

CONTRA COSTA WATER DISTRICT

CONTRACTOR SAFE PRACTICES HANDBOOK 2012



Tear at dotted line and return the bottom portion to the Contract Administrator

.....

I have read and understood the Contractor Safe Practices Handbook and I understand it is my responsibility to ensure that every employee from my company working at Contra Costa Water District facilities has been briefed on the requirements contained in this handbook and has received a copy of the handbook.

Print Name

Company Name

Position

Signature

Date

CONTRACTOR SAFE PRACTICES HANDBOOK

Contra Costa Water District's (District) goal is to provide everyone with the benefits of a safe and healthy work environment. The District is committed to maintaining a workplace free from work-related injuries and illnesses, and to complying with applicable laws and regulations governing workplace safety.

To help achieve these goals, the District has developed a Contractor Safe Practices Handbook. These safe practices outlined in this handbook are intended to foster a safe and healthful work environment.

It is the responsibility of everyone to work together to identify and eliminate conditions and practices that reduce the benefits of a safe and healthy work environment.

This handbook is to augment the requirements in the safety section of the bid documents in the General Conditions, if applicable, and is to be used by the Contractor to be the minimum requirements of the Contractor's safety program. While this handbook provides many of the safe practices the District requires of its contractors, it is not intended to include all required safe practices. The contractor and its employees are expected to follow all applicable rules and regulations in the performance of their work.

The District's Health and Safety Program's objectives are to:

- maximize the safety of employees, contractors, and the general public
- maintain a safe and healthy work environment as free as possible from threat of injury or illness due to unsafe practices or conditions
- establish safety as a priority in conjunction with efficiency and productivity
- comply with all federal, state, city, and District safety requirements and guidelines and, where necessary, to implement additional policies to ensure safety

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The following are safe practices that shall be followed. These safe practices coincide with and/or augment other applicable federal, state and local safety, health and environmental regulations and codes that also shall be followed.

GENERAL SAFETY PRACTICES

1. Obtain appropriate equipment before the start of work to conduct work safely. For example: ladders, lighting, extension cords, direct-read gas monitors, confined space retrieval devices, ventilation fans, lockout/tagout kits, warning signs, as well as personal protective equipment such as respiratory protection, fall protection harnesses, lanyards, hard hats, and safety glasses.
2. Delineate the work zone requiring hard hats using signs, cones, barricades, caution tape, or equivalent warning devices.
3. Use stairs, ladders or ramps to climb up or down work surfaces 4 feet or more in height and/or depth.
4. Ensure there is adequate lighting to perform the job safely.
5. Do not enter confined spaces (vaults, tanks, buried reservoirs, and pipes) unless you are trained, have monitored the atmosphere, and have eliminated or controlled all serious hazards. See Confined Spaces section for other requirements.
6. Keep your work area clean and orderly at all times to prevent slips, trips or falls. Place barriers or warning signs at locations with wet floors.
7. Attend pre-job safety briefings. The District treatment plants and Los Vaqueros Watershed have additional visitor safety rules. Comply with the pertinent visitor safety rules when visiting one of these District locations. Conduct tailgate safety meetings at least once per week for work involving construction, maintenance or repair work, or any work near water (reservoirs and canals) or in confined spaces.
8. Submit all pertinent written safety plans, programs, and information (written programs on confined space entry, lockout/tagout, hot work, diving safety, fall protection, hazardous chemical line breaking, and/or respiratory protection) to the District contract administrator before the start of work. Also submit a written plan for a "critical lift" before performing that lift. A critical lift is a crane lift of more than 75% of crane lift capacity.
9. Submit all current safety certifications and/or licenses for asbestos work and mobile crane operations to the District contract administrator. Before starting work involving confined space entry, hazardous electrical systems (of 50 or more volts), plant machinery, hazardous chemicals, excavations, underwater diving, or the use of fall arrest systems, submit pertinent training records and written descriptions of qualifications for all staff expected to perform work to the District contract administrator.
10. Ensure availability of adequate shade and water for employees working outdoors at a temperature 85^oF and above.
11. Construction debris shall be kept reasonably cleared from work areas, passageways, and stairs in and around buildings or other structures. Debris waste must be stored in a waste container before removal. All waste shall be disposed of at intervals determined by the rate of accumulation and capacity of the job site container.

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SITE SAFETY AND SECURITY

1. Close gates and entry doors that will be unattended to prevent unauthorized entries.
2. If a rattlesnake is found to obstruct your ability to safely perform your work, contact Contra Costa County Animal Services at 335-8300, or Los Vaqueros Watershed staff (when available) to have the snake safely removed from the worksite.
3. Follow posted speed limits. The speed limit at maintenance yards, plant roads, and parking lots is 10 MPH. At Los Vaqueros Watershed, the speed limit is 15 MPH for unpaved roads and 30 MPH for paved roads.
4. Contact Watershed supervisors before driving on unpaved Watershed roads. Watershed supervisors determine when it is safe to drive and what vehicles types may be used during, or shortly after periods of rain.

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DRIVING SAFETY

1. When driving on District property, ensure you have a valid driver's license for the type of vehicle you are driving, vehicle registration form, and proof of vehicle insurance.
2. Ensure that you and your passengers have your safety belts fastened while driving all of the time.
3. Park all vehicles in compliance with the California Vehicle Code and local ordinances. Follow the "*California Manual on Uniform Traffic Control Devices*" whenever work is performed in and adjacent to vehicle traffic.
4. Determine loading restrictions on reservoir roofs and avoid overloading the roofs with the weight of vehicles.

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PERSONAL PROTECTIVE EQUIPMENT

HEAD, EYE, FACE, HAND, FOOT, BODY and HEARING

Head: Hard hats are to be worn at all times when any of the following conditions are present:

1. At work sites where construction and maintenance activities are conducted.
2. When working on a public street, or walking on paths for construction vehicle traffic.
3. When climbing ladders.
4. Vertically entering/exiting confined spaces.
5. At treatment plant process areas.
6. At pump stations/plants.

When possible, wear hard hats for sun protection

Delineate the work zone requiring hard hats using signs, cones, barricades, caution tape, or equivalent warning devices.

Hard hats need not be worn in office environments with no overhead hazards.

Eye/Face

1. Wear the appropriate eye and face protection when you are engaged in metalworking activities, welding and cutting, using powered tools or otherwise exposed to flying particles/objects, injurious light rays, liquid chemicals, or hazardous gases.
2. Eye/Face protection is required to be worn at treatment plants (except offices), pump stations/plants, laboratories, maintenance shops, and all areas where there are unshielded pressurized hazardous chemical lines or when hazardous chemicals are being used.
3. Full-face splash shields with safety glasses worn underneath, chemical splash goggles, or full-face respirators are required to be worn in the immediate areas (within 6 feet or inside secondary containment areas) where corrosive chemicals are off-loaded, handled, or leaking from process lines, or where corrosive chemical line breaking activities are conducted.
4. Eye/Face protection is required in the immediate areas where construction and maintenance activities are being performed.

Hand and Arm

Wear appropriate protective gloves when you may be exposed to abrasions, hazardous substances, burns, cuts, punctures, live electricity, or other hazards. When welding, wear protective leather gauntlet gloves or leather gloves and sleeves. Appropriate chemical resistant nitrile, latex or rubber gloves, and chemical resistant coveralls must be worn when approaching connected bulk chemical delivery hoses.

Foot

Wear safety shoes/boots that comply with ASTM F2413-05, ASTM F2412-05, or ANSI Z-41 when exposed to the risk of foot injuries from hot material, corrosive substances, falling objects, and crushing or penetrating activities. Wear metatarsal (total foot) protection when using a jackhammer.

Body and Leg

1. Wear chemical-resistant suits, coveralls or aprons, when working with bulk chemicals or performing line-breaking operations where chemical exposure to the torso is possible.
2. Wear approved personal floatation devices (PFDs) to control drowning hazards when inside the canal liner fence, near or over areas where water depths may exceed 4 feet, or in areas where indicated by posted signs.

PFDs do not need to be worn when other protective measures are in place, such as:

- a. Keeping a horizontal distance of more than six feet from the drowning hazard.
 - b. Using fall prevention equipment system (anchor point, harness and connection device) that effectively prevents a fall into the water.
 - c. Working behind a proper guardrail or equivalent barrier that is at least 42 inches high.
3. Wear orange uniforms shirts/jackets, or orange or strong yellow-green vests if on foot and exposed to the hazard of vehicular traffic. During rainy weather, orange, strong yellow-green, or yellow rainwear may be worn. During hours of darkness and/or on roads with a speed limit of 45 MPH or above, wear shirts or jackets with retro-reflective stripes on the torso and on each sleeve (rated Class 3 by ANSI 107-2004).
 4. Wear long pants on all construction project sites.
 5. Wear leg protection (chaps) when operating chainsaws (excluding pole saws).
 6. Wear leg protection (snake chaps) when working in snake-prone areas.

Hearing

Wear hearing protection when near the operation of the following equipment: pneumatic tools, concrete saws, mowers, weed eaters, leaf blowers, chainsaws, pavement router, cement grinders, welding/cutting equipment, as well as other equipment where one must shout to be heard.

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POWERED TOOLS AND EQUIPMENT

All employees shall follow these power tool/equipment safety rules:

1. Use manufacturer-recommended safety devices, guards, and shields on powered equipment.
2. Do not disengage safety devices and guards unless equipment is disabled so that it cannot unexpectedly energize. *Exception: A chainsaw's bar nose guard may be removed for certain situations as allowed by the manufacturer's instruction manual.*
3. For non-cord and plug type equipment: isolate, lock and tag out hazardous energy sources (electrical disconnects and valves) before performing service and maintenance. *(See Lock and Tag section).*
4. Effectively ground all cord-connected, electrically-powered tools and equipment, or use double-insulated type tools.
5. Use grounded electric-powered tools and ground-fault circuit interrupters (GFCIs) during all construction and maintenance activities.
6. Use a fall arrest system (lanyard and harness) when using an aerial boom lift.
7. Secure all compressed gas cylinders during transport, use, or storage to prevent them from toppling over. Place valve protection devices on all stored cylinders.
8. Grinders:
 - a. Inspect grinding wheels for cracks or damage before use. Ensure guards are in place. For bench/floor grinders, ensure that the tongue guard is within 1/4" of the wheel, and the tool rest is within 1/8" of the wheel.
 - b. Before using a new grinding wheel, make sure the manufacturer's recommended speed, as posted on the wheel, is compatible with your grinder. Perform a "ring" test to ensure the integrity of the wheel.
 - c. Don't stand directly in front of a grinding wheel whenever a grinder is started.
 - d. Don't grind material for which the wheel is not designed.
 - e. Don't force grinding so that motor slows noticeably.
9. Use water to prevent silica dust from becoming airborne when sawing concrete.

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LADDER SAFETY

1. Select the right ladder for the job.
 - a. The ladder shall be tall enough so that you can reach the required objects without standing on the top or second-to-the-top rung/step of the ladder or putting the ladder on some other object to reach the required objects.
 - b. The ladder shall be made of a material that is appropriate for the work to be performed. Do not use metal (electrically conductive) ladders when working around or with electrical equipment.
2. Use ladders for only their intended purpose, i.e., climbing up and down.
3. Always face the ladder when ascending or descending, holding on with both hands.
4. Step Ladders
 - a. Make sure the spreaders are locked open before climbing.
 - b. Do not climb above second rung from the top.
5. Straight/Extension Ladders
 - a. Ensure that the ladder extends at least 3 feet above the elevated surface to which you are climbing.
 - b. Secure the ladder at the top to hold it in place. Have a second person hold the ladder in place when ascending or descending until the ladder is secured. The person climbing the ladder and the person holding the ladder shall wear hard hats when an overhead hazard is present.
 - c. Keep at or below the third rung from the top on a straight ladder.
6. Fixed Ladders

Use a ladder climbing safety device (LAD-SAF®) when climbing fixed tank ladders that have the device installed.

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CONSTRUCTION AND MAINTENANCE WORK

1. Follow Government Code 4216 (*USA North's California Excavation Manual*) to prevent potentially catastrophic accidents and damage to underground utilities.
2. Use hand tools to locate the exact location of underground utilities (hand dig or probe). While excavating laterally within 24" of the exterior surface of marked utilities or when all known utilities are not marked, probing or hand digging shall be required prior to mechanical excavation. In areas where buried power lines are suspected or within 24" of electric utility marks, use a non-conducting (fiberglass handle and shaft) probing tool to probe soil. Using a probe with a steel shaft and electrically-rated insulated handle to probe soil further away than 24" from electric utility marks or identified electric utility is permissible. Probes within 24" of these marks shall be constructed of a dielectric material.
3. Install adequate shoring, or bench or slope excavations that have either poor soil conditions or depths in excess of 5 feet prior to entry in the excavations.
4. Keep spoils or heavy equipment at least 2 feet from the edge of excavations to prevent them from falling or rolling into excavations.
5. Use manual-cutting tools (snap cutter or hammer) to cut asbestos cement (AC) pipe. Continuously wet the area of the pipe being cut with water to prevent asbestos fibers from becoming airborne. Wear appropriate respiratory protection as required. Properly dispose of asbestos-containing materials according to Cal-EPA regulations.
6. Use grounded electric-powered tools and ground-fault circuit interrupters (GFCIs) during all construction and maintenance activities.
7. Set barricades, fencing or guard rails around open excavations deeper than 6 feet to prevent falls. Place fencing around or sturdy covers (e.g., road plates or 1 1/8" plywood) over unattended excavations.
8. For excavation work, arrange to have the atmospheric levels checked with an appropriate gas monitor, when there is a strong odor present, or other sign of a nearby release of sewage, fuel, natural gas or other hazardous chemical line.
9. Use a portable exhaust fan when welding, torch cutting, operating equipment with combustion engines, or using chemicals in enclosed spaces.
10. Evaluate the working clearance to overhead high voltage (greater than 600 V) power lines and adjust work practices to provide for adequate (greater than 10 foot) clearances.
11. Place rebar caps that provide impalement protection on all sharp vertical metal projections.

Grounds Maintenance

12. When feasible, keep at least 50 feet away from other workers operating push mowers or weed eaters to prevent being struck by flying objects.
13. Do not trim tree branches that are within 10 feet of live high voltage power lines.
14. Use a fall protection system when climbing trees.

Plant Areas

- 15. Unless necessary for troubleshooting, avoid being in the immediate location of industrial equipment when the equipment is remotely started.
- 16. When opening hazardous material piping or tanks follow the CCWD O&M SOP “Line Breaking Involving Dangerous Materials.” Wear self-contained breathing apparatus (SCBAs) when opening systems containing chlorine gas, ozone, or ammonia.
- 17. Always check atmospheric levels before entering a potentially hazardous atmosphere. Wear appropriate respiratory protection before entering a hazardous atmosphere. Continuously monitor the atmosphere.
- 18. Wear supplied air respiratory protection when applying urethane coatings inside confined spaces.

Air Contaminant	Exposure Level in parts per million (ppm)	Required Respiratory Protection
Chlorine (at Randall-Bold WTP)	> 0.5 ppm	SCBA only
Chlorine (at Bollman and City of Brentwood WTP)	0.5 to 5 ppm	Respirator with cartridge, or SCBA
	> 5 ppm	SCBA only
Ozone	> 0.1 ppm	SCBA only
Nitric Acid	> 2 ppm	Respirator with cartridge, or SCBA
	2 to 25 ppm	SCBA only
Ammonia	25 to 250 ppm	Respirator with cartridge, or SCBA
	> 250 ppm	SCBA only
Hydrogen Sulfide	> 10 ppm	SCBA only
Carbon Monoxide	> 25 ppm	SCBA only
Oxygen Deficiency	< 19.5 % oxygen	SCBA only

Check Material Safety Data Sheets for hazardous chemical permissible exposure limits, especially when using the chemicals inside enclosed spaces.

Cartridge Respirator Color Code

Type of air contaminant	Cartridge color code
Organic vapors: solvents, paint (OV)	Black
Acid gases: Chlorine (CL), Hydrofluorosilicic acid (HC), nitric acid, Hydrogen Sulfide, for escape only (HS)	White
Organic vapors & acid gases	Yellow
Ammonia (AM, MA)	Green
Dusts, mists, & fumes: welding fumes, asbestos, (high efficiency, P100)	Magenta/Purple

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ELECTRICAL SAFETY

1. Only qualified electricians shall work on electrical conductors, equipment or systems of 480 V or more. Qualified electricians have a minimum of two years of training and experience with high voltage circuits and equipment and have demonstrated by performance familiarity with the work to be performed and the hazards involved.

Under the supervision or instruction of a qualified electrician, trained persons familiar with the electrical operation to be performed and the electrical hazards involved are permitted to work on electrical equipment or systems of less than 480 V (including throwing switches and using voltage testers to verify proper lockout). No electrical work shall be performed by untrained persons that do not have the demonstrated skills or knowledge in the construction and operation of electric equipment and installations and the hazards involved.

2. Check equipment, cords and attachments before each use to ensure they are safe to use and operate. Remove damaged electrical equipment from service.
3. Use lockout/tagout procedures to ensure that power is completely off during maintenance and repairs of hard-wired equipment. Confirm de-energization before handling non-insulated wiring. The exception to this rule is electrical troubleshooting.
4. Stay clear of energized parts whenever possible. If you must work with or near energized parts with voltages exceeding 50 Volts (i.e., electrical troubleshooting);
 - a. Use personal protective equipment such as rated flame retardant clothing, rubber insulating gloves, sleeves, hard hats, blankets, mats and nonconducting tools.
 - b. Avoid wearing metallic jewelry including watches.
 - c. Follow arc flash label requirements. Wear appropriate PPE or maintain a safe distance from live electrical parts. Where arc flash labels do not exist, stay at least 10 feet away from where live low voltage (480 V and less) electrical work is being conducted unless you are wearing the appropriate personal protective equipment. Stay outside of the motor control center area (building or room) where live high voltage (more than 480 V) electrical work is being conducted unless you are wearing the appropriate personal protective equipment. Use barricade tape or signs to warn unprotected persons to keep away from the live electrical work area.
 - d. Do not use two-hands when handling energized parts.
4. Re-install equipment guards that protect electrical equipment after work is completed.
5. Keep electrical panel doors on and closed. Keep access to electrical panels clear with at least a 36" clearance. Do not use motor control center rooms as storage areas.
6. Use equipment designed for use in damp environments when exposed to such environments. All electrical equipment in these areas must be grounded.
7. Use ground fault circuit interrupters (GFCIs) when using electrically-powered tools and equipment during construction and maintenance activities..
8. Only persons who are trained shall access electrical panels and equipment. Before accessing electrical panels, take safe and appropriate actions to check the panel enclosure for hazardous voltage prior to opening.

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FIRE SAFETY

1. Ensure good housekeeping is maintained, keeping work areas clean and free of debris.
2. Store flammable materials in approved safety cans and/or cabinets. Keep large amounts (more than 10 gallons of flammable liquid) in a flammable liquids cabinet.
 - a. Keep smoking, flames/sparks, and other ignition sources at least 35 feet away from areas where flammable fuel is dispensed.
 - b. To prevent the build up of static electricity and prevent sparks from causing a fire, bond dispensing and receiving containers together before dispensing flammable liquid. Additionally, ensure the dispensing container is grounded.
 - c. Report all fires.
3. Operate and maintain all electrical circuits so they do not become overloaded.
4. Keep fire exits and escape routes clear.
5. Know the evacuation routes from your work area.
6. Know where alarm boxes are located.
7. Maintain a fire watch when open flames, sparks, or smoke are present. Keep a fire extinguisher available when welding/cutting/brazing, grinding or conducting other hot work. Maintain a fire watch for at least 30 minutes after hot work or weed abatement activities are completed at areas with a high wildfire risk.
8. Obtain a hot work permit from the CCWD contract administrator before performing hot work. At CCWD facilities (office buildings/areas, pump stations/plants, and treatment plants), maintain a fire watch for 60 minutes after hot work is completed under a permit. Re-check the work area three hours after hot work is completed under a permit. (See also Welding, Cutting and Other Hot Work section for related requirements).

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CONFINED SPACES

1. When entering confined spaces:
 - a. Remove standing water to less than 3 inches in depth;
 - b. Monitor the atmosphere with a calibrated gas monitor device with oxygen, carbon monoxide, hydrogen sulfide, and explosive atmosphere sensors. Where the potential for hazardous atmospheres of ammonia, chlorine, ozone, or volatile organic compounds exists, monitor the atmosphere with sensors that can detect those hazards, or use appropriate respiratory protection equipment during entry;
 - c. Use an appropriate ladder;
 - d. Where space depths exceed 10', where welding and cutting and/or spray coating activities occur or where other serious hazards exist as defined by the California Code of Regulations (CCR), Title 8, Sec. 5157, "Confined Spaces," a "permit" entry procedure is used. A permit procedure includes use of a Confined Space Permit checklist, use of a retrieval and fall protection system (unless the system poses a greater hazard), and attendant(s) or rescue personnel available on-site that are prepared to carry out a confined space rescue plan;
 - e. Use mechanical ventilation as needed; use exhaust ventilation during welding/cutting activities;
 - f. Eliminate chemical or drowning hazards using positive isolation methods as defined by CCR, Title 8, Sec. 5157. If positive isolation to eliminate drowning hazards is not feasible, entry using a single point of isolation may be made only if a written failure analysis using engineering data indicates that risk of engulfment is adequately controlled by the use of the single isolation point.
 - g. Ensure that self-contained breathing apparatus (SCBAs) are available for rescue personnel where a potential for a hazardous atmosphere may exist; and
 - h. Where access to and from the space is horizontal, fall protection may not be required. However, entrants shall wear harnesses to help assist rescue personnel in retrieval.

2. All confined space entrants, attendants and entry supervisors must be trained on the hazards of confined spaces and safe entry procedures, as well as lockout-tagout procedures when used. Confined space rescue personnel must have participated in a confined space rescue drill within the last 12 months, and be certified in cardiopulmonary resuscitation and first-aid.

District Confined Space list can be found at:

<http://www.ccw-d-staff.com/spaces.asp>

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WELDING, CUTTING AND OTHER HOT WORK

1. Ensure oxygen and acetylene hoses are bound firmly to the connections and ensure all fittings are tight.
2. Do not use oxygen and acetylene without the regulator valves and pressure gauges.
3. Use the pressures recommended by the torch manufacturer. Use the correct size cutting tip. Discard damaged tips. Flash back arrestors must be installed on all torch connections.
4. Light the torch only with a friction lighter.
5. Use exhaust ventilation when welding or cutting in enclosed spaces. Use a gas monitor to confirm safe atmospheres. Do not place cylinders into confined spaces.
6. Do not apply heat to coatings that generate hazardous fumes when heated. Containers which have contained flammables, combustibles or unknown materials shall not be cut or welded.
7. To prevent fires from flames, sparks and molten metal, remove or wet down dry vegetation at least 35 feet around the work area and 75 feet downwind. Cylinders shall be kept far enough away from hot work so that sparks, slag or flame will not reach them. Use fire resistant shields (plywood) as needed.
8. Shield welding work from others to prevent eye damage.

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FALL PROTECTION

1. Install temporary standard 42" guard rails or fencing whenever feasible to provide protection from falls over 7.5 feet.

Set barricades, fencing, or guard rails around open excavations with depths in excess of 6 feet to prevent falls into the excavation.
2. Wear proper fall protection equipment (harness with a fall arrest or fall restraint device tied to an anchor point) when working within 6 feet of the leading edge of unprotected work surfaces more than 7.5 feet in elevation or unprotected sloped work surfaces greater than 40 degrees and more than 7.5 feet in elevation.
3. Do not use fall protection equipment unless properly trained. Inspect fall protection equipment before use.
4. Anchor points must be capable of supporting 5000 lbs per attached worker. Do not attach fall protection equipment to guard rails. When practical, secure the anchor end of the fall arrest device at a level not lower than your waist.
5. A fall arrest device can be a shock absorbing lanyard or a self-retracting lifeline. Lifelines shall be protected against damage.
6. Body belts are worn only for fall restraint, not as part of a fall arrest system.
7. When the use of guard rails or other conventional fall protection is impractical or creates a greater hazard, submit a written fall protection plan that complies with CCR, Title 8, Section 1671.1 to the District Contract Administrator before the start of work.
8. Scaffolds are erected only by trained competent persons.

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LOCK AND TAG

Follow these lock and tag procedures during all confined space entries and all construction and maintenance activities on machinery or equipment where a hazardous release of energy is possible including electrical, mechanical, chemical, hydraulic, pneumatic and potential.

1. Notify all affected personnel (including operators of machinery/ equipment/facility) during a hazard analysis tailgate meeting before the activity.
2. Coordinate with District staff to identify all hazardous energy sources, their energy isolation devices (e.g., circuit breakers, valves, etc.), control circuit-type devices (e.g., push buttons, selector switches, etc.), block-out points, drain/bleed points and energy indicator devices (e.g., gauges, panel lights).
3. Shutdown. All operating controls shall be turned off or returned to the neutral position (depress stop button, open switch, close valve, etc.). Deactivate the energy isolation device so that the machine/ equipment is isolated from the energy source. Disable motor-operated valves.
4. Lockout. A locking device is placed on each energy-isolating device or project lock box to isolate each energy source. Each employee involved shall place their own uniquely keyed lock and tag at each isolation point, or at the lock box.
5. Tagout. Do not use tags alone on energy isolation points unless the isolation point is not lockable. The tag must be attached using a zip tie (or equivalent) and have the following information: name, "Danger – Do Not Operate" (or equivalent wording), date, and contact information.

Machines or equipment not equipped with lockable controls shall be disconnected from its source of power to prevent inadvertent movement or release of hazardous energy. Tag equipment controls. Implement additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the risk of inadvertent energization.

6. Drain, Bleed, Purge Stored Energy. Coordination with District staff to ensure stored or residual energy (such as capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, pressurized air, gas or water systems, chemicals, etc.) are dissipated by methods like grounding, bleeding down, flushing, etc. If necessary, moveable parts shall be mechanically blocked to prevent inadvertent movement.

Portions of chemical systems to be opened must be depressurized and drained as completely as possible, thoroughly washed, flushed, purged and/or vented (if safe), Some toxic gases may not be safely vented. For more specific guidance, follow the District's O&M Line Breaking Procedures which requires SCBAs be used when opening aqueous ammonia, ozone or chlorine systems.

7. Verification of Lockout. First, check that no personnel are exposed, then verify isolation of equipment by operating the push buttons, switches or other normal operating controls, by testing to make certain the equipment is not energized (voltage tester), and/or by visual inspection to ensure the equipment will not otherwise operate. Return operating controls to neutral or "off" position after verification.

Exceptions to the Lock and Tag Procedures: electrical troubleshooting performed by qualified electricians and hot tapping of water pipelines.

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