NREA

NEBRASKA RURAL ELECTRIC ASSOCIATION

Safety Standards Manual

2016 Edition

This 2016 Edition

of the

Nebraska Rural Electric Association

Safety Standards Manual

was prepared by the

Job Training &

Safety Committee

and is intended

for use by its

member-systems

as a safety guide

for their employees.

I, _____, (print name) acknowledge receipt of this copy of the NREA Safety Standards Manual. I understand that it is my duty to read, study, and abide by these safety rules and work procedures and other company policies and procedures as they apply to the duties that I shall perform for _____ (name of utility). I further understand that failure to abide by these rules and the utility rules and procedures shall result in disciplinary action that could include termination of employment.

_____
Signature of Employee

_____
Date

_____
Department

_____
Supervisor

All Employees

Safety is an integral part of the operations of the electric system, and all jobs necessary to our operations can be done with both safety and efficiency. The prevention of accidents must be considered a vital part of our everyday work; not something to be added as an afterthought. The safety of our people must never be sacrificed for any reason.

It is not enough to want to prevent accidents. The degree of safety achieved is determined by the amount of effort expended in that direction. We know from the past experiences of the electrical industry that certain work methods and procedures have repeatedly led to accidents causing injury or death.

The standards outlined in this manual refer to a few of the most common hazards. It would be impractical to cover all hazardous situations and emergencies. Supervisors and employees must cooperate to develop work techniques that will make every job safe.

Supervisors shall take the necessary steps to assure uniform observance of the standards contained herein. Anyone in doubt as to the meaning of any provision has the responsibility of discussing the standard with their supervisor. It is the positive obligation of all employees to know these standards. Ignorance of the standards is not an acceptable excuse for violation. Vigilant awareness of, and voluntary cooperation in using these standards, are the ingredients of safe and efficient work habits.

_____

General Manager

Table of Contents

Part I
General Standards For All Employees

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General Standards For All Employees

Section 1.1 Definitions

1.1-1 ***Approved***
"Approved", as applied to personal protective devices, equipment, work practices, and the like means they are acceptable to the electric system and/or regulatory body having jurisdiction; such as a local, city, state, or federal authority.

1.1-2 ***Authorized Employee***
An employee that has been properly authorized by a supervisor to perform specific or general duties that they are qualified to perform under the prevailing conditions.

1.1-3 ***Barricade***
A physical obstruction such as tapes, screens, and/or cones intended to warn about and limit access to a hazardous area.

1.1-4 ***Barrier***
A physical obstruction which is intended to prevent contact with energized lines or equipment or to prevent unauthorized access to the work area.

1.1-5 ***Bond***
An electrical interconnection of conductive parts designed to maintain a common electrical potential.

1.1-6 ***Central Dispatcher***
Any person having the authority and jurisdiction for giving orders to energize or de-energize a circuit.

1.1-7 ***Circuit***
A conductor or system of conductors through which an electric current is intended to flow.

1.1-8 ***Circuit Recloser***
A self-controlled device for automatically interrupting and reclosing an alternating current circuit with a predetermined sequence of opening and reclosing operations.

1.1-9 ***Clearance***
(For Work) Authorization from a designated authority to perform specific work and/or permission to enter a restricted area.
(From Hazard) Adequate separation to prevent accidental contact by persons or equipment when approaching a point of danger.

1.1-10 ***Climbing Space***
The vertical space reserved along one side of a pole structure to give linemen ready access to equipment and conductors on the pole structure.

1.1-11 ***Confined Space***
An enclosed space that is large enough and so configured that an employee can bodily enter and perform assigned work; has limited or restricted means for entry or exit; and is not designed for continuous occupancy. Its characteristics may be that it contains or has a known potential to contain a hazardous atmosphere, contains a material with the potential for engulfment of an entrant, has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a

floor that slopes downward and tapers to a small cross section, and/or contains any other recognized serious safety or health hazard.

1.1-12 ***De-energized (Dead)***
Free from any electrical connection to a source of potential difference or from electrical charges; or does not have a potential difference from that of the earth.
Note: The term is used only with reference to current-carrying parts which are sometimes energized (live).

1.1-13 ***Effectively Grounded***
Permanently connected to earth through a conductor of sufficiently low impedance which has adequate current-carrying capacity to prevent the build up of voltages that may result in undue hazard to persons or connected equipment.

1.1-14 ***Electric Supply Lines***
Those conductors used to transmit electrical energy and their necessary supporting or containing structures. Lines of more than 600 volts to ground are always supply lines within the meaning of these standards and those of less than 600 volts to ground may be considered as supply lines, if so run and operated throughout.

1.1-15 ***Employee***
In this manual, unless otherwise indicated, any person actively engaged in doing work for the system.
Note: When the system hires a contractor to work on the system, the employees of the contractor shall not be considered employees of the system.

1.1-16 ***Energized (Live)***
Electrically connected to a source of potential difference; or electrically charged so as to have a potential significantly different from that of earth. 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. All previously energized conductors shall be considered energized until tested for voltage and properly grounded.

1.1-17 ***Exposed***
Not insulated or guarded.

1.1-18 ***Foreman***
That person, regardless of title or gender, directly in charge of employees doing the work.

1.1-19 ***Guarded***
Protected by personnel; or covered, fenced, or enclosed by means of suitable casings, barrier rails, screens, mats, platforms, or other suitable devices in accordance with effective barricading techniques designed to prevent approach or contact to hazards by persons or objects.
Note: Wires, which are insulated but not otherwise protected, are not considered guarded.

1.1-20 ***Insulated***
Separated from other conductive surfaces by a dielectric substance (including air space) offering a high resistance to the passage of current.
Note: When an object is said to be insulated, it is understood to be insulated in a suitable manner for the conditions to which it is subjected. Otherwise it is, within the purpose of these standards, not insulated. Insulated cover-up material used on conductors is one means of making the conductor insulated.

1.1-21 ***Isolated***
Not readily accessible to persons unless special means of access are used.

1.1-22 *Protective Grounding*
For the purposes of this manual, the act of placing shorts and grounds on conductors and equipment for the purpose of protecting workers from dangerous voltages while working on lines or equipment.

1.1-23 *Qualified Employee*
A person who by reason of experience and/or training is familiar with the job to be performed and the hazards involved with performing that job. (Reference: OSHA 1910.269(a)(2))

1.1-24 *Shall*
The use of "shall" means application of the standard is mandatory.

1.1-25 *Should*
The use of "should" means application of the standard is recommended.

1.1-26 *Spiking*
A procedure for detecting energized cables by piercing the insulation with a remotely operated grounded tool.

1.1-27 *Supervisor*
The employee in charge at any work site.

1.1-28 *Switch*
A device for opening, closing, or changing the connection of a circuit. Unless otherwise stated in this manual, a switch is understood to be manually operable.

1.1-29 *Tagging*
A system or method of identifying circuits, systems, and/or equipment for the purpose of alerting persons that the circuits, system, and/or equipment so identified is under the control of another individual.
Note: Without proper authorization from the person in control of such identified circuits, system, and/or equipment, persons shall not change the status of such circuits, system, and/or equipment.

1.1-30 *Vest, Reflective*
Traffic-type vest of a high visibility to be worn when working along roads and within the right-of-way. The vest shall be flame retardant if the worker is to be exposed to live parts, Class II minimum. (Reference: MUTCD, Manual on Uniform Traffic Control Devices)

1.1-31 *Voltage*
The effective potential difference (rms) between any two conductors; or between a conductor and ground.

Section 1.2 Application and Responsibility

1.2-1 *Possession*
Each permanent employee shall be provided a copy of these standards and it shall be their duty to become familiar with those standards pertaining to their duties. They should keep the manual readily available and add to it any revisions or additions they are issued.

Temporary employees working under close and direct supervision may be provided a copy of the manual; but supervisors shall familiarize them with the standards pertaining to their work.

1.2-2 *Compliance*
The standards contained in this manual shall be complied with by every employee in all circumstances where they are applicable. Violations of these standards shall be cause for disciplinary action.

Pertinent governmental codes, standards, rules, and orders shall be considered a part of this manual and where conflict exists, the more stringent requirement shall prevail.

1.2-3 *Local Practices*

Supplemental safety practices applicable to specific locations may be issued by local management, provided they are not in conflict with the standards contained in this manual.

Supervisors, foremen, and all other employees are expected and authorized to take additional safety precautions and to apply safety practices that are not in conflict with the standards contained in this manual.

1.2-4 *Responsibility of Employer*

The employer shall have the same responsibility for safety as for any other part of the operations.

A. The employer shall appoint only competent individuals as supervisors, who shall be responsible for the safety of those under their supervision.
B. The employer shall provide adequate automotive equipment, tools, and protective devices and insist upon their proper use and maintenance.
C. The employer shall require supervisors to observe and enforce all safety standards.
D. The employer, or representatives designated by the employer, shall fully investigate all serious accidents and take proper remedial steps to prevent repetition of similar accidents whenever possible.

1.2-5 *Responsibility of Supervisors*

The supervisor shall have the same responsibility for safety as for any other part of the operations.

A. The supervisor shall be held accountable for all accidents and employee actions unless investigation shows they were due to conditions beyond the supervisor's control.
B. Each supervisor shall be responsible for the following:
    1. The safety of their employees and the general public.
    2. Ensuring that all tools and equipment are safe and in good condition.
    3. Enforcing safety standards.
    4. Conducting job briefings at each job site to provide adequate supervision to their employees.
    5. Informing their employees of any hazardous condition.

1.2-6 *Responsibility of Employees*

The employee shall have the same responsibility for safety as for any other part of the operations. Each employee shall be responsible for the following:

1. Adhere to these safety standards, as well as other applicable orders or procedures.
2. Report all hazardous conditions and unsafe tools or equipment.
3. Promptly report all accidents and injuries, regardless of severity.
4. Use protective devices provided by the employer.

1.2-7 *Responsibility of the NREA Safety Department*

The NREA Safety Department is responsible for the coordination of safety activities throughout the state. It aids in supervision, develops and maintains an effective safety program, assists in accident investigations and field inspections, and accumulates and distributes accident records and statistics. It also conducts safety meetings at each system whenever practical, maintains contact with safety organizations in other utilities, and provides counseling upon request.

Section 1.3 General Instructions

1.3-1 *Temporary Employees*

Those employed from day-to-day shall work under direct and close supervision. Copies of these safety standards shall be made available for such employees.

1.3-2 ***Knowledge***
Employees shall carefully study the safety standards that apply to their duties and observe them carefully in their daily work. Ignorance of these standards will not be accepted as an excuse for their violation.

1.3-3 ***Interpretation***
If a difference of opinion arises with respect to the meaning or application of these standards, or the steps necessary to carry them out, the decision of the person directly in charge of the work shall be accepted.

If further interpretation is needed, the NREA Job Training and Safety Coordinator and/or the NREA Job Training and Safety Committee may be contacted.

1.3-4 ***Emergency Work***
These standards represent only minimum requirements and are not intended to cover unusual conditions. It is the responsibility of the supervisors and employees in such cases to work out a safe work procedure.

1.3-5 ***Ability***
It shall be understood that the employee is expected to undertake only such work as they are qualified to do. Work which requires a high degree of skill or personal protection, so as to be performed safely, shall be done only by fully qualified employees.

1.3-6 ***Understanding***
Before starting a job, employees must thoroughly understand the work to be done, their part of the job, and the safety standards that apply to the job.

1.3-7 ***Accident Prevention Program***
It is the duty of every employee to take an active part in the accident prevention program, attend safety meetings, and cooperate in every way possible. Each system should have a written Accident Prevention Plan in place.

1.3-8 ***Taking Chances***
Before commencing work of any kind, care must be taken to see if any hazards exist. If more than one employee is engaged on the same job, all employees must understand the procedures to be followed. Under no circumstances shall safety be sacrificed for speed.

1.3-9 ***Protective Devices***
The employer will provide necessary and approved protective devices for use by employees. Employees shall satisfy themselves that all such devices used by them are in safe condition prior to use.

1.3-10 ***Obedience to Standards***
All deliberate violations of these safety standards shall be reported to the immediate supervisor.

1.3-11 ***Personal Conduct***
Drinking alcoholic beverages on the job or working under the influence of alcohol or drugs shall not be permitted and shall be cause for disciplinary action. Practical jokes, scuffling, or horseplay shall not be permitted.

1.3-12 ***Wearing Apparel***
Employees shall wear clothing suitable to the job being done.

A. Employees shall remove all unnecessary jewelry such as finger rings, key chains, oversized belt buckles, watches/chains, etc., when working in energized situations or around moving equipment that could be hazardous to themselves and others. (Reference: OSHA 1910.269(l)(7))
B. Hair nets may be required to be worn if hair length is determined to be a hazard.

Section 1.4 Housekeeping

Good housekeeping is fundamental to providing continuity of service and essential to successful operations. Accidents and/or fires may be prevented by using good housekeeping practices. The responsibility for good housekeeping must be shared by all employees.

1.4-1 ***Combustible Material***
The accumulation of combustible material, such as packing boxes, packing material, and other material of this kind, shall be disposed of promptly. Care should be taken to see that exposed nails in boards used for packaging cannot cause injuries.

Oil-soaked rags and other such debris shall be disposed of immediately or be kept in approved containers until disposal.

1.4-2 ***Lockers***
Where lockers are provided for employees, they shall be kept neat and clean; free from unnecessary clothing and debris.

1.4-3 ***Flammable Liquids***
Flammable liquids such as gasoline, benzene, carbon tetrachloride, and naphtha shall be stored in approved containers and shall never be used as a cleaning or degreasing agent.

1.4-4 ***Doorways and Walkways***
Doorways and walkways shall be maintained clear of debris. Doorways shall always be in proper operating condition.

Section 1.5 Outside Housekeeping

1.5-1 ***Vehicles***
Cabs, beds, and tool boxes should be kept clean and free of junk and debris. Tools and equipment shall be stored in a safe and orderly manner. Material to be hauled should be carefully loaded and properly secured.

Section 1.6 Fire Protection

1.6-1 ***Fire Fighting Equipment***
Properly maintained fire equipment is an essential part of fire protection. Such equipment shall be located in the most accessible places and each employee shall be familiar with and know how to operate each piece of equipment so that fires may be promptly extinguished.

Access to fire extinguishers and other fire protection equipment shall not be obstructed.

All fire extinguishers shall be maintained in accordance with the manufacturer's recommendations and receive a monthly inspection. Fire extinguishers shall be properly installed on hangers or be placed in cabinets; they shall not be left free-standing.

Fire hoses and other fire protection equipment shall not be removed from fire stations or used for purposes other than fire fighting.
(Reference: OSHA 1910.157)

1.6-2 ***Types of Fires***

Fires are divided into four general classes. Those classes and the type of extinguisher designed for use on each are as follows:

A. Class "A" fires are those of wood, paper, etc. Dry powder extinguishers shall be used.
B. Class "B" fires are those of flammable liquids, grease, etc. Dry chemical, carbon dioxide, or foam extinguishers shall be used. A blanketing effect is essential in extinguishing this type of fire.
C. Class "C" fires are those that are electrical in nature. Dry chemical or carbon dioxide extinguishers shall be used. **DO NOT USE** soda-acid, foam pressured water, antifreeze, or water type extinguishers on Class "C" fires. A non-conducting extinguishing agent is of first importance.
D. Class "D" fires involve combustible metals such as zinc, magnesium, potassium, and titanium. It is best to cover them with dirt or bury them. **DO NOT USE** water or dry chemical type extinguishers on these types of fires.

Section 1.7 First Aid

1.7-1 ***Cardiopulmonary Resuscitation/CPR***

When employees are performing work on, or associated with, exposed lines or equipment energized at 50 volts or more, or when employees are exposed to the possibility of electric shock, all employees at the work site shall be trained in cardiopulmonary resuscitation (CPR). (Reference: OSHA 1910.269(b)(1)) It is recommended that all employees hold a current first aid/CPR card.

1.7-2 ***First Aid***

For field work involving two or more employees at a work location, at least two employees shall be trained in first aid, including CPR. Every employee shall have a working knowledge of the principles of first aid. (Reference: OSHA 1910.269(b)(1)(i))

1.7-3 ***Injuries***

Immediate first aid treatment shall be secured for every injury, however trivial it may appear.

1.7-4 ***First Aid Kits***

Properly equipped first aid kits shall be maintained on all vehicles, in generating plants, warehouses, and offices. (Reference: OSHA 1910.151 (b)) They should contain supplies that reasonably anticipate the specific needs of the individual workplace (Reference 1910.151 Appendix A) and shall be in weatherproof containers if exposed to the weather. (Reference: OSHA 1910.269(b)(2)) First aid kits in generating plants, warehouses, and offices shall undergo a documented monthly inspection to ensure that expended items are replaced. Vehicle first aid kits should receive a weekly documented inspection.

Blood borne pathogen exposure control equipment shall be considered part of the first aid supplies and shall be similarly inspected and maintained. (Reference: OSHA 1910.1030(d)(3))

1.7-5 ***Automatic External Defibrillator (AED)***

If AED's are utilized, they need to be maintained according to the manufacturer's recommendations.

Section 1.8 Accidents to Employees

1.8-1 ***Reporting Injuries***

All injuries, no matter how minor or serious, shall be reported to the supervisor.

1.8-2 ***Investigations***

If the injury involves loss of time or if the accident is one that could have caused a serious injury, a detailed investigation shall be made to determine what may be done to prevent similar accidents in the future.

Section 1.9 Motor Vehicles and Other Mobile Equipment

1.9-1 ***General***

A. Only those employees specifically authorized and who possess a valid license or permit shall operate system-owned vehicles.
B. Drivers shall know and obey all state and local motor vehicle laws that apply to them and their passengers.
C. A driver shall not permit unauthorized persons to drive, operate, or ride in or on a system-owned vehicle.
D. A driver shall not permit anyone to ride on any part of a motor vehicle except in the seat(s) of the vehicle itself.
E. Seatbelts shall be worn by everyone riding in a vehicle.

1.9-2 ***Operations***

Employees shall operate system-owned vehicles in the safest possible manner by obeying all state and local traffic laws and regulations, by adhering to the manufacturer's recommended operating procedures, and by employing necessary defensive driving techniques.

1.9-3 ***Inspection***

Before operating any piece of equipment, the operator shall complete a documented inspection of the equipment to ensure its safe physical condition and proper operation.

1.9-4 ***Vehicle Accidents***

A. Drivers of system-owned vehicles shall always stop and give their name and address and the system's name and address when they are involved in a vehicle accident. They shall also attempt to secure the names, addresses, and drivers license numbers of others involved in the accident and the names and addresses of all available witnesses or others that may have knowledge of the accident.
B. Drivers or other employees shall not attempt to determine or admit liability of the system when an accident occurs.
C. All vehicle accidents shall be reported immediately in accordance with state regulations.
D. Drivers shall be responsible for submitting any reports required by police or other authorities.

1.9-5 ***Fork Lift Trucks and Power Material Handling Equipment***

A. Only qualified personnel shall be permitted to operate this type of equipment.
B. Before operating this equipment, it shall receive a documented inspection for safe condition and proper operation.
C. The equipment shall only be used for its intended purpose.
D. No employee shall be permitted to ride up or down on the lift without an appropriate enclosure and safety equipment.
E. When stacking material, place pallets, skids, or platforms in piles with variations along edges of not more than two inches. No one shall be permitted under the load when it is being moved.
F. Never move the truck with platform or forks raised higher than necessary to complete the move.
G. Do not move unsafe loads or overload the equipment.
H. Always maintain a clear line of sight for the direction equipment is traveling or have someone act as a guide.
I. Always set the brake and lock the truck before leaving it unattended.

1.9-6 ***Aerial Equipment***

A. Only qualified personnel shall be permitted to operate this type of equipment.
B. Before operating this equipment, it shall receive a documented inspection for safe condition and proper operation.
C. The equipment shall only be used for its intended purpose and the manufacturer's recommended load limits for both the basket and boom shall not be exceeded.

D. No field modifications of the equipment shall be permitted without the manufacturer's permission.
E. The operation and maintenance manual issued by the manufacturer shall be followed and a copy of the operators manual shall be carried in the vehicle.
F. Drivers of trucks with mounted equipment shall be constantly alert to the fact that the vehicle has exposed equipment above the elevation of the truck cab and provide necessary traveling clearance.
G. The truck shall not be moved unless the boom is lowered and, if applicable, the basket is cradled and secured.
H. Riding in the basket while the truck is moving between locations shall not be permitted.
I. Available footing for the truck wheels and outriggers shall be examined carefully to be assured of a stable setup. Hand brakes, chocks, and/or cribbing should also be used when needed to insure stability. The truck should sit approximately level when viewed from the rear, as per the manufacturer's recommendations and requirements.
J. Before lowering stabilizers, outriggers, or hydraulic jacks, the operator shall be certain there is no one in a position where they will be injured.
K. Stabilizers, outriggers, or hydraulic jacks shall be used at all times when the boom is lifted out of the cradle. Outrigger pads shall be used in accordance with the manufacturer's recommendations and requirements.
L. When the boom must be maneuvered over a street, highway, or roadway, necessary precautions shall be taken to avoid accidents with vehicle traffic and/or pedestrians.
M. All employees working from an aerial lift device shall wear a safety harness and lanyard at all times that meets all OSHA and ANSI standards for fall protection. This equipment shall be inspected prior to each use to ensure it is in safe condition to use. Employees shall attach their lanyard to the attachment point on the equipment provided by the manufacturer and shall not attach their lanyard to an adjacent pole or structure. Attaching their lanyard to the attachment point shall be done before the boom is moved.
N. No employee shall be permitted to transfer from a basket to a pole or other structure or from a pole or other structure to the basket.
O. Climbers shall not be worn by employees working in a basket.
P. When an aerial device is being used in any manner which might result in contact of an energized conductor, the truck shall be grounded to the system neutral, be grounded to a ground rod with suitable resistance to open the sectionalizing device, or be barricaded.

Section 1.10 Personal Protective Equipment (PPE)

1.10-1 *General*

The employer shall furnish necessary protective equipment such as eye and face protection, ear protection, FR clothing, and hard hats for employees to ensure the work is as safe as possible.

A. It is the responsibility of the employee to ensure this protective equipment is inspected prior to use and in safe condition to use.
B. When there is a doubt as to the use of protective equipment, always employ the safest method; use it.
C. Visitors at the work site shall be equipped with necessary protective equipment or be kept out of the work area.
D. All Personal Protective Equipment (PPE) shall be inspected monthly or in accordance with established standards.

1.10-2 *Eye and Face Protection*

Eye and/or face protection distinctly marked to be in accordance with ANSI Standard Z87.1 shall be worn by all employees any time there is a danger of injury to the eyes or at the direction of a supervisor. (Reference: OSHA 1910.133)

1.10-3 *Ear Protection*

Ear protection shall be worn by all employees when there is a possibility of hearing damage or at the direction of a supervisor.

Hearing damage can occur when there is continuous exposure to noise or impulse exposure to a loud impact noise. Exposure to noise of 85 dBA (decibels) for more than eight continuous hours, 95 dBA for more than four continuous hours, 100 dBA for more than two continuous hours, or 105 dBA for more than one continuous hour may cause hearing damage unless proper protection is worn. (Reference: OSHA 1910.95)

Note: If normal conversation can be understood about two feet away, the noise level is probably less than 85 dBA.

A. Proper ear protection may consist of ear muffs, ear plugs, or wax type ear plugs. Plain cotton is not acceptable. Ear protective devices must be worn properly to provide required protection.
B. A noise hazard assessment shall be performed on a periodic basis according to established standards and/or work practices.

1.10-4 ***Hard Hats/Head Protection***

Employees shall wear protective headgear when working in areas where there is a potential for injury to the head from falling objects or when working near exposed electrical conductors which could contact the head. This protective headgear shall comply with ANSI Standard Z89.1, Class E Type II. (Reference: OSHA 1910.135)

1.10-5 ***Arc Rated Clothing/Protective Clothing***

Employees shall wear clothing suitable to the job being done. Employees exposed to the hazards of flames or electrical arcs shall not wear clothing made of fabric, either alone or in blends, such as nylon, rayon, acetate, or polyester; unless the employer can demonstrate that the fabric has been treated to withstand the conditions that may be encountered. (Reference: OSHA 1910.269(l)(8)) These same employees should wear shirts with long sleeves, rolled down and buttoned at the cuff, when exposed to these hazards.

1.10-*6* ***Foot Protection***

Employees shall use 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, or where employee's feet are exposed to electrical hazards. Protective footwear shall comply with ANSI Standard Z41. (Reference: OSHA 1910.136)

1.10-7 ***Hand Protection***

A. Employers shall select and require employees to use appropriate hand protection when the employee's 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.
B. Employers shall base the selection of appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the tasks to be performed, conditions present, duration of use, and the hazards and potential hazards identified. (Reference: OSHA 1910.138).

1.10-8 ***Fall Protection***

The employer shall insure that all employees utilize the proper fall arrest/protection devices or fall arrest systems according to OSHA 1910.269(g)(2).

Section 1.11 Portable Tools

All tools, regardless of ownership, shall be of the approved type and be maintained in good working condition. Tools are subject to inspection at any time and the supervisor has both the authority and responsibility to condemn unserviceable tools, regardless of ownership. Unserviceable tools shall be

tagged to prevent their use or they shall be removed from the job site. All hand tools, portable tools, etc., shall have a documented monthly inspection.

1.11-1 *Hand Tools*

A. Hammers with metal handles, screw drivers, or knives with metal continuing through the handle and metallic measuring tapes shall not be used on or near energized electrical lines or equipment.
B. Tools with sharp edges such as saws, wood chisels, drawknives, or axes shall be kept in suitable guards or in special compartments.
C. As impact tools such as chisels, punches, and drift pins become mushroomed or cracked, they shall be dressed or repaired before further use or be replaced.
D. All tools shall be used only for the purposes for which they have been approved.
E. Only properly rated insulated tools shall be used in any energized meter sockets or electrical panels. (Reference: OSHA 1910.335(a)(2)(i))

1.11-2 *Electric Powered Tools*

A. Portable electric tools such as drills, saws, and grinders shall be effectively grounded when connected to a power source unless they meet one of the following conditions:
    1. The tool is an approved double insulated type.
    2. The tool is connected to an isolated power supply such as a 24 volt dc system.
B. Electrical tools shall not be used where there is a hazard of flammable vapors, gases, or dust.
C. Tools that are not double insulated and are connected to a central power supply, including portable and vehicle mounted generators, shall be protected by a Ground Fault Interrupter (GFI) or by an "assured grounding system".

1.11-3 *Hydraulic and Pneumatic Tools*

A. Hydraulic and pneumatic tools used on or near energized electric lines or equipment shall have nonconductive hoses with adequate strength for the normal operating pressure. The manufacturer's safe operating pressures for hoses, valves, pipes, filters, and other fittings shall not be exceeded.
B. All pneumatic tools which are used on or near energized lines or equipment shall have an accumulator to collect moisture.
C. All hydraulic tools which are used on or near energized lines or equipment shall have hydraulic fluid of an insulating type.
D. Before connections are broken apart, pressure shall be released to avoid the hazards of flying particles or the whipping of hoses, except where quick coupling connectors are used. Hoses shall never be kinked to cut off pressure prior to disconnecting connections.
E. No part of the body shall be used to locate or attempt to stop a hydraulic leak.

1.11-4 *Ladders and Platforms*

Portable ladders and/or platforms used on structures or conductors in conjunction with overhead line work shall meet the following requirements and shall be inspected prior to each use to ensure they are in safe condition to use.

A. Ladders and platforms shall be secured to prevent their becoming accidentally dislodged.
B. Ladders and platforms shall not be loaded in excess of the working load for which they are designed.
C. Ladders and platforms shall only be used in applications for which they are designed.
D. In configurations in which they are used, ladders and platforms shall be capable of supporting without failure at least 2.5 times the maximum intended load.

Portable metal ladders and other portable conductive ladders shall not be used near exposed energized lines and equipment. However, in specialized high voltage work, conductive ladders shall be used where the employer can demonstrate that nonconductive ladders would present a greater hazard than use of conductive ladders.

Note: For additional information concerning safe supports, scaffolds, and ladders, refer to OSHA Standards 1910.25, 1910.26, 1910.27, 1910.28, and 1910.29.

Part II
Office Safety

Part II
Office Safety

Section 2.1 General

A. To avoid strains from improper handling of boxes and bundles of office supplies, ledgers, portable filing cases, and office machines, lifting shall be done with the back erect, using the more powerful leg muscles. Do not hesitate to call for assistance if needed.
B. Large boxes or bundles of supplies shall be moved by a hand truck or unpacked and delivered in smaller parcels.
C. Bulky objects shall not be carried in such a way as to obstruct the view ahead or interfere with free use of handrails on stairways. Get help when necessary.
D. Water, oil, or other liquids spilled on floors present a dangerous slipping hazard and should be cleaned up immediately.
E. Loose objects shall not be left on stairs or floors.
F. Unprotected extension cords shall not be strung across aisles or walkways where people may trip or fall over them.
G. Desk, file, or cabinet door/drawers shall not be left open.
H. Standing on chairs, boxes, and other makeshift supports shall not be permitted. Only approved ladders or like equipment shall be used to reach objects overhead.
I. Doors shall be opened slowly to avoid striking anyone on the other side.
J. Running in aisles, corridors, and on stairways is prohibited. Use the handrail when going up or down stairways.
K. In walking, particularly at blind corners, employees shall always keep to the right.
L. Use extreme care in opening file cabinet drawers. Opening of overloaded upper drawers, particularly more than one at a time, may cause the cabinet to tip over. Where several tiers of cabinets are used at one location, they shall be fastened together.
M. While using power-operated office machines, avoid touching any grounded metal object such as a radiator or water pipe. Defects in cords or machines shall be reported and promptly repaired or replaced.
N. Pins shall not be used to fasten papers together. Use paper clips or a stapler.
O. Pointed objects, such as uncapped writing pens, pencils, knives, or scissors shall not be carried with the point exposed in the pockets or attached to the clothing in congested aisles or working areas.
P. Gummed strips of envelopes shall be moistened with a suitable device not with the tongue. Avoid opening any envelope with fingers or by sliding the hand along the edges of the paper.
Q. Except in proper holders, safety razor blades shall not be used for cutting paper, sharpening pencils, or other cutting operations. Do not keep razor blades or other sharp instruments loose in desk drawers.
R. Used pressurized containers, broken glass, or other sharp objects shall never be placed in waste baskets, but shall be safely wrapped, identified, and left beside the waste basket for disposal.
S. Keep fingers away from the cutting edge of the paper cutter. The cutting knife on hand-operated cutters shall never be left raised while unsupported. It shall always be closed when not in use. Machine-operated cutters shall be properly guarded to prevent inadvertent operation or contact with the cutter.
T. Ergonomic considerations shall be made when selecting office furniture and decorating office areas.
U. Office areas shall receive a documented monthly inspection to be certain that conditions are being maintained.
V. Security for office areas shall be maintained and reviewed on a regular basis.

Part III
Overhead Distribution and Transmission Lines and Equipment

Part III
Overhead Distribution and Transmission Lines and Equipment

Section 3.1 General

3.1-1 *Application*

A. In addition to the hazards peculiar to electrical operations, other non-electrical hazards may be encountered while performing work on overhead lines and equipment. Employees engaged in electrical operations should therefore be familiar with all sections in this Safety Standards Manual that may apply to their work. The standards in this section apply to all work on overhead electrical lines, equipment, or apparatus, wherever located.
B. All circuits and equipment shall be considered energized at full line voltage until de-energized and grounded, or where grounding is impractical, other precautions are taken as outlined in these standards to insure that there is no possible energy source including lightning, back feed, and/or induced voltages.
C. Clearance and permit procedures shall be followed at all times when work is performed on any lines or equipment under the control of a dispatcher.
D. Before work is begun in the vicinity of vehicular or pedestrian traffic which may endanger employees and/or the general public, warning signs, traffic cones, flags, or other traffic control devices shall be placed conspicuously to alert and channel approaching traffic. (Reference: MUTCD, Manual on Uniform Traffic Control Devices)
    1. Where further protection is needed, barricades shall be utilized. Excavated areas shall be protected with barricades.
    2. At night, warning lights shall be prominently displayed.
    3. Reflective-type traffic vest shall be worn.
E. When working at night, adequate lighting shall be provided to perform the work safely.

3.1-2 *Authorization and Qualifications*

A. Only workers qualified by training and experience shall perform work on energized lines and equipment. Employees shall use prescribed methods for the voltage involved and maintain the minimum working clearances stated in the section. A documented job briefing shall be conducted prior to the start of work so everyone at the job site is aware of the tasks to be completed and any hazards that may exist relating to their task.
B. Work on electrical circuits or apparatus shall not be done until proper authorization has been obtained for performing the work, it has been determined the work can be performed in a safe manner, and the job duties are clearly understood by each employee.
C. No employee shall begin work on any lines or equipment unless authorized or instructed to do so by the person in charge.
D. When instructions are given by telephone or radio, the speakers shall satisfy themselves as to the identity and authority of the other person. Instructions given and received shall be repeated until both parties are certain of the duties to be performed.

Section 3.2 Lines and Equipment Confirmed Isolated

Work to be done on lines and equipment confirmed isolated may proceed without the protection required for de-energized or energized lines and equipment.

A. Lines and equipment may be considered to be confirmed isolated only when all of the following conditions are met:
    1. The lines or equipment are physically located away from the immediate vicinity of any energized apparatus or lines.

2. All connections are removed so that it is impossible to energize the lines or equipment by the operation of any apparatus such as switches, disconnects, or readily available jumpers.
3. There is no possibility of the lines or equipment becoming energized by accidental contact, magnetic or capacitive induction, back feed, or any other source.

Note: Lines or equipment under the control of a system dispatcher shall never be considered as confirmed isolated.

Section 3.3 De-energized Lines and Equipment

Work to be done on de-energized lines and equipment shall not proceed until the lines and equipment are isolated from all sources of electrical energy, checked for voltage, and properly grounded.

A. No work shall be done on lines or equipment where a dispatcher's or operator's clearance is required until clearance to proceed has been obtained in accordance with existing operating procedures.
B. When lines or equipment are taken out of service, they shall first be de-energized by an appropriate switching device, such as a disconnect interrupter, circuit breaker, fuse, recloser, or hot line clamp.
C. The following steps shall be taken before work is begun on lines or equipment normally energized in excess of 600 volts:
    1. All switches and disconnects which directly connect it to a possible source of energy shall be opened and rendered inoperable where design permits.
    2. Lines and equipment that are not a part of an insulated cable system shall be isolated from all energy sources of feed by a visible disconnecting means.
    3. Lines and equipment that are part of an insulated cable system shall be worked in accordance with the standards contained in Part IV of this manual.
D. A hold card shall be attached to all disconnecting means used to provide isolation under any of the following conditions:
    1. When the disconnecting means is not within sight of the work area.
    2. When the disconnecting means is not under the control of the employee in charge of the work.
    3. When two or more crews are working under different supervisors on the same lines or equipment.
    4. When required by existing operating procedures.

    Hold cards or tags shall be placed on all disconnecting means, i.e., the switch handle of manually operated switches, on the disconnecting means itself, or at a conspicuous location near the point of operation of the disconnecting means.
E. Lines or equipment energized at 600 volts or more, removed from service to be worked on shall be checked for voltage and be properly grounded if they may become energized from any source, including back feed, or the work shall be performed as though the lines or equipment are energized.
    1. An equipotential zone shall be created by using temporary protective grounds located and arranged in such a manner as to prevent each employee from being exposed to hazardous differences in electrical potential.
    2. 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 a current carrying capacity not less than that of No. 2 AWG copper.
    3. Protective grounds shall have an impedance low enough to cause immediate operation of protective devices in case the lines or equipment where work is being performed becomes accidentally energized.
    4. Before any ground is installed, lines and equipment shall be tested and found absent of nominal voltage, unless a previously installed ground is present.
    5. When a ground is to be attached to a line or to equipment, the ground end connection shall be attached first and then the other end shall be attached by means of a live line tool.
    6. When a ground is to be removed, the grounding device shall be removed from the line or equipment using a live line tool before the ground end connection is removed.
    7. When installing or removing grounds, at a minimum, Class 2 rubber gloves shall be worn along with flame resistant/retardant clothing.

8. Protective grounds may be removed for equipment testing purposes, but work on the lines or equipment not associated with the test shall be stopped until the grounds are put back in place.
9. All grounds and grounding equipment shall be visually inspected prior to each use.

If the employers can demonstrate that installation of a ground is impractical or that the conditions resulting from the installation of a ground would present greater hazards than working without grounds, the lines and/or equipment may be treated as de-energized provided all of the following conditions are met:
1. The lines and/or equipment being de-energized for work are in the sole control of one individual.
2. There is no possibility of contact with another energized source.
3. The hazard of induced voltage is not present.

For any employee to work transmission and distribution lines or equipment as deenergized, the employer shall ensure that the lines or equipment are deenergized under the provisions of OSHA 1910.269 paragraph (m) of this section and shall ensure proper grounding of the lines or equipment as specified in OSHA 1910.269 paragraphs (n)(3) through (n)(8) of this section. However, if the employer can demonstrate that installation of a ground is impracticable or that the conditions resulting from the installation of a ground would present greater hazards to employees than working without grounds, the lines and equipment may be treated as deenergized provided that the employer establishes that all of the following conditions apply.
(i) *The employer ensures that the lines and equipment are deenergized under the provisions of paragraph (m) of this section (OSHA 1910.269(n)(2)(i)*
(ii) *There is no possibility of contact with another energized source (OSHA 1910.269(n)(2)(ii)*
(iii) *The hazard of induced voltage is not present (OSHA 1910.269(n)(2)(iii)*
(Reference: OSHA 1910.269(n)(2))

Section 3.4 Energized Lines, Equipment, and Rubber Gloves/Sleeves

Only workers qualified by training and experience shall perform work on energized lines and equipment. Employees shall use prescribed methods for the voltage involved, use only tools that are approved for work on energized lines and equipment, wear the necessary personal protective equipment, and maintain the minimum working clearances stated in this section.

3.4-1 *Approach Distances from Energized Lines and Equipment*

A. Approach distances from energized lines and equipment for unqualified employees shall be as follows:
   1. When an unqualified employee is working in an elevated position near overhead lines, the location shall be such that the employee and the longest conductive object they may contact shall not come closer to any unguarded, energized overhead line than the distances specified in Table I.
   2. When an unqualified employee is working on the ground in the vicinity of overhead lines, the employee shall not bring any conductive object closer to any unguarded, energized overhead line than the distances specified in Table I.

TABLE I
Approach Distances
Unqualified Employee

Nominal Voltage (Phase to Ground)	Minimum Approach Distance
50 kV or Below	10 feet
Over 50 kV	10 feet plus 4 inches for every 10 kV over 50 kV

(Reference: OSHA 1910.333(c)(3)(i)[A][1][2])

A. When a qualified employee is working in the vicinity of overhead lines, whether in an elevated position or on the ground, the employee shall not approach or take any conductive object without an approved insulating handle closer to exposed energized parts than shown in Table II unless any of the following conditions are met:
   1. The employee is insulated from the energized part.
   2. The energized part is insulated both from all other conductive objects at a different potential and from the employee.
   3. The employee is insulated from all conductive objects at a potential from that of the energized part.
   4. Rubber gloves shall be worn ground-to-ground and cradle-to-cradle.

   (Reference: OSHA 1910.333(c)(3)(iii)).

TABLE II
TABLE R-6
Alternative Minimum Approach Distances
for Voltages of 72.5 kV and Less[1] (in meters or feet and inches)

Nominal voltage (kV) phase-to-phase	Distance			
	Phase-to-ground exposure		Phase-to-phase exposure	
	m	ft	m	ft
0.50 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.

(Reference: OSHA 1910.269 Table R-6)

TABLE R-5
Altitude Correction Factor

Altitude above sea level (m)	A
0 to 900	1.00
901 to 1,200	1.02
1,201 to 1,500	1.05
1,501 to 1,800	1.08
1,801 to 2,100	1.11
2,101 to 2,400	1.14
2,401 to 2,700	1.17
2,701 to 3,000	1.20
3,001 to 3,600	1.25
3,601 to 4,200	1.30
4,201 to 4,800	1.35
4,801 to 5,400	1.39
5,401 to 6,000	1.44

(Reference: OSHA 1910.269(l)(12)(ii))

Note: The minimum approach distances listed in Tables I and II may be increased by the person in charge to protect the employees from any contact with energized conductors caused by an inadvertent movement of the employee.

3.4-2 ***Work on Energized Lines and Equipment***

Rubber gloves shall be worn ground to ground or cradle to cradle. Exception: Rubber gloves may be removed when not within reaching or falling distance of energized conductors and equipment and with mutual agreement of all employees present at the job site. The following minimum standards shall apply when qualified employees are working on energized lines and equipment, whether using rubber gloving techniques or live line tools. Work on energized lines and equipment shall not be started during unfavorable weather, or unless the proper equipment is available and the use of it thoroughly understood. Before work is begun, the dispatcher or person having jurisdiction of said lines or equipment shall be notified.

A. Work on circuits with a phase-to-phase voltage from 50 volts to 1,000 volts.
    1. Caution shall be exercised to avoid any contact with conductors which will allow the body to complete an electrical circuit.
    2. No worker shall touch any exposed conductors unless they are insulated from other conductive surfaces, or use adequate protective equipment such as Class 0 or greater rubber gloves.
    3. Insulated safety headgear, safety eyewear, and flame resistant/retardant clothing shall be worn.
B. Work on circuits with a phase-to-phase voltage from 1,000 volts to 34,500 volts.
    1. At a minimum, proper class rubber gloves and sleeves shall be worn along with flame resistant/retardant clothing.
    2. Workers shall be isolated from all grounds (wooden poles shall be considered as grounds in this case) by the use of approved supplementary insulation such as an insulated aerial device, lineman's platform, or other insulating device. An insulating basket liner shall be used in an aerial device.
    3. Only one phase shall be exposed and worked on at any one time. Barriers or insulated guards adequate to withstand the voltage shall be used on energized parts not being worked on when the clearance in Table II cannot be maintained.

4. Secondary circuits, guys, ground wires, telephone lines, and grounded surfaces in the work area shall be covered with approved protective equipment. Poles, cross arms, and attached hardware shall be considered as grounded surfaces.
5. Approved line tools and techniques shall be used for opening and closing circuits and when doing live line work. The minimum recommended length of the hot stick is eight feet.
6. Insulated safety headgear, safety eyewear, and, when applicable, a safety harness with lanyard shall be worn.
7. When equipped, the circuit breakers or other circuit protective devices shall be set for non-reclosing operation. (Reference: OSHA 1910.269, Appendix B, Paragraph F)
8. Workers shall not make intentional physical contact with the protective devices installed on energized primary conductors with anything other than their rubber gloves or rubber sleeves.
9. Under no circumstances shall a worker depend upon another worker to hold a live conductor clear of them with a hand-held stick.
10. Employees shall not stand underneath lines that are being worked on unless actually assisting in the work.
11. A worker shall not change their position on the structure, or with a basket, without first making certain that their new position will keep them in the clear and informing fellow workers of their intent.
12. Only insulated blocks, hoists, or hand lines shall be used.
    a. When moving heavy conductors during live line operations, blocks shall be used on the live line tools so the conductor can be moved slowly and carefully.
    b. Blocks and lines under strain shall be snubbed to permanent structures or temporary anchors, not to movable objects such as vehicles or trailers.
13. The minimum crew for this type of work is two qualified persons. One person shall be available for the lower controls when an aerial device is used.

Note: If the standards in this section cannot be adhered to, the lines shall be de-energized and grounded.

C. Equipment being used near energized lines or equipment.
1. Mechanical equipment such as cranes, power shovels, earth augers, derricks, aerial lifts, etc., not actually engaged in the construction of electric line or facilities shall maintain the minimum approach distances from exposed energized parts specified in Table I.
2. Mechanical equipment engaged in the construction or maintenance of electrical lines or facilities shall not be operated closer to any energized lines or equipment than the distance listed in Table I unless either condition a. or b. is met along with the conditions of item c. being met. If condition a. or b. is met in conjunction with condition c., the approach distances listed in Table II shall apply.
    a. An insulated barrier is installed between the energized part and the mechanical equipment.
    b. The mechanical equipment is insulated.
    c. The mechanical equipment is barricaded or grounded and considered as being energized at line potential.

Note: Because the degree of protection provided by a driven ground rod or other grounding method is limited, this protective measure should not be depended upon for complete protection. Although the vehicle is grounded, it shall be considered energized and at no time shall any worker remove material or contact the vehicle while any portion of the vehicle is within the approach distances listed in Table I.
(Reference: OSHA 1910.333(c)(3)(iii))

D. A system neutral or a ground wire shall not be opened until the proposed opening has had a jumper placed across the opening or the opening has been bypassed.
Exception: The ground wire attached to a neutral wire may be temporarily opened, provided protective equipment is used when opening the connection.

E. Workers shall ascertain that tanks housing electrical equipment such as transformers and circuit breakers are grounded before working on such equipment.

3.4-3 *Switching Overhead Circuits*

To perform switching operations on overhead circuits, the following basic standards shall apply:

A. The switch shall be properly identified to be absolutely sure it is the right one, i.e., with a number or other identification.
B. The operation of any switching procedure shall be done only with the knowledge and consent of the operating authority.
C. All system switching procedures, including hold carding and tagging practices, shall be followed when sectionalizing overhead lines. Written switching orders are recommended.
D. Switches shall be left wide open or completely closed.
    1. The operator shall make a positive check to see that all blades and arcing horns of gang operated air brake switches are in the desired position.
E. Switches for interrupting load shall not be operated in a hesitating manner.
    1. Switches shall be closed using sufficient force to make full contact of blades with a quick, firm movement.
F. Single pole disconnect switches, cutouts, and hot line clamps shall be operated only with an approved switch stick or hot line tool. The minimum recommended length of the hot stick is eight feet.

Section 3.5 Substations

A. All lines and equipment shall be considered energized unless it is known positively that clearance has been given and all devices providing isolation are open and tagged with hold cards, as required in Section 3.3.
B. All conducting parts of such energized lines and equipment which are normally energized at 600 volts or above shall be grounded before work begins.
C. Protective grounds may be removed for equipment testing purposes. The work on the equipment, not associated with the tests, shall be stopped until the grounds are put back in place.
D. When protective grounds are installed on equipment and the path to ground passes through a switch, that switch shall be closed, locked, and tagged. This practice is permissible in substations only. Grounding through a fuse is prohibited.
E. Materials and supplies shall not be stacked near substation fences where such stacks could be used by unauthorized persons in climbing over the fence, nor should they be stored under overhead lines except when unavoidable.
F. When switching is being done in a substation, all unauthorized persons shall stay out of the enclosure.
G. Workers shall make sure warning/danger signs are in place and are not obscured. Signs required by the National Electric Safety Code (NESC) shall be displayed.
H. Before driving a vehicle into a substation enclosure, the radio antenna shall be lowered, when possible, and secured in place if the vehicle will be driven close to energized equipment.
I. Gates and substation fences shall be kept closed and locked except when workers are working in the yard near the opening. Doors to enclosures containing live equipment shall be kept closed except when work is being performed inside.
J. When carrying long material in areas where there is a possibility of touching energized equipment, the materials shall be held by at least two workers, one at each end, and carried in the hands, not on the shoulders.
K. When working on one section of a substation or compartment adjacent to other sections or compartments where there are energized circuits or equipment, the section or compartment being worked on shall be conspicuously marked with ropes, tapes, or barriers to designate the working area.
L. Vehicles and mechanical equipment in energized substations shall comply with the provisions of Section 3.4-2 (C).

Section 3.6 Miscellaneous Electrical Equipment

3.6-1 ***Capacitors***

Before employees work on capacitors, the capacitor shall be disconnected from the energized source, be short circuited, and be grounded in accordance with the manufacturer's recommended safe operating procedures. Any line to which capacitors are connected shall be short circuited and properly grounded before it is considered to be de-energized. Only approved procedures shall be followed when installing or removing capacitors.

A. Capacitors shall be considered energized at full line potential until they have been disconnected from the line and their terminals short circuited and discharged to ground in an approved method.
    1. The terminals shall not be short circuited until the capacitor has been de-energized for at least five minutes.
    2. The internal resistor shall not be depended upon to discharge a capacitor.
    3. Employees shall not contact an ungrounded capacitor case until the capacitor has been disconnected from the circuit and the terminals short circuited. Where the tanks of capacitors are on ungrounded racks, the rack shall be grounded before it can be considered de-energized.
    4. Since capacitor units may be connected in series-parallel circuits, each unit shall be shorted between all terminals and the capacitor tank before handling.
B. When capacitors are in storage, all bushings on the unit shall be shorted together.

3.6-2 ***Current Transformers***

The secondary of a current transformer shall not be opened while the transformer is energized. If the primary of the current transformer cannot be properly de-energized to work on the unit, a relay, or other section of a current transformer secondary circuit, the employee shall bridge the secondary circuit with jumpers or equivalent devices so the current transformer secondary will not be opened.

3.6-3 ***Potential Transformers***

The secondary of a potential transformer shall be disconnected or the potential transformer shall be de-energized before working on any circuit to which it may be connected.

3.6-4 ***Series Street Lighting***

Series street lighting circuits shall be considered and worked the same as an energized primary circuit. The series loop may be opened after the street lighting transformer has been de-energized and isolated from the source of supply or if a jumper is properly placed on the loop to avoid an open circuit condition.

3.6-5 ***Voltage Checking Equipment***

Only approved equipment such as potential transformers, voltage detectors, volt meters, or test lamps shall be used in phasing out circuits and transformers and in testing for potential.

3.6-6 ***Voltage Regulators***

When taking a voltage regulator off line, it shall be placed in the neutral position, a test shall be made to ensure it is in the neutral position, and the control circuit shall be opened before the unit is bypassed.

Section 3.7 Poles Used For Overhead Lines

The standards in this section detail the necessary equipment and precautions that shall be taken when handling, setting, removing, and/or working on poles, towers, and/or structures.

3.7-1 ***Handling Poles***

A. Loads of poles shall be unloaded according to procedures approved by the system and industry.
B. Before starting to unload a load of poles, the load shall be thoroughly examined to determine possible unloading hazards. In addition, the brakes on the vehicles holding the poles should be set and the wheels chocked to prevent movement of the vehicle.

C. When loading or unloading poles, workers should work at the ends of the poles whenever possible. Tag lines should be used when necessary to control movement of the poles.
D. Poles placed on piles or racks shall be securely blocked to prevent rolling or shifting.
E. Poles loaded on trailers shall be securely bound together and to the trailer before towing.
    1. Unless a long trailer is used, a secure coupling device shall be attached to one of the poles to couple the load to the vehicle being used to pull the load.
    2. Auxiliary safety chains shall be used at all times between the vehicle towing the load and the trailer being towed.
F. Poles or other long loads being transported on or along roadways shall be plainly marked at the rear with red flags by day and lights by night.
    1. State and local regulations covering the movement of this type of load on roadways shall also be observed.
    2. Precautions shall be exercised to prevent blocking traffic on roadways or endangering other traffic.
    3. Employees shall not ride on pole dollies or trailers.
G. Poles stored near the job site shall be placed so they do not interfere with pedestrian or vehicular traffic.

3.7-2 *Setting or Removing Poles or Structures*

A. All persons not directly engaged in pole setting or removing operations shall be kept out of the work area.
B. For raising or lowering poles, a truck with a winch line shall be used whenever possible.
C. When pulling a pole, a pole jack should be used initially to prevent over stressing the derrick unit. If a pole jack is not available, a hole should be dug to one side of the hole and the soil loosened around the pole before trying to pull it out of the ground.
D. The operator hoisting the load shall accept signals from only the employees specified for that purpose. However, said operator shall obey a "stop" signal given by anyone in the work area.
E. Employees shall not stand or pass under a suspended load or adjacent to, over, or under a loaded winch line.
F. When necessary to insure the stability of mobile derricks, the work site shall be graded and leveled to assure a firm foundation. When derricks are so equipped, outriggers shall also be used to insure stability.
G. Pole holes and footing excavations shall not be left unattended or unguarded in areas where they present a hazard to employees or to the general public. All excavation work, including auger excavations, into which employees are to enter shall be properly sloped and/or shored.
H. While setting or removing poles between or near conductors energized above 600 volts, all of the following standards shall be met:
    1. If minimum approach distances cannot be maintained, the conductors shall be de-energized and covered with protective devices in case of accidental contact.
    2. Workers handling the butt of the pole shall wear rubber gloves whether or not cant hooks, peaveys, or slings are used.
    3. Poles shall be considered as conductive.

    If the above standards cannot be met, the work shall proceed using techniques for work on energized lines and equipment.

3.7-3 *Working From Poles, Towers, or Structures*

Only workers qualified by training and experience shall perform work from poles, towers, or structures. Before climbing poles, ladders, scaffolds, towers, or other elevated structures, they shall be inspected to be sure they are safe to climb. Where there is doubt, they shall not be climbed until being made safe by guying, bracing, or other adequate means. The following standards detail the necessary climbing equipment to be used, the hazards that may be encountered, and procedures for dealing with those hazards.

A. Approved body belts with approved personal fall arrest shall be worn by employees when working at elevated locations on poles, towers, or structures, except where such use creates a greater hazard. In such cases, other safeguards shall be used. (Reference: OSHA 1926.502(d)) (Reference: ASTM F887-12)
   1. Body belts with personal fall arrest equipment shall be inspected prior to each use to insure they are in safe condition to use.
   2. Wire hooks shall not be attached to body belts or positioning straps.
   3. When a positioning strap is in use, both snap hooks shall not be attached to the same "D" ring.
   4. Positioning straps shall not be placed above the top cross arm when it is near the top of the pole.

B. When climbing wood poles, employees shall use approved climbers with holding straps properly affixed to the legs.
   1. Climbers shall be inspected prior to each use to insure they are in safe condition to use.
   2. Gaffs shall be kept sharp, in good condition, and not be cut down to less than 1¼ inches inside measurement.

   Note: Gaffs shall be sharpened to conform to the appropriate gaff gauge.

   3. Climbers should not be worn while driving a vehicle, doing work on the ground, climbing a ladder, or working in an aerial device.

   Note: When a worker removes their body belt, their climbers should also be removed.

   4. When climbing poles, care shall be exercised to set the gaffs securely in the pole and avoid weather cracks, knots, holes, nails, signs, grounds, or other pole attachments.

C. Except for those tools carried in the body belt, all light equipment and tools to be used aloft shall be raised and lowered by means of a hand line and canvas bucket or other suitable container. Care shall be taken by those working aloft to prevent dropping tools, or materials. Workers on the ground shall stand a minimum of 10 feet away from the pole being worked on to prevent being struck by falling objects.
   1. Hand lines shall not be less than ½ inch in diameter, three or four strand manila rope or its equivalent in its strength and durability.

   Exception: When climbing to heights above 100 feet, smaller lines may be used to hoist light materials, tools or heavier lines.

   2. Hand lines should be carried up the pole uncoiled with the end attached to the body belt. They shall not be held in the hand while climbing.
   3. Tools and materials shall not be thrown from the ground to workers aloft nor shall workers aloft throw tools or material to workers on the ground.

D. Tag lines shall be used to control loads being hoisted where it is necessary to prevent workers from hazards or damage material and/or equipment. Tag lines used near energized lines and equipment shall be nonconductive.

E. When working on or near energized conductors on wood poles, employees shall not stand on or touch grounded circuits such as telephone wires, messenger wires, cable sheaths, ground wires, guy wires, or grounded equipment cases.
   1. Metallic hoisting lines shall not be taken above the level of conductors energized above 50 volts unless appropriate precautions are taken.
   2. Metallic slings (chain or cable) shall not be used near energized lines or equipment.
   3. Employees working from poles or other structures shall not pass tools, equipment, or material to a worker in an aerial device while the worker in the aerial device is within reaching distance or the approach distance of an unprotected energized conductor or equipment.
   4. Pneumatic and hydraulic tools used in close proximity to energized lines and equipment shall have non-conducting hoses and shall be supplied only with de-moisturized air or insulating fluid.

F. While an old pole is being replaced by a new pole, workers shall work from the new pole whenever possible. Before stripping the old pole or transferring the conductors, the old pole shall be lashed to the new pole, be supported by a derrick, or be guyed.
   1. Before removing or adding wire, cables, or guys to poles, towers, or other structures, additional guying or bracing shall be used when necessary to take the additional strain.
   2. Workers shall not be on poles that are being plumbed, canted, or tamped.

a. While guying a pole, pikes may be used if they are attended. Unattended pikes alone shall not be relied upon to support a pole while a worker is on the pole.

3. Cross arm braces or other pole attachments should not be relied upon to support a worker's weight.

G. Only proper tools shall be used when working aloft.
   1. All power tools used when working aloft shall be equipped with approved switches or other control devices.
   2. All hammers shall have a nonconductive handle.
   3. Hand axes shall not be used aloft.

H. When grips or hoists are attached to equipment for pulling, the hooks should be adequately secured to prevent them from becoming accidentally dislodged, unless safety hooks are used and properly latched.

I. When workers are engaged in work over or near water, where a danger of drowning exists, suitable protection shall be provided.

J. Descending a pole by sliding down a guy wire or rope is forbidden.

Section 3.8 Stringing Or Removing Conductors

Before beginning operations involving stringing or removing conductors, a job briefing shall be conducted for all employees involved in the operation setting forth the details of the job plan, the personal protective equipment required, and the hazards involved in completing the work.

A. If the work will be confirmed isolated from any energized lines or equipment, the work can be accomplished without the use of the protective equipment required for de-energized or energized lines and equipment. It is recommended that wire stringing equipment and conductors always be grounded.

B. If the work involves pulling in or removing conductors parallel to or crossing circuits or equipment energized at more than 600 volts (where there is a possibility of accidental contact or hazardous induced voltages), such energized circuits or equipment shall be de-energized and grounded, if practical. If it is not practical to de-energize and ground these adjacent facilities, all of the following standards shall be met or the conductors being strung or removed shall be considered energized and worked appropriately:
   1. When practical, the automatic reclosing feature of the circuit interrupting device shall be made inoperative.
   2. The energized conductors shall be moved safely away from the conductors being strung or removed or suitable guard structures or barriers shall be erected to preclude the possibility of contact and the conductor being strung or removed shall be kept under positive control. Guard structures and/or barriers shall be left in place until work on the conductors at the area being protected has been finished and the conductors have been properly secured
   3. The conductors being strung or removed shall be grounded by means of a suitable moving grounding device every mile and at both sides of an energized crossing.
   4. The conductors being strung or removed shall be handled with rubber gloves and insulating lead lines.
   5. Employees tending payout reels shall wear rubber gloves.
   6. All pulling, tensioning, and payout equipment shall be isolated, insulated, or effectively grounded.
   7. Reliable communication between the reel tender and the pulling equipment operator shall be maintained.
   8. While the conductor or pulling line is in motion, employees shall not be permitted directly under overhead operations nor on the poles or cross arms.
      Exception: For those situations when an employee is required to manually ride the stringing sock over or through the stringing sheave, employees shall be allowed to perform this operation while the conductor or pulling line is in motion, provided they are using the necessary personal protective equipment.

C. When conductors are being strung or removed near an energized circuit, extreme care shall be used to keep them from becoming tangled in trees or bushes or caught on cross arms or other objects. If the conductors become snared, the pulling operation shall be stopped and the tension on the conductors relieved before any attempt to clear the conductors is made.
D. Conductors being strung or removed shall be kept clear of sidewalks, streets, highways, and railroad tracks at all times, if possible. Where it is not possible, adequate personnel shall be used to stop or reroute pedestrians and/or vehicles.
E. While stringing or removing conductors, an employee working aloft shall not attach conductors to their belt or hold them in their hands while climbing a pole or structure. A hand line shall be used to raise or lower the conductors after the employee reaches the working position on the pole or structure.

Part IV
Insulated Cables and Underground Systems

Part IV
Insulated Cables and Underground Systems

Section 4.1 General

4.1-1 *Application*

A. The purpose of this section is the practical safe guarding of persons from hazards arising from the installation, operation, and maintenance of underground lines and equipment.
B. Reduced clearances between conductors and confined work space are characteristics of underground work. The worker is likely to be at ground potential at all times from contact with the earth or grounded equipment. Therefore, special precautions are necessary to avoid electrical shock.
C. The following safety standards have been formulated to supplement existing safety standards and practices. Except in cases where there is a direct conflict with underground practices, all existing safety standards shall apply to this type of work.
D. Although there are differences in equipment and work methods for underground versus overhead, the basic principles of job safety are the same. Careful planning and adherence to recommended procedures should make every job a safe one.
E. Before work is begun in the vicinity of vehicular or pedestrian traffic which may endanger employees and/or the general public, reflective-type traffic vests shall be worn by employees, warning signs, traffic cones, flags, or other traffic control devices shall be placed conspicuously to alert and channel approaching traffic. (Reference: MUTCD Manual on Uniform Traffic Control Devices)
    1. Where further protection is needed, barricades shall be utilized. Excavated areas shall be protected with barricades.
    2. At night, warning lights shall be prominently displayed.
F. When working at night, adequate lighting shall be provided as needed to perform the work safely.

Section 4.2 Underground Lines and Equipment

4.2-1 *Underground Cable Installation*

When installing underground cable, the following basic standards shall be followed.

A. All engineering plans and specifications shall be closely followed.
B. Barriers, barricades, guard rails, and other warning devices shall be placed near trenches and construction operations to adequately protect employees and the general public.
C. Before energizing an underground cable, the cable is to be continuity tested to assure that cable identification and marking is correct.
D. All system and transformer grounds shall meet the requirements of the National Electrical Safety Code.
E. When joint agreements with other utilities are executed and recorded, they shall be carried out according to statutes and codes.
F. No plowing, trenching, or boring shall be started until complete checks have been made as to the location of other underground facilities, i.e., Diggers Hot Line.
G. Any disturbance or damage to existing facilities shall be reported to the proper authorities, with special emphasis and emergency precautions being taken when natural gas lines are involved.

4.2-2 *Switching Underground Circuits*

Before work is started on any underground cable, it shall be properly identified and the following basic standards shall be followed when completing switching.

A. All system switching procedures, including hold carding and tagging practices, shall be followed when sectionalizing underground systems.
B. The operation of any switching procedure shall be done only with the knowledge and consent of the controlling authority.

C. Only authorized personnel shall switch underground circuits.
D. An employee shall use a hot stick approved for underground use in performing all operational functions within underground equipment, transformer vaults, junction modules, or pad-mounted equipment. The minimum recommended length of the hot stick is eight feet.
E. Any underground primary circuit shall be de-energized by opening one or more devices. De-energizing lines or equipment shall be done with load break connectors, load break fuse cutouts at the riser pole, a load break tool, or other approved device.
F. Extreme caution shall be taken when switching multiphase lines due to ferroresonance over-voltage possibilities.

4.2-3 *Grounding*

All underground cables and equipment, including secondary services, shall be considered energized until the cable equipment has been positively proven to be de-energized and grounded. The following basic standards shall apply when grounding underground cables and equipment.

Note: A capacitance charge can remain in underground cable after it has been disconnected from the circuit, and a static-type arc may occur when ground sets are applied to such cables.

A. Before doing work on any de-energized underground cable, a visible open break shall be provided, a voltage test for lack of voltage shall be made, and grounds shall be installed on all sides of the work area as close to the work area as practical.
    1. An equipotential zone shall be created by using temporary protective grounds located and arranged in such a manner as to prevent each employee from being exposed to hazardous differences in electrical potential.
    2. 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 a current carrying capacity not less than that of No. 2 AWG copper.
    3. Protective grounds shall have an impedance low enough to cause immediate operation of protective devices in case the lines or equipment where work is being performed becomes accidentally energized.
    4. Before any ground is installed, lines and equipment shall be tested and found absent of nominal voltage, unless a previously installed ground is present.
    5. When a ground is to be attached to a line or to equipment, the ground end connection shall be attached first and then the other end shall be attached by means of a live line tool.
    6. When a ground is to be removed, the grounding device shall be removed from the line or equipment using a live line tool before the ground end connection is removed.
    7. Protective grounds may be removed for equipment testing purposes, but work on the lines or equipment not associated with the test shall be stopped until the grounds are put back in place.
    Exception: If the employer can demonstrate that installation of a ground is impractical or that the conditions resulting from the installation of a ground would present greater hazards than working without grounds, the lines and/or equipment may be treated as de-energized provided all of the following conditions are met.
    1. The lines and/or equipment being de-energized for work are in the sole control of one individual.
    2. There is no possibility of contact with another energized source.
    3. The hazard of induced voltage is not present.

    (Reference: OSHA 1910.269(n))
B. Before cutting into a cable or opening a splice, the cable shall be positively identified and verified to be the proper cable. Spiking procedures shall be used to verify that a cable is de-energized.
C. When work is to be done on equipment or cables of underground systems, precautions to prevent back feed shall be taken. This shall include grounding of the secondary conductors where applicable.

4.2-4 *Rubber Glove and Rubber Sleeve Use*

Workers shall wear rubber gloves with leather protectors and rubber sleeves while working on energized primary cables. Workers shall also stand on suitably rated rubber mats while working on energized conductors and equipment.

A. Rubber gloves shall be worn before any underground compartment or enclosure is opened and until it is closed. Rubber gloves shall be worn when required for protection from contact with grounded equipment such as submersible transformer cases and pad-mount enclosures. (Reference: OSHA 1910.269(4))
B. Rubber gloves and rubber sleeves shall be worn when removing animals, vines, weeds, grass, or vegetation of any kind that has grown into an energized underground installation.
C. Underground primary or secondary cables or related equipment shall be treated as energized until such time it is properly grounded.
D. Rubber gloves shall be worn when work is performed on energized secondary circuits and services where only secondary voltage is present.
E. It is recommended that the worker stand on an insulated mat when working from the ground.

4.2-5 ***Work on Energized Equipment***

When work is performed on cables or apparatus carrying more than 50 volts, employees shall take the necessary precautions in the use of rubber protective equipment, observing adequate clearances, and in the use of proper tools in order to prevent short circuits.

A. When energized pad-mounted transformers or enclosures are unlocked and opened, they shall be directly attended by a worker. They shall be kept closed and locked at all other times.
B. A primary or secondary system neutral on any energized circuit shall not be opened under any circumstances. When working on the metallic sheath or concentric neutral of any buried cable, the continuity shall be maintained by bonding across the opening or by another equivalent means.
C. Only those elbow connectors designed and approved for load break use shall be used to connect or disconnect an energized circuit.
D. Only one energized secondary or service conductor shall be worked on at any one time, and protective devices shall be used to insulate or isolate it from all other conductors or equipment.
E. Before any attempt is made to replace a damaged or blown transformer fuse, an attempt should be made to determine the cause of the fault.
F. Insulated safety headgear, safety eyewear, along with flame resistant/retardant clothing shall be worn when any work is performed requiring the use of rubber gloves.

4.2-6 ***Temporary Jumpers and Installations***

Special care shall be taken in the use of temporary jumpers and installations. When temporary jumpers and installations are in use, all necessary precautions shall be taken to protect workers and the general public.

4.2-7 ***Excavation and Trenching***

Before excavating in an area where any buried facilities are suspected, such facilities shall be located as accurately as possible by contacting Diggers Hotline about the proposed work. The following basic standards shall apply when excavating and/or trenching for underground cables and equipment.

A. Excavation to a distance of 12 inches from the expected location of the cable may be done with mechanical equipment, but the last 12 inches shall be dug with hand tools having non-conducting handles.
B. If buried facilities are damaged, the following steps shall be taken to remedy any problems.
    1. The owner of the buried facility shall be notified at once.
    2. The area shall be barricaded until hazardous conditions are eliminated.
    3. If lines are contacted and punctured, local fire and police authorities should also be notified.

Residents in close proximity to the area should be notified if necessary.

Note: Damage is often not apparent without close examination. Extreme care should be taken to avoid direct contact with any buried facility.

C. Open trenches shall be closed or properly barricaded at the end of each work day.
D. Trenches shall be kept clear and free of objects that might damage cables and equipment.
E. All excavation work into which employees are to enter shall be properly sloped or shored.
F. An appropriate means of egress shall be used in accordance to Construction Standard 1926.651(c)(2)

4.2-8 ***Exposed Energized Bushing Wells***

All exposed energized bushing wells should not be left unprotected. Only approved, insulated caps shall be used.

Part V
Line Clearing and Right-of-Way Maintenance

Part V
Line Clearing and Right-of-Way Maintenance

Section 5.1 Clearing Trees

The following standards shall apply to employees and equipment engaged in pruning, trimming, removing, and/or clearing trees near electric lines and equipment. All employees shall be qualified under 1910.269(a)(2)(ii) as it relates to tree trimming and be properly trained.

5.1-1 *General*

A. Employees shall consider all overhead and underground electrical power conductors to be energized unless they are de-energized and properly grounded. Direct or indirect contact shall never be made with energized conductors unless suitable protective equipment is used.
B. Employees engaged in line clearing operations shall be informed of the following facts:
    1. A direct contact is made when any part of the body touches or contacts an energized conductor or other energized electrical fixture or apparatus.
    2. An indirect contact is made when any part of the body touches any conductive object in contact with an energized conductor or other energized electrical fixture or apparatus.
    3. An indirect contact can be made through conductive tools, tree branches, trucks, equipment, or other objects or as a result of communication wires or cables, fences, or guy wires being accidentally energized.
    4. Electric shock may occur when an employee, by either direct or indirect contact with an energized conductor, energized tree limb, tool, equipment, or other object, provides a path for the flow of electricity to another conductor, a grounded object, or directly to the ground.
C. Before work is begun in the vicinity of vehicular or pedestrian traffic which may endanger employees and/or the general public, reflective-type traffic vests shall be worn by employees, warning signs, traffic cones, flags, or other traffic control devices shall be placed conspicuously to alert and channel approaching traffic. (Reference: MUTCD, Manual on Uniform Traffic Control Devices)
    1. Where further protection is needed, barricades shall be utilized. Excavated areas shall be protected with barricades.
    2. At night, warning lights shall be prominently displayed.
D. When working at night, adequate lighting shall be provided as needed to perform the work safely.
E. Visitors at the work site shall be kept out of the work area.

5.1-2 *Working Near Electrical Hazards*

When clearing trees near overhead energized conductors, an inspection shall be made to determine whether or not an electrical hazard exists (i.e., an energized electrical conductor passes through the tree, the tree cannot be felled without contacting an energized electrical conductor, etc.). If the hazard cannot be eliminated with the installation of protective equipment, the conductor shall be de-energized and properly grounded so the work can be completed safely. The following basic standards shall apply when working near electrical hazards:

A. Only qualified employees familiar with the special techniques and hazards involved in clearing trees from electrical lines shall be permitted to perform the work if it is determined that an electrical hazard exists.
B. During all tree working operations aloft where an electrical hazard of more than 50 volts exists, the minimum crew for this type of work is two persons. One person shall be available for the lower controls when an aerial device is used.
C. Where tree work is performed by employees qualified in clearing trees from electrical lines, the approach distances in Table II, Section 3.4-1 shall apply. (Reference Table R-5 and Table R-6)
D. Branches hanging on an energized conductor may only be removed using appropriately insulated live line tools or equipment.

E. Rubber footwear, including worker's overshoes, shall not be considered as providing any measure of safety from electrical hazards.
F. Ladders, platforms, and aerial devices, including insulated aerial devices, shall not be brought in contact with an energized electrical conductor.
    1. All ladders, platforms, and aerial devices used to clear trees near energized conductors shall be made of nonconductive material.
    2. All aerial devices shall be grounded and considered as energized when working in close proximity to energized lines.
G. Visitors at the work site shall be kept out of the work area.

5.1-3 ***Use of Power Saws***

Employees using chain saws shall wear appropriate personal protective equipment such as head protection, hearing protection, eye and face protection, hand protection, and protective leg chaps. All personal protective equipment shall meet applicable OSHA and ANSI standards, and shall be inspected prior to use to ensure it is in safe condition to use.

The manufacturer's operating and safety instructions shall be followed for use of this type of equipment unless modified by the following standards:

A. Each chain saw shall be equipped with a chain brake or a protective device that minimizes chain saw kickback. None of these safety mechanisms shall be removed or otherwise disabled.
B. 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.
C. The chain saw engine shall be started and the chain saw operated only when all other employees are clear of the chain saw. No one except the operator shall be within 10 feet of the cutting head of a brush saw.
D. The chain saw shall be shut down for all cleaning, refueling, adjustments, and repairs except where the manufacturer's procedures require otherwise.
E. The chain saw shall be fueled at least 10 feet away from any open flame or other source of ignition.
F. The chain saw shall be started at least 10 feet away from the fueling area.
G. The chain saw shall be started on the ground or where otherwise firmly supported. Drop starting a chain saw is prohibited.
H. The chain saw shall be started with the chain brake engaged.
I. The chain saw shall be held with the thumbs and fingers of both hands encircling the handles during operation unless the employer demonstrates that a greater hazard is posed by keeping both hands on the chain saw in that particular situation.
J. The chain saw operator shall be certain of footing before starting to cut. The chain saw shall not be used in a position or at a distance that could cause the operator to become off balance, to have insecure footing, or to relinquish a firm grip on the saw.
K. Prior to felling any tree, the chain saw operator shall clear away brush or other potential obstacles which might interfere with cutting the tree or using a retreat path.
    1. The chain saw shall be shut off or the throttle released before the feller starts their retreat.
L. The chain saw shall be shut down or the chain brake shall be engaged whenever a saw is carried more than 50 feet. The chain saw shall be shut down or the chain brake shall be engaged when a saw is carried less than 50 feet if conditions such as, but not limited to, the terrain, underbrush, and/or slippery surfaces may create a hazard for the employee.
M. The chain saw shall be carried in such a manner that will prevent the operator from contact with the cutting chain and/or muffler.
N. The chain saw shall not be used to cut directly overhead.
O. Visitors at the work site shall be kept out of the work area.

5.1-4 ***Use of Brush Chippers***

Employees using brush chippers shall wear appropriate protective equipment such as head protection, hearing protection, eye and face protection, and hand protection. All protective equipment shall meet all applicable OSHA and ANSI standards and shall be inspected prior to use to ensure it is in safe condition to use.

A. All brush chippers shall be equipped with a locking device on the ignition system. The ignition key shall be removed from this locking device when the chipper is unattended.
B. Access panels for maintenance and adjustment shall be closed and secured prior to operation.
C. All brush chippers shall be equipped with a feeding hopper of sufficient length so as to prevent employees from contacting the blades or knives of the machine during normal operation. At no time shall any part of the workers body enter into, or onto, the input chute surface.
D. All brush chippers shall be equipped with an emergency stopping device at the entrance of the feeding hopper so that the chipper can be immediately shut down in case of an emergency.
E. Trailer brush chippers detached from towing vehicles shall be chocked or otherwise secured.
F. Visitors at the work site shall be kept out of the work area.

5.1-5 ***Use of Stump Cutters***

A. The operator and others involved in the operation of a stump cutter shall wear proper eye and hearing protection.
B. Stump cutters shall be equipped with appropriate enclosures or guards to protect the operator.
C. Visitors at the work site shall be kept out of the work area.

Section 5.2 Application of Chemicals

Only qualified employees familiar with the techniques and hazards involved with the applications of chemicals shall be permitted to make chemical applications. All necessary personal protective equipment required by the type of application being made shall be worn by the employees. This personal protective equipment shall meet all OSHA and ANSI standards, and shall be inspected prior to use to ensure it is in safe condition to use.

5.2-1 ***Use of Herbicides and Other Chemicals***

A. Before using any herbicide or other chemical, employees shall read the label about use, application, and personal protection for the chemical to be used.
B. Employees shall avoid breathing spray mist or skin contact with spray material whenever possible.
C. Spraying chemicals shall not be done when wind may carry the spray beyond the intended target.
D. Herbicides and other chemicals shall never be left where they would create a hazard to persons or property.
E. Empty chemical containers and spray waste shall be disposed of in a safe manner consistent with product labeling.

5.2-2 ***Use of Sprayers and Related Equipment***

A. Working or walking surfaces of all sprayers and related equipment shall be covered with skid-resistant material.
B. Equipment on which workers stand to apply spray while the vehicle is in motion shall be equipped with guardrails around the working area. (Reference: OSHA 1910.23(e))
C. Oil and other liquids spilled on power spray equipment shall be removed as soon as possible to prevent falls on slippery surfaces.
D. Hoses and hose connections on hydraulic sprayers shall be inspected prior to use to ensure safe operation of the equipment.
E. All spraying equipment shall be properly labeled in accordance with the most current Global Harmonizing System standard.

Section 5.3 Hazardous Plants

5.3-1 ***Poison Ivy, Oak, or Sumac***

A. When it is necessary to work in the vicinity of poison ivy, oak, or sumac, employees should protect themselves by keeping their sleeves rolled down and by wearing gloves.

B. Employees should stay clear of smoke when burning poison ivy, oak, or sumac. They should also avoid contact with objects that have brushed or cut such growth.

Part VI
Rubber Protective Equipment

Part VI
Rubber Protective Equipment

Section 6.1 Rubber Glove Care, Storage, and Testing

A. Rubber gloves shall be inspected prior to each use for corona cracks or other damage and be given an air test at least once each day of use. Gloves appearing to be damaged shall not be used to do work on energized lines and/or equipment.
B. Rubber gloves shall receive an electrostatic test according to the schedule adopted by individual systems, but shall receive said test at least every 60 to 90 days.
    1. It is recommended that rubber gloves bear an electrostatic test date not over 90 days old and that they are not in field use for more than 30 days when involved in direct contact rubber gloving.
    2. It is recommended that the maximum carrying time for rubber gloves not used in live line work not exceed 60 days.
C. Rubber gloves shall always be stored in approved bags, cuff first, or stored properly in other approved containers and be stored where they will not be exposed to damage by sharp objects, oil, or grease. They should never be folded or have objects placed upon them.
D. Rubber gloves shall not be stored or transported where they will be exposed to excessive heat, direct sunlight, or near operating electrical equipment that might produce ozone.
E. Only powders and lotions approved for use with rubber goods shall be used with rubber gloves.
F. Inhibitor compounds commonly used on electrical connections can be very destructive to rubber. Any rubber gloves so contaminated should be properly cleaned with soap and water and marked that they have been so contaminated when sent to receive the next electrostatic test.

Section 6.2 Rubber Sleeve Care, Storage, and Testing

A. Rubber sleeves shall be inspected prior to each use for corona cracks or other damage. Sleeves appearing to be damaged shall not be used to do work on energized lines and/or equipment.
B. Rubber sleeves shall receive an electrostatic test according to the schedule adopted by individual systems but shall receive said test at least every six (6) months. It is recommended that rubber sleeves bear an electrostatic test date not over 180 days old.
C. Rubber sleeves shall always be stored flat in canvas bags or stored properly in other approved containers and be stored where they will not be exposed to damage by sharp objects, oil, or grease. They should never be folded or have objects placed upon them.
D. Rubber sleeves shall not be stored or transported where they will be exposed to excessive heat, direct sunlight, or near operating electrical equipment that might produce ozone.
E. Only powders and lotions approved for use with rubber goods shall be used with rubber sleeves.
F. Inhibitor compounds commonly used on electrical connections can be very destructive to rubber. Any rubber sleeves so contaminated should be properly cleaned with soap and water and marked that they have been so contaminated when sent to receive the next electrostatic test.

Section 6.3 Rubber Goods Care, Storage, and Testing

A. Rubber goods, such as insulated line hose, insulated covers or hoods, rubber blankets, etc., shall be inspected prior to each use for damage that would negate its insulating characteristics. Rubber goods appearing to be damaged shall not be used to do work on energized lines and/or equipment.
B. Rubber goods should receive an electrostatic test every six (6) months but not less than once each year.
C. Rubber goods should be stored according to the manufacturer's recommendations and shall be kept free of dirt and other contaminants. They should never be folded or have objects placed upon them.
D. Only powders and lotions approved for use with rubber goods shall be used.

Nebraska Rural Electric Association
Safety Standards Manual Update Procedure

I. Objective:

A. To establish a method whereby the Nebraska Rural Electric Association (NREA) Safety Standards Manual can be uniformly updated when changes in federal (O.S.H.A.), state, or local standards occur or as required to fulfill the needs of its member-systems.

II. Procedure:

A. To facilitate necessary dialogue and recommendations for proposed revisions to the NREA Safety Standards Manual (Manual), the NREA Job Training and Safety Committee (Committee) shall appoint a Safety Standards Manual subcommittee (Subcommittee).

1. This Subcommittee shall be comprised of the NREA Job Training and Safety Coordinator (Coordinator), who shall be Chairman of said Subcommittee and the six (6) operations employees serving on the Committee.

2. The Coordinator shall convene meetings of the Subcommittee as frequently as is necessary to have dialogue concerning proposed revisions to the Manual and having had such, make recommendations for revisions to the Manual to the Committee.

3. An individual shall be so designated to take the minutes of said meetings, and document the proposed language of any such recommendations.

4. The Coordinator shall submit written copies of any recommendations for revisions to the Manual to all members of the Committee at least ten (10) days prior to any of their quarterly meetings for their consideration and appropriate action.

B. All proposed revisions to the Manual shall be submitted in written form detailing the present language of the Manual, as well as the language of the proposed revision. Any and all proposed revisions must be signed by the author of the proposal.

1. Written proposed revisions to the Manual from NREA member-systems shall be submitted to the Coordinator then forwarded to all members of the Subcommittee for appropriate review and recommendations.

2. Written proposed revisions to the Manual initiated by the Coordinator and/or staff shall be submitted to all members of the Subcommittee for appropriate review and recommendations.

3. The Coordinator shall submit written copies of any proposed revisions to the Manual to all members of the Subcommittee at least ten (10) days prior to any of their scheduled meetings for their consideration and appropriate action.

III. Responsibility:

A. The Committee shall be responsible for appointment of the Subcommittee, taking appropriate action on their recommendations for revisions to the Manual, and directing the Coordinator to update the Manual as needed to meet any revisions necessitated by changes in federal, state, or local standards. The Manual will be revised at two-year intervals (i.e., 2007 Edition, 2009 Edition, etc.). Revisions for the upcoming edition of the Manual, along with comment periods for the proposed revisions, shall be completed during the two years preceding the new edition.

B. The Subcommittee shall be responsible for meeting to consider proposed revisions to the Manual and for making recommendations to the Committee as to the content of necessary revisions to the Manual.

C. The Coordinator shall be responsible for apprising the committee of changes in federal, state, or local standards that would necessitate a revision in the Manual, forwarding proposed revisions to the Manual to the Subcommittee, and scheduling appropriate meetings for review, forwarding the recommendations of the Subcommittee to the Committee, and ensuring that the Manual is updated as directed by the Committee.