



# THE ROPE BAG

Arboriculture Safety and Health Topics



**Occupational Safety and Health Division**

1101 Mail Service Center  
Raleigh, NC 27699-1101



**Luke Farley**  
*Commissioner of Labor*

We hope that this safety booklet will help lead job safety and health discussions that will raise awareness, reduce injuries and illness, and prevent fatalities.

This informational booklet is intended to provide a generic, non-exhaustive overview of particular standards-related topics for the arboriculture industry. This publication does not itself alter or determine compliance responsibilities, which are set forth in standards themselves and the Occupational Safety and Health Act of North Carolina. This booklet is not intended to address logging operations, which are covered by 29 CFR 1910.266.

Moreover, because interpretations and enforcement policy may change over time, for additional guidance on occupational safety and health compliance requirements, the reader should consult current administrative interpretations and decisions by the Occupational Safety and Health Review Commission of North Carolina and the courts.

*Luke Farley*

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# Aerial Lifts

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**Hazards:** Falls that can result in broken bones or death.

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**Definition:** Aerial lifts are vehicle-mounted aerial devices used to elevate personnel to job sites above ground. Examples include extensible boom platforms, aerial ladders, articulating boom platforms, vertical towers and a combination of any such devices. Aerial equipment may be powered or manually operated and may or may not be capable of rotating around a primarily vertical axis.

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## Safe Practices:

- Test lift controls each day before use.
- Only allow authorized persons can operate the lift.
- Do not tie off to an adjacent pole, structure or equipment while working from an aerial lift.
- Feet should be firmly on the floor. Sitting and climbing on sides of basket should not be allowed.
- Wear a body harness (or restraining belt) and lanyard attached to the boom or basket.
- Do not exceed specified load limits.
- Set the brakes during use.
- Position outriggers on pads or solid surface.
- Use wheel chocks when on an incline.
- Do not move when boom is elevated in a working position with anyone in the basket, except for equipment that is specifically designed for this type of operation.
- Ensure boom platforms, primarily designed as personnel carriers, have both platform (upper) and lower controls.
- Ensure upper controls are within easy reach of the operator.
- Lower controls should override upper controls but should only be used if permission is given by the worker in the lift or during an emergency.
- Ensure controls' functions are denoted.
- Field modifications may only be made with the manufacturer's written approval.
- Ensure aerial ladders are secured in the lower traveling position by the locking device on top of the truck cab and the manually operated device at the base of the ladder before the truck is moved for highway travel.
- Use caution when working near overhead power lines; maintain lift, equipment and personnel 10 feet from overhead power lines.

# Aerial Rescue Operations

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**Hazards:** Falls that can result in broken bones or death. If the rescuer must ascend the tree to perform a rescue, they are putting themselves in danger and must proceed carefully

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## Safe Practices:

- Practice ahead of time! Employees working aloft (including aerial platforms), should have training and practice in rescue and emergency response. This will ensure that if an emergency happens, people will know how to proceed calmly.
- Successful aerial rescue depends on training, practice and composure. Most training accidents occur during aerial rescue training. Start your training 'low and slow' until everyone is confident in their ability to do their assigned tasks. You can practice effectively while suspended at heights of six feet or less.
- During the pre-work briefing, plan your emergency response (i.e., who is responsible for what tasks such as calling emergency medical services (EMS), providing cardiopulmonary resuscitation (CPR) and first aid, or being the rescue climber). Always know the exact location of your job site including cross-street.
- Have a pre-work plan that also includes the number of the local fire department and the electrical utility provider for that address.
- Ensure that at least two workers are trained in CPR and first aid at the jobsite.
- If an incident happens, call 911 and keep them on the line. If the victim is aloft, make sure the dispatcher knows this will be a **HIGH ANGLE RESCUE**. Be clear and concise with the victim's condition (if known) and the location of the job site. If possible, ensure someone will be on the street to guide EMS to the victim. If there is an electrical hazard, also contact the utility company.
- **DO NOT BECOME THE SECOND VICTIM!**
- Shut down chippers, trucks and any equipment as it is important for both the victim and the rescue climber to be able to hear each other.
- Communicate with the victim and find out the nature of their emergency and their condition (chest pain, broken bones, bleeding, etc.) Maintain communication with the victim to provide reassurance. If the victim is unresponsive, proceed with caution.

# Aerial Rescue Operations

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### Safe Practices:

- Electrical safety: Many aerial rescues are further complicated by the location of power lines. Look for power lines, including downed power lines to avoid contacting them. If the tree is energized, DO NOT ATTEMPT RESCUE. WAIT FOR EMERGENCY SERVICES.
- Pay close attention to the tree's condition before setting up additional anchor points for climbing or rigging. These anchor points could come into play during the rescue. Be confident that the tree or limb can support the weight of the rescuer, and in some cases, the rescuer and victim. Inspection should include signs of overall stability, damage (cracks, hangers, etc.) and stinging insects.
- Be aware of not only the climbers' saw, but also any other sharp equipment that could become an issue during rescue.
- Calmly begin your rescue ascent towards the victim assessing conditions as you make your way up.
- Upon reaching the victim, don't move or reposition them until you have assessed their airway, breathing and circulation. Back and neck injuries can further complicate any rescue operation so briefly assess those as well. A basic trauma assessment is all that is needed. Communicate the victim's condition to the person on the 911 call.
- Based on your assessment, decide whether to lower the victim to the ground. There are three primary reasons for lowering the victim to the ground immediately:
  - o Cardiac arrest: Chest compressions must start immediately which can only take place on the ground.
  - o Severe bleeding: Especially with a femoral artery, a tourniquet must be applied ASAP.
  - o Environmental conditions: A storm, high winds, severe cold, etc.
- If the victim's condition doesn't warrant lowering, stay aloft and tend to the victim. Once EMS arrives, listen to their direction and assist them as needed.

# Back Injuries

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**Hazards:** Back, neck and shoulder pain, sprains and strains, pinched nerves and slipped disks.

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**Background:** Most injuries occur from lifting, lowering, carrying, pushing and pulling materials. Workers are at a higher risk of lower back injury if they often carry heavy loads, must twist while carrying heavy loads, or work a lot while bent over or in other awkward postures.

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## Safe Practices:

- Perform warm-up exercises before work.
- Reduce carrying distances by delivering materials close to where they will be used.
- Store materials at waist height.
- Raise your work surface to waist level when possible.
- Take rest breaks before becoming too tired.
- Use carts, dollies, skidders and hoists to move materials.
- Use tools with handles to get a good grip on logs or odd-shaped loads.
- When lifting or carrying materials, keep the load as close to your body as you can.
- Try not to twist when lifting and lowering materials. Turn your whole body instead.
- Lift and lower materials in a smooth steady manner. Try not to jerk the lift.
- Try supporting yourself by leaning on something when performing a low lift.
- Don't bend over; instead, kneel on one knee and pull the load up onto your knee before standing. (Wear kneepads when you kneel.)
- Even younger workers can be susceptible to back injuries. Protecting against back injuries now ensures they will be there in the years ahead.
- Work with your employer to discuss the best strategy to protect you and your co-workers from back injuries.
- Injuries can be reduced by planning, changing how work is performed, and training workers and supervisors.

# Bucket Trucks

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**Hazards:** Electrocution, ejection, falls, and struck by.

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**Background:** Most injuries occur from contacting power lines, falling from the bucket, and overloading the bucket weight capacity while cutting a branch, thus causing the worker to be ejected during the process.

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## Safe Practices:

- Before operating a bucket truck, perform a walk-around inspection to ensure the boom is secure and all equipment is in place. You should also inspect the equipment before each use, including the ground controls. Ensure the dielectric testing is up to date.
- Always wear personal protective equipment (PPE) including a hard hat, eye protection, and appropriate gloves. You should also wear full harness and fall protection equipment.
- Maintain a safe distance from power lines and keep the bucket truck at least ten feet away from power lines. Always treat lines as if they are energized and have deadly voltage.
- Avoid contact with trees, buildings, or utility poles.
- Don't exceed the manufacturer's load limit capacity, which includes the weight of the workers, tools, and materials. Never balance or rest limbs on the bucket. This overloads the bucket and creates a situation in which the bucket occupant can be ejected.
- Avoid working in traffic if possible. If you're working in or near traffic, set up a work zone with signs, barricades, and channelizing devices using Manual on Uniform Traffic Control Devices (MUTCD) rules.
- NEVER move the truck while people are in the bucket.
- Don't climb on anything inside the bucket to achieve greater height. Either raise the bucket or get a taller bucket. Never lean over the railing.
- Stand on the floor of the bucket or platform. Do not stand on a railing or an object inside the basket.
- Before positioning the truck, make sure the bucket truck is level, the ground is stable and always use the truck's outriggers. Use cribbing, if necessary, especially when setting up on sloped ground.
- Be aware of your state of mind. Operating a bucket truck requires focus, if you have doubts; walk away.

# Chainsaw Safety

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**Hazards:** Serious and fatal accidents have resulted from the improper use of chainsaws, not using proper personal protective equipment, and not following safe operating procedures.

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## Before Starting a Chainsaw

- Inspect the chainsaw to ensure all controls, chain tension, chain brake and all bolts and handles are functioning properly and are adjusted according to the manufacturer's instructions.
- Ensure safety devices are in proper working order while using a chainsaw. Safety devices should not be modified without manufacturer approval or removed.
- Make sure the chain is always sharp, and the lubrication reservoir is full.
- When starting the chainsaw, ensure secure footing. The chain brake should be engaged.
- Drop starting is considered extremely dangerous and should not be utilized. Start the saw on the ground or other firm support; knee lock is acceptable.
- A chainsaw should be operated by the arborist or another qualified worker. Always hold the chainsaw firmly with both hands with the chain brake engaged. The chainsaw should be held firmly and in a manner that movement is minimized when the operator pulls the starter. Upon starting the saw, check the chain brake's function.
- Engage the chain brake before setting a chainsaw down or turn it off, anytime the chainsaw is not actively cutting, including when repositioning aloft.
- Maintain a distance of at least 10 feet from others when cutting. Always cut using both hands on the chainsaw..
- The arborist should be tied in to ensure stability. Use at least two points of attachment.
- When carrying a chainsaw, engage the chain brake or turn off the engine.
- Always carry the chainsaw so that the operator does not contact the muffler or the chain.
- When working in a tree, the operator should be tied in and have a second means of being secure.

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# Chainsaw Safety

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### **Fueling a Chainsaw:**

- Never attempt to fuel a running or HOT saw. Do not smoke during fueling.
  - Dispense fuel at least 10 feet away from any sources of ignition, with the chainsaw off
  - Use approved containers for transporting fuel to the saw. Use a funnel or flexible hose when fueling the saw.
  - Start the saw at least 10 feet away from the fueling area, with the chain's brake engaged.
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### **Chainsaw Safety:**

- Clear away dirt, debris, small tree limbs and rocks from the saw chain path. Look for nails, spikes or other metal in the tree before cutting.
- Keep your hands on the saw handles and maintain secure footing while operating.
- When operating the saw, wear the appropriate personal protective equipment, which includes hand, foot, leg, eye, face, hearing, and head protection.
- Do not wear loose-fitting clothing.
- Be careful that the trunk or tree limbs will not bind against the saw. Watch for branches under tension.
- Gasoline-powered chainsaws must be equipped with a protective device that minimizes the chainsaw kickback.
- Be cautious of saw kickback. Avoid sawing with the blade tip if possible. If equipped, keep the tip guard in place.
- Cut resistant boots are required for employee operations that require the use of chainsaws on the ground.
- Cut resistant leg protection should be worn that meets or exceeds ASTM standards while using a chainsaw on the ground.

# Chipper Safety

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**Hazards:** Caught in between and amputations.

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## **Safe Practices:**

- Never reach into a chipper while it is operating. Doing so could result in amputation or death.
- Avoid standing directly behind the chipper. In addition to being pulled into the chipper, operators can also be injured by material thrown from the machine.
- To minimize the hazards associated with chippers, use appropriate engineering and work practice controls, including operator training.
- Do not reach into a chipper to feed debris. Always use a wooden push paddle.
- Keep all ropes, including climbing ropes and winch lines, away from the chipper work area. Secure all ropes not in use and ensure they are not tangled in the brush or dragged into the machine.
- Always wear hearing protection to avoid hearing loss.
- Always wear PPE including a hard hat, eye protection, and appropriate gloves and follow safe work practices.
- Do not wear loose-fitting clothing around a chipper.
- Always follow the manufacturer's guidelines and safety instructions.
- Workers must be trained in the safe operation of chipper machines. Always supervise new workers using a chipper to ensure that they work safely and never endanger themselves or others.
- Protect yourself from contacting operating chipper components by ensuring machine guards are intact and functional, and preventing the opening of the access covers or doors until the drum or disc completely stops.
- Prevent detached trailer chippers from rolling or sliding on slopes by chocking the trailer wheels.
- Maintain a safe distance (i.e., two tree or log lengths) between chipper operations and other tree work or workers.
- When servicing and/or maintaining chipping equipment (i.e., "unjamming"), always use a lockout/tagout system. Never open the disk cover on a chipper with the disk still rotating.

# Climbing Safety

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**Hazards:** Falling, struck by, and ergonomic injuries.

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**Double Rope Technique (DRT):** The DRT, also called Moving Rope System (MRS), is the most basic and one of the original climbing techniques; and is still the first technique learned by most climbers. The climber doubles their rope over a union (branch junction) or through a friction saver. The rope moves up or down while ascending or descending and moving throughout the canopy. This method relies on hip thrusting and arm strength and depends on the Blake's Hitch to capture progress. Using this system will halve the force needed for the climber to pull himself into the canopy, but he will end up pulling twice the amount of rope than with a Single Rope Technique (SRT) system. A moving rope system uses little more than a climbing rope with a Blake's hitch tied to the working end which is tied to the opposite side of the doubled rope. However, with the addition of hitch tending pulleys, split tails, prusiks, friction hitches and various mechanical devices, the climber can customize the system for comfort, versatility and to fit the needs of the job. For an MRS anchor point, isolate an appropriate branch that will not only hold your weight, but withstand the force of hip-thrusting up the rope.

**Single Rope Technique:** The SRT, or Single Rope System (SRS), uses a single rope to ascend and descend into the canopy. This technique uses mechanical prusiks and foot and knee ascenders to walk up the rope. Unlike a moving rope system, the climbing line remains stationary and ascents can be made very quickly as the climber is using their legs and can capture more progress with less effort, leaving the climber with more energy for work in the canopy when accessing tall trees or working on large canopies. When choosing a tie-in point, ensure the tie-in point is a strong branch at least 4" in diameter. It's important to remember that different tie-ins impart different forces on the tree. A basal anchor will impart more than twice the force of a canopy anchor with a static load. Movement will increase these forces even more. Choose the appropriate tie-in based on the tree and available anchor points. In addition, a wider crotch is preferable to a tight one to prevent the rope from binding.

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# Climbing Safety

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### Safe Practices:

- **Always inspect your equipment:** Always check your gear for signs of wear or damage before starting and after finishing work. This includes a thorough inspection of ropes, carabiners, saddles, spurs, positioning lines, thimbles, friction savers, retrieval tools, and other climbing hardware. Always inspect gear before use and replace worn out and damaged gear to ensure the climber's safety. All equipment should meet or exceed the ANSI-Z133 standard.
  - o Ropes and prusiks: Inspect for cuts, fraying, abrasions, glazing, loose strands, picks, milking, stretching, as well as discoloration or fading.
  - o Never use climbing ropes for rigging. Prusiks are especially susceptible to glazing from over-heating. Brightly colored ropes stand out in the canopy and are good choices to prevent accidental cutting of a line.
  - o PPE: Inspect your harness for fraying, loose, pulled or damaged stitching and functionality. Check that all gear loops are secure and that harness tool holders are secure and functional. Ensure that helmets are intact with secure padding and chinstraps. Boots should be in good condition with non-slip soles. Safety glasses should also be clean and undamaged. Ensure hearing protection is properly fitting and appropriate for the job (electric chainsaw vs. a chipper). Chainsaw protective gear should fit properly and be in good condition.
  - o First aid kit and tourniquet: Ensure the kit is secure to your harness, easily accessible, and the contents are complete and functional. Make sure that 'Wound seal' or similar blood stopper is sealed and not expired.
  - o Positioning systems and friction savers: In addition to inspecting the rope portion as described above, inspect belay devices for functionality as well.
  - o Mechanical ascenders/descenders: Check for device functionality and that all pins, clips, etc. are functioning properly. Always ascend a few feet, and test that the device will hold without slipping.
  - o Carabiners: Make sure the open and closing mechanism works properly; no damage, cracks, stretching, or excessive wear.

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# Climbing Safety

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- o Do not modify gear or use in any way other than the manufacturer's intended use.

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- **Emergency planning:** Know the resources available to you in the event of an emergency. Assign specific tasks during a pre-work jobsite briefing before starting work. This includes having a fully stocked first aid kit, knowing the worksite address, the numbers of emergency services in your area, the closest hospital, assigning an aerial rescue climber, designating who will call 911, and who will direct emergency personnel to the worksite. Always have at least two people certified in CPR and first aid.
  - Practicing aerial rescue will also help maintain smooth operations during a rescue. The time to plan is before, not after the accident happens.
  - **Tree assessment:** Before climbing, thoroughly inspect the tree for rot, dead branches, weak roots, insect damage, animal nests, poisonous and non-poisonous invasive vines and plants as well as strong anchor points in the canopy or at the base. Carefully plan both ascent and descent as well as redirects while in the canopy.
  - **Communication:** Ensure that ALL personnel have been briefed on proper communication within the working zone. Use two-way radio communications or hand signals while working. Yelling or shouting is rarely a reliable form of communication.
  - **Ergonomics and work positioning:** Always maintain a stable position while working in the tree. Being properly positioned ensures the climber can position their weight safely without overreaching, straining, or being off balance while working.

# Cranes and Rigging

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**Hazards:** Struck by falling material and caught between moving machinery.

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## **Inspections:**

- Never use a crane unless specifically trained as a crane operator.
  - Never use a crane that is not in perfect mechanical condition.
  - Ensure operator inspects and tests crane before each shift.
  - Check limit switches before rigging load.
  - Inspect all rigging before use.
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## **Safe Practices:**

- Know the rated capacities of the crane and rigging.
- The operator should be familiar with the load chart for that specific crane. Calculate load weights based on log charts for the specific tree being worked on.
- Know the center of gravity of the load.
- For stability, attach load above the center of gravity.
- Select hitch that will control the load.
- Allow for load reductions when using choker hitches.
- Attach a tagline before lift.
- Protect the sling from sharp corners.
- Allow for increased tension due to sling angle.
- Equalize loading on multiple leg slings.
- Lift the load a few inches and verify rigging.
- Check for any loose items.
- Start and stop SLOWLY! Watch for obstructions (not only hook and load but outboard end of the bridge).
- Ensure the pathway is clear before making a lift (use a spotter for blind spots).
- Verify the hook completely closes.
- Wear hard hats when making overhead lifts.
- Avoid working under loads.
- Keep personnel clear of lift area.
- Use appropriate hand signals. Everyone must know and agree on the hand signals being used to avoid confusion.
- Always maintain load control.
- Report suspected drum wrappings immediately if drum has fewer than 2.5 wraps remaining.
- Never leave load unattended.
- Destroy defective sling and rigging before throwing it away.
- Stay clear of overhead power lines (Ten feet minimum).
- Stop lifts during winds that exceed operational limits.

# Electrical

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**Hazards:** Burns, shock and electrocutions.

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## **Inspections:**

- Ensure all tools and equipment (both company and employee owned) are in good condition.
- Work on energized electrical circuits is prohibited.
- Prohibit the use of frayed or worn electrical cords or cables.
- Ensure that only grounded type extension cords designed for hard or junior hard service (Type SJ, SJO, SJT, SJTO, S, SO, ST and STO) are used.
- Check portable electric tools before use to ensure that the cord and plug are in good condition.
- Ensure that broken or damaged tools and equipment are removed from service.
- Ensure that portable electrical tools and equipment are either grounded or of the double insulated type.
- Ensure that each 15 or 20 amperes, 120-volt AC receptacle, not part of the permanent wiring of the building, is protected by either ground-fault circuit interrupters or an assured equipment grounding program.
- Ensure that electrical equipment and cords used in wet or damp locations are approved for wet and damp locations.
- Ensure that listed, labeled or certified equipment is used in accordance with the instructions included in the listing, labeling or certification.
- Ensure that when a circuit breaker is removed from a circuit breaker panel, it is replaced with either a breaker or a blank.
- Ensure that unused openings in electrical boxes are effectively closed.
- Prohibit bypassing any protective system or device designed to protect employees from contact with electrical current.
- Ensure that electrical cords are protected from physical damage.
- Ensure electrical equipment is used only as approved and listed.

# Fall Protection

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**Hazards:** Falls that can lead to fractures or death.

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**Background:** Falls most often occur due to lack of training or failing to tie off correctly. Climbers should always use redundant systems and proper positioning while working in the canopy. Care should also be taken to tie off when in aerial devices. Always follow the manufacturer's instructions when using any fall protection device.

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## **Safe Practices:**

- Ensure the job site is assessed to determine if walking and working surfaces have the strength and structural integrity to safely support workers.
- Ensure workers exposed to falling four feet or more from an unprotected side or edge are protected by a guardrail system, safety net system or personal fall arrest system.
- A personal fall arrest system consists of an anchorage, connectors, body harness and may include a lanyard, deceleration device, lifeline or a suitable combination.
- Ensure workers in a hoist area exposed to falls of four feet or more are protected by either a guard rail system or personal fall arrest system.
- If removing debris from a roof or other structure, appropriate fall protection must be used, including properly rated harnesses, deceleration devices, connectors, lanyards and anchor points.

# Fire Prevention

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**Hazards:** Burns and smoke inhalation.

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## **Safe Practices:**

- Ensure that fire extinguishers are provided near all welding, soldering and other sources of ignition.
- Ensure that fire extinguishers are available and readily accessible in case of an emergency.
- Ensure that portable fire extinguishers are periodically inspected and maintained in accordance with *Maintenance and Use of Portable Fire Extinguishers*, National Fire Protection Association (NFPA) No. 10A-1970.
- Ensure that at least one 2A rated fire extinguisher is provided for each 3,000 square feet of the protected building area.
- Ensure that employees do not have to travel more than 100 feet to reach the nearest fire extinguisher.
- Ensure that flammable and combustible materials are not stored in stairways or exits.
- Ensure that adequate ventilation is provided in areas where paints, solvents or other flammable materials are being applied. The buildup of flammable vapors can lead to fires or explosions.
- Ensure that gasoline and other flammable liquids are stored in safety cans or in an approved flammable storage facility.
- Ensure that flammable liquid leaks or spills are cleaned up immediately.
- Prohibit smoking in the vicinity of operations that constitute a fire hazard and conspicuously posted “**No Smoking or Open Flames**” signs.
- Ensure that an alarm system is established so that employees and the local fire department can be alerted to an emergency.

# First Aid/Bloodborne Pathogens

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**Hazards:** Delayed medical treatment; infection from bloodborne pathogens.

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## **In work environments where employees are exposed to blood or other bodily fluids:**

- Establish a written exposure control plan identifying at-risk workers (e.g., workers responsible for first aid).
  - Implement engineering/work practice controls.
  - Ensure first aid and CPR providers are trained and certified by an accredited trainer.
  - Ensure a Class B first aid kit is available in a weatherproof container and checked weekly for replacement of expended items.
  - Specify means to protect (providing PPE) and train employees.
  - Offer hepatitis B vaccination and post-exposure follow-up.
  - Ensure emergency numbers are available and communication systems are working.
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## **During an Emergency:**

- Act promptly. Specific response roles should be assigned during a pre-work meeting.
- Assess the injured worker's situation and call for emergency help. Always use protective gloves and other PPE as required.
- If available, use a one-way protective device to perform mouth-to-mouth resuscitation.
- Use pressure to stop bleeding; be sure to use gloves to protect yourself from blood exposure.
- Use tourniquet only if necessary. If using a tourniquet, be sure to note the time it was applied.
- Prevent shock by wrapping victim in a blanket.
- Do not move a person with a back or neck injury unless a greater hazard exists. Move victim using a backboard.
- Splint broken bones and joints.
- Do not give liquids to an unconscious victim.
- Clean and bandage surface wounds with sterile bandages.

# Flammable and Combustible Materials

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**Hazards:** Fire, explosion and burns.

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## **Safe Practices:**

- Ensure combustible debris, waste materials (oily rags, etc.) and waste solvents are stored in covered metal receptacles and removed from the worksite promptly.
- Provide approved containers and tanks for the storage and handling of flammable liquids.
- Use safety cans for dispensing flammable liquids at a point of use.
- Make connections on drums and piping tight.
- When not in use, ensure all flammable liquids are kept in closed containers.
- Bond and ground drums of flammable liquids to containers during dispensing.
- Ensure storage rooms have explosion-proof lights and mechanical or gravity ventilation.
- Where flammables or combustibles are used or stored, post **“NO SMOKING or OPEN FLAMES”** signs.
- Physically guard liquefied petroleum storage tanks to prevent damage from vehicles.
- To ensure support and stability, place firm separators between combustibles or flammables containers when stacked.
- Separate fuel gas cylinders and oxygen cylinders by distance and fire-resistant barriers while in storage.
- Do not block or obstruct fire extinguishers.
- Keep fire extinguishers serviced, maintained and tagged at intervals not to exceed one year.
- Promptly clean up all spills.
- Ensure storage tanks are adequately vented to prevent an excessive vacuum or pressure as a result of filling, emptying, or atmosphere temperature changes.
- Ensure tanks are equipped with emergency venting.

# Fueling

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**Hazards:** Fires, poisoning and burns.

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## **Safe Practices:**

- Prohibit the fueling of an internal combustion engine while the engine is running.
- When mixing two-cycle engine fuel, always use a dedicated container and seal before shaking to mix.
- Always wear PPE during fuel operations.
- Keep spillage to a minimum.
- If spillage occurs during fueling operations, wash spilled fuel completely, give vapors time to dissipate or take other measures to control vapors before restarting the engine.
- Replace and secure the fuel cap before starting the engine.
- Ensure metal contact between the container and the fuel tank.
- Ensure fueling hoses are of a type designed to handle the specific type of fuel.
- Do not handle or transfer gasoline in open containers.
- Prohibit open lights, open flames, sparking or arcing equipment near fuel or fuel transfer operations.
- Prohibit smoking in the vicinity of fueling operations.
- Prohibit fueling operations in buildings or other enclosed areas that are not specifically ventilated for this purpose.
- Ensure nozzles are self-closing when fueling or transferring fuel is done through a gravity flow system.
- Ensure safety data sheets are available to employees handling hazardous substances.

# Hand and Portable Tools

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**Hazards:** Lacerations, fractures, amputations, electrical shock and electrocutions.

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## **Inspections:**

- Ensure all tools and equipment (both company and employee owned) are in good condition.
- Repair or replace hand tools, such as chisels and punches, that develop mushroomed heads.
- Repair or replace hammers, axes and similar tools that have broken or fractured handles.
- Ensure tool handles are wedged tightly in the head of all tools.
- Ensure tool's cutting edges are kept sharp.
- Ensure grinders, saws and similar equipment are provided with appropriate safety guards.
- Ensure power tools are used with the correct shield, guard or attachment.
- Ensure all cord-connected, electrically operated equipment is effectively grounded or of the approved double insulated type.
- Ensure effective guards are over belts, pulleys, chains, sprockets, pinch points and points of operation.
- Ensure ground-fault circuit interrupters are provided on all temporary electrical 15 and 20 ampere circuits.
- Check pneumatic and hydraulic hoses on power-operated tools for deterioration.
- Ensure the work rest is adjusted to within  $\frac{1}{8}$  inch to the wheel and the tongue is adjusted to within  $\frac{1}{4}$  inch to the wheel on abrasive wheel grinders.
- Ensure side guards cover the spindle, nut, flange and 75 percent of the wheel diameter on abrasive wheel grinders.
- Ensure the maximum RPM rating of each abrasive wheel is compatible with the RPM rating of the grinder motor.
- Ensure new abrasive wheels are visually inspected and ring-tested before use.
- Ensure appropriate safety glasses, face shields, etc., are used while using hand or powered tools or equipment that might produce flying materials or is subject to breakage.

# Hazard Communication

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**Purpose:** Ensure hazards of chemicals are conveyed to employers and employees.

To ensure chemical safety in the workplace, information about the identities and hazards of the chemicals must be available and understandable to workers. OSHA's Hazard Communication Standard (HCS 1910.1200) requires the development and dissemination of such information by way of a written program, labels, safety data sheets (SDS) and training for employees exposed to workplace chemicals.

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**Written Program:** Employers must develop a written program that includes:

- List of hazardous chemicals
  - Locations of SDSs
  - How and where employees can get information on new chemicals
  - Who to ask questions about chemical safety
  - How to perform non-routine tasks safely
- 

**Employee Training:** Ensure each employee is trained in the following:

- How to use hazardous chemicals safely.
- What safety equipment is required.
- Not to remove or deface labels on incoming containers of hazardous chemicals.
- Where SDSs are maintained and how they should be used during emergency situations.
- Electronic access to SDSs is acceptable if the employer can ensure employees are competent to access the information and adequate backup is provided in the event of a power failure.
- How to identify chemical hazards using warning labels and SDSs.
- How to identify any operation on the jobsite where hazardous chemicals are present.
- Post hazard warnings (physical and health), protective measures, equipment requirements or prohibited activity.
- A consumer product that is used in a workplace in such a way that the duration and frequency of use are the same as that of a consumer is not required to be included in an employer's hazard communication program.

# Heat Illnesses

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**Symptoms:** Headaches; dizziness or lightheadedness; weakness; mood changes (e.g., irritability or confusion); upset stomach; vomiting; decreased or dark-colored urine; fainting or passing out; and pale, clammy skin.

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## First Aid:

- Act immediately. Heat illness can quickly progress from heat rash, cramps, exhaustion to heat stroke and even death.
  - Move the victim to a cool, shaded area to rest. Don't leave the person alone.
  - If symptoms include dizziness or lightheadedness, lay the victim on their back and raise their legs 6 inches to 8 inches.
  - If symptoms include nausea or upset stomach, lay the victim on their side.
  - Loosen and remove any heavy clothing.
  - Have the person drink cool water (a cup every 15 minutes) unless they are sick to their stomach. Do not administer water to an unconscious victim.
  - Cool the person's body by fanning and spraying with a cool mist of water or applying a wet cloth to the person's skin.
  - Call 911 for emergency help if the person does not feel better in a few minutes.
  - Heat stroke is a medical emergency.
- 

## Safe Practices:

- Schedule heaviest work during coolest part of day.
  - Slowly build up tolerance to the heat and the work activity. Most people need two weeks to adjust.
  - Work people in pairs.
  - Drink plenty of cool water, a cup every 15 minutes.
  - Wear light, loose-fitting, breathable clothing.
  - Take frequent short breaks in cool shaded areas to allow the body to cool down.
  - Avoid eating large meals before hot work.
  - Avoid alcohol or beverages with caffeine.
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## Risk Factors:

- Taking certain medications. Check with your pharmacist to see if any medicines you are taking affect you during hot work.
- A previous heat-induced illness.
- Personal protective equipment that can add to physical stress.

# Housekeeping

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**Hazards:** Slips, trips, falls and fires.

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## **Safe Practices:**

- Keep trash and loose materials picked up and disposed of properly.
- Remove tripping hazards.
- Keep lines of traffic open.
- Do not place objects in the way of exit paths.
- Keep ladder rungs clean, dry and free from oil and grease.
- Ensure brush piles are stable.
- Return saws, climbing gear, tools and equipment to areas where they belong.
- Secure stored materials to prevent tipping.
- Leave space for workers and equipment to load and unload stored materials.
- Keep the height of stored material low for stability and line of sight.
- Clear brush piles from work areas to reduce trip hazards.
- Remove combustible scrap and debris regularly.
- Provide containers for the collection of waste, trash, oily and used rags, and other refuse.
- Ensure containers for oily and flammable materials and rags are approved, covered, fire-resistant metal containers.
- Remember if waste is allowed to accumulate, the job site becomes messy and unsafe.

# Ladder Safety

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**Hazards:** Ladders missing parts or broken, energized electrical lines or equipment, too short for work height, weight limit rating too low, not the correct equipment for the job.

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**Loads:** Self-supporting (foldout) and non-self-supporting (leaning) portable ladders must support four times the maximum intended load; extra-heavy-duty metal or plastic ladders must sustain 3.3 times the maximum intended load.

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**Angle:** The base of a non-self-supporting commercially manufactured ladder should be one-quarter its length away from the wall or supporting structure; the base of a job-made wooden ladder should be one-eighth its length away from the wall.

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**Rung:** Rungs, cleats or steps must be parallel, level and uniformly spaced and must be spaced between 10 inches and 14 inches apart; spacing for extension trestle ladders must be 8 inches to 18 inches for the base, and 6 inches to 12 inches on the extension section, shaped so that an employee's foot cannot slide off.

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**Securing the Ladder:** Trees are rarely the ideal surface to lean a ladder against. Secure the ladder's stiles (sides) to a solid anchor point to prevent it from sliding sideways or kicking out. Always secure the ladder by the stiles, not the rungs. Ensure the base is on firm, level ground, or secure it to prevent slipping.

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**Storage:** Store so ladder will not warp, sag or be damaged; secure during transport.

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**Inspection:** Check to ensure shoes and ladder are free of oil, grease, wet paint and other slipping hazards; warning labels are legible; spreader device can be locked in place and ensure area around the top and bottom of ladder is cleared of material.

**Continued on back of page**

# Ladder Safety

## continued

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### **Safe Practices:**

- Secure the ladder safely in place.
- Never tie off directly to the ladder.
- Face ladder and use both hands when climbing.
- Carry tools on belt or use a hand line.
- Hold on with one hand when performing work.
- Never reach too far to either side or rear.
- Do not climb higher than second step from top on a stepladder or third from the top on a straight ladder.
- Never attempt to move, shift or extend ladder while in use.
- Maintain a three-point contact (one hand and two feet or two hands and one foot) while climbing a ladder.

# Lockout/Tagout

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**Hazards:** Amputations, fractures, electrocution and death.

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**Lockout/Tagout (LOTO):** Procedures are necessary to disable machinery or equipment, thereby preventing the release of hazardous energy while employees perform servicing and maintenance activities. The procedures for LOTO vary depending on the type of equipment and the type hazardous energies controlled including electrical, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy sources.

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## **Lockout/Tagout Procedures:**

- Each piece type of equipment or machinery should may have its own LOTO procedures.
- Notify operators and supervisors that power is being disconnected or isolated.
- Prepare for isolation by checking specific written procedures that state the shutdown and restart process.
- Shut down by turning off the equipment.
- Separate all energy sources using proper isolating devices – like manual circuit breakers or disconnect switches.
- Push buttons or selector switches cannot be the only way to de-energize. Equipment may have more than one type of energy that needs to be isolated.
- Each worker who can be exposed to hazardous energy must be part of the LOTO process.
- Control stored energy (e.g., discharge capacitors or drain hydraulic lines).
- Verify equipment has been de-energized by trying to restart and using testing equipment (such as an electric circuit tester).
- Only the worker who puts on a lockout or tagout device may remove it.
- When the work is finished, inspect to ensure all tools, mechanical restrains, and electrical devices have been removed before turning on the power. Warn affected employees that power will be restored.
- If the LOTO job is interrupted for testing or positioning equipment, the procedures must start over from the beginning.

# Material Handling

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**Hazards:** Falling material and struck-by injuries.

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## **Safe Practices:**

- Inspect motorized vehicles and mechanized equipment daily or prior to use.
- Shut off vehicles and set brakes before manually loading or unloading.
- Secure trucks and trailers from movement during loading and unloading operations.
- Before unloading, inspect load for shift, displacement or instability.
- Avoid operating under energized electrical lines or in emergency exit ways.
- Ensure safe clearance for equipment through paths and roadways.
- Equip trucks with sideboards of sufficient height to prevent materials from free-falling.
- Ensure rigging slings and lines are secured using properly rated and gated carabiners. Blocks, pulleys, port-a-wraps should be properly rated as well
- Ensure rigging slings and lines are adequate for the job.
- Ensure no one will be passing under suspended loads.
- Ensure people who operate vehicles on public roads have valid operator's licenses.
- Ensure cutting tools or tools with sharp edges are placed in closed boxes or containers that are segregated from climbing and rigging tools and lines in transport vehicles.
- Cut limbs and material into manageable pieces for ease or transport.
- Hand trucks or dollies should have larger large diameter wheels for easier use.

# Overhead Power Lines

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**Hazards:** Electrical shock and electrocution.

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## **Safe Practices:**

- Always survey the site for overhead power lines—**LOOK UP!**
- Always locate and identify overhead electrical power lines.
- Remember when using a crane or high reaching equipment near energized power lines of 50,000 volts (50 Kv) or more, the minimum distance between the lines and any part of the crane/equipment must be 10 feet plus  $\frac{1}{2}$  inch for each 1,000 volts over 50,000 volts.
- Always request an observer when you do not have a clear view of the power line from your operating station.
- The observer's only job should be ensuring that the operator maintains a safe distance from overhead power lines.
- Always treat overhead power lines as if they are energized.
- When in doubt, contact the electric company to determine what voltage is on the lines.
- Always ask the electric company to either de-energize and ground the lines or install insulation while you are working near the lines.
- Even with insulation, a minimum safe clearance must be maintained from the power lines.
- Always make sure ladders and tools used near power lines are nonconductive.

# Personal Protective Equipment

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**Hazards:** Misuse or incorrect use and improper selection of equipment for the hazard resulting in injury or illness.

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## When to Use:

- Abate hazard via the hierarchy of controls including elimination, substitution, engineering and administrative. If those controls are not feasible, use appropriate personal protective equipment, which provides a temporary barrier between you and the hazard.
- **Hearing Protection**—When exposed to noise at or above 90 decibels (dB) TWA. If you must yell to communicate, you need hearing protection.
  - A typical chainsaws noise level can range between 106-125 decibels (dBA). This is enough to cause hearing loss even with short duration.
- **Hard Hats**—When exposed to struck-by or falling object hazards, arborists must wear an approved arborist helmet with a chinstrap. These often have built-in visors and hearing protection. Their low profile makes them less cumbersome to climbers.
- **Gloves and Arm Protection**—When hands or arms are exposed to abrasive surfaces, sharp edges, hot, cold or chemical hazards, employees should wear appropriate protection.
- **Respirators**—When exposed by inhalation to harmful substances (vapors, mists and dusts), your employer must ensure the respirator protects against the specific hazards, fit tested and you are medically cleared to use a respirator.
- **Safety Harnesses with Lanyards**—when exposed to fall hazards.
- **Eye and Face Protection**—Safety glasses provide protection from impact hazards, e.g., when using saws. Goggles protect eyes from splash hazards. Mesh visors protect the face from branches; however, they must still be worn with safety glasses
- **Steel-Toe Shoes**—For falling heavy objects.
- **Chainsaw Cut Resistance Boots**—For personnel using chainsaws except for climbers when they are conducting in-tree operations.

# Recording and Reporting

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**Purpose:** To identify industries and establishments that have higher than average injury and illness rates; to facilitate timely investigations of fatalities and catastrophes.

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Your employer may be required to record a work-related injury or illness that necessitates medical treatment beyond first aid. Please inform your employer or supervisor of any injury and promptly seek medical attention as necessary.

Your employer must report to the NC DOL Occupational Safety and Health any work-related incident that results in fatality, loss of eye, amputation or in-patient hospitalization.

**Reports can be made by calling 1-800-625-2267 or 919-779-8560.**

# Rigging Operations

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**Hazards:** Struck by / caught in-between injuries and fatalities resulting from a worker being crushed, caught, pinched, squeezed, or compressed between two or more objects, or between parts of an object.

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**Rigging** during trimming or removal is essential to a safe controlled worksite. When done properly, rigging takes a lot of guesswork out of removing larger branches or spar removal by putting the arborist in control. This can help avoid worker injuries, power line strikes and property damage. This is far safer than cutting and bombing down large pieces of debris.

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## **Safe Practices:**

- Training in rigging practices is critical. Ensure workers realize there is a difference between weight and force. When cutting limbs, especially in negative rigging, the rigging is 'shock-loaded' which can severely stress both rigging lines and hardware. If possible, allow materials to run to dissipate peak force. This will reduce the shock on the equipment.
- Correct placement of rigging blocks in the tree is crucial to safe operation. Make sure the branch that you're connected to is strong enough to bear the intended load. If not, you may have to use a rigging point backup.
- Make sure the landing area and swing radius of the piece are clear before proceeding.
- Ensure the area of the tree you are rigging is free of defects and decay that might compromise your rigging points. Rigging requires experience and a good knowledge of the strength and flexibility of wood; make sure you have crew members with rigging experience.
- Make sure you accurately determine wood weight before cutting. Consult a green log weight chart.
- Test your rigging with smaller cuts, around 50% of the expected total weight. This will ensure you have a feel for what to expect when the system is fully loaded.
- Make sure you use the correct rope for the job. Size, construction and load rating are crucial factors to consider when choosing rigging lines. Only use dedicated lines for rigging, do not use climbing ropes, tag lines, etc.
- Using lowering devices such as a 'port-a-wrap' or friction rings can help workers manage and lower heavy loads in a controlled manner.

# Rigging Operations

## continued

- These devices simplify every rigging job by eliminating the need to wrap lines around other trees to create friction.
- 

**Positive vs. Negative Rigging:** (Both are common, but positive is usually preferred.).

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### Controls:

- **Positive:** An anchor (rigging block or pulley) mounted above the load is considered positive rigging. This setup allows the cutter to pre-tension the rope and supports the load before cutting.
  - Positive rigging reduces loads, minimizes strain on the system and provides flexibility within the system for additional rigging points.
  - It provides control over branches without the danger of free-fall
- **Negative:** An anchor (rigging block or pulley) mounted below the load is considered negative rigging. This can be a viable alternative if positive rigging is impossible. Because the anchor is below, there will be an instant instance of free fall before the piece is arrested by the anchor. This results in shock-loading of the line and hardware involved.
  - Because excessive force is generated during free fall, positive rigging is usually a safer alternative.
  - When possible, let the piece 'run' to help dissipate force.
  - Ensure that ALL pieces of rigging have been thoroughly checked and rated for the forces generated during negative rigging.
  - The rigging point can be attached anywhere on the tree trunk, however, the closer it is to the point of cutting, the less free fall forces on the sections being cut. Excessive force will increase the wear on rigging equipment.
  - Negative rigging gives the arborist the ability to rig a piece even when there are no rigging points above.

# Stump Grinder Safety

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**Hazards:** Struck by / caught in between injuries and amputations.

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**Safety Equipment:** Safety Equipment: Steel-toe boots, safety glasses, hearing protection, hard hat, gloves.

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## **Safe Practices:**

- Call 811 for marking. Ensure all underground utilities and pipes have been properly marked before starting. If in doubt, dig potholes and verify.
- Always inspect the area around the stump before starting. Ensure there are no obstacles, such as rocks, wires or other obstructions, that could interfere with the process.
- Use a stump grinder that is appropriate for the size of the stump you are removing. Always follow the manufacturer's instructions and ensure that it is in good order before using.
- Ensure the teeth are sharpened and the machine has been oiled and lubricated before you start grinding.
- Wear appropriate PPE including eye and ear protection, hard hat, and gloves. Wear sturdy work boots with slip-resistant soles that provide good traction and protection.
- Do not wear loose clothing or jewelry that could get caught in the grinder.
- Keep all non-authorized personnel and pets away from the work area while stump grinding is in progress.
- Move the grinder in a controlled manner, using slow and deliberate movements. Avoid jerking or sudden movements that could cause the grinder to jump, bounce or shift.
- Always grind at an angle. Avoid putting the grinding wheel straight down on the stump. Grinding at an angle will allow the wheel to keep spinning at a faster rate, grinding the stump more efficiently. Grinding straight down will cause the wheel speed to decrease, making it less efficient. This also causes more wear and tear on your equipment.

# Vehicle Safety

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**Hazards:** Struck-by and roll-over injuries.

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**Safety Equipment:** Seat belts, rollover protective structure (ROPS), brakes, horn, reverse alarm.

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**Inspection:** Inspect vehicles before each shift to ensure that all parts and accessories are in safe operating condition. Check brakes, trailer brake connections, parking system, emergency brakes, tires, coupling devices, seatbelts, horn, steering mechanism, operating controls, safety devices (e.g., reverse signal alarm, ROPS), lights, reflectors, defrosters, windshield wipers and fire extinguishers.

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## Safe Practices:

- Do not drive a vehicle in reverse gear with an obstructed rear view, unless the vehicle is equipped with an audible reverse alarm or another worker signals that it is safe.
- Drive on roadways or grades that are safely constructed and maintained.
- Make sure you and all personnel are in the clear before using dumping or lifting devices.
- When not in use, lower or block bulldozer and scraper blades, end-loader buckets, dump bodies, etc., and leave all controls in neutral position.
- Set parking brakes when vehicles and equipment are parked and chock the wheels.
- Vehicles that are loaded by cranes, power shovels, loaders, etc., must have a cab shield or canopy that protects the driver from falling materials.
- Do not exceed a vehicle's rated load or lift capacity.
- Do not carry personnel unless there is a seat available; no one should ride in buckets or on forks.
- Use traffic signs, barricades or flaggers when construction takes place near public roadways.
- Workers should wear highly visible warning clothing, such as Hi Vis yellow or Hi Vis orange vests, and reflective vests.
- Wear provided seatbelts

# Work Zone Safety

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## What Is a Work Zone?

A temporary traffic control zone, change from normal traffic patterns, where people and equipment are at risk.

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**Operations in a Work Zone:** Construction, maintenance, utility work, emergency response, environmental sampling.

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## Regulations to Follow:

- All traffic control operations and devices must conform to Manual on Uniform Traffic Control Devices (MUTCD) and state Department of Transportation (DOT) design standards.
  - MUTCD is available online from DOT—  
<http://mutcd.fhwa.dot.gov>.
- 

## Traffic Control Devices:

- Traffic control devices include signs, channelizing devices, lighting devices and pavement markings.
  - Signs: *Regulatory signs* impose legal restrictions and may not be used without permission. Guide signs typically show destinations and directions. Warning signs give notice of conditions that may be hazardous. Used extensively in road construction, signs must be retroreflective or illuminated during hours of darkness, meet minimum size requirements, meet mounting standards, and be removed when work is over.
  - Channelizing devices include traffic cones, tubular markers, vertical panels, drums, barricades and barriers.
  - Traffic cones must be orange in color, meet minimum heights for certain jobs and be retroreflective if used in darkness.
  - Lighting devices include warning lights, flashing vehicle lights and arrow displays.
- 

## Mobile Operations:

- Ensure warning devices are used for mobile operations at speeds above 20 miles per hour (mph).
- Use portable devices that are appropriately colored.
- Use marked vehicles with flashing or rotating lights.
- Augment portable devices with signage.
- Use advance-warning devices that move with the work area.

Continued on back of page

# Work Zone Safety

## continued

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### Safe Practices:

- Use protective measures, such as high-visibility clothing, traffic control devices, work-zone protection plan, law-enforcement and public awareness, worker training, variable message signs (VMS), arrowboards, crash cushions, impact attenuators, and jersey barriers.
  - Ensure the traffic control zone is divided and maintained in five distinct areas—advance warning area, transition area, buffer area, worker area and termination area.
  - Ensure employees work inside the “work area” of the traffic control zone.
  - Ensure retroreflective and illuminated devices are used at intermediate and long-term stationary temporary traffic control zones.
  - Use properly spaced advance warning signs for lane tapering and certain shoulder work.
  - Use traffic control devices with traffic barriers that are immediately adjacent to an open lane.
  - Use temporary traffic barriers separating opposing traffic on a two-way roadway.
  - Ensure flaggers have certified training National Safety Council, American Traffic Safety Services Association (NSC, ATSSA or equivalent).
- 

### Inside the Work Zone:

- Ensure vehicle backup alarms are used.
- Ensure alarms are loud enough to be heard over the noise being emitted by work.
- Ensure trucks are equipped with mirrors.
- Equip construction vehicles with proximity detectors.
- Implement an internal traffic control plan that includes schematics of vehicle and worker movements, hazard checklist, reporting system, adequate lighting, and plans for intermittent stoppages.

# Workplace Violence

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**Workplace violence** is violence or the threat of violence against workers. It can occur at or outside the workplace and can range from threats and verbal abuse to physical assaults and homicide, one of the leading causes of job-related deaths.

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**Workplace Violence Includes:** Beatings, rapes, stabbings, suicides, shootings, psychological trauma, threatening phone calls, intimidation, harassment, stalking and verbal abuse.

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**Sources of Violence Include:** Strangers, clients, co-workers and personal relations.

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**Risk Factors Include:** Contact with the public, working with unstable or volatile persons, delivery of passengers or goods, working alone or in small numbers, working late at night or during early morning hours, working in high-crime areas, guarding valuable property and money exchange.

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**Be Alert to Warning Signs:** Fascination with weapons, alcohol or drug abuse, anguish over pending or recent demotion or termination, history of violent incidents, severe stress, social isolation, psychological deterioration, decreased or inconsistent job functioning, deterioration in personal hygiene, and major personality changes.

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## **Safe Best Practices:**

- Management has zero tolerance for violence, threats, harassment, intimidations and other disruptive behavior in the workplace.
- Reports of incidents will be taken seriously; line supervisors are accountable to act upon reports of violence.
- Workers will report violent behavior to their supervisor or other person of authority.
- No one will receive reprisals for reporting.
- Management is committed to emotional and physical health of the employee.
- The employer can implement security measures that include locks on doors, cell phones and walkie-talkies, adequate lighting, lockers for valuables, night-time guards, identity badges, surveillance cameras, curved mirrors, and controlled access to work areas.
- **Call 911** for any physical actions or threats that appear imminent, acts of physical harm, or property damage or out-of-control behavior.

# General Industry References

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**For more information on hazards and OSHA standards, view [www.osha.gov](http://www.osha.gov) and refer to:**

*29 CFR Part 1904—Recording and Reporting Occupational Injuries and Illnesses*

*29 CFR Part 1926—Safety and Health Regulations for the Construction Industry*

*29 CFR Part 1910 – Safety and Health Regulations for General Industry*

- Subpart A—General
- Subpart B—Adoption and Extension of Established Federal Standards
- Subpart C—Reserved
- Subpart D—Walking-Working Surfaces
- Subpart E—Exit Routes and Emergency Planning
- Subpart F—Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms
- Subpart G—Occupational Health and Environmental Control
- Subpart H—Hazardous Materials
- Subpart I—Personal Protective Equipment
- Subpart J—General Environmental Control
- Subpart K—Medical Services and First Aid
- Subpart L—Fire Protection
- Subpart M—Compressed Gas and Compressed Air Equipment
- Subpart N—Materials Handling and Storage
- Subpart O—Machinery and Machine Guarding
- Subpart P—Hand and Portable Powered Tools and Other Hand-Held Equipment
- Subpart Q—Welding, Cutting, and Brazing
- Subpart R—Special Industries
- Subpart S—Electrical
- Subpart T—Commercial Diving Operations
- Subpart Y—Reserved
- Subpart Z—Toxic and Hazardous Substances







**The Occupational Safety and Health Division** comprises six bureaus of the N.C. Department of Labor:

**Agriculture Safety and Health (ASH):** Inspects migrant housing and conducts OSH compliance inspections.

**Contact:** 919-707-7820

**Compliance (East and West):** Investigates employee complaints, work-related accidents and deaths, conducts OSH compliance inspections.

**Report a Workplace Accident:** Report a work-related fatality or incident involving any in-patient hospitalization of one or more employees, any work-related amputation, and any work-related loss of an eye.

**Contact:** 919-779-8560

**OSH Complaint Desk:** File a complaint about a workplace hazard. **Contact:** 919-779-8560

**Consultative Services:** Provides small businesses with free confidential services to identify and eliminate worksite hazards to improve safety and health and reduce injury and illness.

**Contact:** 919-707-7846

**Education, Training and Technical Assistance:** Offers free outreach services and safety and health training, assists with building safety and health management systems, and provides technical assistance to employers. **Contact:** 919-707-7876

**Ask OSH:** Request technical assistance with OSHA standards: 919-707-7876 or [ask.osh@labor.nc.gov](mailto:ask.osh@labor.nc.gov)

**Planning, Statistics and Information Management:**

Administers the Public Sector Survey, maintains statistical data and manages inspection and investigative case file disclosures and archiving. **Contact:** 919-707-7838

# Occupational Safety and Health Division

**Agriculture Safety and Health (ASH):** inspects migrant housing and conducts OSH compliance inspections to ensure applicable safety and health standards are met.

**Compliance (East and West):** investigates employee complaints, work-related accidents and deaths, conducts scheduled site inspections, and follow-up inspections.

**Consultative Services:** provides small businesses with free confidential services to identify and eliminate worksite hazards to improve safety and health and reduce injury and illness. Consultants do not issue citations.

**Education, Training and Technical Assistance:** offers North Carolina businesses free safety and health training throughout the state including general industry and construction 10/30-hour courses, webinars, workshops and workplace training; provides technical assistance in understanding safety and health standards; administers the Carolina Star Program, which recognizes leaders in occupational safety and health; manages safety awards for companies with good safety records; and supports a staffed library with labor-related resources available to the public.

**Planning, Statistics and Information Management:** administers the Public Sector Survey, maintains statistical data and manages inspection and investigative case file disclosures and archiving.

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