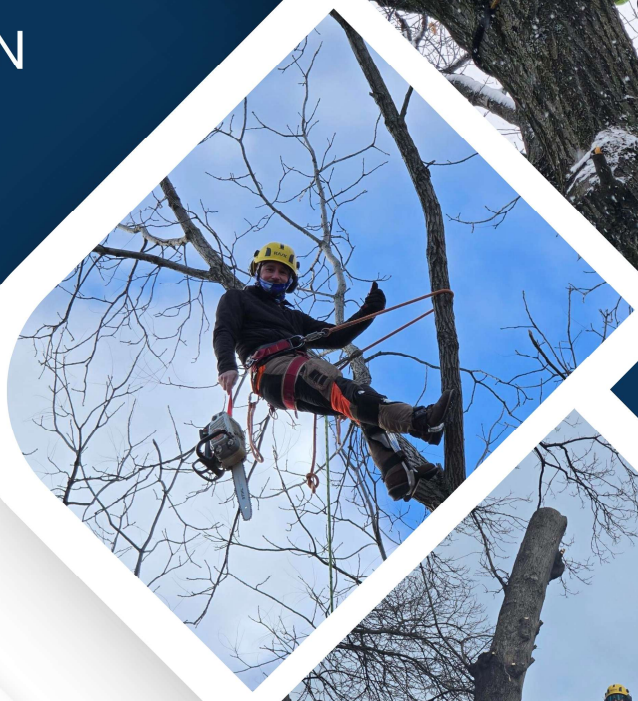
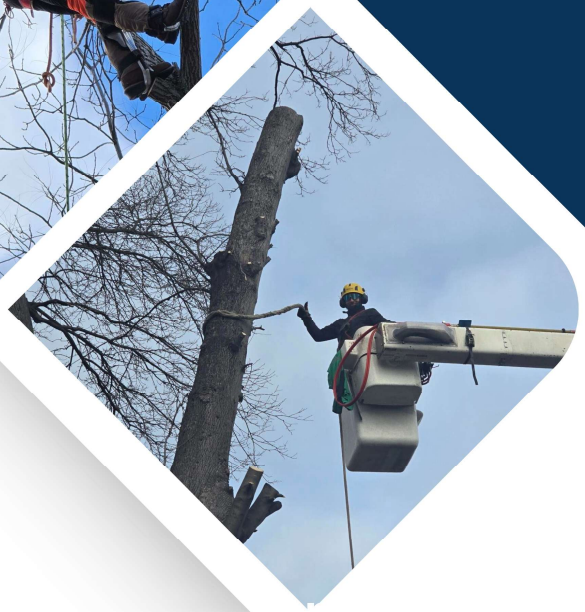
LCCP MANUAL

LINE CLEARANCE CERTIFICATION PROGRAM





- Groundman
- Trimmer
- Climber
- Lift Operator
- Foreman
- Driver
- Herbicide

2025

Owner

Name:_____

GF:_____

Date:_____

Contact Number:_____

Instructions: This training manual is issued to you as a valuable resource for safety and professional development. Please ensure it is kept in good condition and readily available for reference.

"If you're not willing to learn, no one can help you. If you're determined to learn, no one can stop you." — Zig Ziglar

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Safety Attitude

The purpose of this program is to provide safety criteria for our employees.
Safety is the responsibility of ALL employees and company representatives.
ALL Safety rules and regulations are in place to protect YOU, the worker. The most important and effective safety tool is YOUR ATTITUDE

DO NOT perform any task that is unsafe.
ALL ACCIDENTS AND INCIDENTS MUST BE REPORTED TO YOUR SUPERVISOR IMMEDIATELY.
If you cannot get in contact with your supervisor, call the company office.

OSHA Responsibilities

Responsibilities of the Employer

Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees; shall comply with all occupational safety and health standards.

This is the basis of ALL company policies.

Responsibilities of the Employee

Each person (employee or otherwise) shall be responsible for his or her own safety while on the jobsite and shall comply with the appropriate federal or state occupational safety and health standards and all rules, regulations, and orders that are applicable to his or her own actions and conduct.

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Purpose

The Line Clearance Certification program is designed to be used as a guide to train employees in the knowledge and skills involved in Line Clearance Arboriculture. The program is divided into five certification sections (Groundhand/Trimmer Trainee; Trimmer; Climber; Lift Operator; Foreman) each include different individual training components.

Each component consists of skills verification and knowledge tests.

A certificate will be issued upon verification of completion of each component by the instructor or trainer.

Employees with prior experience can have their skills verified by job observation by the instructor or trainer and complete the applicable knowledge tests.

All included components must be completed to receive the section certification. Section certificate and card will be issued upon verification of completion of all components required for that section.

There are also specialized, individual training components (Specialized Equipment) that are qualifications for each individual operation. Certification for specialized training will be issued upon verification of completion by instructor or trainer.

All Energy Group Inc issued certifications are valid for three years from issue, at which time, knowledge and skills must be recertified.

- All employees should complete the Groundhand/Trimmer Trainee Section.
- Employees performing trimming and removal operations should complete the Trimmer Section.
- All tree climbers should complete the Climber Section.
- All bucket truck operators should complete the Lift Operator Section.
- Tree crew Foreman should complete the Tree Foreman Section.
- All drivers of company vehicles should complete the Driver Section.
- All employees involved in herbicide applications should complete the Herbicide Section.
- Specialty Equipment will be covered in separate proficiency manuals.

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Stop Work Authority

The Stop Work Authority process involves a STOP, NOTIFY, CORRECT and RESUME approach for the resolution of a perceived unsafe condition, act, error, omission or lack of understanding that could result in an injury or damage to any equipment and/or property.

All Energy Group, Inc. employees have the authority and obligation to stop any task or operation where concerns or questions regarding the control of health, safety or environmental risks exist.

When an unsafe condition is identified by an employee, the Stop Work Authority order will be immediately initiated and coordinated by the supervisor (Foreman of the crew or highest ranking manager at the job site), where the supervisor must initiate the Stop Work Authority order in a positive manner, notify all affected personnel at the job site to stop work and address the stop work issue, discuss and correct the issue. Once everyone agrees that the issue is corrected, and the work environment is now safe, the supervisor may allow the team to resume work.

If a supervisor fails to recognize an employee's Stop Work Authority order, the employee must call the General Foreman or the next highest manager over the supervisor and let them know that Stop Work Authority order has been made but not addressed by the supervisor. Supervisors are not allowed to ignore any Stop Work Authority order.

No work will resume until all stop work issues and concerns have been adequately addressed and a safe work environment exists as determined by all employees at the job site.

Any form of retribution or intimidation directed at any individual for exercising their right to issue a stop work authority will not be tolerated by Energy Group, Inc.

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8 Critical Safety Violations

Because of the serious nature of certain safety violations, the company has instituted eight critical safety violations. Violation of any one of these rules can result in immediate termination of employment.

- Employees MUST recognize and abide by any employee's Stop Work Authority Order.
- Seat belts MUST be worn by all vehicle operators and passengers whenever the vehicle is in motion. Equipment operators MUST use seat belts and passenger restraint systems during operation of all equipment.
- All employees MUST be secured with a climbing line or lanyard at all times while working aloft, whether ascending, descending, working or repositioning. (This includes, while in a tree, in a bucket or other aerial lift devices, or on a ladder.) And Climbers MUST be tied in with a climbing line and either a second climbing line or lanyard at all times while operating a chain saw off the ground.
- All workers MUST never approach closer to any energized conductor than the distances indicated on the OSHA minimum approach distance chart.
- The chain saw MUST be held with the thumbs and fingers of both hands encircling the handles at all times during operation.
- The operator MUST where chain saw chaps at all times while operating a chain saw on the ground. This includes starting and warming up the saw.
- Employees MUST set and maintain a proper Drop Zone with 4 visual markers 360 degrees around the tree, at least 10 feet from the drip edge of the tree being trimmed. Employees MUST use 3-way communication while entering and exiting the Drop Zone.
- Employees MUST follow guidelines pertaining to 60/70 foot policy. While elevator is raised, employees will not perform chipping operations, must maintain 10 feet from truck/chipper, and will act as a spotter for the trimmer aloft.

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1.0 General Safety

- Employees shall be trained in the proper use, inspection, and maintenance of tools and equipment, including ropes and lines, and shall follow all appropriate working practices.
- A visual hazard assessment, including a root collar inspection, shall be performed prior to climbing, entering, or performing any work in a tree.
- A second arborist or other worker trained in emergency procedures shall be within visual or voice communication during arboricultural operations above 12 feet (3.65 m).
- A job briefing shall be performed by the qualified arborist in charge before the start of each job. The briefing shall be communicated to all affected workers.
- Communications shall be established between arborists working aloft, either in a tree or from an aerial device, and arborists and other workers on the ground, before starting work. The method of verbal/visual communication shall be discussed and established during the job briefing, prior to the start of the work. The verbal/visual communication system shall use an established command and response system or pre-arranged, two-way hand signals. The communication method shall be clearly understood and used during all operations. The command "stand clear" from aloft and response "all clear" from the ground are terms that may be used for this purpose.
- Workers returning to the work area shall not enter until the arborists have acknowledged that it is safe to do so.
- A qualified arborist should determine whether direct supervision of arborist trainees is needed on a jobsite.
- Tools and equipment **SHALL** be maintained according to manufacturer specifications.

1.1 Personal Protective Requirements

- Training shall be provided in the use, care, maintenance, fit, and life of personal protective equipment.
- Clothing and footwear appropriate to the known job hazards shall be approved by the employer and worn by the employee.
- **Work attire** must include long pants and a shirt with sleeves. Long sleeve shirts may be required for specific operations such as herbicide use. Flame Resistant or natural fiber clothing may be required.
- Loose clothing and dangling or loose jewelry are prohibited on the job.
- Clothing with obscene or offensive pictures or phases is also prohibited.
- Proper **footwear** SHALL be worn by employees on all job sites. Leather boots with protective soles are the minimum requirement. Some job sites may require steel/composite toed boots. Boots must have defined ankle support and a pronounced heal.
- Gloves that are appropriate for the job being performed shall be worn. This includes standard work gloves for everyday use and chemical resistant gloves while handling herbicides and other chemicals. Other gloves may be required for other work tasks.
- Personal Protective Equipment SHALL be worn as required by regulations, policies and manufacturer recommendations.

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Personal Protective Requirements (Continued)

- Eye and head protection equipment shall be worn at all times during working hours.
- Contacts, sunglasses, regular eyeglasses or any other type of eyewear is not a substitute for ANSI approved safety glasses.
- Workers shall wear head-protection (hard hat) that conforms to ANSI Z89.1 at all times on the job site. Head protection shall not be changed, defaced, or altered in any manner. This includes but is not limited to drilling, painting, cutting, altering of suspension system or wearing any type coverings on the exterior. Only approved liners shall be worn.

- Eye protection shall comply with ANSI Z87.1 and shall be worn at all times on the job site.
- Face protection shall comply with applicable federal regulations as well as with ANSI Z87.1. Safety glasses are required even when using a face shield.
- Hearing protection shall be worn by employees operating chippers, power saws and other high noise emitting equipment, and by employees working within *25* feet of such operations.
- Chain saw chaps/pants shall be worn by all employees who are operating chain saws on the ground. Chainsaw chaps/pants must meet or exceed ASTM F1897-20 requirements. Label must be listed
- Hearing protection shall be worn by employees operating chippers, power saws and other high noise emitting equipment, and by employees working within 25 feet of such operations.
- The manual for the tool or equipment will specify if hearing protection is required.
- Class 2 reflective vests shall be used by all employees while engaged in any ground activities. All employees who are exposed to traffic and/or are working within 15' of traffic will be required to wear the Class 2 High Visibility Safety Vest or clothing. The High Visibility Vest shall be worn over all other clothing and it shall not be worn alone or in place of any other clothing. It is permitted for employees to remove Class 2 clothing while aloft, or in a vehicle/piece of equipment.
- Seat belts shall be worn by all occupants in any moving vehicle or operating equipment.
- Breathing protection shall be worn when required by hazardous substance manufacturers and when high volumes of dust are produced on the job.

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1.2 Proper Lifting

- Impact Trauma is when the spine is injured. Examples of impact trauma include, but are not limited to: falls, slips, twisting while lifting and carrying, being struck by materials or equipment, or being involved in an auto accident.
- Working in an awkward position or lifting incorrectly over a period of time can cause what are known as cumulative trauma disorders. Repeated unhealthy position or movement causes small injuries that add up to more serious injuries.
- The risk of back injury is increased due to awkward posture, overexertion, repetition and
- fatigue.
- Inspect the object to plan the lift and avoid sharp edges, slivers, splinters, or other things
- that might cause injury.
- A preliminary lift shall be made to be sure the load can be handled. Get help if the load is too heavy or awkward.
- Feet shall be solidly placed. Lifting is usually more effective if one foot is placed slightly ahead of the other.
- Get as close to the load as possible, with the legs bent at the knees, at an angle of about 90 degrees. Standing up from this position requires about half the effort required to stand from a full squat.
- Keep the back as straight as possible. It may be far from vertical, but should not be arched. Straighten the legs at the same time the back is moved to the vertical.
- To lift an object above shoulder height one end should be placed where you intend to place the object and the hands shifted to allow the load to be pushed up and over.
- To change direction, the entire body, including the feet, shall be turned. A twisting motion may result in an injury.
- These procedures shall be followed even when carrying very small objects. Lowering is the reverse of lifting.
- Proper lifting is as important with lighter objects as with heavier ones. Team lifting procedures shall be used on objects weighing over 50 lbs.

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Section 1 Groundhand/Trimmer Trainee

1.3 Tools and Equipment

- Correct tools and equipment shall be selected for the job.
- Tools and equipment shall be properly stored or placed in plain sight out of the immediate work area when not in use.
- Brush and logs shall not be allowed to create hazards in the work areas.
- Workers shall maintain a safe working distance from other workers when using tools and equipment.
- Prior to daily use of all tools, equipment and vehicles, thorough inspections and operational checks shall be made in accordance with manufacturers' and owners' instructions and applicable federal, state, and local requirements. Inspection will include all steps, handholds and railings used to mount or enter machinery.
- All tools, equipment and vehicles shall be equipped and maintained with manufacturers' safety devices, instructions, warnings, and safeguards. Arborists and other workers shall follow instructions provided by manufacturers.
- Defects or malfunctions affecting the safe operation of tools, equipment and vehicles shall be corrected before such units are placed into use.
- Maintenance shall be performed only by those persons authorized by the employer and trained to perform such operations.
- Manufacturers' preventive maintenance inspections and parts replacement procedures shall be followed.
- Hoses affecting dielectric characteristics of equipment shall meet manufacturers' requirements.
- The flash point of hydraulic fluid shall meet the minimum set by the manufacturer.
- Manufacturers' instructions shall be followed in detecting hydraulic leaks. No part of the body shall be used to locate or stop hydraulic leaks.
- Tools, equipment and vehicles shall be operated or maintained only by authorized and qualified personnel in accordance with company policies and federal, state, or local laws.
- Engines shall be stopped for all cleaning, refueling, adjustments, and repairs to the saw or engine, except where manufacturers' procedures require otherwise.
- Hydraulic/pneumatic tools shall be disconnected when they are being serviced or adjusted, except where manufacturers' procedures require otherwise.
- To avoid flying particles or whipping hydraulic/pneumatic hoses, pressure shall be released before connections are broken, except where quick-acting connectors are used.
- Hydraulic/pneumatic hoses shall never be kinked in order to cut off pressure.
- Units equipped with outriggers or a stabilizing system shall be operated in a manner consistent with manufacturers' requirements.
- The operator shall ensure adequate clearance exists and give verbal warning prior to lowering outriggers. Pads shall be placed under outrigger feet at all times to ensure stable footing.
- Hydraulic dump bed shall only be lowered by employees after verbal warning has been given to all crew members and "All Clear" response has been received

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Section 1 Groundhand/Trimmer Trainee

1.4 Vehicles and Mobile Equipment

- Material and equipment carried on vehicles shall be properly stored and secured in compliance with the design of the unit in order to prevent the movement of material or equipment.
- Logs or other material shall not overhang the sides; obscure taillights, brake lights, or vision; or exceed height limits per state and local requirements for bridges, overpasses, utility lines, or other overhead hazards.
- To avoid the hazard of spontaneous combustion or the generation of undesirable odors, wood chips should not be left in vehicles for extended periods.
- Ropes and climbing equipment shall be stored and transported in such a manner to prevent damage through contact with sharp tools, cutting edges, gas, oil, or chemicals.
- Step surfaces and platforms on mobile equipment shall be skid resistant.
- Safety seat belts, when provided by the manufacturer, shall be worn while a unit is being operated.
- Riding or working outside or on top of units shall not be permitted unless the units are designed for that purpose or the operator is performing maintenance or inspection.
- Hoisting or lifting equipment on vehicles shall be used within rated capacities as stated by the manufacturers' specifications.
- Units with obscured rear vision, particularly those with towed equipment, should be backed up only when absolutely necessary and then should be used with external rear guidance, such as a spotter.
- When units are left unattended, keys shall be removed from ignition, the wheels chocked, and, if applicable, the parking brake applied.
- Units shall be turned off, keys removed from the ignition, and rotating parts at rest prior to making repairs or adjustments, except where manufacturers' procedures require otherwise.
- When towing, safety chains shall be crossed under the tongue of the unit being towed and connected to the towing vehicle.
- Towed units that detach from another unit (for example, a motorized vehicle) shall be chocked or otherwise secured in place.
- Care should be taken to ensure that a unit's exhaust system does not present a fire hazard.
- Units operated off-road shall be operated in the proper gear and at the proper speed relative to the operating environment and the manufacturers' instructions and guidelines.
- Cutting Equipment should be equipped with a deadman control. When deadman controls are not available, the worker shall disengage the power source to the rotary or cutter head before dismounting.

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Section 1 Groundhand/Trimmer Trainee

1.5 Outriggers

- Units equipped with outriggers shall be operated in a manner consistent with manufacturers' requirements.
- The operator shall ensure adequate clearance exists and give warning prior to lowering outriggers. Pads shall be placed under outrigger feet at all times to ensure stable footing.
- When positioning equipment, inspect the location of the outriggers.
- Outriggers need to be set on a firm, flat, solid surface to help stabilize the equipment. Look for cracks or damage in paved surfaces. Sloping ground should not be used.
- If the ground or surface is not solid, realign equipment until safe ground has been verified.

1.6 Outrigger Placement Procedures

- Inspect the surface where the outriggers will be placed.
- Always use outrigger pads.
- The outriggers are used to support and stabilize the equipment in conjunction with the wheels.
- Do not lift wheels off the ground.
- Verify that no one is in the path of the outriggers. Use verbal communication to warn coworkers that the outriggers are being lowered.
- Lower the outrigger(s) on the lower side of the equipment until the equipment is level.
- If the equipment cannot be leveled with the wheels on the ground, do not proceed. Move the equipment to a position where it can be leveled
- Lower the outrigger(s) on the other side of the equipment until the equipment is level and supported.
- If an outrigger shifts or moves during operation carefully cradle the boom(s) and inspect the outrigger placement.
- If an outrigger leaves the ground during operation, check the other outriggers for shifting or settling and reset the opposite outrigger, if it is safe to do so. DO NOT lower the outrigger that has left the ground, this will make the equipment less stable and more prone to turning over.
- After work is completed, reverse the procedure to raise the outriggers.

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1.7 Hazard Identification

- A job briefing shall be performed by the qualified arborist in charge before the start of each job. The briefing shall be communicated to all affected workers.
- Before beginning any tree operation, the chain-saw operator and/or crew leader shall carefully consider all relevant factors pertaining to the tree and site and shall take appropriate actions to ensure a safe operation. The following factors should be considered:
    - the area surrounding the tree, including nearby trees
    - species and shape ofthe tree
    - lean ofthe tree
    - loose limbs, chunks, or other overhead material
    - wind force and direction
    - decayed or weak spots throughout the tree
    - location and means to protect other persons, property, and electrical conductors
    - size and terrain characteristics or limitations ofthe work area
    - evidence of bees or wildlife habitation in the tree
- The crew leader shall develop a work plan so that operations do not conflict with each other, thereby creating a hazard.
- Work plans shall be communicated to all workers in a job briefing before commencing work
- A job briefing shall include
    - Hazards associated with the job
    - Work procedures involved
    - Special precautions
    - Energy sources and controls
    - Personal protective equipment (PPE)
- If the job cannot be performed safely, it shall not be attempted

1.8 Emergency Procedures

- For any emergency, call for any necessary emergency assistance and then the supervisor. If the supervisor is not available, call the office. When calling 911 be sure to know the location of the emergency and provide information from the MSDS sheets for any hazardous materials involved.
- Every job site must have two workers certified in first aid and CPR.
- Provide assistance if it is safe to do so. If it is not safe, the area should be guarded at a safe distance to prevent people from entering the area.
- Emergency phone numbers shall be available and workers shall be instructed as to the specific location of such information.
- Employees shall receive training in emergency response and rescue procedures appropriate and applicable to the work to be performed, as well as training to recognize the hazards inherent in rescue efforts. Instruction shall be provided in the identification, preventive measures, and first-aid treatment of poisonous plants, stinging and biting insects, and other pests indigenous to the area in which work is to be performed.

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First Aid Kit

- The first-aid kit, provided by the company, shall be kept in the cab of the work vehicle, where all employees know its location.
- The first-aid kit SHALL be inventoried to replace used or expired contents monthly.

Fire Protection

- Equipment shall be equipped with a fire extinguisher rated for the equipment and flammable materials present. The fire extinguisher will be inspected daily to ensure that it is fully charged.
- Equipment shall be refueled only after the engine has stopped. Spilled fuel shall be removed from equipment before restarting.
- Equipment shall not be operated within 10 feet (3.05 m) of refueling operations or areas in which refueling has recently taken place.
- Flammable liquids shall be stored, handled, and dispensed from approved containers.
- Smoking shall be prohibited when handling or working around flammable liquids. Open flame and other sources of ignition shall be avoided.
- Clothing contaminated by flammable liquid shall be changed as soon as possible.
- In case of fire, call 911 and the supervisor, then attempt to extinguish the fire, if it is safe to do so.
- With an engine fire, turn off the engine as soon as possible. Don't open the hood.
- Shoot extinguishers through louvers or radiator or from the underside of the vehicle or equipment.
- For a fire in a bin, van or box trailer, keep the doors shut. Opening the doors will supply the fire with oxygen and can cause it to burn faster and allow it to spread.
- If it is not safe to attempt to extinguish the fire, especially a hazardous materials fire, wait for qualified firefighters.
- When using the extinguisher, stay as far away from the fire as possible.
- Aim at the base of the fire, not up in the flames.
- Remain upwind of the fire to let the wind carry the extinguisher material to the fire.
- Continue until whatever was burning has been cooled. Absence of smoke or flame does not mean the fire is completely out or cannot restart.

Injury or Illness

- Check the scene.
- Call 911 and the supervisor.
- Provide care if you are qualified and it is safe to do so. Employees that are not trained in first aid and CPR shall not attempt to provide aid.
- Cardiopulmonary resuscitation (CPR) and first-aid training are provided to employees.

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Hazardous Material Program and Material Safety Data Sheets

- Hazardous Materials are anything flammable, combustible, toxic or in pressurized cans.
- Herbicides are considered hazardous materials and are included in this program.
- Material Safety data Sheets can be found on the EGU portal for all hazardous materials on
- Federal law requires that employers inform their employees about hazardous materials in the workplace. This Hazard Communication Program is to ensure that all employees receive adequate information on all hazardous materials in the workplace.

Container labeling

- All containers containing hazardous materials will be labeled.
- Whenever possible, hazardous materials will be kept in the manufacturer's original, labeled container. If the original container is unavailable, hazardous materials must be in an approved, labeled container.

List of hazardous materials

- Included with this program, each crew will maintain a list of hazardous materials included in this program.

Material Safety Data Sheets (MSDS)

- Material Safety Data Sheets on all materials at the work site can be found on the employee portal.

Employee training

- Employees will attend an orientation reviewing this program and the hazardous materials at the work site before beginning work

Spill Emergency Response

- Whenever a hazardous material spill occurs, follow the following procedure.
  - Control the spill – Do whatever possible to stop the flow of material at the source. Take precautions to protect yourself from exposure to hazards.
  - Contain the spill- Use absorbent material and physical barriers to prevent the spread of spilled material.
  - Clean up the spill-After the spill is controlled and contained, clean up may begin. Collect material and dispose of following all relevant regulations.
  - Call- Notify your immediate supervisor or the company office with the following information:
    Location
    Material involved
    Total volume of spill

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Aerial Rescue

- Due to the hazards associated with the job it is necessary to be prepared to rescue a fellow worker.
- Before any attempt at rescue, call 911.
- When calling 911 be sure to know the location of the emergency.
- In these situations, it is important to determine the cause of the accident and how to respond quickly and safely. Do not attempt a rescue until it is safe to do so.
- In the case of an electrical contact it is necessary to determine the source of the electricity and break the contact before any rescue is attempted. Only use nonconductive tools to break the electrical contact. If the truck becomes energized, DO NOT attempt a rescue. Call 911 and explain the situation. Ask for a "high angle rescue".

Procedures

- To break the contact between a victim and an energized conductor, a nonconductive tool must be used.
- Possible methods from the ground:
- You may be able to move the victim away from the conductor by pulling the victim's climbing line in the appropriate direction.
- Throw a clean, dry rope over the conductor and move it away from the victim. Tie the conductor off so it is as much out of the way as possible.
- Use an insulated or nonconductive pole tool to separate the trimmer from the conductor.
- If these methods do not work, it is necessary to wait until the conductor is de-energized.

Reaching the Victim

- Use the safest, fastest method available to reach the victim.
- If an aerial lift is available, it is usually the best method to use.
- Tree hooks can be used if the tree is not energized.

Two-man Rescue

- The victim may be lowered on his climbing line after being released from his climbing knot.
- A worker on the ground secures the climbing rope.
- The rescuer ties in with a separate climbing line.
- Then the rescuer releases the climber by cutting the tail between the figure-8 knot and the climbing knot, unsnapping the tail of a split tail system, or untying the climbing knot.
- The worker on the ground then lowers the victim while the rescuer guides him.

Double Taut-line Rescue

- The rescuer ties in with a separate climbing line. He then uses the safety lanyard to attach himself to the victim either by putting the lanyard around the victim's chest or through the victim's d-rings. The rescuer lowers himself and the victim while operating both climbing knots.

"D" Ring Rescue

- If the crotch used by the victim's climbing line will hold the weight and the climbing line is not damaged, the rescuer can attach himself to the victim and use the victim's climbing line to descend together. The rescuer can attach himself to the victim by using his lanyard or climbing line through or to the d-rings.
- If the climbing line is damaged or the crotch will not hold the weight, the rescuer can crotch a separate climbing line and transfer the victim to his climbing line to use the same method.

Conclusion

- No two rescue situations are exactly alike. Therefore, workers must be familiar with the different rescue techniques to be able to react quickly and safely.

Lift Rescue

- Quickly determine the cause of the accident.
- Before any attempt at rescue, call 911.
- When calling 911 be sure to know the location of the emergency.
- In these situations it is important to determine the cause of the accident and how to respond quickly and safely. Do not attempt a rescue until it is safe to do so.
- In the case of an electrical contact it is necessary to determine the source of the electricity and break the contact before any rescue is attempted. Only use nonconductive tools to break the electrical contact.
- NEVER TOUCH A VICTIM WHO IS IN CONTACT WITH AN ENERGIZED CONDUCTOR!
- NEVER TOUCH A VEHICLE OR PIECE OF EQUIPMENT THAT IS ENERGIZED!
- If there is electrical contact, use a clean, dry pole to operate the controls to break the contact. It may be possible to break the contact by operating the outrigger controls. If that is not possible, use the pole to operate the override and lower controls to break contact.
- After contact has been broken and the equipment is no longer energized, ascend to the lower controls and bring the bucket safely to the ground.
- If it is necessary and there is no suspicion of neck or back injury; gently lift or roll the victim out of the bucket and onto the ground.

1.9 Incident Reporting

- ALL ACCIDENTS AND INCIDENTS MUST BE REPORTED TO YOUR SUPERVISOR IMMEDIATELY.
- If you cannot get in contact with your supervisor, call the company office.
- Follow the Energy Group Inc accident reporting procedures.
- In the case that a doctor or specialist visit is needed after an emergency room visit, you will need to contact your supervisor before, to make the proper arrangements.

2.0 Electrical Safety

- ALL employees must be trained in Electrical Hazard Recognition.

Electrical hazards

- Each employee shall be trained to recognize and be qualified to work within proximity to electrical hazards that are applicable to the employee's assignment.
- All overhead and underground electrical conductors and all communication wires and cables shall be considered energized with potentially fatal voltages.
- Workers shall understand that electrical shock will occur when a person, by either direct contact or indirect contact with an energized electrical conductor, provides a path for the flow of electricity to a grounded object or to the ground itself. Simultaneous contact with two energized conductors phase to phase will also cause electric shock that may result in serious or fatal injury.

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Electrical Safety (Continued)

- Workers shall understand that electrical shock may occur as a result of ground fault when a person stands near a grounded object.
- Workers shall understand that, in the event of a downed energized electrical conductor or energized grounded object, there exists the hazard of step potential.
- If the minimum approach distance cannot be maintained during operations, the electrical system owner/operator shall be advised and an electrical hazard abatement plan implemented before any work is performed in proximity to energized electrical conductors.
- Nonconductive equipment includes wood or fiberglass tools, ropes and wood or fiberglass ladders. THESE TOOLS BECOME CONDUCTIVE IF THEY ARE WET OR DIRTY!!
- A rope or tool that is wet or that is contaminated to the extent that its insulating capacity is impaired is not to be considered insulated and may not be used near exposed energy lines.
- Footwear, including lineman's overshoes or those with electrical-resistant soles, shall not be considered as providing any measure of safety from electrical hazards.
- Rubber gloves, shall only be worn by qualified individuals in accordance with company provided training.
- Ladders, platforms, booms, buckets, or any part of an aerial device or piece of equipment shall not be allowed to make contact or violate minimum approach distances with energized electrical conductors, poles, or similar conductive objects.
- Equipment brought into contact with energized electrical conductors shall be considered energized. Contact by people and/or equipment shall be avoided.
- Operations shall be suspended when adverse weather conditions or emergency conditions develop involving energized electrical conductors. Electrical system owners/operators shall be notified immediately.
- Workers performing operations after a storm or under similar conditions shall be trained in the special hazards associated with this type of work.

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2.1 Elements of Electricity

- Electricity is the flow of electrons which is referred to as current. Current is measured by volts, amps and ohms.
- Each individual conductor wire is known as a phase. Electricity is generated and conducted as three phases.

Volts

- The force propelling the flow of electrons or the electrical pressure is measured in voltage, or volts for short.
- The higher the voltage is, the greater the risk of arcing and overcoming resistance.
- Twelve volts of electricity is enough pressure to overcome the resistance of human skin.
- A car battery is twelve volts.
- The common household plug is 110 volts.
- All primary wires and substation facilities are thousands of volts or kv.
- All OSHA safety requirements are listed by voltage phase to phase which is more than phase to ground.

Amps

- The rate at which electricity moves or the flow of electricity is called amperes, or amps for
- short.
- The higher the amps, the more electricity is moving.
- One tenth of an amp can cause ventricular fibrillation, which can cause death. A 60 watt light bulb uses one half to one amp.
- All conductors including communication cables and lines contain enough amps to kill.

Ohms

- When an object or substance limits the flow of current, this property is called resistance.
- Resistance is measured in ohms.
- The higher the ohms are, the lower the electrical current.
- Materials with a high level of resistance are called insulators. Common insulators include plastics, rubber, and porcelain. These materials do not allow electricity to pass through them easily.
- Materials with a low level of resistance are used as conductors. The most common are aluminum and copper. One of the minerals with the lowest resistance is gold; therefore gold jewelry can be an electrical hazard.
- It is impossible to predict the resistance of an electrical contact.

2.2 Completing a Circuit

- In order to flow, electricity needs a "path to ground". Providing this path to ground is known as "completing a circuit".
- Materials with a low level of resistance are called **conductors.** Common conductors include water, most metals, and the human body. Electricity can pass easily through these materials under almost all conditions.
- Any conductive object can be a path to ground. Conductive objects include, but are not limited to: metal objects, trees, branches, fences, guide rails, utility poles, uninsulated equipment and uninsulated sections of insulated equipment.
- Nonconductive objects and tools can become conductive if they are wet or dirty.
- A conductive path between two energized wires creates a ***DEAD SHORT.*** This can create fireballs, surges and downed lines.

2.3 Kinds of Electrical Contact

- There are two basic kinds of electrical contact.
- **Direct contact** occurs when some part of a worker's body comes into contact with an energized electrical conductor. Possible causes are falling or swinging into the conductors. This can also occur in storm situations when energized conductors are damaged by storm and are near or on the ground.
- **Indirect contact** occurs when some part of a worker's body comes into contact with a conductive object that is in contact with an energized conductor. Conductive objects include but are not limited to: tree branches, conductive tools, wet or dirty tools including ropes, utility poles and damaged electric facilities.

ALL WIRES, CONDUCTORS AND COMMUNICATION CABLES ARE TO BE CONSIDERED AND TREATED AS ENERGIZED WITH POTENTIALLY FATAL VOLTAGES!

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2.4 Electrical Hazards on the ground

- Electrical hazards are not limited to workers aloft; workers on the ground can be exposed to electrical contact.
- Uninsulated equipment can become energized.
- A tree falling and coming in contact with conductors can become energized.
- A wet rope coming into contact with conductors can become energized.
- Utility poles can become energized when there is damage to the facilities.
- Fallen wires can be energized and therefore energize fences, guard rails and equipment.
- When electrical current has a path to ground, the current spreads in the ground in expanding circles of lessening voltage. This is known as step potential. A person taking normal steps within this energized zone has the hazard of creating a path to ground between different voltage levels. If step potential is expected during an electrical contact incident, employees should shuffle in a heal to toe method away from the point of ground contact, being careful to take small steps.
- During storm operations, employees should carry a non-conductive tool with them to open metal gates, fences, doors. Do not touch conductive objects until it has been verified that electrical energy is not present.

ALWAYS ASSUME THAT FALLEN WIRES ARE ENERGIZED!!

- If the crew encounters a downed power line, immediately secure the area and notify the supervisor and the utility.
- Protect the area from all unauthorized entry, especially children and the public. The crew shall remain on site until the utility personnel release them.

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2.5 Minimum Separation

Workers should remain ten feet from energized conductors whenever possible. All workers shall maintain the following minimum approach distances from all energized conductors.

All non-qualified trainees SHALL maintain 10 feet from the power lines unless supervised by a qualified Line Clearance Arborist.

Qualified Line Clearance Arborist
Minimum approach distances to energized conductors.

Nominal voltage in kilovolts Phase to phase	**Distance:**
0.05 to 1.0	Avoid contact
1.1 to 15.0	2'-5" (0.66m)
15.1 to 36.0	2'-7" (0.77m)
36.1 to 46.0	2'-10" (0.85m)
46.1 to 72.5	3'-6" (1.05m)
72.6 to 121	4'-3" (1.29m)
138 to 145	4'-11" (1.50m)
161 to 169	5'-8" (1.71m)
230 to 242	7'-6" (2.27m)
345 to 362	12'-6" (3.80m)
500 to 550	18'-1" (5.50m)
764 to 800	26'-0" (7.91m)

Non-Qualified Arborist
Minimum approach distances to energized conductors.

Nominal voltage in kilovolts (kV) phase to phase*	Distance ft-in	m
0.0 to 1.0	10-00	3.05
1.1 to 15.0	10-00	3.05
15.1 to 36.0	10-00	3.05
36.1 to 50.0	10-00	3.05
50.1 to 72.5	10-09	3.28
72.6 to 121.0	12-04	3.76
138.0 to 145.0	13-02	4.00
161.0 to 169.0	14-00	4.24
230.0 to 242.0	16-05	4.97
345.0 to 362.0	20-05	6.17
500.0 to 550.0	26-08	8.05
785.0 to 800.0	35-00	10.55

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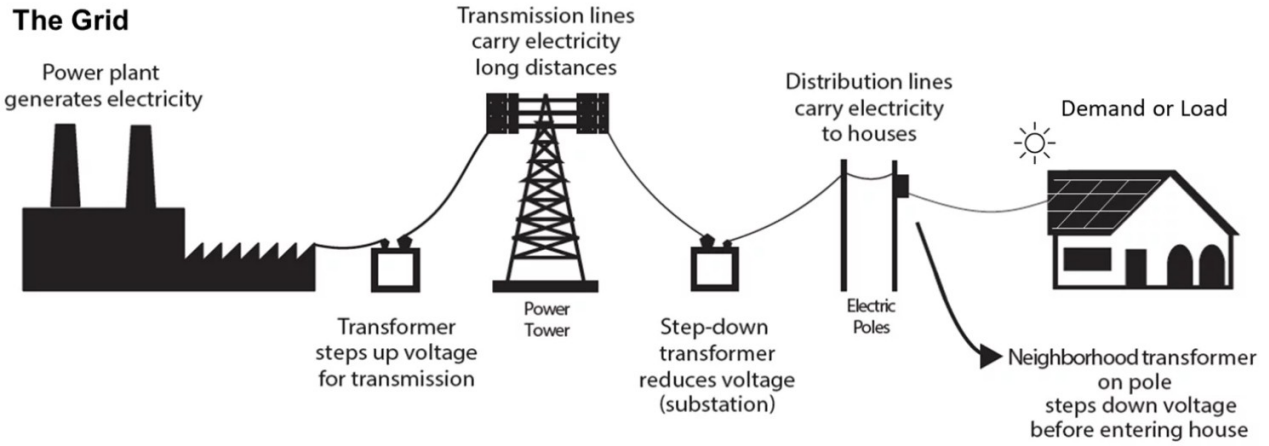
2.6 Electrical Systems Overview



- Power plants generate electricity in three phases. The three-phase power leaves the generator and enters a transmission substation at the power plant. This substation uses large transformers to convert the generator's voltage up to high voltages for transportation on the transmission grid.
- The transmission lines or transmission grid are conductive wires on towers or large poles that conduct the electricity long distances. Typical voltages for transmission are 130,000 to 770,000 volts.
- The electricity comes off the transmission grid and is stepped-down to the distribution grid. The place where the conversion from "transmission" to "distribution" occurs is in a power substation. A power substation typically does two or three things:
    - It has transformers that step transmission voltages down to distribution voltages.
    - It has a "bus" that can split the distribution power off in multiple directions.
    - It often has circuit breakers and switches so that the substation can be disconnected from the transmission grid or separate distribution lines can be disconnected from the substation when necessary.

Electrical Systems Overview (Continued)

- The regulator banks are located along the line, either underground or in the air. They regulate the voltage on the line to prevent undervoltage and overvoltage conditions.
- There are switches that allow this regulator bank to be disconnected for maintenance when necessary.

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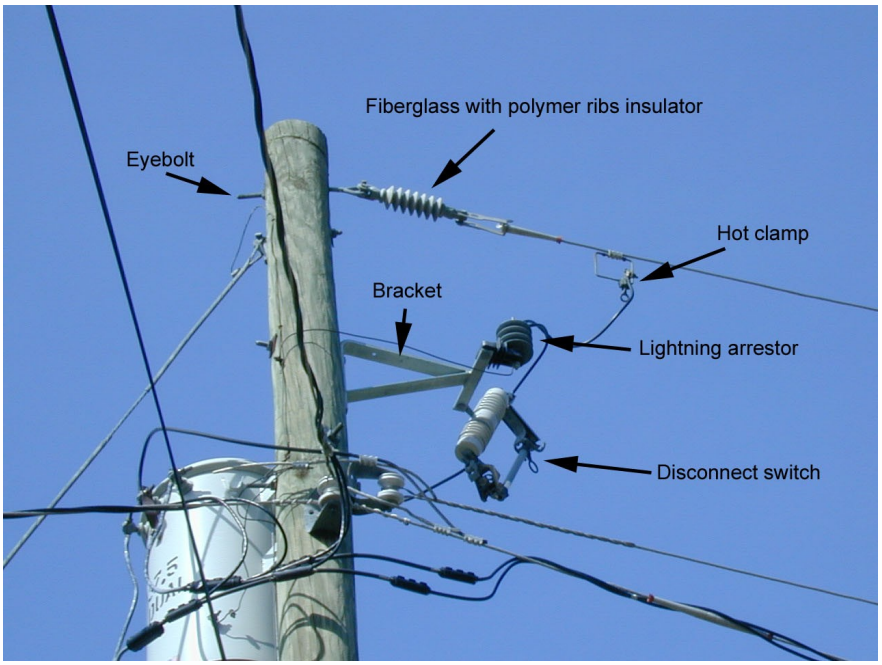
Electrical Systems Overview (Continued)

- Typically, three phase wires leave the substation, with taps of one or two phases running off of the three-phase. These primary voltage wires are generally 4,000 to 34,000 volts.
- There are **transformer drums** attached to the pole, which step down the primary voltage to **240 volts** to secondary lines and service drops.



- In many suburban neighborhoods, the distribution lines are underground and there are green transformer pads.

2.7 Substation Safety

- Employees SHALL NOT enter substations without Utility permission.
- Utility company security procedures will be followed when working in substations.
- Required Personal Protective equipment for working inside substations includes: Hard Hat, Safety Glasses, Steel Toed Work Boots, and FR clothing. FR clothing MUST be the outer layer of clothing. Reflective vests are not FR and must be removed before entering substations.
- Substation gates must remain locked unless a worker is assigned to guard the gate.
- If any damage to the facilities is encountered or caused, the utility SHALL be notified immediately.
- Minimum approach distances SHALL be maintained for all electrical equipment. It may be necessary to assign a worker to watch the equipment during operation to maintain minimum approach. Ifthis is necessary, the assigned worker shall not be performing any other work while performing this duty.
- Never carry tools, materials or equipment above shoulder level within substations.
- When driving vehicles or equipment within substations, the operator shall not drive over cable covers, underground cables, or near substation equipment. Do not drive under energized conductors unless minimum separation can be maintained. Drive less than ten miles per hour within substations.
- Workers shall not come in contact with vehicles or equipment that is in proximity to energized facilities.

2.8 Working in Proximity to Electrical Hazards

- An inspection shall be made by a qualified arborist to determine whether an electrical hazard exists before climbing, otherwise entering, or performing work in or on a tree.
- Only qualified line-clearance arborists or qualified line-clearance arborist trainees shall be assigned to work where an electrical hazard exists. Qualified line-clearance arborist trainees shall be under the direct supervision ofqualified line-clearance arborists.
- A second qualified line-clearance arborist or line-clearance arborist trainee shall be within visual or voice communication during line-clearing operations aloft when an arborist must approach closer than 10 feet (3.05 m) to any energized electrical conductor in excess of 750 volts (primary conductor) or when branches or limbs are being removed, which cannot first be cut (with a nonconductive pole pruner/pole saw) to sufficiently clear electrical conductors, so as to avoid contact; and/or roping is required to remove branches or limbs from such electrical conductors.
- Qualified line-clearance arborists and line-clearance arborist trainees shall maintain minimum approach distances for qualified arborists from energized electrical conductors.
- All other arborists and other workers shall maintain a minimum approach distance for non- qualified arborists from energized electrical conductors.

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Working in Proximity to Electrical Hazards (Continued)

- Branches hanging on an energized electrical conductor shall be removed using nonconductive equipment, only by a qualified line-clearance arborist or line-clearance arborist trainee.
- The tie-in position should be above the work area and located in such a way that a slip would swing the arborist away from any energized electrical conductor or other identified hazard.
- While climbing, the arborist should climb on the side of the tree that is away from energized electrical conductors while maintaining the required distances.
- All vegetation SHALL be cleared before ascending a tree with climbing gaffs.

- Line clearance shall not be performed during adverse weather conditions such as thunderstorms, high winds, and snow and ice storms. Work should stop anytime lightning is confirmed within 10 miles of the work location. If wind speeds reach over 30 MPH sustained or 40 MPH gusts, work should be stopped immediately.
- Qualified line-clearance arborists and qualified line-clearance arborist trainees performing line clearance after a storm or under similar conditions shall be trained in the special hazards associated with this type of work.
- Line-clearance operations shall be suspended when adverse weather conditions or emergency conditions develop involving energized electrical conductors. Electrical system owners/operators shall be notified immediately.

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3.0 Temporay Traffic Control (T.T.C.)

3.1 T.T.C. Set Up

- The "Manual on Uniform Traffic Control Devices (MUTCD)" Part VI (6) regulates job set- up on all public roads in the United States.
- These regulations are nationwide; however some states have additional, more stringent regulations. Employees must know the requirements for the state that they are working in.
- High-visibility safety apparel, temporary traffic-control devices and effective means for controlling pedestrian and vehicular traffic shall be instituted on every jobsite, in accordance with the U.S. Department of Transportation (DOT) Manual on Uniform Traffic Control Devices (MUTCD) and applicable state and local laws and regulations.
- Certified Flaggers will be used when required.
- Clearances from passing vehicles shall be maintained including overhead when necessary.
- The job site is divided into four sections:
    - Advanced warning Area
    - Transition Area
    - Activity Area
    - Termination Area.
- The Advanced Warning Area is the section of roadway where road users are informed about the upcoming work zone. The placement of work area, one lane and flagger signs warn the motorists what is ahead.
- The Transition area is the section of roadway where the motorists are directed out of the normal path of travel. This is accomplished with cones or other channelizing devices placed into a taper across the travel lane to direct the traffic into another lane.
- The Activity Area is the section of roadway where the work activity takes place. This also includes the buffer space. The buffer space is a vacant area that separates the motorists from the work area and may provide some recovery space for an errant vehicle

3.2 Sign and Cone Placement

- Warning signs and cones shall be placed in accordance with diagrams provided in the MUTCD, state diagrams and the Flagger Handbook.
- Cones in the traffic zone shall be spaced 1 foot for every MPH of the marked road speed. Employees will verify proper traffic control zone by signing designated space in the pre-job briefing.

3.3 Flagger Placement

- The flagger station shall be off of the roadway at the beginning of the transition taper with at least five hundred feet of visibility. The flagger shall not enter the lane unless the traffic has come to a complete stop.

3.4 Fundamentals of Traffic control

- Plan for traffic safety
- Interfere with traffic as little as possible
- Provide clear and positive directions
- Inspect and care for the traffic control devices
- Maintain the safety of adjacent areas
- Know the standards and laws
- Maintain good public relations

SIGN SPACING

Road Type	Distance Between Signs**		
	A	B	C
Urban (low speed)*	100 feet	100 feet	100 feet
Urban (high speed)*	350 feet	350 feet	350 feet
Rural	500 feet	500 feet	500 feet
Expressway / Freeway	1,000 feet	1,500 feet	2,640 feet

Speed Limit	Taper Channelization		Tangent Channelization
	Merging Taper, Shifting Taper, and Shoulder Taper	One-Lane, Two-Way, and Downstream Taper	
[mph]	[ft]	[ft]	[ft]
20	20	20	40
25	25	20	50
30	30	20	60
35	35	20	70
40	40	20	80
45	45	20	90
50	50	20	100
55	55	20	110
60	60	20	120
65	65	20	130
70	70	20	140
75	75	20	150

4.0 Railroad Safety

- According to Federal Railroad Administration regulations, all workers MUST complete an approved Roadway Worker Protection Course for the specific railroad BEFORE working on railroad property.
- The primary hazards of working along railroads are moving trains and electric power lines.
- Workers need to be aware of these hazards and working accordingly.
- Do not begin work until a job briefing has been performed and a watchman is in place. Job briefing documentation MUST be completed by the employee in charge and signed or initialed by ALL workers on the job.
- DO NOT foul the track unless it is necessary.
- Foul time is when a track shut down has been approved by the designated authority of the railroad.
- Foul Time MUST be approved and set up by a qualified railroad employee when: Any machinery or equipment is within twenty five feet of the outside track.
- Any unsecured construction materials are stored within twenty five feet of any track.
- Any boom equipped machinery or its load has the potential to swing into the track area or electric power lines.
- Activities might affect the stability of adjacent tracks.
- Any conditions, circumstances, or situations may present a danger to employees or the safe movement of trains.
- When walking on ballast, place your feet carefully, be aware that the ballast may shift or roll and take extra care on slopes.

Railroad Safety (Continued)

- Do not stand or walk on the tracks except when necessary.
- NEVER walk between the rails of an individual set of tracks except to cross the tracks.
- Look both ways before crossing or fouling each track.
- Do not cross tracks within fifteen feet of standing equipment.
- Do not step or sit on any part of a rail, switch or switch machine, frog, derail, interlocking machine or its connections, retarder, or defect detector.
- Never take shelter under any car, equipment or locomotive.
- Expect equipment to move at any time in any direction on the tracks.
- Minimum separation distance for ALL workers is fifteen feet from the railroad overhead energized electric wires and catenary wires.
- Minimum separation distance is to avoid contact with the third rail electrical equipment.
- Equipment and employees must stay twenty-five feet from the active tracks when trains are approaching.
- The track MUST be cleared at least fifteen seconds before a train passes. Always look in the direction of the approaching train as it passes.
- When a train is approaching, the watchman signals with the air horn or whistle and holds the disc horizontally toward the agreed upon area clear of the tracks. The expression "hot rail" means that there is train movement in the vicinity and can be used between workers to communicate that workers need to clear the tracks.
- Watchmen can signal the workers to return to work by holding the disc horizontally toward the work area.
- Advance watchmen may be needed if the watchman does not have enough visibility for sufficient time to warn the crew. The advance watchmen communicate with the watchman in the same fashion.

5.0 Wood Disposal

- When trees are cut, only the tree limbs should be removed from the job site, if possible. In rural areas, every effort should be made to leave the tree and large branches at the job site. Cutting of the tree into fireplace lengths should be avoided, if possible. These practices will minimize the cost of tree removal.
- The various methods of brush disposal are these:
    - Chipping brush and leaving chips on the right-of-way.
    - Chipping with removal of chips from the right-of-way.
    - Drag from right-of-way and windrow at tree-line.
- An analysis of various methods over the years indicates that no one method can be considered best in all cases. Evaluation of the physical factors is necessary to determine the most efficient method of brush disposal for any particular job.

Wood Disposal (Continued)

- These factors are as follows:
  - The distance from point of cutting to disposal.
  - The difficulty of the terrain to be covered between the point of cutting and disposal.
  - Direction of Utility Planner.
- These three factors working in combination are the determining factors and should be given prime consideration in determining the most efficient method of brush disposal.

6.0 Chipper and Site Clean Up

6.1 Inspection and Maintenance

- Inspect access panels for maintenance and adjustment, including discharge chute and cutter housing, ensure they are closed and secured prior to starting the brush chipper engine. These access panels shall not be opened or unsecured until the engine and all moving parts have come to a complete stop.
- Rotary drum or disc brush chippers not equipped with a mechanical infeed system shall be equipped with an infeed hopper not less than 85 inches (2.15m) measured from the blades or knives to ground level over the center line of the hopper. Side members of the infeed hopper shall have sufficient height so as to prevent workers from contacting the blades or knives during operations.
- Rotary drum or disc brush chippers not equipped with a mechanical infeed system shall have a flexible anti-kickback device installed in the infeed hopper to reduce the risk of injury from flying chips and debris.
- Chippers equipped with a mechanical infeed system shall have a quick-stop and reversing device on the infeed system. The activating mechanism for the quick-stop and reversing device shall be located across the top, along each side, and close to the feed end of the infeed hopper within easy reach of the worker. This device must be checked for condition and proper operation before use.


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Chipper Inspection and Maintenance (Continued)

- Mechanics and workers shall not, under any circumstances, reach into the infeed hopper when the cutter disc, rotary drum, or feed rollers are moving.
- Check oil level when engine is cooled and add oil if required.
  Check radiator and add water and antifreeze as required.
- Check all connections and fasteners for proper tightness.

- Check guards are in place.
- Check controls for proper operation.
- Make sure there is the proper manual for the chipper. Read the manual before operating the chipper and follow ALL the manufacturers' guidelines and recommendations.
- Also make sure ALL manufacturers' decals are in place and legible.

.6.2 Start and Stop Procedures

- Start engine with the clutch disengaged and run at a fast "idle" for at least several minutes before engaging clutch.



- Always engage clutch at about 1/4 or 1/3 full throttle, then open throttle, to desired position after the chipper has gained momentum.
- Engage infeed system after cutting blades are at desired momentum.

Start and Stop Procedures (Continued)

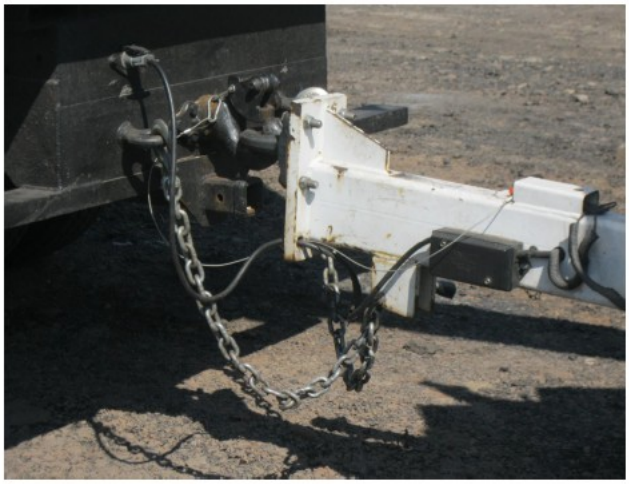
- Stop the chipper by lowering the throttle and then disengaging the feed rollers and then the cutting blades. Do not attempt any repairs, maintenance or approach the feed system until the blades have completely stopped.
- The chipper ignition shall be locked and the key removed whenever the unit is left unattended.

6.3 Operation

- To prevent an entanglement hazard, loose clothing, climbing equipment, body belts, harnesses, lanyards, or gauntlet-type gloves (for example, long-cuffed lineman's or welder's gloves) shall not be worn while operating chippers.
- Personal protective equipment shall be worn at all times on the job. Hearing protection shall be worn by the chipper operator and all others within 25 feet of the chipper.
- Training shall be provided in the proper operation, feeding, starting, and shutdown procedures for the chipper being used.
- Brush and logs shall be fed into chippers, butt or cut end first, from the side of the feed table center line, and the operator shall immediately turn away from the feed table when the brush is taken into the rotor or feed rollers. Chippers should be fed from the curbside whenever practical. Standing directly behind the Feed Table puts the operator in the path of any flying pieces. When feeding a chipper during roadside operations, the operator shall do so in a manner that prevents him or her from stepping into traffic or being pushed into traffic by the material that is being fed into the chipper.
- Push brush in contact with revolving blades or feed rollers and then allow the unit to feed without forcing.
- If it does not feed, check blades to be sure they are sharp and set correctly.
- While material is being fed into the chipper infeed hopper chute, pinch points continually develop within the material being chipped and between the material and machine. The operator shall be aware of this situation and respond accordingly.
- Sweepings or other foreign materials such as stones and nails will damage the chipper and may become flying projectiles.
- Traffic control around the jobsite shall be established prior to the start of chipping operations along roads and highways.
- Small pieces of brush or wood shall be pushed through the chipper with a push stick or branch, never the hands, feet, rake, or pruner pole etc.
- No part of the body shall ever be placed on the feed table while the chipper is running. or other parts of the body shall not be placed into the infeed hopper. Leaning into or pushing material into infeed hoppers with feet is prohibited.
- Make no adjustments or repairs while chipper is in motion or operation.
- A trailer chipper shall not be hitched or unhitched from a truck without sufficient help.

Chipper Operation (Continued)

- Before any trailer chipper is towed on a public roadway the hitch safety chain and electrical connections shall be properly attached, with the chains crossed and all lights functional.
- Only trained employees shall clear chipper of clogs. Chipper keys will be taken out and held by individual working on chipper. Proper chipper jack will be placed into designed opening to lift feed wheel. After chipper is free from clog, replace jack on chipper tongue before operating.



6.4 Stacking and Dragging Brush

- Brush usually needs to be moved to be disposed of. This is commonly done by stacking the brush to drag it to the chipper or another location for disposal.
- When stacking the brush, as with feeding the chipper, place the butts of the brush together to make it easier to hold, lift and negotiate obstacles.
- Keep in mind that the stack of brush will need to be manageable and not too heavy to lift the butts and drag the stack.
- Inspect the intended route for obstructions that can be grabbed by the brush and narrow pathways or gates that will limit the width of the stack of brush. Make sure that the brush, when it is stacked can fit through these pathways and gates.
- Using proper lifting procedures place your arm or hand through or around the butt end of the stack of brush and lift the butt end high enough to comfortably drag the stack. Face forward whenever possible to assist in preventing tripping hazards.
- If the brush becomes caught or tangled, DO NOT yank it, work the stack gently back and forth, or lower the stack to free it.

6.5 Raking and Sweeping

- Inspect rakes and brooms for damage, loose parts and splinters before use.
- Stand and move correctly. Pay attention to your raking or sweeping posture. Form a wide base with your feet and hold the rake or broom slightly toward the end ofthe handle with one hand and three-quarters of the way down the handle with the other.
- DO NOT twist your spine, move your whole body not going farther than your feet will allow.
- Try to stand as straight as you comfortably can.
- Switch sides. Workers tend to rake on one side of their body, which increases the risk of injury since raking uses the same muscles to do the same movement over and over.

6.6 Leaf Blower

- Read all Safety, Operating and Maintenance Instructions before operating. Wear eye and hearing protection when operating a leafblower.
- Never start or run the blower in an enclosed area.
- Inspect the blower before each use for loose fasteners and fuel leaks.
- Keep all bystanders, children, pets and coworkers at least 50 feet away.
- Do Not point the blower toward people or pets.
- Keep firm footing and balance. Wear a dust mask ifoperating in dusty conditions.
- Blow around the outer edges ofthe debris. Never blow directly into the center ofa pile. Operate at the lowest possible throttle speed to do the job.
- Watch out for children, pets, open windows, cars and other objects that could be damaged by blown debris.

7.0 Chain Saw

7.1 Inspection and Maintenance Procedures

- Chain saw chaps shall be worn when operating a chain saw on the ground.
- Never operate a chain saw that is damaged, improperly adjusted, or is not completely and securely assembled.
- Follow all manufacturers' recommendations for inspection and maintenance. Inspect the chain saw before each use.
- At a minimum, the inspection shall include the following:

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Chainsaw Inspection (Continued)

- Check for loose or broken nuts and bolts


- Inspect handles and guards, to assure that they are sound, tight-fitting, properly shaped, free of splinters and sharp edges, and in place.
- Test all controls and safety features to assure proper function.


- Right Rear Hand Guard
- On/Off Switch
- Throttle Interlock
- Handles (Grip with two hands)
- Chain Brake
- Front Hand Guard
- Anti-vibration System
- Chain Catch
- Rotating Parts Guards (2)
- Spark Arresting Muffler

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Chainsaw Inspection (Continued)

- Check chain saw chains, to assure proper adjustment and no chain movement when the engine is idling. The chain should be tight to the bar, but loose enough to be gently pulled around the bar by hand. If the chain is too loose it can jump out of the bar during operation. Also check cutting edges, to assure that they are sharp and properly shaped.



- Check the air and fuel filters and clean or replace if necessary.
- The cutting edge of each tool shall be sharpened in accordance with manufacturer's specifications whenever it becomes dull during the work shift. Cut Resistant gloves SHALL be worn while sharpening chain.

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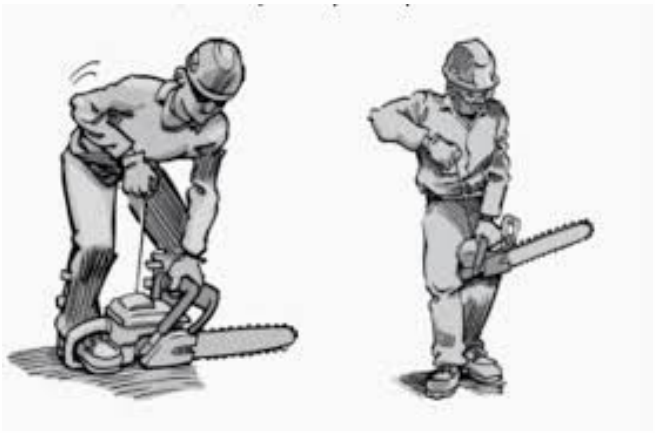
7.2 Start and Stop Procedures



- Secure footing shall be maintained when starting the chain saw.
- When starting a chain saw, the operator shall hold the saw firmly in place on the ground or using the leg-lock method. The chain saw shall be started with the chain brake engaged. Drop-starting a chain saw is prohibited.
- Chain-saw engines shall be started and operated only when other workers are clear of the chain saw.
- A 10-ft bubble shall be maintained around chainsaw operators. 20-ft between multiple operators.
- Chain saws should be allowed to idle for a short period to warm up before starting to cut. To stop the chain saw, the engine should be lowered to an idle, the chain brake engaged and then the engine turned off.
- Chain saws SHALL be started on the ground, warmed up, shut off and then sent into the tree. Chain saws shall not be running while being sent aloft.
- Chain saws shall be carried aloft or raised and lowered to a climber by use of a work line.

7.3 Operation

- When operating a chain saw, the worker shall hold the saw firmly with both hands, keeping the thumb and fingers wrapped around the handle.
- The chain brake shall be engaged, or the engine shut off, before setting a chain saw down.
- When a chain saw is being carried more than two steps, the chain brake shall be engaged or the engine shut off The chain saw shall be carried in a manner that will prevent operator contact with the cutting chain and the muffler. The chainsaw bar will face to the rear.
- 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, have insecure footing, or relinquish a firm grip on the saw.

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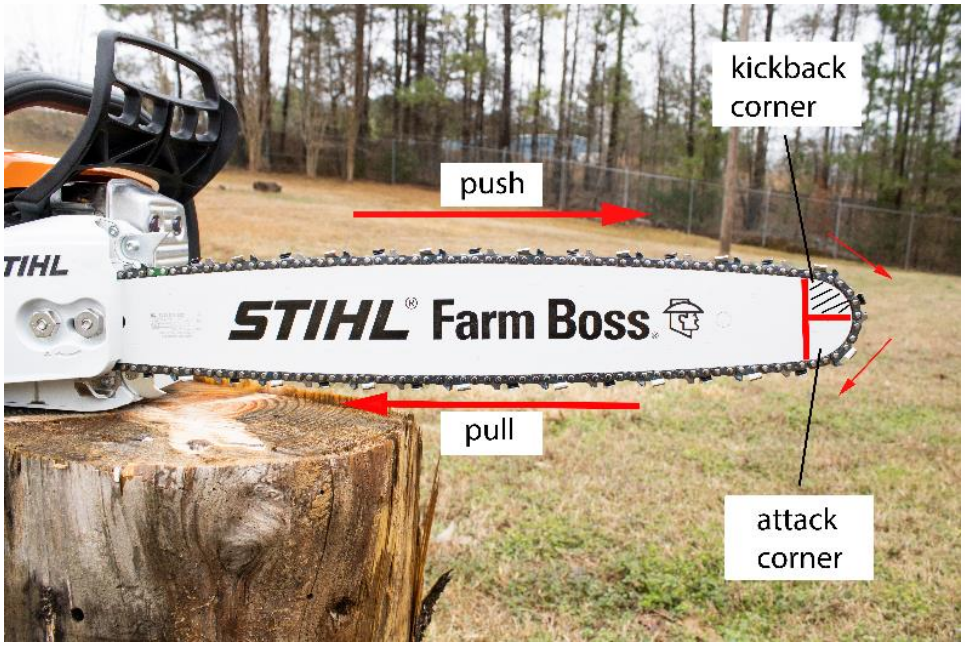
Chainsaw Operation (Continued)

- Kick back occurs when the top of the bar tip catches or strikes an object causing a violent movement of the bar upward. This can be prevented by avoiding cutting with the tip of the bar.
- A properly sharpened chain will cut quickly. Putting pressure on the saw to try to make it cut faster will make the saw bind in the cut. The operator should guide the saw, not attempt to push it faster through the cut.
- A kick back can also occur if the chain saw pinches in a cut. This can cause the tip to move violently upward or the body of the saw to be pushed violently out of the cut. To avoid this be aware of the tension of the wood or limb being cut.
- Normal cutting with the bottom of the bar causes the saw to be pulled into the cut; Therefore, the body of the saw should be against the object being cut. This also gives the operator leverage to guide the saw.
- Cutting with the top of the bar causes the saw to push out of the cut, so the operator may need to brace against the saw to control it.



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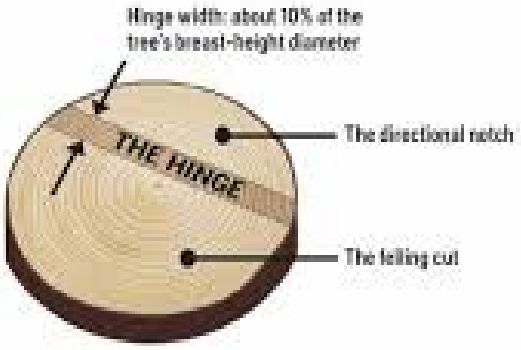
Section 1 Groundhand/Trimmer Trainee

7.4 Reaction Wood

When a woody plant is subjected to mechanical stress during growth, it forms compression wood and tension wood to support the tree. Compression wood forms on the underside of a limb or lean pushing the tree or limb up. Tension wood forms on the upper side of the limb or lean pulling the tree or limb up. This condition creates pressure that is released very quickly when the limb or tree is cut. This pressure can cause the limb or tree to split, barber chair or plank when cut. This reaction can cause serious injury to a trimmer positioned directly behind the cut. Climbers shall not position themselves in this hazardous position.

7.5 Tree Removal

- Generally, dead trees and incompatible or fast growing trees should be removed.
- Workers not directly involved in any tree removal operation shall be clear of the work area, where practicable, beyond twice the height of the tree.
- Any limbs that can come in contact with the energized conductors and electric facilities SHALL be removed before felling the tree.
- A planned escape route for all workers shall be prepared before cutting any standing tree or trunk. The preferred escape route is 45 degrees on either side of a line drawn opposite the intended direction of the fall. Obstructions shall be cleared along the escape path. The chain-saw operator shall use this path for egress once the cut has been completed.



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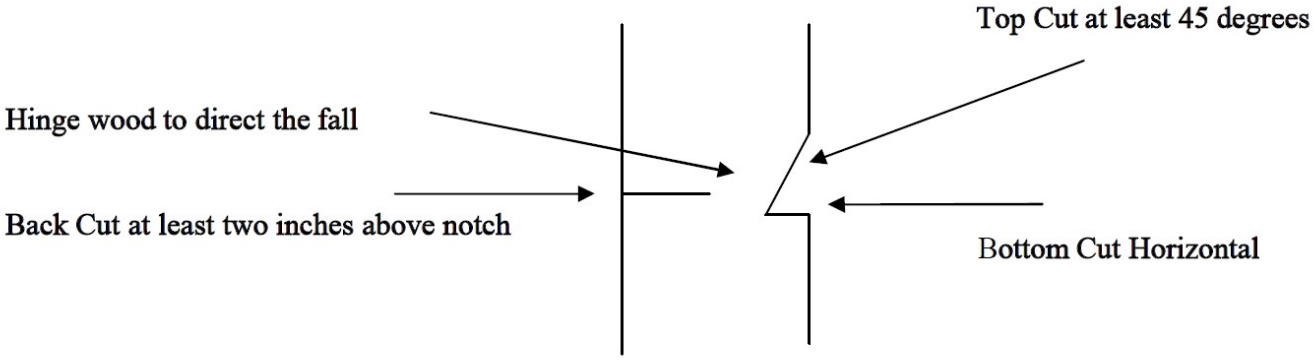
Tree Removal (Continued)

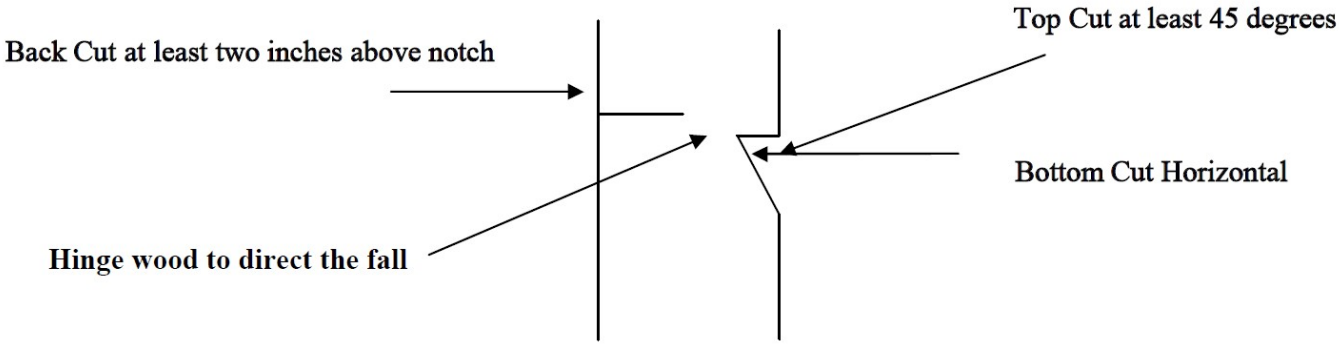
- When it is necessary to shorten or remove branches before removing the tree, the arborist shall attempt to determine whether the tree can withstand the strain of the lowering procedures. If not, other means of removing the tree should be considered.
- The crew leader shall determine the number of workers necessary for tree removal operations.
- Wedges, block and tackle, rope, or other appropriate devices shall be used when there is a danger that the tree or trees being removed may fall in the wrong direction or damage property. All limbs shall be removed to a height and width sufficient to allow the tree to fall clear of any wires and other objects in the vicinity.
- Tackle blocks and pulleys and their connecting links shall be inspected immediately before use and removed from service if they are found to be defective.
- When a pull line is being used, workers involved in removing a tree or trunk shall be clear by a minimum of one and one-halftimes the height of the tree. They shall also be positioned so they will not become entangled in the rope. Never wrap the rope around parts of the body.
- Notches shall be used on all trees and trunks greater than 5 inches (12.7 cm) in diameter at breast height.
- Notches and back cuts shall be made at a height that enables the chain-saw operator to safely begin the cut, control the tree or trunk, and have freedom of movement for escape.
- The notch cut used shall be a conventional notch, an open-face notch, or a Humboldt notch.
- Notches shall be 45 degrees or greater and large enough to guide the fall of the tree or trunk to prevent splitting.
- Notch depth should be 25%-33% the diameter of the tree.
- The back cut shall not penetrate into the predetermined hinge area.
- Hinge wood should be 5%-10% the diameter of the tree. No less than 1 inch.
- With a conventional notch or Humboldt notch, the back cut shall be 1 to 2 inches (2.5 to 5 cm) above the apex of the notch to provide an adequate platform to prevent kick back of the tree or trunk. With an open-face notch (greater than 70 degrees), the back cut should be at the same level as the apex of the notch.
- The two cuts that form the notch shall not cross at the point where they meet. (Bypass)
- Before making the back cut, there shall be a command such as "stand clear" from the arborist operating the chain saw and a response such as "all clear" from the workers supporting the removal operation. Pre-arranged, two-way hand signals may also be used. Only designated persons shall give such signals. All workers in the vicinity shall be out of range when the tree or trunk falls.
- Visual contact should be maintained with the tree or trunk until it is on the ground.
- When the back cut has been completed, the chain-saw operator shall take the planned escape route.
- Once the tree is falling in the correct direction, the workers should release the rope and move away.

7.6 Felling Notches

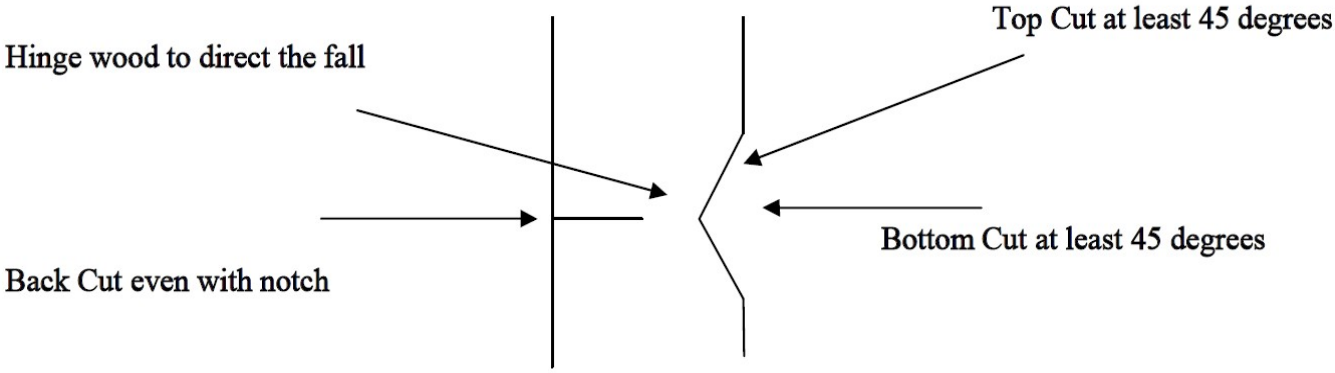
Standard Notch



Humboldt Notch



Open Face Notch



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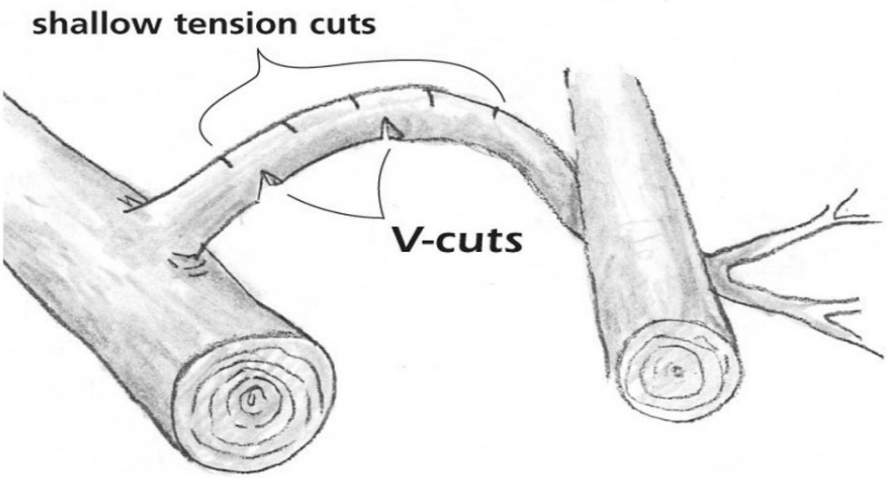
7.7 **Limbing and Bucking**

- Work plans for limbing and bucking operations shall be communicated to all workers in a job briefing before work begins.
- When more than one worker is limbing or bucking a tree, each shall be positioned and their duties organized so that the actions of one worker will not create a hazard for any other worker.
- Chain saws should be operated away from the vicinity of the legs and feet. Natural barriers, such as limbs between the saw and the body, should be employed where possible, while ensuring proper balance. While operating a chain saw, the preferred working position is on the uphill side of the work.
- The worker shall make sure of firm footing before and during limbing and bucking. The worker shall not stand on loose chunks or logs that will roll when the log being bucked is sawed off.
- Trees, limbs, or saplings under tension shall be considered hazardous because they will spring back to their natural position when released. Workers should find the center of the two angles of a springpole and gently shave the compression side until energy is released.



- Wedges or small twigs should be used as necessary to prevent binding of the guide bar or chain when bucking trunks of trees.
- Cant hooks or peaveys should be used as an aid in rolling large or irregular logs to complete bucking.
- If mechanized equipment is to be used, the equipment operator shall establish an effective means of communication with other workers.
- Workers shall not approach mechanized equipment operations until the equipment operator has acknowledged that it is safe to do so.

7.8 Powered Pole Tools and Backpack Power Units

- Power units shall be equipped with a readily accessible, quick shutoff switch.
- Powered pole tools with poles made of metal or other conductive material shall not be used in operations where electrical hazards exist.
- Only workers operating the equipment shall be within 10 feet (3.05 m) of the cutting head of a brush saw during operations.
- Operators shall observe the position of all other workers in the vicinity while the equipment is running.

8.0 Hand Tools

8.1 Cant Hooks, Cant Dogs, Peaveys, and Tongs

- Arborists and other workers shall always stand uphill from rolling logs, and all workers shall be warned and in the clear before logs are moved.
- Points of hooks shall be at least 2 inches (5 cm) long and kept sharp.
- Cant hooks should be firmly set before applying force.

8.2 Wedges, Chisels, and Gouges

- Wedges, chisels, and gouges shall be inspected for cracks and flaws before use. Tools with damaged heads shall not be used.
- Wedges and chisels shall be properly pointed and tempered.
- Only wood, plastic, or soft-metal wedges shall be used while operating chain saws. Wood-handled chisels should be protected with a ferrule on the striking end.
- Wood, rubber, or high-impact plastic mauls, sledges, or hammers should be used when striking wood-handled chisels or gouges.
- Eye protection shall be used during impact operations.

8.3 Chopping Tools

- Chopping tools should not be used while working aloft.
- Chopping tools shall not be used as wedges or used to drive metal wedges.
- Chopping tools shall be swung away from the feet, legs, and body, using the minimum force practical for function and control.
- When swinging tools such as grub hoes, mattocks, and axes, a secure grip, firm footing, and clearance of workers and overhead hazards shall be maintained.

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8.4 Hand Saw

- A saw will cut only so fast. Any attempt to force it through or make it cut faster will generally result in binding and buckling the saw-and may produce an injury.
- Any saw must be kept straight in the cut, or it will buckle or bind.
- A slight down pressure on the blade will prevent the rake of teeth from "jumping" the saw out of the cut.
- The free hand shall be kept away from the cut, so that, if the saw should jump out of the cut, it won't result in an injury.
- Knees shall be kept well out of the way of the sweep of the saw. If they aren't, a slip may produce a severe wound.
- Don't use the cutting edge of the saw blade to knock off dead stubs or branches. Avoid bending the saw blade. A bent saw blade tends to bind in the cut.
- Saws shall be stored in the proper place away from ropes and hazardous materials.

8.5 Pole Pruners



- Pole Pruners are used to trim small branches from the ground and to clip vines that are attached to the limbs or trees that are being cut. Use the pole pruner to cut the vines before cutting the limb and the limb can fall free. If the limb catches in vines the trimmer can remain a safe distance away and cut the vines with the pole pruner until it falls free.
- DO NOT cut directly overhead.
- A clean, dry pole pruner is a non-conductive tool for working around the electrical conductors. If cut limbs hang in the trees or on conductors, the pole pruner can be used to pull the limbs off or cut the limbs to make them fall free.
- Pole pruners can be used to set lines. This can be done by placing the rope over or around the pulley side of the head and dropping the rope through a crotch. If the crotched rope does not fall back to the worker, the pulley side of the head can be used to pull the rope down. DO NOT use the hook side of the head as this can accidentally cut the rope.
- Keep fingers out of the hook of the pole pruner. Never pull the pole clip off the truck or drag it along the ground by putting a finger in the hook, or by grasping the end of the pole just below the hook, since the sash cord can too easily catch on something and operate the blade.

Pole Pruners (Continued)

- A pole pruner shall never be hung on a conductor.
- Poles shall not be painted or wrapped with electrical tape as this can make the pole retain moisture.
- Cracked poles should be replaced.
- Fiberglass poles will need to be periodically cleaned as dirt and sap can help conduct electricity.

8.6 Pole Saw

- When hung, the pole saw shall be hung securely with the sharp edge away from your body. A pole saw SHALL NEVER be hung on a conductor of any kind.
- Poles shall not be painted or wrapped with electrical tape as this can make the pole retain moisture.
- Blades shall not be stored loosely with other tools, ropes or hazardous materials.
- Poles with blades attached should not be stored in a position in which they can cause injury to a person passing by or moving around the truck.
- Pole pruners or pole saws shall not be hung on electrical conductors. Pole tools used in utility operations shall be constructed with fiberglass

8.7 Ropes

- Ropes shall be inspected before use and if damage is suspected. Look for breaks or cuts, excessive wear, dirty fibers inside the rope and an exterior that is stretched past the core. If part of the rope near the end is unsatisfactory, the end can be cut off If the entire rope is unsatisfactory, it shall be removed from service. Damaged ropes shall not be used.
- Because of stress and torque involved in using ropes workers shall identify the safe working load of each rope before use. Shockload should be determined before rigging operations are completed.
- Climbing lines may not be used for any other purpose. If a climbing line has been used for another purpose it can no longer be used as a climbing line.
- Do not use wet ropes when working in close proximity to energized conductors.
- Hand lines shall never be wrapped around the arm or any other part of the body to provide a better grip.
- When inspecting 12/16/24/32 strand ropes, if one or more strands is cut all the way through the rope must be taken from service. If two or more strands are cut halfway through within 2 inches the rope must be taken from service. Use the pinch test shown below to test any "bad spots" found in the rope. DO NOT burn frays in the rope as this damages fibers. Carefully cut off frays using finger-nail clippers or a small knife/scissors.
- All persons shall be kept clear of any rope or part of a rope or cable under strain.
- Ropes shall not be stored, or brought in contact with sharp edged tools, equipment or any other objects or material that might damage them.

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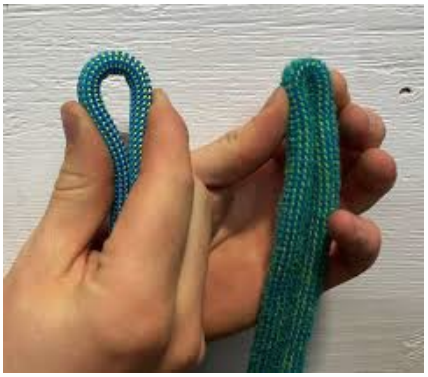
Ropes (Continued)

- Ropes shall be kept free ofdirt, gas, oil, grease, acids or any other chemical or material that may cause any harm to the rope. Ropes are not to be stored in the same bin as chemicals.
- Ropes have a number of loads it can take before it inevitably breaks. This is called "cycles to failure". The more times a rope is shock loaded, the sooner it will break. Set up rigging applications in a way to prevent dynamic loading when possible.



Shockload Formula:

Weight of wood x Number of feet falling + Weight of Wood

Example: 300 lbs log falling 2 feet
300x2+300=900 lbs of shockload at the rigging point.

Use the Green Weight Log Chart on your employee portal to calculate log weight prior to rigging.

Energy Group Inc
Line Clearance Certification Program
Section 1 Groundhand/Trimmer Trainee

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Energy Group Inc
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Verification

Employee Name: _____

GROUNDHAND/TRIMMER TRAINEE

	Instructor Initials	Date
1.0 General Safety		
1.1 Personal Protective Requirements		
1.2 Proper Lifting		
1.3 Tools and Equipment		
1.4 Vehicles and mobile equipment		
1.5 Outriggers		
1.6 Outrigger Placement		
1.7 Hazard Identification		
1.8 Emergency Procedures		
1.9 Incident Reporting		
2.0 Electrical Safety		
2.1 Elements of Electricity		
2.2 Completing a Circuit		
2.3 Kinds of Electrical Contact		
2.4 Electrical Hazards on the Ground		
2.5 Minimum Separation		
2.6 Electrical Systems Overview		
2.7 Substation Safety		
2.8 Working in Proximity to Electrical Hazards		
3.0 Temporary Traffic Control (T.T.C.)		
3.1 TTC Set Up		
3.2 Sign and Cone Placement		
3.3 Flagger Placement		
3.4 Fundamentals of Traffic Control		
4.0 Railroad Safety		
5.0 Wood Disposal		
6.0 Chippers & Site Cleanup		
6.1 Inspection & Maintenance		
6.2 Start & Stop Procedures		
6.3 Operation		
6.4 Stacking & Dragging Brush		
6.5 Raking & Sweeping		
6.6 Leaf Blower		

Energy Group Inc
Line Clearance Certification Program
Verification

Employee Name: _____

GROUNDHAND/TRIMMER TRAINEE

	Instructor Initials	Date
7.0 Chainsaws & Power Pole Tools		
7.1 Inspection & Maintenance Procedures		
7.2 Start & Stop Procedures		
7.3 Operation		
7.4 Reaction Wood		
7.5 Tree Removal		
7.6 Felling Notches		
7.7 Limbing & Bucking		
7.8 Power Pole Tools		
8.0 Hand Tools		
8.1 Cant Hooks & Tongs		
8.2 Wedges, Chisels, and Gouges		
8.3 Chopping Tools		
8.4 Hand Saw		
8.5 Pole Clip		
8.6 Pole Saw		
8.7 Ropes		

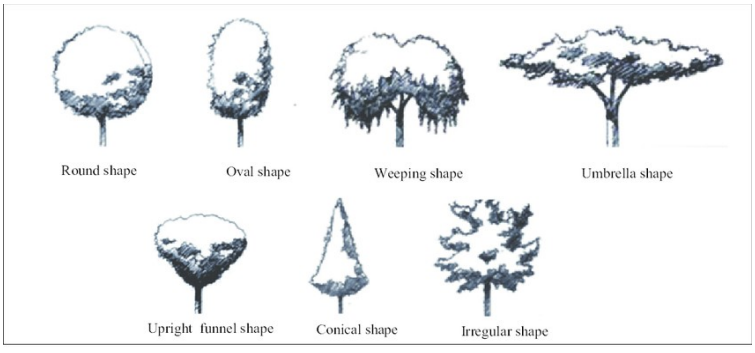
Energy Group Inc
Line Clearance Certification Program
Section 2 Trimmer

9.0 Introduction to Trimmer

- Trees or limbs that fall into utility lines have serious consequences. Not only can they injure people or property near the line, but hitting a line may cause power outages, surges, fires and other damage. Downed utility lines still conduct electricity and are especially dangerous. A tree with a potential to fall into a utility line is a very serious situation.
- A second crew member SHALL remain within voice or visual contact during line clearance operations aloft.
- All line clearance employees SHALL maintain minimum safe working distances at all times.
- In case of inclement weather, work SHALL be suspended until it is safe to resume.
- All hand tools SHALL be handed aloft or raised and lowered by means of a work line or climbing line. Pole tools SHALL be attached to the line in a way that prevents the line from contacting the cutting edges.
- Tools and equipment SHALL NOT be thrown into or dropped from a tree or lift.
- Branches and limbs SHALL be trimmed with an insulated tool or roped when necessary to avoid contact with the energized conductors.
- Limbs and branches shall be cut using a method to avoid contacting the conductors.
- Any limbs that hang on a conductor SHALL be removed as soon as safely possible with a nonconductive tool.

9.1 Tree Identification

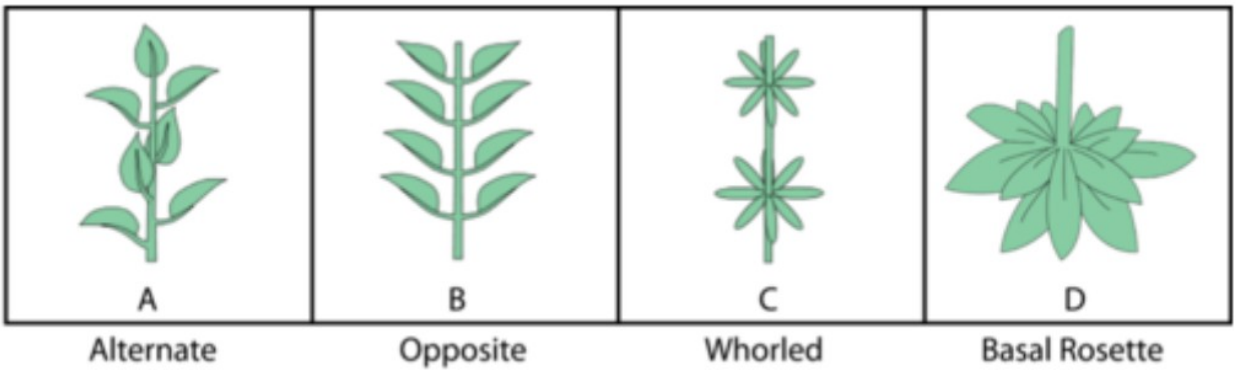
- Different species of plant have different characteristics that are important to the job we do. Growth rate, wood and limb strength and wood weight are some of the characteristics of trees that need to be considered in planning the job. Appearance, growth pattern and maintenance requirements are characteristics of grass and shrubs that may be considered.
- Identification of plants depends on a knowledge and experience with common species both desirable and undesirable. In today's world, many apps on your smartphone offer help to identify tree species. But there are many alternate ways a qualified line clearance arborist can identify trees with the naked eye. Leaves, bark, growth structure, seeds, flowers, and many more. Also take into consideration the geographical area and habitat, as most areas have trees that are native to a particular location.



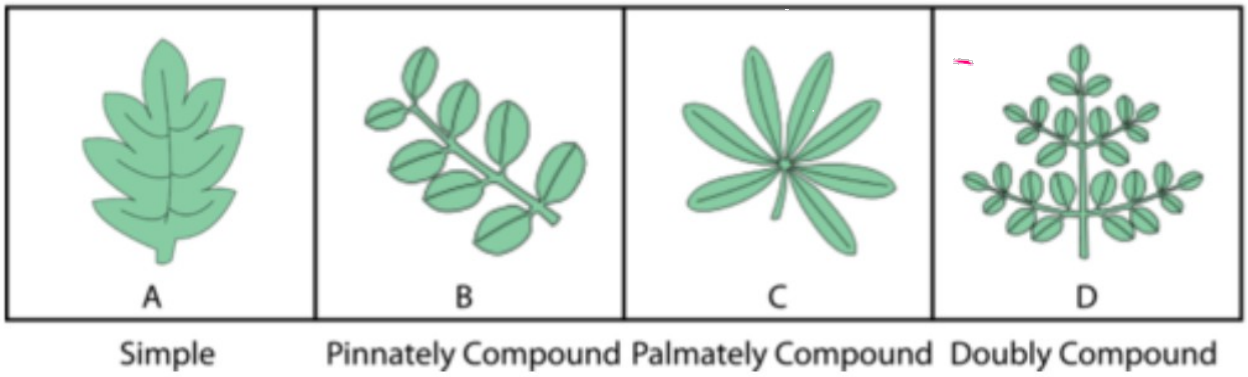
Energy Group Inc
Line Clearance Certification Program
Section 2 Trimmer

9.2 Leaves

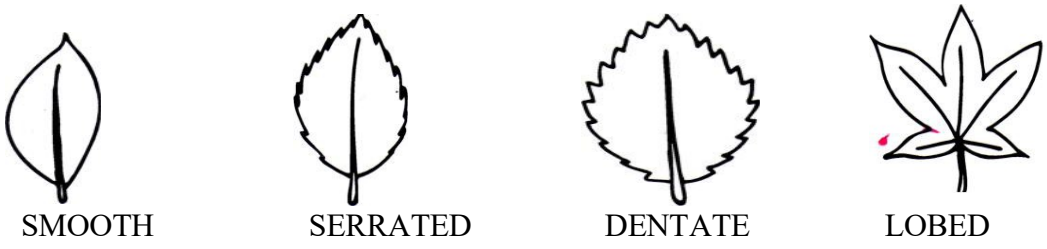
- Observing the arrangement of leaves on the stem can help identify different species.



- The structure of the leaf helps in the identification process.



- Leaf margin is the shape of the edge of the leaf and can help with the identification as well as texture and color.



Leaves (Continued)

- Needle bearing trees and shrubs can be identified by the structure of the needles and the color and length.

SINGLE NEEDLE

CLUSTER NEEDLE

9.3 Bark

- Many tree species have unique bark characteristics.

SHEDDING

ROUGH

SMOOTH

9.4 Seeds

- Seeds, cones, berries and seed heads can help identify different plants.

9.5 Flowers

- When flowers are in bloom, they can help identify the plant species.


10.0 Trimming Cut

10.1 Ripping or Fast Cut

- Ripping or fast cutting is cutting from one side until the weight of the branch rips it off.
- This should only be done when the limb has sufficient clearance to fall without causing any damage or injury. I the branch is to large, this cut can cause peeling back into the trunk tissue.

10.2 Drop Cuts and Snap Cuts

- Drop Cuts and Snap Cuts are made so the branch falls off clean without any ripping. The drop cut is made by placing an undercut in the limb about ¼ - 1/3 the way through, followed by a top cut overlapping the undercut. This will cause the limb to break and fall straight down. The snap cut is made by placing alternating/overlapping cuts on either side of a branch/log at a distance apart. The distance between cuts and the distance of overlapping will depend on the size of the limb and the type of wood. This cut is often used when "blocking" down large logs. Be careful to practice this cut on the ground out of harms way before trying it aloft near the conductors.

10.3 Notch and Back Cuts

- Notches and back cuts are primarily used for tree removal and the procedures are outlined in the previous tree removal section. When topping a tree, a notch cut is to be used. It is best use a shallow 25-45 degree notch when pulling over a top.

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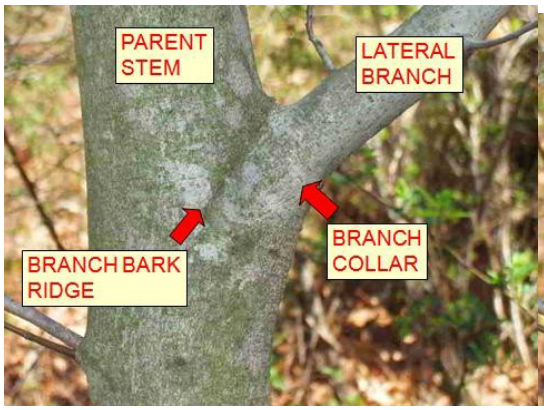
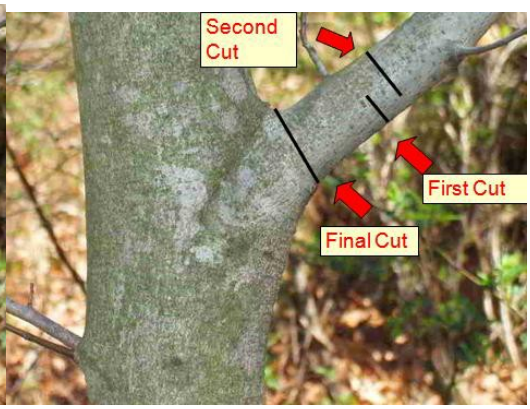
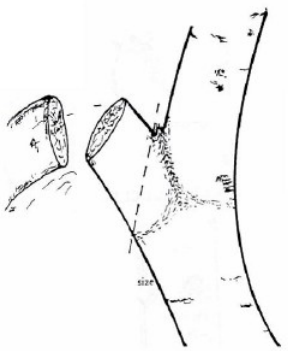
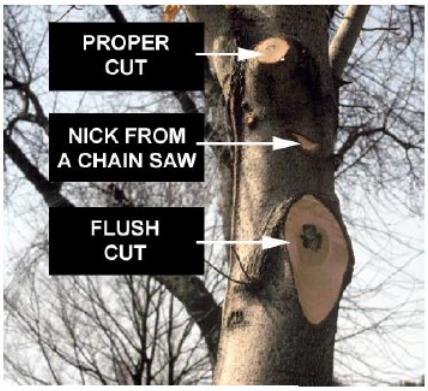
10.4 Final Cuts at Branch Collar

- Final pruning cuts call for a cut to be made at the branch collar avoiding contact with the branch bark ridge.
- Whenever a branch of a tree is cut, the tree is injured and an entry point for microorganisms (infection) is opened.
- The tree's natural defenses respond by compartmentalizing or "walling off" the site of injury. The faster a tree can accomplish this, the less infection enters. Any infection that does enter causes decay and thus weakens the tree.
- Flush cutting removes the branch collar and/or branch bark ridge, and thus leaves the wound without a protective zone.
- The branch bark ridge and branch collar vary in appearance among species, especially between hardwoods and softwoods.









10.5 Pruning to Laterals and Selective Pruning

- Natural or directional trimming, shall be employed.
- Pole clipping should be held to a necessary minimum. In many cases, trees can be satisfactorily trimmed with fewer cuts. Minimal clipping and preserving limb structure is essential to obtain good natural form.
- Trimming shall at all times be done in accordance with applicable laws and governmental regulations.
- Natural trimming is a method by which branches are cut, so as not to injure the branch bark ridge, at a suitable parent limb back toward the center of the tree. This method of trimming is sometimes called "drop crotching" or lateral trimming. Large branches should be removed to laterals at least one-third the diameter of the branch being removed. Natural trimming is especially adapted to large trees where a great deal of wood must be removed.
- In natural trimming, almost all cuts are made with a saw, and very little pole pruner work is required. This results in a natural looking tree when finished, even if a large amount of wood has been removed.
- When pruning a limb or tree no more than twenty-five to fifty percent of the leaf surface should be removed. If more leaf surface needs to be removed, the entire limb or tree should be removed if possible.
- The principles of natural type pruning are applicable to tree height control and side, under, and through trimming. The method must be applied with discretion and intelligent thought to avoid excessive and unnecessary work.
- Pole clipping use should be held to a necessary minimum. In many cases, trees can be satisfactorily trimmed with fewer cuts.
- Look at the conductors.
- Look at the conductor interference.
- Trace the conductor interference (the limb) back on a priority basis to a natural union with another limb.
- Remove the conductor interference at the most desirable union.
- Assure best possible shape.
- Natural target trimming is also directional trimming, since it tends to guide the growth of the tree away from the wires.
- Stubbing or pole-clip clearance, on the other hand, tends to promote rapid sucker growth right back into the conductors.
- Most shade trees lend themselves easily to this type of trimming. Elm, Norway maple, red oak, red maple, and sugar maple are the most common street trees, and these species react especially well to natural trimming methods.
- Stubbing, stumping or pole-clipping should not be done as this tends to promote rapid sucker growth as well as an entranceway for insects and disease.

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DO NOT Stub, Stump, or Round over.

- Determine the minimum amount of the branch to be pruned.
- If the limb can be pruned at that location in accordance with the requirements of this section, make the pruning cut.
- If the limb cannot be pruned at that location in accordance with the requirements of this section, proceed away from the terminal bud and towards the trunk until a lateral branch that meets the requirements of this section can be located. If no such lateral branch can be located, or pruning at the appropriate lateral would involve removal of more than 50% of the biomass of the branch, remove the branch at the base (parent limb or trunk).

10.6 Height Control

- Height control is achieved by cutting back portions of the upper crown of the tree. This is often required when a tree is located directly beneath a line. The main leader or leaders are cut back to a suitable lateral. (The lateral should be at least one-third the diameter of the limb being removed.) Most cuts should be made with a saw; the pole pruner is used only to prune some of the high lateral branches.
- For the sake of appearance and to limit the amount of regrowth, it is best not to remove more than one-fourth of the crown when controlling height. In certain species, removal of too much of the crown may result in death of the tree.

10.7 Rounding Over

- Rounding over (or shearing) is done by making many small cuts so that the tree top is sheared in a uniform line. This creates an unhealthy tree condition and results in rapid regrowth of suckers directly toward the electrical conductors.

10.8 Pollarding

- This is done by stubbing off major limbs until the tree assumes the desired shape. The result is not only unsightly, but a multitude of fast-growing suckers will sprout from the stubs. The stubs are quite likely to fall victim to decay or disease.

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10.9 Through Trimming

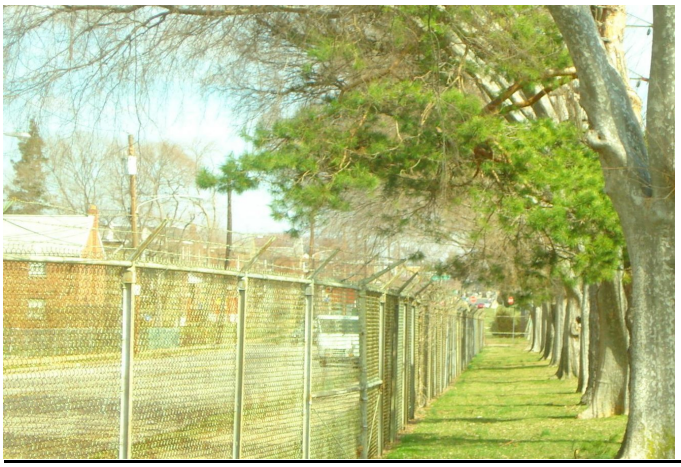
- Through trimming is the removal of branches within the crown to allow lines to pass through the tree. It is best suited for secondaries, and cables, although it is often used on primary circuits where there is no other way of trimming the tree. Cuts should be made at crotches to encourage growth away from the lines. Care must be taken with dead limbs inside the crown.

10.10 Side Trimming

- Side trimming consists of cutting back or removing the side branches that are threatening the conductors. Limbs should be removed at a lateral branch or the main trunk. if possible.
- Proper side trimming of conifers will often eliminate the need to trim them in future cycles. However, if branches of conifers are left below the conductors, they will produce shoots that will grow upward and require retrimming.

10.11 Under Trimming

- Under trimming, also called elevating, is the removal of lower limbs of a tree without trimming the upper portion of the tree except for removal of dead branches. Two thirds of the height or length needs to have leaf surface remaining after pruning. Leaving leaf surface only toward the ends (lion tailing) can lead to severe damage. Leaves and branches catch the wind and distribute the force. If the leaf surface is only toward the ends, the force is not distributed and the limb or tree can easily break.
- This practice shall be limited to ornamental or landscape trees found along primary distribution lines in residential lawn areas and trees overhanging "covered" conductors (i.e., tree cable, triplex, etc.)
- When trees are of sufficient height and lines are directly underneath, it is desirable to under trim. However, trees that lack wood strength should not be permitted to "overhang" lines.



Under trimming

Lion Tailing is Unacceptable

10.12 Overhangs

- Trees and limbs that overhang the conductors endanger the conductors and facilities.
- If overhangs can come in contact with the conductors they shall be roped back or cut back by taking pieces only large enough to be handled easily.
- If overhangs are in contact with conductors they shall be removed with non-conductive tools, or the conductors de-energized.
- To rope back an overhang, crotch a hand line above and behind the lines. Make sure that the crotch can hold the weight of the limb, that it is sufficiently high enough and back far enough so that the limb will clear the wires when lowered. Tie the hand line at least two thirds of the way out on the limb, so that the limb will not be balanced in the rope and the butt will hang down once the limb is cut free.
- Make sure that there is enough ground personnel to handle the weight, then undercut carefully until the ground personnel can pull the limb into the crotch. Then the cut can be finished and the limb lowered safely to the ground. Wrapping the hand line around another tree or using blocks and come-a-longs may be necessary to support the weight.
- A butt line may be necessary to prevent the heavy end from swinging into the wires or against the climber causing an accident. This butt line then can be used for a tag line to guiding the limb to the ground.

10.13 Pruning and Trimming

- Communications among arborists aloft and among arborists and other workers on the ground shall be established before cutting and dropping limbs.
- Pole pruners and pole saws, when hung, shall be securely positioned to prevent dislodgment. Pole pruners or pole saws shall not be hung on electrical conductors or left in a tree unattended. Pole saws and pole pruners shall be hung so that sharp edges are away from the arborist and shall be removed when the arborist leaves the tree.
- Scabbards or sheaths shall be used to carry handsaws when not in use. Folding saws, when not in use, shall be closed and hooked to the arborist saddle.
- Pole tools used in line-clearance operations shall be constructed with fiberglass reinforced plastic (FRP) or wooden poles.
- A separate workline shall be attached to limbs that cannot be dropped safely or controlled by hand. Arborist climbing lines and worklines shall not be secured to the same crotch.
- Cut branches shall not be left in trees upon completion of work.

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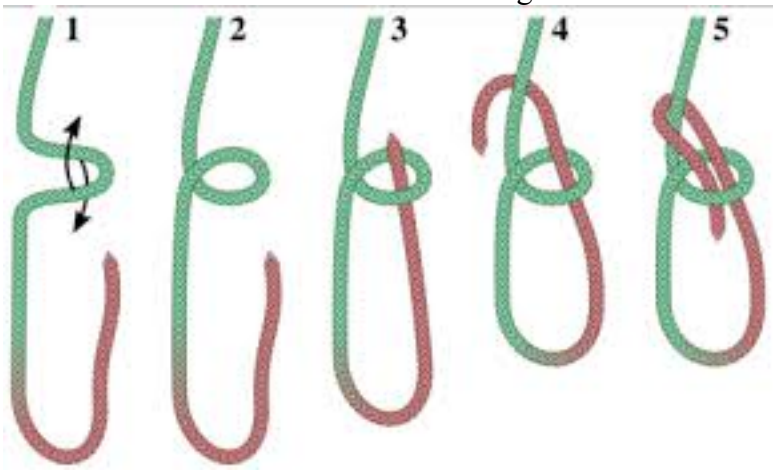
11.0 Knots and Their Use

11.1 Bowline

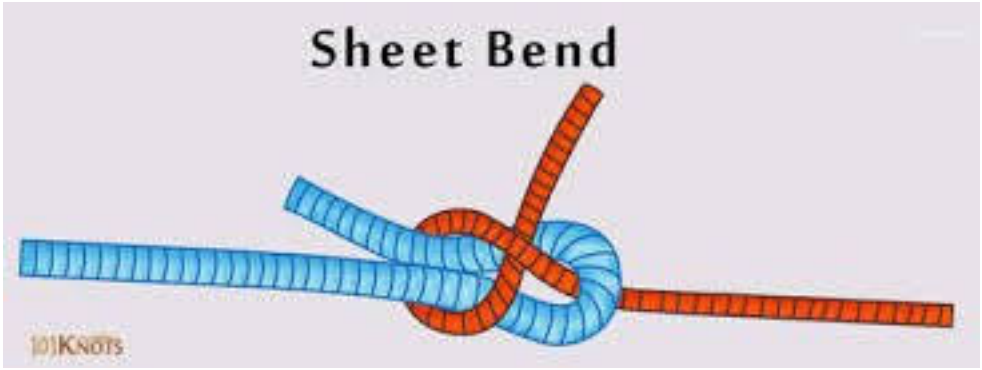
Attaches Climbing Snap to Climbing Line
Tie the ends of two hand lines together



- **A figure 8 must be placed at the tail end of the bowline to prevent unwanted untying of the knot.**

11.2 Sheet Bend

Tie two ropes together temporarily
Tie a hand line to a climbing line for the climber



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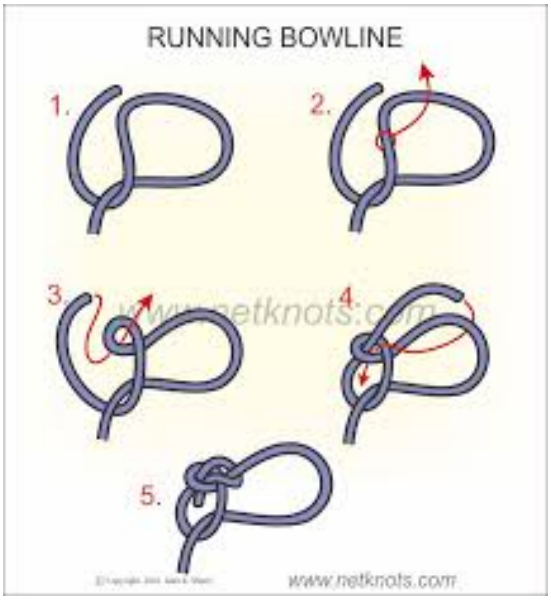
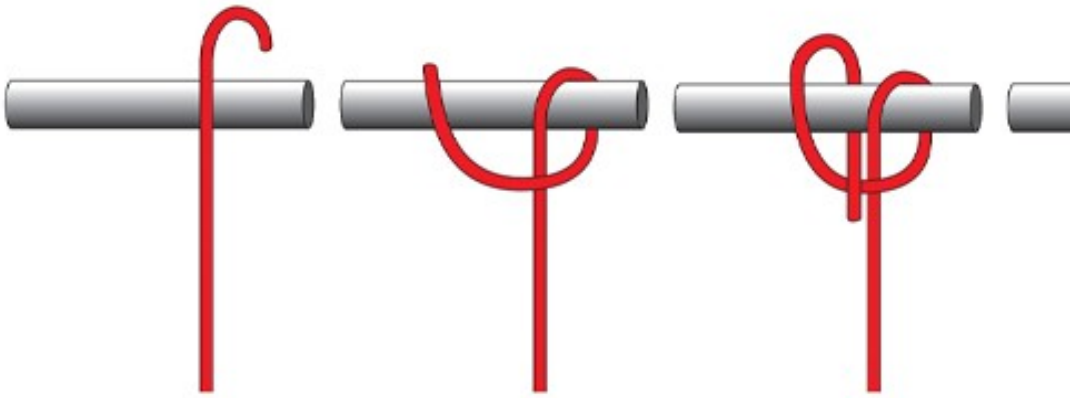
11.3 Running Bowline

Secure limbs for roping
Pull trees/tops over
Must be secured with figure eight on tail.



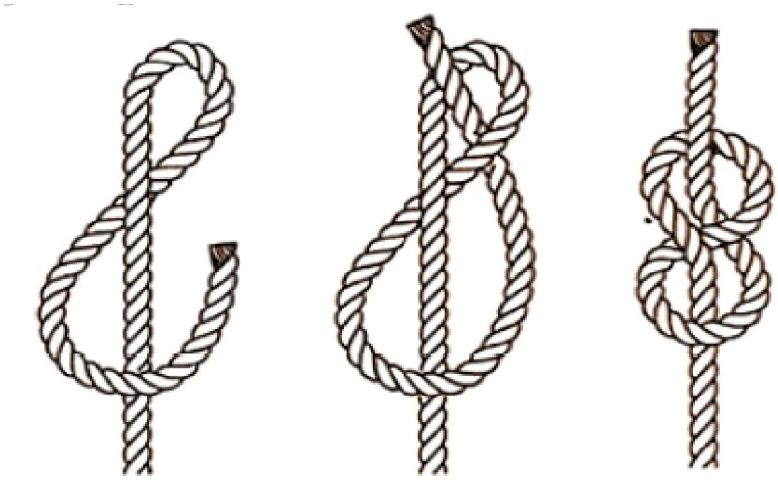
11.4 Clove Hitch/ Half Hitch

Used for raising and lowering tools
Helps secure limb being roped



11.5 Figure Eight

Identifies place to cut during tree rescue
Prevents climbing knot from coming undone
Prevents climbing line from running through climbing knot
Prevents knot from coming undone

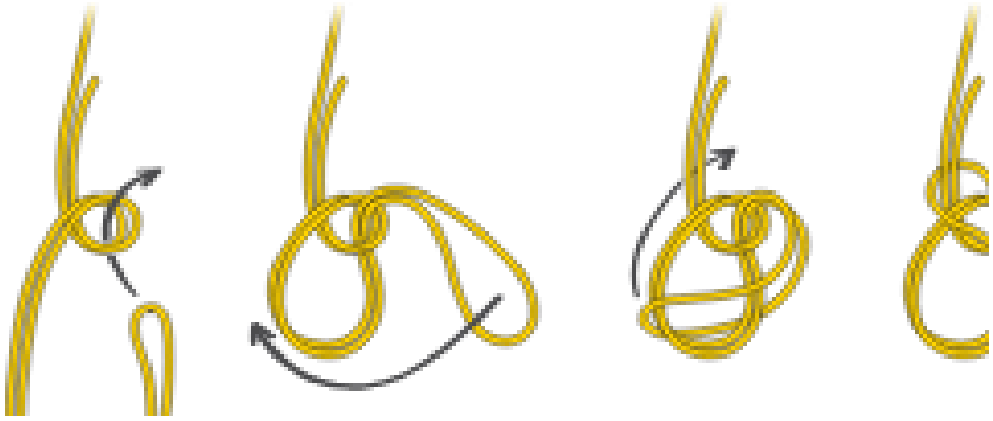


11.6 Square Knot

Ties two lines together

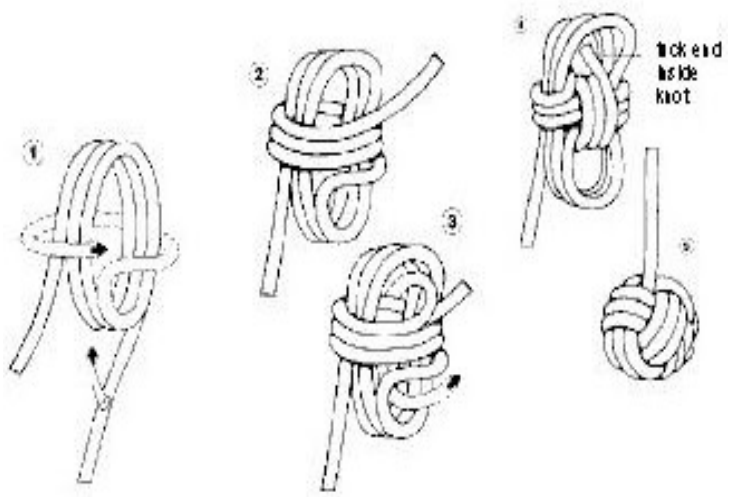
11.7 Bowline on a Bight

Come-a-long or hand hold



11.8 Monkey Fist / Johnny Ball

Weighted knot to throw line into crotch



12.0 Rigging

- Arborists performing rigging operations shall inspect trees for their integrity to determine whether the trees have any visible defect that could affect the operation. If it is determined that the tree poses a risk of failure due to the forces and strains that will be created by the design of the rigging operation, an alternate plan shall be used.
- The number of connecting links used for connecting components of a rigging system shall be minimized when possible. Care shall be taken to ensure that connecting links interface properly and in compliance with manufacturers' recommendations.
- The qualified arborist shall ensure that load ratings shown on the rigging equipment or provided by the manufacturer for all ropes, connecting links, and rigging equipment are observed in all rigging operations. Rigging equipment shall be chosen for the specific task based on working-load limits and design specifications.
- All equipment used for rigging operations shall be in good working condition. Equipment that has been damaged or overloaded shall be removed from service.
- When the potential exists for rigging equipment to be confused with climbing equipment, the equipment shall be clearly marked to indicate their different purposes.
- Rigging points shall be assessed for their structural integrity by a qualified arborist. The rigging plan and the tree shall be considered relative to the forces being applied to any part of the tree, including branch attachments and anchoring roots, before a rigging point is chosen and established.
- Climbers shall choose tie-in points that will provide proper protection while allowing for a separation between the rigging system and the climbing system. Running rigging lines shall not be allowed to come into contact with any part of the climbing system.
- Arborists performing rigging operations shall be educated to understand and trained to estimate the potential forces at any point in the rigging system being used. The system components shall comply with working-load limits relative to the operation and the maximum potential forces.
- Careful consideration shall be given to the potential forces resulting from the specific influences of rope angles as well as the number of lines and/or line parts that will act on any rigging point.
- The spars, limbs, or leaders being worked on and the spars being used for tie-in and/or rigging points shall be assessed for structural integrity and potential reaction forces that could cause a spar to split when it is cut.
- Taglines or other means may be used to help control and handle suspended loads.
- Arborists working aloft shall position themselves so as to be above or to the side of the piece being rigged and out of the path of movement of the piece when it has been cut. Climbers and their climbing systems shall be positioned outside of the rigging system itself when a cut is being made or a load is being moved or lowered. Climbers shall have an escape plan prepared.
- Steps shall be taken to prevent spars from splitting or tearing during the rigging operation, and climbers shall take steps to avoid trapping, pinning, or entangling themselves in the system should the tree split or the rigging fail. Load binders are one possible means of preventing splitting.

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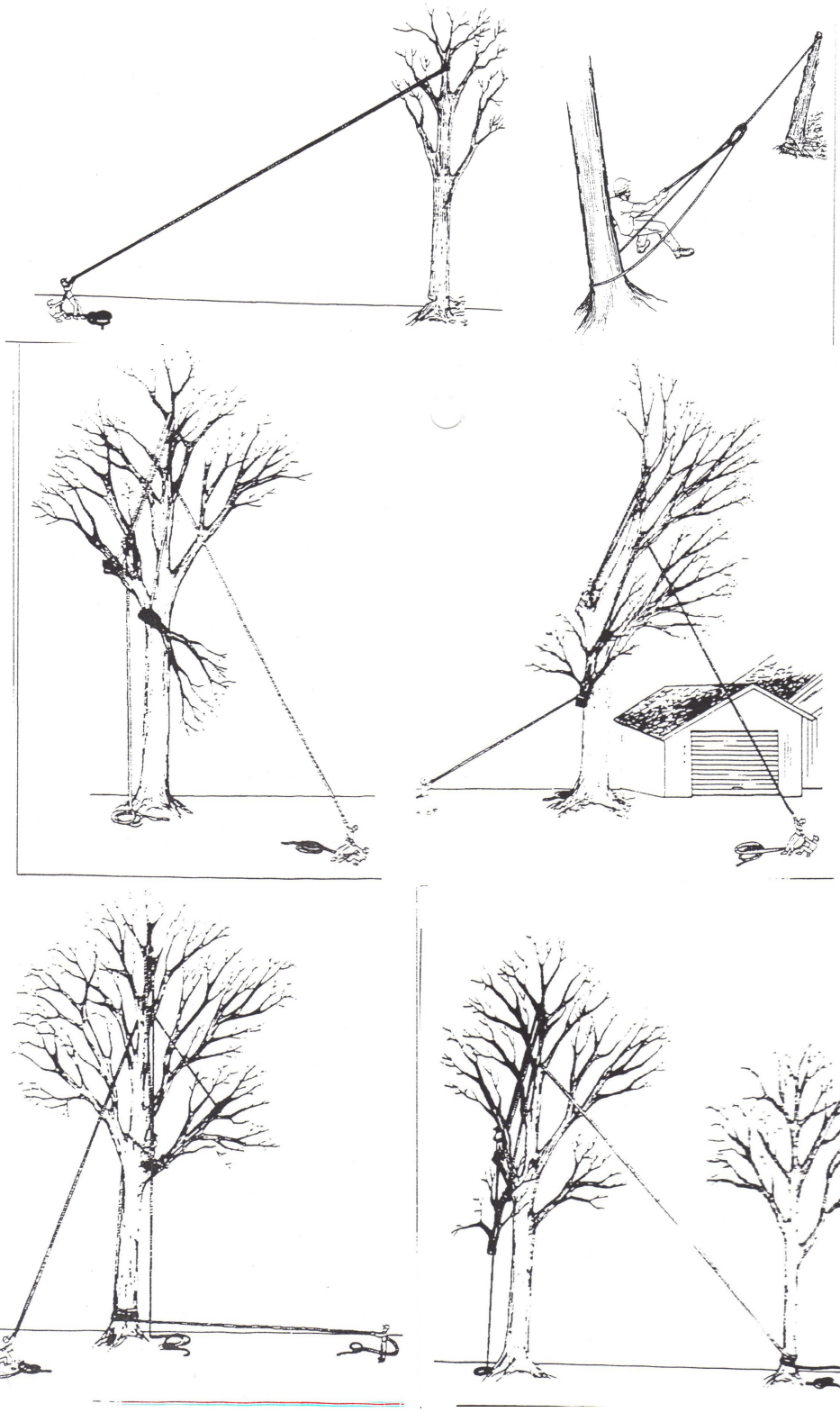
Section 2 Trimmer



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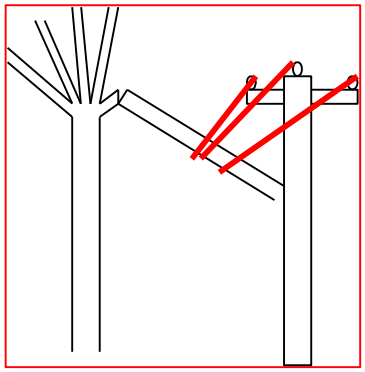
Section 2 Trimmer

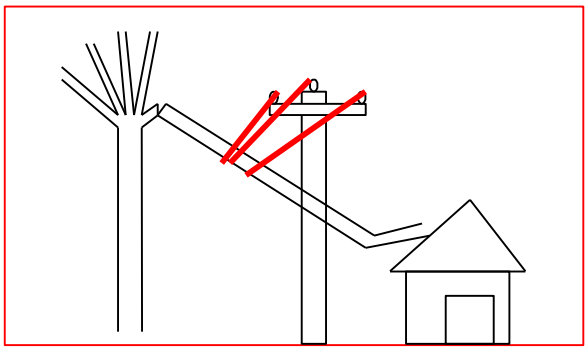
13.0 Storm work

- Never perform any storm work until it has been verified that the conductors are de-energized.
- During storm operations limbs or trees fail and are subjected to different pressure and tensions.
- Before performing any work trimming or removing any failed limb or tree, it must be determined where the points of tension are. All cuts must be made carefully and the limb or tree should be supported by rigging if possible.

13.1 Examples of different tensions are:

- If the conductors remain intact they may be helping to support the tree or limb. If the facilities are not damaged the conductors will move forcefully back to their original position





- If the tree is wedged in trees or resting on a structure beyond the conductors, the pressure may be minimal at the conductors until the tree is cut free of the other trees. When the tree is cut away from the other trees, more damage can occur if there is no other support, such as rigging lines.

13.2 Procedures to remove storm damaged limbs

- Verify that the conductors are de-energized.
  Determine the hazards and points of pressure.
  Plan the work.
- Perform job briefing.
- Install rigging to support the limb if necessary.
- Pull the limb off of the conductors with a non-conductive rope or tool if possible.
  Use an extended cutting tool as much as possible.
- Remove as much brush as possible that is not supporting or going to support the limb to remove weight. Cut everything beyond the furthest point of tension. DO NOT remove limbs with tension at this time.

Removing Storm Damaged Limbs (Continued)

- Remove any slack in the rigging that is created by removing the weight. Remove any brush that has lost the tension and is no longer supporting the limb.
- If the furthest point of tension is the conductors, it may be possible at this point to pull the conductors free with a non-conductive rope.
- After removing all excess weight and ensuring that the rigging is tight, the limb may be pulled or cut from the conductors.
- When pressure is removed from the conductors, they will violently return to their original position, unless the conductors or facilities are damaged. DO NOT cut from a position that places you in the path of the conductors.

13.3 Positive Control

- It is the responsibility of the tree trimmer to always be in positive control of where the tree limbs fall after trimming. Positive control can be achieved by multiple methods and the following list provides a recommended procedure for ensuring positive control:

- When the tree trimmer is making a proper pruner clip and the cut piece is verified to fall to the ground and not fall into a hazard (pieces cut to length shorter than the distance between two adjacent primary or secondary wires of a power line are allowed);

- When the tree trimmer is making a proper tree cut and the cut piece is verified to fall to the ground and not fall into a hazard (pieces cut to length shorter than the distance between two adjacent primary or secondary wires of a power line are allowed);

- When the tree trimmer is using rigging to lower a cut piece away from a hazard.

- When the tree trimmer is handling a limb by hand and throwing the cut piece to a location that is verified to fall to the ground and not fall into a hazard.

- If it is not possible to use the listed methods above, then a planned outage may be needed. Contact your General Foreman immediately if a positive control method listed above cannot be managed on the job. The General Foreman will advise the crew on what to do including, coordinate with the customer to schedule the planned outage to safely trim the tree.

Energy Group Inc
Line Clearance Certification Program
Section 2 Trimmer

Energy Group Inc
Line Clearance Certification Program
Verification

Employee Name: _____

TRIMMER

	Instructor Initials	Date
9.0 Introduction to Trimmer		
9.1 Tree Identification		
9.2 Leaves		
9.3 Bark		
9.4 Seeds		
9.5 Flowers		
10.0 Cuts		
10.1 Ripping or Fast Cut		
10.2 Jump Cuts and Snap Cuts 10.3 Notch and Back Cut		
10.4 Final Cuts at Branch Collar		
10.5 Laterals and Selective Pruning		
10.6 Height Control		
10.7 Rounding Over		
10.8 Pollarding		
10.9 Through Trimming		
10.10 Side Trimming		
10.11 Under Trimming		
10.12 Overhangs		
10.13 Pruning and Trimming		
11.0 Knots and Their Use		
11.1 Bowline Procedures		
11.2 Sheet Bend		
11.3 Running Bowline		
11.4 Clove Hitch		
11.5 Figure Eight		
11.6 Square Knot		
11.7 Bowline on a Bight		
11.8 Monkey Fist		
12.0 Rigging		
13.0 Storm Work		
13.1 Tension		
13.2 Removing Limbs From Conductors		
13.3 Positive Control		

Energy Group Inc
Line Clearance Certification Program
Section 3 Climber

14.0 Climbing Equipment

- Must be inspected before use.
- Climbers must use company issued equipment
- Climbers may use personal equipment only after a safety supervisor has inspected the personal equipment and determined it to be in good working order and meet minimum standards.

14.1 Tree Spikes

- Tree spikes, gaffs, or similar climbing devices that penetrate tree bark shall not be used when trimming live trees for any reason. Tree spikes may only be used on trees at the time they are being removed. Tree spikes can only be worn during trimming operations in tree parts that are being removed fully.
- Tree spikes SHALL be worn only when required and be removed and stored when no longer needed.
- Tree spike SHALL be kept sharp and covered when not in use. Manufacturer maintenance requirements will be followed.

14.2 Ladders

- Ladders made of metal or other conductive material shall not be used where electrical hazards exist. Only wooden ladders or nonconductive ladders made of synthetic material equal to or exceeding the strength of wooden ladders shall be used.
- All ladders shall be inspected before use and removed from service if found defective.
- Cleats, metal points, skid-resistant feet, lashing, or other effective means of securing the ladder shall be used when there is danger of slipping.
- Ladders shall not be placed against conductors.
- Ladders shall not be used as bridges or inclined planes to load or handle logs or other material.
- Ladders shall be supported while in storage to prevent sagging. Except when on mobile equipment, ladders should be stored under suitable cover, protected from the weather, and kept in a dry location away from excessive heat.

Energy Group Inc
Line Clearance Certification Program
Section 3 Climber

14.3 Ropes and Arborist Climbing Equipment

- Climbing lines used in a split-tail system and split-tails shall be terminated with an eye splice or a knot that interfaces appropriately with the connecting link that it is attached to. The termination knot selected shall remain secure under normal loading and unloading.
- When using a carabiner without a captive eye, the knot or eye splice shall cinch in place to prevent accidental opening and/or side-loading of the carabiner.
- Arborists shall inspect climbing lines, worklines, lanyards, and other climbing equipment for damage, cuts, abrasion, and/or deterioration before each use and shall remove them from service if signs of excessive wear or damage are found.
- Arborist saddles and lanyards used for work positioning shall be identified by the manufacturer as suitable for tree climbing.
- Arborist saddles and lanyards used for work positioning shall not be altered in a manner that would compromise the integrity of the equipment.
- Arborist climbing lines shall have a minimum diameter of 1/2 inch (12.7 mm) and be constructed from a synthetic fiber, with a minimum breaking strength of 5,400 pounds (24.02 kilonewtons [kN]) when new. Arborist climbing lines shall be identified by the manufacturer as suitable for tree climbing.
- Prusik loops, split-tails, and work-positioning lanyards used in a climbing system shall meet the minimum strength standards for arborist climbing lines.
- Snap hooks used in climbing shall be self-closing and self-locking, with a minimum tensile strength of 5,000 pounds (22.24 kN).

- Carabiners used in climbing shall be self-closing, and triple locking with a minimum tensile strength of 5,000 pounds (22.24 kN). Carabiners shall be designed to release the load by requiring at least three consecutive, deliberate actions to prepare the gate for opening.
- Splicing shall be done in accordance with cordage manufacturers' specifications.
- All load-bearing components of the climbing system shall meet the minimum standards for arborist climbing equipment.
- Equipment used to secure an arborist in the tree or from an aerial lift shall not be used for anything other than its intended purpose. EXCEPT using the arborist climbing line to raise and lower tools.
- Rope ends shall be finished in a manner to prevent unraveling.

Energy Group Inc
Line Clearance Certification Program
Section 3 Climber

14.4 Pre-climb Planning

Before climbing any tree, a pre-climb inspection shall be performed to identify hazards and plan the work. Any hazards identified must be minimized through the work plan before climbing.

Step 1: ***Worksite Inspection.***

- Employees will inspect the work area for any hazards that may effect the safety of workers.

Step 2: ***Tree Inspection.***

- Ground View- Employees will inspect the root flare and area directly around the base of the tree for damage, decay, girdling roots, fungal growth, mushrooms, or other signs of a weakened tree base.
- Trunk View- Employees will inspect the first 10-15 feet of the tree trunk looking for co-dominant stems, included bark, cavities or rotten wood, or large hallows in the trunk. At this point employees will inspect the trunk lean and general health of the tree.
- Canopy View- Employees will inspect the top 50% of the tree looking for dead branches/widowmakers, stinging insect activity, vines, animal nesting, tight branch unions, decay, wounds from past trimming, hallow cavities, and any other hazards.
- Wide Angle View- Employees will take a few steps back to observe the tree in its entirety to check for anything that was missed during the past three steps. This is a good time to check for the proximity to the conductors. During this last view employees will identify a suitable tie-in point and start to develop a plan.

Step 3: ***Work Plan***

- Employees will develop a effective work plan and communicate this plan with all employees on the jobsite.

14.5 Climbing Procedures

- When climbing into a tree, arborists shall not carry hand tools and equipment in their hands unless the tools are used to assist them in climbing. Tools other than ropes or throwlines shall not be thrown into a tree or between workers aloft.
- Arborist climbing lines or work lines should be used for raising and lowering hand tools and equipment. Arborists should raise or lower hand tools and equipment in a manner such that the cutting edge will not contact the arborist climbing line or handline.

Energy Group Inc
Line Clearance Certification Program
Section 3 Climber

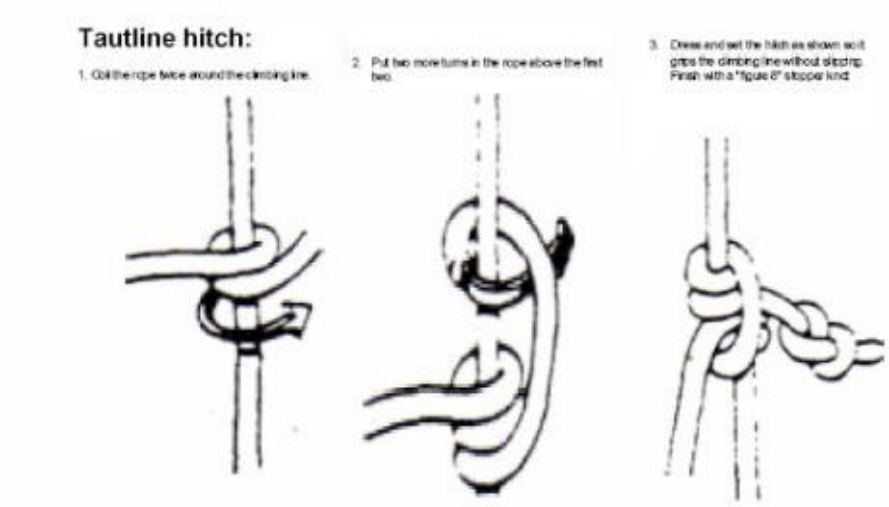
Climbing Procedures (Continued)

- Any chainsaw weighing over 15 lbs shall be lifted on a separate line. Arborist climbing lines shall never be left in trees unattended.
- Arborists shall have available a climbing line and at least one other means of being secured while working aloft; for example, an arborist climbing line and a work-positioning lanyard.
- The arborist shall be 100% tied in at all times while ascending the tree. The arborist shall be tied in once the work begins and shall stay tied in until the work is completed and he or she has returned to the ground. The arborist shall be secured when repositioning the climbing line.
- While ascending a ladder to gain access to a tree, the arborist shall not work from or leave the ladder until he or she is tied in or otherwise secured.
- Hands and feet should be placed on separate limbs, if possible, and three points of contact should be maintained with the tree while climbing.
- A false crotch and/or false crotch redirect may be used at the discretion of the arborist in lieu of a natural crotch. When working down a spar without a suitable tie in point arborists may be required to utilize a false crotch.
- The tie-in position should be well above the work area so that the arborist will not be subjected to an uncontrolled pendulum swing in the event of a slip. The tie-in shall be positioned in such a manner that the arborist will swing away from the conductors in case of a slip. The work position shall not be further from the tie-in point than the tie-in point is from the ground.
- The climbing line shall be crotched around a main upright lead above a limb of suitable size to support the climbers weight. Tight crotches should be avoided.
- The climbing line must be kept taught with no sag between the climber and the tie-in point.
- When a climber is working at heights greater than one-half the length of the arborist climbing line, a figure-8 knot shall be tied in the end of the arborist climbing line to prevent pulling the rope through the climbing hitch.
- The end of the climbing line on the ground shall be kept clear of brush, traffic, pedestrians, equipment and other hazards.

- All ground workers shall keep a vigilant eye when chipping brush for all climbing/work ropes before entering brush into chippers. Ropes will not come within 25ft of a running chipper at any time.

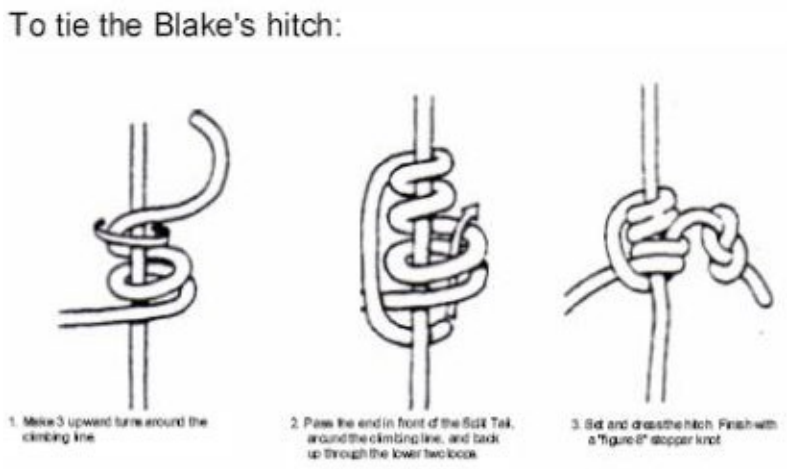
- Climbers should take into consideration the rope angle and forces being applied to tie in point when performing long limb walks away from the base of the tree. Angles over 25 degrees can cause intense forces and torque on the tie in point causing failure and could result in serious injury.

Taut Line Hitch
Acceptable climbing Knot



15.1 Blake Hitch

Acceptable climbing Knot



16.0 Chain Saw Use in a Tree

- Any chain saw weighing more than 15 pounds SHALL be supported by a separate line that is crotched in a way to allow the saw to swing away from the climber in the case of a slip or loss of grip.
- Before starting a chain saw aloft, the climber SHALL be tied in and using a second point of attachment. The saw should be supported on a limb when starting. The saw SHALL be turned off before attaching it to the saddle.
- Keep all ropes free of the chain at all times.

16.1 Positive Control

- It is the responsibility of the tree trimmer to always be in positive control of where the tree limbs fall after trimming. Positive control can be achieved by multiple methods and the following list provides a recommended procedure for ensuring positive control:
- When the tree trimmer is making a proper pruner clip and the cut piece is verified to fall to the ground and not fall into a hazard (pieces cut to length shorter than the distance between two adjacent primary or secondary wires of a power line are allowed)
- When the tree trimmer is making a proper tree cut and the cut piece is verified to fall to the ground and not fall into a hazard (pieces cut to length shorter than the distance between two adjacent primary or secondary wires of a power line are allowed)
- When the tree trimmer is using rigging to lower a cut piece away from a hazard.
- When the tree trimmer is handling a limb by hand and throwing the cut piece to a location that is verified to fall to the ground and not fall into a hazard.
- If it is not possible to use the listed methods above, then a planned outage may be needed. Contact your General Foreman immediately if a positive control method listed above cannot be managed on the job. The General Foreman will advise the crew on what to do including, coordinate with the customer to schedule the planned outage to safely trim the tree.

Advanced Climbing Systems

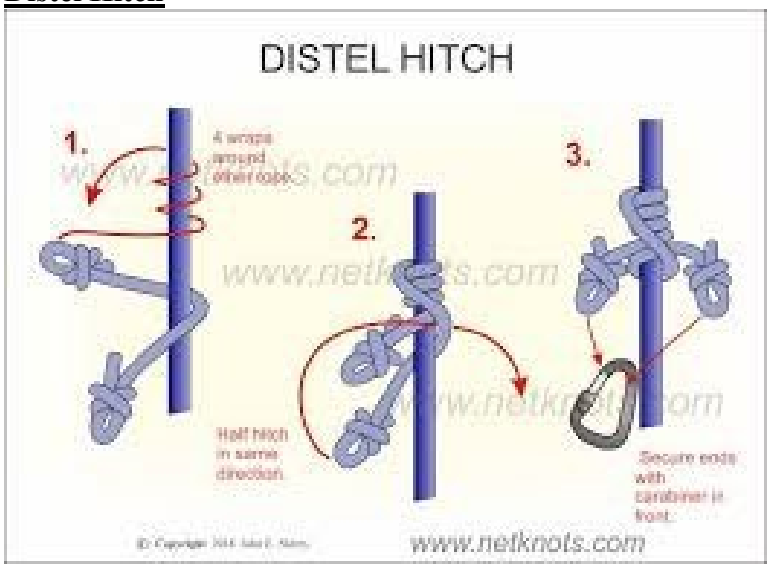
- Though Energy Group does not provide employees with advanced climbing equipment it can still be used at work with proper approval and training. Check with your local Safety Supervisor to receive approval to use items such as Mechanical Ascenders, SRS climbing equipment, and any other advanced gear.

Energy Group Inc
Line Clearance Certification Program
Section 3 Climber

Eye to Eye climbing systems:

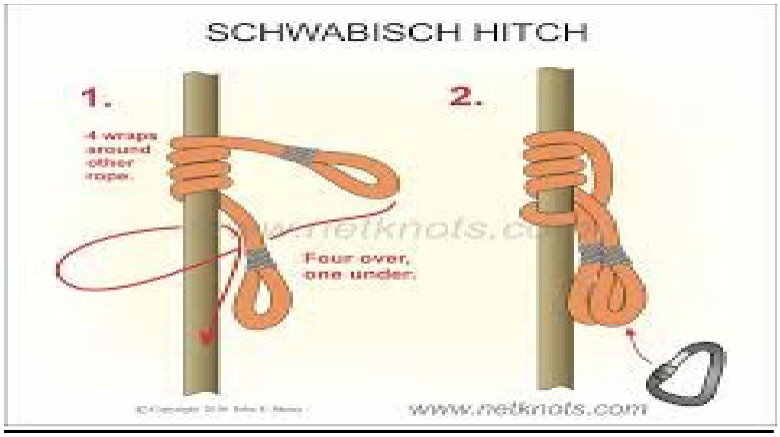
Energy Group provides employees with eye to eye prussiks to be used in conjunction with micro pulleys to create a more efficient climbing systems. Listed below are some approved knot options.

Distel Hitch



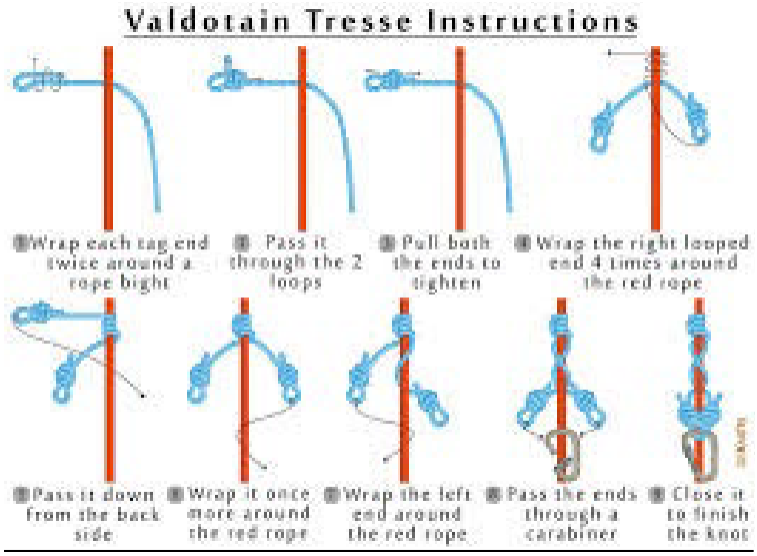
This hitch is great for beginners

Schwabisch Hitch



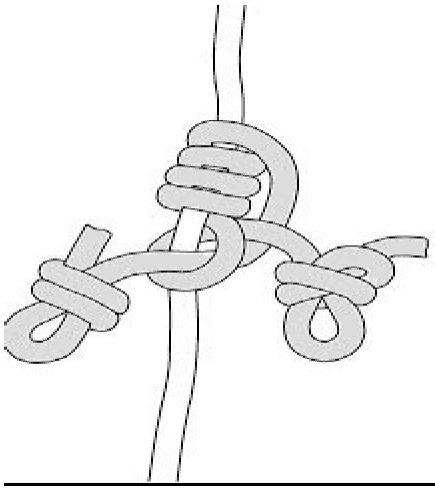
Energy Group Inc
Line Clearance Certification Program
Section 3 Climber

Valdotain Tresse hitch (VT)



A more advanced hitch. Not for beginners.

Michoacan hitch



Also an advanced hitch

Energy Group Inc
Line Clearance Certification Program
Section 3 Climber

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Energy Group Inc
Line Clearance Certification Program
Verification

Employee Name: _____

CLIMBER

	Instructor Initials	Date
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14.1 Tree Spikes		
14.2 Ladders		
14.3 Ropes & Gear		
14.4 Pre-Climb Planning		
14.5 Climbing Procedures		
15.0 Climbing Knots		
15.1 Taut Line Hitch		
15.2 Blakes Hitch		
16.0 Chainsaw Use In a Tree		
16.1 Positive Control		
Distel		
Schwabisch		
Valdotain Tresse		
Michoacan		

Energy Group Inc
Line Clearance Certification Program
Section 4 Lift Operator

17.0 Introduction To Aerial Devices

- Only qualified employees shall be permitted to operate an aerial lift.
- Fall protection must be worn when operating an aerial lift. Fall protection consists of a full body harness with shock absorbing lanyard attached to an anchor point on the aerial lift.
- All aerial devices shall be operated, inspected and maintained in strict accordance with the manufacturer's manuals or instructions for the unit being operated, and these manuals must be kept on the Aerial Device.

17.1 Aerial Devices

- An aerial lift is any work platform attached to an articulating boom.
- Aerial devices shall be provided with an approved point of attachment on which to secure a full-body harness with an shock absorbing lanyard, which shall be worn when aloft.
- Do not operate aerial lift without a bucket liner.
- The safety features built into aerial lift are additional protection only. They are not meant to allow operators to ignore safety rules and safe work practices.
- Never touch any conductor, or any conductive material in contact with a conductor. The booms shall not be brought in contact with any wires, cables or conductors. Booms and lifts shall maintain minimum approach distances at all times.
- Wheel chocks shall be set before using an aerial device.
- Aerial devices shall not be moved with an arborist on an elevated platform.
- Holes shall not be drilled in buckets or liners.
- All underground hazards shall be located prior to operating aerial lift devices off-road. These hazards could include natural gas tanks, underground oil tanks, and septic systems.
- One-person buckets shall not have more than one person in them during operations.
- Aerial devices or aerial ladders shall not be used as cranes or hoists to lift or lower materials or tree parts.
- Combined loads shall not exceed rated lift capacities. Load ratings shall be conspicuously and permanently posted on aerial devices.
- An aerial lift shall not be operated until the outriggers have been lowered. When outriggers are lowered, the operator shall ensure adequate clearance exists and give warning. Outrigger pads shall be used when operating aerial device at all times.
- Do not work on the truck, screen or dump when equipment is in operation.
- Do not come in contact with any part of the equipment if the boom is in contact with conductors or near MAD.
- When operating aerial devices, the operator shall look in the direction the bucket is traveling and be aware of the location of the booms in relation to all other objects and hazards.
- Keep tools in the proper place or keep a secure grip on them while maneuvering.
- If booms or buckets are operated over a roadway, clearance from vehicles must be provided.
- Disconnect or divert power from hydraulic tools when they're not in use.

Aerial Devices (Continued)

- Clean brush, dirt, and debris from the cage, pedestal, turntable and dump body before moving the vehicle.
- Keep the non-conductive portions of the booms clean and dry, inside and outside.
- Make sure that the booms are cradled and the outriggers are up before moving the vehicle.
- Do not ride in the bucket while the vehicle is moving.
- Chock the wheels, set the emergency brake, remove the keys and lock the doors whenever the aerial lift is left unattended.
- All tool bins and doors must be locked and barred to prevent theft.
- Aerial lifts are for tree work only.
- Insulated aerial lifts do NOT protect workers from other electrical paths to ground.

17.2 Inspection Procedures

- Before operating, the aerial lift shall be inspected and documented. The inspection shall follow the manufacturer's guidelines and include all safety related components, such as control interlocks, Hydraulic fluid level (Dielectric fluid only), and paint match marks on turret bolts.
- All manufacturer safety decals shall be legible.
- Operate all controls from the lower control bank before entering the bucket. Lubricate moving parts according to manufacturer's specifications.
- All aerial lifts must be drift tested monthly. Drift test instructions can be found in the manufacturer's manual.
- Many aerial lifts have an emergency stop knob or lever at the upper controls. Make sure that this is operating properly.

17.3 Positioning Truck

- Carefully position the truck to promote safe and efficient trimming.
- Know the height of the truck and avoid low branches and structures.
- Check the ground before lowering the outriggers.
- Before entering the bucket, make sure the override on lower controls is in the non-override position.
- Fasten the body harness and enter the bucket.
- Attach safety lanyard to the harness and to the D-ring on the bucket or boom. Locate all conductors before raising the aerial lift.
- Make sure that you know the direction the bucket will move before operating the controls.
- Raise the upper boom out of the cradle first, and then raise the lower boom.
- Make sure that the lower boom will clear the truck before rotating.
- Use the controls to move the bucket into position to trim, always looking in the direction of travel.
- Always store Chain Saw with brake engaged in scabbard when not in use. Be careful not to cut the boom, bucket, liner or nonconductive hydraulic hoses.

Positioning Truck (Continued)

- Do not hang tools on conductors.
- Do not damage the liner by touching it with a hot chain saw muffler, or the cutting edge of a tool.
- Locate all conductors before cutting.
- If electrical contact occurs, brake contact immediately and have the lift inspected.

17.4 Operation

- Unfold the upper boom out of the cradle.
- Raise the lower boom out of the cradle.
- After removing both booms out of the cradles, the controls for both booms and the rotation can be used to position the bucket at the end of the trimming work and rotate as the work is completed.
- It is best to trim from the bottom up so that the brush has a clear path to the ground.
- DO NOT go in between conductors unless minimum separation plus one foot above and below can be maintained. This procedure can only be performed when going between primary and secondary conductors. Going between primary conductors is never allowed. Only certified line clearance arborists shall perform this task. It is usually best to position the bucket at the necessary height to access between the conductors and rotate between them. When returning from behind the conductors check the separation at the exit point, the separation between conductors is not consistent within a span. Some states and utilities do not allow buckets to access between conductors; check the utility specifications and regional policies.
- Whenever the booms are within two times of MAD to the conductors a “boom spotter” shall be used to ensure that the minimum separation is maintained. The only task a boom spotter may perform while booms are closer than two times the distance of MAD, is to be the second pair of eyes observing all parts of the boom (upper, lower, elevator) and their relation to the conductors, and be ready to warn the operator before MAD is violated. Spotting the boom is the only task a boom spotter performs. A boom spotter may not cut, drag or chip brush. A boom spotter must not be on their phone or distracted by other activities around them. A boom spotter must be positioned outside of the drop zone but still in clear sight of the boom and conductors.
- For lower work that is further from the truck, it may be necessary to unfold the upper boom over center and lower the lower boom. When this is done, the rotation controls will seem from the operator's perspective to move the bucket in the opposite direction from normal. Also, the upper boom controls will appear opposite.
- If access to the work is not possible over the conductors, it may be possible to lay the upper and lower booms straight out low, swing under all of the conductors and fold the upper boom into the "L" position behind the conductors. When operating the boom in this fashion, always be aware of where the brush is dropping so that there is minimal contact with the boom.

17.5 Hydraulic Tools

- When connecting hydraulic tools check the movement of the blade or chain, reverse hydraulic flow will make the tool operate in reverse.
- Hydraulic tools often use the hydraulic fluid as lubrication, so the level must be checked regularly when hydraulic tools are used frequently.
- Be aware of tool hoses when maneuvering the bucket and the tools themselves. Center the hydraulic tool control valve handle when tool is not in use.
- Disconnect tools before servicing them.

17.6 Dumping Chips

- Check the dump location prior to dumping for overhead obstructions and conductors. Also check for uneven or soft ground that may cause the vehicle to tip.
- Open the dump gate as close as possible to the dump position.
- Back into the dump position. Use a spotter if available.
- Engage the emergency brake.
- Engage the PTO or auxiliary motor.
- Lower the outriggers.
- Operate the booms from the lower controls.
- Unfold the upper boom to a point that it will not contact the cage when the lower boom is raised.
- Raise the lower boom to a sufficient height so that the dump body will clear the boom.
- Raise the dump body to its full height.
- If the entire load is not dumped it will be necessary to reset the box and boom to stowed position before moving the truck. Then repeat the above steps until box is fully empty.
- DO NOT leave the dump location with the booms or dump body elevated and dump gate open.

17.7 Positive Control

- It is the responsibility of the tree trimmer to always be in positive control of where the tree limbs fall after trimming. Positive control can be achieved by multiple methods and the following list provides a recommended procedure for ensuring positive control:

- When the tree trimmer is making a proper pruner clip and the cut piece is verified to fall to the ground and not fall into a hazard (pieces cut to length shorter than the distance between two adjacent primary or secondary wires of a power line are allowed);

- When the tree trimmer is making a proper tree cut and the cut piece is verified to fall to the ground and not fall into a hazard (pieces cut to length shorter than the distance between two adjacent primary or secondary wires of a power line are allowed);

- When the tree trimmer is using rigging to lower a cut piece away from a hazard.

- When the tree trimmer is handling a limb by hand and throwing the cut piece to a location that is verified to fall to the ground and not fall into a hazard.

- If it is not possible to use the listed methods above, then a planned outage may be needed. Contact your General Foreman immediately if a positive control method listed above cannot be managed on the job. The General Foreman will advise the crew on what to do including, coordinate with the customer to schedule the planned outage to safely trim the tree.

17.8 60/70 Aerial Devices

- Some aerial devices are equipped with an elevator lift. These are often referred to as 60/70 buckets. The elevator portion is uninsulated from electrical current. When the elevator is raised, the uninsulated portion of the elevator and lower boom can reach to line height or above. This is an added hazard to both the operator and the employees on the ground when the elevator is raised.
  - Before the elevator is raised, there will be 3 way communication from operator to ground personnel.
  - Personnel on the ground will remain at least 10’ away from truck and chipper when the elevator is raised.
  - Ground personnel will not chip brush with the chipper attached to a 60/70 when the elevator is raised.
  - A spotter within hearing distance of operator must be used when elevator is raised.

Energy Group Inc
Line Clearance Certification Program
Section 4 Lift Operator

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Energy Group Inc
Line Clearance Certification Program
Verification

Employee Name: _____

LIFT OPERATOR

	Instructor Initials	Date
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17.1 Aerial Devices		
17.2 Inspection Procedures		
17.3 Positioning Truck		
17.4 Operation		
17.5 Hydraulic Tools		
17.6 Dumping Chips		
17.7 Positive Control		
17.8 60/70 Policy		

Energy Group Inc
Line Clearance Certification Program
Section 5 Foreman

18.0 Overview

- Each crew shall have a Foreman in charge.
- In the absence of the crew Foreman, another qualified worker shall be assigned the responsibility of the Foreman.
- The Crew or Job Foreman is responsible for the safe and efficient completion of the assigned work as well as being the representative of Energy Group, Inc. the primary contractor and the utility customer.
- It is essential that the Foreman manages the job, the crew and also deals politely with customers and property owners.
- Most of our day-to-day work is carried out along the roads and highways and in plain sight of our customers. GOOD JOB PLANNING AND EFFICIENT USE OF OUR TIME AND EQUIPMENT is most essential in the promotion of good public relations.
- Personnel, above all, play the most important role in creating goodwill. As a normal part of their job, management and employees at all levels have continuous communications with the public.

18.1 Maintenance Cycle

- The objective is to return to the work unit for repeat right-of-way maintenance at the most economical time before conditions deteriorate to the point of causing outages. This interval between treatments is known as the maintenance cycle. For distribution trimming, cycle length is dependent upon the amount of clearance obtained in the trimming process. Cycle lengths vary depending upon the environment through which a line passes.
- The variables to be considered for a distribution circuit for the planning process include cycle length and crew type.
- The type of crew to use on a circuit or portion of a circuit varies with existing conditions. The most economical crew to work a given field situation must be identified and planned for that portion of the circuit.
- Effective right-of-way vegetation control programs can only be accomplished by combining a proper mix of manpower and equipment for a given work situation. A well trained work force must be maintained if high productivity and efficiency are to be attained.
- An example would be a three-phase line along a highway with single-phase taps radiating off the three-phase and going across country. The portion of the line along the highway is best suited for work with a bucket truck, and the radial cross country taps are best suited for a manual crew or specialty equipment.

Energy Group Inc
Line Clearance Certification Program
Section 5 Foreman

19.0 Crew Structure and Equipment

19.1 Two-Wheel-Drive Lift Crew

- Aerial lifts should be utilized where line facilities parallel roadways and are accessible to an aerial lift truck.
- Only under unusual conditions should cross-country rural lines be scheduled for two-wheel-drive aerial lift work due to the inefficiencies encountered in moving aerial lifts over such rights-of-way.
- Tree density must be high enough that time spent moving between trees is at a minimum. In such areas, an additional chip truck may be necessary to follow the aerial device for brush chipping. Usually, in such high density areas, the trees can be trimmed faster than the brush can be chipped. Thus, to avoid down time on the aerial device, a follow-up truck is used to chip brush.
- In high traffic areas, it may be necessary to use one or two persons to direct traffic. These factors necessitate a three- or four- person crew depending on congestion. Some states and contracts require that flaggers performing traffic control must be certified; check the requirements in your region.
- As tree density and traffic congestion decrease, such as along rural roads, both the manpower and equipment on an aerial lift crew change. Often, under lighter tree density, the follow-up chip truck and the trainees are eliminated.

19.2 Manual Crew

- This type of crew is structured to trim in areas of high tree density that are unsuitable to trim with an aerial lift. Examples of such areas might include distribution trimming through areas inaccessible to mechanized equipment and unsuitable for aerial trim.

19.3 Job Briefings

- Proper planning is necessary for the safe and productive operation of our crews.
- Before any work begins, each job must be planned to ensure the use of proper equipment, to identify the hazards of the job, and to perform the work in a manner that eliminates those hazards.
- The Crew or Job Foreman is responsible for surveying the work location in order to identify any and all hazards that could jeopardize the safety of any employee.
- The Foreman must conduct a job briefing with all employees involved before they start each job.
- The job planning must be completed through the use of the “Job Briefing” forms and must be completed as outlined in the job briefing directions.
- If the job cannot be performed safely, it SHALL NOT be attempted.
- Each employee on the crew shall sign the job briefing after review.

Job Briefing (Continued)

- The Foreman shall make sure that all employees understand the job briefing and answer any questions they may have. Encouraging other crew members to participate in completing and communicating the job briefing will help them understand the process and advance in the company.
- Job briefings need to be reviewed mid-shift and if conditions change.
- All job briefings must be turned in on a weekly basis.

19.4 Crew Training

- It is the responsibility of ALL foremen to ensure that the employees working on their crews are properly trained to perform the work that they are assigned.
- Effective programs can only be accomplished by combining a proper mix of manpower and equipment for a given work situation. A well trained work force must be maintained if high productivity and efficiency are to be attained.
- Training each member of your crew to do the job more skillfully and safely is a vital responsibility. The objective should be to develop people to where they are able to solve their own job problems but with the judgment to ask questions when necessary.
- Explain how to do the job properly. Demonstrate how to do the job properly. Allow the trainee to perform the job. Observe the performance and provide feedback to the trainee complimenting correct procedures and correcting incorrect procedures. (Tell, Show, Try Out, Follow up)
- Constantly share experience and knowledge to help coworkers advance.
- Give trainees a chance to use their own initiative and ingenuity to try techniques on their Own.
- Answer questions fully and to the best of your ability, or find the answers if you don't know
- Immediately stop any unsafe or incorrect practice and show the worker the right way. Give directions and explanations clearly and completely so that the crew understands what is expected.
- Whenever a person struggles or is unsure, take the time to show them how to get the job done.

19.5 Crew Management

- ALL crew foremen must supervise their workers to ensure safe and efficient operation. The foreman must also correct unsafe acts as soon as they occur; this should be done privately and correct the action, not be demeaning to the employee.
- Provide feedback to all of the crew members about their work. Never criticize a coworker publicly. Make corrections and suggestions privately to prevent embarrassment in front of others.
- The foreman must build a team willing to work together toward completing the work in a safe, professional manner. The crew must have confidence that the foreman will make sound, careful decisions, help solve work problems and operate safely.
- The entire crew must share their knowledge to help each other work smarter, more efficiently and safer.

Crew Management (Continued)

- Discuss the work standards that are expected concerning quality, production, care of the equipment, and behavior toward the public and the customer.
- Anyone supervising the work of others has a primary job responsibility of behaving in a reasonable and calm manner. Losing your temper prevents the clear thinking that is essential to getting our work done safely and well.

19.6 Public Relations

- Public relations are public opinions of the way we conduct ourselves in our work situation.
- Good public relations may be achieved by an organized effort to be on good terms with the person who buys our electrical power and service, and whose opinion can affect our future.
- Our customers are always important people. We must think of them as people, not as numbers.
- As company representatives, employees are looked upon as reflecting the attitude of the company. Words, actions, and ways of relating are important and are closely observed by the public.
- Business with a property owner or customer should be carried out in a polite and friendly manner. Heated discussions on any subject shall be avoided.
- Customers have a right to expect certain things in the service they pay for. They expect honest answers to their questions, and the normal respect offered by one individual to another in our society.

19.7 Interest in the Customer

- Listening is a crucial part of communication. The extent to which we show interest in the customer's problem is important. This can be displayed by first listening without interruption to all he has to say. Let him present his problem while you listen—listen—listen. Then present your answer in a professional manner presenting only facts and avoiding speculation and assumption. If you do not have the solution to his problem, follow up by advising him that you will do your best to get him the information or have someone contact him with the information.

19.8 Customer Contact

- It is important that the customer is not given the impression that he is being given the "run around." The General Foreman or Supervisor shall be the point of contact for customers.

19.9 Giving Information

- Information we give can only satisfy the customer if it is clear, accurate, and to the point. It is no disgrace to admit that you do not know the answer. Tell him you will get the information for him or direct him to where the information may be obtained. If necessary, go to your immediate superior for information needed to correct wrong information previously given.
- During conversations, our pronunciation, choice of words, and tone of voice indicate whether or not we are sympathetic or interested. This does a great deal toward satisfying a customer.

19.10 Telephone Contact

- In dealing with customers by telephone, we reveal our personalities to some extent. Tone of voice, choice of words, pronunciation, and attitude can influence the picture the customer forms about us and the company we represent.
- Telephone conversations should be brief and to the point, but with sufficient time to bring the matter being discussed to a satisfactory conclusion. Never give the customer the impression that we are too busy to talk with him.

19.11 Notification/Permission

- Property owners and other authorities are to be notified of the intent to trim trees, rather than requesting permission. The utility or utilities representatives will conduct notifications and permissions. Many people are contacted in the process of work notification or getting permission. In general, they will fall in one of the following categories:
- Although the trees may be the property of one of the above-mentioned organizations, most will be adjacent to private property. Location inside a roadside fence does not necessarily indicate the tree is on private property. Conversely, a tree located 10 feet outside a roadside fence may belong to the private property owner. Roadside fences are not always a true indication of property lines, and owners of private property should always be contacted even when permission is given by government agencies.
- Other authorities that may have to be contacted for notification or to obtain permission are city foresters, conservation authorities, school boards, etc. In discussions with any of these groups, make sure your contact actually has executive authority and is not merely a board or panel member.
- The job of work notification and getting permission often brings you into contact with important people. Be sure you know the facts so you can discuss them intelligently.

19.12 Communication Techniques

- The techniques of public relations are an integral part of vegetation management operations and are of particular importance in notification and obtaining work permission. If the technique is good, the problem of obtaining permission is simplified, but if the technique is poor, the problem is often complicated beyond solution.
- Notification or obtaining permission may be done by personal contact, as it usually is in most cases, or by telephone or letter. Here are some of the points to remember that will be of assistance, regardless of the method used:
- Identify yourself, whom you represent and what your work involves. It is always good policy to inspect the trees before you see the property owner. Know exactly what you want to do.
- If the property owner or authority you are notifying or seeking permission from does not live at the work site, be sure to describe the location of the trees exactly in order to avoid a misunderstanding about the location of trees.
- Make sure you contact the right authority. Tenants will sometimes give permission not realizing they haven't the authority. Question their ownership, and if suspicious with the answer, check further.
- A wife will often give permission in the absence of her husband. In such cases, question his possible reaction. Ask her to phone him while you are there. Be sure to get a permission form signed for all removals.
- Your appearance and behavior may be a factor in your success or failure. Your dress should be clean and neat; be courteous and phrase your request carefully.
- Be honest in your dealings. Keep any promises you make. You may have to face the same people again in a couple of years. If you can build a reputation of trustworthiness, your job will be easier in the future.
- Don't give up with the first refusal. Sell them on the necessity of line clearing and point out hazards involved. Use your knowledge of trees and give assurance there will be no butchery or permanent damage to trees. Point out the necessity of good clearance.
- When you encounter an out-and-out refusal, report the circumstances to the supervisor and follow the appropriate reporting procedures.
- Obtain permission well ahead of the crew. Keep a record of permissions to eliminate any possible misunderstanding. Let property owners know the approximate date that the work will commence.
- Explain to a farmer (customer) if you wish to drive into his field, take down a fence, or move lawn furniture. To do so without permission may create ill feeling.
- The contacting of property owners in the evening or on weekends is sometimes necessary. This may add a bit more expense to the operation, but it is warranted because you decrease the delay and waiting time of the crew.
- Only in cases of storm damage should work be done without notification or permission, and this only to the extent of restoring service as quickly as possible. Even here, notification should be given or permission obtained if convenient, and the situation should be explained as soon as possible to property owners not contacted at the time

work is done.

19.13 Timesheets

- Timesheets and reports must contain all of the required information and be filled out daily. Energy Group timesheets must list the job, class and times for each job performed. Start and end times must be included for each job each day.
- If jobs take more than one day it is not necessary to have a separate line for each day, the times can be recorded for each day on one line. If more than one job is performed in a day there must be a separate line for each job. Any questions can be directed to the supervisor or the office.
- Some projects and jobs require that timesheets from the customer be used in addition to the Energy Group timesheets. When this is necessary all information and directions to complete these timesheets will be provided.
- Paperwork must be completed and turned in on time.

19.14 Necessary Reports

- Many jobs require reports in addition to timesheets. These reports are required and must be completed daily and turned in either daily or weekly.
- Some examples of these reports are Job Briefings, Substation Entry Logs, Vehicle Inspection reports and Driver logs.

19.15 Reporting Of Incidents

- All incidents, accidents, and problems shall be reported immediately according to the Energy Group reporting procedures.

Energy Group Inc
Line Clearance Certification Program
Section 5 Foreman

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Energy Group Inc
Line Clearance Certification Program
Verification

Employee Name: _____

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19.1 Two-Wheel-Drive Lift Crew		
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Energy Group Inc
Line Clearance Certification Program
Section 6 Driver

20.0 Motor Vehicle Use

- Driving a Company vehicle is a privilege and not a right or a guaranteed benefit of your job. The Company reserves the right to revoke the assignment of a vehicle and/or your driving privileges at any time and for any reason without prior notice.
- The Company vehicle assigned to you is to be used to travel to work in the morning, throughout the course of the day for business purposes only and to return to the overnight parking location at the end of the day. The Company vehicle is to remain parked at the overnight parking location until the next working day, or until you are called to duty, unless you are given permission to use the vehicle for other business related activities during off hours.
- The only individuals who may operate or ride in a Company owned or leased vehicle are authorized employees of the company and, when necessary, authorized Customer Representatives.
- Additionally, the transportation of weapons, alcoholic beverages or illegal drugs within a Company vehicle is strictly prohibited. Violations of the above stated policy will result in immediate termination of employment.
- Drinking and driving with a company vehicle is cause for dismissal.
- In the event that you violate this policy and your actions result in costs (either legal, claim or other) being incurred by the company, the company will use all available legal means to recover such cost from you personally.
- Employees must follow all customer rules when using customer vehicles and when parking or working at customer facilities.
- Seat belt use is mandatory in all company vehicles.
- It is the driver's responsibility to perform daily vehicle inspections and report any defects to arrange repairs.

VIOLATION OF ANY OF THESE REQUIREMENTS MAY RESULT IN IMMEDIATE TERMINATION.

20.1 Licensing requirements

- Employees without a current, valid driver's license are prohibited from driving any company Vehicle under any circumstances.
- An up-to-date physical examination is required to drive any vehicle with a gross vehicle combination weight rating of 10,001 lbs. or above.
- A CDL license class B is required for any vehicle with a gross vehicle weight above 26,000 pounds.
- A CDL license class A is required for any vehicle towing a trailer with a gross vehicle weight above 10,000 pounds.
- All accidents, tickets and traffic stops involving company vehicles MUST be reported immediately.
- Employee drivers must meet the ticket and accident reporting requirements of the Federal Motor Vehicle Regulations.

20.2 Pre-Trip Inspection

- You should do a pre-trip inspection the same way each time so you will learn all the steps and be less likely to forget something.
- When approaching the vehicle:
  Notice general condition.
    - Look for damage or vehicle leaning to one side.
    - Look under the vehicle for fresh oil, coolant, grease, or fuel leaks.
    - Check the area around the vehicle for hazards to vehicle movement (people, other vehicles, objects, low hanging wires, limbs, etc.).
    - Verify that the inspection stickers and IFTA stickers are up to date and that all required marking is in place and legible.
    - Know where the registration and insurance card are.
- Review Last Vehicle Inspection Report
- Drivers may have to make a vehicle inspection report in writing each day.
- The motor carrier must repair any item in the report that affects safety and certify on the report that repairs were made or were unnecessary. Verify that any needed repairs were completed.
- Check the fluid levels, hoses, belts and wires in the engine compartment.
- Check the gauges for proper function.
    - Oil pressure should come up to normal within seconds after the engine is started. Ammeter and/or voltmeter should be in normal range.
    - Coolant temperature should begin gradual rise to normal operating range. Engine oil temperature should begin gradual rise to normal operating range.
    - Warning lights or buzzers should go out right away.
- Check the condition of the controls and pedals.
  Check the lights.
- Check Mirrors and Windshield
- Check Emergency Equipment
- Walk around inspection
    - Door latches or locks.
    - Wheels, rims and tires.
    - Suspension of springs, spring hangers, shackles, U-bolts. Shock absorbers
    - Brakes, drums, discs and hoses.
    - Axles.
    - Steering system.
    - Windshield wiper arms and blades. Fuel tank and lines.
    - Exhaust system.
    - Frame and cross members.
    - Air lines and electrical wiring.

Pre-Trip Inspection (Continued)

- Spare tire and mount.
- Cargo secure and bins closed.

- IF YOU FIND ANYTHING UNSAFE DURING THE PRE-TRIP INSPECTION, GET IT FIXED.
- FEDERAL AND STATE LAWS FORBID OPERATING AN UNSAFE VEHICLE.

20.3 Inspection during a trip

- Check vehicle operation regularly.
  - Instruments.
    Gauges.
  - Cargo, cargo covers.
- If you see, hear, smell, or feel anything that might mean trouble, check it out.

- Drivers of trucks and truck tractors, when transporting cargo, must inspect the securement of the cargo within the first 25 miles of a trip and every 150 miles or every three hours (whichever comes first) afterward.

20.4 After trip inspection and report

- You may have to make a written report each day on the condition of the vehicle you drove. Report anything affecting safety or possibly leading to mechanical breakdown.
- The vehicle inspection report tells the motor carrier about problems that may need fixing.
- Keep a copy of your report in the vehicle for one day. That way, the next driver can learn about any problems you have found. Contact the supervisor or assigned individual to have necessary repairs completed.

20.5 Vehicle Control

Accelerating

- Avoid roll back when starting. Partly engage the clutch before releasing the brake. Put on the parking brake whenever necessary to keep from rolling back.
- Speed up smoothly and gradually.
- Use more care during slippery conditions. If the wheels begin to spin, release the accelerator until traction returns.

Steering

- Hold the steering wheel firmly with both hands. The three o'clock and nine o'clock positions are recommended.

Vehicle Control (Continued)

Backing

- Due to blind spots, backing is always dangerous. Avoid backing whenever possible. Back into parking spaces to be able to pull forward to exit.
- When backing is necessary; check the path before backing. Turn toward the driver's side of the vehicle when backing whenever possible.
- Get help backing. The helper should stand near the back of your vehicle where you can see the helper. Before you begin backing, work out a set of hand signals that you both understand.
- Agree on a signal for "stop."
- When backing with a trailer, turn the wheel in the direction opposite of the intended travel.

21.0 FOCUS on Driving driver safety

21.1 Form a Plan

- Driving is one of the most hazardous tasks that workers perform or are involved in. We think nothing of getting into a vehicle and assuming that we will get to our destination. Drivers are responsible, not only for themselves but also for their passengers and the public as well.
- The first thing that must be done before driving is to plan the route whether we are travelling down the street or across the country. Before using GPS, make sure that it is identifying the correct destination. Planning the drive so that there is sufficient time for the trip removes the impression that speeding is necessary to arrive on time. Make sure that proper licensing and any necessary permits are in place before driving.
- While driving, plan ahead by looking 15 to 20 seconds ahead. Traffic lights that are green before we see them are likely to turn red before we get to them. Brake lights on vehicles ahead can inform us that a road hazard or heavy traffic is ahead. When vehicles are moving into other lanes it could mean that there is a slower vehicle or road hazard in the lane that they are leaving.
- We can plan our response to the conditions that are observed. Slowing down to prepare for lights that may change or road hazards and heavy traffic helps prevent accidents caused by sudden reactions.

21.2 Observe and Inspect

- Observation and inspection are important parts of remaining safe while driving.
- Inspection of the vehicle before driving is required by law for commercial vehicles. It is also required by the company with all vehicles. The vehicle must be inspected to verify that it is safe to operate.
- A walk around check of the vehicle before moving is required by many customers and is useful to identify objects that might be struck by the vehicle that can not be seen by the driver.
- While driving, drivers must observe their surroundings by checking the mirrors and constantly scanning ahead to identify potential problems.
- Side mirrors should be set so that the inside edge of the mirror is viewing the side of the vehicle. Rear view mirrors, if the view is not obstructed should look through the entire rear window.
- Checking the mirrors every six to ten seconds makes a driver aware of vehicles that may be moving into blind spots so that the driver is aware of their position without being able to see them. This also makes it possible to see hazards from vehicles behind and to the sides. Use the mirrors to check the vehicle for damage or load problems.
- Use the mirrors during turns to ensure that the rear of the vehicle or trailer will not hit anything.
- Many large vehicles have curved mirrors that show a wider area than flat mirrors. This is often helpful. But everything appears smaller in a convex mirror than it would if you were looking at it directly. Things also seem farther away than they really are.
- Scanning ahead to check for pedestrians and vehicles on side roads and driveways can help a driver prepare for people and vehicles entering the road in front of them. In urban and residential areas, checking for toys, bicycles and other signs of children makes a driver aware of the possibility of a child playing in the street.
- Constant vigilance makes a driver aware of the surroundings and helps to be prepared for the hazards of driving.

21.3 Communicate

- Communication is an important part of driver safety. Drivers must communicate their presence and intentions to other drivers.
- Communicating the presence means to use marker lights and headlights to be visible to other drivers and the public. This is especially important during times of limited visibility such as fog, dusk and dawn, and during rain.
- High beams should be used at night, but make sure that they are switched to low beams when other vehicles could be blinded.
- Lights must be on during fog conditions to be visible to other drivers, do not use the high beams as this can reflect back off of the fog to create glare.
- Many states have requirements that headlights must be used whenever the windshield wipers are in use. This makes the vehicle more visible to other drivers.
- Dusk and dawn create visibility issues, so headlights and marker lights should be used to add visibility for other drivers.
- When passing trucks, many truckers will flash the high beams to communicate that it is safe to move into the lane in front of them. Do not do this unless absolutely sure that it is safe.
- Traffic will not make room if they are not aware that a vehicle wishes to change lanes. Use the turn signals to communicate the intention to change lanes. Wait four to six blinks of the turn signal before changing lanes.
- Use turn signals before any turn to allow other drivers to slow down or react to the intention to turn.
- Four way flashers need to be used when driving slowly to communicate to other drivers to slow down.
- When pulling off of the road to stop, be sure to turn on the 4-way emergency flashers. This is important at night.
- When stopped on a road or the shoulder of any road, the emergency warning devices must be put out as soon as possible.
- On a 2-lane road carrying traffic in both directions or on an undivided highway, place warning devices within ten (10) feet of the front or rear corners to mark the location of the vehicle and 100 feet behind and ahead of the vehicle, on the shoulder or in the lane you stopped in.
- Back beyond any hill, curve, or other obstruction that prevents other drivers from seeing the vehicle within 500 feet.
- On one-way or divided highway, place warning devices ten (10) feet, 100 feet, and 200 feet toward the approaching traffic.
- When putting out the triangles, hold them between yourself and the oncoming traffic.
- Horns can be used to warn other drivers, pedestrians and the general public of the presence of the vehicle.
- Warn drivers behind when it is necessary to slow down. A few light taps on the brake pedal to flash the brake lights should warn following drivers.
- In work trucks with limited visibility, communicate with the passenger to get assistance during turns and lane changes. The passenger can see some areas that the driver can not.

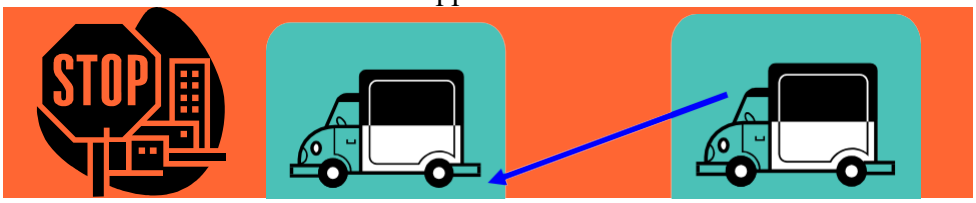
21.4 Unexpected Happens Be Prepared

- While driving, many things happen that a driver needs to be prepared to respond to. Other drivers, pedestrians and even wildlife create hazards that must be avoided. Always having an escape route, maintaining space around the vehicle and not remaining in a hazardous position are the main ways a driver can prepare.
- Before driving verify the availability of emergency equipment such as a fire extinguisher, reflective triangles or flares and spare fuses. It is necessary that a driver knows how to properly use these items.
- Maintain proper following distance to allow for time to react to the unexpected. Following distance should be at least one second for each ten feet of vehicle length plus one more second for speeds over forty miles an hour. Also add time for weather conditions such as wet, slippery and icy roads. Count the following distance by starting when the vehicle ahead passes a fixed object, count one one thousand, two one thousand and so on until the vehicle passes the same fixed object. This number of one thousands is how many seconds of following distance.
- Maintain a distance from large packs of traffic if possible. Driving at the same speed a larger distance away allows time to respond to changes in traffic patterns and emergencies.
- Maintaining space behind can be difficult. If a vehicle is tailgating, increase the following distance and space ahead. This allows for more time to react and warn the tailgater. Also use turn signals and brake lights earlier to allow the tailgater to adjust.
- Keep the vehicle centered in the lane to keep a safe clearance on both sides. Try to remain in a position that has an escape route to the side. It may be necessary to momentarily enter the blind spot of a larger vehicle to pass or due to traffic conditions. Do not remain in the blind spot of these vehicles. Drivers may attempt to change lanes or turn and are not aware of vehicles within the blind spots.
- Hitting overhead objects is a danger. Know the vehicle height. Verify overhead clearance. Warnings are often posted on low bridges or underpasses, but sometimes they are not. Do not assume that the heights posted at bridges and overpasses are correct. Re-paving or packed snow may have reduced the clearances since the heights were posted.
- The weight of a vehicle changes its height. An empty vehicle is higher than a loaded one.
- If there is a question of whether the vehicle has enough clearance use a spotter and drive slowly or take another route.
- Signs, trees, bridge supports, branches, electric wires and communication cables can be low enough to be a hazard. Check the clearance if it appears to be close to the vehicle height.
- When driving larger vehicles, smaller vehicles wishing to enter the roadway from driveways and side streets are likely to pull out because they do not want to be behind a larger vehicle.
- Urban, residential and shopping areas are likely to have people and children walk into the street without seeing the approaching traffic. Wooded areas even in metropolitan areas have wildlife that will enter the roadway unexpectedly. Drivers must be prepared for these occurrences and respond without causing an accident. Slowing down in these areas and maintaining an escape route can minimize the risk.

- Speeding minimizes the driver's reaction time and lessens the ability to react safely when the unexpected happens.
- Using space properly gives a driver time to respond properly when the unexpected occurs.

21.5 Stop Safely

- Stopping safely is a critical skill for any driver. It is even more important for individuals driving larger, heavier vehicles.
- Maintaining proper following distance allows drivers the time needed to stop safely.
- Perception time, Reaction Time and Braking Distance added together are the stopping time and distance. A vehicle travels approximately 1 1/2 feet per second for every mile per hour of speed.
- Perception time is the time it takes for the driver to recognize the need to brake. This is 1/4 to 1/2 second on average.
- Reaction time is the time it takes a driver to apply the brakes. This averages from 1/4 to 3/4 of a second.
- Braking distance is approximately ten feet for every ten miles per hour. This is changed by conditions, such as road surface, tire tread, and brake condition. Empty vehicles have a greater stopping distance because there is less friction.
- Therefore, at 55 mph it will take approximately six seconds to stop. The distance travelled in those six seconds is 290 feet (60 + 60 + 170 = 290 feet.).
- When stopping at intersections and traffic lights, many stop signs, crosswalks and white lines sit back from the intersection. This is to identify the safe place to stop so that larger vehicles can safely turn at the intersection. When stopped past these identifiers, the vehicle is technically and legally in the intersection and a hazard to traffic.
- Maintain a Safe Distance when stopped.



- Positioning of the vehicle with enough space can eliminate hazards and provide an escape route. Enough space should be provided to be able to pull around the vehicle ahead if it is necessary. This also creates a space in the event that the vehicle is struck from the rear and is pushed forward. A general guide to create this space is to stop where the tires of the vehicle in front are visible.

22.0 Parking

- It is your responsibility to park equipment in a safe and convenient place. Ignition keys must be removed from the ignition and kept in a safe place.
- The truck and/or equipment shall be parked completely off the highway whenever possible and always as far off the roadway as possible. Don't create a traffic hazard.
- It is safer to back into dead-end streets, driveways and parking spaces. Some customers require backing into parking spaces at their facilities. Use help to back vehicles.
- When parking off pavement check the parking area to make sure it will support the vehicle.
- Do not leave an idling truck parked in tall grass.

23.0 Slippery Surfaces

- Drive slowly and smoothly on slippery roads. If it is very slippery, you shouldn't drive at all. Stop at the first safe place.
- Start gently and slowly.
- Make turns as gently as possible.
- Do not brake any harder than necessary.
  Adjust speed to the conditions
- Do not pass slower vehicles unless necessary.
- Go slow and watch far enough ahead to keep a steady speed.
  Avoid having to slow down and speed up.
- Take curves at slower speeds.
- Be aware that as the temperature rises to the point where ice begins to melt, the road becomes even more slippery. Slow down more.
- Keep a longer following distance.
- Try to anticipate stops early and slow down gradually.
  Skidding and Hydroplaning
- It will take longer to stop and it will be harder to turn without skidding when the road is slippery. Drive slower to be able to stop in the same distance as on a dry road.
- Wet roads can double stopping distance. Reduce speed by about one third on a wet road. On packed snow, reduce speed by a half or more.
- If the surface is icy, reduce speed to a crawl and stop driving as soon as it is safe to do so. Shady parts of the road will remain icy and slippery long after open areas have melted.
- When the temperature drops, bridges will freeze before the road will. Be especially careful when the temperature is close to 32 degrees F.
- Slight melting will make ice wet. Wet ice is much more slippery than ice that is not wet.
- Black ice is a thin layer that is clear enough that you can see the road underneath it. It makes the road look wet. Anytime the temperature is below freezing and the road looks wet, watch out for black ice.
- Right after it starts to rain, the water mixes with oil left on the road by vehicles. This makes the road very slippery. If the rain continues, it will wash the oil away.
- In some weather, water or slush collects on the road. When this happens, vehicles can hydroplane. The tires lose contact with the road and have little or no traction.
- Slippery surfaces or hydroplaning can eliminate the ability to steer or brake.
  To regain control, release the accelerator. This will slow your vehicle.

Slippery Surfaces (Continued)

- Do not use the brakes to slow down.
- When the drive wheels skid and the vehicle begins to turn stop braking, release the accelerator and turn the steering wheel quickly in the direction the vehicle is skidding. Be prepared to counter steer or turn the steering wheel quickly in the other direction to prevent the vehicle from skidding in the other direction.
- Hydroplaning and skidding are more likely if tire pressure is low or the tread is worn.

24.0 Curves

- Drivers must adjust their speed for curves in the road. If the vehicle is moving too fast through a curve the tires can lose traction and continue straight ahead or keep traction and the vehicle rolls over.
- Tests have shown that trucks with a high center of gravity can roll over at the posted speed limit for a curve.
- Slow to a safe speed before entering a curve. Braking in a curve can lock the wheels and cause a skid.
- Because of wide turning and off tracking, large vehicles can hit other vehicles or objects during turns.
- Turn slowly to avoid problems.
- If the vehicle cannot make the right turn without swinging into another lane, turn wide to complete the turn.
- Keep the rear of your vehicle close to the curb.
- If you must cross into the oncoming lane to make a turn, watch out for vehicles coming toward you. Give them room to go by or to stop.
- On a left turn, make sure wait until reaching the center of the intersection before starting the left turn.

25.0 Off Road

- Vehicles should not be operated cross-hill on grades where the possibility of rollover exists. Careful consideration shall be given to the steepness of grade, character and condition of the soil and presence of roots, stumps, rocks, etc. that could contribute to or precipitate a rollover.
- Rocks, depressions, buried structures and other objects can cause a vehicle to bottom out or hang up. Watch carefully for objects and areas that could cause a problem.
- Vehicles shall be operated in a controlled, professional manner. Excessive speed, excessively fast and sharp turns and any other form of reckless operation may cause rollover.

26.0 Mountain Driving

- On any upgrade, gravity slows you down. The steeper the grade, the longer the grade, and the heavier the load the lower gears are needed to climb hills or mountains.
- In coming down, long steep downgrades, gravity causes the speed of the vehicle to increase. Use of a lower gear and proper braking techniques helps maintain asafe speed.
- Shift the transmission to a low gear before starting down the grade.
- Do not try to downshift after your speed has already built up.
- With older trucks, a rule for choosing gears is to use the same gear going down a hill that is used to climb the hill.
- Brakes are designed so brake shoes or pads rub against the brake drum or disks to slow the vehicle. Braking creates heat, but brakes are designed to take a lot of heat. However, brakes can fade or fail from excessive heat caused by using them too much and not relying on the engine braking effect.
- Apply the brakes just hard enough to feel a definite slowdown.
- When your speed has been reduced to approximately 5 mph below the desired speed, release the brakes.
- When the speed has been increased to the desired speed, repeat steps 1 and 2.
- Know escape ramp locations on your route. Signs show drivers where ramps are located. Escape ramps save lives, equipment, and cargo. Use them if you lose your brakes.

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Line Clearance Certification Program
Section 6 Driver

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Energy Group Inc
Line Clearance Certification Program
Verification

Employee Name: _____

DRIVER

	Instructor Initials	Date
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20.2 Pre-Trip Inspection		
20.3 Inspection During a Trip		
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20.5 Vehicle Control		
21.0 FOCUS on Driving		
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22.0 Parking		
23.0 Slippery Surfaces		
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25.0 Off Road		
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Energy Group Inc
Line Clearance Certification Program
Section 7 Herbicide

27.0 Licensing Requirements

- Pesticide applications fall under the jurisdiction of the Federal Environmental Protection Agency. They are governed by the Federal Insecticide, Fungicide and Rodenticide Act. State agencies oversee pesticide licensing and applications these programs vary; check the regional policy for information.
- Applicators must be certified to apply pesticides in each individual state and work for a licensed business.
- Only qualified and licensed employees shall perform herbicide applications.

27.1 Labels

- The label for all pesticides on the job must be on the job.
- The applicator shall follow label instructions when using any pesticide.
- The pesticide label is a legal document approved by the Federal EPA. It contains detailed information about how to apply that specific pesticide properly, efficiently and safely. It is against the law to apply a pesticide professionally contrary to the label requirements.

27.2 Maintenance and use of Spray Equipment

- Working and walking surfaces of all sprayers and related equipment shall be covered with skid-resistant material.
- Equipment on which the applicator/operator stands while the vehicle is in motion shall be equipped with guardrails around the working area.
- The applicator/operator shall make a visual inspection of hoses, fittings, exposed plumbing, tanks, covers, and related equipment prior to its use each workday.
- The applicator/operator shall not allow hoses or other parts of the equipment to create a tripping hazard for coworkers or the public.
- The applicator/operator shall have a firm grip on the spray gun when pulling the trigger. Precautions shall be taken to prevent contamination of the clean water source.
- The applicator shall not direct a solid spray column into contact with electrical conductors.

27.3 Proper Herbicide Application

- The proper herbicide and method of application must be carefully selected to fit field conditions. However, all the evaluating and planning is useless if herbicides are not properly applied.
- Once a right-of-way is under control or when considering initial application, every effort should be made to treat vegetation before it grows to a height in excess of 6 feet.
- Natural screens of low-growing vegetation (not exceeding 12 feet tall on transmission) should be used to reduce the impact of herbicide application where aesthetically necessary.
- In areas where wildlife food and cover are important, selective application techniques shall be employed.
- The method of herbicide application is to be based upon what method is best suited to field conditions.

Proper Herbicide Application (Continued)

- Three hours is required between application and rain for control to be effective.
- Application cannot be made for 1 hour after a rain sufficient to cause runoff.
- High volume application is usually 50 to 100 gallons of mix per acre. When performing high volume applications, the treated surface must be covered but not to the point of runoff.
- Low volume applications are usually 25 gallons per acre with a less dilute mix. When performing low volume applications, the treated surface must be wet, but not saturated.
- Ultra low volume application is usually less than 10 gallons per acre with a high concentration mix and a carrier such as Thinvert. When performing ultralow volume applications, the treated surface only needs a small amount of mix.
- Any herbicide spills must be reported immediately to the supervision or the Energy Group office and cleaned up following the spill emergency response procedures.

27.4 Foliage Application

- Foliar application is applying the pesticide to the leaf surface to be absorbed into the plant and is usually performed between June 1 and September 1.
- A foliar application may be broadcast or selective in manner. With the broadcast method, all woody vegetation on a right-of-way is treated with selective material.
- With the selective method, only those species that will reach conductor height are intentionally treated. Desirable species in close proximity to target plants may receive enough herbicide to eliminate them as well as the incompatible species.
- Foliar application has the greatest risk of drift. A drift control agent shall always be used by all spray crews.

27.5 Basal Application

- This technique involves using one to four gallons per acre of herbicide mix on the lower 18 inches of stems. Small amounts of herbicide are applied on each stem, with no drenching or puddling necessary for control.
- Herbicide mix consists of a high concentration of active ingredients in bark penetrating oil.
- The only equipment necessary for operation are backpacks and a vehicle to get a crew to the job site. Mixing can be done directly in the backpack tank instead of a spray truck tank.
- Not as subject to drift as foliage application, but off right-of-way damage is possible with poor application.
- May not be applied when ground is snow covered or ice is on stems or the stem is saturated by rainfall.

27.6 Cut Stubble Application

- May be applied any time temperature is above freezing.
- Herbicide is applied to the ground following right-of-way clearing but before the cut stumps have started vigorous regrowth.
- A soil active material must be used. The technique works by root pickup from the remaining stumps.
- Cut Stubble is a non-selective application using selective material.
- Cannot be applied when ground is icy or snow covered.

27.7 Cut Stump Application

- Used on maintenance brush clearing and initial clearing.
- All stumps over 1 inch in diameter shall be treated unless a follow-up herbicide application or stump grinding is to be performed. All stumps should be treated within one hour after cutting.
- Will significantly reduce stand density from resprouting.
- May be applied all year, but is less effective during peak sap flow in the spring.

27.8 Bare Ground Application

- Used at facilities to remain vegetation free.
- Bare ground is usually performed during April and May, after the ground is no longer frozen and before sprouting.
- The mix contains pre-emergent herbicide to prevent growth of new plants as well as post-emergent herbicide to control unwanted vegetation that is present.
- It is necessary to cover the entire facility to be effective.

Wild cherry growing in pasture land shall not be sprayed. Plants shall be cut, the stumps treated, and the cut brush carried from the pasture area and disposed of.

27.9 Chemical Reports

- Reporting all pesticide applications is required by law. The application record must contain the company name, property owner's name, location, mix used, total mix applied and the size of the area treated. These reports must be filled out completely every day and turned in weekly.

Energy Group Inc
Line Clearance Certification Program
Section 7 Herbicide

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Energy Group Inc
Line Clearance Certification Program
Verification

Employee Name: _____

HERBICIDE

		Instructor Initials	Date
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27.6	Cut Stubble Application		
27.7	Cut Stump Application		
27.8	Bare Ground Application		
27.9	Chemical Reports		