

Great Western Painting

Work Performed On or Near Overhead Lines

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1910.269(p) and (q) of Electric Power Generation, Transmission, and Distribution

Note: The below information applies only to power generation, transmission, and distribution installations, including related equipment for the purpose of communication or metering that are accessible only to qualified employees; and

Other installations at an electric power generating station, as follows: fuel and ash handling and processing installations, such as coal conveyors, Water and steam installations, such as penstocks, pipelines, and tanks, providing a source of energy for electric generators, and Chlorine and hydrogen systems; test sites where employees perform electrical testing involving temporary measurements associated with electric power generation, transmission, and distribution in laboratories, in the field, in substations, and on lines, as opposed to metering, relaying, and routine line work; work on, or directly associated with, the installations noted above and line-clearance tree-trimming operations.

It does not apply to construction work or electrical installations, electrical safety-related work practices, or electrical maintenance considerations covered by 1910 Subpart S – Electrical.

General Requirements:

The critical safety components of mechanical elevating and rotating equipment shall receive a thorough visual inspection before use on each shift.

Note: Critical safety components of mechanical elevating and rotating equipment are components for which failure would result in free fall or free rotation of the boom.

No motor vehicle or earthmoving or compacting equipment having an obstructed view to the rear may be operated on off-highway jobsites where any employee is exposed to the hazards created by the moving vehicle, unless:

1. The vehicle has a reverse signal alarm audible above the surrounding noise level, or
2. The vehicle is backed up only when a designated employee signals that it is safe to do so.

Rubber-tired self-propelled scrapers, rubber-tired front-end loaders, rubber-tired dozers, wheel-type agricultural and industrial tractors, crawler-type tractors, crawler-type loaders, and motor graders, with or without attachments, shall have rollover protective structures that meet the requirements of Subpart W of Part 1926.

The operator of an electric line truck may not leave his or her position at the controls while a load is suspended, unless it can demonstrate that no employee (including the operator) is endangered.

Outriggers:

Mobile equipment, if provided with outriggers, shall be operated with the outriggers extended and firmly set.

Note: If the work area or the terrain precludes the use of outriggers, the equipment may be operated only within its maximum load ratings specified by the equipment manufacturer for the particular configuration of the equipment without outriggers.

Outriggers may not be extended or retracted outside of the clear view of the operator unless all employees are outside the range of possible equipment motion.

Applied loads:

Mechanical equipment used to lift or move lines or other material shall be used within its maximum load rating and other design limitations for the conditions under which the mechanical equipment is being used.

Operations near energized lines or equipment:

Mechanical equipment shall be operated so that the minimum approach distances no less than the distances computed by Table R-3 for ac systems or Table R-8 for dc systems are maintained from exposed energized lines and equipment. However, the insulated portion of an aerial lift operated by a qualified employee in the lift is exempt from this requirement.

Note: OSHA Definition of a Qualified Person: “One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.”

Note: The following statement is extracted from the previous obsolete 1910.269(p)(4) which stated: “Operations near energized lines or equipment. (i) Mechanical equipment shall be operated so that the minimum approach distances of Table R-6 through Table R-10 are maintained from exposed energized lines and equipment. However, the insulated portion of an aerial lift operated by a qualified employee in the lift is exempt from this requirement if the applicable minimum approach distance is maintained between the uninsulated portions of the aerial lift and exposed objects at a different potential.”

Note: The current 1910.269, September 24, 2014, does not contain the above statement, and its provisions are obsolete.

A designated employee other than the equipment operator shall observe the approach distance to exposed lines and equipment and provide timely warnings before the minimum approach distance is reached, unless it can

demonstrate that the operator can accurately determine that the minimum approach distance is being maintained.

The energized lines or equipment exposed to contact shall be covered with insulating protective material that will withstand the type of contact that could be made during the operation.

The mechanical equipment shall be insulated for the voltage involved. The mechanical equipment shall be positioned so that its uninsulated portions cannot approach the energized lines or equipment any closer than the minimum approach distances.

Each employee shall be protected from hazards that could arise from mechanical equipment contact with energized lines or equipment. The **protective measures** used shall ensure that employees will not be exposed to hazardous differences in electric potential. Unless it can be demonstrated that the methods in use protect each employee from the hazards that could arise if the mechanical equipment contacts the energized line or equipment, the measures used shall include all of the following techniques:

1. Using the best available ground to minimize the time the lines or electric equipment remain energized,
2. Bonding mechanical equipment together to minimize potential differences,
3. Providing ground mats to extend areas of equipotential, and
4. Employing insulating protective equipment or barricades to guard against any remaining hazardous electrical potential differences.

Minimum approach distances:

“1910.269(l)3(i): The employer shall establish minimum approach distances no less than the distances computed by Table R-3 for ac systems or Table R-8 for dc systems.”

Note: No later than April 1, 2015, for voltages over 72.5 kilovolts, the employer shall determine the maximum anticipated per-unit transient overvoltage, phase-to-ground, through an engineering analysis or assume a maximum anticipated per-unit transient overvoltage, phase-to-ground, in accordance with Table R-9. When the employer uses portable protective gaps to control the maximum transient overvoltage, the value of the maximum anticipated per-unit transient overvoltage, phase-to-ground, must provide for five standard deviations between the statistical sparkover voltage of the gap and the statistical withstand voltage corresponding to the electrical component of the minimum approach distance. The employer shall make any engineering analysis conducted to determine maximum anticipated per unit transient overvoltage available upon request to employees and to the Assistant Secretary or designee for examination and copying.

Note: See 1910.269 Appendix B for information on how to calculate the maximum anticipated per-unit transient overvoltage, phase-to-ground, when the employer uses portable protective gaps to reduce maximum transient overvoltages.

Note: Legacy Minimum Approach Distance Table 6 through Table 13 found in Appendix B to 1910.269 may not be used as of April 1, 2015.

Table R-3 for ac systems and Table R-8 for dc systems require actual computations.

Overhead Lines and Live-Line Barehand Work:

Following are **additional requirements** for work performed **on or near overhead lines and equipment and for live-line barehand work.**

Before allowing employees to subject elevated structures, such as poles or towers, to such stresses as climbing or the installation or removal of equipment may impose, we shall ascertain that the structures are capable of sustaining the additional or unbalanced stresses. If the pole or other structure cannot withstand the expected loads it shall be braced or otherwise supported so as to prevent failure.

Note: Appendix D to Subpart V of Part 1926-Methods of Inspecting and Testing Wood Poles (click here) **contains test methods that employers can use in ascertaining whether a wood pole is capable of sustaining the forces imposed by an employee climbing the pole. This paragraph also requires the employer to ascertain that the pole can sustain all other forces imposed by the work employees will perform.**

When a pole is set, moved, or removed near an exposed energized overhead conductor, the pole may not contact the conductor.

When a pole is set, moved, or removed near an exposed energized overhead conductor, we shall ensure that each employee wears electrical protective equipment or uses insulated devices when handling the pole and that no employee contacts the pole with uninsulated parts of his or her body.

To protect employees from falling into holes used for placing poles, we shall physically guard the holes, or ensure that employees attend the holes, whenever anyone is working nearby.

The following provisions apply to the installation and removal of overhead conductors or cable (overhead lines):

1. When lines that employees are installing or removing can contact energized parts, we shall use the tension-stringing method, barriers, or other equivalent measures to minimize the possibility that conductors and cables the employees are installing or removing will contact energized power lines or equipment.
2. For conductors, cables, and pulling and tensioning equipment, we shall provide the protective measures [See Page 3, above] when

employees are installing or removing a conductor or cable close enough to energized conductors that any of the following failures could energize the pulling or tensioning equipment or the conductor or cable being installed or removed:

- a. Failure of the pulling or tensioning equipment,
 - b. Failure of the conductor or cable being pulled, or
 - c. Failure of the previously installed lines or equipment.
3. If the conductors that employees are installing or removing cross over energized conductors in excess of 600 volts and if the design of the circuit-interrupting devices protecting the lines so permits, we shall render inoperable the automatic-reclosing feature of these devices.
- a. Before employees install lines parallel to existing energized lines, we shall make a determination of the approximate voltage to be induced in the new lines, or work shall proceed on the assumption that the induced voltage is hazardous.
4. Unless we can demonstrate that the lines that employees are installing are not subject to the induction of a hazardous voltage or unless the lines are treated as energized, temporary protective grounds shall be placed at such locations and arranged in such a manner that we can demonstrate will prevent exposure of each employee to hazardous differences in electric potential.

Note [Appendix C to Subpart V of Part 1926-Protection From Hazardous Differences in Electric Potential](#) (click here) **contains guidelines for protecting employees from hazardous differences in electric potential as required by this paragraph.**

Note: **If we take no precautions to protect employees from hazards associated with involuntary reactions from electric shock, a hazard exists if the induced voltage is sufficient to pass a current of 1 milliamperes through a 500-ohm resistor. If we protect employees from injury due to involuntary reactions from electric shock, a hazard exists if the resultant current would be more than 6 milliamperes.**

5. Reel handling equipment, including pulling and tensioning devices, shall be in safe operating condition and shall be leveled and aligned.
6. We shall ensure that employees do not exceed load ratings of stringing lines, pulling lines, conductor grips, load-bearing hardware and accessories, rigging, and hoists.
7. We shall repair or replace defective pulling lines and accessories.
8. We shall ensure that employees do not use conductor grips on wire rope unless the manufacturer specifically designed the grip for this application.

9. We shall ensure that employees maintain reliable communications, through two-way radios or other equivalent means, between the reel tender and the pulling rig operator.
10. Employees may operate the pulling rig only when it is safe to do so.

Note: Examples of unsafe conditions include: employees in locations prohibited by subparagraph paragraph 11, below, conductor and pulling line hangups, and slipping of the conductor grip.

11. While a power-driven device is pulling the conductor or pulling line and the conductor or pulling line is in motion, we shall ensure that employees are not directly under overhead operations or on the crossarm, except as necessary for the employees to guide the stringing sock or board over or through the stringing sheave.

In addition to other applicable provisions contained in Subpart V, Electric Power Transmission and Distribution, the following requirements apply to live-line barehand work:

1. Before an employee uses or supervises the use of the live-line barehand technique on energized circuits, we shall ensure that the employee has completed the required training, **detailed below on Pages 9 & 10**, and in the safety requirements, below.
2. Before any employee uses the live-line barehand technique on energized high-voltage conductors or parts, we shall ascertain the following information in addition to information about other existing conditions required by § 1926.950(d), see Information Transfer, above:
 - a. The nominal voltage rating of the circuit on which employees will perform the work,
 - b. The clearances to ground of lines and other energized parts on which employees will perform the work, and
 - c. The voltage limitations of equipment employees will use.
3. We shall ensure that the insulated equipment, insulated tools, and aerial devices and platforms used by employees are designed, tested, and made for live-line barehand work and we shall ensure that employees keep tools and equipment clean and dry while they are in use.
4. We shall render inoperable the automatic-reclosing feature of circuit-interrupting devices protecting the lines if the design of the devices permits.
5. We shall ensure that employees do not perform work when adverse weather conditions would make the work hazardous even after we implements the work practices required by this subpart. Additionally, employees may not perform work when winds reduce the phase-to-

phase or phase-to-ground clearances at the work location below the minimum approach distances we have established unless insulating guards cover the grounded objects and other lines and equipment.

Note: Thunderstorms in the vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that make live-line barehand work too hazardous to perform safely even after we implements the work practices required by this subpart.

6. We shall provide and ensure that employees use a conductive bucket liner or other conductive device for bonding the insulated aerial device to the energized line or equipment.
 - a. The employee shall be connected to the bucket liner or other conductive device by the use of conductive shoes, leg clips, or other means.
 - b. Where differences in potentials at the worksite pose a hazard to employees, we shall provide electrostatic shielding designed for the voltage being worked.
7. We shall ensure that, before the employee contacts the energized part, the employee bonds the conductive bucket liner or other conductive device to the energized conductor by means of a positive connection. This connection shall remain attached to the energized conductor until the employee completes the work on the energized circuit.
8. Aerial lifts used for live-line barehand work shall have dual controls (lower and upper) as follows:
 - a. The upper controls shall be within easy reach of the employee in the bucket. On a two-bucket-type lift, access to the controls shall be within easy reach of both buckets.
 - b. The lower set of controls shall be near the base of the boom and shall be designed so that they can override operation of the equipment at any time.
9. Lower (ground-level) lift controls may not be operated with an employee in the lift except in case of emergency.
10. We shall ensure that, before employees elevate an aerial lift into the work position, the employees check all controls (ground level and bucket) to determine that they are in proper working condition.
11. We shall ensure that, before employees elevate the boom of an aerial lift, the employees ground the body of the truck or barricade the body of the truck and treat it as energized.
12. We shall ensure that employees perform a boom-current test before starting work each day, each time during the day when they

encounter a higher voltage, and when changed conditions indicate a need for an additional test.

- a. This test shall consist of placing the bucket in contact with an energized source equal to the voltage to be encountered for a minimum of 3 minutes.
 - b. The leakage current may not exceed 1 microampere per kilovolt of nominal phase-to-ground voltage.
 - c. We shall immediately suspend work from the aerial lift when there is any indication of a malfunction in the equipment.
13. We shall ensure that employees maintain the minimum approach distances, established by us under § 1926.960(c)(1)(i) [See Working on or Near Exposed Energized Parts, above], from all grounded objects and from lines and equipment at a potential different from that to which the live-line barehand equipment is bonded, unless insulating guards cover such grounded objects and other lines and equipment.
 14. We shall ensure that, while an employee is approaching, leaving, or bonding to an energized circuit, the employee maintains the minimum approach distances, established by us under § 1926.960(c)(1)(i) [See Working on or Near Exposed Energized Parts, above], between the employee and any grounded parts, including the lower boom and portions of the truck and between the employee and conductive objects energized at different potentials.
 15. While the bucket is alongside an energized bushing or insulator string, we shall ensure that employees maintain the phase-to-ground minimum approach distances, established by us under § 1926.960(c)(1)(i), [See Working on or Near Exposed Energized Parts, above] between all parts of the bucket and the grounded end of the bushing or insulator string or any other grounded surface.
 16. We shall ensure that employees do not use handlines between the bucket and the boom or between the bucket and the ground. However, employees may use nonconductive-type handlines from conductor to ground if not supported from the bucket. We shall ensure that no one uses ropes used for live-line barehand work for other purposes.
 17. We shall ensure that employees do not pass uninsulated equipment or material between a pole or structure and an aerial lift while an employee working from the bucket is bonded to an energized part.
 18. A nonconductive measuring device shall be readily accessible to employees performing live-line barehand work to assist them in maintaining the required minimum approach distance.

The following requirements apply to work performed on towers or other structures that support overhead lines:

1. We shall ensure that no employee is under a tower or structure while work is in progress, except when we can demonstrate that such a working position is necessary to assist employees working above.
2. We shall ensure that employees use tag lines or other similar devices to maintain control of tower sections being raised or positioned, unless we can demonstrate that the use of such devices would create a greater hazard to employees.
3. We shall ensure that employees do not detach the loadline from a member or section until they safely secure the load.
4. We shall ensure that, except during emergency restoration procedures, employees discontinue work when adverse weather conditions would make the work hazardous in spite of the work practices required by this subpart.

Note: Thunderstorms in the vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that make this work too hazardous to perform even after we implements the work practices required by this subpart.

Training: All Employees:

1. Each employee shall be trained in, and familiar with, the safety-related work practices, safety procedures, and other safety requirements in Subpart V, Electric Power Transmission and Distribution, that pertain to his or her job assignments.
2. Each employee shall also be trained in and familiar with any other safety practices, including applicable emergency procedures (such as pole-top and manhole rescue), that are not specifically addressed by Subpart V but that are related to his or her work and are necessary for his or her safety.
3. The degree of training shall be determined by the risk to the employee for the hazard involved.

Training: Qualified Employees:

Each qualified employee shall also be trained and competent in:

1. The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment,
2. The skills and techniques necessary to determine the nominal voltage of exposed live parts,

Note: An employee must have had the training, see above, to be considered a qualified person.

3. The minimum approach distances specified in this subpart corresponding to the voltages to which the qualified employee will be exposed and the skills and techniques necessary to maintain those distances,
4. The proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electric equipment, and
5. The recognition of electrical hazards to which the employee may be exposed and the skills and techniques necessary to control or avoid these hazards.

Note: Our job site safety person/competent person shall determine, through regular supervision and through inspections conducted on at least an annual basis that each employee is complying with the safety related work practices required by Subpart V.

Additional [Refresher] Training:

An employee shall receive additional training (or retraining) under any of the following conditions:

1. If the supervision or annual inspections, see above, indicate that the employee is not complying with the safety-related work practices required by this Subpart V, or
2. If new technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that are different from those which the employee would normally use, or
3. If he or she must employ safety related work practices that are not normally used during his or her regular job duties.

Note: The Occupational Safety and Health Administration considers tasks that are performed less often than once per year to necessitate retraining before the performance of the work practices involved.

Training will be classroom or on-the-job. The goal of training is to establish employee proficiency in the work practices required by Subpart V and shall introduce the procedures necessary for compliance with Subpart V.

Note: Though they are not required, employment records that indicate that an employee has successfully completed the required training are one way of keeping track of when an employee has demonstrated proficiency.

Note: For an employee with previous training, we may determine that that employee has demonstrated the proficiency using the following process: (1) Confirm that the employee has the required training, see above, (2) use an examination or interview to make an initial determination that the employee understands the relevant safety-related work practices before he or she performs any work covered by Subpart V, and (3) supervise the employee closely until that employee has demonstrated proficiency.