

Author:	Paul Roberts	Revision #:	New
Approved By:	Bobby Lewis	Date Revised:	July 2019

SAFETY POLICY & PROCEDURE

Tree Felling and Chainsaw Use

SPP# 1910.266

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1.0 Purpose

The purpose of this safety policy and procedure is to establish tree felling and chainsaw use operation procedures for North Carolina Department of Transportation (NCDOT) employees engaged in these activities.

2.0 Scope and Applicability

This safety policy and procedure provides requirements for safe tree felling and chainsaw use to protect NCDOT employees. Since Tree Felling is an operation performed throughout NCDOT and Chainsaws are the primary powered tool used to perform the operation, both have been included in this SPP.

This document also details the areas of responsibility for managers/unit heads, supervisors, affected employees and Safety and Risk Management within NCDOT.

This safety policy and procedure affects NCDOT employees who as a result of their job duties are exposed to tree felling and chainsaw use hazards.

3.0 Reference

This safety policy and procedure is established in accordance with Occupational Safety and Health Standards for General Industry Special Industries – Logging Operations (29 CFR 1910.266) as applicable to NCDOT operations.

4.0 Policy

It is the policy of NCDOT to provide a place of employment that is free from recognized hazards that cause or are likely to cause death or serious physical harm to employees or the public. When tree felling and chainsaw use hazards exist that cannot be eliminated, then engineering practices, administrative practices, safe work practices, Personal Protective Equipment (PPE), and proper training regarding Tree Felling and Chainsaw Use will be implemented. These measures will be implemented to minimize those hazards to ensure the safety of employees and the public.

5.0 General Responsibilities

It is the responsibility of each manager/unit head, supervisor, and employee to ensure implementation of NCDOT's safety policy and procedure on Tree Felling and Chainsaw Use. It is also the responsibility of each NCDOT employee to report immediately any unsafe act or condition to his or her supervisor. Specific responsibilities are outlined under Section 6.3.

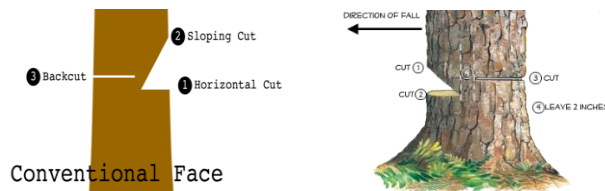
6.0 Procedure

This section provides applicable definitions, establishes general provisions, and identifies specific responsibilities required by NCDOT's safety policy and procedure on Tree Felling and Chainsaw Use operations.

6.1 Definitions

Back Cut

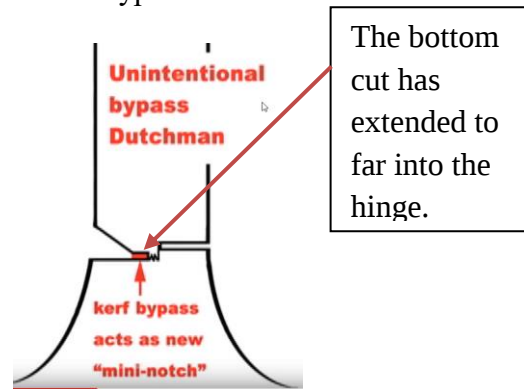
The last of the three cuts required to fell a tree using the conventional notch method made from the opposite side of the undercut at least 2 inches above the horizontal cut of undercut.



Barber Chair – A tree that while in the process of being cut, splits lengthwise and leaves a vertical piece of wood on top of the stump. It can occur when attempting to fell the tree while making the final Backcut with a Dutchman “Bypass” at notch cut on tree.



Barber Chair Hazard



Boring

Using the nose or tip of the guide bar to saw into the tree while felling or bucking

Buck

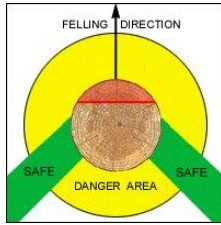
To cut felled trees into logs.

Dutchman Notch

The seat that interferes with the smooth closing of the notch. Caused when one of the notch cuts is made too deep and extends beyond the endpoint of the other notch cut, known as "Bypass".

Escape Route

A predetermined path used by fallers when felling or bucking. Determine the direction and distance of the escape route and clear the route before cutting. There should be an escape route at a 45° angle. If possible, plan at least 2 escape routes.



Kickback

A strong thrust of the saw back toward the tree feller, generally resulting from improper use of the guide bar's nose or from pinching the bar in a cut.

Lean

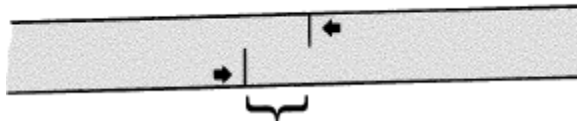
The tilt of a tree away from its vertical position. Often two leans (such as head lean and side lean) may affect the same tree.

Limbing

To cut branches off felled trees.

Limb Lock Cut

The purpose of a limb lock cut is to relieve the pressure of a limb or tree that is under pressure. It prevents a limb under pressure from kicking back and striking the leg or pinching the saw. The first cut is made on the compression side of the tree, and the 2nd on the tension side of the tree limb 3-5" from the 1st cut. Both cuts should be deep enough to by-pass the fiber cut.



Spring Pole

A tree, segment of a tree, limb, or sapling which is under stress or tension due to the pressure or weight of another tree or ice. Pressure on a spring pole should be relieved by shaving a sufficient amount of wood from the underside of spring pole to release some of the tension and the tree breaks at the hinge point. Finish by cutting top side of spring pole ½" from past series of shallow underside cuts.

Tree Felling

To cut down trees.

Undercut

A notch cut in the tree to guide the direction of tree fall and prevent splitting or kickback comprised of first two cuts required to fell a tree. The first horizontal notch cut must be at least one third of the diameter of the tree. The second sloping cut must have enough angle to allow a wide opening as it meets the end of the first horizontal cut.

Wedge

A plastic or magnesium tool used by a tree feller to redistribute a tree's weight in the desired direction and to prevent a tree from falling backward. It also is used while bucking to prevent the guide bar from being pinched. Driving the wedge into the tree can promote the direction of the fall.

Widow Maker - A loose or broken limb that may be rotted, laying loose on top of other limbs or ready to fall onto people standing below or underneath the working area below. Widow makers may exist in trees next to the tree intended to be cut. Limbs, from the tree intended to be cut, may brush against other trees containing widow makers.

6.2 General Provisions

This section details the provisions of this safety policy and procedure with each provision discussed in a separate subsection. These provisions are:

- Training
- Chainsaw Use
- PPE
- Tree Felling
- Traffic Control
- Night-Time Operations
- First Aid

6.2.1 Training

All employees shall receive chainsaw and tree felling training prior to engaging in such operations. Training in safe operations shall include:

- Proper operation and maintenance of a chainsaw
- PPE required when operating chainsaw
- Proper method for tree felling and hazards associated
- Initial training may be hands-on or on-the-job training, but subsequent instructor led training should be conducted and documented.
- If a chainsaw is to be used in a bucket truck or other type of aerial lift employee must receive training and be qualified to operate the aerial lift being used.

6.2.2 Chainsaw Use

Follow manufacturer guidelines when using a Chainsaw.

1. Operators shall check controls, chain tension, all bolts, handle, and ensure throttle lock operates properly and chain catcher is in place to ensure they are functioning properly and adjusted according to the manufacturer's instructions. Report all needed repairs promptly and do not use any equipment that is unsafe.
2. Do not wear loose jewelry or chains. Snug fitting clothing shall be worn but allow complete freedom of movement.

3. Always use the following precautions when handling fuel and refueling the chainsaw:
 - a. Always store gasoline in an approved container.
 - b. Do not smoke while handling fuel.
 - c. Beware of static electricity and sparks between saw and fuel cans (metal and plastic).
 - d. Always stop the engine to refuel the tank and allow engine to cool.
 - e. Avoid spilling fuel or oil. Spilled fuel should always be cleaned up.
 - f. Do not remove fuel tank cap when engine is running.
 - g. Move the chainsaw at least 10 feet from the fueling point before starting the engine.
4. Wear all applicable PPE listed in Section 6.2.3 prior to using the chainsaw.
5. Before you start the engine, make sure the chain is not contacting any object and the chain brake is engaged.
6. The preferred method is to start the chainsaw engine on the ground. Do NOT drop start or air drop start a chain saw. The leg lock method may also be used to start a chainsaw.
7. Never start the chainsaw until you are at the location where you intend to use the saw.
8. Do not allow other persons to be near the chainsaw when starting or cutting.
9. Shut off or engage the chain brake whenever the saw is carried more than 50 feet or on hazardous terrain.
10. When carrying the saw, keep the bar facing behind you.

6.2.3 PPE

The following PPE shall be worn when using a chainsaw:

1. DOT Loggers hard hat w/ mesh face shield and hearing protection earmuffs are preferred head, face, eye, and hearing protection. Safety glasses are required under the mesh face shield.
2. Safety glasses
3. Hard-hat with chip shield, ear plugs or earmuffs (chainsaws run at 119dB typically)
4. Full Wrap Around Chain Saw Chaps
5. Cut resistant leather gloves
6. Sturdy construction safety toe work boots
7. Snugly fitting Safety Vest if exposed to moving traffic or equipment.
8. Never wear a Safety Vest when using a chipper.
9. Fall protection consisting of full body harness and fall arrest lanyard or restraint if operating chainsaw from aerial lift.

6.2.4 Tree Felling

No felling or limbing of trees is allowed without the presence of at least 2 workers. The worker not actually running the chainsaw shall remain clear of the cutting so that the can call for help if needed.

Before felling or cutting down a tree, the work area around the tree should be cleared to allow safe access and an escape route planned.

Conduct hazard assessment of the area for:

- Overhead Powerlines or other Utilities (notify Power or Utility company if needed)
- Old fence or metal,
- Vines or poison Ivy/Oak etc.
- Animals or pets
- Children in residential areas or where housing exists.
- Rotted or dead wood.
- Curb and gutter or crossover pipe that can be damaged.
- Residential cars or trucks that may be parked in or near the drop zone.
- Pedestrians and onlookers who may wander into the area.
- Below ground utilities (that may be affected from limbs or trees stabbing into the ground during the fall.

All workers not involved in the operation should keep clear of the work area (at least two tree lengths). The following conditions must also be evaluated to ensure safe operation:

- Shape of the tree
- Wind force and direction; cease operations if wind speed approach 40 MPH.
- Hazardous weather conditions
- Location of overhead utilities
- Lean of tree
- Condition of tree (decayed, hollow, weak spots, stress from vines or other trees, nails and spikes that can damage the chain or cause kickback)
- Traffic or any other concerns when tree falls

Proper procedures for felling trees using a chainsaw:

1. A notch and back cut method should be used in felling trees with diameter of ten inches or greater measured at belt height.
 - a. The first top cut of notch should be 45° angle to 1/3rd of tree diameter.
 - b. The second bottom cut of notch should be horizontal to end of first cut. The 2nd cut must meet cleanly with the 1st cut or the tree will lean into the cut possibly snapping prematurely or binding the bar.
 - c. The order of these (2) cuts may be reversed obtaining same results.
 - d. The final back cut is a horizontal cut from opposite side of notch 1" – 2" above the notch corner stopping a point that will leave hinge width about 1/10th of the tree diameter. Tree will fall in direction of the notch. It is very important to leave hinge wood to control the fall of the tree.
 - e. After making the final back cut, take your escape route to avoid being in area when tree falls.
 - f. Bore Cut and Wedges may be necessary to direct the fall of trees with lean and on larger diameter trees.
 - g. To ensure the tree will not fall backwards when making the final back cut, wedge can be placed into the back cut.
2. Once the tree has fallen, limbing and bucking can be performed. Ensure the area is clear of any trip hazards during this process.

6.2.5 Traffic Control

Traffic control must be performed when cutting trees next to road. All signs must be erected to control traffic in each direction.

- Communications by line of sight or by radio must be established before beginning work.
- Radio communications is required when out of line of sight. Verbal communications are required before the release of any traffic and not by the sound of idling equipment
- Take any necessary precautions when working to drop trees that are in a curve or over a hill.
- For any trees that are dropped into or toward the road, the traffic must be completely stopped in each direction.

6.2.6 Night-Time Operations

Night-time and call out operations for the removal of trees and limbs increase the danger and risk of injuries. Therefore, a minimum of (2) NCDOT personnel is required. Due to risk of injury or potential fatalities, there are no exceptions to this policy. If possible, the removal of trees and limbs will be delayed until daytime when operations will be safer.

- Appropriate lighting and signage will need to be addressed first.
- Signage must be placed well in advance of curves and allow time for stopping. Highway Patrol, Sheriffs Dept, and local Police should be called for operations where visibility and line of sight will present hazards.
- If the work cannot be performed safely, it will be delayed until daytime.
- Lighting used by crews will consist of vehicle headlights, mobile light stands, vehicle mounted lights, headlamps or other feasible methods.
- Additional crew members will be called out if needed for flagging and warning the crew of errant traffic and other situations and conditions that require material handling more than 2 people can safely handle.
- Other equipment needed for the removal of trees will be determined by the Supervisor and County Maintenance Engineers.

6.2.7 First Aid

At least one member of each crew shall be trained in First Aid and CPR. Training must be current.

Each crew must have at least (1) 25-unit first aid kit on hand consisting of the following items:

- 1-4x4 Bandage Compress
- 1-Box 3x3 Sterile Gauze Pads (4 per box)
- 1-Triangular Bandage (40" x40"x40")
- 1-2"x 4 yards Gauze Bandage
- 1/2 inch x 2.5 yards Adhesive Tape (2 per box)
- 1-Boxes of 1"x3" Adhesive Bandages (16 per box)

- 1-Sterile Buffered Isotonic Eyewash Kit (1 oz.) with 2 eye pads, 2 adhesive strips
- 1-Instant Cold Pack
- Hand Sanitizer (1/32 oz. pks 6 per box)
- Antiseptic Wipes (10 per box)
- Triple Antibiotic Ointment (1/57 oz. pks 10 per box)
- Sting Relief Swabs (10 per box)
- 1-Eye/Skin Wash 1oz.
- 1-CPR Breather Barrier
- Disposable Nitrile Gloves (2 per box)
- Burn Treatment (10 per box)
- 1-Burn Dressing (4"x4") gel soaked
- 2-Trauma Pads (5"x9")
- 1-Scissors
- First Aid Guide
- **Due to the potential severity of injury and excessive bleeding to a body part from chainsaw cut, additional and larger (8"x10" Gauze Pads) should be added to First Aid Kits for Tree Felling and Chainsaw use.**

First aid kits should be replenished with any depleted items after each use and inspected yearly to replace any expired items.

6.3 Specific Responsibilities

6.3.1 Managers/Unit Heads

Managers/Unit Heads are responsible for ensuring that adequate funds are available and budgeted for equipment, related supplies and PPE for chainsaw use and tree felling operations.

Manager/Unit Heads will obtain and coordinate the required Tree Felling and Chainsaw Use training for the affected employees. Manager/Unit Heads will also ensure compliance with this safety policy and procedure through their auditing process.

6.3.2 Supervisors

Supervisors will not allow any employee who has not received the required training perform any of the tasks or activities associated with this safety policy and procedure.

Supervisors will communicate appropriate needs to managers/unit heads and/or other supervisors.

Supervisors will ensure that employees are provided and wear PPE as required for Tree Felling and Chainsaw Use.

6.3.3 Employees

Employees shall comply with all applicable guidelines contained in this safety policy and procedure.

Employees shall be responsible for reporting suspected unsafe conditions or equipment to the competent person.

6.3.5 Safety and Risk Management

Safety and Risk Management shall provide prompt assistance to managers/unit heads, supervisors, or others as applicable on any matter concerning this safety policy and procedure. Safety and Risk Management will assist in developing or providing Chainsaw and Tree Felling training.

Safety Engineers will provide consultative and audit assistance to ensure effective implementation of this safety policy and procedure

6.3.6 Central Inventory Unit

The Central Inventory Unit or MRO contract supplier will be responsible for maintaining an inventory of chainsaws, related supplies and first aid kits.