THE ELECTRIC COOPERATIVES OF SOUTH CAROLINA

"SAFETY TAKES PRECEDENCE OVER
ALL OTHER REQUIREMENTS"

Safety Manual
2024

COASTAL ELECTRIC COOPERATIVE, INC.

Your Touchstone Energy® Cooperative

The information contained within this safety manual represents the minimum safety requirements. Each cooperative may require additional protective measures.

I have received a safety manual and the contents have been reviewed with me. I understand that I am responsible for knowing and following all safety rules and safe work practices. I also acknowledge that receipt of this manual does not constitute a contract of employment.

Employee signature: _____

Date: _____

Contents reviewed by: _____

Date: _____

SAFETY MANUAL

The Board of Trustees of the Electric Cooperatives of South Carolina, Inc. does hereby recommend that electric cooperatives in South Carolina accept this safety manual as the minimum standards for employees. The purpose of this manual is to promote safe and consistent work practices among the South Carolina cooperatives. Be it further resolved that each cooperative must establish policies, practices and programs as each system deems necessary to maintain a safe working environment.

Every effort has been made to provide the most accurate and authoritative information possible in regard to the subject matter addressed in this document. Due to the constantly changing nature of laws and regulations, ECSC does not assume any liability for errors or omissions within this document. If specific information is needed concerning a particular issue, please contact the Loss Control and Training Department at ECSC.

FOREWORD

The safety rules contained within this manual are the result of government regulations, established safe work practices and numerous investigations of many tragic injuries. Work-related injuries are very costly, in human life, suffering, and in dollars. Hopefully we can learn from the mistakes of others through the study of this manual and become more aware of the hazards we face each day. Unsafe acts of people cause well over 95% of all injuries. We must work together to eliminate unsafe acts and thereby eliminate the related injuries. Most injuries can be prevented with proper job planning, training, and a positive safety attitude.

Don’t take chances with your life and the future of your family.

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DEFINITIONS (NESC, OSHA General Industry, OSHA Construction)

Administrative authority - The governmental authority exercising jurisdiction over application of this code.

Affected employee - An employee whose job requires him or her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him or her to work in an area in which such servicing or maintenance is being performed.

Alive or live (energized) - Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of the earth in the vicinity. The term “live” is sometimes used in place of the term “current-carrying,” where the intent is clear, to avoid repetition of the longer term.

Ampacity - The current-carrying capacity, expressed in amperes, of an electric conductor under stated thermal conditions.

Anchorage - A secure point of attachment to which a fall protection system is connected. ANSI American National Standards Institute

ANSI - American National Standards Institute

Approved - The term “approved” when used in connection with methods, tools, or equipment, refers to those methods, tools or equipment meeting the requirements of OSHA, ANSI, NESC or the Cooperative.

ASTM - American Society for Testing and Materials

Attendant - An employee assigned to remain immediately outside the entrance to an enclosed or other space to render assistance as needed to employees inside an enclosed space.

Authorized person - One who has the authority to perform specific duties under certain conditions or who is carrying out orders from responsible authority.

Automatic - Self-acting, operating by its own mechanism when actuated by some impersonal influence - as, for example, a change in current strength; not manual; without personal intervention. Remote control that requires personal intervention is not automatic, but manual.

Automatic circuit recloser - A self-controlled device for automatically interrupting and reclosing an alternating current circuit with a predetermined sequence of opening and reclosing followed by resetting, hold closed, or lockout operation.

Backfill (noun) - Materials such as sand, crushed stone, or soil that are placed to fill an excavation.

Barricade - A physical obstruction such as tapes, screens, or cones intended to warn and limit access to a hazardous area.

Barrier - A physical obstruction which is intended to prevent contact with energized lines or equipment.

Belt, line-worker's body - A belt that consists of a belt strap and D" rings, and may include a cushion section or a tool saddle.

Body harness - Straps that are secured about an employee in a manner that distributes the arresting forces over at least the thighs, shoulders and pelvis, with provisions for attaching a lanyard, lifeline, or deceleration device.

Bond - An electrical connection from one conductive element to another for the purpose of minimizing potential differences or providing suitable conductivity for fault current or for reducing leakage current and electrolytic action.

Bonding - The electrical interconnecting of conductive parts, designed to maintain a common electrical potential.

Bushing - An insulating structure including a through conductor, or providing a passageway for such a conductor, with provision for mounting on a barrier, conducting or otherwise, for the purpose of insulating the conductor from the barrier and conducting current from one side of the barrier to the other.

Cable - A conductor with insulation or a stranded conductor with or without insulation and other coverings (single-conductor cable) or a combination of conductors insulated from one another (multiple-conductor cable).

Cable (Spacer) - A type of electric supply line construction consisting of an assembly of one or more covered conductors, separated from each other and supported from a messenger by insulating spacers.

Cable jacket - A protective covering over the insulation, core, or sheath of a cable.

Cable sheath - A protective covering applied to cables.
NOTE: A cable sheath may consist of multiple layers of which one or more is conductive.

Cable terminal - A device that provides insulated egress (path) for the conductors. ***Syn:*** termination.

Chemical - Any element, chemical compound or mixture of elements and/or compounds.

Chemical name - The scientific designation of chemical.

Circuit - The term means a conductor or system of conductors through which an electric current is intended to flow.

Circuit breaker - A switching device capable of making, carrying, and breaking currents under normal circuit conditions; and also making, carrying for a specified time, and breaking currents under specified abnormal conditions such as those of short circuit.

Clearance (for work) - Authorization to perform specific work or permission to enter a restricted area.

Clearance (from hazard) - Adequate separation or protection by the use of devices to prevent incidental contact by persons or objects on approach to a point of danger.

Clearance (hot line) - An assurance that the automatic reclosing features of a circuit have been made inoperative.

Clear live line tool distance - The minimum distance for the use of live-line tools held by linemen when performing live-line work.

Climbing - The vertical movement (ascending and descending) and horizontal movement to access or depart the worksite.

Common use - Simultaneous use by two or more utilities of the same kind.

Communication lines - The conductors and their supporting or containing structures which are used for public or private signal or communication service, and which operate at potentials not exceeding 400 volts to ground or 740 volts between any two points of the circuit, and the transmitted power of which does not exceed 150 watts. When operating at less than a nominal voltage 90 volts, no limit is placed on the transmitted power of the system. Under specified conditions, communication cables may include communication circuits exceeding the preceding limitation where such circuits are also used to supply power solely to communications equipment.

NOTE: Telephone, telegraph, railroad signal, data clock, fire, police-alarm, community television antenna, and other systems conforming to the above are included. Lines used for signaling purposes, but not included under the above definition, are considered as supply lines of the same voltage and are to be so installed.

Company/Cooperative - The employer. The entity having jurisdiction and control over the operation of the utility.

Competent person - One who is capable of identifying existing and predicting hazards in surrounding or work conditions which are unsanitary, hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.

Conductor - A material, usually in the form of a wire, cable, or buss bar suitable for carrying an electric current.

Conductor shielding - An envelope that encloses the conductor of a cable and provides an equipotential surface in contact with the cable insulation.

Conduit - A structure containing one or more ducts.
NOTE: Conduit may be designated as iron-pipe conduit, tile conduit, etc. If it contains only one duct it is called *single-duct conduit;* if it contains more than one duct it is called *multiple-duct conduit,* usually with the number of ducts as a prefix, for example, *two-duct multiple conduit*

Conduit system - Any combination of duct, conduit, conduits, manholes, handholds, and vaults joined to form an integrated whole.

Confined space - A place such as a manhole, underground vault, condenser generator, tank, tunnel or any other space that is entered through a manhole opening or other restricted opening that is not designed for human occupancy or that may become difficult to leave.

Current-carrying part - A conducting part intended to be connected in an electric circuit to a source of voltage. Non-current-carrying parts are those not intended to be so connected.

Dead (de-energized) - Free from any electrical connection to a source of potential difference and from electrical charges: Not having a potential difference from that of earth.
NOTE: The term is used only with reference to current-carrying parts which are sometimes alive (energized).

Designated area - A distinct portion of a walking-working surface delineated by a warning line in which employees may perform work without additional fall protection.

Designated Observer – A designated observer is an electrically qualified person who will observe all work activities being performed within the minimum approach distance to exposed energized conductors and equipment.

Designated person - A qualified person designated to perform specific duties under the conditions existing. A designated person must also have the authority to control all elements of the job.

Disconnecting or isolating switch - A mechanical switching device used for changing the connections in a circuit, or for isolating a circuit or equipment from a source of power.
NOTE: It is required to carry normal load current continuously, and also abnormal or short-circuit current for short intervals as specified. It is also required to open or close circuits either when negligible current is broken or made, or when no significant change in the voltage across the terminals of each of the switch poles occurs. *Syn:* disconnector, isolator.

Dockboard - A portable or fixed device that spans a gap or compensates for a difference in elevation between a loading platform and a transport vehicle. Dockboards include, but are not limited to, bridge plates, dock plates, and dock levelers.

Duct - A single enclosed raceway for conductors or cable.

Employee - Any person employed by the Cooperative on either the permanent or temporary payroll.

Employer - See Company/Cooperative.

Effectively grounded - Intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to limit the buildup of voltages to levels below, that may result in undue hazard to persons or to connected equipment.

Electric line truck - A truck used to transport employees, tools, and material, and to serve as a traveling workshop for electric power line construction and maintenance work. It is sometimes equipped with a boom and auxiliary equipment for setting poles, digging holes, and elevating materials or men.

Electric supply equipment - Equipment that produces, modifies, regulates, controls, or safeguards a supply of electric energy. *Syn:* supply equipment.

Electric supply lines - Those conductors used to transmit electric energy and their necessary supporting or containing structures. Signal lines of more than 400 volts are always supply lines within the meaning of the rules, and those of less than 400 volts may be considered as supply lines, if so run and operated throughout.

Electrically Qualified Person – A person who is 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 lived parts,
3. The minimum approach distances specified in this section 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 exposed, and the skills and techniques necessary to control or avoid these hazards.

Emergency - An emergency occurs when an unusual condition exists that endangers life and/or property.

Enclosed - Surrounded by a case, cage, or fence, which will protect the contained equipment and limit the likelihood, under normal conditions, of dangerous approach or incidental contact by persons or objects.

Enclosed space - A working space such as a manhole, vault or enclosure that has limited means of access or entry that is designed for periodic employee entry under normal operating conditions. Under normal operating conditions an enclosed space does not contain a hazardous atmosphere. Under abnormal conditions an enclosed space could contain a hazardous atmosphere.

Energized - Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of earth in the vicinity.

Equipment - A general term which includes fittings, devices, appliances, fixtures, apparatus, and similar terms, used as part of, or in connection with, an electric supply or communications system.

Equipotential zone 1910.269(n)(3) - Temporary protective grounds shall be placed at such locations and arranged in such a manner as to prevent each employee from being exposed to hazardous differences in electrical potential.

Excavations - Any opening made in the ground, street or sidewalk in connection with Cooperative work, such as holes, trenches, ditches or tunnels.

Exposed - **(a)** Exposed circuited or lines are those in such a position that in case of failure of supports or insulation, contact with another circuit or line may result. **(b)** Exposed equipment is an object or device that can be inadvertently touched or approached nearer than a safe distance by any person. The term is applied to objects not suitably guarded or isolated.

Factory Mutual (F.M.) - Products displaying F.M. approval markings have been tested to ensure that they meet only the highest standards for property loss prevention and safety.

Fall arrest system - The assemblage of equipment, such as a line worker's body belt, aerial belt, or full body harness in conjunction with a connecting means, with or without an energy absorbing device, and an anchorage to limit the forces a worker can experience during a fall.

Fall restraint system - A system, which may include a positioning device system, intended to prevent a worker from falling from an elevation.

Fall protection program - A program intended to protect workers from injury due to falls from elevations.

Fall protection system (hardware) - Consists of either a fall prevention system or a fall arrest system.

Fiber-optic cable communication - A fiber-optic cable meeting the requirements for a communication line and located in the communication space of overhead or underground facilities.

Fiber-optic cable supply - A fiber-optic cable located in the supply space of overhead or underground facilities.

Fireproofing (of cables) - The application of a fire-resistant covering.

Flammable liquid - means any liquid having a flashpoint at or below 199.4 °F (93 °C). Flammable liquids are divided into four categories as follows:

- Category 1 shall include liquids having flashpoints below 73.4 °F (23 °C) and having a boiling point at or below 95 °F (35 °C).
- Category 2 shall include liquids having flashpoints below 73.4 °F (23 °C) and having a boiling point above 95 °F (35 °C).
- Category 3 shall include liquids having flashpoints at or above 73.4 °F (23 °C) and at or below 140 °F (60 °C). When a Category 3 liquid with a flashpoint at or above 100 °F (37.8 °C) is heated for use to within 30 °F (16.7 °C) of its flashpoint, it shall be handled in accordance with the requirements for a Category 3 liquid with a flashpoint below 100 °F (37.8 °C).
- Category 4 shall include liquids having flashpoints above 140 °F (60 °C) and at or below 199.4 °F (93 °C). When a Category 4 flammable

liquid is heated for use to within 30 °F (16.7 °C) of its flashpoint, it shall be handled in accordance with the requirements for a Category 3 liquid with a flashpoint at or above 100 °F (37.8 °C).

Note: When liquid with a flashpoint greater than 199.4 °F (93 °C) is heated for use to within 30 °F (16.7 °C) of its flashpoint, it shall be handled in accordance with the requirements for a Category 4 flammable liquid.

Flashpoint - Means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested.

Generating station - A facility wherein electric energy is produced by conversion from some other form of energy (for example, chemical, nuclear, solar, mechanical, or hydraulic) by means of suitable apparatus. This includes all generating station auxiliaries and other associated equipment required for the operation of the plant. Not included are stations producing power exclusively for use with communications systems.

Governmental - Any type of political agency having control over an area. Included are federal, state, county, township, city, etc.

Grounded - Connected to or in contact with earth or connected to some extended conductive body that serves instead of the earth.

Grounded effectively – See: effectively grounded

Grounded system - A system of conductors in which at least one conductor or point is intentionally grounded, either solidly or through a non-interrupting current-limiting device.

Guarded - Covered, fenced, enclosed, or otherwise protected, by means of suitable covers or casing, barrier rails or screens, mats or platforms, designed to limit the likelihood under normal conditions, of dangerous approach or incidental contact by persons or objects.

NOTE: Wires, that are insulated, but not otherwise protected, are not normally considered to be guarded.

Ground (reference) - Conductive body, usually earth, to which an electric potential is referenced.

Ground (noun) - A conductive connection whether intentional or incidental, by which an electric circuit or equipment is connected to reference ground.

Ground (verb) - Connecting or establishment of a connection, whether by intention or incident of an electric circuit or equipment to reference ground.

Grounding electrode (ground electrode) – A conductor embedded in the earth, used for maintaining ground potential on conductors connected to it, and for dissipating into the earth current conducted to it.

Grounding electrode resistance - The resistance of the grounding electrode to earth.

Grounding electrode conductor (grounding conductor) - A conductor used to connect equipment of the grounded circuit of a wiring system to a grounding electrode.

Grounded conductor - The term means a system or circuit conductor which is intentionally grounded.

Handhold - An access opening, provided in equipment or in a below-the-surface enclosure in connection with underground lines, into which personnel reach but do not enter, for the purpose of installing, operating, or maintaining equipment or cable or both.

Harness - A component with a design of straps that is fastened about the worker in a manner so as to contain the torso and distribute the fall arrest forces over at least the upper thighs, pelvis, chest, and shoulders with means for attaching it to other components and subsystems.
NOTE: Wherever the word “harness” is used in this code, it refers to full body harness.

Hazard warning - Means any words, pictures, symbols or the combination thereof appearing on a label or other appropriate form of warning that convey the hazards of the chemicals in the containers.

Hazardous atmosphere - An atmosphere that may expose employees to the risk of death, incapacitation, and impairment of ability to self-rescue (that is, escape unaided from an enclosed space), injury or acute illness from one or more of the following causes:

1. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit.
   (LFL)
2. Airborne combustible dust at a concentration that meets or exceeds its LFL.
   NOTE: The concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less.
3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.
4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this part and which could result in employee exposure in excess of its dose or permissible exposure limit:

NOTE: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, and impairment of ability to self-rescue, injury or acute illness due to its health effects is not covered by this provision.

5. Any other atmospheric condition that is immediately dangerous to life or health.
   NOTE: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information such as Safety Data Sheets that comply with the Hazard Communication Standard, S1910.1200 of the Part, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

Hazardous chemical - Any chemical that is a physical hazard or a health hazard.

Health hazards - Any chemical that could cause acute or chronic health effects that may occur in exposed employees.

High winds - A wind of such velocity that the following hazards would be present:

1. An employee would be exposed to being blown from elevated locations, or
2. An employee or material handling equipment could lose control of material being handled, or
3. An employee would be exposed to other hazards not controlled by the standard involved.
   NOTE: Winds exceeding 40 miles per hour, or 30 miles per hour if material handling is involved, are normally considered as meeting this criteria unless precautions are taken to protect employees from the hazardous effects of the wind.

Hold tag - A card or tag-type device, usually having a dominant color red which warns against the operation of a particular switch, device, valve, circuit, tool or machine. These tags must be respected; equipment or items so tagged must not be activated or used without full and proper authority from a responsible person.

Hotline tools and ropes - Those tools and ropes which are especially designed for work on energized high voltage lines and equipment. Insulated aerial equipment especially designed for work on energized high voltage lines and equipment shall be considered hot line.

Immediate use - The hazardous chemical will be under control of and used only by the person who transfers it from a labeled container, and only within the work shift in which it is transferred.

Immediately Dangerous to Life or Health (IDLH) - Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.
NOTE: Some materials — hydrogen fluoride gas and cadmium vapor, for example may produce immediate transient effect that, even if sudden, possible fatal collapse 12-72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

In service - Lines and equipment are considered in service when connected to the system and intended to be capable of delivering energy or communication signals, regardless of whether electric loads or signaling apparatus are presently being served from such facilities.

Industrial truck (powered) - Any mobile power-propelled truck used to carry, push, pull, lift, stack or tier materials. Powered industrial trucks can be ridden or controlled by a walking operator. Earth moving and over the road haulage trucks are not included. Equipment that was designed to move earth but has been modified to accept forks are also not included.

Insulated - Separated from other conducting surfaces by a dielectric substance (including air space) offering a high resistance to the passage of current.
NOTE: When any object is said to be insulated, it is understood to be insulated for the conditions to which it is normally subjected. Otherwise, it is, within the purpose of these rules, uninsulated.

Insulation (as applied to cable) - That which is relied upon to insulate the conductor from other conductors of conducting parts or from ground.

Insulation shielding - An envelope that encloses the insulation of a cable and provides an equipotential surface in contact with cable insulation.

Insulator - Insulating material in a form designed to support a conductor physically and electrically separate it from another conductor or object.

ISEA – International Safety Equipment Association

Isolated - Not readily accessible to persons unless special means of access are used.

Isolated by elevation - Elevated sufficiently so that persons may safely walk underneath.

Jacket - A protective covering over the insulation, core, or sheath of a cable.

Job briefing - **(See Tailboard discussion).**

Joint use - Simultaneous use by two or more kinds of utilities.

Ladder - A device with rungs, steps, or cleats used to gain access to a different elevation.

Lanyard - A flexible line or webbing, rope, wire rope, or strap that generally has a connector at each end for connecting the line-workers body belt, aerial belt, or full body harness to an energy absorbing device, life-line, or anchorage.

Limited access highways - As used herein, limited access highways include both fully controlled highways and partially controlled highways where access is controlled by a governmental authority for purposes of improving traffic flow and safety. Fully controlled access highways have no grade crossings and have carefully designed access connections.

Line-clearance tree trimming - The pruning, trimming, repairing, maintaining, removing, or clearing of trees or the cutting of brush that is within 10 feet of electric supply lines and equipment.
NOTE: OSHA recognizes three different qualification levels for line-clearance tree trimmers:

Unqualified employees must maintain the minimum approach distances of at least 10 feet from overhead power lines. (Work practices for these employees are covered by Subpart S, particularly 1910.333(c)(3). Section 1910.269 does not apply to tree trimming operations performed by unqualified employees.)

269-qualified employees must use their 269-specific skills and any other tree cutting procedures and training to safely trim trees. All of 1910.269 except paragraph (r)(1), which applies specifically to line-clearance tree trimmers, apply to work performed by these specialized workers.

Line-clearance tree trimmers are workers that have received specialized training so they can work within 10 feet of energized power lines and equipment.

Manhole - A subsurface enclosure that personnel may enter and which is used for the purpose of installing, operating, and maintaining submersible equipment and/or cable.

Manhole cover - A removable lid that closes the opening to a manhole or similar subsurface enclosure.

Manhole grating - A grid that provides ventilation and a protective cover for a manhole opening.

Manhole steps - Steps that are individually attached to, or set into, the wall of a manhole structure.

Manual - Capable of being operated by personal intervention.

Maximum intended load - The total load (weight and force) of all employees, equipment, vehicles, tools, materials, and other loads the employer reasonably anticipates being applied to a walking-working surface at any one time.

Minimum approach distance - The closest distance a qualified or unqualified person is permitted to approach either an energized or a grounded object.

MUTCD - Manual on Uniform Traffic Control Devices

NFPA - National Fire Protection Association

Out of service - Lines and equipment are considered out of service when disconnected from the system and not intended to be capable of delivering energy or communications signals.
OSHA - Occupational Safety and Health Administration

Pad-mounted equipment - A general term describing enclosed equipment, the exterior of which enclosure is at ground potential, positioned on a surface-mounted pad.

Person in charge - Used in a general sense to indicate any person, regardless of classification, who is directly in charge of a specific job(s).

Personal fall protection system - A system (including all components) an employer uses to provide protection from falling or to safely arrest an employee's fall if one occurs. Examples of personal fall protection systems include personal fall arrest systems, positioning systems, and travel restraint systems.

Personal Protective Equipment (PPE) - Approved equipment designed to eliminate personal injury.

Physical hazard - A chemical for which there is scientifically valid evidence that is a combustible liquid, a compressed gas explosive, flammable, and organic peroxide, and oxidizer, pyrophoric, unstable (reactive) or water reactive.

Positioning strap - A strap with snap hook(s) to connect to the “D” rings of a line-worker’s body belt or full body harness.

Positive Control – Definite, constant and/or unyielding securement of an object where outside forces (intentional or unintentional) cannot alter the position of that object.

Pre-stressed concrete structures - Concrete structures that include metal tendons that are tensioned and anchored either before or after curing of the concrete.

Primary compartment - A compartment containing current-carrying devices above 600 volts.

Primary voltage - Any electrical circuit that normally operates at more than 600 volts.

Protective grounding - The act of applying a ground for the purpose of bonding to an effectively grounded neutral conductor or to a grounding system designed to minimize hazard to personnel and having resistances to ground low enough to permit prompt operation of circuit protective devices. (NESC - see Effective Ground)

Proximity - A specific distance where an employee may be incidentally or inadvertently exposed to a hazard.

Public member - Any individual not an employee or representative of the company.

Pulling iron - An anchor secured in the wall, ceiling, or floor of a manhole or vault to attach rigging used to pull cable.

Pulling tension - The longitudinal force exerted on a cable during installation.

Qualified - Having adequate knowledge of the installation, construction, or operation of apparatus and the hazards involved.

Qualified climber - A worker who, by reason of training and experience, understands the methods and has routinely demonstrated proficiency in climbing techniques and familiarity with the hazards associated with climbing.

Qualified person - A person, who by reason of experience or training, is familiar with the operation to be performed and the hazards involved.

Raceway - Any channel designed expressly and used solely for holding conductors.

Random separation - Installed with no deliberate separation.

Reduced visibility - Times when normal visibility is reduced because of adverse conditions such as fog, heavy rainfall, snow, dust, smoke, dawn or dusk.

Remotely operable (as applied to equipment) - Capable of being operated from a position external to the structure in which it is installed or from a protected position within the structure.

Responsible party - Someone who can provide additional information on the hazardous chemical and appropriate emergency procedure, if necessary.

Road - The paved or unpaved surface of a roadway upon which vehicles are intended to travel. When the road is paved, the entire surface is included.

Rope descent system - A suspension system that allows an employee to descend in a controlled manner and, as needed, stop at any point during the descent. A rope descent system usually consists of a roof anchorage, support rope, a descent device, carabiner(s) or shackle(s), and a chair (seatboard). A rope descent system also is called controlled descent equipment or apparatus. Rope descent systems do not include industrial rope access systems.

Rural districts - All places not urban. This may include thinly settled areas within city limits.

Safety Data Sheet (SDS) - Written, printed, or electronic material concerning a hazardous chemical.

Safety rules – A principle or regulation governing actions, procedures, or devices intended to lower the occurrence or risk of injury, loss, and danger to persons, property, or the environment.

Sag - The distance measured vertically from a conductor to the straight line joining its two points of support. Unless otherwise stated in the rule, the sag referred to is the sag at the mid-point of the span.

SCADA (Supervisory Control and Data Acquisition) - Electronic equipment used to provide remote control (Supervisory Control) and information retrieval (Data Acquisition) from remote locations by either telephone lines, radio signals, fiber, or power line carriers.

Scaffold - Any temporary elevated or suspended platform and its supporting structure, including anchorage points, used to support employees, equipment, materials, and other items. For purposes of this subpart, a scaffold does not include a crane-suspended or derrick-suspended personnel platform or a rope descent system.

Secondary compartment - A compartment containing current-carrying devices below 600 volts.

Secondary voltage - Any supply voltage less than 600 volts.

Separation - The distance between two objects, measured surface to surface.

Service drop - The overhead or underground conductors between the electric supply or communication line and the building or structure being served.

Shall - When the word “shall” appears in the wording of a rule, the rule is to be obeyed as written.

Should - When the word “should” appears in the wording of a rule, the rule is recommended but is not compulsory.

Shoulder - The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles for emergency use and for lateral support of base and surface course.

Side-wall pressure - The internal force exerted on an insulated cable during installation around sharp bends, angles or turns.

Snap-hook - A self-closing device with a keeper latch, or other similar arrangement that will remain closed until manually opened. Such devices include self-closing, single-action, double-action or double-locking snap hooks.

Span length - The horizontal distance between two adjacent supporting points of a conductor.

Span wire (overhead guy) - An auxiliary suspension wire that serves to support one or more trolley contact conductors or a light fixture and the conductors that connect it to a supply system.

Stairway (stairs) - Risers and treads that connect one level with another and includes any landings and platforms in between those levels. Stairways include standard, spiral, alternating tread-type, and ship stairs.

Step bolt (pole step) - A bolt or rung attached at intervals along a structural member used for foot placement and as a handhold when climbing or standing.

Structure conflict (slapping conductor) - A line so situated with respect to a second line that the overturning of the first line will result in contact between its supporting structures or conductors and the conductors of the second line, assuming that no conductors are broken in either line.

Substation - An enclosed assemblage of equipment (e.g., switches, circuit breakers, busses, and transformers) under the control of qualified person(s), through which electric energy is passed for the purpose of switching or modifying its characteristics.

Supporting structure - The main supporting unit (usually a pole or tower).

Switch - A device for opening and closing or changing the connection of a circuit. A switch is understood to be manually operable, unless otherwise stated.

Switchboard - A type of switchgear assembly that consists of one or more panels with electric devices mounted thereon, and associated framework.

Tag - Incident prevention tag (Danger, People at work, etc.) of a distinctive appearance used for the purpose of personnel protection to indicate that the operation of the device to which it is attached is restricted.

Tailboard discussion (Tailgate) - An informal discussion of the work to be accomplished, associated hazards, and the safety measures to be incorporated. It is normally conducted by the supervisor or person in charge of the crew and performed before **every** job.

Tension, unloaded - **(1)** initial - The longitudinal tension in a conductor prior to the application of any external load. **(2)** final - The longitudinal tension in a conductor after it has been subjected for an appreciable period to the loading prescribed for the loading district in which it is situated, or equivalent loading, and the loading removed. Final unloaded tension shall include the effect of inelastic deformation (creep).

Termination – The method used to connect a conductor to a device or another conductor.

Transferring (as applied to fall protection) - The act of moving from one distinct object to another (e.g., between a ladder and a roof).

Transformer vault - An isolated enclosure either above or below ground with fire-resistant walls, ceiling, and floor, in which transformers and related equipment are installed, and which is not continuously attended during operation. *See also:* vault.

Transitioning (as applied to fall protections) - The act of moving from one location to another on equipment or a structure.

Traveled way - The portion of the roadway for the movement of vehicles, exclusive of shoulders and full-time parking lanes.

Underground Residential Distribution (URD) - The facilities necessary to furnish underground service, generally to residential and commercial-type customers, usually through directly buried cable.

Underwriters Laboratory (U.L.) - Products displaying U.L. markings have been tested to meet specific, defined requirements often listed in U.L.'s published and nationally recognized Standards for Safety.

Unsafe conditions - Dangerous, hazardous, defective or unusual conditions that could cause injury.

Urban districts - Thickly settled areas (whether in cities or suburbs) or where congested traffic often occurs. A highway, even though in thinly settled areas, on which the traffic is often very heavy, is considered as urban.

Utility - An organization responsible for the installation, operation, or maintenance of electric supply or communications systems.

Utility interactive system - An electric power production system that is operating in parallel with and capable of delivering energy to a utility electric supply system.

Utilization equipment - Equipment, devices, and connected wiring on the load side of the meter that utilize electric energy for mechanical, chemical, heating, lighting, testing, or similar purposes and are not a part of supply equipment, supply lines, or communication lines.

Unstable material - Earth material, other than running, that because of its nature or the influence of related conditions cannot be depended upon to remain in place without extra support, such as would be furnished by a system of shoring.

Vault - A structurally solid enclosure above or below ground with access limited to personnel qualified to install, maintain, operate, or inspect the equipment or cable enclosed. The enclosure may have openings for ventilation, personnel access, cable entrance, and other openings required for operation of equipment in the vault.

Vicinity - Defined with respect to the hard hat rule. An employee is in the vicinity of an operation when he has arrived at that site for purpose of operation, discussion with employees engaged in the operation, or any purpose related to the work in progress.

Voltage - The effective (rms) potential difference between any two conductors or between a conductor and ground. Voltages are expressed in nominal values unless otherwise indicated. The nominal voltage of a system or circuit is the value assigned to a system or circuit of a given voltage class for the purpose of convenient designation. The operating voltage of the system may vary above or below this value.

Voltage of an effectively grounded circuit - The highest nominal voltage available between any conductor of the circuit and ground unless otherwise indicated.

Voltage of a constant-current circuit - The highest normal full-load voltage of the circuit.

Voltage of a circuit not effectively grounded - The highest nominal voltage available between any two conductors of the circuit.

NOTE: If one circuit is directly connected to and supplied from another circuit of higher voltage (as in the case of an autotransformer), both are considered to be of the higher voltage, unless the circuit of the lower voltage is effectively grounded, in which case its voltage is not determined by the circuit of higher voltage. Direct connection implies electric connection as distinguished from connection merely through electromagnetic or electrostatic induction.

Walking-working surface (OSHA 1910 Subpart D) - Any horizontal or vertical surface on or through which an employee walks, works, or gains access to a work area or workplace location.

Walking-working surface (OSHA 1926 Subpart M) - Any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

Warning signs - For the purpose of these rules, a warning sign is any sign or similar means of alerting an employee or the public of an actual or possible hazard. Included are “Danger” signs, “Caution” signs, traffic control signs, instructional signs and informational signs.

Wheel chock (effective) - Made of sturdy material, wedge-shaped, and of adequate height to prevent movement of vehicles and/or equipment.

Wire gages - Throughout these rules the American Wire Gage (AWG), formerly known as Brown & Sharpe (B&S), is the standard gage for copper, aluminum, and other conductors, excepting only steel conductors, for which the Steel Wire Gage (StI WG) is used.

Work positioning equipment - A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a utility pole or tower leg, and work with both hands free while leaning. (1910.269(x)) (1926.968)

Worksite (as applied to fall protection) - The location on the structure or equipment where, after the worker has completed the climbing (horizontally and vertically), the worker is in position to perform the assigned work or task.

SECTION I

Safety Responsibility

1.0 MANAGEMENT'S RESPONSIBILITY

1.1 Management's first consideration in the daily operations of providing electric service is the safety of the employees and the public. Training of employees and education of the public in safety are vital parts of the overall safety program. The organization's safety program must also include safe electrical installation and construction of all facilities.

1.2 Setting a good example is an excellent way for management to show the employees, members, and the general public of their interest in safety. Follow all safety rules all of the time. Train by example. Make certain that your electric power facilities are safe. Check all primary and secondary installations constantly for possible hazards and correct the hazards immediately. Management should also inform consumers of hazardous conditions found on their property and offer suggestions for correction of the deficiencies.

1.3 Management is ultimately responsible for the implementation and management of the safety program. Management must ensure that all safety and health rules are enforced. Management must ensure that all regulatory compliance issues are adequately addressed. Management shall ensure that all employees have been adequately trained for their specific job duties and certify that each employee has received the required training on safe work practices and safety related procedures related to their job.

1.4 Safety Rule Enforcement is not entirely a matter of discipline, but one of constant observation and concern on the part of Management. One of the first steps towards rule observance is that all management know and follow the rules thereby always setting a good example. If an employee has been adequately trained and violates the safety rules or commits unsafe acts it is management's responsibility to take swift disciplinary action to deal with these violations. Safety rule violations should be handled in a timely manner like any other performance problem and according to the cooperatives' disciplinary policies.

1.5 Management 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. (1910.269(a)(2) (iv))

1.6 Any supervisor or foreman having reasonable grounds to suspect that an employee is either mentally or physically unfit for the work assigned, shall prohibit such employee from working until satisfactory medical or other evidence indicating his/her fitness is secured.

1.7 The general manager/CEO is responsible for the implementation of policies, rules and their intent.

1.8 The general manager/CEO or his designee is responsible for the distribution and presentation of the written monthly report on safety/loss control activities to the board.

1.9 It is management's responsibility to ensure that all employees are properly trained and qualified to perform all required work assignments safely.

1.10 The general manager/CEO should attend and participate in monthly safety meetings whenever their schedule permits.

1.11 Management shall require supervisors to observe employees and enforce all safety rules, regardless of workload and conditions.

1.12 Management or its representatives shall fully investigate all incidents and take proper corrective steps to prevent recurrence of similar incidents.

1.13 Management shall comply with all federal, state and local standards/laws that affect the safety and health of its employees and the general public.

2.0 PERSON'S IN CHARGE RESPONSIBILITIES

2.1 Persons in charge shall fully understand the safety rules in this manual and comply with them, regardless of workload or conditions.

2.2 Persons in charge are at all times responsible for the execution of the work in a safe manner and for the job performance of all employees under their direction.

2.3 Persons in charge will participate in all incident investigations of those employees under their direction and shall make recommendations for proper corrective steps to prevent recurrence of similar incidents.

2.4 Persons in charge are responsible for ensuring that the use of cell phones does not create a hazard on the jobsite.

2.5 Persons in charge shall conduct or supervise a tailgate safety meeting before starting any job. The following items shall be covered and documented at each job briefing/tailgate:

- Hazards associated with the job.
- Work procedures involved.
- Special precautions.
- Energy source controls.
- Personal protective equipment requirements.

2.6 Persons in charge shall be responsible for the proper use of safety devices and equipment by employees under their supervision.

2.7 Persons in charge shall make certain that no work is assigned to an individual who is untrained, unqualified or incapable of performing the work safely.

2.8 Persons in charge shall be responsible to ensure that all vehicles, equipment, tools (including personal tools) and personal protective equipment (PPE) are in proper working condition.

2.9 Persons in charge shall ensure adequate warning of any condition which might endanger other workers or the general public. All unsafe conditions that cannot be immediately corrected shall not be left unguarded. Before leaving every job, persons in charge shall ensure that the work area is left in a safe condition.

2.10 Persons in charge shall comply with all federal, state and local standards/laws that affect the safety and health of the cooperative's employees and the general public.

3.0 RESPONSIBILITY OF EMPLOYEES

3.1 Everyone shares the responsibility for safety. Each employee is responsible for his/her own safety, the safety of his/her fellow workers and the general public. (NESC, section 42, 420-423)

3.2 Employees shall become familiar with and use all the personal protective equipment and safety devices provided for their protection. (1910.132)(f)(2)

3.3 Employees shall immediately report all unsafe equipment, unsafe tools and hazardous conditions. (NESC, Section 42, (420) (c))

3.4 Employees shall wear seat belts (where provided) at all times while mechanized equipment is in operation. (1926.601(b)(9) and 1926.602(a)(2))

3.5 Every employee shall become thoroughly familiar with the contents of this manual as they apply to the work activities.

3.6 Where conditions are not covered by this manual or the job is not completely understood the employee shall obtain specific instructions from his/her supervisor before proceeding with the work.

3.7 All employees have a responsibility to report to work in a good physical and mental condition ready to perform any duties associated with the job. Any employee having reasonable grounds to suspect that another employee is either mentally or physically unfit for the work assigned, shall report their observation to their immediate supervisor.

3.8 Each employee shall always use reasonable care in the performance of his/her duties and act in such a manner as to assure maximum safety to themselves, fellow employees, and the public.

3.9 Each employee shall carefully study those safety rules applying to their duties. Safety rules shall be obeyed; ignorance will not be accepted as an excuse for their violation. Employees may be periodically examined on their knowledge of the rules.

3.10 The cooperative and all employees are responsible for compliance with all Occupational Safety and Health rules. Serious fines and penalties may result from violation of these rules by an employee. As stated in the Occupational Safety and Health Act, “Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.”

3.11 The employee shall access the safety manual throughout his/her employment. If his/her services are terminated, access to the safety manual shall be blocked.

3.12 If an employee is called upon to perform work that he/she considers hazardous and is not properly protected, he/she shall bring the matter to the attention of his/her supervisor before proceeding.

3.13 These rules represent minimum requirements and are not intended to cover all conditions and emergencies. Employees and supervisors shall work together to maintain safe work practices during conditions not covered in these rules.

3.14 Before starting a job, each employee shall thoroughly understand the work to be done, his/her part in it and the safety rules that apply. Job briefings shall be conducted before starting work at the job-site to determine hazardous conditions. (See: Job Briefings, Section I, 1.6 of management's responsibility)

3.15 No phase of operations is of greater importance than incident prevention. All employees involved in the incident should participate in the investigations, giving recommendations on corrective steps to prevent reoccurrence of similar incidents.

3.16 In an emergency involving hazard to life, a supervisor, foreman or employee in charge of any work may modify or suspend such portion of this manual as may be considered temporarily necessary to permit proper handling of the emergency. The person so acting shall be fully accountable.

3.17 No horseplay, harassment, or sexual harassment will be tolerated.

3.18 Before proceeding with a job, the employee shall satisfy him/herself that the work can be performed without injury.

3.19 It is the employee's responsibility to attend training in first aid/CPR when such training is provided by the employer.

3.20 It is the employee's responsibility to attend all safety meetings and required training held on the employer's time, and to take an active part in these meetings.

3.21 Employees shall comply with all federal, state and local standards/laws that affect the safety and health of the cooperative's employees and the general public.

3.22 Cell Phone Use

3.22.1 Employees will follow their cooperative's cell phone policy during working hours. If the employee's cooperative does not have a cell phone policy, at a minimum, rules **3.22.2 – 3.22.4 apply**.

3.22.2 Cell Phone use by a designated observer shall not be permitted.

3.22.3 Cell Phone use by an employee performing energized work shall not be permitted.

3.22.4 Cell Phone use by an employee performing safety sensitive work shall not be permitted, unless required by the nature of the work.

4.0 INCIDENT REPORTING/INVESTIGATION

4.1 Reporting Employee Injuries

4.1.1 Injuries, no matter how slight, shall be reported to Management immediately. (S.C. Workers' Compensation Law)

4.1.2 All minor injuries shall be properly treated and a report made to the employee's supervisor. An incident investigation shall be completed and documented as soon as possible. (S.C. Workers' Compensation Law)

4.1.3 When the services of a physician are necessary, a physician designated by the cooperative shall be used whenever possible. Injuries shall be reported to management immediately.

4.1.4 An "Employers First Report of Injury" (S.C. Workers Compensation Commission Form) must be filed on any employee who is injured on the job or has a job related illness if the employee is treated by either a doctor, hospital or clinic. The immediate supervisor will investigate each incident. The results of this investigation should be recorded on the "Incident Investigation" form and submitted to the proper person or safety coordinator.

4.1.5 The fatality of any employee resulting from a work-related incident must be reported to the Occupational Safety and Health Administration (OSHA) within 8 hours of the incident. An in-patient hospitalization, amputation, or loss of an eye of one or more employees resulting from a work-related incident must be reported to OSHA within 24 hours of the incident. The report may be made either in person or by telephone and shall be made at the direction of the CEO. The report shall relate the following information: (OSHA 1904.39)

1. Establishment name
2. Location of incident
3. Time of the incident
4. Type of reportable event: fatality, in-patient hospitalization, amputation, loss of an eye
5. # of employees experiencing a reportable event
6. Names of employee(s) experiencing the reportable event
7. Contact person
8. Brief description of the incident.

Note 1: Every incident involving a fatality, in-patient hospitalization, amputation, or loss of an eye resulting from a motor vehicle accident in a work zone must be reported to OSHA. (1904.39(b)(3))

Note 2: It is not required to report a fatality, in-patient hospitalization, amputation, or loss of an eye if the incident occurs on a commercial or public transportation system.

However, the incident must be recorded in the cooperative's OSHA injury and illness records. (1904.39(b)(4))

4.1.6 Fatalities and serious incidents should be investigated promptly by a formal committee. ECSC Loss Control and Training Department will provide assistance when requested. The need for other formal incident investigations shall be determined by management after preliminary information is obtained. Any incident may be formally investigated if Management deems it necessary.

4.1.7 OSHA required injury/illness records shall be maintained. (OSHA 1904.2)

4.1.8 Near-miss incidents shall be reported and investigated.

4.2 Reporting Cooperative Vehicle Incidents

4.2.1 The driver shall report accurately and immediately all damage to a vehicle. Additional reports shall be made to the police or state authority as required.

4.2.2 The driver shall not discuss an incident with other parties but shall secure all pertinent facts and information. The driver shall answer questions when asked by proper authorities but under no circumstances shall admit fault or negligence or sign any statement for anyone.

4.2.3 Should the other driver demand immediate action, they shall be referred to the employee's supervisor. The cooperative's driver, when involved in an incident, shall stop, call the authorities, and give their name and address, and the employer's name and address. He/she shall also secure the name and address of others involved in the incident and of witnesses to the incident. The cooperative's driver shall also note position of the vehicle after the collision in reference to edge of road, sidewalk line, center of intersection, etc. Photograph the scene and the vehicles if possible.

4.2.4 If any person is injured as the result of a vehicle incident employees shall see that necessary emergency aid is provided. (S.C. Dept. of Public Safety)

4.2.5 If the incident involved a CDL vehicle and was "recordable" per DOT guidelines make sure it is entered on the cooperative's vehicle incident register and that a copy of the state form is included in the incident register file. (49CFR 390.15)

4.3 Property Damage Incidents

4.3.1 Any property damage or loss to include, but not limited to, theft, fire, or structure damage shall be reported immediately to management and an investigation report completed.

5.0 SAFETY TRAINING

5.1 Employees shall be trained in and familiar with the safety related work practices, safety procedures, and other safety requirements that pertain to their respective job assignments. Employees shall also be trained in and familiar with any other safety practices, including applicable emergency procedures such as pole top, manhole, and bucket truck rescue, that are related to their work and are necessary for their safety. (1910.269 (a)(2)(i)(A) and (B))

5.2 Qualified employees 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,
3. The minimum approach distances specified in this section corresponding to the voltages to which the qualified employee will be exposed, and
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. (1910.269(a)(2)(ii))
   NOTE: A person must have this training in order to be considered a qualified person.

5.3 The employer 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. (1910.269(a)(2)(iv))

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

1. If the supervisor's annual inspections indicate that the employee is not complying with the safety-related work practices, 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.

5.5 Tasks that are performed less often than once per year require retraining or review before the performance of the work practices involved.

5.6 Training shall establish employee proficiency in the work practices required, and introduce the procedures necessary for compliance.

5.7 The employer shall certify that each employee has received the required training. This certification shall be made when the employee demonstrates proficiency in the work practices involved and shall be maintained for the duration of the employee's employment.

NOTE: Employment records that indicate that an employee has received the required training are an acceptable means of meeting this requirement.

6.0 PROTECTING THE PUBLIC (NESC SECTION 42, 420)

6.1 The public shall be kept away from locations where work activity presents a hazard.

6.2 Hazards, such as manholes, pole holes, trenches or excavations shall be protected by proper barricades. Where exposed to traffic at night they shall be protected with warning devices that are illuminated with warning flashing light or arrow boards that are located as to be visible to traffic and the public.

6.3 When it is necessary to warn traffic, flagmen or warning devices shall be stationed far enough on each side of the hazard to give vehicles enough time to stop and comply with state and local regulations. When flagmen are used, they shall wear approved traffic safety vest containing reflectorized material.

6.4 When it is necessary to leave reels, equipment or other obstructions unattended, the following precautions shall be taken:

1. They shall not be left adjacent to fire plugs or directly in front of entrances to private or public property.
2. They shall be locked, blocked or otherwise secured.
3. They shall be adequately protected by approved warning devices.

6.5 When chiseling, chipping or welding is done in locations where the public may be exposed to hazards, shields shall be placed around the work and the area shall be roped off or barricaded.

7.0 TRAFFIC CONTROL

All cooperative employees and work areas along roads shall be in compliance with S.C. Department of Transportation regulations.

Reference: SC Department of Transportation Construction and Maintenance Operations Supplement to the Manual on Uniform Traffic Control Devices (MUTCD)

8.0 VEHICLE OPERATION

8.1 Motor Vehicle Safety Operation *(Motor Vehicle and Other Mobile Equipment):* Drivers of cooperative-owned vehicles shall comply with all South Carolina and federal motor vehicle laws and any other laws that affect the safe operation of the vehicle.

8.1.1 Only those employees specifically authorized and who possess valid licenses or permits shall operate cooperative-owned vehicles.

8.1.2 Drivers shall know and obey all federal, state and local motor vehicle laws that apply to them.

8.1.3 Vehicles shall be operated within the legal speed limit and at lower speeds where conditions warrant.

8.1.4 A driver shall not permit unauthorized persons to drive, operate or ride in or on a cooperative vehicle, except in cases of emergency.

8.1.5 Seat belts shall be used in compliance with all federal, state, and local motor vehicle laws, and per cooperative policy.

8.1.6 Employees shall not ride on the running boards, fenders, or any part of any motorized equipment.

8.1.7 Employees shall not stand in moving vehicles, unless required by the nature of the operation, such as roadside spraying or stringing wire.

8.1.8 Employees shall not ride on trailers.

8.1.9 Employees shall not mount or dismount vehicles in motion.

8.1.10 Employees shall immediately report loss or restriction of drivers licenses to their supervisor.

8.1.11 Commercial driver's license (CDL) holders must report any traffic citations other than parking tickets regardless of vehicle driven at time of citation.

8.1.12 Employees shall not drive or pass under any overhead door that is being opened or closed.

8.1.13 All loose material in the driver compartment area shall be secured.

8.2 Vehicle Inspection

8.2.1 All vehicles in use shall be inspected by the driver before the beginning of each shift to assure that the vehicles, equipment and accessories are in safe operating condition. Before employees elevate an aerial lift into the work position, all controls (override and bucket) shall be checked for proper operation. (1910.269(q)(3)(xi)) Drivers of commercial vehicles shall record a post trip inspection of each vehicle operated at the completion of each day. (FMCSR 396.11)

8.2.2 A thorough inspection of each company vehicle shall be performed at least monthly.

8.2.3 All unsafe conditions shall be corrected before use.

8.3 Trailer Inspection

8.3.1 All trailers in use shall be inspected by the driver at the beginning of each shift to assure that the trailer equipment and accessories are in safe operating condition and properly secured.

8.3.2 All unsafe conditions shall be corrected before use.

8.4 Operation

8.4.1 Drivers shall stay alert for children, especially in school zones or where they are playing, and be prepared for an immediate stop.

8.4.2 Drivers shall be especially alert for slow moving machinery on or near the vicinity of the road right-of-way.

8.4.3 All vehicles parked on or along road right-of-way shall be protected in accordance with state and federal regulations, to include MUTCD.

8.4.4 Vehicles shall not be parked on bridges or culverts, except when necessary for work, and shall be protected in accordance with MUTCD.

8.4.5 A complete stop shall be made and the driver shall proceed with caution when entering or leaving any building or enclosure, an alley, or street where vision is obstructed.

8.4.6 Before radio-equipped cars or trucks are driven adjacent to, or beneath, energized equipment such as substations, a check shall be made to ensure that proper clearance will be maintained.

8.4.7 While refueling:

- Ignition systems shall be turned off.
- Smoking, open flames, or cell phone use shall be prohibited.

8.4.8 During refueling operations, drivers shall remain at the dispenser and monitor fuel transfers to prevent accidental product release.

8.4.9 When proceeding down grade, the clutch shall not be disengaged. Trucks, particularly if heavily loaded, shall be in low or second gear on steep grades.

8.4.10 When parking a vehicle the driver shall use all means readily available to secure the vehicle from unintended movement.

8.4.11 When articulating booms are in motion, wheel chocks shall be used.

8.4.12 Vehicle should never be left running when unattended.

8.4.13 Vehicle keys should be removed when unattended.

8.4.14 No driver shall use a hand-held mobile telephone while driving a CMV. For the purpose of this rule, driving means operating a commercial motor vehicle on a highway, including while temporarily stationary because of traffic, a traffic control device, or other momentary delays. Driving does not include operating a commercial motor vehicle when the driver has moved the vehicle to the side of, or off, a highway and has halted in a location where the vehicle can safely remain stationary. (FMCSR 392.82)

8.5 Backing

8.5.1 When possible, vehicles should be positioned to avoid the necessity of backing.

8.5.2 Extreme caution shall be exercised when backing a vehicle to avoid injury to persons and to prevent property damage.

8.5.3 During all backing operations the vehicle operator shall:

- Keep a constant lookout during the entire time.
- Carefully check any blind areas.
- Back slowly.
- Watch both sides. Do not depend entirely on mirrors.
- When a second employee is available, the second employee shall act as a guide when the rear view is obstructed. The driver shall stop when the guide is not in his/her view.
- Whenever possible, backing operations shall proceed to the driver's side of vehicle.
- All mechanical equipment (aerial lift and derrick) that have an obstructed view to the rear shall have a reverse signal alarm or a designated employee to inform the operator when it is safe to back.

9.0 REPORTING HAZARDOUS CONDITIONS (NESC SECTION 42, 420C)

9.1 When any employee observes a hazardous condition that may cause injury, property damage or interfere with service, it shall be reported promptly to the proper authority and guarded when necessary and practical.

9.2 An employee who receives a report of any hazardous emergency condition shall obtain the name of the informant, the exact location and the nature of the trouble. He/she shall immediately refer this information to the person having responsibility for such matters and assign a priority. A follow-up written hazard report shall be made.

10.0 EQUIPMENT GUARDS (1910.212)

10.1 No guard shall be removed from any machine or piece of equipment except to perform required maintenance.

10.2 Guards removed to perform maintenance operations shall be replaced immediately and the machine shall not be operated while the guards are removed (except for maintenance certification).

10.3 Equipment guards less than 7 feet above the working surface must provide total enclosure to prevent exposure to the hazard. Opening on guards must not have an opening over 1/2 inch.

11.0 TAGGING ELECTRIC SUPPLY CIRCUITS ASSOCIATED WITH POWER GENERATION WORK ACTIVITIES

11.1 Application: The provisions of this section apply to the use of lockout/tagout procedures for the control of energy sources in installations for the purpose of electric power generation, including related equipment for communication or metering. (1910.269(d))
Note: Installations in electric power generation facilities that are not an integral part of, or inextricably comingled with, power generation processes or equipment are covered under OSHA 1910.147 and Subpart S.

11.2 The employer shall establish a program consisting of energy control procedures, employee training, and periodic inspections to ensure that, before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start up, or release of stored energy could occur and cause injury, the machine or equipment is isolated from the energy source and rendered inoperative.

11.3 If clearance logs or sheets are not used for this purpose a properly filled-out hold tag may be used. At the end of the 12-month period all records of clearances must be reviewed to find problems and ways to improve the system.

11.4 A record of all clearances must be maintained for one year.

11.5 The hazardous energy control program shall meet the following requirements:

1. If an energy isolating device is not capable of being locked out, the employer's program shall use a tagout system.
2. If an energy isolating device is capable of being locked out, the employer's program shall use lockout, unless the employer can demonstrate that the use of a tagout system will provide full employee protection as follows:

   (A) When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by the use of a lockout program.

   (B) In demonstrating that a level of safety is achieved in the tagout program equivalent to the level of safety obtained by the use of a lockout program, the employer shall demonstrate full compliance with all tagout-related provisions of OSHA together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device.

Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of 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 likelihood of inadvertent energizing.

11.6 Whenever replacement or major repair, renovation, or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machines or equipment shall be designed to accept a lockout device.

11.7 Procedures shall be developed, documented, and used for the control of potentially hazardous energy covered by this section.

11.8 Equipment or circuits that are to be treated as de-energized shall have a suitable tag attached to all points where such equipment or circuits can be energized.

11.9 Controls that are to be de-activated during the course of work on energized or de-energized equipment or circuits shall also be tagged:

1. The required tags shall be placed to identify plainly the equipment or circuits on which work is being performed.
2. When controls upon which tags have been placed open automatically, they shall be left open until re-closing has been authorized.
3. Attachment methods of hold tags have minimum breaking strength of 50 lbs. where possible.

11.10 Before starting work on any circuit, machine, equipment or other apparatus which is out of service, employees shall assure themselves that a standard Hold Card, tag or lockout device is properly attached to the apparatus control.

11.11 No switch, governor, valve, throttle, or other device used to put a circuit or equipment into service shall be operated while a Hold Card or similar device is attached to it.

11.12 A Hold Card, or similar device, that has been placed for protection of workers shall be removed only by authorization of the person in whose name it was placed and then only after the work has been completed, all workers have been notified and are in the clear. (Follow Cooperative operating instructions pertaining to the equipment involved).

11.13 Each person in charge of work on any equipment shall have his Hold Card or similar device secured to the apparatus control.

12.0 TAGGING ELECTRIC SUPPLY CIRCUITS ASSOCIATED WITH TRANSMISSION AND DISTRIBUTION ACTIVITIES (1910.269(M) AND (N))

12.1 Hold Tags/Lockout-Tagout

1. Hold tags shall be weatherproof and if possible have a means of attachment that will withstand 50 foot lbs. of force.
2. Installed anytime a line is de-energized or when a circuit is placed in the non-reclose position without SCADA assistance.
3. Have the designated person's name on the tag with date, time, contact information, clearance number, and circuit or device number recorded on the hold tag.
4. Hold tags shall be attached to the control panel, control handle, or within visibility of the connection between source and load connections.
5. Hold tags shall only be removed by the designated person on the hold tag. The designated person can transfer the hold tag to another designated person in accordance with the cooperative's current lock-out/tag-out procedures.
6. An annual review is required of the lockout-tagout procedure to look for potential problems and to find ways to improve the program.

12.2 All oral communications about dispatching and clearances shall be recorded by the person receiving them and read back to the person giving them.

12.3 Under no circumstances shall clearances be granted or released on a predetermined time basis.

12.4 When two or more independent crews are working on the same line or equipment and are not under the supervision of the same person in charge, each designated person shall request and release his or her own clearance independently in accordance with these rules.

12.5 All "switch" Hold Tags providing a clearance on a cleared line or apparatus shall be attached to the structure, equipment, apparatus, etc…, in a conspicuous location, indicating employees are at work.

12.6 The handles of switches providing clearances for working on lines or apparatus shall be locked or blocked, open or closed, in addition to the application of the hold tags.

12.7 Before primary grounds are removed and line or equipment returned to service, the load dispatcher or designated person shall require that the same person who received the clearance shall report that the line or equipment may be re-energized.
Exception: If the person who received the clearance leaves the work before it is completed, he/she shall inform the dispatcher or designated person giving the name of the employee who will take his/her place. In such cases, the dispatcher shall communicate with both employees, releasing the one who is leaving and accepting the other as authorized to report. Clear entries of all such authorized changes shall be made on dispatcher's records, and Hold tags.

12.8 When it is necessary to obtain a clearance for work on any line or apparatus not under the jurisdiction of a dispatcher, the request shall be made directly to the person having jurisdiction.

12.9 After de-energizing the line or equipment and attaching Hold tags to each switch providing clearance on the line or equipment, the employee shall report back to the person making the request that the line or equipment is out of service. Work may begin after testing for the absence of nominal voltage and installing adequate grounds that have the ampacity for the anticipated fault current.

12.10 A line or equipment shall not be put back in service, nor the Hold tags removed until the person to whom the clearance was given releases his/her clearance.

12.11 After the work is completed, the grounds removed, and all employees are in the clear, the employee who received the clearance, or his/her properly authorized substitute, shall report to the person having jurisdiction that the line or equipment is ready for service.

12.12 Lockout/Tagout programs for buildings not directly related to electrical distribution shall comply with OSHA 1910 subpart S.

12.13 Employees should receive periodic training on clearance program procedures, or as regular supervision and/or inspections dictate.

13.0 OFFICE SAFETY (1910.22)

13.1 Chairs, wastebaskets, extension cords and other articles shall not be left in aisles where they constitute a tripping hazard.

13.2 Desk and file cabinet doors shall not be left open when not in use.

13.3 Only staples, clips or other approved fasteners shall be used for fastening paper together.

13.4 Broken glass or other sharp edged objects shall not be placed in wastebaskets unless properly protected.

13.5 Approved ladders or step stools shall be used to reach material on high shelves or at other similar locations. Boxes, crates, chairs, etc. shall not be used in place of a stool or ladder.

13.6 Employees shall walk cautiously around blind corners and should use hand rails on stairs.

13.7 Employees shall not attempt to clean, oil, or adjust any machine that is running.

13.8 Do not sit on the edge of a chair. Do not tilt back when sitting in a straight chair.

13.9 Heaters with visibly exposed heating elements shall not be used.

13.10 All lighting panel doors shall be closed at all times.

13.11 Exits and fire extinguishers shall not be blocked at any time.

13.12 Fire/evacuation drills shall be held with sufficient frequency to familiarize occupants with the drill procedure and to establish conduct of the drill as a matter of routine. Drills shall include suitable procedures to ensure that all persons subject to the drill participate. (NFPA 101, 4.7.2)

13.13 Material shall not be stored within 3 feet of electrical distribution panels.

13.14 Use care when operating paper shears and other office equipment.

13.15 Proper footwear should be worn when ice is present or on an unstable walking surface.

13.16 Office desk equipment should be ergonomically sound and properly adjusted.

13.17 Always watch for loose tile or rough places in flooring, as this may cause a tripping incident. This type of hazard shall be reported as soon as possible to appropriate personnel.

13.18 Swivel chairs: Do not stand in or lean back excessively. Check for broken or bent parts or sticking casters. Tighten any loose screws or bolts and replace or repair any damaged parts immediately. Swivel chairs with a five-point base are more stable than those with less than five points.

13.19 File cabinets: Always close a file cabinet when you are through with it to

prevent you or someone else from running into it.

- Be careful when closing a file cabinet, as your fingers or someone else's fingers could be in the way.
- Never overload the top drawers of a file cabinet. This will make the cabinet top-heavy. File cabinets should be secured to prevent tipping.
- Never open more than one drawer of a file cabinet at a time.

13.20 Be cautious when approaching a door that can be pushed toward you. Be equally cautious when pushing a door open.

13.21 Never lick an envelope. It can cut your tongue. Use a wet sponge or some other wetting device.

13.22 Use a rubber finger guard when working with stacks of paper.

13.23 Never store any sharp objects loose in your desk. Keep them in boxes.

13.24 Never remove guards from any machine. Never try to clear any jammed machine without first shutting off the power.

13.25 Never indulge in horseplay in the office.

13.26 When lifting or moving heavy objects: Always ask for some help. When lifting, lift in the proper manner. The safe way to lift is to bend your knees and let your legs do the lifting—not your back. Keep your back as straight as possible. Put the load down the same way—using your legs. Move your feet to turn with the load—don't twist, and keep the load close to your body.

13.27 When carrying a load, be sure you can see where you are going. Check footing on stairs, and keep the load as close to your body as you can.

13.28 Always be alert and remember that incidents can happen in offices. Report all hazards immediately.

13.29 With long hair, loose jewelry, loose clothing, and neck wear, extreme caution should be used when any of these conditions exist around moving machinery or equipment.

13.30 Office equipment should be turned off after working hours with the exception of equipment designed to be left on continuously.

13.31 Drop cords shall be used only for temporary operations.

13.32 Designated employees shall be trained on their duties in an emergency procedure.

14.0 FIRSTAID/CPR (1910.269(b) & 1910.151)

14.1 General

14.1.1 All required employees shall be trained in First Aid and CPR.

14.1.2 Employees rendering first aid should exercise universal precautions when exposed to blood or body fluids of another. This would include the use of latex or nitrate gloves to avoid exposure to hand contact. Other personal protective equipment such as a breathing barrier, face mask, and eye protectors are to be used when performing mouth to mouth resuscitation and when there is possibility of splashing of blood. Immediately wash your hands with soap and water after rendering first aid.

14.1.3 All incidents where there is potential risk of exposure to blood or body fluids shall be reported immediately so that proper follow-up procedures can be performed.

14.1.4 Vaccinations for Hepatitis B shall be offered within 24 hours where there has been a job related exposure to blood or body fluids during first aid procedures.

14.1.5 All employees should be aware of the emergency medical services available and how to obtain them.

14.1.6 At least two persons trained in first aid & CPR shall be present when two or more employees are performing work on circuit lines or equipment energized at 50 volts or more.

14.1.7 Employees shall be familiar with the location, the contents and the proper use of first aid kits.

14.1.8 The contents of the first aid kits shall be inspected each month and expended items replaced.

14.1.9 Safety Data Sheet information for all chemicals used at the cooperative, shall be readily available to all employees.

14.1.10 Rescue equipment and annual training is required for enclosed spaces.

14.2 Wounds and Control of Bleeding

14.2.1 A person can bleed to death in less than one minute. In the event of an injury that results in significant bleeding immediate steps must be taken to prevent the loss of blood.

14.2.2 Serious bleeding may be controlled by direct pressure, elevation, and pressure points. Direct pressure can be achieved by applying firm direct pressure directly on top of the wound. Use of a sterile dressing is preferred. As a last resort, a tourniquet should be used to stop the flow of blood. Note the time the tourniquet is applied.

14.3 Shock

14.3.1 Attention must be given to the prompt treatment for shock. Shock usually occurs following a severe loss of blood or some type of serious injury. It can occur from a minor injury or even from anxiety or emotional stress. Regardless of the cause, the symptoms are the same and similar treatment is required.

14.3.2 Symptoms of shock are:

- Chalk-like appearance
- Dull or anxious expressions
- Shallow breathing
- Weak, rapid pulse
- Cold, moist skin
- Disorientation
- Nausea/Vomiting
- Confusion

14.3.3 The victim should be kept warm and comfortable but not too hot. In many cases the only first aid measure necessary and possible is to cover the victim with a blanket to prevent the loss of body heat. It may be necessary during cold weather to place a blanket underneath the victim as well.

14.3.4 Keep the victim's body horizontal and positioned so the feet are at least 6 inches higher than the head. The single exception to this positioning is the case of a victim who obviously has an injury to the chest, and who has difficulty breathing. This victim should be kept horizontal with upper body slightly raised to make breathing easier. Check the victim for signs of trauma or injuries.

14.3.5 Clear the victim's mouth of all foreign bodies and make sure they are breathing properly.

14.3.6 Loosen tight clothing at the neck, the chest, and the waist.

14.3.7 Proper transportation to a medical facility is important in the case of a person who may develop shock and lose consciousness. Use of an ambulance is preferred. Use of a car or truck is not advised where there is a risk of the victim becoming unconscious when en route to a medical facility.

14.4 Eye Injuries

14.4.1 Foreign Bodies

1. When a small foreign body such as dust has entered the eye, moderate efforts may be made to remove it. The edge of a clean handkerchief or similar item may be used. Never use a matchstick, knife or other such instrument that might cause damage to the eye. Grasp the upper eye lid and pull out and down over the lower lid and release. Try this method several times.

2. Objects imbedded in the eye must not be removed except by a physician. Place the victim on their back and call for an ambulance immediately. Both eyes of the injured should be bandaged loosely. The injured employee should be told to relax and asked not to move his/her eyes.

14.4.2 Chemical Burns, Acid or Caustic

1. Immediate irrigation of the eye with large quantities of clean water is mandatory whenever a chemical substance enters the eye. In no instance should it take an individual longer than 10 seconds to reach the nearest eyewash facility. (ANSI Z358.1)
2. Flushing of the eye with tepid (moderately warm or lukewarm) running water should continue for at least 15 minutes. The use of excessively cold (less than 60º) or hot (greater than 100º) water should be avoided.

14.4.3 Regardless of first aid measures taken, potentially serious eye injury cases should be seen by a physician as soon as possible.

14.5 Burns

14.5.1 Electrical or thermal burns:

1. Electrical burns may be caused by electrical contact, from the heat of an electrical arc, or a combination of both.
2. Cool the injured area with clean or sterile water as soon as possible.
3. Continue to cool the burned area until professional help arrives.
4. Treat for shock.
5. Electrical contact injuries may cause severe internal injuries. All electrical contact injuries should be treated at a burn center.

14.5.2 Chemical burns

1. Flush the chemical from the skin for at least 5 minutes. Remove any contaminated clothing.
2. Refer to the Safety Data Sheet (SDS) for chemical first aid treatment.

14.6 Bee Stings

14.6.1 Most individuals will have a small localized reaction to a bee sting. Temporary symptoms may include reddened skin, pain, and swelling and/or itching. Symptoms from a large local reaction may include swelling, redness, and pain and may persist for up to a week. Areas adjacent to the sting site may also experience similar symptoms.

14.6.2 In a few instances, a systemic allergic reaction can occur and affect the victim's entire body. Hives, redness, or swelling may occur at sites on the body distant from the site of the sting. Other symptoms may include vomiting, nausea, diarrhea, or dizziness.

14.6.3 The most serious reaction to bee stings is an anaphylactic reaction. Victims experience wheezing, difficulty breathing, and a drop in blood pressure that leads to shock if not treated promptly. These types of reactions usually occur within minutes of the bee sting. Since most people who have allergies to bee stings will have a worsened reaction to every subsequent sting, those individuals with bee sting allergies should talk to their doctor about taking special precautions, including carrying an injectable form of the drug epinephrine (used to treat anaphylactic reactions) at all times.

14.6.4 Protocols for bee stings:

1. Call emergency medical services if the victim has a history of severe reactions to insect stings or experiences any severe symptoms as described above.
2. Determine if the stinger is still present (look for a small black dot at the sting site) and remove it immediately if it is visible in the wound. Many doctors recommend using a hard object like a credit card to swipe over the area and remove the stinger.
3. Apply ice or cold packs to the area to reduce inflammation.
4. Clean the area with soap and water and apply hydrocortisone cream to the site to decrease the severity of the reaction.

14.6.5 Stings in the mouth or nose may require emergency medical attention, since they can lead to swelling that can interfere with breathing.

14.7 Poisonous Plants

14.7.1 When poison ivy, poison oak, or poison sumac leaves or plant parts are bruised, damaged, or burned, urushiol (oil) may be released. If the oil gets on the skin an allergic reaction, referred to as contact dermatitis, may occur. Symptoms may include an itchy red rash with bumps or blisters.

14.7.2 Plant Identification:

1. Poison Ivy:
   - Eastern poison ivy is typically a hairy, ropelike vine with three shiny green (or red in the fall) leaves budding from one small stem.
   - May have yellow or green flowers and white to green-yellow or amber berries
2. Poison Oak:
   - Typically a shrub with leaves of three, similar to poison ivy
   - May have yellow or green flowers and clusters of green-yellow or white berries
3. Poison Sumac:
   - Woody shrub that has stems that contain 7-13 leaves arranged in pairs
   - May have glossy, pale yellow, or cream-colored berries

14.7.3 Exposure to urushiol can occur through direct contact with the plant, indirect contact (such as touching contaminated tools or clothing), or inhalation of particles containing urushiol from burning plants.

14.7.4 Signs or symptoms associated with dermal contact may include: red rash within a few days of contact; possible bumps, patches, streaking, or weeping blisters (blister fluids are not contagious); swelling; itching.

14.7.5 Employees who have come in contact with poisonous plants should:

1. Immediately rinse affected skin with rubbing alcohol, degreasing soap (such as dishwashing soap) or detergent, and lots of water. Rinse frequently so that the wash solution does not dry on the skin and further spread the urushiol.
2. Scrub under fingernails with a brush if available.
3. Apply wet compresses, calamine lotion, or hydrocortisone cream to the skin to reduce itching and blistering. Follow the directions on any creams and lotions. Do not apply ointments to broken skin, such as open blisters.
4. In severe cases or if the rash is on the face or genitals, seek professional medical attention.
5. Call 911 or seek emergency assistance if the employee is suffering a severe allergic reaction, such as swelling or difficulty breathing, or has had a severe reaction in the past.

15.0 POLE TOP/BUCKET RESCUE

15.1 Pre-planning for an emergency is important. Prompt action by fellow employees is essential in rescue operations. Personnel engaged in overhead line work must be proficient in pole top and bucket rescue. Pole top and bucket rescue shall be practiced and documented at least annually for affected employees.

15.2 INITIATE EMERGENCY PROCEDURES TO SUMMON MEDICAL ASSISTANCE

15.2.1 **CHECK - CALL – CARE**: Size up the situation. The rescue effort will be far more effective if a few seconds are devoted to fully identifying the situation. If available, apply and use the necessary personal protective equipment (PPE) to protect yourself. Then clear the victim of any hazards.

15.2.2 **CHECK** – the scene to be sure the area is safe to enter.

- In electric shock cases, do not rush in and become a casualty yourself. Remove or disconnect the source from the victim before starting rescue procedures.

15.2.3 **CALL** – call for MAYDAY clearance, give location, and request medical assistance

15.2.4 **CARE –** care for the victim so as not to endanger yourself or create further injury to the victim

1. Prepare the equipment you will need.
2. Proceed with pole-top or bucket rescue as the conditions dictate

If the victim is conscious:

- Reassure the injured
- Be watchful for shock
- Help the injured descend the pole
- Administer first aid

If the victim is unconscious and breathing:

- Watch breathing closely
- Lower the injured to the ground
- Administer first aid

If the victim is unconscious and not breathing:

- Lower the victim to the ground as soon as possible
- Place the victim in a level position on their back
- Begin CPR immediately and continue until help arrives
- If one is available, use an AED as soon as possible

- Change of rescuers during CPR should be a smooth transition without breaking the rhythm of compressions. If CPR is interrupted to move the victim, resuscitation should continue as soon as possible. Symptoms of shock should be treated accordingly.

15.3.5 Proceed with pole top or bucket rescue and resuscitation as dictated by the conditions.

1. If the victim is conscious:
    - Reassure the injured
    - Be watchful for shock
    - Help the injured descend the pole
    - Administer first aid
2. If the victim is unconscious and breathing:
    - Watch breathing closely
    - Lower the injured to ground
    - Give first aid
3. If the victim is unconscious and not breathing:
    - Lower the victim to the ground as soon as possible
    - Place the victim in a level position on their back
    - If no pulse is detected, begin CPR immediately and continue until help arrives
4. Use an AED as soon as possible, if one is available

16.0 WALKING-WORKING SURFACES (OSHA 1910 Subpart D)

16.1 Surface Conditions

16.1.1 All places of employment, passageways, storerooms, service rooms, and walking-working surfaces must be kept in a clean, orderly, and sanitary condition.

16.1.2 The floor of each workroom must be maintained in a clean and, to the extent feasible, dry condition. When wet processes are used, drainage must be maintained and, to the extent feasible, dry standing places, such as false floors, platforms, and mats must be provided.

16.1.3 Walking-working surfaces must be maintained free of hazards such as sharp or protruding objects, loose boards, corrosion, leaks, spills, snow, and ice.

16.2 Loads

16.2.1 Each walking-working surface shall support the maximum intended load for that surface.

16.3 Access and Egress

16.3.1 The employer must provide and ensure each employee uses a safe means of access and egress to and from walking-working surfaces.

16.4 Inspection, Maintenance, and Repair

16.4.1 Walking-working surfaces must be inspected regularly and as necessary and maintained in a safe condition.

16.4.2 Hazardous conditions on walking-working surfaces shall be corrected or repaired before an employee uses the walking-working surface again. If the correction or repair cannot be made immediately, the hazard must be guarded to prevent employees from using the walking-working surface until the hazard is corrected or repaired.

16.4.3 When any correction or repair involves the structural integrity of the walking-working surface, a qualified person shall perform or supervise the correction or repair.

16.5 Each of the following items shall meet the requirements listed in 1910 Subpart D Walking-Working Surfaces, when applicable:

- Ladders
- Step-Bolts and Manhole Steps
- Stairways
- Dockboards
- Scaffolds and Rope Descent Systems

16.6 Under 1910 Subpart D, “Duty to have fall protection and falling object protection”, employers are required to provide protection for each employee exposed to fall and falling object hazards. Unless stated otherwise, all fall protection and falling object protection shall meet the criteria in OSHA 1910.29, except the personal fall protection systems required to meet the criteria of OSHA 1910.140.

16.7 Training

16.7.1 Before any employee is exposed to a fall hazard, the employer must provide training for any employee who uses a personal fall protection system(s) or who is required to be trained as specified elsewhere in OSHA 1910 Subpart D.

16.7.2 Each employee shall be trained by a qualified person.

16.7.3 A qualified person(s) shall train each employee in the:

- Nature of the fall hazards in the work area and how to recognize them
- Procedures to follow to minimize fall hazards
- Correct procedures for installing, inspecting, operating, maintaining, and disassembling the personal fall protection systems that the employee uses
- Correct use of personal fall protection systems and equipment, including, but not limited to, proper hook-up, anchoring & tie-off techniques, and methods of equipment inspection and storage, as specified by the manufacturer.

16.7.4 A qualified person(s) shall train each employee in the proper care, inspection, storage, and use of equipment covered by OSHA 1910 Subpart D before an employee uses the equipment.

16.7.5 A qualified person(s) shall train each employee who uses a dock board to properly place and secure it to prevent unintentional movement.

16.7.6 A qualified person(s) shall train each employee who uses a rope descent system in proper rigging and use of the equipment in accordance with OSHA 1910.27.

16.7.7 A qualified person(s) shall train each employee who uses a designated area in the proper set-up and use of the area.

16.7.8 All information and training shall be provided to each employee in a manner that the employee understands.

16.8 Re-Training

16.8.1 Employees shall be re-trained by a qualified person(s) when the employer has reason to believe the employee does not have the understanding and skill required by rule 16.6 Training.

16.8.2 Employees shall be re-trained by a qualified person(s):

- When changes in the workplace render previous training obsolete or inadequate
- When changes in the types of fall protection systems or equipment to be used render previous training obsolete or inadequate
- When inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee no longer has the understanding or skill necessary to use the equipment to perform the job safely.

SECTION II

Buildings and Facilities

20.0 HOUSEKEEPING (1910.22)

20.1 Work areas, vehicles, and facilities shall be kept clean and orderly at all times.

20.2 Floors and platforms shall be kept free of dangerous projections or obstructions and shall be maintained free from oil, grease, or water. Where the type of operation produces slippery conditions, mats, grates, cleats or other methods shall be used to reduce the hazard of slipping.

20.3 Stairways, aisles, permanent roadways, walkways and material storage areas in yards shall be kept free from obstructions, depressions and debris.

20.4 Materials and supplies shall be stored in an orderly manner to eliminate tripping hazards.

20.5 Personal lockers shall be kept clean and orderly.

20.6 Paper and other combustible materials shall not be allowed to accumulate. Weeds and other undesirable vegetation shall not be permitted to grow in substations, pole yards, around buildings, oil tanks or other structures.

21.0 PLANS AND PROGRAMS

If applicable, the employer shall develop plans and ensure training for affected personnel for the following OSHA standards:

- Emergency Action Plans (1910.38)
- Fire protection program (1910 Subpart L, 1926.24, and 1926.150-155)
- Fire prevention program (1910.39, 1926.24, and 1926.150-155)
- Hazard Communication (1910.1200)
- Bloodborne Pathogens (1910.1030)
- Facility Lockout/Tagout (1910.147)
- Permit Required Confined Spaces (1910.146)
- Hearing Conservation (1910.95)
- Respirator (1910.134)
- PPE (1910.132 – 138)

22.0 FIRE PREVENTION

OSHA 1926 Subpart F and 1910 Subpart E and L

22.1 No more than 25 gallons of a Class l-A flammable liquid (such as gasoline) can be stored in a room outside a flammable liquid storage cabinet.

22.2 All solvents shall be kept in approved, properly labeled containers.

22.3 Flammable liquids shall be stored and dispensed only in U.L. or F.M. approved and properly labeled safety cans.

22.4 Not more than one gallon of safety solvent shall be used in any open container. The container shall be provided with a proper cover and be securely covered except when in actual use.

22.5 When pouring or pumping gasoline or other flammable liquids from one container to another container, electrical bonding shall be maintained between the containers. No more than 5 gallons should be transferred at one time. (1926.152(e)(1))

22.6 Strict adherence shall be paid to “No Smoking”, “No Open Flames”, “No Cell Phone Use”, and “Shut off Motor” signs.

22.7 If open flames are used in enclosed spaces, a test for flammable gases and vapors shall be made before the open flame device is used and shall be conducted continuously in the enclosed space.

22.8 The storage of flammable liquids is not permitted in an office building.

22.9 Material shall not be stored within 3 feet of electrical distribution panels.

22.10 Combustible materials, such as oil-soaked rags, waste, and shavings shall be kept in approved metal containers with metal lids. Containers shall be emptied daily.

22.11 Flammable liquids shall be used only for their designed purposes. Gasoline, benzene, denatured alcohol, naphtha, lacquer thinner, etc. shall not be used for cleaning purposes or for starting fires.

22.12 In any building, except one provided for their storage, flammable liquids such as gasoline, benzene, naphtha, lacquer thinner, etc., shall be limited to five gallons, in U.L. or F.M.-approved, properly labeled safety cans with a 60 gallon maximum limit.

23.0 FIRE PROTECTION

OSHA 1926 Subpart F and 1910 Subpart L

23.1 Fire protection equipment shall be properly located at all times. Except for actual use, employees shall not move or remove such equipment without proper authority.

23.2 Except for wheel-type extinguishers, all portable fire extinguishers located in permanent structures shall be mounted at readily accessible locations and shall comply with current regulations.

23.3 All employees shall know the classes of fire, their burning characteristics and the proper extinguishing agent to be used. The classes are:

- Class “A” fires involve ordinary combustibles such as wood and paper. Extinguishing agents include water, multipurpose dry chemical.
- Class “B” fires involve oils and flammable liquids. Extinguishing agents include C02 and dry chemical.
- Class ‘C’ fires involve electrical equipment. Extinguishing agents include CO2 and dry chemical.

23.4 Each company vehicle shall carry a fire extinguisher with a minimum rating of 5 BC, unless that vehicle is over 26,000lbs. (aerial lifts and derrick trucks), in which case no less than two 10 BC fire extinguishers will be required. (FMCSR 393.95)

23.5 Each service or fueling area shall be provided with at least one fire extinguisher having a rating of not less than 20 BC and located no closer than 25 feet or more than 75 feet of each pump, dispenser, underground fill pipe opening, lubrication or service area.

23.6 Only approved safety solvents shall be used for cleaning equipment and parts.

24.0 FLAMMABLE LIQUIDS STORAGE

OSHA 1926.152

24.1 Flammable materials shall not be stored in areas used for exits, stairways or passageways normally used by people.

24.2 Indoor storage quantities of flammable liquids in excess of 25 gallons shall be stored in an approved cabinet.

24.3 All flammable cabinets shall be labeled in conspicuous lettering “Flammable - Keep Fire Away” and “No Smoking”.

24.4 Not more than 60 gallons of Category 1, 2 and/or 3 flammable liquids or 120 gallons of Category 4 flammable liquids shall be stored in any one storage cabinet. Not more than three such cabinets may be located in a single storage area. Quantities in excess of this shall be stored in an inside storage room.

24.5 Inside storage rooms of flammable liquids shall be constructed to meet the required fire-resistive rating for their use. Construction of inside storage rooms shall comply with the specifications set forth in Standard Methods of Fire Test of Buildings Construction and Material, NFPA 251-1969.

24.6 At least one portable fire extinguisher, having a rating of not less than 20 BC, shall be located outside of, but not more than 10 feet from, the door opening into any room used for storage of more than 60 gallons of flammable or combustible liquids.

25.0 SMOKING

25.1 Smoking or open flames shall not be permitted in areas where dangerous gases might be present; for example, oil rooms, hydrogen areas, acetylene storage, confined spaces, or similar areas.

25.2 Smoking is not permitted in storerooms, battery rooms, flammable liquid storage rooms, and in areas where flammable liquids are used or in other areas where quantities of combustible materials are kept.

26.0 STORAGE AND HANDLING MATERIALS (FORKLIFTS)

OSHA - 1910 Subpart D and N & 1910.269(k), 1926 Subpart H and 1926 Subpart V

26.1 General

26.1.1 All materials stored in tiers shall be stacked, racked, blocked, interlocked or otherwise secured to prevent sliding, falling or collapsing.

26.1.2 Maximum safe load limits of floors within buildings and structures, in pounds per square foot, shall be conspicuously posted in all storage areas, except for floors or slabs on grade. Maximum safe loads shall not be exceeded.

26.1.3 Aisles and passageways shall be kept clear to allow free and safe movement of material handling equipment or employees. Such areas shall be kept in good repair.

26.1.4 When a difference in road or working levels exists, means such as ramps, blocking or grading shall be used to ensure the safe movement of vehicles between the two levels.

26.1.5 Materials shall not be stored on scaffolds or runways in excess of supplies needed for immediate operations.

26.1.6 Structural steel, poles, pipe, bar stock and other cylindrical materials shall be stacked and blocked so as to prevent spreading or tilting.

26.1.7 Portable dock boards shall be secured in position, either by being anchored or equipped with devices that will prevent slipping.

26.1.8 No materials or equipment shall be stored under energized lines or near energized equipment, if it is practical to store them elsewhere.

If it is not practical to store them elsewhere, these rules will apply:

1. Storage of materials or equipment shall maintain applicable clearances stated in OSHA 1910.269 (k) (10 feet up to 50 kV plus 4 inches for every 10 kV above 50kV), if not practical. Extreme caution shall be exercised when moving materials near such energized lines or equipment.
2. Storage of materials or equipment may not be stored within the working space about energized lines or equipment in substations.

26.1.9 When mechanical equipment is used to move material in warehouses, permanent aisles and passageways shall be appropriately marked.

26.1.10 When unpacking new capacitors they shall be treated as capacitors just removed from service until externally shunted.

26.2 Manual Handling

26.2.1 An employee shall obtain assistance in lifting heavy objects or shall use power equipment.

26.2.2 When two or more persons carry a heavy object, there shall be a prearranged signal for lifting and releasing the load.

26.2.3 When lifting objects, the employee shall keep their back straight, avoid sudden movements, keep the object as close to the body as possible, and lift with the legs, not the back.

26.2.4 When two or more persons are carrying one object each employee should face the direction in which the object is being carried. Avoid strains from lifting objects by being sure of footing, bending the knees and keeping the back almost perpendicular.

26.2.5 In areas not restricted to qualified persons only, materials or equipment may not be stored closer to energized lines or exposed energized parts of equipment than the following distances plus an amount providing for the maximum sag and side swing of all conductors and providing for the height and movement of material handling equipment:

1. For lines and equipment energized at 50kV or less, the distance is 10 feet (305 cm).
2. For lines and equipment energized at more than 50 kV, the distance is 10 feet (305 cm) plus 4 inches (10 cm) for every 10kV over 50kv.
3. In areas restricted to qualified employees, material may not be stored within the working space about energized lines or equipment.

26.3 Industrial Trucks- Fork Lifts (1910.178, 1926.602)

26.3.1 Forklift trucks shall be operated only by authorized persons who are properly trained and proficient in the operation of the type of forklift truck they will operate. The operator must be re-evaluated every three years.

26.3.2 Brakes and controls shall be tested prior to use. Equipment with faulty brakes or mechanical or electrical defects shall not be operated. Needed repairs shall be corrected before use. A documented inspection shall be performed before each shift.

26.3.3 Fork lifts shall always be operated at a safe speed for existing conditions.

26.3.4 Before moving the equipment, the operator shall make sure that no person or objects are in the path of the vehicle. Clearances in all directions shall always be checked, particularly overhead clearances.

26.3.5 Fork lifts shall not be refueled while the engine is running. Smoking is not permitted while refueling.

26.3.6 When picking up a load, forks shall be set squarely and placed under the load as far as possible. Loads should not be raised or lowered while

traveling. Whether loaded or empty, forks should be carried as low as possible, but high enough to clear uneven surfaces.

26.3.7 Loads shall not be suspended or swung over other persons. No one shall be allowed to stand or walk under elevated forks.

26.3.8 The operator shall always face in the direction of travel.

26.3.9 On inclines, all types of loaded fork lifts shall be driven with the load on the upgrade side of the driver, whether ascending or descending.

26.3.10 Sudden stops that might spill the load shall be avoided.

26.3.11 All loads shall be securely fastened or safely positioned to prevent tipping or falling.

26.3.12 Lift bars on fork lifts that are movable or replaceable shall be held firmly in place by a proper securing pin. Improvised devices, such as using a threaded bolt, shall not be permitted.

26.3.13 Only attachments provided or approved by the manufacturer may be used; all attachments shall be properly secured. Improvised methods shall not be used.

26.3.14 No one other than the operator shall be allowed to ride the fork lift or other equipment, except when seats are provided for this purpose.

26.3.15 When a fork lift is left unattended (operator is 25 feet away or the vehicle is not in his view), the load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, the key should be removed and brakes shall be set. Wheels shall be chocked when the vehicle or fork lift is parked on an incline.

26.3.16 Fork lifts shall be fitted with a back-up alarm.

26.3.17 Fork lifts with internal combustion engines shall not be operated in enclosed areas for prolonged periods of time unless suitable ventilation has been provided, so as not to exceed the allowable levels of carbon monoxide.

26.3.18 When loading or unloading highway trucks, properly secured, approved dock boards shall be used. The wheels of the highway truck being loaded or unloaded shall be chocked. Inspect the floor of a trailer prior to entry.

26.3.19 At minimum, all fork lifts shall be equipped with a 10 BC portable fire extinguisher.

26.3.20 Modifications and additions that affect capacity and safe operations of fork lifts shall not be performed without manufacturer’s prior written approval.

26.3.21 The operator shall see that all nameplates and markings are in place and are maintained in a legible condition.

26.3.22 Changing and charging batteries:

- Facilities shall be provided for: flushing and neutralizing spilled electrolyte, fire protection, protecting charging apparatus from damage by vehicles, and adequate ventilation for dispersal of fumes from gassing batteries.
- When charging batteries, acid shall be poured into water; water shall not be poured into acid.
- Vehicles shall be properly positioned and the brake applied before attempting to change or charge batteries.
- Smoking shall be prohibited and “No Smoking” signs posted in the charging area.
- Appropriate eye wash shall be available.

26.3.23 The driver is required to slow down and sound the horn at cross aisles, doorways and other locations where vision is obstructed.

26.3.24 Fork lifts shall not be driven up to anyone standing in front of a bench, truck or other fixed object.

26.3.25 Horseplay is not permitted while operating fork lifts.

26.3.26 Seat belts shall be used if fork lift is so equipped.

26.3.27 Follow your cooperative’s procedures for PPE use while operating forklifts. If a cooperative procedure is not in place, at a minimum, hard hats and safety glasses shall be required.

26.4 Pole Handling

26.4.1 Prior to unloading steel, poles, cross arms and similar material, the load shall be thoroughly examined to ascertain if the load has shifted, binders or stakes have broken, or the load is otherwise hazardous to employees.

26.4.2 During handling operations, all poles shall be secured to prevent displacement. Precautions shall be exercised to keep all personnel out of the area.

26.4.3 Pre-operational inspections of the pole hoist and the lifting devices are required.

26.4.4 Poles at the pole yard shall be stored by class and length.

26.4.5 Where hazards to employees exist, tag lines or other suitable devices shall be used to control loads being handled by hoisting equipment.

26.4.6 During framing operations, employees shall not work under a pole or a structure.

26.4.7 Hoist rope shall not be wrapped around poles or an object to be lifted.

27.0 GARAGE

27.1 Handling and Storage of Compressed Gas Cylinders (1926.350, 1910 Sub part Q)

27.1.1 Care shall be exercised in handling all gas cylinders. Cylinders shall not be dropped or jarred.

27.1.2 Gas cylinders shall not be hoisted using a sling or electric magnet nor shall they be lifted by the valve protection cap. Hydraulic tailgates or other approved methods shall be used in lowering cylinders from trucks. When cylinders are transported by vehicles they shall be secured in the vertical position.

27.1.3 Stored gas cylinders, tagged & labeled full or empty, shall always be tied off securely in an upright position at all times. Valve protection caps shall be kept in place, except while regulators or hoses are attached. All other cylinder labels shall be in place.

27.1.4 Gas cylinders shall be kept away from heat and welding or cutting operations where sparks could reach them.

27.1.5 Oxygen cylinders shall not be stored near highly combustible materials, especially oil and grease. They shall be separated in storage from fuel gas cylinders or combustible materials (especially oil or grease) a minimum distance of 20 feet or by a five(s) foot high one-half hour rated fire wall.

27.1.6 Welding or cutting of any pipeline, tank, empty container or piece of equipment shall not be performed until it is assured the object is free from highly flammable materials or an explosive mixture of gases. Before welding or cutting is begun, the hazardous materials shall be removed, and it shall be vented to the atmosphere and purged with an inert gas to prevent an explosion from expansion of trapped gases.

27.1.7 Cylinders containing chlorine, propane or hydrogen shall not be stored in a general storeroom. They shall be stored in separate, well ventilated, fireproof areas.

27.1.8 Cylinders shall not be allowed to come in contact with energized conductors, ground wires from electrical equipment or welding machines.

27.1.9 A full cylinder shall be connected to a header or manifold with other cylinders only when their temperatures are approximately the same.

27.1.10 Only those fuel gas cylinders that are in actual use and are secured in place and connected to a manifold or welding set shall be permitted in a main building. All empty and spare cylinders shall be stored elsewhere.

27.1.11 The valves of compressed gas cylinders shall be opened slowly.

27.1.12 Employees shall never tamper with the safety relief devices of cylinders.

27.1.13 Employees shall never force connections that do not fit. Only properly

trained employees shall be entitled to use this equipment.

27.1.14 Oil or grease shall not be used for lubricating valves, gauge connections or any parts of a compressed oxygen system.

27.1.15 Before a regulator is removed from a cylinder, the valve shall be closed and all pressure released from the regulator.

27.1.16 A leaking cylinder shall not be used. Such cylinders shall be taken outdoors away from sources of ignition. The supervisor shall be notified.

27.1.17 A flame shall never be used to detect gas leaks.

27.1.18 The recessed top of cylinders shall not be used as a place for tools.

27.1.19 No attempt shall be made to mix gases in a cylinder or to transfer gas from one cylinder to another.

27.1.20 “Danger-No Smoking, Matches or Open Lights” or equivalent wording shall be conspicuously posted in rooms or at entrances to areas where fuel gas is used or stored.

27.2 Gas Welding and Cutting

27.2.1 Welding and cutting shall be performed only by experienced and properly instructed persons.

27.2.2 When welding or cutting in elevated positions, precautions shall be taken to prevent sparks or hot metal from contacting people or flammable material.

27.2.3 Suitable fire extinguishing equipment shall be located within 25 feet where welding and cutting equipment is used.

27.2.4 Matches or cigarette lighters shall not be carried by welders or their helpers when engaged in welding or cutting operations.

27.2.5 A fire watch shall be maintained wherever welding or cutting is performed in locations where combustible material presents a fire hazard. A fire check shall be made of the area one half hour after completion of welding.

27.2.6 Where combustible materials such as paper clippings or wood shavings are present, the floor shall be swept clean for a radius of 35 feet before welding. Combustible floors shall be kept wet or protected by fire-resistant shields. Where floors have been wet down, personnel operating arc-welding or cutting equipment shall be protected from possible shock.

27.2.7 Machinery, tanks, equipment shafts or pipes that could contain explosive or highly flammable materials shall be thoroughly cleaned and decontaminated prior to the application of heat.

27.2.8 Gaseous spaces where there is a possibility of an explosion, welding or cutting equipment shall not be used until the space is adequately ventilated and tested.

27.2.9 Adequate ventilation or approved respiratory equipment shall be used while welding, brazing, or cutting. Welding zinc, brass, bronze, stainless steel or galvanized or lead coated material present additional hazards.

27.2.10 Cadmium bearing materials.

1. Proper respiratory protection must be used when welding or cutting cadmium bearing metals.
2. Indoors or in confined spaces, local exhaust ventilation or airline respirators shall be used.
3. Outdoors, respiratory protection, such as approved fume respirators or airline respirators shall be used.

27.2.11 Under no condition shall acetylene be used at a pressure in excess of 15 psig. The cylinder valve should not be opened more than ¾ to 1 ½ turns.

27.2.12 Cylinders shall not be placed where they may become part of an electrical circuit.

27.2.13 Suitable eye protection, protective gloves and 100% cotton or FR clothing shall be worn during welding or cutting operations and while cleaning scale from welds. Helpers or attendants shall wear proper eye protection.

27.2.14 Matches shall not be used to light a torch; a torch shall not be lighted on hot work. A friction lighter or stationary pilot light shall be used.

27.2.15 Damaged welding hose shall be replaced immediately.

27.2.16 When welding equipment is not in use, the cylinder valves shall be closed, regulators closed, and the pressure in the hose and regulators released.

27.2.17 Flash back arresters shall be used at the cylinder regulators.

27.2.18 Oxygen cylinders in storage must be separated from fuel gases and oil grease by a minimum distance of 20 feet or by a non-combustible barrier at least 5 feet high having a fire resistance rating of at least ½ hour.

27.3 Electric Welding

27.3.1 No electrical welding machine, either AC or DC, shall be operated until the frame or case of the machine is electrically grounded. Grounding connections shall be checked prior to welding to insure they are adequate, both mechanically and electrically. Welding rods shall be removed from the holder (stinger) when not in use.

27.3.2 Rules and instructions supplied by the manufacturer for the machine shall be followed.

27.3.3 To protect the eyes, face and body during electrical welding and cutting, the welder and helper shall wear an approved welding helmet and proper protective gloves and 100% cotton or FR clothing.

27.3.4 Proper eye protection (safety glasses or goggles) shall be worn to guard against flying particles when chipping or grinding.

27.3.5 Welders shall not strike an arc with an electrode when there are persons nearby who might be affected by the arc. Other employees shall not observe electric welding operations unless they use approved eye protection.

27.3.6 Welding screens shall be used when welding and grinding when necessary for the protection of employees and the public.

27.4 Vehicle Battery Charging Area

27.4.1 All exits from a battery room shall be marked.

27.4.2 Battery rooms or charging areas shall be properly ventilated.

27.4.3 Face shield, apron and rubber gloves shall be used when working with or handling batteries (1926.441(a)(5). Chemical goggles may also be used for additional eye protection.

27.4.4 An eye wash facility shall be available within 10 seconds of a battery charging area.

27.4.5 When jump-starting a weak or dead battery, the following procedure is recommended (National Safety Council):

- Turn off the ignitions of both vehicles and set the parking brakes. Place automatic transmissions in "Park" and standard transmissions in neutral.
- Wear safety glasses and gloves while using cables.
- Unless given different directions in the owner's manual, use the booster cables in this order:
    1. Clamp/connect one end of the positive (+) booster cable to the positive (+) post of the dead battery.
    2. Connect the other end of the same cable to the same marked post (+) of the booster battery.
    3. Connect the second, negative (-) booster cable to the other post of the booster battery.
    4. Make the final negative (-) booster cable connection on the engine block of the stalled vehicle away from the battery.
- Start the booster vehicle and let it run for a few minutes. Then, start the disabled vehicle.
- Remove the cables in the reverse order of connection, being very careful not to let the booster cable clamps touch each other or come in contact with car parts.

27.4.6 Only approved jumper cables shall be used to jump start a vehicle.

28.0 BUILDING AND FACILITIES LOCKOUT/TAGOUT

OSHA 1910.147

Employee shall follow the Lockout and Tagging procedure as written by the cooperative.

SECTION III

Personal Protective Equipment and Rubber Goods

30.0 GENERAL REQUIREMENTS (1910.132)

30.0.1 Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

30.1 All personal protective equipment shall be inspected for damage or defect prior to use. Defective or damaged personal protective equipment shall not be used, removed from service immediately, and either replaced or repaired.

30.2 All personal protective equipment shall meet ANSI, ASTM, OSHA or NIOSH standards.

30.3 Hazard assessment and equipment selection:

30.3.1 The employer shall assess the workplace to determine if hazards are present or are likely to be present which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall:

1. Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment.
2. Communicate selection decisions to each affected employee.
3. Select PPE that properly fits each affected employee.

30.4 The employer shall verify that the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and, which identifies the document as a certification of hazard assessment.

30.5 PPE Training

30.5.1 The employer shall provide training to each employee who is required to use PPE. Each employee shall be trained to know the following:

1. When PPE is necessary
2. What PPE is necessary
3. How to properly put-on, take-off, adjust, and wear PPE

4. The limitations of the PPE
5. The proper care, maintenance, useful life and disposal of the PPE

30.6 Each affected employee shall demonstrate an understanding of the training specified above and the ability to use PPE properly before being allowed to perform work requiring the use of PPE.

30.7 When the supervisor has reason to believe that any affected employee who has already been trained does not have the understanding and skill required, the employer shall retrain that employee. Circumstances where retraining is required include, but are not limited to, situations where:

1. Changes in the workplace render previous training obsolete; or
2. Changes in the types of PPE to be used render previous training obsolete; or
3. Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the required understanding or skill.

31.0 APPROVED RUBBER GOODS AND ELECTRICAL TEST EQUIPMENT

OSHA 1910.137, 1926.97, ASTM Standards on Electrical Protective Equipment for Workers

Rubber insulating equipment meeting the following national consensus standards is deemed to be in compliance with the performance requirements of paragraph (a) of this section: (1926.97(a)(3)(ii))(B)

American Society for Testing and Materials

- (ASTM) D120-09, *Standard Specification for Rubber Insulating Gloves.*
- ASTM D178-01 (2010), *Standard Specification for Rubber Insulating Matting.*
- ASTM D1048-12, *Standard Specification for Rubber Insulating Blankets.*
- ASTM D1049-98 (2010), *Standard Specification for Rubber Insulating Covers.*
- ASTM D1050-05 (2011), *Standard Specification for Rubber Insulating Line Hose.*
- ASTM D1051-08, *Standard Specification for Rubber Insulating Sleeves.*

31.1 Care

31.1.1 Approved rubber goods and cover-up shall be tested in accordance with the American Society for Testing and Materials Standard for Electric Protective Equipment and cooperative policy.

31.1.2 All approved rubber goods and cover-up shall be stored in special compartments or containers on trucks where they will not be subjected to damage from tools or other equipment.

31.1.3 Approved rubber goods and cover-up shall be visually inspected before each use for the following defects:

- Holes, tears, punctures or cuts
- Ozone cutting or ozone checking
- Embedded foreign objects
- Sunlight cutting
- Texture changes, swelling, softening, hardening, becoming sticky or inelastic

31.1.4 To avoid corona and ozone damage, rubber insulating equipment shall not be allowed to remain in place on energized lines or apparatus overnight unless approved by the person in charge.

31.1.5 Rubber insulating blankets shall not be used on the ground without protecting them from physical damage and moisture by means of a tarpaulin canvas, or protective mat.

31.2 Use

31.2.1 Employees shall not touch or work on any exposed energized lines or apparatus above 50 volts, except when using protective equipment approved for that voltage.

31.2.2 While performing energized work, all differences of potential that are within reach or extended reach of energized lines/equipment shall be evaluated for task-based hazards.

At a minimum, the following shall be covered with insulating protective equipment:

- all current carrying conductors, except those parts on which the employee is working,
- potential differences deemed hazardous to perform the task at hand.

31.2.3 When working on energized lines or apparatus, including the installation of protective devices, work should be done from below when possible to lessen exposure to heat rise due to an arc.

31.2.4 In applying rubber insulating equipment, an employee shall always protect the nearest and lowest wires first, protecting himself as he progresses. In removing rubber insulating equipment, the reverse order shall be maintained.

31.2.5 Personal protective equipment shall be put on before entering the working area within which energized lines or apparatus may be reached, and the protective equipment shall not be removed until the employee is completely out of reach of this area.

31.2.6 When installing or removing poles or equipment on energized lines, the poles, the exposed energized lines and the equipment shall be properly covered when there is a possibility of coming into contact with an energized conductor. If it is impractical to properly cover the equipment, then at a minimum, the exposed energized conductor shall be covered.

31.2.7 Although not to be considered as primary protection dielectric rubber overshoes or EH-rated footwear may be used as supplemental protection against step potential. Appendix C of OSHA 1910.269 contains information on hazardous step and touch potentials and on methods for protecting employees from hazards resulting from such potentials.

32.0 PROPERLY RATED RUBBER GLOVES (OSHA Approved)

OSHA 1910.137, 1926.97, ASTM Standards on Electrical Protective Equipment for Workers

32.1 Care

32.1.1 Approved rubber gloves shall be tested periodically and in accordance with the American Society for Testing and Materials Standard for Electric Protective Equipment.

32.1.2 Approved rubber gloves shall carry a monthly test date per cooperative policy.

32.1.3 Approved rubber gloves should be given an air test before each use but shall be done at the beginning of each day. Rubber gloves shall be visually inspected before each use for the following defects:

- Holes, tears, punctures or cuts
- Ozone cutting or ozone checking
- Imbedded foreign objects
- Sunlight cutting
- Texture changes, swelling, softening, hardening, becoming sticky or inelastic

32.1.4 Approved rubber gloves shall also be inspected immediately following an incident that can reasonably be suspected of having caused damage.

32.1.5 Approved rubber gloves, when not in use, shall be kept in canvas bags or other approved containers. They shall be stored with the cuffs down to permit drainage, better ventilation and reduce the possibility of damage, and where they will not become damaged from sharp objects or exposed to direct sunlight. They shall never be folded while stored nor shall other objects be placed upon them. Approved rubber gloves shall not be stored in bins or compartments containing petroleum products.

32.1.6 Approved rubber gloves shall never be worn inside-out or without leather protectors. They shall be exchanged any time they become damaged or the employee to whom they are assigned becomes suspicious of them.

32.1.7 Leather Protectors shall be inspected before each use for holes or any damage that would compromise their protective integrity and replaced as necessary.

32.1.8 Leather protectors shall not be worn except when in use over rubber gloves. Their use shall conform to the following table:

(ASTM F496-Table 4):

Minimum distances between protector gauntlet and cuff of rubber glove.

Class of Rubber Glove	Minimum Distance
0, 00	1/2”
1	1”
2	2”
3	3”
4	4”

32.1.9 Rubber gloves shall be assigned and properly fitted to each affected employee.

32.1.10 Below are classes of rubber gloves, proof-test voltages and maximum use voltages as specified by OSHA 1910.137(c):

TABLE I-4-RUBBER INSULATING EQUIPMENT, VOLTAGE REQUIREMENTS			
Class of equipment	Maximum use voltage[1] AC rms	Retest voltage[2] AC rms	Retest voltage[2] DC avg
00	500	2,500	10,000
0	1,000	5,000	20,000
1	7,500	10,000	40,000
2	17,000	20,000	50,000
3	26,500	30,000	60,000
4	36,000	40,000	70,000

[1] The maximum use voltage is the ac voltage (rms) classification of the protective equipment that designates the maximum nominal design voltage of the energized system that may be safely worked. The nominal design voltage is equal to the phase-to-phase voltage on multiphase circuits. However, the phase-to-ground potential is considered to be the nominal design voltage if:

(1) There is no multiphase exposure in a system area and the voltage exposure is limited to the phase-to-ground potential, or

(2) The electric equipment and devices are insulated or isolated or both so that the multiphase exposure on a grounded wye circuit is removed.

[2] The proof-test voltage shall be applied continuously for at least 1 minute, but no more than 3 minutes.

32.1.11 To prevent damage to rubber gloves and comply with OSHA, employees shall remove all conductive articles such as, but not limited to, watches, rings, jewelry, etc.

32.1.12 Dispensing of and control of extra rubber gloves shall be done by a designated person.

32.2 Use: ***Properly rated (approved) rubber gloves shall be worn according to cooperative procedures, otherwise 32.2.1 – 32.2.11 apply.***

32.2.1 When approaching or taking any conductive object within the minimum approach distance of an exposed energized part as set forth in Table R-6, employees shall wear approved rubber gloves. (See definition of "exposed," page xiii)

32.2.2 Approved rubber gloves shall be worn from ground to ground and cradle to cradle on any energized pole or structure. This includes pole climbing and bucket work.

32.2.3 Approved rubber gloves shall be worn when working on properly grounded line, if an energized line is located (above or below) between the grounded points.

32.2.4 Approved rubber gloves shall be worn when operating manually-controlled air break switches.

32.2.5 Approved rubber gloves shall be worn when opening and closing manually-operated oil circuit reclosers.

32.2.6 Approved rubber gloves shall be worn when opening, closing, removing or replacing hot clamps, fuses or fuse doors on cutouts when using an approved switch stick or hot line tool on energized lines.

32.2.7 Approved rubber gloves shall be worn when pulling in wires or handling other conducting materials near circuits, apparatus or equipment that is, or may become, energized.

32.2.8 Approved rubber gloves shall be worn while working on or near telephone lines, foreign circuits, or any other equipment that is subject to induced voltages.

32.2.9 Approved rubber gloves shall be worn by each member of pole setting crew while a pole or other conductive structure is being set or removed from proximity of energized primary lines. They shall be put on before pole is raised and worn until pole is set and secured. Although not to be considered as primary protection, dielectric rubber overshoes or EH-rated footwear may be used as supplemental protection against step potential.

32.2.10 Approved rubber gloves shall be worn when work is performed on energized secondaries and services.

32.2.11 Non-current-carrying metal parts of equipment or devices, such as transformer cases and circuit-breaker housings, shall be treated as energized at the highest voltage to which these parts are exposed, unless the employer inspects the installation and determines that these parts are grounded before employees begin performing the work. (29 CFR 1910.269(l)(11)) Therefore, rubber gloves shall be worn lock to lock.

32.3 Visual Test for Rubber Gloves

1. Examine inside of cuff for tears, punctures and cracking.
2. Stretching cuff may make defect more visible.
3. Inspect between each finger for cracks, punctures and tears.
4. Turn glove inside out and repeat procedures 1-3.
5. Make sure this test is performed on both gloves.

32.4 Air Test for Rubber Gloves

(Use an approved rubber glove air tester per manufacturers testing procedures or 1 - 4 apply.)

1. An air test is done by first closing glove to trap air.
2. Next, roll end of glove toward fingers.
3. Squeeze glove while checking for air escaping through tears or punctures. If escaping air is noticed, mark glove as defective and return to designated person.
4. Make sure this test is performed on both gloves.

33.0 PROPERLY RATED RUBBER SLEEVES (OSHA Approved)

OSHA 1910.137, 1926.97, ASTM Standards

33.1 Care

33.1.1 Approved rubber sleeves shall be tested periodically and in accordance with the American Society for Testing and Materials Standard for Electric Protective Equipment.

33.1.2 Approved rubber sleeves shall carry a monthly test date per cooperative policy.

33.1.3 Before each use, approved rubber sleeves shall be visually inspected for the following defects:

- Holes, tears, punctures or cuts
- Ozone cutting or ozone checking
- Embedded foreign objects
- Sunlight cutting
- Texture changes, swelling, softening, hardening, becoming sticky or inelastic

33.1.4 Approved rubber sleeves shall also be inspected immediately following an incident that can be reasonably suspected of having caused damage.

33.1.5 Approved rubber sleeves when not in use shall be kept in canvas bags or other approved containers and stored where they will not become damaged from sharp objects or exposed to direct sunlight. They shall never be folded while stored nor shall other objects be placed upon them. Approved rubber sleeves shall not be stored in bins or compartments containing petroleum products.

33.1.6 Dispensing and the control of extra rubber sleeves shall be done by a designated person.

33.2 Use

33.2.1 Rubber sleeve straps shall not be worn in such a manner (both straps behind the head) that exposes the employee's shoulders. Rubber sleeves shall not be worn with one strap.

33.2.2 Properly rated (approved) rubber sleeves shall be put on prior to entering the approach distance.

34.0 HEARING CONSERVATION (1910.95 & 1926.52, 1926.101)

34.1 Specific areas or jobs where the noise level is above 85 DBA shall be identified. Employees and visitors shall wear ANSI approved protective devices when exposed to noise above 85 DBA.

34.2 Equipment shall be tested to determine if hearing protection is required. If it is determined that noise levels exceed OSHA standards, a hearing conservation program shall be implemented.

34.3 Hearing protection shall be maintained in excellent condition and properly stored when not in use.

34.4 Proper hearing protection may consist of any of the following: ear muffs, molded ear protectors, molded foam, or wax-type ear plugs. Plain cotton is not acceptable. Hearing protection devices shall be worn properly to provide the required protection. Hearing protection shall be maintained in a sanitary condition.

34.5 Noise cancelling/Bluetooth headphones are not considered properly rated hearing protection unless they are labeled with a noise reduction rating (NRR). If a cooperative allows the use of properly rated noise cancelling/Bluetooth headphones, employees shall comply with their cooperatives hearing conservation program.

35.0 FOOT PROTECTION (OSHA APPROVED)

OSHA 1910.136, ASTM F-2412-2005, ASTM F-2413-2005

Employees shall wear protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where employees' feet are exposed to electrical hazards. This foot protection shall comply with ASTM F-2412-2005 and ASTM F-2413-2005.

36.0 HAND PROTECTION (OSHA APPROVED) (1910.138)

36.1 Employers shall perform a PPE hazard assessment for hand protection.

36.2 Employees shall use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, thermal burns and harmful temperature extremes. Hand protection shall be inspected before each use.

37.0 EYE PROTECTION (1910.133) (1926.102)

37.1 Based on the cooperative's hazard assessment, eye protection shall be selected from ANSI Z 87.1-2010.) Inspect prior to use, discard if defective. (Eyeglasses, even with hardened lenses, are not a substitute for goggles.) Full cover goggles, safety glasses, and/or face shields shall be worn when an employee is engaged in or is close to work involving:

1. Impact Operations - drilling, chipping, grinding, machining, masonry work, wood working, sawing, chiseling, power fastening, riveting, and sanding.
2. Heat - furnace operations, pouring and casting of hot metals, hot dipping, gas cutting, and welding.
3. Dust - woodworking, buffing, general dusty conditions, and use of/in the area of air used for cleaning.
4. Chemicals - acid and base chemical use and handling, other chemical use and handling.
5. Optical Radiation - electric arc or gas welding, cutting, torch brazing and soldering, and glare (approved colored lenses shall be used).

37.2 Approved safety glasses and/or face-shields shall be worn when working with electrical conductors.

37.3 Approved safety glasses that are not in use, shall be properly stored.

Annex D. Lateral (Side) Coverage Illustration (for Medium Headform)
(informative)

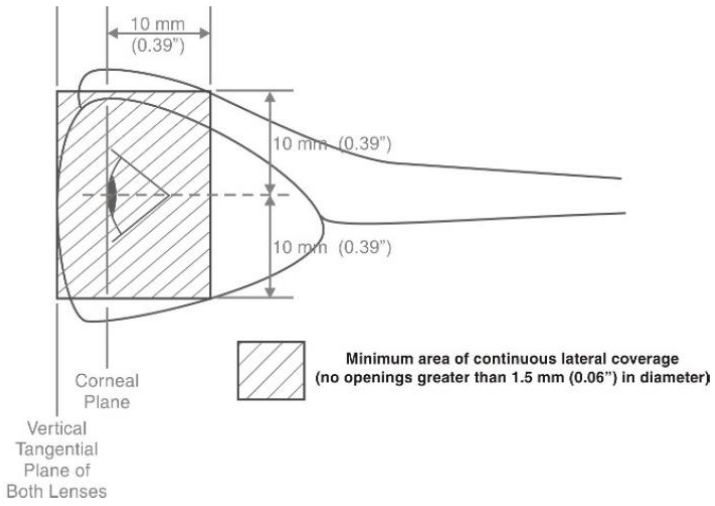


Image 37.2

38.0 LIFE JACKETS (1926.106) (1910.269(w)(5))

38.1 When working where there is a danger of drowning, employees shall wear a USCG approved personal floatation device (PFD). If a safety belt and lanyard or safety net will prevent exposure to the hazard of drowning the PFD is not required.

39.0 HEAD PROTECTION (1910.135)

39.1 Approved safety head gear Type I Class E (ANSI Z89.1) shall be worn by all employees when in areas where falling objects, electrical contact, or other hazards may cause a head injury.

39.2 Safety head gear or head band assembly shall not be defaced or altered in any manner.

39.3 Only Co-op approved stickers or decals shall be placed on the hardhat.

39.4 Inspect prior to use, discard immediately if defective.

39.5 Hard hats shall be worn per manufactures specifications.

40.0 APPAREL (OSHA APPROVED)

OSHA 1910.269(l)(8) and 1926.960(g)

Employees exposed to the hazards of flame or electric arcs shall wear clothing that has been approved by the cooperative and meets the requirements of OSHA standard 1910.269(l)(8) and 1926.960(g).

40.1 The employer shall ensure that each employee who is exposed to hazards from flames or electric arcs does not wear clothing that could melt onto his or her skin or that could ignite and continue to burn when exposed to flames or the heat energy estimated under paragraph (l)(8)(ii) of this section. (1910.269(l)(8)(iii))

1. Note to paragraph (l)(8)(iii) of this section: This paragraph prohibits clothing made from acetate, nylon, polyester, rayon and polypropylene, either alone or in blends, unless the employer demonstrates that the fabric has been treated to withstand the conditions that may be encountered by the employee or that the employee wears the clothing in such a manner as to eliminate the hazard involved.

2. The employer shall ensure that each employee exposed to hazards from electric arcs wears protective clothing and other protective equipment with an arc rating greater than or equal to the heat energy estimated under paragraph (l)(8)(ii) of this section whenever that estimate exceeds 2.0 cal/cm2. This protective equipment shall cover the employee's entire body, except as follows:

   A. Arc-rated protection is not necessary for the employee's hands when the employee is wearing rubber insulating gloves with protectors or, if the estimated incident energy is no more than 14 cal/cm2, heavy-duty leather work gloves with a weight of at least 407 gm/m2 (12 oz/yd2). (1910.269(l)(8)(v)(A))

   B. Arc-rated protection is not necessary for the employee's feet when the employee is wearing heavy-duty work shoes or boots. (1910.269(l)(8)(v)(B))

   C. Arc-rated protection is not necessary for the employee's head when the employee is wearing head protection meeting § 1910.135 if the estimated incident energy is less than 9 cal/cm2 for exposures involving single-phase arcs in open air or 5 cal/cm2 for other exposures. (1910.269(l)(8)(v)(C))

   D. The protection for the employee's head may consist of head protection meeting §1910.135 and a faceshield with a minimum arc rating of 8 cal/cm2 if the estimated incident-energy exposure is less than 13 cal/cm2 for exposures involving single-phase arcs in open air or 9 cal/cm2 for other exposures, and (1910.269(l)(8)(v)(D))

E. For exposures involving single-phase arcs in open air, the arc rating for the employee's head and face protection may be 4 cal/cm2 less than the estimated incident energy. (1910.269(l)(8)(v)(E))

40.2 ARC rated high-visibility safety apparel shall be worn per cooperative procedures. If a cooperative does not have a procedure in place, ARC rated high visibility safety apparel shall be worn while performing tasks where exposure to vehicular traffic AND an arc-flash are both present.

41.0 FALL PROTECTION (OSHA APPROVED)

OSHA 1910.269, 1926.954, and 1910.28

41.1 Each employee in elevated locations more than four (4) feet above the ground on poles, towers, or similar structures shall use a personal fall arrest system, work-positioning equipment, or fall restraint system, as appropriate.

41.2 Fall arrest equipment shall be properly fitted to the individual and shall be stored free from sharp objects in a clean and dry environment when not in use. Fall protection equipment shall be inspected before each use.

41.3 The employer shall ensure that all employees are protected from fall hazards of 4 feet or greater. Methods of fall hazard protection shall comply with OSHA 1910.28 - Duty to have fall protection.

41.4 Personal fall arrest equipment used by employees who are exposed to hazards from flames or electric arcs, shall be inspected and/or tested after exposure to an electric arc occurs. (29 CFR 1910.954(b)(1)(ii))

41.5 Work-positioning systems shall be rigged so that an employee can free call no more than 2 feet (0.6 meters). (29 CFR 1910.269(g)(2)(iii))

41.6 Unless the snap hook is a locking type and designed specifically for the following connections, snap hooks on work-positioning equipment may not be engaged:

- Directly to webbing, rope, or wire rope,
- To each other,
- To a D-ring to which another snap hook or other connector is attached,
- To a horizontal lifeline, or
- To any object that is incompatibly shaped or dimensioned in relation to the snap hook such that accidental disengagement could occur should the connected object sufficiently depress the snap hook keeper to allow release of the object.

(29 CFR 1910.269(g)(2)(iv)(F))

SECTION IV

Overhead Powerline Construction and Maintenance

50.0 GENERAL (1910.269 & 1926 Sub part V)

50.1 The employee in charge is responsible for conducting the "Job briefings" or ensuring that it is done before the start of each job. The following items shall be covered and documented at each job briefing / tailgate:

- Hazards associated with the job.
- Work procedures involved.
- Special precautions.
- Energy source controls.
- Personal protective equipment requirements.

50.2 A brief discussion is satisfactory if the work involved is routine and if the employee, by virtue of training and experience, can reasonably be expected to recognize and avoid the hazards involved in the job.

50.3 A more extensive discussion shall be conducted if the work is complicated or particularly hazardous, or if the employee cannot be expected to recognize and avoid the hazards involved in the job.

50.4 If the work or operations to be performed during the work day or shift are repetitive and similar, at least one job briefing shall be conducted before the start of the first job of each day or shift. Additional job briefings shall be held if significant changes, which might affect the safety of the employees, occur during the course of the work.

50.5 An employee working alone is not required to conduct a job briefing. However, the employer shall ensure that the tasks to be performed are planned as if a briefing were required.

51.0 INSPECTION AND TESTING OF WOOD POLES (1910.269 APPENDIX D)

51.1 The employee performing a pole inspection must be qualified to make a determination as to whether or not it is safe to perform the work without taking additional precautions.

51.2 Wood poles should be inspected by a qualified employee for the conditions listed below. The presence of any of these conditions is an indication that the pole may not be safe to climb or to work from:

1. The pole should be inspected for buckling at the ground line and for an unusual angle with respect to the ground. Buckling and odd angles may indicate that the pole has rotted or is broken.
2. The pole should be inspected for cracks. Horizontal cracks perpendicular to the grain of the wood may weaken the pole. Vertical cracks can pose a hazard to the climber, and the employee should keep his or her gaffs away from them while climbing.
3. Check for hollow spots and woodpecker holes that can reduce the strength of a wood pole.
4. Look for rotting and decay which are cutout hazards and are indications of the age and internal condition of the pole.
5. One large knot or several smaller ones at the same height on the pole may be evidence of a weak point of the pole.
6. Evidence of the existence of a former ground line substantially above the existing ground level may be an indication that the pole is no longer buried to a sufficient extent. Pole birthmark may also be used as a reference mark.
7. Soft, wet, or loose soil may not support any changes of stress on the pole.
8. Burning from transformer failures or conductor faults could damage the pole so that it cannot withstand mechanical stress changes.

51.3 Perform the test below in addition to the pole inspection.

<u>Hammer Test</u>

Strike the pole sharply with a hammer starting near the ground line and continuing upwards circumferentially around the pole to a height of approximately 6 feet. The hammer will produce a clear sound and rebound sharply when striking sound wood. Decay pockets will be indicated by a dull sound or a less pronounced hammer rebound. Also, prod the pole up to 18 inches below the ground line using a pole prod or a screwdriver with a blade at least 5 inches long. If substantial decay is encountered, the pole is considered unsafe.

51.4 Poles shall be thoroughly inspected before they can be climbed. If a pole is not strong enough to sustain strain in its condition or its placement (such as in soft ground), it shall be guyed or otherwise secured throughout the time any work is being performed on it. If the pole to be climbed is being replaced and the new pole is set adjacent to it, the old pole may be lashed to the new one in lieu of guying.

51.5 When poles are encountered which are unsafe to climb (ice, badly chewed, wide cracks, shell rot, etc.), they shall not be climbed until made safe.

52.0 CLIMBING AND WORKING ON POLES

OSHA 1910.269 and 1926.954

Except as provided in paragraph 1926.954(b)(3)(iii)(C), each employee in elevated locations more than 4 feet above the ground on poles, towers, or similar structures shall use a personal fall arrest system, work-positioning equipment, or fall restraint system, as appropriate.

52.1 All poles and structures shall be carefully inspected before climbing to ensure that they are in safe condition for the work to be performed and that they are capable of sustaining the additional or unbalanced stresses to which they will be subjected.

52.2 Where poles or structures may be unsafe for climbing, they shall not be climbed until made safe by guying, bracing or by other adequate means.

52.3 Wires shall not be attached to or removed from a pole or structure until it is certain the pole or structure will withstand the altered strain.

52.4 All poles shall be thoroughly tested (check the birthmark for depth of pole and sound test with a hammer beginning at ground level) before they are climbed. If a pole is not strong enough to sustain a lineman's weight by reason of its condition or its placement (such as in soft ground), it shall be guyed or otherwise secured throughout the time any work is being performed on it. If the pole to be climbed is being replaced and the new pole is set adjacent to it, the old pole may be lashed to the new one in lieu of guying.

52.5 When poles are encountered which are unsafe to climb (ice, badly chewed, wide cracks, shell rot, etc.), they shall not be climbed until made safe or the use of an aerial lift shall be considered.

52.6 Employees shall wear approved climbers while climbing a pole. Employees may wear their climbers while walking or working on the ground within 10' of the pole as long as gaff guards are used. For any other work task, climbers shall not be worn.

52.7 Employees shall not work on an elevated pole or structure without first securing themselves with work positioning equipment.

52.8 Only cooperative approved lineman belts, climbing and work positioning equipment that comply with ANSI/OSHA standards shall be used. Care and maintenance of these approved items shall be in accordance with the manufacturers guidelines and should be inspected prior to use.

52.9 Work positioning equipment shall not be placed within 6 inches of the top of the pole. It shall not be used on pole steps, cross arm braces, insulators, insulator pins, conductors, rotten or otherwise weak cross arms or on attachments that are being moved.

52.10 Employees shall not trust their weight to guy wires, pins, braces, conductors or other such equipment as they might prove to be unstable.

52.11 A lineman shall not throw anything from the pole to the ground before verifying the landing area is clear and communicating his/her intent to do so (e.g. shout “headache”), nor should the lineman permit anything to be thrown to him/her while on the pole.

52.12 There shall be at least one hand line on each pole on which linemen are working.

52.13 Employees engaged in hoisting tools and materials shall stand in such a position that they will not be endangered by incidental dropping of the load. Employee should stand at least 10 feet from the pole at all possible times.

52.14 An auxiliary lanyard shall not be allowed to hang loose when a lineman is ascending, descending or moving about on a pole.

52.15 Metal hooks, chains, etc. for holding tools or tape shall not be attached to body belts. Leather or other non-conducting material shall be used for this purpose.

52.16 When two or more employees are to work on the same pole at the same time, one shall reach the working position before the next leaves the ground. They shall descend the pole one at a time. The first person up brings the hand line and the last person down removes the hand line.

52.17 When climbers are stored in the truck or tool room, gaff guards shall be placed where the sharp points will not damage other equipment or cause personal injury.

52.18 Never store or place any material on work positioning equipment, to include the auxiliary lanyard.

52.19 Work positioning equipment, to include auxiliary lanyards, shall have double-locking snap hooks.

52.20 Additional work positioning equipment (such as the Buck Tooth or using two safety straps) shall be used by qualified climbers any time conditions such as ice, weather, or unusual conditions make it unsafe to climb the pole.

52.21 When an employee is climbing and working from a wood pole, a second qualified climber and climbing gear should be available within 10 seconds of the base of the pole.

53.0 PROPER GAFF SHARPENING

ASTM F887

53.1 Employees shall follow the manufacturer's instructions for inspecting and sharpening pole climber gaffs. Manufacturer's instructions for inspecting and sharpening pole climbers' gaffs can be found in the provided manufacturer links.

Buckingham Pole Climbers…….https://buckinghammfg.com/wp-content/uploads/2015/11/6303Series_012813.pdf

Bashlin Pole Climbers…….https://www.bashlin.com/media/wysiwyg/BLCL_514_Rev_10-17_Safety_Book.pdf

Klein Pole Climbers…….https://data.kleintools.com/sites/all/product_assets/documents/instructions/klein/GaffSharpening_Instructions.pdf

53.2 Gaff sharpening kits are available through each pole climber manufacturer and include a pole climber specific gaff gauge. When the sharpness of gaffs is questionable, the appropriate gaff gauges shall be used to ensure the climbers are safe and compliant before use.

54.0 PERFORMING ENERGIZED WORK (1910.269(l), 1910.269(j), and 1926.960)

54.1 General

54.1.1 Electrical equipment and lines shall always be considered as “energized” unless they are visibly open, tested for the absence of nominal voltage, and grounded. Before starting work, a test for nominal voltage shall be made to determine what conditions exist. Extreme care shall be used when handling common neutral conductors as high voltage may be encountered. (NESC Section 42, 420 (D))

54.1.2 Only qualified employees may work on or with exposed energized lines or parts of equipment.

54.1.3 Only qualified employees may work in areas containing unguarded, uninsulated energized lines or parts of equipment operating at 50 volts or more. (1910.269(l)(1)(ii))

54.1.4 The employer shall train each employee, who has the potential to be exposed to flames or electric arcs, of the hazards involved.

54.1.5 The employer shall ensure that each employee, to the extent that other safety-related conditions at the worksite permit, works in a position from which a slip or shock will not bring the employee's body into contact with exposed, uninsulated parts energized at a potential different from the employee's. (1910.269(l)(5)(i))

54.1.6 Connections shall be made as follows:

1. In connecting de-energized equipment or lines to an energized circuit by means of a conducting wire or device, an employee shall first attach the wire to the de-energized part.
2. When disconnecting equipment or lines from an energized circuit by means of a conducting wire or device, an employee shall remove the source end first.
3. When lines or equipment are connected to or disconnected from energized circuits, loose conductors shall be kept away from exposed energized parts. (1910.269(l)(6)(iii))

54.1.7 Non-current-carrying metal parts of equipment or devices, such as transformer cases and circuit-breaker housings, shall be treated as energized at the highest voltage to which these parts are exposed, unless the employer inspects the installation and determines that these parts are grounded before employees begin performing the work. (1910.269(l)(11))

54.1.8 Devices used to open circuits under load conditions shall be designed to interrupt the current involved.(1910.269(l)(12)(i))

54.1.9 The following chart reflects preferred methods for employees to use to obtain a double factor of insulation when handling any exposed ungrounded wire or apparatus over 600 volts. Cooperatives are encouraged to use any other OSHA-approved method(s) for insulating employees from an energized source.

DOUBLE FACTOR OF INSULATION

From a Bucket	**Transmission (only): Insulated Stick + Insulated Bucket**
	Distribution: Rubber Gloves + Insulated Bucket
From a Pole	**Rubber Gloves + Insulated Stick**
In URD Enclosures	**Rubber Gloves + Insulated Stick**

Table 54.1.9

54.1.10 Employees shall report immediately to the person in charge any defective line, apparatus or tool or other condition which in their judgment may be dangerous either to persons or property or likely to interrupt or delay service. (NESC Section 42, 420, (c))

54.1.11 Non-reclose(R-Switch) or Hotline Tag should be used for equipment protection on all circuits. Dispatch shall be notified before applying equipment protection on all circuits.

54.1.12 A careful check shall be made to see that the condition of the structure and lines at the point of the work is such that the job may be performed safely. In addition, the adjacent spans and structures shall be carefully checked for defects in conductors, tie wires, insulators and other equipment.

54.1.13 Positive control shall be maintained during the movement of any conductor.

54.2 On or Near Exposed Energized Parts

54.2.1 The employee shall not approach or take any conductive object closer to exposed energized parts than set forth in the applicable minimum approach distance table, unless:

1. The employee is insulated from the energized part (rubber insulating gloves or rubber insulating gloves and sleeves worn in accordance with paragraph (l)(4) of §1910.269 constitutes insulation of the employee from the energized part upon which the employee is working provided that the employee has control of the

part in a manner sufficient to prevent exposure to uninsulated portions of the employee's body), or

2. The energized part is insulated from the employee and from any other conductive object at a different potential, or
3. The employee is insulated from any other exposed conductive object in accordance with the requirements for live-line barehand work in paragraph (q)(3) of §1910.269.

Table R-6—Alternative Minimum Approach Distances for Voltages of 72.5 kV and Less[1]

Nominal voltage (kV) phase-to-phase	Distance			
	Phase-to-ground exposure		Phase-to-phase exposure	
	M	ft	m	ft
0.050 to 0.300[2]	Avoid Contact		Avoid Contact	
0.301 to 0.750[2]	0.33	1.09	0.33	1.09
0.751 to 5.0	0.63	2.07	0.63	2.07
5.1 to 15.0	0.65	2.14	0.68	2.24
15.1 to 36.0	0.77	2.53	0.89	2.92
36.1 to 46.0	0.84	2.76	0.98	3.22
46.1 to 72.5	1.00	3.29	1.20	3.94

[1] Employers may use the minimum approach distances in this table provided the worksite is at an elevation of 900 meters (3,000 feet) or less. If employees will be working at elevations greater than 900 meters (3,000 feet) above mean sea level, the employer shall determine minimum approach distances by multiplying the distances in this table by the correction factor in Table R-5 corresponding to the altitude of the work.

[2] For single-phase systems, use voltage-to-ground.

Table R-7—Alternative Minimum Approach Distances for Voltages of More Than 72.5 kV[1 2 3]

Voltage range phase to phase (kV)	Phase-to-ground exposure		Phase-to-phase exposure	
	m	ft	m	ft
72.6 to 121.0	1.13	3.71	1.42	4.66
121.1 to 145.0	1.30	4.27	1.64	5.38
145.1 to 169.0	1.46	4.79	1.94	6.36
169.1 to 242.0	2.01	6.59	3.08	10.10
242.1 to 362.0	3.41	11.19	5.52	18.11
362.1 to 420.0	4.25	13.94	6.81	22.34
420.1 to 550.0	5.07	16.63	8.24	27.03
550.1 to 800.0	6.88	22.57	11.38	37.34

[1] Employers may use the minimum approach distances in this table provided the worksite is at an elevation of 900 meters (3,000 feet) or less. If employees will be working at elevations greater than 900 meters (3,000 feet) above mean sea level, the employer shall determine minimum approach distances by multiplying the distances in this table by the correction factor in Table R-5 corresponding to the altitude of the work.

[2] Employers may use the phase-to-phase minimum approach distances in this table provided that no insulated tool spans the gap and no large conductive object is in the gap.

[3] The clear live-line tool distance shall equal or exceed the values for the indicated voltage ranges.

54.2.2 If the employee is to be insulated from energized parts by the use of insulating gloves, insulating sleeves shall also be used. However, insulating sleeves need not be used in the following conditions 1910.269(l)(4):

1. Exposed energized parts on which the employee is not working are insulated from the employee; and
2. The employee installs the insulation from a position that does not expose his or her upper arm to contact with other energized parts.

54.2.3 The requirements of this section which pertain to the hazards of exposed live parts also apply when work is performed in the proximity of covered (non-insulated) wires. (1910.269(l)(10))

54.2.4 Secondary winding of current or series transformers shall be bridged before any instrument or other device connected in the circuit is removed or disconnected. (NESC 44,443, H, 1910.269(w)(2))

54.2.5 Existing conditions related to the safety of the work to be performed shall be determined and discussed before work on or near electric lines or equipment is started. Such conditions include, but are not limited to, the nominal voltages of lines and equipment, the maximum switching transient voltages, the presence of hazardous induced voltages, the presence and condition of protective grounds and equipment grounding conductors, the condition of poles, environmental conditions relative to safety, and the locations of circuits and equipment, including power and communication lines and fire protective signaling circuits.

54.2.6 At least two qualified employees shall be present while any employees perform the following types of work (1910.269(l)(2)(i)):

- Installation, removal, or repair of lines energized at more than 600 volts, (l)(2)(i)(A)
- Installation, removal, or repair of deenergized lines if an employee is exposed to contact with other parts energized at more than 600 volts, (l)(2)(i)(B)
- Installation, removal, or repair of equipment, such as transformers, capacitors, and regulators, if an employee is exposed to contact with parts energized at more than 600 volts, (l)(2)(i)(C)
- Work involving the use of mechanical equipment, other than insulated aerial lifts, near parts energized at more than 600 volts, and (l)(2)(i)(D)
- Other work that exposes an employee to electrical hazards greater than, or equal to, the electrical hazards posed by operations listed specifically in paragraphs (l)(2)(i)(A) through (l)(2)(i)(D) of this section.

NOTE: Does not apply to:

1. Routine switching of circuits that can be done safely.
2. Work performed with live line tools if the employee is not within reach or exposed to contact with energized parts.
3. Emergency repairs to safeguard the general public.

54.2.7 The minimum working distance and minimum clear live-line tool distances stated in Table R-6 shall not be violated. The minimum clear live-line tool distance is that for the use of live-line tools held by linemen when performing live-line work.

54.2.8 Conductor support tools, such as link sticks, strain carriers, and insulator cradles may be used provided the clear live line tools distance equals or exceeds the values for the voltage ranges in Table R-6 for the operating voltage.

54.2.9 When expulsion type fuses are installed with one or both terminals energized at more than 300 volts, the employee shall wear proper PPE, use a tool rated for the voltage being worked, and stay clear of the exhaust path.

54.3 With Live-Line Tools

54.3.1 Lines of #6 copper, #6 ACSR, and #8A copper weld or smaller, shall not be worked energized with live-line tools except in specific instances where continuity of service is vital and then only upon special authorization.

54.3.2 Planned work with live-line tools shall not be started during unfavorable weather.

54.3.3 If during live-line tool work, an interruption of service occurs, the dispatcher or person having jurisdiction shall be notified.

54.3.4 Only hotline tools meeting OSHA requirements and ASTM standards approved by the cooperative shall be used in live-line maintenance work.

54.3.5 While live-line work is in progress, no other work of any nature shall be performed on the same pole or structure.

54.3.6 The person in charge shall be on site during all hot-stick work.

54.3.7 Under no circumstances shall a lineman depend on another employee to hold a live conductor clear of him.

55.0 DISPATCHING AND CLEARANCES (1910.269(m))

55.1 If a system operator is in charge of the lines or equipment and their means of disconnection, all of the requirements of this section shall be observed, in the order given.

55.2 If no system operator is in charge of the lines or equipment and their means of disconnection, one employee in the crew shall be designated as being in charge of the clearance. The employee in charge of the clearance shall take the place of the system operator, as necessary.

55.3 Any disconnecting means that are accessible to persons outside the employer's control (for example, the general public) shall be rendered inoperable while they are open for the purpose of protecting employees.

55.4 A designated employee shall make a request of the system operator to have the particular section of line or equipment de-energized. The designated employee becomes the employee in charge.

55.5 All switches, disconnects, jumpers, taps, and other means through which known sources of electric energy may be supplied to the particular lines and equipment to be de-energized shall have a visible opening. Such means shall be rendered inoperable, unless its design does not so permit, and tagged to indicate that employees are at work.

55.6 Automatically and remotely controlled switches that could cause the opened disconnecting means to close shall also be tagged at the point of control. The automatic or remote control feature shall be rendered inoperable, unless its design does not so permit.

55.7 Hold tags shall prohibit operation of the disconnecting means and shall indicate that employees are at work. Hold tags shall be placed in a conspicuous area to alert others that employees are at work.

55.8 After the applicable requirements in of this section have been followed and the employee in charge of the work has been given a clearance by the system operator, the lines and equipment to be worked shall be visibly opened and tested for the absence of nominal voltage to ensure that they are de-energized.

55.9 Protective grounds shall be installed.

55.10 Equipotential zone. Temporary protective grounds shall be placed at such locations and arranged in such a manner as to prevent each employee from being exposed to hazardous differences in electrical potential.

55.11 After the applicable requirements of this section and the cooperative have been followed, the lines and equipment involved may be worked as de-energized.

55.12 If two or more independent crews will be working on the same lines or equipment, each crew shall independently comply with the requirements of this section.

55.13 To transfer the clearance, the employee in charge (or, if the employee in charge is forced to leave the worksite due to illness or other emergency, the employee or his/her supervisor) shall inform the system operator; employees in the crew shall be informed of the transfer; and the new employee in charge shall be responsible for the clearance.

55.14 To release a clearance, the employee in charge shall:

1. Notify employees under his or her direction that the clearance is to be released;
2. Determine that all protective grounds installed by the crew have been removed; and
3. Report this information to the system operator and release the clearance.
4. Ensure all employees under the clearance are clear of lines and equipment.

55.15 If only one crew will be working on the lines or equipment and if the means of disconnection is accessible, visible to, and under the sole control of the employee in charge at the clearance, tags are not necessary.

56.0 WORKING ON TRANSFORMERS

56.1 The primary leads of a distribution transformer shall be considered energized at full voltage until both the primary and the secondary leads have been disconnected or it has been determined that the secondary circuit to which it is attached is not energized from other sources.

56.2 The cases of all transformers connected to a source of supply shall be considered as being energized at the full primary voltage, until they are inspected to ensure they are adequately grounded. (1910.269(l)(11))

56.3 Employees shall avoid touching the case of any energized transformer with any unprotected portion of their bodies.

56.4 The tripping mechanism of a CSP transformer shall not be used as an open point while work is performed on secondary wires or the transformers. A visual opening shall be required (air gap) unless worked as energized.

56.5 When installing and connecting transformers, the ground and neutral connections shall be made first, then the secondary connections, and the primary last. The reverse order shall be followed when removing a transformer.

56.6 Adequate and clear climbing space must be maintained on all transformer poles.

56.7 Only qualified employees shall open or close fuses on the high voltage side of a transformer.

56.8 Insulating sticks shall be used at all times when connecting or disconnecting primary side of transformer to line. Clamps shall not be taken off or put on with hands.

56.9 While climbing, employees shall always secure their position before opening or closing a fuse on a pole or structure.

56.10 Tap and voltage changes shall never be made on any energized transformer.

56.11 When changing out a defective transformer in a bank or when constructing a three-phase bank, the name plates shall be checked for voltage, polarity, and percentage impedance so that the transformers will bank properly.

56.12 All transformers shall be carefully inspected before being installed.

56.13 Prior to placing a transformer into service, internal winding connections shall be verified.

56.14 When used transformers are removed from service, all wire shall be removed from all primary, secondary, and ground lugs.

57.0 LIFTING EQUIPMENT

57.1 Hoisting Equipment

57.1.1 Wire rope or other conductive material shall not be used to raise transformers, poles, or any other equipment or materials near energized lines, except:

1. When the wire rope is rigged a sufficient distance from all energized wires to prevent the possibility of electrical contact between the energized wires and the wire or conductive material being raised; or
2. When the wire rope and any conductive material being raised are adequately protected; or
3. When energized lines and equipment are DOUBLE insulated.

57.1.2 Use of wire rope as a hoist line shall be discontinued when it becomes worn, deteriorated or damaged to a degree that is unsafe.

57.1.3 Metallic slings (chain or cable) shall not be used near energized equipment.

57.1.4 Positive control shall be maintained at all times.

57.1.5 Synthetic hoisting or pulling lines and ropes shall be considered as conductive.

57.1.6 Lifting equipment such as but not limited to wire rope, slings, etc…, shall have permanently affixed, legible identification markings stating size, rated capacity for the type(s) of hitch(es) used and the angle upon which it is based, and the number of legs if more than one.

57.1.7 Lifting equipment of adequate strength shall be used when installing or removing transformers.

57.1.8 When transformers are being raised or lowered, all employees shall stand in the clear.

57.1.9 Employees shall not stand or pass under a suspended load or adjacent to or over or under a loaded winch line.

57.1.10 Hoisting equipment operators shall accept signals only from the employees specifically designated. The operator shall obey an emergency stop signal given by anyone.

57.1.11 Load limits as specified by the manufacturer shall not be exceeded under any circumstances.

57.1.12 With every load the slings and binding shall be checked and shall be readjusted as necessary to ensure safety and stability.

57.1.13 All slings and other fittings shall be of sufficient strength, proper type and rated for their intended use. Inspect prior to use.

57.2 Mechanical Equipment

57.2.1 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 roll-over protective structures that meet the requirements of Subpart W of OSHA 1926.

57.2.2 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 work is being performed.

57.2.3 No person shall be permitted to ride the hook, sling or load of any hoisting equipment.

57.2.4 Equipment used for lifting shall have the load rating properly stamped or identified on the equipment.

58.0 WORKING ON CAPACITORS

58.1 Line capacitors shall be considered at full voltage until they have been disconnected from the line, and the terminals short-circuited and discharged to ground by an approved method. The terminals shall not be short circuited until the capacitors have been de-energized for at least five minutes. Once shorted, they should remain shorted until next use.

58.2 Employees shall not come in contact with an ungrounded capacitor case until the capacitor has been disconnected from the circuit and the terminals shorted.

58.3 The exposed terminals of previously used line capacitors in storage shall be shorted. The exposed terminals of new line capacitors that are removed from their original container (box, crate, etc.) shall also be shorted prior to and during storage.

58.3 An appropriate load-break switch or device shall be used to de-energize capacitor banks.

59.0 INSTALLING AND REMOVING OVERHEAD LINES (1926.964(b) & 1910.269(q))

59.1 Prior to stringing operations, a detailed job briefing shall be held setting forth the plan of operation and specifying the type of equipment to be used, grounding devices and procedures to be followed, crossover methods to be employed, and the clearance authorization required.

59.2 Refer to the NESC for all clearance requirements when stringing wire.

59.3 Load ratings of stringing lines, pulling lines, conductor grips, load-bearing hardware and accessories, rigging, and hoists shall not be exceeded.

59.4 Conductor grips shall not be used on wire rope, unless the grip is specifically designed for this application.

59.5 Reliable communications, through two-way radios or other equivalent means, shall be maintained between the reel tender and the pulling rig operator.

59.6 The pulling rig may only be operated when it is safe to do so.

59.7 While the conductor or pulling line is being pulled (in motion) with a power-driven device, employees are not permitted directly under overhead operations or on the cross area, except as necessary to guide the stringing sock or board over or through the stringing sheave.

59.8 When stringing conductors or crossing over/under non-cooperative power lines, it shall be done in sections short enough so that the entire section is under observation and control.

59.9 Where there is a possibility of the conductor incidentally contacting an energized circuit or receiving a dangerous induced voltage buildup, to further protect the employee from the hazards of the conductor, the conductor being installed or removed shall be grounded or provisions made to insulate or isolate the employee.

59.10 If an existing line is de-energized, proper clearance authorization shall be secured and the line grounded on both sides of the crossover, or the line being strung or removed shall be considered and worked as energized.

59.11 When crossing over energized conductors in excess of 600 volts, rope nets or guard structures shall be installed, unless provision is made to isolate or insulate the employee or the energized conductor. In addition, the line being strung shall be grounded on either side of the crossover or considered and worked as energized.

59.12 Conductors being strung in or removed shall be kept under positive control by the use of adequate tension reels, guard structures, tie-lines, or other means to prevent incidental contact with energized circuits.

59.13 Guard structure members shall be sound and of adequate dimension and strength, and adequately supported.

59.14 Catch-off anchors, rigging, and hoists shall be of ample capacity to prevent loss of the lines.

59.15 Pulling lines and accessories shall be inspected regularly and replaced or repaired when damaged or when dependability is doubtful. The provisions of §1926.251(c)(4)(ii) (concerning splices) shall not apply.

59.16 When working on bare conductors, tying crews shall work between grounds at all times.

59.17 Except during emergencies, work from structures shall be discontinued when adverse weather (such as high wind or ice on structures) makes the work hazardous.

59.18 Stringing and tying operations shall be discontinued if an electrical storm is in the immediate vicinity.

59.19 Reel handling equipment, including pulling and braking machines, shall have ample capacity, operate smoothly, and be leveled and aligned in accordance with the manufacturer's operating instructions. Reel handling equipment shall be properly grounded.

59.20 Each pull shall be snubbed or dead ended at both ends before subsequent pulls.

60.0 STRINGING ADJACENT TO ENERGIZED LINES (1926.964(b))

60.1 Prior to stringing parallel to an existing energized line, a competent determination shall be made to ascertain whether dangerous induced voltage build ups will occur, particularly during switching and ground fault conditions. When there is a possibility that dangerous induced voltage may exist, the provisions below shall apply unless the line is worked as energized.

60.2 When stringing adjacent to energized lines, the tension stringing method or other methods that preclude unintentional contact between the lines being pulled and an employee shall be used.

60.3 All pulling and tensioning equipment shall be effectively grounded and barricaded. (29 CFR 1910.269(p)(4)(iii))

60.4 A ground shall be installed between the tensioning reel setup and the first structure in order to ground each bare conductor and overhead ground conductor during stringing operations.

60.5 During stringing operations, each bare conductor and overhead ground conductor shall be grounded at the first pole adjacent to both the tensioning and pulling setup and in increments so that no point is more than two (2) miles from a ground.

60.6 The grounds shall be left in place until conductor installation is completed.

60.7 Grounds shall be removed at the last phase of aerial cleanup.

61.0 REPAIRING FALLEN CONDUCTORS (1910.269(l) and (n))

61.1 A fallen primary conductor can only be handled after:

1. The conductor is properly identified;
2. A visible open / break is provided;
3. A voltage test is made; and
4. All other differences in potential have been assessed.

Once these conditions have been met, properly rated rubber gloves must be worn, or the conductor must be grounded.

Exception: See rule 3.16

61.2 When repairing an open neutral they shall be treated as energized until properly repaired.

61.3 When an overhead circuit has opened, the route of the circuit shall be assessed for obvious hazards before the circuit is reclosed.

62.0 GROUNDING AND BONDING (1910.269(n))

62.1 This section applies to the grounding of transmission and distribution lines and equipment for the purpose of protecting employees.

62.2 General

62.2.1 For the employee to work lines or equipment as de-energized, the lines or equipment shall be de-energized, have a visible opening, be tested for the absence of nominal voltage, and grounded. However, if the person in charge can demonstrate that installation of a ground is impracticable or that the conditions resulting from the installation of a ground would present greater hazards than working without grounds, the lines and equipment may be treated as de-energized provided all of the following conditions are met:

1. The lines and equipment have been de-energized using a clearance system.
2. There is no possibility of contact with another energized source.
3. The hazard of induced voltage is not present.
4. The lines or equipment have been tested for absence of nominal voltage.

62.2.2 Temporary protective grounds shall be placed at such locations and arranged in such a manner as to prevent each employee from being exposed to hazardous differences in electrical potential. 1910.269(n)(3).

62.2.3 Protective grounding equipment shall be capable of conducting the maximum fault current that could flow at the point of grounding for the time necessary to clear the fault. This equipment shall have an ampacity greater than or equal to that of No. 2 AWG copper. Guidelines for protective grounding equipment are contained in American Society for Testing and Materials Standard Specifications for Temporary Grounding Systems to be Used on De-Energized Electric Power Lines and Equipment. (ASTM F855)

62.2.4 Protective grounds shall have an impedance low enough to cause immediate operation of protective devices in case of incidental energizing of the lines or equipment.

62.2.5 Before any ground is installed, lines and equipment shall be tested and found absent of nominal voltage, unless a previously installed ground is present.

62.2.6 Order of connection:

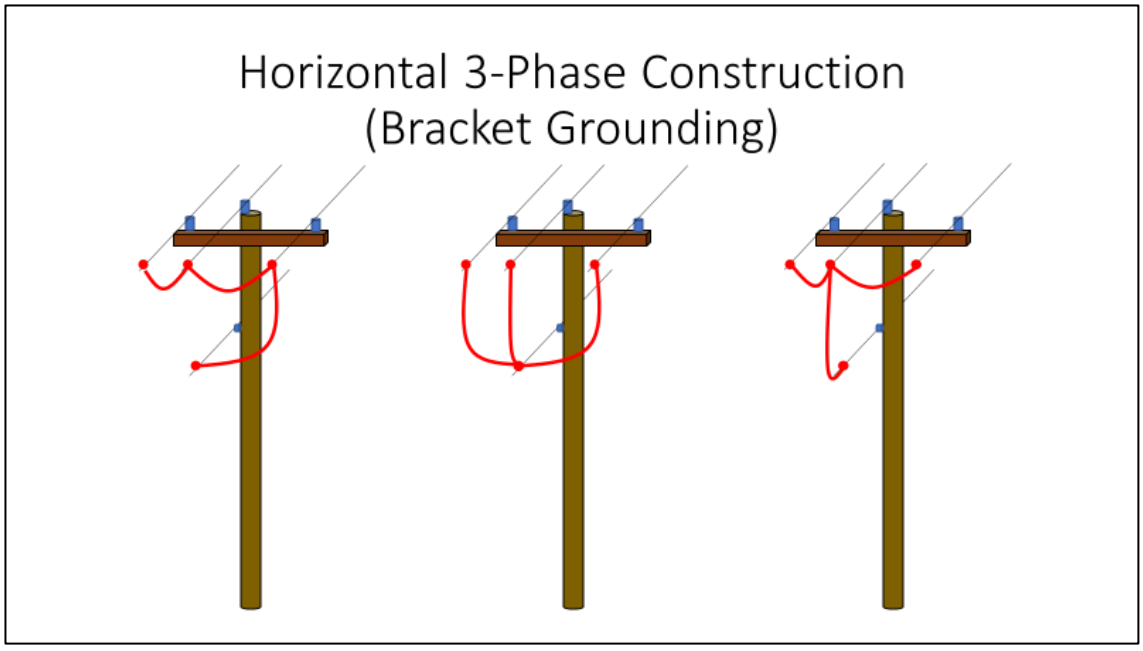
1. Inspect grounds prior to use.
2. When a ground is to be attached to a line or to equipment using the Bracket Grounding Method, it shall first be attached to the system neutral and then to the phase(s).
3. Attachment to the phase(s) shall follow one of the configurations

shown in the diagrams for Bracket Grounding.

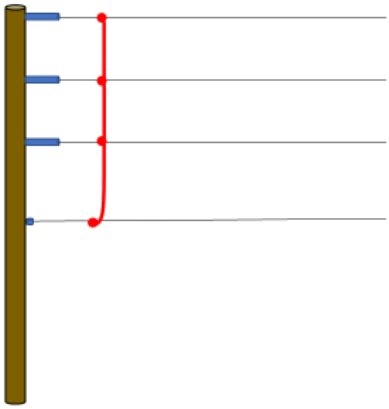
4. Grounds shall be applied to / removed from primary conductor using a live-line tool.
5. If using a cluster bar to Equipotential Zone Ground, the grounds shall first be attached to the cluster bar and then to the system neutral.
6. A second ground shall be attached to the cluster bar and then to the phase(s).
7. Attachment to the phase(s) shall follow one of the configurations shown in the diagrams for Equipotential Zone Grounding.
8. Grounds shall be applied to / removed from primary conductor using a live-line tool.

Note: Caution should be exercised to limit grounding jumper lengths for all personal protective grounding configurations.

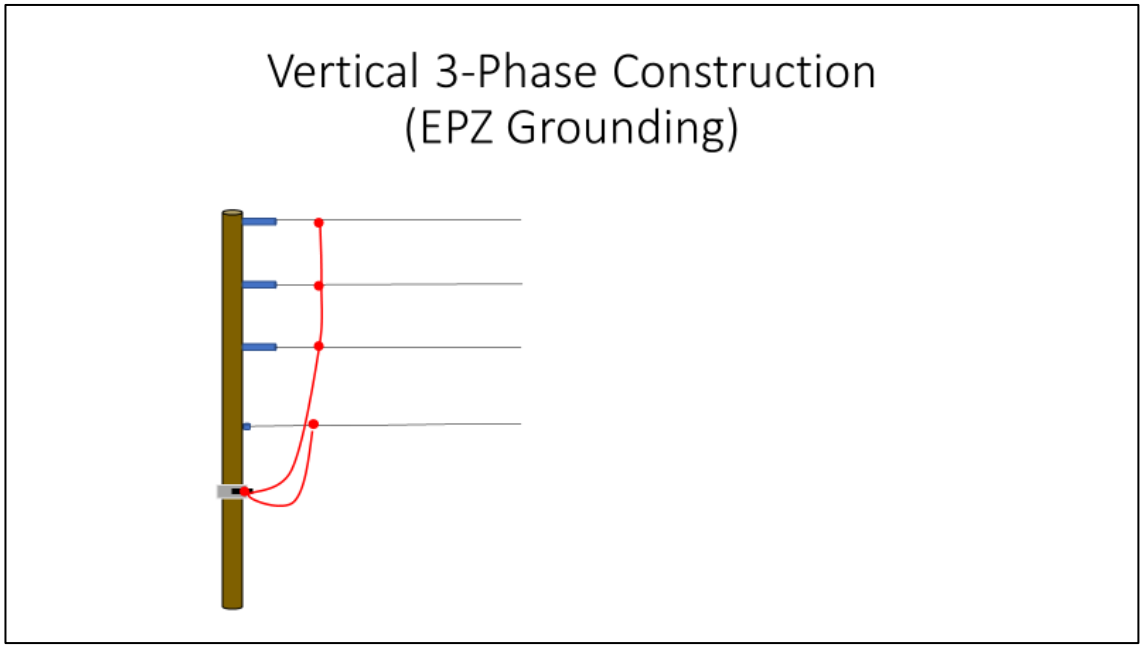
Grounding Configuration Diagrams for Bracket Grounding and Equipotential Zone Grounding (EPZ)



Vertical 3-Phase Construction (Bracket Grounding)



Horizontal 3-Phase Construction (EPZ Grounding)



62.2.7 Grounds shall be removed in reverse order of connection.

62.2.8 Additional precautions: When work is performed on a cable at a location remote from the cable terminal, the cable may not be grounded at the cable terminal if there is a possibility of hazardous transfer of potential should a fault occur.

62.2.9 Removal of grounds for test: Grounds may be removed temporarily during tests. During the test procedure, the employer shall ensure that each employee uses insulating equipment and is isolated from any hazards involved, and the employer shall institute any additional measures as may be necessary to protect each exposed employee in case the previously grounded lines and equipment become energized.

62.2.10 A visible opening shall be made separating source and load.

62.2.11 Personal grounds shall be electrically tested annually, individually numbered, labeled with date of test (Month, Day, and Year) and properly documented.

62.2.12 Grounds shall be stored in such a manner that grounding clamps and cable maintain their integrity.

62.2.13 Only flexible, covered cable with ferrules and appropriately-rated grounding clamps shall be used in protective ground jumpers.

62.2.14 A phase jumper, when disconnected to de-energize a section of line, shall not be used as a protective ground jumper.

62.2.15 Employees shall avoid touching pole grounds, loops in ground jumpers and all other conductors or grounded objects when installing or removing protective grounds.

62.2.16 Protective grounds do not provide 100 percent protection against lightning surges. Employees should avoid working on lines or apparatus under such conditions.

62.3 For any employee to work distribution lines or equipment as deenergized, the employer shall ensure that the lines or equipment are deenergized under the provisions of §1926.961 and shall ensure proper grounding of the lines or equipment. New lines or equipment under construction may be considered de-energized and worked as such where: (1926.962(b))

1. The employer ensures that the lines and equipment are deenergized under the provisions of §1926.961.
2. There is no possibility of contact with another energized source.
3. The hazard of induced voltage is not present.

62.4 Grounds shall be placed between work location and all sources of energy and as close as practicable to the work location, or grounds shall be placed at the work location. If work is to be performed at more than one location in a line section, the line section must be grounded and short circuited at one location in the line section, and the conductor to be worked on shall be grounded at each work location. The minimum approach distance shall be maintained from ungrounded conductors at the work location.

62.5 Grounding to the common neutral shall be made with a proper clamp and cable capable of conducting the maximum anticipated fault current.

62.6 When ground rods are used, they shall have a resistance to ground low enough to remove the danger of harm to the employees and provide prompt operation of protective devices.

63.0 MECHANICAL EQUIPMENT GROUNDS (aerial lifts, line trucks, etc.)

OSHA 1910.269, 1926.959

63.1 Truck grounds shall be visually inspected before each use, tested annually, individually numbered, labeled with the date of test (Month, Day, and Year) and properly documented.

63.2 If, during operation of the mechanical equipment, it could become energized, the operation shall also comply with at least one of the following:

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

63.2.2 The equipment shall be insulated for the voltage involved. The equipment shall be positioned so that its uninsulated portions cannot approach the lines or equipment any closer than the minimum approach distance in Table R-6/Table R-7 (pg. 74-75).

63.2.3 Each employee shall be protected from hazards that might arise from equipment contact with the energized lines. The measures used shall ensure that employees will not be exposed to hazardous differences in potential. Unless the employer can demonstrate that the methods in use protect each employee from the hazards that might arise if the equipment contacts the energized line, the measures used shall include all of the following techniques: 1910.269(p)(4)(iii)(C)

1. Using the best available ground to minimize the time the lines remain energized,
2. Bonding 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 potential differences.

63.3 Approved grounding clamps shall be rated for the highest available fault current on the system.

63.4 Approved grounding cable with ferrules shall be no smaller than No. 2 stranded copper.

63.5 All derrick and aerial lift truck grounds shall be completely uncoiled and shall be attached to the main line neutral. If the trucks can't be grounded to the main line neutral, the following grounding points may be used:

- Driven Ground – shall be installed a minimum 4 feet deep (a locate is required by SC law)
- Screw Ground - shall be installed a minimum 4 feet deep (a locate is required by SC law)
- Anchor Rod

63.6 All mechanical equipment (i.e.: trailer, chipper, etc.) shall be bonded together to minimize potential differences.

63.7 Each vehicle and trailer in the work area within reach of each other should be bonded together with a minimum of # 2 copper ground cable and the vehicle grounded to the system neutral. If more than one vehicle is in the work area, the vehicles should be bonded together with a ground cable if they are close enough for someone to touch both vehicles at the same time. (1910.269(p)(4)(iii)(c))

63.8 Truck grounds shall be raised to the neutral in such a way that the ground cannot become energized and the integrity of the bucket insulation cannot be compromised. Use of a handline is preferred.

64.0 WORKING OFF SYSTEM

64.1 Employees providing mutual aid shall obtain and review information transfer details from the host cooperative.

64.2 Should a conflict in safety rules occur while assisting another cooperative in emergency situations, employees shall follow their own Safety Manual pertaining to the work situation. When working off system, personal protective equipment such as rubber gloves and personal grounds shall be sufficiently rated for the system voltage and fault current available.

65.0 POLE HAULING AND TEMPORARY STORAGE (1926.958)

65.1 The trailing end of a load of poles shall be marked by a DOT approved flag during the day and a flashing red light at night and during inclement weather that must be visible from the rear and both sides. As an additional precaution, warning flags or lights may be placed in the center of long loads. An escort vehicle in the rear of the pole trailer is recommended where available.

65.2 If it becomes necessary to store poles at the location where they are to be set, they shall be placed so they will not interfere with traffic or access to private property.

65.3 If poles left on or near streets, highways or walkways overnight create a hazard, they shall be safeguarded by red lights or well-lit signs.

65.4 Poles shall be placed or blocked so that they will not roll.

65.5 Employees shall not remain on a pole pile while poles are being hoisted or lowered.

65.6 Poles loaded on a truck or trailer shall be securely fastened according to DOT regulations with a minimum of two tie downs.

65.7 When poles are loaded on trailers, ratchet type load binders shall be used.

65.8 Employees shall not ride on pole trailers.

65.9 The wheels of the transporting vehicle shall be chocked and securely braked prior to loading/unloading.

65.10 Pole tongs used for lifting poles must be designed for lifting and rated for the load capacity. The use of lifting tongs with a safety locking mechanism is recommended.

66.0 SETTING AND REMOVING POLES (1910.269)

66.1 When a pole is set, moved, or removed near an exposed energized overhead conductor, all employees handling the pole shall wear rubber gloves. No employee shall contact the pole with uninsulated portions of their body.

66.2 To protect employees from falling into holes into which poles are to be placed, the holes shall be attended by employees or physically guarded whenever anyone is working nearby.

66.3 All persons not engaged in pole setting operations shall keep out of the work area.

66.4 If safe clearance cannot be maintained, the conductors shall be de-energized, covered with protective devices, spread apart, or pole guards shall be used, to minimize incidental contact.

66.5 When pikes are used to hold poles in place while holes are being back-filled, they shall be firmly secured until the backfill is sufficient to hold. When a pole is being “canted” or “hooked” the pikes shall be held.

66.6 Employees engaged in handling or working on poles:

- Shall not be permitted under a suspended load,
- Shall wear suitable work gloves, and
- Shall watch for pinch points.

66.7 No one shall be on a gin pole when it is being used to raise another pole.

66.8 The proper tools shall be used to turn or roll poles.

66.9 Pole jacks should be used to pull poles.

67.0 AVERAGE WEIGHTS OF POLES (EXPRESSED IN POUNDS)

It should be understood that poles even within the same class vary in diameter and weight. Also, the moisture content of a pole changes under various conditions. Therefore, the weights given in the table should be taken as average values only.

POLE WEIGHT

Southern Yellow Pine RUS Specification

Size	Penta WT EA	CCA WT EA
7/16	171	186
7/20	253	276
4/25	550	600
5/25	473	516
6/25	413	450
7/25	352	384
2/30	979	1068
3/30	547	924
4/30	732	798
5/30	638	696
6/30	556	606
7/30	473	516
1/35	1441	1572
2/35	1254	1368
3/35	1084	1182
4/35	941	1026
5/35	814	888
6/35	704	768
7/35	611	666
1/40	1793	1956
2/40	1551	1692
3/40	1348	1470
4/40	1166	1272
5/40	1012	1104
6/40	875	954
1/45	2162	2358
2/45	1876	2046
3/45	1623	1770
4/45	1408	1536
5/45	1221	1332
1/50	2563	2796
2/50	2222	2424
3/50	1925	2100
4/50	1672	1824
1/55	2987	3258
2/55	2591	2826
3/55	2244	2448
4/55	1947	2124
2/60	2981	3252
3/60	2585	2820
2/65	3388	3696
2/70	3823	4170
3/70	3311	3612

68.0 DERRICK TRUCKS, CRANES AND OTHER LIFTING EQUIPMENT (1910.269) (1926.959 & 1926.962)

68.1 Only trained and qualified individuals shall be allowed to operate this equipment.

68.2 With the exception of equipment certified for work on the proper voltage, mechanical equipment shall not be operated closer to any energized line or equipment than the clearances set forth in Table R-6 & Table R-7 (pg. 74-75) unless:

1. An insulated barrier is installed between the energized part and the mechanical equipment, or
2. The mechanical equipment is grounded, or
3. The mechanical equipment is insulated, or
4. The mechanical equipment is considered as energized and is barricaded.

68.3 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 whose failure would result in a free fall or free rotation of the boom.

68.4 The operator of an electric line truck may not leave his or her position at the controls while a load is suspended, unless the employer can demonstrate that no employee (including the operator) might be endangered. (1910.269(p)(1)(iii))

68.5 If the vehicle is equipped with outriggers it shall be operated with the outriggers extended and firmly set as necessary for the stability of the specific configuration of the equipment. Outrigger pads shall be used per cooperative procedure.

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

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

68.8 Operators of cranes, derricks, hoists and other hoisting equipment shall exercise extreme caution when in close proximity to energized lines or equipment:

1. When performing power transmission, distribution, construction, or maintenance refer to Table R-6 or Table R-7 (pg. 74-75). Qualified employees operating the insulated section of an aerial lift are exempt from this requirement.
2. Unqualified personnel cannot perform this work. The minimum clearances for unqualified personnel shall be:
   - Up to 50kv - 10 feet
   - Over 50kv - 10 feet plus 4 in. for each 10kv over 50kv

68.9 Until a pole is positively secured from moving against an energized conductor, no one shall step on or off the truck, nor shall an employee standing on the ground touch any part of the truck without using rubber gloves.

68.10 A designated employee, other than the equipment operator, shall observe the approach distance to exposed lines and equipment and give timely warnings before the minimum approach distance is reached, unless the employer can demonstrate that the operator can accurately determine that the minimum approach distance is being maintained.

68.11 Operating and maintenance, inspections, procedures, as specified by the manufacturer, shall be followed.

68.12 The following are the minimum checks to be made daily prior to use:

1. All control mechanisms checked for proper operation & clearly labeled.
2. All safety devices.
3. Deterioration or leakage in air or hydraulic systems.
4. Hooks, slings and load attachment devices.

68.13 For the first lift of each day, the load shall be test-lifted, and the hoist brakes checked (load lifted several inches and then checked for slippage).

68.14 No employee shall be under a suspended load.

68.15 Employees standing on the ground shall avoid touching the truck, pole or equipment while work is being performed in an energized area. Although not to be considered as primary protection, dielectric rubber overshoes or EH-rated footwear may be used as supplemental protection against step potential.

69.0 AERIAL LIFTS (1910.67 & 1910.269)

69.1 Only trained and qualified individuals or those under the direct supervision of such shall be allowed to operate this equipment.

69.1.1 Material handling jibs should be parallel to the upper boom before stowing the boom.

69.1.2 Material handling jibs shall not exceed rated capacities on manufacturer charts.

69.1.3 Material handling jibs shall not be used to lift or pull loads that are attached to the ground or structures.

69.1.4 Material handling jibs should be used per manufacturer recommendations and for vertical lifting only.

69.1.5 To prevent sudden load drops, winch lines on material handling jibs should be wound under slight tension to prevent loose or irregular winds.

69.1.6 For material handling systems with a lower boom lifting eye, the platform should not be occupied, nor any tools be left in the bucket.

69.2 The operating and maintenance instruction manuals issued by the manufacturer shall be followed.

69.3 When aerial lifts are equipped with outriggers, pads shall be used per manufacturer recommendations and cooperative procedures. The truck should appear level when viewed from the rear. Outriggers may not be extended or retracted outside of clear view of the operator unless all employees are outside the range of possible equipment motion.

69.4 Aerial lifts shall not be “field modified” unless such modification is pre-certified in writing by the manufacturer. The insulated portions of aerial lifts shall not be altered in any manner.

69.5 Prior to use, the equipment shall be given a warm up period and a pre-operational check. The hydraulic system and the lift controls (upper and lower) shall be tested daily before use to determine they are in safe working condition. Malfunctions or unsafe operations conditions shall be reported and corrected. Equipment that is not in proper operational condition shall not be used.

69.6 Lower level controls shall not be operated unless permission has been obtained from the employee in the lift, except in an emergency.

69.7 The truck shall not be moved unless the boom is lowered, the basket cradled and secured, and the outriggers retracted.

69.8 Employees shall not ride in the bucket while the truck is traveling. (Exception: Unless required by the nature of the operation and approved by the supervisor)

69.9 Load limits of the boom and basket shall not be exceeded. Shock loading

of the equipment shall be avoided.

69.10 When working from an aerial lift an ANSI Class 3 safety harness and a shock absorbing lanyard with locking snap hooks shall be used. The lanyard shall be attached to the boom with a boom strap or other approved devices. Always inspect this equipment before each use and remove from service immediately if defective.

69.11 Employees shall not be permitted to transfer from a bucket to a pole or structure, except for specialized jobs and then only when following specific written cooperative work procedures.

69.12 When the boom must be maneuvered over a street or highway, necessary precautions shall be taken to avoid incidents with traffic and pedestrians.

69.13 The operator shall always face in the direction in which the basket is moving, and he/she shall see that the path of the boom or basket is clear when it is being moved.

69.14 Employees shall not stand or sit on top or edge of the basket or on ladders placed in the basket. Employee's feet shall be on the floor of the basket.

69.15 When two persons are in the basket or baskets, one of them shall be designated to operate the controls. One employee shall give all signals, which shall be thoroughly understood by all persons concerned.

69.16 When working from an aerial lift, extreme care shall be taken to avoid working at different potentials.

69.17 The aerial lift, together with the person in the basket and all tools and equipment, shall maintain proper clearances from unprotected energized conductors, unless isolated or insulated.

69.18 When using hydraulic tools in a bucket, the operator shall be sure that hoses or lines do not become entangled in the operational controls.

69.19 Good housekeeping shall be maintained.

69.20 Employees standing on the ground shall avoid touching the truck, pole or equipment while work is being performed in an energized area. Although not to be considered as primary protection, dielectric rubber overshoes or EH-rated footwear may be used as supplemental protection against step potential.

70.0 WINCHES (ASME B 30.7 – 2011)

70.1 Operators shall perform an inspection prior to use.

70.2 A designated person shall also perform a documented periodic inspection per cooperative procedure.

70.3 To avoid crushing or pinch points, personnel should not pass between the moving load and fixed obstructions. [7-3.1.4(b)]

70.4 Personnel should not stand in line with, pass over, or pass near a load line that is under tension. [7-3.1.4(c)]

70.5 Personnel shall stand clear of any slack, loops, or curves while the rope is being tensioned. [7-3.1.4(e)]

70.6 A designated person shall evaluate the load line paths and operating areas and establish suitable barricades and guards. Barricades or guarding shall be used where tensioned load lines cross through pedestrian or vehicle routes. [7-3.1.4(f)]

70.7 Personnel shall not place any portion of their body on a winch line that is under tension. [7-3.1.4(g)]

70.8 Personnel should not wear loose clothing around winch operations. [7-3.1.4(h)]

70.9 Precautions shall be taken in winch operation to be certain that (7-3.2.3):

1. Winch ropes do not become kinked when the rope is tensioned.
2. There is no sudden acceleration or deceleration of the winch rope.
3. The rope is seated properly on drums, in sheaves, and in rigging blocks.
4. Entanglement with personnel or obstructions is avoided.
5. The wire rope is not damaged by contacting electrical conductors or obstructions that can cause cutting or severe abrasion.
6. The integrity of the winch or block connection points are capable of withstanding loads imposed by the winch under operating conditions.

70.10 Signals to the equipment operator shall be given by one person designated to perform this task. However, the operator shall obey a “Stop” signal given by anyone. Hand signals given to the operator shall be uniform per ASME/ANSI.

70.11 Winch lines, ropes, or wire cables shall not be guided by hand within 4 feet from a hoist drum. Tag lines shall be used to control loads being handled by hoist. Leather work gloves should be worn.

70.12 Wire-rope loops shall be made by proper splicing or mechanical clamping of the tail section. Wire rope clips shall not be used to form eyes in wire rope bridles or slings. Knots shall not be used in wire ropes for any purpose.

70.13 When U-bolt wire rope clips are used to form eyes in winch lines, the number used and the spacing provided shall be in accordance with size of the cable. The saddle portion of the clamp shall be placed on the live part of the wire rope (Figure 70.13) A minimum of three clips are required.

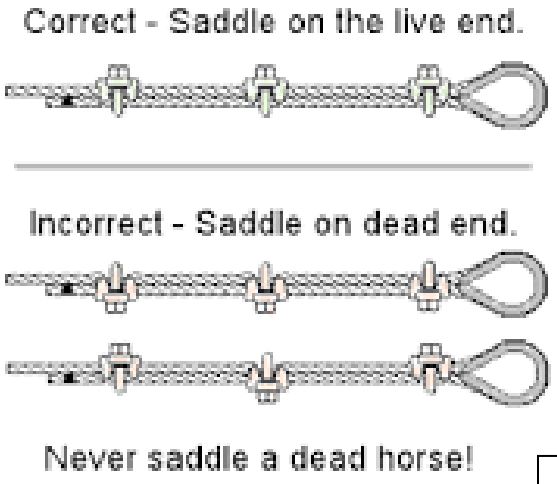


Figure 70.13

Wire Rope - Safe Working Loads

Size Stranding		Improved Plow	
Size	Stranding	Tons	Steel Lbs
7/16"	6x19	8.27	3308
	8x19	7.09	2836
	6x37	7.82	3128
1/2"	6x19	10.70	4280
	8x19	9.23	3692
	6x37	10.20	4080
9/16"	6x19	13.50	5400
	8x19	11.60	4640
	6x37	12.90	5160
5/8"	6x19	16.70	6680
	8x19	14.30	5720
	6x37	15.80	6320

All permissible working loads are based on a safety factor of 5 to 1.

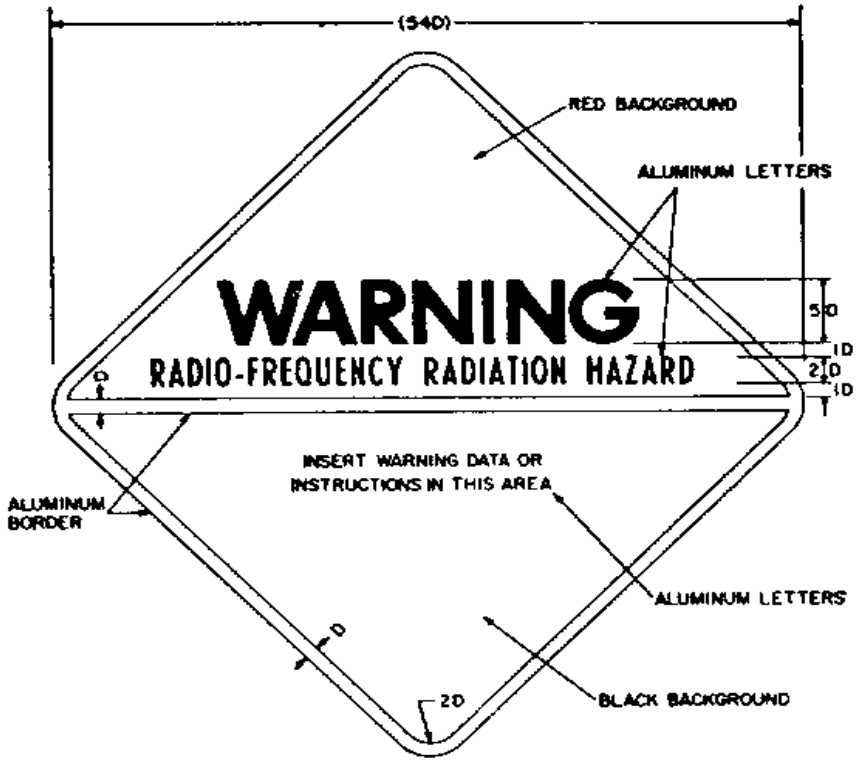
70.14 When U-bolt wire rope clips are used to form eyes, Table H–2 shall be used to determine the number and spacing of clips. 1926.251(c)(5)

TABLE H - 2. -- NUMBER AND SPACING OF U-BOLT WIRE ROPE CLIPS

Improved plow steel, rope diameter (inches)	Number of clips		Minimum spacing (inches)
	Drop forged	Other material	
1/2	3	4	3
5/8	3	4	3 3/4
3/4	4	5	4 1/2
7/8	4	5	5 1/4
1	5	6	6
1 1/8	6	6	6 3/4
1 1/4	6	7	7 1/2
1 3/8	7	7	8 1/4
1 1/2	7	8	9

71.0 ELECTROMAGNETIC RADIATION (29 CFR 1910.97)

Employees must avoid all sources of electromagnetic radiation originating from radio stations, radar equipment, and other possible sources of electromagnetic radiation such as used for microwave communication, radio navigation, and industrial and scientific purposes. Do not enter an area that contains a radio frequency hazard warning sign until the hazard has been removed utilizing a lock-out tag-out program. The warning symbol for radio frequency radiation hazards consists of a red isosceles triangle above an inverted black isosceles triangle, separated and outlined by an aluminum color border. The words “Warning - Radio-Frequency Radiation Hazard” appears in the upper triangle.



1. Place handling and mounting instructions on reverse side.
2. D = Scaling unit.
3. Lettering: Ratio of letter height to thickness of letter lines.
   - Upper triangle : 5 to 1 Large
   - 6 to 1 Medium
   - Lower triangle 4 to 1 Small
   - 6 to 1 Medium
4. Symbol is square, triangles are right-angle isoseles.

Figure G-11

Radio-Frequency Radiation Hazard Warning Symbol

72.0 SERIES STREET LIGHTING CIRCUITS (1910.269(w)(3))

72.1 A street lighting circuit exceeding 600 volts is to be worked in the manner as an overhead or underground energized conductor. (1910.269(w)(3)(i))

72.1.1 Circuit shall be visibly disconnected from the source of supply by opening disconnecting switches and hold tags shall be placed in time switches or other automatic devices.

72.1.2 Circuit shall be properly jumpered to avoid an open circuit condition.

72.2 A series loop may only be opened after the street lighting transformer has been de-energized and isolated from the supply source or after the loop has been bridged to avoid an open circuit condition. (1910.269(w)(3)(ii))

72.3 All series street lighting circuits shall be considered as energized and worked accordingly.

73.0 DESIGNATED OBSERVER

Purpose: A designated observer is needed when working around exposed energized conductors or energized equipment to enhance safety. Their primary role is to monitor the work performed and watch for signs of danger or potential hazards that the workers might not notice. This additional set of eyes can help in several ways.

1. ****Preventing Accidents**: The observer can alert workers if they are getting too close to energized components or if their actions might lead to an electrical fault or short circuit.**
2. ****Ensuring Compliance with Safety Protocols**: They ensure that workers follow safety protocols and use the necessary personal protective equipment (PPE) correctly.**
3. ****Emergency Response**: In case of an accident or emergency, the observer can act quickly to shut down power, call for help, and provide first aid if necessary.**
4. ****Maintaining Focus**: Workers can become focused on their specific tasks and may overlook broader safety concerns. The observer helps maintain overall situational awareness.**
5. ****Reducing Human Error**: By having someone specifically tasked with watching for mistakes or unsafe practices, the risk of human error leading to an accident is reduced.**

Overall, the presence of a designated observer is a critical safety measure designed to prevent accidents and ensure a rapid response in case of emergencies, ultimately protecting the workers and maintaining a safe work environment.

73.1 The following conditions require the use of a designated observer:

1. When work is being performed within the minimum approach distance to exposed energized conductors and equipment greater than 600 Volts.
2. When handling and moving energized conductors, to include mechanical bypass jumpers.
3. When operating mechanical equipment (i.e.Digger Derrick, Aerial Lifts, etc…) within the minimum approach distance to exposed energized conductors and equipment greater than 600 Volts.

73.2 The duties of the designated observer during the performance of work identified in 73.1 shall include, but are not limited to the following:

1. Ensuring proper clearances to exposed energized conductors and equipment are maintained.
2. Ensuring proper work procedures are being followed.
3. Ensuring proper protective cover-up practices are being adhered to.
4. Ensuring proper PPE is being used.

5. When signs of danger or potential hazards arise, take corrective action and if necessary, shut down work.
6. In the event of an accident or emergency, initiate emergency response procedures.

73.3 The Designated Observer shall have no other duties, during the performance of work identified in 73.1, that will interfere with their ability to identify hazards and take corrective action.

SECTION V

Underground Powerline Construction and Maintenance

(1910.269 Paragraph (e), (l), (m), (n), (o), (t))

80.0 URD GENERAL

80.1 Before URD enclosures or equipment are opened, all unauthorized persons including the public shall be required to leave the immediate work area and remain clear of all hazards involved in the work.

80.2 All PPE requirements for overhead work shall also apply to underground work, as applicable.

80.3 Identification of URD Cable

NESC Section 34; 341-B, 3a and Section 37; 372

80.3.1 All URD cables, both primary and secondary, shall be properly identified and labeled.

80.3.2 Before any work is done on a cable, it shall be identified by an approved method. If there is any doubt as to the identification, work shall not be started until it is checked and identified by a qualified person.

81.0 SUB-SURFACE OPENINGS (1910.269 (t) & 1926.965)

81.1 Opening and Guarding Holes

81.1.1 All obstructions to traffic shall be guarded by adequate signs, barricades, lights, flares or flags. Traffic shall be warned in advance through the use of signs, high level standards, flashing lights, traffic cones or Flaggers, as may be required by the situation.

81.1.2 Where permissible and practicable, the truck shall be placed to guard the work area against oncoming traffic.

81.1.3 A blow torch or other open flame shall never be used around a manhole or vault cover.

81.1.4 Manhole, vault, and service-box covers shall always be removed and replaced by means of approved hooks or hoists.

81.1.5 When underground facilities are exposed (electric, gas, water, telephone, etc.) they shall be protected as necessary to avoid damage.

81.2 Manholes and Vaults

81.2.1 Ladders or other climbing devices shall be used to enter or exit manholes or subsurface vaults that exceed 4 feet in depth. Employees shall not use cables or hangers as steps to climb in or out of manholes and vaults.

81.2.2 Equipment used to lower materials and tools must be capable of supporting the weight and shall be checked for defects before use. Employees working in manholes and vaults shall stand clear of the area directly underneath openings while tools or materials are lowered or raised.

81.2.3 While work is being performed in a manhole that contains energized electric equipment, an employee capable of rendering emergency assistance shall be on duty in the immediate vicinity of the manhole opening. CPR/first aid training of this employee shall meet the same requirements as the qualified employee.

81.2.4 The employee attendant on duty may occasionally and briefly enter the manhole to provide assistance other than emergency.

Note: One person may serve to fulfill both requirements of attendant and rescuer. However, attendants are not permitted to enter the manhole.

Note: Employees entering manholes containing unguarded, uninsulated energized lines or parts of electric equipment operating at 50 volts or more are required to be qualified.

81.2.5 For the purpose of inspection, housekeeping, taking readings, or similar work, a qualified employee working alone may enter, for brief periods of time, a manhole where energized cables or equipment are in service, if the employer can demonstrate that the employee will be protected from all electrical hazards. Provided all applicable requirements for entering manholes specified in section 81.0 are met. 1910.269(t)(3)(iii)

81.2.6 Reliable communications, through two-way radios or other equivalent means, shall be maintained among all employees involved in the job. 1910.269(t)(3)(iv)

81.2.7 If duct rods are used, they shall be installed in the direction presenting the least hazard to employees. An employee shall be stationed at the far end of the duct line being rodded to ensure that the required minimum approach distances are maintained. 1910.269(t)(4)

81.2.8 When multiple cables are present in a work area, the cable to be worked shall be identified by electrical means, unless its identity is obvious by reason of distinctive appearance or location or by other readily apparent means of identification. Cables other than the one being worked shall be protected from damage. 1910.269(t)(5)

81.2.9 Energized cables that are to be moved shall be inspected for defects. 1910.269(t)(6)

81.2.10 Where a cable in a manhole has one or more abnormalities that could lead to or be an indication of an impending fault, the defective cable shall be de-energized before any employee may work in the manhole, except when service load conditions and a lack of feasible alternatives require that the cable remain energized. In that case, employees may enter the manhole provided they are protected from the possible effects of a failure by shields or other devices that are capable of containing the adverse effects of a fault in the joint. 1910.269(t)(7)

NOTE: Abnormalities such as hot localized surface temperatures of cables or joints, or joints that are swollen beyond normal tolerance are presumed to lead to or be an indication of an impending fault.

81.2.11 When work is performed on buried cable or on cable in manholes, system neutral continuity shall be maintained by bonding or other equivalent means or the neutral conductors shall be disconnected on both sides of the fault. 1910.269(t)(8)

82.0 ENCLOSED SPACES

OSHA 1910.146, 1910.269, 1926.953

These requirements apply only to enclosed spaces, such as manholes, unvented vaults, tunnels, etc., that can be entered by employees. Permit Required Confined spaces are covered under 29 CFR 1910.146.

82.1 The employer shall ensure that the employee uses safe work practices for entry into and work within enclosed spaces and for rescue of employees from such places. Furthermore, if hazards remain after the precautions taken for enclosed space are exercised or if the escape procedures cannot be met, then entry into enclosed spaces must meet the requirements of permit-space or confined space requirements of *29 CFR 1910.146*.

82.2 Employees who enter enclosed spaces or serve as attendants shall be trained in the following: (1910.269(e)(2))

1. The hazards of enclosed space entry.
2. Enclosed space entry procedures.
3. Enclosed space rescue procedures.

82.3 Employees shall be provided equipment to ensure prompt and safe rescue. (1910.269(e)(3))

82.4 Before removal of any entrance cover to an enclosed space, the employer must: (1910.269(e)(4))

1. Check for atmospheric pressure and temperature differences.
2. Determine whether a hazardous atmosphere could exist in the enclosed space.
3. Eliminate any conditions that make it unsafe to remove the cover.
4. The evaluation called for in this paragraph may take the form of a check of the conditions expected to be in the enclosed space. For example, the cover shall be checked to see if it is hot and, if it is fastened in place, shall be loosened gradually to release any residual pressure. A determination must also be made of whether conditions at the site could cause a hazardous atmosphere, such as an oxygen deficient or flammable atmosphere, to develop within the space.

82.5 When covers are removed from enclosed spaces, the opening shall be promptly guarded by a railing, temporary cover, or other barrier intended to prevent an accidental fall through the opening and to protect employees working in the space from objects entering the space. (1910.269(e)(5))

82.6 An employee cannot enter an enclosed space that contains a hazardous atmosphere unless the entry meets requirements of 29 CFR 1910.146.

(1910.269(e)(6))

82.7 If, while work is being performed in the space, there is reason to believe that a hazard may exist in the space or that traffic may cause a hazardous condition, an attendant with CPR/first aid training shall be immediately available to render emergency assistance. This attendant may perform tasks outside the enclosed space as long as those tasks do not distract the attendant from monitoring employees within the space. (1910.269(e)(7))

82.8 Test equipment used to monitor atmosphere in enclosed spaces must be kept in calibration with a minimum accuracy of +/- 10 percent. (1910.269(e)(8))

82.9 Before an employee enters the space, the following tests must be performed:

1. The internal atmosphere shall first be tested for oxygen deficiency. (1910.269(e)(9))
2. The internal atmosphere shall then be tested for flammable gas vapors. (1910.269(e)(10))
3. Each test shall use a direct-reading meter that is capable of collection and immediate analysis of data samples, thus eliminating the need for off-site evaluation. (1910.269(e)(10))

NOTE: Oxygen deficiency testing is not required if continuous forced air ventilation is provided.

82.10 If flammable gases or vapors are found to be present or an oxygen deficiency exists, forced air ventilation shall be used to maintain a safe level of oxygen and to prevent the accumulation of flammable gases or vapors from reaching a hazardous concentration. (1910.269(e)(11))

82.11 If continuous forced air ventilation is used, it must meet the following criteria:

1. It must begin and be maintained long enough before workers are allowed to enter the enclosed space to ensure that a safe atmosphere exists. (1910.269(e)(12))
2. It shall be directed to the employees' immediate area. (1910.269(e)(12))
3. It shall continue until all employees have left the enclosed space. (1910.269(e)(12))
4. The supply for the continuous forced air ventilation shall be from a clean source and shall not contribute to the hazard in the enclosed space. (1910.269(e)(13))

82.12 If open flames are used in the enclosed space, a test for flammable gases or vapors shall be made immediately before the open flame device is used and at least once each hour while the device is being used in the enclosed space. More frequent tests must be conducted if there is an indication that one-hour periods are insufficient. (1910.269(e)(14))

82.13 Prior to working on limited access areas where there is likelihood of fire, escaping gas, toxic fumes, or deficiency of oxygen (as inside tanks or tunnels), an employee shall wear an approved safety harness with life line attached. Employees shall not enter such a confined space or enclosed space unless properly trained in the OSHA requirements.

83.0 OPENING AND CLOSING CIRCUITS

83.1 Company switching and tagging procedures shall be followed when sectionalizing URD systems.

83.2 When a URD circuit has opened, the route of the circuit shall be assessed for obvious hazards before the circuit is reclosed.

83.3 An approved switching tool shall be used when switching, and when an energized circuit is opened or closed.

83.4 Any URD primary circuit shall be de-energized by opening one or more devices. De-energizing shall be done with load break elbow connectors, load break fuse cutout at the riser pole, load break tool or other approved device.

83.5 All Underground enclosures shall be labeled for identification and all cables shall be labeled with suitable identification methods and/or durable tags to confirm the correct enclosure, to identify cables, to distinguish phases, etc. for utility worker safety during normal operation and troubleshooting activities.

84.0 WORK ON DE-ENERGIZED CABLES

84.1 General

84.1.1 Prior to cutting an identified URD cable with approved cable cutters (to include Bluetooth remote cable cutters), the cable shall be tested for nominal voltage with approved sensing tools, then spiked with an approved spiking tool and shotgun stick utilizing all personal protective equipment. Other cables in the immediate vicinity of the one to be spiked or cut shall be protected as necessary.

84.1.2 All conductors of a multi-phase primary circuit shall be de-energized and properly grounded before work is to be performed, even if only one phase requires work.

84.1.3 System neutral shall be maintained by bonding or other equivalent means, or the neutral conductors shall be disconnected on both sides of the fault.

84.1.4 An underground secondary service cannot be considered de-energized and disconnected until the bayonet fuses have been pulled, the cable has been tested for voltage, the meter pulled, and all possible sources of back feed have been eliminated.

84.2 Grounding

(NOTE: A capacitance charge can remain in a primary URD cable after it has been disconnected from the circuit and a static-type arc can occur when grounds are applied to these cables.)

84.2.1 All URD cables and equipment that have been energized or could become energized from any source shall be considered as energized until the equipment is positively proven to be de-energized and has been grounded.

84.2.2 Before doing work on de-energized primary cable or equipment:

- identify the cable to be worked on.
- a visible open break (air gap) shall be provided.
- a voltage test shall be made.
- the equipment shall be grounded on both sides of the work area.
- hold tags shall be installed.

84.2.3 When work is to be done on equipment or cables of an underground system, precautions to prevent backfeed shall be taken.

84.2.4 De-energized cables shall be grounded and tagged on both sides of the work area, as close to the work as possible, before work is started.

84.2.5 All underground cables and apparatus carrying current at voltages more than 600 volts shall be identified, isolated, tested, grounded and tagged on both sides of the work area.

84.2.6 Only flexible, covered cable and appropriately-rated grounding elbows shall be used in protective ground jumpers.

84.2.7 Protective ground elbows shall be capable of conducting the available fault current. They shall not be smaller than No. 2 stranded copper conductor. Approved grounding elbows shall be rated 10,000 amps or greater depending on maximum fault current available on the system.

85.0 WORK ON ENERGIZED CABLES AND EQUIPMENT

85.1 Before any work is done on an energized secondary conductor or equipment, employees shall use insulated tools or proper cover-up.

85.2 Only approved and tested live line tools shall be used to remove or install primary elbows.

85.3 When energized enclosures or equipment are unlocked and opened, they shall be directly attended to by a worker. They shall be kept closed and locked at all other times.

5.4 A primary or secondary system neutral on any energized circuit shall not be opened under any circumstances.

85.5 Only elbow connectors designed and approved for load break use shall be used to connect or disconnect an energized circuit.

86.0 OPERATING BAYONET-TYPE FUSES

86.1 Approved live-line tools and rubber gloves shall be used to install or remove bayonet-type fuses from fuse holder.

86.2 A bayonet-type fuse may not be used to energize or de-energize a three-phase transformer. A bayonet-type fuse may be used to energize or de-energize a single-phase transformer with or without load.

NOTE: It should be noted that when a bayonet fuse is removed the transformer windings have been de-energized. However, the source and load primary URD cables are energized.

86.3 The pressure relief valve shall be operated before the bayonet-type fuses are removed.

86.4 Care shall be taken when removing bayonet-type fuses as to not spill or drip oil on elbows or cables, because this oil will damage the equipment.

87.0 EXCAVATIONS

OSHA 1910.269 and 1926 Subpart P

87.1 All excavations must be preceded by notification to all utilities and others having underground installations in the affected location. This notice shall be 24 hours prior to starting work, unless local or state law requires a longer period.

87.2 Excavations less than 5 feet deep do not require a protection system if a competent person has determined there is no cave-in potential.

87.3 Excavation operations shall comply with ***OSHA*** *1910.269 and 1926 Subpart P*

87.4 There shall be a competent person present at each excavation site where there is a possibility of employees entering the excavation.

87.5 Before excavating in any area where any buried facilities are suspected, such facilities shall be located as accurately as possible and other utilities shall be notified of the proposed work. It is strongly recommended that the local or state locating service (S.C. 811 Call Center: 1-888-721-7877) is contacted prior to digging.

87.6 Mechanical excavating equipment shall be used only in areas where there is no known danger of contacting or damaging buried facilities.

87.7 Whenever excavating is done in close proximity to buried facilities, it shall be done only by hand digging.

87.8 When employees are required to be in excavations 4 feet deep or more, an adequate means of exit, such as a ladder or steps, shall be provided and located so as to require no more than 25 feet of lateral travel.

87.9 Sides of excavations 5 feet or more in depth shall be shored, sloped or otherwise supported by means of sufficient strength to protect employees working within them.

87.10 If electric cables are damaged, the following steps shall be taken:

- If the damaged cable belongs to a power company other than the one performing the work, the other company shall be notified at once.
- The area shall be barricaded, and the public kept out until hazardous conditions can be eliminated.

87.11 If gas lines are damaged, the following steps shall be taken as soon as possible:

- The local fire and police department shall be notified immediately.
- The hole shall be left open to allow the gas to dissipate into the atmosphere. All possible sources of igniting the gas shall be removed or eliminated. Caution shall be taken in starting any equipment in the vicinity of the gas leak.
- Residents of the area shall be warned when necessary and the public kept out of the area.
- The gas company shall be notified immediately.

87.12 If communication cables are damaged, the communication company shall be notified at once. To avoid eye damage, never look at the cut end of a fiber optic cable.

87.13 At the end of each day's work, as much of the excavation as practical shall be closed or protective barricades put in place.

87.14 When excavations are left open, warning devices, barriers, barricades or guardrails shall be placed to adequately protect the public and employees.

87.15 Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation shall be tested before employees enter excavations greater than 4 feet in depth. (1926.651(g)(1)(i))

87.16 When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, testing shall be conducted as often as necessary to ensure that the atmosphere remains safe. (1926.651(g)(1)(iv))

SECTION VI

Line Clearing and Right-of-Way Maintenance

90.0 TREE TRIMMING - GENERAL

OSHA 1910.269(r)

90.1 When tree trimming, tree felling, brush loading or brush disposal operations are under way on street, highway or any other areas accessible to the public, “Working” signs, cones, red flags or flares, barricades and other warning devices (or combinations thereof) shall be used to warn vehicular and pedestrian traffic.

90.2 Dead or rotted limbs, regardless of size, shall not be used by employees for support. Dead or rotted limbs shall not be climbed by the employee.

90.3 No work shall be done in a tree until the employee is securely tied in or belted to the tree.

90.4 The climbing rope shall be crotched in such a manner as to prevent working its way out on a lateral limb.

90.5 When working in a multiple-trunk tree, the climbing rope shall preferably be crotched around a main trunk other than the one on which the employee is working.

90.6 The employee shall crotch the climbing rope in two places if a single crotch does not adequately protect him/her from falling into energized lines or falling back into the trunk of the tree.

90.7 The climbing rope shall not be used as a pull-rope or as a hand-line to lower limbs or branches.

90.8 The ground end of a climbing rope shall not be allowed to dangle over roadways and shall be kept free from obstructions, passing vehicles, etc.

90.9 The taut-line hitch shall not be released until the climber is on the ground.

90.10 Branches or other material shall not be dropped unless the immediate area has been cleared so that there is no possibility of injury to persons or damage to the property. If such a possibility exists, a rope shall be used to lower branches or other materials. Trees shall be trimmed from a lower level upward when possible.

90.11 When lowering heavy tree members, employees shall not tie fall lines around hands or bodies.

90.12 No employee shall attempt to clear limbs or brush from under the side of the tree where the climber is working.

90.13 Employees shall obtain assistance or use power equipment when lifting logs or other heavy loads.

90.14 When loading brush on a truck, employees shall not stand on or straddle the loaded brush.

90.15 When hauling brush, care shall be taken that it doesn't extend over the sides of the truck or trailers. The brush shall be secured.

90.16 Small trees and underbrush cut around poles and/or equipment shall be cut low (no more than 2 inches high) and horizontal to the ground.

90.17 Tools shall not be thrown into or dropped from a tree; they shall be raised or lowered by a suitable rope.

91.0 WORKING NEAR ENERGIZED CONDUCTORS (1910.269)

91.1 Only qualified employees shall work near energized conductors. Employees shall be trained in and familiar with the safety- related work practices, safety procedures and other safety requirements in the OSHA 1910.269 standard.

91.2 Wires in proximity to tree trimming shall be considered energized until properly de-energized and grounded.

91.3 Parts of trees, in contact with or likely to contact energized conductors, shall be cut with insulated tools. Limbs being removed from contact with wires are to be handled with the same precaution as the wires themselves. Care shall be taken to prevent limbs being removed from coming in contact with uninsulated parts of the employee's body.

91.4 Employees shall not remove tree limbs or branches from above energized conductors while other employees are working in trees below the conductors in the same span.

91.5 Broken or fallen wires shall not be handled, except by properly trained employees.

91.6 When working near wires the employee shall have his/her climbing rope secured so that in the event he/she slips or a limb breaks, the employee will swing free and clear of the wires.

91.7 Tree limbs shall not be dropped on conductors.

91.8 Ropes shall not be thrown over conductors or cross arms for the purpose of using the conductor or cross arm as a support or hitch.

91.9 Dry ropes shall be used in trees through which energized conductors pass.

91.10 When using an aerial device, only electrically qualified persons are allowed to bring themselves or equipment within the minimum approach distance of contact with energized lines or equipment.

91.11 For additional information concerning working near energized conductors refer to *OSHA 1910.269 (r).*

92.0 TREE FELLING

92.1 The tree feller shall appraise the situation for dead limbs that may break or broken limbs of the tree to be cut, wind conditions, and other hazards. The tree feller shall exercise proper precautions before the cut is started.

92.2 The employee felling the tree shall plan a clear retreat path before a cut is started.

92.3 No one shall be allowed to work in a tree located near a tree that is being felled if there is any danger of it being struck by any part of the falling tree.

92.4 All persons not engaged in the felling operation shall be kept clear of guide ropes and other rigging.

92.5 Clear warning shall be given to all employees in the area when trees are to be felled or tree parts are to be dropped.

92.6 Once the felling of a tree has been started, it shall be completed before leaving the job.

92.7 Trees should not be worked on during high wind, or when a lightning storm is approaching or in progress.

93.0 POWERED TRIMMING EQUIPMENT

OSHA 1910.269

93.1 Employees operating powered trimming equipment (chain saw) shall wear approved eye, face, head, hearing, hand, leg, and foot protection.

Note: The employer shall provide, at no cost to the employee, and assure that each employee who operates a chain saw wears leg protection constructed with cut-resistant material, such as ballistic nylon. The leg protection shall cover the full length of the thigh to the top of the boot on each leg to protect against contact with a moving chain saw. *Exception:* This requirement does not apply when an employee is working as a climber if the employer demonstrates that a greater hazard is posed by wearing leg protection in the particular situation, or when an employee is working from a vehicular mounted elevating and rotating work platform meeting the requirements of 29 CFR 1910.68. (1910.266(d)(1)(iv))

Note: The employer shall assure that each employee wears foot protection, such as heavy-duty logging boots that are waterproof or water repellent, cover and provide support to the ankle. The employer shall assure that each employee who operates a chain saw wears foot protection that is constructed with cut-resistant material which will protect the employee against contact with a running chain saw. Sharp, calk-soled boots or other slip-resistant type boots may be worn where the employer demonstrates that they are necessary for the employee's job, the terrain, the timber type, and the weather conditions, provided that foot protection otherwise required by this paragraph is met. (1910.266(d)(1)(v))

93.2 Employees shall use two means of securement when using a chainsaw from a climbing position. Exception: an employee can omit the secondary means of securement if he/she can demonstrate that it poses a greater hazard. (ANSI Z133 6.3.7)

93.3 A gas powered chain saw shall be started on the ground or where it is otherwise firmly supported, and the chain brake shall be engaged. Drop starting of saws over 15 pounds is permitted outside of the bucket on an aerial lift only if the area below the lift is clear of personnel. (1910.269(r)(5)(iv))

93.4 The operator shall grip the chain saw with both hands during the entire cutting operation. ANSI Z133 Section 6.3.5

93.5 Saw bumpers should be against a tree or limb before starting a cut.

93.6 Chain saw operators shall clear the immediate area around their work to make certain that brush will not interfere with either the chain saw or operator.

93.7 All chain saws shall be equipped with a chain brake. Each gasoline-powered chain saw shall be equipped with a continuous pressure throttle

control system which will stop the chain when pressure on the throttle is released. (1910.266(e)(2)(i) & (e)(2)(ii))

93.8 A gas-powered chain saw engine shall be stopped when working on any part of the chain or cutting bar or while the saw is unattended. The battery shall be removed from an electric chain saw while performing the same activity.

93.9 The chain saw shall be shut down or the chain brake shall be engaged whenever a saw is or if conditions such as, but not limited to, the terrain, underbrush and slippery surfaces, may create a hazard for an employee. (1910.266(e)(2)(xiv))

93.10 Gas-powered chain saw engines shall be stopped when being refueled. If gas is spilled on the chain saw during refueling, it shall be wiped off before the engine is started.

93.11 Manufacturer-approved batteries shall be used in electric chain saws.

93.12 A chain saw shall not be used above shoulder level.

93.13 Employees shall not approach within 10 feet of a chain saw operator while the saw is in operation. ANSI Z-133

93.14 Powered tools shall not be left unattended if connected to a power source.

93.15 Powered tools shall not be adjusted or repaired while connected to a power source.

93.16 When not in actual use, the trimmer's saw shall be returned to the scabbard.

93.17 When not in use, chainsaws shall be properly stored with a protective cover over the bar and chain.

94.0 CHIPPERS

OSHA 1910.269(r)(2)

94.1 Chippers shall never be parked directly under a tree being trimmed. A chipper detached from a truck shall be chocked or otherwise secured.

94.2 Employees shall not permit spectators to stand near the machine while brush is fed into the chipper.

94.3 Each employee in the immediate area of an operating chipper feed table shall wear required personal protective equipment. (OSHA 1910.269 (r)(2)(v))

94.4 Employees shall never place hands or other parts of their body into the brush hopper while a chipper is in operation.

94.5 Tools or other metallic objects shall not be used to push brush into a chipper. Sweepings, which may contain foreign objects such as stones and nails, shall be loaded on a truck and not fed into a chipper.

94.6 The ignition key shall be removed when the chipper is left unattended.

94.7 Operators shall not wear loose, floppy clothing. Long sleeves are suggested.

94.8 A chipper shall be fed from the side, not directly behind the feed table.

94.9 If it becomes necessary to operate in high grass or weeds, this growth shall be cleared from around the motor and exhaust before starting the engine.

94.10 Only employees properly trained shall operate the chipper. An employee shall never attempt to make any repairs or adjustments to the chipper unit while it is in operation. The ignition switch must be off, the key removed, and the clutch disengaged.

94.11 If the truck is grounded, the chipper shall be grounded to the truck with a ground of equal or greater size.]

94.12 All brush chippers shall be equipped with an emergency stop mechanism.

95.0 BRUSH CLEARING AND MOWING

95.1 Where two or more employees are cutting brush on the ground, they shall maintain a safe working distance.

95.2 Under no circumstances shall anyone except the operator ride on a mower, or any other heavy equipment used in land clearing.

95.3 Mower operators shall wear seat belts and approved PPE, per cooperative procedures.

95.4 When emerging from right-of-way, prior to road travel, employees shall test the brakes.

96.0 CHEMICAL SPRAYING

OSHA 1910.269

96.1 Before using herbicide or any other chemical, trained and qualified employees shall adhere to warning labels, directions, and precautions for each chemical and wear all personal protective equipment recommended by the manufacturer and/or SDS.

96.2 When you are spraying chemicals to control growth of brush and trees, use extreme care to prevent damage to growing crops, fruits and shade trees. Don't attempt to spray when wind velocity or direction is likely to cause drift toward cultivated fields. Reducing the pressure on the spraying apparatus also reduces the extent of drift of the chemical.

96.3 Employees shall avoid skin contact or breathing mist of spray material.

96.4 When a chemical presents an eye hazard, a portable "eye wash" facility shall be in the immediate area.

SECTION VII
TOOLS AND MISCELLANEOUS

100.0 PORTABLE LADDERS (1926.1053) (1926.955) (1910.269(h))

100.1 General

100.1.1 Ladders shall be inspected prior to use.

100.1.2 Employees shall not use a ladder that has broken, loose or cracked rungs, side rails or braces. Defective ladders shall be tagged and removed from service immediately.

100.1.3 When ascending or descending ladders, employees shall face the ladder and use at least one hand to grasp the ladder when progressing up and/or down the ladder.

100.1.4 Boxes, crates, chairs, etc. shall not be used in place of a ladder or step ladder.

100.1.5 Only one employee shall work from a ladder (except hook ladders) at one time. If the work requires two employees, a second ladder shall be used.

100.1.6 If a ladder is to be placed where the opening of a door may displace it, the door shall be locked or otherwise guarded.

100.1.7 Metal ladders or ladders with metal side rails shall not be used near energized equipment or lines. (Conductive ladders may be necessary in specialized work. Conductive ladders shall be prominently marked.)

100.1.8 Only ANSI approved ladders owned by the Cooperative shall be used by employees.

100.1.9 When transferring from a ladder to an elevated position, the ladder side rails shall extend at least 36 inches above the landing.

100.1.10 Straight and extension ladders shall not be used unless they are equipped with nonskid safety feet or other means to prevent slipping.

100.1.11 Do not lean outside the rails of a ladder.

100.1.12 All ladders shall be rated for their intended use.

100.1.13 Ladders, when not in use, shall be removed from the base of a tree.

100.1.14 All ladders shall be secured to prevent accidental displacement.

100.2 Straight Ladders 1926.1053

100.2.1 Ladders shall be placed so the distance from the foot of the ladder to the base of the wall or other support is approximately one-fourth the working length of the ladder.

100.2.2 An employee shall not stand on either of the top two rungs of a ladder.

100.2.3 Ladders shall not be tied together.

100.2.4 A ladder shall never be placed against an unstable support.

100.2.5 Ladders shall be placed on a suitable surface.

100.2.6 Ladders shall not be used as scaffold platforms.

100.2.7 Portable ladders in use shall be tied, blocked or otherwise secured to prevent their being displaced.

100.3 Step Ladders (1926.1053)

100.3.1 Employees shall not use the top two steps of a step ladder. (This rule does not apply to safety platform ladders.)

100.3.2 Step ladder legs shall be fully spread and locked open when the ladder is in use.

100.3.3 Step ladders shall not be used as straight ladders.

100.3.4 Ladders and platforms shall be secured to prevent their becoming incidentally dislodged.

100.3.5 Conductive portable ladders should not be used near exposed energized lines or equipment. Specialized ladders used for transmission work excepted.

101.0 LIGHTING (1926.26)

101.1 Where natural illumination is not sufficient for the task at hand, artificial lighting shall be used.

102.0 ASBESTOS (1910.1001) (1926.1101)

102.1 Certain precautionary measures shall be taken prior to working with asbestos.

102.2 Personnel shall have special training and physicals before handling asbestos products or material.

103.0 EXHAUST VENTILATION (1926.57) (1910.94)

103.1 Exhaust systems, when provided at the work location, shall be used.

103.2 Where an exhaust system does not provide adequate protection, other protective means such as an approved respirator shall be used.

104.0 HAZARD COMMUNICATION (OSHA 1910.1200)

104.1 All employees shall know the location of and how to read the Safety Data Sheets of all chemicals that they may be exposed to.

104.2 All employees shall be trained in Hazard Communication and in the safe use and handling of all dangerous chemicals they are required to use.

104.3 All required PPE should be used to protect against exposure to hazardous materials.

104.4 At any time an employee is unsure about the proper use of a chemical they shall consult with their supervisor before proceeding with the job.

104.5 Do not eat, drink, or use tobacco products when handling chemicals.

104.6 Wash hands immediately after handling any chemicals.

104.7 All DOT Hazardous shipping markings must remain on the container.

104.8 Any employee who uses a respirator must be included in a comprehensive respiratory protection program that includes a health history questionnaire, medical monitoring, training and a respirator physical.

104.9 All containers must be labeled as to their contents.

105.0 CONTRACTORS AND VISITORS

105.1 All contractors are required to follow all applicable OSHA, DOT, NESC and EPA rules and regulations.

105.2 All visitors, vendors, and contractors are required to use all required personal protective equipment such as but not limited to eye, head, face, hearing, foot, and fall protection.

106.0 LIVE-LINE TOOLS (1910.269 (j))

106.1 Live-line tools shall never be laid directly on the ground or against sharp objects such as barb wire fences. Special tool holders or tarpaulins shall be used for this purpose.

106.2 Each live-line tool shall be wiped clean and visually inspected for defects before use each day. Tools shall be kept clean and properly stored.

106.3 If any defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is present after wiping, the tool shall be immediately removed from service, examined, and tested before being returned to service or replaced.

106.4 Live-line tools used for primary employee protection shall be removed from service at least once every 2 years and whenever required for examination, cleaning, repair, and testing as follows:

1. Each tool shall be thoroughly examined for defects.
2. If a defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live line tool is found, the tool shall be repaired and refinished or shall be permanently removed from service. If no such defect or contamination is found, the tool shall be cleaned and waxed.
3. The tool shall be electrically tested per ASTM and returned to service if it passes the test.

106.5 New live line tools shall be tested prior to being placed in service.

107.0 ROPE (OSHA 1910.269(r)(7))

107.1 Hand line ropes shall have a minimum diameter of 0.5 inch. Synthetic rope shall have elasticity of not more than 7 percent.

107.2 Rope shall be inspected for damage or defect before each use. Damaged or defective ropes shall be removed from service, destroyed, and replaced.

107.3 Rope shall be stored away from cutting edges and sharp tools. Rope shall also be kept away from fire, acids, oil, chemicals and all sources of excessive heat.

107.4 When stored, rope shall be coiled and piled, or shall be suspended, so that air can circulate through the coils.

107.5 Rope ends shall be secured to prevent their unraveling.

107.6 Ropes shall not be considered insulated.

107.7 A rope shall not be overloaded or dragged over rough or sharp objects.

107.8 Short bends over sharp-edged surfaces should be avoided.

107.9 Kinks shall be removed before any strain is put on a rope.

107.10 When not in use, rope shall be dried, stored properly, and kept free from mechanical damage and excessive heat and contamination.

107.11 Rope shall be examined regularly for cuts, worn spots, burns and rot. The rope shall be untwisted at various places and inspected for poor fiber and dry rot.

107.12 The outward appearance of rope shall not be accepted as proof of quality or strength.

107.13 The safe working loads, as specified by the manufacturer, shall not be exceeded.

107.14 Eyes and splices shall be made in accordance with the instructions given by the rope manufacturer.

107.15 Two or more ropes joined together with knots instead of splices shall not be used for lifting materials. (ASME B30.9c-2000; 9-4.7.1(d))

108.0 CARE AND USE OF TOOLS

108.1 General

108.1.1 The cutting edge of tools shall be suitably sheathed or guarded, except while in actual use.

108.1.2 Axes shall not be used in trees or carried on the shoulder.

108.1.3 A pruner shall not be laid on a limb, in a tree crotch or hooked on a wire or rope. It shall be hooked over a limb strong enough to hold its weight.

108.2 Hand Tools (1910.269) (1926.300)

108.2.1 Only cooperative approved hand tools shall be used.

108.2.2 Supervisors shall inspect personal tools at least on an annual basis.

108.3 Personal Tools (Body Belt, Safety Belt, Body Harness, Lanyard, Pole and Tree Hooks)

OSHA 1926.954 and 1910.269(g)

108.3.1 Wire hooks shall not be placed on body or safety belts. Metal chains, keepers or other metal parts shall not be attached to the tools or body belts.

108.3.2 There shall be no center tool loop and a maximum of 4 tool loops on any body belt. No more holes than necessary shall be made in a body or safety belt. If additional holes are required, they shall be punched rather than cut. There shall be no rivets on the inside of the body belt.

108.3.3 Body belts, safeties, body harnesses and lanyards shall be inspected before each use to determine they are in safe working condition.

108.3.4 Gaff guards shall be on climbers when not in use.

108.3.5 All tools, regardless of ownership, shall be approved by the Cooperative and maintained in good condition. (Tools are subject to inspection at any time. Supervisors have the authority and responsibility to condemn unserviceable tools, regardless of ownership.)

108.3.6 Personal tools that are condemned shall be tagged “Danger, Do Not Use” and removed from the work area.

108.4 Portable Electric Tools (1910.269(i))

108.4.1 The non-current carrying metal parts of portable electric tools such as drills, saws, and grinders shall be effectively grounded when connected to a power source unless:

1. The tool is approved double-insulated type, or
2. The tool is connected to the power supply by means of an isolating transformer or other isolated power supply, such as a 24-V DC system. All powered tools shall be examined prior to use to ensure general serviceability and the presence of all applicable safety devices.

1208.4.2 Powered tools shall be used only within their design capability and shall be operated in accordance with the instructions of the manufacturer.

108.4.3 All tools shall be kept in good repair and shall be disconnected from the power source while repairs are being made.

108.4.4 Electrical tools shall not be used where there is a hazard of flammable vapors, gases or dusts.

108.4.5 Ground fault circuit interrupters shall be used in outdoor or wet locations.

108.4.6 Any cord and plug connected equipment supplied by other than premises wiring shall comply with one of the following:

1. It shall be equipped with a cord containing an equipment grounding conductor connected to the tool frame and to a means for grounding the other end (however, this option may not be used where the introduction of the ground into the work environment increases the hazard to an employee); or
2. It shall be of the double-insulated type or,
3. It shall be connected to the power supply through an isolating transformer with an ungrounded secondary.

108.4.7 Portable and vehicle mounted generators used to supply cord and plug connected equipment shall meet the following requirements:

1. The generator may only supply equipment located on the generator or the vehicle and cord and plug connected equipment through receptacles mounted on the generator or the vehicle.
2. The non-current-carrying metal parts of equipment and the equipment grounding conductor terminals of the receptacles shall be bonded to the generator frame.
3. In the case of vehicle-mounted generators, the frame of the generator shall be bonded to the vehicle frame.
4. Any neutral conductor shall be bonded to the generator frame.

108.4.8 A documented tool inspection program is required.

108.5 Air Power Tools (1926 Sub Part I and 1926.956(d))

108.5.1 Compressed air and compressed air tools shall be used with care.

108.5.2 Pneumatic tools shall never be pointed at another person.

108.5.3 Pneumatic power tools shall be secured to the hose by some positive means to prevent the tools from becoming incidentally disconnected.

108.5.4 Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being incidentally expelled.

108.5.5 Compressed air shall not be used for cleaning purposes, except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

108.5.6 Compressed air shall not be used to blow dust or dirt from clothing.

108.5.7 The manufacturer's stated safe operating pressure for hoses, pipes, valves, filters, and other fittings shall not be exceeded.

108.5.8 The use of hoses for hoisting or lowering tools shall not be permitted.

1208.5.9 All compressed air hoses exceeding one-half inch inside diameter shall have a safety device at the source of supply or branch line to reduce pressure in the event of hose failure.

108.5.10 Before making adjustments or changing air tools, unless equipped with quick-change connectors, the air shall be shut off at the air supply valve ahead of the hose. The hose shall be bled off at the tool before breaking the connection.

108.5.11 Powered tools shall be operated only by competent persons who have been trained in their use.

108.5.12 Conductive hose shall not be used near energized equipment.

108.5.13 All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 psi pressure at the tool shall have a safety device on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in contact with the work surface.

108.5.14 Airless spray guns of the type which atomize paints and fluids at high pressures (1,000 pounds or more per square inch) shall be equipped with automatic or visible manual safety devices which will prevent pulling of the trigger to prevent release of the paint or fluid until the safety device is manually released.

108.5.15 In lieu of the above, a diffuser nut which will prevent high pressure, high velocity release, while the nozzle tip is removed, plus a nozzle tip guard which will prevent the tip from coming into contact with the operator, or other equivalent protection, shall be provided.

108.5.16 Abrasive blast cleaning nozzles shall be equipped with an operating valve which must be held open manually. A support shall be provided on which the nozzle may be mounted when it is not in use.

108.5.17 A pneumatic tool used on energized electric lines or equipment or used where it may contact exposed live parts shall provide protection against the accumulation of moisture in the air supply.

108.6 Hydraulic Tools (1926 Sub Part I and 1926.956(d))

108.6.1 Safe operating pressures for hydraulic tools, hoses, valves, pipes, filters, and fittings may not be exceeded.

NOTE: If any hazardous defects are present, no operating pressure would be safe, and the hydraulic equipment involved may not be used. In the absence of defects, the maximum rated operating pressure is the maximum safe pressure.

108.6.2 The hydraulic system supplying a hydraulic tool used where it may contact exposed live parts shall provide protection against loss of insulating value for the voltage involved due to the formation of a partial vacuum in the hydraulic line.

NOTE Hydraulic lines without check valves having a separation of more than 35 feet (10.7 m) between the oil reservoir and the upper end of the hydraulic system promote the formation of a partial vacuum.

108.6.3 Pressure shall be released before connections are broken, unless quick acting, self-closing connectors are used. Hoses may not be kinked.

108.6.4 Employees may not use any part of their bodies to locate or attempt to stop a hydraulic leak.

108.7 Powder Actuated Tools (1926 Subpart I)

108.7.1 Only those employees who have been trained in their use shall operate these tools.

108.7.2 Explosive charges shall be carried and transported in approved containers.

108.7.3 Operators and assistants using these tools shall be safeguarded by means of eye protection devices (safety eye goggles and/or face shields) and head protection.

108.7.4 Tools shall be maintained in good condition and serviced regularly by qualified persons. The material upon which these tools is to be used shall be examined before work is started to determine its suitability and to eliminate the possibility of hazard to the operator and others.

108.7.5 Prior to use, the operator shall insure that the protective shield is properly attached to the tool.

108.7.6 Prior to use, the operator shall inspect the tool to be sure that it is clean, moving parts operate freely and the barrel is free from obstructions.

108.7.7 A defective tool shall be tagged and immediately removed from service.

108.7.8 Powder actuated tools shall not be used in an explosive or flammable atmosphere.

108.7.9 Tools shall not be loaded until just prior to the intended firing.

108.7.10 Only cartridges with an explosive charge adequate for the job with proper penetration shall be used.

108.7.11 Tools and cartridges shall never be left unattended.

108.7.12 Tools shall never be pointed at any person.

108.7.13 In case of a misfire, the operator shall hold the tool in place for 30 seconds. Then try to operate the tool a second time and if unsuccessful shall wait another 30 seconds. Misfired cartridges shall be disposed of properly. (Place in metal container and return to supervisor.)

109.0 POWER LAWN EQUIPMENT (1910.243(e))

109.1 Safety glasses and hearing protection shall be worn when operating this equipment.

109.2 Employees shall insure that all applicable guards are in place prior to using power lawn equipment.

109.3 All power lawn equipment shall be equipped with adequate guards, which shall remain in place while the equipment is in operation.

109.4 Prior to making adjustments, inspection or repairs, the employee shall turn off the equipment and permit it to come to a complete stop.

SECTION VIII

SUBSTATIONS AND METERING

120.0 General (1910.269(u)) (1926.966)

120.1 Sufficient access and working space shall be provided and maintained about electric equipment to permit ready and safe operation and maintenance of such equipment .

120.2 The substation must conform to the edition of NESC (ANSI C2) requirements that was in effect at the time of construction.

120.3 The configuration of the installation must enable employees to maintain the minimum approach distances while they are working on exposed, energized parts.

120.4 Work precautions must be taken when work is performed in a substation that does not conform to ANSI C2 to provide protection equivalent to the protection that would be provided by access and working space meeting ANSI C2.

120.5 When draw-out-type circuit breakers are removed or inserted, the breaker shall be in the open position. The control circuit shall also be rendered inoperative, if the design of the equipment permits.

120.6 Conductive fences around substations shall be grounded. When a substation fence is expanded or a section is removed, fence grounding continuity shall be maintained, and bonding shall be used to ensure electrical continuity.

120.7 Substations that are not occupied shall have all gates closed and locked. Substation gates of occupied substations shall either be closed or closely monitored to prevent entry by unauthorized persons.

120.8 Unqualified persons may not enter rooms or spaces while the electric supply lines or equipment that contain unguarded parts energized at more than 50 volts that are within eight (8) feet of the floor level. Entrances to rooms or spaces that are not under the observation of an attendant shall be kept locked. Signs shall be posted at the entrance to these rooms or spaces warning unqualified persons to keep out.

120.9 Upon entering an attended substation, each employee other than those regularly working in the station shall report his or her presence to the employee in charge in order to receive information on special system conditions affecting employee safety.

120.10 Extreme caution shall be exercised in the handling of parts and material in substation. Never manually carry anything above the waist if possible.

120.11 Use of vehicles and mechanized equipment in substations shall be supervised by a qualified person at all times.

120.12 All mechanized equipment shall be grounded or barricaded when performing work within 10' of energized conductors or equipment in substations.

120.13 Temporary grounds used in substations shall be sized to accommodate maximum available station fault current.

120.14 Battery safety equipment, chemical goggles, face shield, fire extinguisher, rubber gloves, and apron shall be available when work is performed on station batteries.

120.15 A source of water must be immediately available when work is performed on station batteries. If a portable emergency eyewash/shower unit is used it must provide at least a 15- minute flow of water.

120.16 Substation entry shall be restricted to qualified employees and contractors. Visitors and unqualified employees may enter when accompanied by a qualified escort.

120.17 Before beginning work on any equipment or structure in a substation, the person in charge of the work shall see that all the workers in the crew are familiar with the equipment, what part if any is energized, location of grounds, what the limits of the working space are, and what open switches disconnect the equipment from the source of supply. If for any reason there is an interruption causing the workers to leave the job or a switching change is made, before work is resumed, the same formality of checking and making the workers familiar with conditions shall be followed as at the beginning of the job.

120.18 Proper protective clothing, head, and eye protection shall be worn by all employees, contractors, and visitors working in a substation.

120.19 All approved and required PPE shall be worn by all affected personnel.

120.20 If the person in charge determines a job to be hazardous because of proximity to energized equipment, and decides that an observer is necessary to reduce such hazard and prevent accidents, he/she shall designate a qualified observer.

120.21 While climbing or working on structures above 4 feet inside of substations, 100% fall protection shall be used.

120.22 All substations shall be inspected monthly, dated, signed by the person performing the inspection, and properly documented.

120.23 All substation fences and gates shall be locked and properly grounded. The fence and barbed wire shall not have tears or gaps in it. There shall not be washouts or gaps underneath the gates or fences of more than four (4) inches.

120.24 Proper signs of wording and color shall be displayed on all outside fences, all gates and inside the stations on the steel where required.

120.25 Materials and/or equipment that is stored in or around the substation shall be stored as to prevent unauthorized access or contact with overhead lines or equipment.

120.26 All substation structures and devices shall be kept in excellent condition with no evidence of broken welds, loose bolts, cracked cement or oil leaks, and they shall be properly grounded.

120.27 All switching devices shall be locked and secure at all times and shall have a properly grounded mat for the employee to stand on while operating the device. Approved rubber gloves shall be worn while operating these devices.

120.28 All substation circuits should have proper identification with an identification system that is legible, and this system should be consistent system wide.

120.29 No employee shall approach or take any conductive object closer to exposed energized parts than specified in the minimum approach distance Tables R6 & R7 (pg. 74-75). Work inside these limits will be performed with protective equipment or approved devices.

120.30 If energized apparatus is being directly worked on, cooperative approved insulated tools or devices shall be used, and approved protective guards or barriers shall be installed between the employee and the adjacent energized parts.

120.31 Except for fuse replacement and other necessary access by qualified person, the guarding of energized parts within a compartment shall be maintained during operation and maintenance functions to prevent accidental contact with energized parts and to prevent tools or other equipment from being dropped on energized parts.

120.32 Approved rubber gloves shall be worn while using an approved switch stick or live-line tool on energized lines and equipment in a substation.

121.0 WATT HOUR METERS

121.1 Prior to meter installations, all meter bases shall be checked per cooperative procedures, otherwise these basic checks shall be followed:

- Verify proper connections (source & load)
- Check for backfeeds
- Check for short circuited entrance cable
- Verify proper voltage
- When possible, ensure main breaker is in the OFF position

121.2 Hard hats, safety glasses and/or faceshields, proper clothing and rubber gloves shall be worn while installing and removing meters.

121.3 Broken glass shall be removed from a meter before placing the meter in storage.

121.4 Meter guards shall be used, where provided, when setting and pulling meters.

121.5 Be certain that the proper type meter is being set.

121.6 Look for and immediately report signs of meter tampering.

121.7 When there is any doubt about the meter base or connections do not set the meter until all issues are resolved.

REFERENCES

Engineering Standards

Lineman's Handbook

ANSI (American National Standards Institute)

ASTM (American Society of Testing and Material Standards)

ASME (American Society of Mechanical Engineers)

Bashlin Industries Inc.

Buckingham Manufacturing Co. Inc.

CFR (Code of Federal Regulations)

29 CFR Part 1910	Occupational Safety and Health Standards for General Industry
29 CFR Part 1926	Occupational Safety and Health Regulations for Construction
29 CFR Part 1904	Recording and Reporting Occupational Injuries and Illness
49 CFR	Federal Motor Carrier Safety Regulations

IEEE (Institute of Electrical and Electronic Engineers)

IEEE978	Guide for In-Service Maintenance and Electrical Testing of Live Line Tools

Klein Tools Inc.

NEC (National Electric Code)

NESC (National Electric Safety Code)

NFPA (National Fire Protection Associates)

S.C. Worker's Compensation Law

S.C. Department of Public Safety

MUTCD (Manual on Uniform Traffic Control Devices)

National Safety Council