric welding from a metal ladder is prohibited.
- Welding leads shall be adequately insulated from the machine to the electrode holder.
- Do not weld in the presence of a chlorinated hydrocarbon since a by-product may be phosgene.

Burning and Welding — Gas

- Before connecting regulators to cylinders, carefully “crack open” the cylinder valve to blow out any foreign particles. Close the valve. After the regulator is connected, ensure that the second stage of the regulator is closed. Stand to one side and open the cylinder valve slowly.
- Open valves on all fuel gases except acetylene (propane, Mapp, natural gas, etc.) completely to backseat valve and prevent leaking. Acetylene valves should be opened *one-quarter turn only*. Cylinders without integral valve handles must have the valve wrench lift in place while the valve is open.
- Do not exceed 15 psi on the torch side of the gauge when using acetylene.
- When lighting a torch, (1) open the fuel gas valve, (2) light the torch, (3) then open the oxygen valve. Use an approved spark lighter. Do not use matches, cigarette lighters, or cigarettes to light a torch. Reverse the order to shut down the torch.
- Break down all burning rigs at the end of the shift, or when the work is completed, removing the regulators and screwing the cylinder valve protective cap down hand-tight.
- Secure all compressed gas cylinders upright to an adequate support while they are in storage, transit, or use.

- Keep oil and grease away from oxygen regulators, hoses, and fittings. Do not store wrenches, dies, cutters, or other grease-covered tools in the same compartment with oxygen equipment.
- Do not use compressed gas to clean clothing, blow out cinch anchor holes, or otherwise clean the work area.
- The user before each use shall inspect all hoses, gauges, and torches.
- Wear approved burning goggles. Use at least a No. 3 or No. 4 filter with a safety lens on both sides of the filter.
- Because of the potential hazard of leakage, never leave a torch inside a vessel, tank, or other closed container.
- Never use oxygen in pneumatic tools, to pressurize a container, to blow out lines, or as a substitute for compressed air or other gases.
- Place cylinders and hoses where they are not exposed to sparks or slag from a burning operation.
- Handle cylinders with care:
 - Lift cylinders to upper levels with approved methods only. Do not use slings or lift a cylinder by the protective cap.
 - Do not strike an arc on cylinders.
 - Do not use cylinders as rollers.
- Combination check valves with flashback arrestors shall be an integral part of the oxy/fuel rig and installed at both the torch and regulator ends. FR11 or equivalent arrestors shall be installed at the torch inlet valves, and FR43 or equivalent arrestors at the regulators.

- Store cylinders outside when not using them. Store oxygen cylinders at least 20 feet from fuel-gas cylinders. Storage areas must be labeled as to their contents. At least one 2-A:40B:C UL-rated fire extinguisher must be mounted within 50 feet of cylinder storage locations.

COMPRESSED AIR

- Check hoses and couplings daily before use. Use only hoses designed to handle compressed air. Provide all hose couplings with a positive locking device. Secure Chicago-type fittings together with wire or clips.
- Never crimp, couple, or uncouple pressurized hose. Shut off valves and bleed down pressure.
- When using compressed air for cleaning purposes, ensure pressure does not exceed 30 psi. Use monogoggles or a face shield over approved safety glasses for this application. Do not use compressed air to clean dust or debris off your body.
- Make sure all hoses exceeding 1/2-inch ID have a safety device at the source of supply or branchline to reduce the pressure in case of hose failure.

HIGH-PRESSURE WATER CLEANING

High-pressure water cleaning processes (HPWC) at pressures greater than 200 psi require special procedures and shall be approved by the Contract Administrator prior to the start of work. Only an Authorized Operator shall perform this type of work.

- No portion of the body shall ever be placed in front of the water jet.
- Personnel performing HPWC exposed to water spray or reflected material shall wear a raincoat,

rubber pants, safety glasses, hard hat with face shield, rubber boots, rubber gloves, and hearing protection. (These do not protect from the jet, but do protect against other hazards encountered while doing the work.)

- When cleaning equipment which might be contaminated with hazardous chemicals, appropriate additional protective equipment specified by the Contract Administrator shall be worn.
- Boots with steel toe caps and metatarsal protection is required when tube lancing or shotgunning.
- HPWC equipment must be designed and maintained to achieve a minimum safety factor of 2 to 1 against maximum allowable working pressure.
- Pressure must be removed from the system before tightening or loosening fittings.
- All personnel doing HPWC must be at least 18 years old and a full-time employee of the company providing the service and have at least 6 months prior experience in HPWC. They must have completed a HPWC training course provided by the employer. The Contract Administrator must review the training course for adequacy.
- The equipment operator nearest the high-pressure nozzle shall always have a means of immediately reducing pressure and interrupting flow to the nozzle.

MELTING POTS AND KETTLES

- Keep equipment away from any combustible structure or material and building or building air intake and erect a barricade around the equipment. Do not use melting pots inside a building without the approval of the Contract Administrator.
- Obtain a Flame Permit before firing the vessel.
- Be sure the melting chamber is vented. Inspect hoses, clamps, gauges, tools, fuel tanks, and bucket handles before use.
- Keep the area around the vessel free of tools and materials to eliminate any tripping hazards.
- Keep two 10-A:60-B:C dry chemical fire extinguishers within 30 feet of the vessel. One such extinguisher is adequate for a melting pot.
- Maintain careful temperature control with molten material to prevent accidental ignition. Make sure the pot or kettle is tended at all times.
- Be sure all equipment, tools, and buckets are free of moisture to prevent spattering of the hot liquid.
- While charging and tending kettles and handling molten liquids in buckets, wear long sleeves, gloves tucked under sleeve cuffs, and a full-face shield (worn over approved safety glasses).
- Vapors are extremely irritating to the eyes, skin, and respiratory system. Wear adequate personal protective equipment to prevent exposure. Products containing lead or coal tar pitch are allowed only with the written approval of the Contract Administrator.
- Erect barricades around any area where hot molten liquids are used overhead.

MOTOR VEHICLES AND POWER EQUIPMENT

Vehicles and mobile power equipment are not allowed on site without approval from the Contract Administrator. The equipment shall be driven by trained Authorized Operators only. All equipment shall be inspected prior to use.

- In the event of a site emergency, vehicles shall be pulled off the roadway. Turn engine off and proceed to the appropriate assembly area on foot. Leave keys in ignition in case the vehicle has to be moved.
- The driver is responsible for the safety of all passengers and for the stability of material being hauled or handled by his equipment. Seat belts shall be worn where provided.
- All speed limit and other regulatory signs shall be obeyed. Pedestrians shall be given the right of way.
- The use of cell phones and radios while driving a vehicle is prohibited; vehicle must be pulled over and stopped.
- Parking on site roads is not permitted without the approval of the Contract Administrator. Blocking or closing of roads shall be approved by the Contract Administrator.
- All on-site refueling procedures shall be reviewed by the Contract Administrator.
- The driver shall shut off the engine, unless a running engine is required for a power take-off, and shall set brakes before leaving the operator's cab. Adequate chocking of a wheel on the downhill side is required when a vehicle is parked and unattended. (*Adequate* is intended to mean

sized appropriately for the vehicle and load; ***unattended*** is defined as not having an operator in the cab or in a position as to have complete control over vehicular motion.)

Compliance by delivery trucks shall be the responsibility of the person requesting the delivery.

- When a semi-trailer is left without the tractor connected, it shall have a wheel chocked in opposite directions and a support jack installed under the tractor connection plate (fifth wheel).
- Personnel shall not ride in the bed of a dump vehicle, and may only ride in the bed of other vehicles if allowed by site policy. Personnel shall not ride in the bed of a vehicle hauling material unless the stability of the equipment or material has been checked; they must be seated on the bed of the vehicle.
- All major construction equipment should have a back-up alarm. However, if none is installed, a flagman shall be used or the operator shall sound horn before backing. A flagman should direct the backing of a vehicle in congested areas.
- Any haulage vehicle whose payload is loaded by means of cranes, power shovels, loaders, or similar equipment should have a cab shield and/or canopy adequate to protect the operator from shifting or falling materials. Otherwise, the operator shall dismount from the cab and remain clear while the vehicle is being loaded.
- Dozer blades, endloader buckets, forklift forks, and like equipment parts shall be lowered to the ground before the operator may leave the equipment. Rigging from or use of dozer blades,

endloader buckets, etc., is prohibited unless specifically allowed by the equipment manufacturer and load chart information is provided.

- Operation of power equipment near power, process, or utility lines may require a permit. The Contract Administrator shall be consulted before work is begun.

FIRE PROTECTION

Fire alarms, hydrants, fire extinguishers, safety showers, safety stations, etc., shall be plainly marked and shall be kept clear of all obstructions.

ALARMS

Know:

- . . . Where the nearest fire alarm box is located.
- . . . How to turn in an alarm.
- . . . The site emergency phone numbers
(see back cover of handbook).
- . . . The proper exit route and the rally points.

Contact the Contract Administrator for this information.

EXTINGUISHERS

Know:

- . . . Where the nearest fire extinguisher is located.
- . . . How to operate it.
- . . . The type of fire on which it should be used.
Check the label.

Be aware that . . .

- For each job requiring open flame work or welding, the Contractor is required to furnish, maintain, and inspect monthly at least one 2-A:10-B:C (as a minimum), UL-1 rated, fully-charged fire extinguisher.
- All extinguishers shall be recharged or replaced promptly after use. Use of any company extinguishers shall be reported to the Contract Administrator immediately.

COMBUSTIBLES

- Combustible material shall be kept away from steam lines, radiators, heaters, and hot process and service lines. Use nonflammable or flame-retardant materials whenever possible.
- Dispose of “oily” and solvent-soaked rags in a UL-approved self-closing container.

RADIOACTIVE/TOXIC MATERIALS, LASERS, AND X-RAY EQUIPMENT

- Prior to bringing these materials or equipment on site, check with the Contract Administrator for specific rules regarding their handling, identification, use, and storage.



- Hazard warning signs are used to identify specific areas and equipment. Do not work in these areas or on this equipment without approval of the Contract Administrator.

RAILROAD SAFETY

- If you work on or close to a track (within 6 ft.) you must isolate that section of track with a locked switch, locked wheel stop, or locked derail. Do not park any vehicle or equipment within 6 ft. of the track unless the section of track has been isolated. The Contract Administrator must approve isolation of any section of track.
- When derails or wheel stops are locked on the rail, they must be accompanied by:
 - a) A blue track sign “Stop — Men at Work” at least 55 ft. from the work whenever possible.
 - b) A working blue warning light to supplement the sign at night.
- Derails (portable or permanent) are to be placed on whichever rail is appropriate so that cars are not derailed in a hazardous manner.
- The proprietor is responsible for issuing work permits, closing of track switches, placement of derails/wheel stops, and placing “First Lock.”
- All derails and wheel stops (portable or permanent) when in place on the track, must be in the locked position whether on the rail or in the open position.



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CONTRACT ADMINISTRATOR

Name _____

Phone Number _____

Radio Page _____

EMERGENCY PHONE NUMBERS

Fire _____

Medical _____

Security _____

Safety _____

Environmental _____

Other _____

My Safety Principles

- **Plan Every Job**
- **Anticipate Unexpected Events**
- **Use the Right Tool for the Job**
- **Use Procedures as Tools**
- **Isolate the Equipment**
- **Identify the Hazard**
- **Minimize the Hazard**
- **Protect the Person**
- **Assess People's Abilities**
- **Audit these Principles**

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