



*Martin O'Malley, Governor*  
*Anthony G. Brown, Lt. Governor*  
*John R. Griffin, Secretary*  
*Eric Schwaab, Deputy Secretary*

## Maryland Roadside Tree Care Expert Exam Study Guide

### For Exam Domain:

### Chapter 8: Safety Standards

### Version 1.2

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The *ANSI Z133.1 Standards* contain arboriculture safety requirements for pruning, repairing, maintaining, removing trees, cutting brush, and for using equipment in such operations. All Licensed Tree Experts and Certified Roadside Tree Care Experts shall comply with safety standards while working in the State of Maryland.

**Each person**, employee or other, shall be responsible for his/her own safety and comply with the appropriate federal and state occupational safety and health standards and all rules, regulations, and orders which are applicable to his/her own actions and conduct. **Employers** shall instruct their employees in the proper use, inspection and maintenance of tools and equipment, including ropes and lines; and require that appropriate working practices be followed. A job briefing shall be performed by the qualified tree expert in charge before the start of each job. The briefing shall be communicated to all affected workers.

Proper personal protective equipment (PPE) shall be worn when performing tree care operations. Clothing and footwear appropriate to the known job hazards shall be approved by the employer and worn by the employees. Workers shall wear head protection that conforms to ANSI Z89.1. Class E helmets shall be worn when working in proximity to electrical conductors, in accordance with ANSI Z89.1. Face and eye protection shall comply with ANSI Z87.1. When noise levels exceed acceptable standards, as established by federal regulations, approved hearing protection shall be provided by the employer and worn. Chain saw resistant leg protection shall be worn while operating a chain saw during ground operations.

A first-aid kit, adequately stocked and maintained, shall be provided by the employer. Tree Experts and other workers shall be instructed in its use and specific location. Instruction shall be provided in the identification, preventive measures and first-aid treatment of common poisonous plants (poison ivy, poison oak and poison sumac), stinging/biting insects and other pests indigenous to the area in which work is to be performed.

Effective means for controlling pedestrian and vehicular traffic shall be instituted on every job site where necessary in accordance with U.S. DOT *Manual on Uniform Traffic Control Devices* (MUTCD), or applicable state and local laws and regulations.

A roadside tree care expert should take immediate action if a tree is leaning with recent root exposure, soil movement, or soil mounding near the base of the tree. Immediate action is also needed if more than half of the roots under the tree's crown have been cut or crushed or if there is advanced decay present in the root flares or "buttress" roots. Dead branches of sufficient size to cause injury should be removed immediately. All of these conditions create a hazardous situation. A tree is considered hazardous if it has the potential to fail and there is a target it may strike.

Before working in a tree, always look for dead or broken branches, signs of decay, cables, bracing, or guying wires, and electrical conductors and utility lines. All overhead and underground electrical conductors and all communication wires and cables shall be considered to be energized with potentially fatal voltages.

Electrical shock may occur during a ground fault simply by standing near the grounding object. Only qualified line-clearance tree experts or qualified line-clearance tree expert trainees shall be assigned to work where an electrical hazard exists. Qualified line-clearance tree expert trainees shall be under the direct supervision of qualified line-clearance tree expert. An electrical hazard exists when a worker, tool, tree, or any other conductive object is closer than ten feet from an energized electrical conductor rated 50 kV, phase-to-phase, or less.

Direct contact is made when any part of the body contacts an energized line. Indirect contact occurs when any part of the body touches a conductive object that is in contact with an energized line. Conductive objects include a saw, tree branch or another person. Even in an insulated bucket truck indirect contact can be made. When climbing a tree, the tie-in position should be above the work area and located in such a way that a slip would swing the tree expert away from any energized electrical conductor or other identified hazard.

Footwear, including lineman's overshoes, having electrical-resistant soles, shall not be considered as providing any measure of safety from electrical hazards. Rubber gloves, with or without leather or other protective covering, shall not be considered as providing any measure of safety from electrical hazards. Qualified line-clearance tree experts and qualified line-clearance tree expert trainees performing line clearance in the aftermath of a storm or under similar conditions shall be trained in the special hazards associated with this type of work.

Aerial devices shall be provided with a point of attachment to secure a full body harness with a shock-absorbing lanyard or body-belt and lanyard. Fall protection shall be worn when working aloft. Aerial devices shall not be used as cranes or hoists to lift or lower materials, unless specifically designed by the manufacturer to perform such operations. Wheel chocks shall be set before using an aerial device, unless the device has no wheels on the ground or is designed for use without chocks. No part of the boom or bucket shall make contact with energized electrical conductors, poles, trees or similar objects.

Brush chippers equipped with a mechanical infeed system shall have a quick stop and reversing device on the in-feed system, which shall be:

- close to the feed end of the in-feed hopper;
- located across the top and along each side of the in-feed hopper;
- within easy reach of the worker.

Trailer chippers, when detached from the vehicles, shall be chocked or otherwise secured in place.

Vision, hearing and/or other appropriate personal protective equipment shall be worn when in the immediate area of a brush chipper in accordance with ANSI Z133.1 standards.

Towable stump cutters or stump cutter trailers, when detached from the vehicle, shall be chocked or otherwise secured in place.

ANSI Z133.1-2000 standards require that when a chain saw is being started, it shall be held firmly in place on the ground with the chain brake engaged. The kickback zone of a chainsaw is the front upper quadrant. Kickback happens while, in making a cut, the top of the bar nose contacts a solid object or is pinched. This causes the guide bar to fly back towards you. Kickback occurs at a rate twice as fast as a human can react.

The direction of safe retreat from a falling tree is 45 degrees from the sides and back on either side opposite the felling direction. NEVER move away directly behind the tree-you can be seriously hurt if the tree butt kicks back during the fall.

Using a bore cut and a release cut will make it easier to retreat in plenty of time. Don't turn your back on the falling tree. Walk quickly away to a distance of 20 feet from the falling tree and position yourself behind a standing tree if possible.

When performing tree removal, the notch depth should not exceed 1/3rd the diameter of the tree. Notches shall be used for felling all trees over 5 inches diameter at breast height (4.5 feet above the ground). A conventional notch is a directional felling cut into the side of a tree, facing the intended direction of fall and consisting of a horizontal face cut and an angle cut above it, creating a notch of approximately 45 degrees. A Humboldt notch is a directional felling cut facing the direction of fall and consisting of a horizontal face cut and an angled cut below it. A Humboldt cut is usually reserved for larger trees on steep slopes. An open-faced notch is a directional felling cut facing the intended direction of fall and consisting of two cuts creating a notch greater than 70 degrees. Be sure that the back cut does not penetrate into the predetermined hinge area.

When limbing and bucking a tree, the tree expert must stand on the uphill side of the work. Whenever possible, cut limbs on the opposite side of the tree trunk from which you are working. Doing so keeps the tree trunk between you and the saw. Wedges should be used as necessary to prevent binding of the guide bar or chain when bucking up trunks of trees.