

**AMENDED SECTION**

**WAC 296-155-428 General requirements. (1) Protection of employees.**

(a) You must not permit an employee to work in such proximity to any part of an electric power circuit that the employee could contact the electric power circuit in the course of work, unless the employee is protected against electric shock by deenergizing the circuit and grounding it or by guarding it effectively by insulation or other means.

(b) You must not require or permit any employee to perform any function in proximity to electrical conductors or to engage in any excavation, construction, demolition, repair, or other operation, unless and until danger from accidental contact with said electrical conductors has been effectively guarded by deenergizing the circuit and grounding it or by guarding it by effective insulation or other effective means.

(c) In work areas where the exact location of underground electric powerlines is unknown, you must not begin any activity which may bring employees into contact with those powerlines until the powerlines have been positively and unmistakably deenergized and grounded.

(d) Before work is begun the you must ascertain by inquiry or direct observation, or by instruments, whether any part of an energized electric

power circuit, exposed or concealed, is so located that the performance of the work may bring any person, tool, or machine into physical or electrical contact with the electric power circuit. You must post and maintain proper warning signs where such a circuit exists. You must advise employees of the location of such lines, the hazards involved, and the protective measures to be taken.

(e) You must not perform any work, nor are you permitted to pile, store or otherwise handle any material, nor are you permitted to erect or dismantle any scaffolding, commercial signs, or structures, nor are you permitted to operate any tools, machinery or equipment within the specified minimum distances from any energized high voltage electrical conductor capable of energizing the material or equipment; except where the electrical distribution and transmission lines have been deenergized and visibly grounded at point of work, or where insulating barriers not a part of or an attachment to the equipment have been erected, to prevent physical contact with the lines, you must operate equipment proximate to, under, over, by, or near energized conductors only in accordance with the following:

(i) For lines rated 50 kV. or below, minimum clearance between the lines and any part of the equipment or load must be 10 feet.

(ii) For lines rated over 50 kV. minimum, clearance between the lines and any part of the equipment or load must be 10 feet plus 0.4 inch or each 1 kV. over 50 kV., or twice the length of the line insulator but never less than 10 feet.

(f) **Work on energized equipment.** Only qualified persons are permitted to work on electric circuit parts of equipment that have not been deenergized under the procedures of WAC 296-155-429(4). Such persons must be capable of working safely on energized circuits and must be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.

(g) **Overhead electric lines.** Where overhead electric conductors are encountered in proximity to a work area, you must be responsible for:

(i) Ascertaining the voltage and minimum clearance distance required; and

(ii) Maintaining the minimum clearance distance; and

(iii) Ensuring that the requirements of this section are complied with.

(h) If relocation of the electrical conductors is necessary, you must make arrangements with the owners of the lines for such relocation.

(i) **Barriers.**

(i) Barriers must be of such character and construction as to effectively provide the necessary protection without creating other hazards or jeopardizing the operation of the electrical circuits.

(ii) You must only install barriers within the 10 feet clearance from conductors under the supervision of authorized and qualified persons and this must include a representative of the electrical utility or owner involved.

(j) **Exceptions.**

(i) These rules do not apply to the construction, reconstruction, operation, and maintenance, of overhead electrical lines, structures, and associated equipment by authorized and qualified electrical workers.

(ii) These rules do not apply to authorized and qualified employees engaged in the construction, reconstruction, operation, and maintenance, of overhead electrical circuits or conductors and associated equipment of rail transportation systems or electrical generating, transmission, distribution and communication systems which are covered by chapters 296-45 and 296-32 WAC.

(k) **You must take special precautions.**

(i) When handling any winch lines, guy wires, or other free cable, wire or rope in the vicinity of any electrical conductors.

(ii) When pulling a winch line, or other cable or rope under energized electrical conductors from a boom, mast, pile driver, etc., in such a manner as to make possible an approach to within 10 feet of a conductor.

(iii) When there is possibility of a winch line, cable, etc., either becoming disconnected or breaking under load because of excessive strain and flipping up into overhead conductors.

(iv) When placing steel, concrete reinforcement, wire mesh, etc.

(v) When handling pipe or rod sections in connection with digging wells or test holes.

(vi) When moving construction equipment, apparatus, machinery, etc., all such movements must avoid striking supporting structures, guy wires, or other elements of the electrical utility system causing the conductors to so swing or move as to decrease clearances to less than 10 feet from construction equipment, or to cause them to come together.

(1) **Warning sign required.**

(i) You must post and maintain approved durable warning sign legible at 12 feet, reading "It is unlawful to operate this equipment within 10 feet of electrical conductors" in plain view of the operator at the controls of each crane, derrick, shovel, drilling rig, pile driver or

similar apparatus which is capable of vertical, lateral or swinging motion.

(ii) You must install a similar sign on the outside of the equipment and located as to be readily visible to mechanics or other persons engaged in the work operation.

(iii) Signs must be not less than 6" x 8" dimensions with the word "WARNING" or "DANGER" in large letters and painted red across the top and the other letters in black painted on yellow background.

(m) You must consider any overhead wire to be an energized line until the owner of such line or the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.

(2) **Passageways and open spaces.**

(a) You must provide barriers or other means of guarding to ensure that workspace for electrical equipment will not be used as a passageway during periods when energized parts of electrical equipment are exposed.

(b) You must keep working spaces, walkways, and similar locations clear of cords so as not to create a tripping hazard to employees.

(3) **Load ratings.** In existing installations, you must not make any changes in circuit protection to increase the load in excess of the load rating of the circuit wiring.

(4) **Fuses.** When fuses are installed or removed with one or both terminals energized, you must use special tools insulated for the voltage.

(5) **Cords and cables.**

(a) You must not use work or frayed electric cords or cables.

(b) You must not fasten extension cords with staples, hang them from nails, or suspend them by wire.

(6) **Interlocks.** Only a qualified person following the requirements of this section may defeat an electrical safety interlock, and then only temporarily while they are working on the equipment. The interlock systems must be returned to its operable condition when this work is completed.

(7) **Portable electric equipment - Handling.** You must handle portable equipment in a manner which will not cause damage. You must not use flexible electric cords connected to equipment for raising or lowering the equipment. You must not fasten flexible cords with staples or otherwise hang them in such a fashion as could damage the outer jacket or insulation.

(8) **Visual inspection.** When an attachment plug is to be connected to a receptacle (including any on a cord set), you must first check the

relationship of the plug and receptacle contacts to ensure they are of proper mating configurations.

(9) **Connecting attachment plugs.**

(a) Your hands must not be wet when plugging and unplugging flexible cords and cord- and plug-connected equipment, if energized equipment is involved.

(b) You must only handle energized plug and receptacle connections with insulating protective equipment if the condition of the connection could provide a conducting path to the employee's hand (if, for example, a cord connector is wet from being immersed in water).

(c) You must properly secure locking-type connectors after connection.

(10) **Routine opening and closing circuits.** You must use load rated switches, circuit breakers, or other devices specifically designed as disconnecting means for the opening, reversing, or closing of circuits under load conditions. You must not use cable connectors not of the load-break type, fuses, terminal lugs, and cable splice connections for such purposes, except in an emergency.

(11) **Reclosing circuits after protective device operation.** After a circuit is deenergized by a circuit protective device, you must not manually reenergize the circuit until it has been determined that the

equipment and circuit can be safety energized. This repetitive manual reclosing of circuit breakers or reenergizing circuits through replaced fuses is prohibited.

Note: When it can be determined from the design of the circuit and the overcurrent devices involved that the automatic operation of a device was caused by an overload rather than a fault connection, no examination of the circuit or connected equipment is needed before the circuit is reenergized.

(12) **Test instruments and equipment - Use.** Only qualified persons must perform testing work on electric circuits or equipment.

(13) **Visual inspection.** You must visually inspect test instruments and equipment and all associated test leads, cables, power cords, probes, and connectors for external defects and damage before the equipment is used. If there is a defect or evidence of damage that might expose an employee to injury, you must remove the defective or damaged item from service, and you must ensure that no employee uses it until necessary repairs and tests to render the equipment safe have been made.

(14) **Rating of equipment.** Test instruments and equipment and their accessories must be rated for the circuits and equipment to which they will be connected and must be designed for the environment in which they will be used.

(15) **Occasional use of flammable or ignitable materials.** Where flammable materials are present only occasionally, you must not use electric equipment capable of igniting them, unless measures are taken to prevent hazardous conditions from developing. Such materials include,

but are not limited to: Flammable gases, vapors, or liquids; combustible dust; and ignitable fibers or flyings.

(16) **Work on energized equipment.** Only qualified persons must work on electric circuit parts of equipment that have not been deenergized under the procedures of WAC 296-155-429(4). Such persons must be capable of working safely on energized circuits and must be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.

(17) **Overhead lines.** If work is to be performed near overhead lines, you must deenergize and ground the lines, or you must provide other protective measures before work is started. If the lines are to be deenergized, you must make arrangements with the person or organization that operates or controls the electric circuits involved to deenergize and ground them. If protective measures, such as guarding, isolating, or insulating, these precautions must prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment.

(18) Overhead Energized Transit System Power Supply (OETSPS) Lines below 800 volts DC.

If work is to be performed in proximity to OETSPS lines and the employer has identified an alternative means of protection from the

electrical hazard that utilizes both engineering controls and administrative controls, based on the type of work being performed and equipment in use, a minimum clearance distance of 4ft is allowed if all of the following applicable provisions are met:

(a) For mechanized equipment with a boom/bucket, a height limitation device (sensor) must be installed that will limit and restrict the height the boom/bucket can be raised. The operator must not perform any adjustments on the equipment past a height which will maintain a distance of 4 feet or more from the OETSPS lines.

(b) For other mechanized equipment where there is potential for any part of the equipment to come in contact with the OETSPS lines, a device such as a chain or strap must be in place so that the operator cannot adjust the limits on the equipment past a height which will maintain a distance of 4 feet or more from the OETSPS lines.

(c) For other mechanized equipment where there is potential for employees to come in contact with OETSPS lines by

climbing on part of the equipment structure, such as an access ladder, or other elevated working surfaces, a physical barrier or sign must be installed to warn employees of the electrical hazard and or to prevent access to the equipment/hazard.

(d) Signage on mechanized equipment must be installed to warn workers and anyone else in the vicinity that the equipment is working under OETSPS Lines.

(e) You must develop a written policy and train all employees in electrical hazard awareness when working in proximity of OETSPS lines.

(f) You must make sure to have in place an Electrical Safety Watch, who has the authority to stop work and to take the necessary corrective actions. This person's only responsibility as the Safety Watch is to warn employees and those in the work area (by verbal, hand signal/red flag or air horn commands) of impeding hazards associated with work within 10 feet of the trolley lines.

(g) You must notify the owner, department, agency or utility responsible for the OETSPS lines that work will be working in proximity to their overhead lines. You must verify the OETSPS line heights, and document in writing that this requirement has been met. Written documentation will be kept onsite for the duration of the project, and made available to the department upon request.

(h) Crew leader-crew safety meetings must be held at the beginning of each job with all employees involved in the work to discuss the OETSPS line clearances and the specific safety procedures that must be followed. This meeting will be documented as to subjects discussed and attendance, kept onsite for the duration of the project, and made available to the department upon request.

**(19) Unqualified persons.** When an unqualified person is working in an elevated position, or on the ground, near overhead lines, the location must be such that the person and the longest conductive object they may contact cannot come closer to any unguarded, energized overhead line than the following distances:

(a) For voltages to ground 50kV or below—10 ft.;

(b) For voltages to ground over 50kV—10 ft. plus 0.4 inch for every 1kV over 50kV.

((19)) 20 **Qualified persons.** When a qualified person is working in the vicinity of overhead lines, whether in an elevated position or on the ground, the person must not approach or take any conductive object without an approved insulating handle closer to exposed energized parts that are shown in subsection (1)(e) of this section unless:

(a) The person is insulated from the energized part (gloves, with sleeves if necessary), rated for the voltage involved are considered to be insulation of the person from the energized part on which work is performed; or

(b) The energized part is insulated both from all other conductive objects at a different potential and from the person; or

(c) The person is insulated from all conductive objects at a potential different from that of the energized part.

((20)) 21 **Vehicular and mechanical equipment.**

(a) You must operate any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines so that a clearance of 10 ft. is maintained. If the voltage is higher than 50kV, you must increase the clearance 0.4 inch for every 1kV over

the voltage. However, under any of the following conditions, the clearance may be reduced:

(i) If the vehicle is in transit with its structure lowered, the clearance may be reduced to 4 ft. If the voltage is higher than 50kV, you must increase the clearance 0.4 inch for every 1kV over that voltage.

(ii) If insulating barriers are installed to prevent contact with the lines, and if the barriers are rated for the voltage of the line being guarded and are not a part of or an attachment to the vehicle or its raised structure, the clearance may be reduced to a distance within the designed working dimensions of the insulating barrier.

(b) If the equipment is an aerial lift insulated for the voltage involved, and if the work is performed by a qualified person, the clearance (between the uninsulated portion of the aerial lift and the power line) may be reduced to the distance given in (a) through (d) of this subsection.

(c) Employees standing on the ground must not contact the vehicle or mechanical equipment or any of its attachments, unless:

(i) The employee is using protective equipment rated for the voltage; or

(ii) The equipment is located so that no uninsulated part of its structure (that portion of the structure that provides a conductive path

to employees on the ground) can come closer to the line than permitted in this section.

(d) If any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines is of grounding must not stand at the grounding location whenever there is a possibility of overhead line contact. You must take additional precautions, such as the use of barricades or insulation, to protect employees from hazardous ground potentials, depending on earth resistivity and fault currents, which can develop within the first few feet or more outward from the grounding point.

((21)) 22 **Illumination.**

(a) Employees must not enter spaces containing exposed energized parts, unless illumination is provided that enables the employees to perform the work safely.

(b) Where lack of illumination or an obstruction precludes observation of the work to be performed, employees must not perform tasks near exposed energized parts. Employees must not reach blindly into areas which may contain energized parts.

((22)) 23 Confined or enclosed space (such as a manhole or vault) that contains exposed energized parts, you must provide, and the employee

must use, protective shields, protective barriers, or insulating materials as necessary to avoid inadvertent contact with these parts. You must secure doors, hinged panels, and the like to prevent their swinging into an employee and causing the employee to contact exposed energized parts.

((23)) 24 **Conductive materials and equipment.** You must handle conductive materials and equipment that are in contact with any part of an employee's body in a manner that will prevent them from contacting exposed energized conductors or circuit parts. If an employee handles long dimensional conductive objects (such as ducts and pipes) practices (such as the use of insulation, guarding, and material handling techniques) which will minimize the hazard.

((24)) 25 **Portable ladders.** Portable ladders must have nonconductive siderails if they are used where the employee or the ladder could contact exposed energized parts.

((25)) 26 **Conductive apparel.** You must not wear conductive articles of jewelry and clothing (such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear) if they might contact exposed energized parts.

((26)) 27 **Housekeeping duties.**

(a) Where live parts present an electrical contact hazard, employees must not perform housekeeping duties at such close distances to the parts that there is a possibility of contact, unless adequate safeguards (such as insulating equipment or barriers) are provided.

(b) You must not use electrically conductive cleaning materials (including conductive solids such as steel wool, metalized cloth, and silicon carbide, as well as conductive liquid solutions) in proximity to energized parts unless procedures are followed which will prevent electrical contact.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 16-09-085, § 296-155-428, filed 4/19/16, effective 5/20/16. Statutory Authority: Chapter 49.17 RCW. WSR 94-15-096 (Order 94-07), § 296-155-428, filed 7/20/94, effective 9/20/94; WSR 92-23-017 (Order 92-13), § 296-155-428, filed 11/10/92, effective 12/18/92; WSR 88-11-021 (Order 88-04), § 296-155-428, filed 5/11/88.]