



VOSH PROGRAM DIRECTIVE: 02-244 (Corrected)

ISSUED: May 9, 2011

SUBJECT: Tree Trimming Operations, 16VAC25-73, Inspection Procedures and Interpretations

Purpose Corrections have been made to numbering errors in the SAVES in Appendix A, as well as to typographical errors, appearing on pp. C-1 and C- 2 of the original 02-244. This directive transmits to field personnel inspection procedures and interpretation guidance for the above VOSH unique regulation and other amendments to related existing standards.

This Program Directive is an internal guideline, not a statutory or regulatory rule, and is intended to provide instructions to VOSH personnel regarding internal operation of the Virginia Occupational Safety and Health Program and is solely for the benefit of the program. This document is not subject to the Virginia Register Act or the Administrative Process Act; it does not have general application and is not being enforced as having the force of law.

Scope This directive applies to all VOSH personnel.

**References VOSH Program Directive 12-255 (26 April 2011), Tree Trimming Operations, 16 VAC 25-73.
VOSH Program Directive 14-234 (26 April 2011), Local Emphasis Program - Tree Trimming Operations**

Regulatory rulemaking documents for the final regulation can be found at:
<http://www.townhall.state.va.us/L/viewstage.cfm?stageid=5288&display=documents>

Cancellation. None.

Action Directors and Managers shall ensure that field personnel understand and comply with the standard included in this directive.

Effective Date. May 9, 2011 (See also Section II. for phase-in of full enforcement.)

Expiration Date Not Applicable.

Courtney M. Malveaux
Commissioner

Distribution: Commissioner of Labor and Industry
Assistant Commissioner - Programs
VOSH Directors and Managers
Legal Support & IMIS Staffs

Cooperative Programs Director & Manager
VOSH Compliance & Cooperative Programs Staffs
OSHA Regional III & Norfolk Area Offices

I. Purpose of the Regulation

The purpose of the final regulation, 16 VAC 25-73, is to reduce/eliminate employee injuries and fatalities by adoption of a comprehensive regulation to address non-logging, arborist/tree trimming and cutting operations on residential and commercial work sites.

The need for the regulation is very evident when fatality statistics are reviewed (see below). Since 1993 Virginia has had 52 non-logging, tree trimming/cutting/felling fatalities (7% of all fatalities since 1993), with 40 of those occurring since 2000 (9% of all fatalities since 2000). For an industry of the relatively small size of the tree care industry, this is a very high number of fatal accidents.

Employers should benefit from reductions in injuries and fatalities associated with current unsafe tree trimming practices which would be addressed by any comprehensive regulation. On average over the last 10 years there are four (4) fatal tree trimming accidents that occur per year which could be prevented if the proposed regulation is fully complied with.

Virginia Occupational Safety and Health (VOSH Program)

Tree-Related Fatality Statistics (Non-Logging) as of December 31, 2009

| Year | Chipper | Tree Trimming | Aerial Lift | Power Line | Struck-by Vehicle | Site Clearance | Total | Total VOSH Fatalities | Percentage of Tree Fatalities |
|-----------------|---------|---------------|-------------|------------|-------------------|----------------|-------|-----------------------|-------------------------------|
| 2009 | 2 | 1 | | | | | 3 | 33 | 9% |
| 2008 | | 2 | | 2 | | | 4 | 40 | 10% |
| 2007 | | 4 | | | | | 4 | 44 | 9% |
| 2006 | | 4 | | 3 | 1 | | 8 | 56 | 14% |
| 2005 | | 1 | | | 1 | | 2 | 59 | 3% |
| 2004 | | 2 | | 1 | | 1 | 4 | 51 | 8% |
| 2003 | | 4 | | 1 | | | 5 | 47 | 11% |
| 2002 | | 4 | | | | | 4 | 48 | 8% |
| 2001 | | 4 | | | 2 | | 6 | 54 | 11% |
| 2000 | | 1 | | 2 | | | 3 | 59 | 5% |
| Subtotal | | | | | | | | | |
| | 2 | 26 | 0 | 9 | 4 | 1 | 40 | 458 | 9% |
| Subtotal | | | | | | | | | |
| 1999 | | 2 | | | | | 2 | 45 | 4% |
| 1998 | | | | 2 | | | 2 | 40 | 5% |
| 1997 | 1 | 1 | 1 | | | 1 | 4 | 56 | 7% |
| 1996 | | 2 | | | | | 2 | 49 | 4% |
| 1995 | | | | | | | 0 | 32 | 0% |
| 1994 | | | | | | 1 | 1 | 50 | 2% |
| 1993 | | | | 1 | | | 1 | 26 | 4% |
| Subtotal | | | | | | | | | |
| | 1 | 5 | 1 | 3 | 0 | 2 | 12 | 298 | 4% |
| Total | | | | | | | | | |
| | 1 | 31 | 1 | 12 | 4 | 3 | 52 | 756 | 7% |

II. Background.

Summary of Rulemaking Process

The Tree Trimming Industry approached the Department about the possibility of adopting a comprehensive regulation addressing tree trimming in 2001. They requested a regulation based on the then ANSI Z133.1-2000. Discussions with the Department resulted in a commitment from the industry to make significant changes to the ANSI standard, which culminated in the adoption of the revised ANSI Z133.1-2006, referenced above. The Department initiated this rulemaking in 2007 with the assistance of a regulatory work group composed of private and public sector representatives. The following individuals participated in the Department's regulatory work group:

Peter Gerstenberger, Senior Advisor for Safety, Compliance & Standards
Tree Care Industry Association (TCIA)
Bryan Giere, CTSP, Northern Virginia Tree Experts, Inc.
Andrew T. Ross, CTSP, President, RTEC Treecare
Sten Compe, Big "O" Tree & Lawn Service Inc.
M. Scott Turner, CTSP, President, TrueTimber Tree Service, Inc.
David G. Marren, Vice President of Regulatory Affairs, F. A. Bartlett Tree Expert Co.
Peter Girardi, TrueTimber Tree Service, Inc.
Kristina Villaire, City of Virginia Beach
Thomas R. Scallorn, CSP, Virginia Department of Transportation

The Notice of Intended Regulatory Action (NOIRA) was adopted by Board on October 18, 2007. The NOIRA was published on February 4, 2008, with 30-day comment period ending March 4, 2008. No comments were received through the Virginia Regulatory Town Hall. One comment was received directly by the Department. The Department held a meeting with the interested parties referenced above on June 10, 2008.

The Board adopted proposed regulatory language on July 10, 2008. The proposed regulation was published on March 16, 2009, with a 60-day comment period ending on May 15, 2009. A public hearing was held by the Board on April 16, 2009. A final regulation was adopted by the Board on August 13, 2009. The final regulation was published in the Virginia Register of Regulations on March 28, 2011. The final regulation will become effective **April 27, 2011**, and the text of the final regulation, **along with free downloadable training and information materials** can be found on the Department's Web site.

Outreach and Phased Enforcement Approach

To provide employers and employees with sufficient time to familiarize themselves with the requirements of the comprehensive new Tree Trimming Operations regulation, the VOSH Program will use a phased enforcement approach:

1. VOSH Inspectors/Consultants will be provided with handouts on the new regulation that can be distributed to employers and employees in the weeks leading up to the effective date of **April 27, 2011**. A training program will be posted on the Department's Web site. Articles on the new regulation will be sent out for publication to organizations with newsletters. "Quick cards" will be available for download from the Department's Web site to briefly explain requirements of the regulation, and will be translated into Spanish as well. A VOSH Directive with enforcement procedures and interpretations will be posted on the Department's Web site.
2. For the first month after the effective date of the regulation, **April 27, 2011 to May 26, 2011**, VOSH will primarily operate in a non-enforcement mode with regard to the **new regulation**, performing outreach activities with employers and employees. However, current protections for employees will remain in place during the outreach period – see 3. below. If during an onsite inspection, violations of the **new regulation** are noted, VOSH inspectors will give one "warning" to the employer for any noted violations at the specific worksite, but not cite the violation. The VOSH inspector will verify that the violation is corrected, and note the violation and corrective action taken in field notes. The warning and handout materials need to be provided to an on-site supervisor, foreman, or lead person. If the VOSH inspector returns the next day and finds the same violation recurring, or if the employer refuses to correct the violation, the employer can be cited under the new regulation.

3. During the first month after the effective date of the regulation, **April 27, 2011 to May 26, 2011**, employers shall **at a minimum** protect employees' safety and health by continuing to comply with existing federal identical VOSH regulations and 16VAC25-60-120 of the VOSH Administrative Regulations Manual.
4. For the second month after the effective date of the regulation, **May 27, 2011 to June 26, 2011**, VOSH will discontinue enforcement of existing federal identical regulations that are superseded by the new regulation and fully enforce the following sections of the Tree Trimming Operations regulation:
 - §10, Scope;
 - §20, Definitions;
 - §40, General Safety Requirements;
 - §50, Electrical Hazards;
 - §60, Safe Use of Equipment and Vehicles in Arboriculture;
 - §70, Portable Power Hand Tools;
 - §80, Hand Tools and Ladders; and
 - §90, Work Procedures
5. Section 30, which contains the training requirements, will not be cited during the second month after the effective date **May 27, 2011 to June 26, 2011**). This extra time period will give employers and employees time to access the training materials that are being provided.
6. All sections of the regulation will be fully enforced **starting June 27, 2011**.

III. Summary.

The final regulation is based on the American National Standard's Institute (ANSI) Z133.1-2006, Safety Requirements for Arboricultural Operations (With Modifications), for Application to Tree Trimming Operations. The regulation addresses non-logging, tree-trimming and cutting operations on residential and commercial work sites.

The final regulation contains the following components:

- General safety requirements (traffic control around the jobsite, emergency procedures and readiness, personal protective equipment, fire protection);
- Electrical hazards (working in proximity to electrical hazards, storm work and emergency conditions, line-clearance);
- Safe use of vehicles and mobile equipment used in arboriculture (aerial devices, brush chippers, sprayers and related equipment, stump cutters, vehicles, log loaders, knucklebooms, cranes and related hoists, specialized units, equipment-mounted winches);
- Portable power hand tools (portable electric power tools, chain saws, powered pole tools and backpack power units);
- Hand tools and ladders (cant hooks, cant dogs, peaveys and tongs, wedges, chisels, gouges, chopping tools, ladders);
- Work procedures (ropes and arborist climbing equipment, pruning and trimming, cabling, rigging, tree removal, bush removal and chipping, limbing and bucking, pesticide application); and
- Training.

The following issues have been addressed in recommended changes to the original text for ANSI Z133.1-2006:

- Clarification is provided with regard to the following areas:

Line-clearance tree-trimming (see 1910.269), and the Overhead High Voltage Line Safety Act, Va. Code §§59.1-406 to -414

Logging operations (see 1910.266)

Lot clearing activities involving felling of trees (see 1910.266)

- The original ANSI text contained “should” or “may” language in some provisions, which are unenforceable from a compliance standpoint. Prescriptive language such as “shall” or “will” was added, as appropriate.

Although the Manual of Uniform Traffic Control Devices (MUTCD) has been adopted by OSHA and VOSH, it has been found to contain a great deal of “should” or “may” language, which means those provisions are not enforceable. In its stead, the Virginia Department of Transportation (VDOT) Manual on Uniform Traffic Control Devices has been substituted as it contains fewer “shoulds” and “mays”.

- The original ANSI text addresses the issue of exposure to noise hazards. Reference is made in the final regulation to requirements contained in the VOSH Noise Standard.
- VOSH currently enforces §16VAC25-60-120 requiring that employers comply with manufacturer’s specifications and limitations applicable to the operation, training, use, installation, inspection, testing, repair and maintenance of machinery, vehicles, tools, materials and equipment. ANSI Z133.1-2006 contains provisions that address the use and operation of machinery, vehicles, tools, etc., so any conflicts with §16VAC25-60-120 have been corrected (e.g., ANSI Z133.1-2006 contains provisions allowing the use of a crane to lift an individual in an arborist’s saddle, but the ability to make such a lift would be contingent on the crane manufacturer’s operating instructions).
- The original ANSI text addresses the use of personal protective equipment (PPE). Reference is made in the final regulation to requirements contained in the VOSH PPE Standards, §§1910.132 through 138.
- The original ANSI text contains provisions addressing reverse signal operation of vehicles. Reference is made in the final regulation to requirements in the VOSH Reverse Signal Operation Safety Requirements for Vehicles, Machinery and Equipment for General Industry and the Construction Industry, §16 VAC 25-97 and is incorporated by reference.
- The original ANSI text contains provisions addressing proper use of personal fall arrest systems while working from an aerial lift (permits use of either a full body harness and lanyard or a body belt and lanyard). In light of advances in PPE and current manufacturer’s requirements for use of PPE in aerial lifts (full body harness and energy absorbing lanyard are normally required while working from aerial lifts), the option to allow an employee to use a body belt and lanyard in an aerial lift has been removed.
- The original ANSI text addresses the use of cranes. In light of certain requirements contained in VOSH regulations §1910.180, Crawler, Locomotive and Truck Cranes, and §1910.184, Slings, certain additions have been made (e.g. the prohibition against employees working under a suspended load of a crane).
- Certain arborist-related terms used in the original text were not defined in (e.g., “split-tail system” and “split tails”). Definitions have been added.

*** Refer to Additional Interpretive Guidance on these Issues in Appendix B of this Directive. ***

IV. Procedures.

- 1. Citation Numbering Procedures to be printed on VOSH citations.**
(VOSH Inspection Personnel Only).

Violations of the regulation to be printed on VOSH citations shall be written as demonstrated in the following examples:

16VAC25-73-30.A. The employer did not ensure that each employee received orientation and training on the requirements of this regulation prior to permitting them to engage in arboricultural activities covered by this regulation.

16VAC25-73-30.B.2. Refresher training on applicable provisions of this regulation was not provided by the employer to an employee who was involved in an accident or near miss accident.

2. Standard Alleged Violation Elements (SAVEs).

See Appendix A. for SAVEs for this regulation.

Guidance for Citing a Separate Regulation Incorporated by Reference in the Tree Trimming Regulation. When a subsection of the Tree Trimming Regulation requires compliance with or incorporates by reference a separate VOSH regulation or law, the violation shall be issued under the applicable tree trimming subsection.

EXAMPLE:

16VAC25-73-40.D.7 provides:

“Eye protection shall comply with 16VAC25-90-1910.133 and shall be worn when engaged in arboricultural operations.”

In a situation where the employer did not provide eye protection that also included side protection for chain saw operators, the AVD would be worded as follows:

“16VAC25-73-40.D.7 - Eye protection for chain saw operators exposed to flying wood chips did not comply with 16VAC25-90-1910.133(a)(2) which provides that the employer shall ensure that each affected employee uses eye protection that provides side protection when there is a hazard from flying objects.”

3. Codes to Enter Violations into the IMIS Database.

Data on violations of the Act listed in section IV. above shall be entered into the IMIS database in the following format:

- a. TREE 0030 A
- b. TREE 0030 B 01
- c. TREE 0060 D 08 a

See Appendix C for complete IMIS Coding List.

4. Also to be Recorded as a Local Emphasis Program in IMIS. As stated in VOSH Program Directive 14-234, the Local Emphasis Program - Tree Trimming Operations, guidelines shall be applied when recording all tree trimming inspections conducted whether under that LEP or other inspections where general industry and construction activities involving tree trimming activities are found:

- a. For IMIS purposes, the VAOSH-1 form will be completed as follows:

For Inspection Type, find item 24, and enter an “H” after the colon. (This will yield “**Programmed Planned**” on the screen.)

For Inspection Classification, find item 25c and enter a “Y” after the colon. (This will yield “Local Emphasis Program” on the pop-up box. Enter “**TREETRIM**” in all caps in the left-hand column of the pop-up box.

- b. What had previously been referred to as non-formal complaints, other government agency referrals and reports from the public reporting potential hazards related to tree trimming shall be recorded on a VAOSH-7 (Notice of Alleged Safety or Health Hazards) or on VAOSH-90 (Referral

Report), if appropriate. Follow current IMIS instructions. They shall also be recorded as unprogrammed inspections under the LEP.

- c. No Inspection Conducted: When no inspection of tree trimming activities is done for any of the reasons listed in I.1 through I.5 of VOSH Program Directive 14-234 (*or its successor*), the VAOSH-1 form shall be marked "No Inspection" (Item 35, marked "D" after the colon; "Close" (Item 44, marked "A"); "No Citations Issued": (Item 44, marked "B"); and "Other" (Item 45, marked "I"). **"TREETRIM"** should be recorded in the space in 45!. "Opening Conference Date" (Item 20) which will be the date of entry, (enter the date–month/day/year) and "Closing Conference Date" (On Site) (Item 46) will be the date of exit (enter the date– month/day/year). Opening and closing dates are the same date when no inspection is conducted.

NOTE: If you have any questions regarding the proper way to record in IMIS, please contact the VOSH IMIS section.

5. Procedures for Obtaining Agency Interpretations.

All outside requests for interpretations of the regulation shall be referred to the VOSH Director.

See Appendix B for agency interpretations of this regulation.

APPENDIX A

VIRGINIA DEPARTMENT OF LABOR AND INDUSTRY

VIRGINIA OCCUPATIONAL SAFETY AND HEALTH (VOSH) PROGRAM

TREE TRIMMING OPERATIONS, 16VAC25-73

STANDARD ALLEGED VIOLATION ELEMENTS (SAVEs)

16VAC25-73-30. Orientation and training.

16VAC25-73-30.A. The employer did not ensure that each employee received orientation and training on the requirements of this regulation prior to permitting an employee to engage in any arboricultural activity covered by this regulation.

16VAC25-73-30.B. The employer did not provide refresher training on applicable provisions of this regulation for any employee who has **[FILL IN LANGUAGE FROM 1, 2 AND/OR 3 BELOW AS FACTS INDICATE]**.

1. Been observed to violate the requirements of this regulation;
2. Been involved in an accident or near miss accident; or
3. Received an evaluation that reveals the employee is not working in a safe manner in accordance with the requirements of this regulation.

16VAC25-73-40. General safety requirements.

A. General.

16VAC25-73-40.A.1.

Option 1: Machinery, vehicles, tools, materials and/or equipment did not conform to the requirements of this regulation.

Option 2: Machinery, vehicles, tools, materials and/or equipment did not conform to the requirements 16VAC25-60-120. **[FILL IN LANGUAGE FROM 16VAC25-60-120 BELOW AS FACTS INDICATE]**.

16VAC25-60-120. The employer shall comply with the manufacturer's specifications and limitations applicable to the operation, training, use, installation, inspection, testing, repair and maintenance of all machinery, vehicles, tools, materials and equipment; unless specifically superseded by a more stringent corresponding requirement in Part 1910. The use of any machinery, vehicle, tool, material or equipment which is not in compliance with any applicable requirement of the manufacturer is prohibited, and shall either be identified by the employer as unsafe by tagging or locking the controls to render them inoperable, or be physically removed from its place of use or operation.

16VAC25-73-40.A.2. The employer did not instruct their employees in the proper use, inspection, and maintenance of tools and equipment, including ropes and lines, and shall require that appropriate working practices be followed.

16VAC25-73-40.A.3. A qualified arborist did not determine whether direct supervision is needed on the jobsite.

16VAC25-73-40.A.4.

Option 1: A job briefing was not performed by the qualified arborist in charge before the start of each job.

Option 2: The job briefing was not communicated to all affected workers.

Option 3: An employee working alone need not conduct a job briefing. The employer did not ensure that the tasks were being performed as if a briefing were required.

B. Traffic control around the jobsite.

16VAC25-73-40.B.1. High-visibility safety apparel and headgear, when required, did not conform to the Virginia Department of Transportation's (VDOT) Virginia Work Area Protection Manual.

16VAC25-73-40.B.2. Effective means for controlling pedestrian and vehicular traffic was not instituted on every jobsite where necessary, in accordance with the VDOT's Virginia Work Area Protection Manual and applicable state and local laws and regulations.

16VAC25-73-40.B.3. Temporary traffic-control devices used in arboricultural operations did not conform to the VDOT Virginia Work Area Protection Manual and applicable federal and state regulations.

C. Emergency procedures and readiness.

16VAC25-73-40.C.1.

Option 1: Emergency phone numbers were not available when and where arboricultural operations are being carried out.

Option 2: Arborists and other workers were not instructed as to the specific location of such information.

16VAC25-73-40.C.2.

Option 1: A first-aid kit, adequately stocked and maintained in accordance with 16VAC25-90-1910.151, was not provided by the employer, when and where arboricultural operations are being carried out.

Option 2: Arborists and other workers shall be instructed in the use and specific location of the first-aid kit.

16VAC25-73-40.C.3. Instruction was not provided in the identification, preventive measures, and first-aid treatment of common poisonous plants (poison ivy, poison oak, and poison sumac), stinging and biting insects, and other pests indigenous to the area in which work is to be performed.

16VAC25-73-40.C.4. Employees who may be faced with a rescue decision were not trained in emergency response and rescue procedures appropriate and applicable to the work to be performed, as well as training to recognize the hazards inherent in rescue efforts (see 16VAC25-73-140, Appendix E).

16VAC25-73-40.C.5. First-aid training was not provided in accordance with 16VAC25-90-1910.151.

D. Personal protective equipment (PPE).

16VAC25-73-40.D.1.

Option 1: Personal protective equipment (PPE), as outlined in this section, was not required when there was a reasonable probability of injury or illness that could be prevented by such protection, and when required by 16VAC25-90-1910.132.

Option 2: Training was not provided in the use, care, maintenance, fit, and life of personal protective equipment.

16VAC25-73-40.D.2.

Option 1: Workers engaged in arboricultural operations did not wear head protection (helmets) that conforms to ANSI Z89.1, and in accordance with 16VAC25-90-1910.135.

Option 2: Class E helmets were not worn when working in proximity to electrical conductors, in accordance with ANSI Z89.1. Workers shall not place reliance on the dielectric capabilities of such helmets.

16VAC25-73-40.D.3. Face protection did not comply with 16VAC25-90-1910.133.

16VAC25-73-40.D.4. Clothing and footwear appropriate to the known job hazards was not approved by the employer and worn by the employee in accordance with 16VAC25-90-1910.132.

16VAC25-73-40.D.5. Respiratory protection did not comply with 16VAC25-90-1910.134.

16VAC25-73-40.D.6.

Option 1: Hearing protection was not provided to employees by the employer in accordance with 16VAC25-90-1910.95.

Option 2: Hearing protection provided by the employer was not worn when it was not practical to decrease or isolate noise levels that exceed acceptable standards and in accordance with 16VAC25-90-1910.95.

16VAC25-73-40.D.7.

Option 1: Eye protection did not comply with 16VAC25-90-1910.133.

Option 2: Eye protection compliant with 16VAC25-90-1910.133 was not worn by employees when engaged in arboricultural operations.

16VAC25-73-40.D.8. Chain-saw resistant leg protection was not worn while operating a chain saw during ground operations.

E. Fire protection.

16VAC25-73-40.E.1.

Option 1: The employer did not assure that equipment was refueled only after the engine has stopped.

Option 2: Spilled fuel was not removed from equipment before restarting.

16VAC25-73-40.E.2. Equipment was operated within 10 feet (3.05 m) of refueling operations or areas in which refueling had recently taken place.

16VAC25-73-40.E.3. Flammable liquids were not stored, handled, and dispensed from approved containers.

16VAC25-73-40.E.4. Smoking was not prohibited when handling or working around flammable liquids.

16VAC25-73-40.E.5. Clothing contaminated by flammable liquid was not changed as soon as possible.

16VAC25-73-40.E.6. Open flame and other sources of ignition were not avoided.

16VAC25-73-50. Electrical hazards.

A. General.

16VAC25-73-50.A.1. The employer did not assure that all overhead and underground electrical conductors and all communication wires and cables were considered by employees to be energized with potentially fatal voltages.

16VAC25-73-50.A.2. The employer did not certify in writing that each employee has been trained to recognize and is appropriately qualified to work within proximity to electrical hazards that are applicable to the employee's assignment.

16VAC25-73-50.A.3. Arborists and other workers were not instructed that: [FILL IN LANGUAGE FROM a. through c. BELOW AS FACTS INDICATE].

a. Electrical shock will occur when a person, by either direct contact or indirect contact with an energized electrical conductor, energized tree limb, tool, equipment, or other object, provides a path for the flow of

electricity to a grounded object or to the ground itself. Simultaneous contact with two energized conductors phase to phase will also cause electric shock that may result in serious or fatal injury.

- b. Electrical shock may occur as a result of ground fault when a person stands near a grounded object (for example, if an uninsulated aerial device comes into contact with a conductor with outriggers down).
- c. In the event of a downed energized electrical conductor or energized grounded object, there exists the hazard of step potential.

B. Working in proximity to electrical hazards.

16VAC25-73-50.B.1. The items contained in subsection A of this section shall always were not included in the review of this section.

Not Citable: Sections 59.1-406 through 59.1-414 of the Code of Virginia, Overhead High Voltage Line Safety Act (Act), are hereby incorporated by reference, and apply as specified in the Act anytime the voltage of overhead high voltage lines exceeds 600 volts as defined in the Act. The Act does not apply anytime line-clearance activities are performed by the employees of the owner or operator of the electrical or communication systems, or independent contractors engaged on behalf of the owner or operator of the system to perform the work.

16VAC25-73-50.B.2. An inspection was not made by a qualified arborist to determine whether an electrical hazard exists before climbing, otherwise entering, or performing work in or on a tree.

16VAC25-73-50.B.3.

Option 1: The employer did not assure that only qualified line-clearance arborists or qualified line-clearance arborist trainees shall be assigned to work where an electrical hazard exists.

Option 2: Qualified line-clearance arborist trainees were not under the direct supervision of qualified line-clearance arborists.

Option 3: The employer did not assure that a qualified line-clearance arborist trainee shall not serve as a ground observer for another qualified line-clearance arborist trainee who is engaged in line clearing operations aloft, unless a qualified arborist is also present at the work site.

Table 1.

Minimum approach distances to energized conductors for persons other than qualified line-clearance arborists and qualified line-clearance arborist trainees

| Nominal voltage in kilovolts (kV) phase to phase* | Distance | |
|--|----------|-------|
| | ft-in | M |
| 0.0 to 1.0 | 10-00 | 3.05 |
| 1.1 to 15.0 | 10-00 | 3.05 |
| 15.1 to 36.0 | 10-00 | 3.05 |
| 36.1 to 50.0 | 10-00 | 3.05 |
| 50.1 to 72.5 | 10-09 | 3.28 |
| 72.6 to 121.0 | 12-04 | 3.76 |
| 138.0 to 145.0 | 13-02 | 4 |
| 161.0 to 169.0 | 14-00 | 4.24 |
| 230.0 to 242.0 | 16-05 | 4.97 |
| 345.0 to 362.0 | 20-05 | 6.17 |
| 500.0 to 550.0 | 26-08 | 8.05 |
| 785.0 to 800.0 | 35-00 | 10.55 |

*Exceeds phase to ground per 29 CFR 1910.333.

16VAC25-73-50.B.4. The employer did not assure that all other Arborists and other workers maintained a minimum approach distance from energized electrical conductors in accordance with Table 1.

16VAC25-73-50.B.5. The employer failed to assure that branches hanging on an energized electrical conductor were removed using nonconductive equipment.

16VAC25-73-50.B.6. The tie-in position was not above the work area and located in such a way that a slip would swing the arborist away from any energized electrical conductor or other identified hazard.

16VAC25-73-50.B.7. While climbing, the arborist failed to climb on the side of the tree that was away from energized electrical conductors while maintaining the required distances shown in Table 1.

16VAC25-73-50.B.8. The employer failed to assure that footwear, including lineman's overshoes or those with electrical-resistant soles, was not considered by the employee as providing any measure of safety from electrical hazards.

16VAC25-73-50.B.9. The employer failed to assure that rubber gloves, with or without leather or other protective covering, were not considered by the employee as providing any measure of safety from electrical hazards.

16VAC25-73-50.B.10. A rope that was wet, that was contaminated to the extent that its insulating capacity was impaired, or that was otherwise not to be considered insulated for the voltage involved was used near exposed energy lines.

16VAC25-73-50.B.11. The employer permitted ladders, platforms, and/or aerial devices, including insulated aerial devices, to be used inside the minimum approach distances indicated in Table 1.

16VAC25-73-50.B.12.

Option 1: The employer failed to assure that aerial devices with attached equipment (such as chippers) brought into contact with energized electrical conductors were considered energized.

Option 2: Contact by people and/or equipment with energized electrical equipment was not avoided.

16VAC25-73-50.B.13. Emergency response to an electric contact was not performed in accordance with 16VAC25-73-40 C.

16VAC25-73-60. Safe use of vehicles and mobile equipment used in arboriculture.

A. General.

16VAC25-73-60.A.1. Prior to daily use of any vehicles and mobile equipment (units), visual walk-around inspections and operational checks were not made in accordance with manufacturers' and owners' instructions (see 16VAC25-60-120) and applicable federal, state, and local requirements. **[FILL IN LANGUAGE FROM 16VAC25-60-120 BELOW AS FACTS INDICATE].**

16VAC25-73-60-120. The employer shall comply with the manufacturer's specifications and limitations applicable to the operation, training, use, installation, inspection, testing, repair and maintenance of all machinery, vehicles, tools, materials and equipment; unless specifically superseded by a more stringent corresponding requirement in Part 1910. The use of any machinery, vehicle, tool, material or equipment which is not in compliance with any applicable requirement of the manufacturer is prohibited, and shall either be identified by the employer as unsafe by tagging or locking the controls to render them inoperable, or be physically removed from its place of use or operation.

16VAC25-73-60.A.2.

Option 1: Units were not equipped and maintained with manufacturers' safety devices, instructions, warnings, and safeguards.

Option 2: Arborists and other workers did not follow instructions for vehicles and mobile equipment provided by manufacturers.

16VAC25-73-60.A.3. Manufacturers' preventive maintenance inspections and parts replacement procedures were not followed.

16VAC25-73-60.A.4.

Option 1: Manufacturers' instructions were not followed in detecting hydraulic leaks.

Option 2: The employer did not assure that no part of the vehicle body was used to locate or stop hydraulic leaks.

16VAC25-73-60.A.5. The employer did not assure that units were operated or maintained only by authorized and qualified personnel in accordance with company policies and federal, state, or local laws.

16VAC25-73-60.A.6. Material and equipment carried on vehicles were not properly stored and secured in compliance with the design of the unit in order to prevent the movement of material or equipment.

16VAC25-73-60.A.7. Step surfaces and platforms on mobile equipment previously installed by the manufacturer were not properly maintained.

16VAC25-73-60.A.8. Safety seat belts provided by the manufacturer were not worn while a unit was being operated.

16VAC25-73-60.A.9.

Option 1: The employer failed to assure that riding or working outside or on top of units was not permitted unless the units were designed for that purpose or the operator was performing maintenance or inspection.

Option 2: Fall protection was not provided for employees performing maintenance on top of units six feet or more above a lower level.

Not Citable: Fall protection is not required when performing inspections on top of units six feet or more above a lower level.

16VAC25-73-60.A.10. The employer did not assure that hoisting or lifting equipment on vehicles was used within rated capacities as stated by the manufacturers' specifications.

16VAC25-73-60.A.11. The employer did not assure that units with obscured rear vision, particularly those with towed equipment, were backed up in accordance with 16VAC25-97.

16VAC25-73-60.A.12. When units were left unattended, keys were not removed from the ignition, the wheels chocked, and, if applicable, the parking brake applied.

16VAC25-73-60.A.13.

Option 1: The employer did not assure that units were turned off, keys removed from the ignition, and rotating parts at rest prior to making repairs or adjustments, except where manufacturers' procedures require otherwise.

Option 2: Defects or malfunctions affecting the safe operation of equipment were not corrected before such units were placed into use.

16VAC25-73-60.A.14. The employer did not assure that personal protective equipment (for example, eye, head, hand, and ear protection) was worn in accordance with 16VAC25-73-40 D.

16VAC25-73-60.A.15. When towing, safety chains were not crossed under the tongue of the unit being towed and connected to the towing vehicle.

16VAC25-73-60.A.16. The unit's exhaust system presented a fire hazard.

16VAC25-73-60.A.17. Towed units that detach from another unit (for example, a motorized vehicle) were chocked or otherwise secured in place.

16VAC25-73-60.A.18. Units operated off-road were not operated in the proper gear and at the proper speed relative to the operating environment and the manufacturers' instructions and guidelines.

B. Aerial devices.

16VAC25-73-60.B.1.

Option 1: The items contained in subsection A of this section shall were not included in the review of this section. 16VAC25-90-1910.67 is hereby incorporated by reference.

Option 2: Damaged aerial device(s) and vehicle(s) were not removed from service and tagged until repaired or discarded.

16VAC25-73-60.B.2.

Option 1: Aerial device(s) were not provided with an approved point of attachment on which to secure a full-body harness with an energy-absorbing lanyard,

Option 2: A full-body harness with an energy-absorbing lanyard, was not worn when aloft in an aerial device.

16VAC25-73-60.B.3. Booms, buckets, or any other part of the aerial device were allowed to make contact or violate minimum approach distances with energized electrical conductors, poles, or similar conductive objects. (See Table 1 of 16VAC25-73-50 or §§ 59.1-406 through 59.1-414 of the Code of Virginia (Overhead High Voltage Line Safety Act), as applicable.)

16VAC25-73-60.B.4. Aerial devices or aerial ladders were used as cranes or hoists to lift or lower materials or tree parts, when not specifically designed by the manufacturer to do so (see 16VAC25-60-120). [FILL IN LANGUAGE FROM 16VAC25-60-120 BELOW AS FACTS INDICATE].

16VAC25-60-120. The employer shall comply with the manufacturer's specifications and limitations applicable to the operation, training, use, installation, inspection, testing, repair and maintenance of all machinery, vehicles, tools, materials and equipment; unless specifically superseded by a more stringent corresponding requirement in Part 1910. The use of any machinery, vehicle, tool, material or equipment which is not in compliance with any applicable requirement of the manufacturer is prohibited, and shall either be identified by the employer as unsafe by tagging or locking the controls to render them inoperable, or be physically removed from its place of use or operation.

16VAC25-73-60.B.5. Wheel chocks were not set before using an aerial device.

[unless the device has no wheels on the ground or is designed for use without chocks.]

16VAC25-73-60.B.6. Aerial devices equipped with outriggers or a stabilizing system were not operated in a manner consistent with manufacturers' requirements.

16VAC25-73-60.B.7.

Option 1: The operator did not ensure adequate clearance exists prior to lowering the outriggers.

Option 2: The operator failed to give warning to all employees in the work area prior to lowering outriggers of an aerial device.

Option 3: Pads were not placed under the outrigger feet of an aerial device when they were needed to ensure stable footing.

16VAC25-73-60.B.8. When operating an aerial device, the operator did not look in the direction the bucket was traveling and was not aware of the location of the boom in relation to all other objects and hazards.

16VAC25-73-60.B.9.

Option 1: Aerial device clearances from passing vehicles was not maintained.

Option 2: Traffic control was not provided in accordance with VDOT's Virginia Work Area Protection Manual, when booms or buckets were operated over roads.

16VAC25-73-60.B.10. A one-person aerial device bucket had more than one person in it during operation.

16VAC25-73-60.B.11. Hydraulic/pneumatic tools were not disconnected when they were being serviced or adjusted,

[except where manufacturers' procedures require otherwise.]

16VAC25-73-60.B.12. Pressure was not released before connections were broken on hydraulic/pneumatic hoses, exposing employees to potential flying particles or whipping hoses.

[except where quick-acting connectors are used.

Option 2: Hydraulic/pneumatic hoses were kinked in order to cut off pressure.

16VAC25-73-60.B.13. The employer did not assure that no part of the body was used to locate or stop hydraulic leaks on aerial device(s).

16VAC25-73-60.B.14. Hoses affecting dielectric characteristics of aerial device equipment did not meet manufacturers' requirements.

16VAC25-73-60.B.15. The flash point of hydraulic fluid did not meet the minimum set by the manufacturer.

16VAC25-73-60.B.16.

Option 1: Combined loads exceeded rated lift capacities.

Option 2: Load ratings were not conspicuously and permanently posted on aerial devices in accordance with ANSI A92.2.

16VAC25-73-60.B.17. Electric cables/cords used with electric saws or lights, or other conductive material were run from the vehicle to the bucket when arborists were working in proximity to energized electrical conductors.

16VAC25-73-60.B.18. Aerial devices were moved with an arborist on an elevated platform/bucket.

[except when equipment is specifically designed for such operation.]

16VAC25-73-60.B.19. Holes were drilled in aerial device buckets or liners.

16VAC25-73-60.B.20. During aerial device operations, arborists and other workers who are not qualified line-clearance arborists did not maintain a minimum approach distance from energized electrical conductors in accordance with Table 1 of 16VAC25-73-50.

[Only qualified line-clearance arborists or qualified line-clearance arborist trainees using an insulated aerial device may operate in accordance with minimum approach distances provided in Table 1.]

16VAC25-73-60.B.21. Arborists and other workers were not instructed that insulated aerial device buckets do not protect them from other electric paths to the ground, such as paths through trees, guy wires, or from one phase wire to the second phase wire, any one of which can be fatal.

16VAC25-73-60.B.22. All underground hazards were not located prior to operating aerial lift devices off-road. Such hazards include natural gas tanks, underground oil tanks, and septic systems.

C. Brush chippers.

16VAC25-73-60.C.1.

Option 1: The items contained in subsection A of this section were not included in the review of this section.

Option 2: Damaged brush chippers were not removed from service and tagged until repaired or discarded.

16VAC25-73-60.C.2.

Option 1: Access panels (for example, guards) for maintenance and adjustment, including discharge chute and cutter housing, were not closed and secured prior to starting the engine of brush chippers.

Option 2: Access panels were opened or unsecured before the engine and all moving parts have come to a complete stop (see 16VAC25-73-110, Appendix B, General Safety Procedures that Apply to All Tree Work).

16VAC25-73-60.C.3.

Option 1: A rotary drum or disc brush chipper not equipped with a mechanical infeed system was not equipped with an infeed hopper not less than 85 inches (2.15 m) measured from the blades or knives to ground level over the center line of the hopper.

Option 2: Side members of the infeed hopper did not have sufficient height so as to prevent workers from contacting the blades or knives during operations.

16VAC25-73-60.C.4. Rotary drum or disc brush chippers not equipped with a mechanical infeed system did not have a flexible anti-kickback device installed in the infeed hopper to reduce the risk of injury from flying chips and debris.

16VAC25-73-60.C.5.

Option 1: A chipper equipped with a mechanical infeed system did not have a quick-stop and reversing device on the infeed system.

Option 2: The activating mechanism for the quick-stop and reversing device was not located across the top, along each side, and close to the feed end of the infeed hopper within easy reach of the worker.

16VAC25-73-60.C.6. Vision, hearing, and other appropriate personal protective equipment was not worn when in the immediate area of a brush chipper in accordance with 16VAC25-73-40 D.

16VAC25-73-60.C.7. The employer failed to assure that arborists, mechanics, and other workers did not, under any circumstances, reach into the infeed hopper when the cutter disc, rotary drum, or feed rollers are moving.

16VAC25-73-60.C.8. A trailer chipper detached from the vehicle, was not chocked or otherwise secured in place.

16VAC25-73-60.C.9. When in a towing position, chipper safety chains were not crossed under the tongue of the chipper and properly affixed to the towing vehicle.

Not Citable: 16VAC25-73-60.C.10. See 16VAC25-73-90 F, for additional requirements.

D. Sprayers and related equipment.

16VAC25-73-60.D.1.

Option 1: The items contained in subsection A of this section were not included in the review of this section.

Option 2: Damaged sprayers and related equipment were not removed from service and tagged until repaired or discarded.

16VAC25-73-60.D.2. Walking and working surfaces of all sprayers and related equipment were not covered with skid-resistant material.

16VAC25-73-60.D.3. Equipment on which the applicator/operator stands while the vehicle is in motion was not equipped with guardrails around the working area. Guardrails shall be constructed in accordance with 16VAC25-90-1910.23.

16VAC25-73-60.D.4. The applicator/operator did not visual inspection of hoses, fittings, exposed plumbing, tanks, covers, and related equipment prior to its use each workday.

16VAC25-73-60.D.5. The applicator/operator allowed hoses or other parts of the equipment to create a tripping hazard for coworkers or the public.

16VAC25-73-60.D.6. The applicator/operator did not have a firm grip on the spray gun/excavation tool when pulling the trigger.

16VAC25-73-60.D.7. The operator of high-pressure excavation equipment did not wear a face shield in addition to eye protection.

16VAC25-73-60.D.8.a. The applicator/operator was not aware of underground utility locations when drilling holes in the ground for fertilizer or pesticide applications.

16VAC25-73-60.D.8.b.

Option 1: The equipment did not have splash guards.

Option 2: The applicator did not wear eye protection when injecting liquid fertilizer or pesticides into the ground.

16VAC25-73-60.D.8.c.

Option 1: The applicator did not wear eye protection when injecting liquids into trees.

Option 2: The applicator did not follow label instructions when injecting liquids into trees.

E. Stump cutters.

16VAC25-73-60.E.1.

Option 1: The items contained in subsection A of this section were not included in the review of this section.

Option 2: Damaged stump cutters were not removed from service and tagged until repaired or discarded.

16VAC25-73-60.E.2.

Option 1: Stump cutters were not equipped with enclosures or guards that reduce the risk of injury during operation.

Option 2: Enclosures or guards were not kept in place when stump cutters were operative.

16VAC25-73-60.E.3. Arborists and other workers in the immediate stump-cutting work zone did not wear vision, hearing, and other personal protective equipment in accordance with 16VAC25-73-40 D.

16VAC25-73-60.E.4. When in a towing position, stump-cutter safety chains were not crossed under the tongue of the stump cutter and properly affixed to the towing vehicle.

16VAC25-73-60.E.5. Towable stump cutters or stump-cutter trailers, when detached from the vehicle, were not chocked or otherwise secured in place.

16VAC25-73-60.E.6. The operator was not aware of underground utility locations prior to performing work.

F. Vehicles.

16VAC25-73-60.F.1.

Option 1: The items contained in subsection A of this section were not included in the review of this section.

Option 2: Damaged vehicles were not removed from service and tagged until repaired or discarded. (See 16VAC25-60-120.). **[FILL IN LANGUAGE FROM 16VAC25-60-120 BELOW AS FACTS INDICATE].**

16VAC25-60-120. The employer shall comply with the manufacturer's specifications and limitations applicable to the operation, training, use, installation, inspection, testing, repair and maintenance of all machinery, vehicles, tools, materials and equipment; unless specifically superseded by a more stringent corresponding requirement in Part 1910. The use of any machinery, vehicle, tool, material or equipment which is not in compliance with any applicable requirement of the manufacturer is prohibited, and shall either be identified by the employer as unsafe by tagging or locking the controls to render them inoperable, or be physically removed from its place of use or operation.

16VAC25-73-60.F.2. A steel bulkhead or equivalent protective devices was not provided to protect workers from load shifts in vehicles carrying logs or other material.

16VAC25-73-60.F.3. Load-securing procedures were not followed to prevent accidental shifting or discharge of logs or other materials from the vehicle during transport.

16VAC25-73-60.F.4. The employer failed to assure that logs or other material did not overhang the sides; obscure taillights, brake lights, or vision; or exceed height limits per state and local requirements for bridges, overpasses, utility lines, or other overhead hazards.

16VAC25-73-60.F.5. To avoid the hazard of spontaneous combustion or the generation of undesirable odors, wood chips shall not be left in vehicles for extended periods.

G. Log loaders, knucklebooms, cranes, and related hoists.

16VAC25-73-60.G.1.

Option 1: The items contained in subsection A of this section were not be included in the review of this section.

Option 2: Damaged log loaders, knuckle booms, cranes and related hoists were not removed from service and tagged until repaired or discarded.

16VAC25-73-60.G.2.

Option 1: Log loaders, cranes, and related hoisting equipment were not inspected in accordance with applicable regulations as well as manufacturers' instructions and guidelines.

Option 2: Chokers, slings, and other means of lifting, lowering, or rigging equipment were not inspected before each use.

Option 3: An inspection procedure checklist for log loaders, cranes, related hoisting equipment, chokers, slings, and other means of lifting, lowering, or rigging equipment was not available to the crew.

16VAC25-73-60.G.3.

Option 1: Operators of hoisting equipment were not trained in maintaining a minimum approach distances from energized conductors in accordance with Table 1 of 16VAC25-73-50, or §§ 59.1-406 through 59.1-414, Overhead High Voltage Line Safety Act, as applicable.

Option 2: Operators of hoisting equipment did not maintain a minimum approach distance from energized conductors in accordance with Table 1 of 16VAC25-73-50, or §§ 59.1-406 through 59.1-414, Overhead High Voltage Line Safety Act, as applicable.

Option 3: A spotter was not used when work was being performed in proximity to electrical conductors.

Option 4: Personnel assigned to work in proximity to the tree removal were not trained on the guidelines for electrical hazards in 16VAC25-73-50.

Option 5: Personnel assigned to work in proximity to the tree removal did not follow the guidelines for electrical hazards in 16VAC25-73-50.

16VAC25-73-60.G.4. The crane operator was not familiar with the potential hazards encountered and operational techniques used in tree work.

16VAC25-73-60.G.5.

Option 1: Cranes with telescoping booms were not equipped with an anti-two block device.

Option 2: Cranes with telescoping booms were not equipped with a boom angle indicator and a device to indicate the boom's extended length which was clearly visible to the operator at all times.

Option 3: A load rating chart with clearly legible letters and figures was not provided with each crane and securely fixed at a location easily visible to the operator.

16VAC25-73-60.G.6. Operators of hoisting equipment did not remain at the controls while a load is lifted, suspended, or lowered.

16VAC25-73-60.G.7.

Option 1: Tree sections shall be rigged to minimize load shifting.

Option 2: Controlled load lowering of tree sections was not employed.

Option 3: Shock-loading of tree sections was not avoided

Option 4: Free fall of tree sections was not prohibited.

Option 5: A green log weight chart (see 16VAC25-73-130, Appendix D), was not available to the crew.

Option 6: All workers were not kept clear of loads about to be lifted and of suspended loads.

16VAC25-73-60.G.8. The employer did not assure that riding the load line of a crane while it was under load tension was prohibited.

16VAC25-73-60.G.9.

Option 1: The use of a crane to hoist a qualified arborist into position was permitted when the use of conventional means of reaching the work area, such as, but not limited to, an aerial lift, would not have been more hazardous and was physically possible because of worksite conditions.

Option 2: A qualified arborist was hoisted into position utilizing a crane when the crane manufacturer's specifications and limitations prohibited such use.

Option 3: A qualified arborist was hoisted into position utilizing a crane when the fall protection requirements of the crane manufacturer were not complied with.

Option 4: A qualified arborist was hoisted into position utilizing a crane, and the arborist was not tied in with an arborist climbing line and arborist saddle and secured to a designated anchor point on the boom line or crane.

16VAC25-73-60.G.9.a.

Option 1: The qualified crane operator, the signal person, the person responsible for the work to be performed and the arborist to be lifted did not meet prior to the work to review the procedures to be followed.

Option 2: A job briefing was not done before any work began, in accordance with 16VAC25-73-40 A 4.

16VAC25-73-60.G.9.b. The arborist climbing line was not secured to the crane in such a way that it would not interfere with the function of any damage-prevention or warning device on the crane and so that no part of the crane compromised the climbing line or any component of the climbing system.

16VAC25-73-60.G.9.c.

Option 1: The crane operator did not test the adequacy of footing prior to any lifting.

Option 2: The crane operator did not conduct a trial lift immediately before lifting the arborist into position.

Option 3: The crane operator did not determine that all systems, controls and safety devices were activated and functioning properly; that no interferences exist; and that all configurations necessary to reach the intended work location would allow the operator to remain under the 50% limit of the hoist's rated capacity.

Option 4: The crane was not uniformly level and located on firm footing. Where necessary, blocking was not used so that the support system did not exceed its load-bearing capabilities.

Option 5: Cranes equipped with outriggers did not have them all fully extended and properly set, as applicable, before lifting and lowering operations began and/or before the qualified arborist was lifted.

16VAC25-73-60.G.9.d.

Option 1: Lifting and supporting was not done under controlled conditions and under the direction of a qualified arborist or an appointed signal person.

Option 2: Lifting and supporting operations were performed during adverse weather conditions such as thunderstorms, high winds, and snow and ice storms.

16VAC25-73-60.G.9.e.

Option 1: The load-line hoist drum did not have a system or other device on the power train, other than the load hoist brake, that regulated the lowering speed of the hoist mechanism.

Option 2: Load lines were not capable of supporting, without failure, at least seven times the maximum intended load.

Option 3: Where rotation resistant rope was used, the load lines were not capable of supporting without failure, at least 10 times the maximum intended load.

[The required design factor is achieved by taking the current safety factor of 3.5 and applying 50% de-rating of the crane capacity.]

16VAC25-73-60.G.9 f.

Option 1: Communication between the crane operator and the arborist being lifted was not maintained either directly or through the appointed signal person.

[This communication shall either be visual, using the accepted hand signals, or audible, using voice or radio.]

Option 2: Radio communication was not used to control blind picks.

Option 3: The crew members did not know and follow hand signals for standard crane operations (see 16VAC25-73-150, Appendix F).

16VAC25-73-60.G.9.g. The crane operator did not remain at the controls when the qualified arborist was attached to the crane and during lifting and lowering operations.

16VAC25-73-60.G.9.h.

Option 1: The crane boom and load line were not moved in a slow, controlled, cautious manner when the arborist was attached.

Option 2: Lifting or lowering speed exceeded 100 feet/minute (0.5 m/sec). Sudden movements were not avoided.

Option 3: The crane was not operated so that lowering was power controlled.

16VAC25-73-60.G.9.i.

Option 1: The crane carrier was allowed to travel while the qualified arborist was attached.

Option 2: An accurate determination of the load radius to be used during lifting was not made before the qualified arborist is hoisted.

16VAC25-73-60.G.9.j. The qualified arborist was not detached from the crane any time it came under load tension.

H. Specialized units.

16VAC25-73-60.H.1. The items contained in subsection A of this section were not included in the review of this section.

16VAC25-73-60.H.2. Off-road and tracked vehicles were not operated at the proper speed and in the proper gear relative to the operating environment and the manufacturer's instructions and guidelines.

16VAC25-73-60.H.3.

Option 1: Deadman controls on towing equipment for brush hogs and similar implements were not used and maintained in good working condition.

Option 2: Where the deadman control is malfunctioning or not operational, the equipment was not removed from service and tagged until it was repaired or discarded.

Option 3: When deadman controls were not provided by the manufacturer, the worker did not disengage the power source to the rotary or cutter head before dismounting.

I. Equipment-mounted winches.

16VAC25-73-60.I.1.

Option 1: The items contained in subsection A of this section were not included in the review of this section.

Option 1: Damaged equipment mounted winches were not removed from service and tagged until repaired or discarded.

16VAC25-73-60.I.2. Operators did not wear the appropriate personal protective equipment during winch operations, including eye and head protection.

16VAC25-73-60.I.3.

Option 1: The winch cable/synthetic line was not inspected daily for broken or worn strands, bird caging, major kinks, and other defects.

Option 2: Damaged cable(s) were not removed from service and tagged until repaired or discarded.

16VAC25-73-60.I.4.

Option 1: Cable hooks and attachment points were not inspected for damage.

Option 2: Damaged hooks or attachment assemblies were not removed from service and tagged until repaired or discarded.

16VAC25-73-60.I.5.

Option 1: Mounting bolts and hardware were not inspected for loose or missing components.

Option 2: The winch was used before complete repairs were made to damaged or missing bolts and hardware.

16VAC25-73-60.I.6.

Option 1: The operators was not aware of the dangers of load or cable breakage.

Option 2: The operator did not ensure that all personnel remain clear of the recoil area in the event of load or cable breakage.

16VAC25-73-60.I.7. Winch operator(s) were not properly trained and aware of the inherent dangers associated with winch operations.

16VAC25-73-60.I.8. The employer did not assure that operator(s) were aware of the winch cable at all times during extension and ensure that it does not become a hazard to personnel or machinery.

16VAC25-73-60.I.9. Winch systems and cables were not used as intended and instructed by the manufacturer.

16VAC25-73-60.I.10. The winch was used with personnel, including the operator, within the span of the winch cable and the winch.

16VAC25-73-60.I.11. The employer failed to assure that operator(s) involved in the winching operation were constantly aware of pinch point hazards during winching operations and stand clear of these areas.

16VAC25-73-60.I.12. Loads were not pulled in such a manner as to avoid angles that may result in tipping, causing the vehicle to become unstable, or resulting in unintended movement of the vehicle.

16VAC25-73-60.I.13. When the winch was not properly equipped with a fair lead and the operator was trained to pull loads at an angle, loads were not pulled in line with the winch.

16VAC25-73-60.I.14. The operator did not ensure that the vehicle supporting the winch was secured to avoid unintended movement.

16VAC25-73-60.I.15. The operator did not ensure that all rigging points complied with 16VAC25-73-90 D.

16VAC25-73-60.I.16. An effective means of communication was not established and used with all workers involved in the winching operations (see 16VAC25-73-90 D 14).

16VAC25-73-70. Portable power hand tools.

A. General.

16VAC25-73-70.A.1. Damaged portable power tools were not removed from service and tagged until repaired or discarded.

16VAC25-73-70.A.2. Manufacturers' operating and safety instructions were not followed (see 16VAC25-60-120). **[FILL IN LANGUAGE FROM 16VAC25-60-120 BELOW AS FACTS INDICATE].**

16VAC25-73-60-120. The employer shall comply with the manufacturer's specifications and limitations applicable to the operation, training, use, installation, inspection, testing, repair and maintenance of all machinery, vehicles, tools, materials and equipment; unless specifically superseded by a more stringent corresponding requirement in Part 1910. The use of any machinery, vehicle, tool, material or equipment which is not in compliance with any applicable requirement of the manufacturer is prohibited, and shall either be identified by the employer as unsafe by tagging or locking the controls to render them inoperable, or be physically removed from its place of use or operation.

16VAC25-73-70.A.3. A communication system was not established in accordance with the requirements of 16VAC25-73-90.B.1., before starting or otherwise using any portable power tools

B. Portable electric power tools.

16VAC25-73-70.B.1.

Option 1: The items contained in subsection A of this section were not included in the review of this section.

Option 2: Damaged portable electric power tools were not removed from service and tagged until repaired or discarded.

16VAC25-73-70.B.2. Corded electric power tools were used in trees or aerial devices near energized electrical conductors when there was a possibility of power tools or supply cords contacting the conductor.

16VAC25-73-70.B.3. Corded portable electric power tools were not equipped with three-wire cords having the ground wire permanently connected to the tool frame and a means for grounding the other end (16VAC25-73-70.B.3.a.); double insulated and permanently labeled as "double insulated" (16VAC25-73-70.B.3.b.); or connected to power supplies by means of an isolating transformer or other isolated power supply (16VAC25-73-70.B.3.c.).

16VAC25-73-70.B.4.

Option 1: Extension cords were not maintained in safe condition.

Option 2: Exposed metal sockets were be used.

Option 3: Worn or frayed extension cords were not removed from service and tagged until repaired or discarded.

16VAC25-73-70.B.5.a. Arborists and other workers did not prevent cords from becoming entangled, damaged, or cut by blades and bits.

16VAC25-73-70.B.5.b. Extension cords were laid in water.

16VAC25-73-70.B.5.c. Electric power tools and supply cords were not supported by a tool lanyard or separate line, when used aloft.

B. Chain saws.

16VAC25-73-70.C.1.

Option 1: The items contained in subsection A of this section were not included in the review of this section.

Option 2: Damaged chain saws were not removed from service and tagged until repaired or discarded.

16VAC25-73-70.C.2.

Option 1: Chain saws were operated without the manufacturer's safety devices in proper working order.

Option 2: Chain-saw safety devices were removed or modified.

16VAC25-73-70.C.3. When an arborist or other worker was working in a tree other than from an aerial device, chain saws weighing more than 15 pounds (6.8 kg) service weight were not made safe against falling (i.e., supported by a separate line or tool lanyard).

16VAC25-73-70.C.4. Secure footing was not maintained when starting the chain saw.

16VAC25-73-70.C.5.

Option 1: When starting a chain saw, the operator did not hold the saw firmly in place on the ground or otherwise support the saw in a manner that minimized movement of the saw when pulling the starter handle.

Option 2: A chain saw was started with the chain brake not engaged, on saws so equipped.

Option 3: A chain saw was drop-started.

16VAC25-73-70.C.6. Chain-saw engine(s) were started and operated when other arborists and workers were not clear of the swing radius of the chain saw.

16VAC25-73-70.C.7. When operating a chain saw, the arborist or other worker did not hold the saw firmly with both hands, keeping the thumb and fingers wrapped around the handle.

16VAC25-73-70.C.8. Arborists shall did not use a second point of attachment (for example, lanyard or doublecrotched climbing line) when operating a chain saw in a tree

[NOTE: Unless the employer demonstrates that a greater hazard is posed by using a second point of attachment while operating a chain saw in that particular situation. Using both ends of a two-in-one lanyard shall not be considered two points of attachment when using a chain saw.]

16VAC25-73-70.C.9. Chain-saw mufflers and spark arresters (if the latter are provided) were not maintained in good condition.

16VAC25-73-70.C.10. Before setting a chain saw down, the chain brake was not engaged, or the engine shut off.

16VAC25-73-70.C.11.

Option 1: When a chain saw was being carried more than two steps, the chain brake was not engaged or the engine shut off.

Option 2: The chain saw was not carried in a manner that would prevent operator contact with the cutting chain and the muffler.

16VAC25-73-70.C.12.

Option 1: The chain-saw operator was not certain of footing before starting to cut.

Option 2: The chain saw was used in a position or at a distance that could cause the operator to become off-balance, have insecure footing, or relinquish a firm grip on the saw.

D. Powered pole tools and backpack power units.

16VAC25-73-70.D.1.

Option 1: The items contained in subsection A of this section were not included in the review of this section.

Option 2: Damaged powered pole tools and backpack power units were not removed from service and tagged until repaired or discarded.

16VAC25-73-70.D.2. The employer failed to assure that only workers operating the equipment were within 10 feet (3.05 m) of the cutting head of a brush saw during operations.

16VAC25-73-70.D.3. Power were not equipped with a readily accessible, quick shutoff switch.

16VAC25-73-70.D.4. Operators did not observe the position of all other workers in the vicinity while the equipment was running.

16VAC25-73-70.D.5. Engines were not stopped for all cleaning, refueling, adjustments, and repairs to the saw or engine, except where manufacturers' procedures required otherwise.

16VAC25-73-70.D.6. Powered pole tools with poles made of metal or other conductive material were used in operations where electrical hazards exist.

16VAC25-73-80. Hand tools and ladders.

A. General.

16VAC25-73-80.A.1. Correct hand tools and equipment were not selected for the job.

16VAC25-73-80.A.2. Hand tools and equipment that were made unsafe by damage or defect, including tools with loose or cracked heads or cracked, splintered, or weakened handles, were not removed from service and tagged until repaired or discarded.

16VAC25-73-80.A.3. Workers did not maintain a safe working distance from other workers when using hand tools and equipment.

16VAC25-73-80.A.4.

Option 1: The employer failed to assure that when climbing into a tree, arborists did not carry hand tools and equipment in their hands unless the tools were used to assist them in climbing.

Option 2: The employer failed to assure that tools other than ropes or throwlines were not thrown into a tree or between workers aloft.

16VAC25-73-80.A.5.

Option 1: Arborist climbing lines or handlines were not used for raising and lowering hand tools and equipment.

Option 2: The employer failed to assure that arborists raised or lowered hand tools and equipment in a manner such that the cutting edge would not contact the arborist climbing line or handline.

16VAC25-73-80.A.6. Hand tools and equipment were not properly stored or placed in plain sight out of the immediate work area when not in use.

B. Cant hooks, cant dogs, peaveys, and tongs.

16VAC25-73-80.B.1.

Option 1: The items contained in subsection A of this section were not included in the review of this section.

Option 2: Damaged cant hooks, cant dogs, peaveys and tongs were not removed from service and tagged until repaired or discarded.

16VAC25-73-80.B.2. Cant hooks were not firmly set before applying force.

16VAC25-73-80.B.3. Points of hooks were not at least two inches (5 cm) long and kept sharp.

16VAC25-73-80.B.4.

Option 1: Arborists and other workers did not stand uphill from rolling logs.

Option 2: Workers were not warned and in the clear before logs were moved.

C. Wedges, chisels, and gouges.

16VAC25-73-80.C.1. The items contained in subsection A of this section were not included in the review of this section.

16VAC25-73-80.C.2.

Option 1: Wedges, chisels, and gouges were not inspected for cracks and flaws before use.

Option 2: Tools with damaged heads were not removed from service and tagged until repaired or discarded.

16VAC25-73-80.C.3. Wedges and chisels were not properly pointed and tempered.

16VAC25-73-80.C.4. Eye protection was not used during impact operations.

16VAC25-73-80.C.5. The employer did not assure that only wood, plastic, or soft-metal wedges were used while operating chain saws.

16VAC25-73-80.C.6. Wood-handled chisels were not protected with a ferrule on the striking end.

16VAC25-73-80.C.7. Wood, rubber, or high-impact plastic mauls, sledges, or hammers were not used when striking wood-handled chisels or gouges.

D. Chopping tools.

16VAC25-73-80.D.1.

Option 1: The items contained in subsection A of this section were not included in the review of this section.

Option 2: Damaged chopping tools were not removed from service and tagged until repaired or discarded.

16VAC25-73-80.D.2. The employer failed to assure that chopping tools were not used while working aloft.

16VAC25-73-80.D.3. Chopping tools were used as wedges or used to drive metal wedges.

16VAC25-73-80.D.4. Chopping tools were not be swung away from the feet, legs, and body, using the minimum force practical for function and control.

16VAC25-73-80.D.5. The employer did not assure that when employees were swinging tools such as grub hoes, mattocks, and axes, they used a secure grip, firm footing, and clearance of workers and overhead hazards was maintained.

E. Ladders.

16VAC25-73-80.E.1. The items contained in subsection A of this section were not included in the review of this section.

16VAC25-73-80.E.2.

Option 1: Ladders made of metal or other conductive material were used where electrical hazards existed.

Not Citable: Only wooden ladders or nonconductive ladders made of synthetic material equal to or exceeding the strength of wooden ladders shall be used.

Option 2: Portable wooden ladders were not used in accordance with 16VAC25-90-1910.25.

16VAC25-73-80.E.3. Metal ladders used where no electrical hazard exists were not used in accordance with 16VAC25-90-1910.26.

16VAC25-73-80.E.4. Ladders were not inspected before use and removed from service if found defective, and tagged until repaired or discarded.

16VAC25-73-80.E.5. Cleats, metal points, skid-resistant feet, lashing, or other effective means of securing the ladder were not used.

16VAC25-73-80.E.6. Ladders were used as bridges or inclined planes to load or handle logs or other material.

16VAC25-73-80.E.7.

Option 1: Ladders were not supported while in storage to prevent sagging.

Option 2: Except when on mobile equipment, ladders were not stored under suitable cover, protected from the weather, and kept in a dry location away from excessive heat.

16VAC25-73-80.E.8. The third, or hinged, leg of a tripod/orchard ladder was not braced or fastened when on hard or slick surfaces.

16VAC25-73-80.E.9.

Option 1: Ladder(s) were not used in accordance with the manufacturers' specifications and limitations.

Option 2: Ladder(s) shall not be altered in a way that contradicts the manufacturer's specifications and limitations.

16VAC25-73-90. Work procedures.

A. Ropes and arborist climbing equipment.

16VAC25-73-90.A.1.

Option 1: A visual hazard assessment, including a root collar inspection, was not performed prior to climbing, entering, or performing any work in a tree.

Option 2: An ongoing hazard assessment was not conducted as operations progress while the arborist was in the tree.

Option 3: Where the hazard assessment revealed a serious hazard to the climber or ground personnel, work was not immediately stopped and personnel removed from the hazardous area until a work plan was developed to safely remove the hazard/tree.

16VAC25-73-90.A.1.a. The visual hazard assessment did not include trunk and root hazards including, but not limited to, cracks, cavities, wood decay/rot, cut roots, mushrooms.

16VAC25-73-90.A.1.b. The visual hazard assessment did not include lower stem hazards including, but not limited to, loose bark, open cavities, cracks, mushrooms, conks, and depressions or swelling in the stem.

16VAC25-73-90.A.1.c. The visual hazard assessment did not include limb hazards including, but not limited to, watersprouts, hangers, cankers, dead branches, lightning damage, and weak crotches.

16VAC25-73-90.A.1.d. The visual hazard assessment did not include storm damage hazards including, but not limited to, cracked stems and crotches, broken limbs supported by cables, points of pressure, and tension on limbs or small trees underneath larger fallen trees.

16VAC25-73-90.A.2. A second arborist or other worker trained in emergency procedures was not within visual or voice communication during arboricultural operations above 12 feet (3.65 m) that were not subject to the requirements of 16VAC25-73-50 B 4.

16VAC25-73-90.A.3.

Option 1: Climbing lines used in a split-tail system and split-tails were not terminated with an eye splice or a knot that interfaced appropriately with the connecting link that it was attached to.

Option 2: The termination knot on climbing lines used in a split-tail system and split-tails did not remain secure under normal loading and unloading.

Option 3: When using a carabiner without a captive eye, the knot or eye splice did not cinch in place to prevent accidental opening and/or side-loading of the carabiner.

16VAC25-73-90.A.4.

Option 1: Arborists did not inspect climbing lines, worklines, lanyards, and other climbing equipment for damage, cuts, abrasion, and/or deterioration before each use.

Option 2: Arborists did not remove climbing lines, worklines, lanyards, and other climbing equipment from service where signs of excessive wear or damage were found.

Option 3: Climbing lines, worklines, lanyards, and other climbing equipment removed from service were not tagged until repaired or discarded.

16VAC25-73-90.A.5. Arborist saddles and lanyards used for work positioning were not identified by the manufacturer as suitable for tree climbing.

16VAC25-73-90.A.6. Arborist saddles and lanyards used for work positioning were altered in a manner that would compromise the integrity of the equipment.

16VAC25-73-90.A.7. Hardware used in the manufacture of arborist saddles did not meet the hardware material, strength, and testing requirements outlined in ANSI 359.1.

16VAC25-73-90.A.8.

Option 1: Arborist climbing lines did not have a minimum diameter of 7/16 (11 mm) and was not constructed from a synthetic fiber, with a minimum breaking strength of 5,400 pounds (24.02 kilonewtons (kN)) when new.

Option 2: Maximum working elongation for Arborist climbing lines exceeded 7.0% at a load of 540 pounds (2.402 kN).

Option 3: Arborist climbing lines were not identified by the manufacturer as suitable for tree climbing.

16VAC25-73-90.A.9. The qualified arborist did not assure that each component of the climbing system was approved by the manufacturer for its intended use as well as its compatibility with other components of the climbing system.

16VAC25-73-90.A.10. Prusik loops, split-tails, and work-positioning lanyards used in a climbing system did not meet the minimum strength standards for arborist climbing lines.

16VAC25-73-90.A.11. Snap hooks (rope snaps) used in climbing were not self-closing and self-locking, with a minimum tensile strength of 5,000 pounds (22.24 kN).

16VAC25-73-90.A.12.

Option 1: Carabiners used in climbing were not self-closing and self-locking, with a minimum tensile strength of 5,000 pounds (22.24 kN).

Option 2: Carabiners were not designed to release the load by requiring at least two consecutive, deliberate actions to prepare the gate for opening.

16VAC25-73-90.A.13. Splicing was not done in accordance with cordage manufacturers' specifications.

16VAC25-73-90.A.14. Load-bearing components of the climbing system did not meet the minimum standards for arborist climbing equipment.

16VAC25-73-90.A.15. Equipment used to secure an arborist in the tree or from an aerial lift was used for things other than its intended purpose.

[The arborist climbing line may be used to raise and lower tools.]

16VAC25-73-90.A.16. Rope ends were not finished in a manner to prevent raveling.

16VAC25-73-90.A.17. Ropes and climbing equipment were not stored and transported in such a manner to prevent damage through contact with sharp tools, cutting edges, gas, oil, or chemicals.

16VAC25-73-90.A.18. Arborist climbing lines were left in trees unattended.

16VAC25-73-90.A.19. Arborists did not have available a climbing line and at least one other means of being secured while working aloft; for example, an arborist climbing line and a work-positioning lanyard.

16VAC25-73-90.A.20.

Option 1: The arborist was not secured while ascending the tree.

Option 2: The arborist was not tied in once the work began and nor did he remain tied in until the work was completed and he had returned to the ground.

Option 3: The arborist was not secured when repositioning the climbing line.

16VAC25-73-90.A.21.

Option 1: While ascending a ladder to gain access to a tree, the arborist worked from the ladder without being tied in or otherwise secured.

Option 1: While ascending a ladder to gain access to a tree, the arborist left ladder before he was tied in or otherwise secured.

Not Citable: 16VAC25-73-90.A.22. A false crotch and/or false crotch redirect may be used at the discretion of the arborist in lieu of a natural crotch.

16VAC25-73-90.A.23. The tie-in position was such that the arborist was subjected to an uncontrolled pendulum swing in the event of a slip.

16VAC25-73-90.A.24. When a climber was working at heights greater than one-half the length of the arborist climbing line, a figure-8 knot was not be tied in the end of the arborist climbing line to prevent pulling the rope through the climbing hitch.

B. Pruning and trimming.

16VAC25-73-90.B.1.

Option 1: Voice communications among arborists aloft and among arborists and other workers on the ground were not established before cutting and dropping limbs.

Option 2: The communication method among arborists aloft and among arborists and other workers on the ground was not be clearly understood and used by all workers during all operations.

[Not Citable/Recommendations Only -The command "stand clear" from aloft and the response "all clear," "Underneath," or "No" from the ground are terms that may be used for this purpose. Prearranged, two-way hand signals may also be used when verbal communication is not possible because of distance or surrounding noise levels. Arborists and other workers returning to the work area shall be acknowledged by arborists aloft.]

16VAC25-73-90.B.2.

Option 1: Pole pruners and pole saws, when hung, were not securely positioned to prevent dislodgment.

Option 2: Pole pruners or pole saws were hung on electrical conductors or left in a tree unattended.

Option 3: Pole saws and pole pruners were not hung so that sharp edges were away from the arborist.

Option 4: Pole saws and pole pruners were not removed when the arborist leaves the tree.

16VAC25-73-90.B.3.

Option 1: Scabbards or sheaths were not used to carry handsaws when not in use.

Option 2: Folding saws, when not in use, were not closed and hooked to the arborist saddle.

16VAC25-73-90.B.4. Pole tools used in line-clearance operations were not constructed with fiberglass reinforced plastic (FRP) or wooden poles meeting the requirements of 16VAC25-90-1910.269.

16VAC25-73-90.B.5.

Option 1: A separate workline was not attached to limbs that could be dropped safely or controlled by hand.

Option 2: Arborist climbing lines and worklines were secured to the same crotch.

16VAC25-73-90.B.6.

Option 1: When dry conditions existed, arborists and other workers were smoking while working in or near dead palm fronds.

Option 2: All chain saws used under dry conditions near dead palm fronds did not have mufflers and spark arresters in good working condition.

[Dry conditions and dead palm fronds present an extreme fire hazard.]

16VAC25-73-90.B.7.

Option 1: Palm frond skirts that have three years or more of growth were not removed from the top down.

Option 2: Arborist(s) performing work on palm frond skirts were not supported by an arborist climbing line and a false crotch.

Option 3: Arborists shall attempted to remove skirts of three years or more by positioning themselves below work areas while being supported by a lanyard.

16VAC25-73-90.B.8. Cut branches were left in trees upon completion of work.

C. Cabling.

16VAC25-73-90.C.1. Arborists and other workers on the ground stood under the work area of a tree when a cabling system was being installed.

16VAC25-73-90.C.2. Tools used for cabling, bark tracing, and cavity work were not carried in a bag, on a belt designed to hold such tools, or attached to a tool lanyard.

16VAC25-73-90.C.3. Arborists installing cabling systems in trees were not positioned off to one side in order to avoid injury in case of cable system failure that could occur when a block and tackle or a hand winch is released.

16VAC25-73-90.C.4. A block and tackle or come-along system was not installed before removing an existing cable from a tree.

16VAC25-73-90.C.5. The replacement cable was not fully installed before removing the outdated cable from the tree.

D. Rigging.

16VAC25-73-90.D.1.

Option 1: Arborists performing rigging operations did not inspect trees for their integrity to determine whether the trees had any visible defect that could affect the operation.

Option 2: When it was determined that the tree posed a risk of failure due to the forces and strains that would be created by the design of the rigging operation, an alternate plan was not used that did not expose workers to the hazards of a failure.

16VAC25-73-90.D.2.

Option 1: The number of connecting links used for connecting components of a rigging system was not minimized when possible.

Option 2: Connecting links did not interface properly.

Option 3: Connecting links were not in compliance with manufacturers' specifications and limitations (reference 16VAC26-60-120). [FILL IN LANGUAGE FROM 16VAC25-60-120 BELOW AS FACTS INDICATE].

16VAC25-60-120. The employer shall comply with the manufacturer's specifications and limitations applicable to the operation, training, use, installation, inspection, testing, repair and maintenance of all machinery, vehicles, tools, materials and equipment; unless specifically superseded by a more stringent corresponding requirement in Part 1910. The use of any machinery, vehicle, tool, material or equipment which is not in compliance with any applicable requirement of the manufacturer is prohibited, and shall either be identified by the employer as unsafe by tagging or locking the controls to render them inoperable, or be physically removed from its place of use or operation.

16VAC25-73-90.D.3.

Option 1: The qualified arborist did not ensure that load ratings shown on the rigging equipment or provided by the manufacturer for all ropes, connecting links, and rigging equipment were observed in all rigging operations.

Option 2: Rigging equipment was not chosen for the specific task based on working-load limits and design specifications.

16VAC25-73-90.D.4.

Option 1: Equipment used for rigging operations was not in good working condition.

Option 2: Equipment used for rigging operations that was damaged or overloaded was not removed from service.

Option 3: Equipment used for rigging which had been removed from service were not tagged until repaired or discarded.

16VAC25-73-90.D.5. Rigging and climbing equipment was not clearly marked to indicate their different purposes, to avoid confusion between rigging equipment and climbing equipment.

16VAC25-73-90.D.6.

Option 1: Rigging points were not assessed for their structural integrity by a qualified arborist.

Option 2: The rigging plan and the tree were not considered relative to the forces being applied to any part of the tree, including branch attachments and anchoring roots, before a rigging point was chosen and established.

16VAC25-73-90.D.7.

Option 2: Climbers did not choose tie-in points that would provide proper protection while allowing for a separation between the rigging system and the climbing system.

Option 2: Running rigging lines were allowed to come into contact with part(s) of the climbing system.

16VAC25-73-90.D.8.

Option 1: Arborists performing rigging operations were not educated to understand and trained to estimate the potential forces at any point in the rigging system being used.

Option 2: The rigging system components did not comply with working-load limits relative to the operation and the maximum potential forces.

16VAC25-73-90.D.9.

Option 1: Careful consideration was not given to the potential forces resulting from the specific influences of rope angles.

Careful consideration was not given to the number of lines and/or line parts that would act on any rigging point.

16VAC25-73-90.D.10. Prior to the start of removal/rigging operations, a communication system was not established in accordance with the requirements in subdivision 16VAC25-73-90.B.1 of this section.

16VAC25-73-90.D.11.

Option 1: A work zone was not established prior to the start of rigging operations.

Option 2: Workers not directly involved in the rigging operation did not stay out of the pre-established work zone until it had been communicated by a qualified arborist or qualified arborist trainee directly involved in the rigging operation that it was safe to enter the work zone.

Option 3: Workers were not positioned and their duties organized so that the actions of one worker would not create a hazard for any other worker.

16VAC25-73-90.D.12.

Option 1: Workers other than the qualified arborist(s) or qualified arborist trainee(s) directly involved in the operation were permitted in the work zone when a load was being suspended by the rigging system.

Option 2: All workers were not kept clear of suspended loads.

16VAC25-73-90.D.13. Taglines or other means may be used to help control and handle suspended loads. **[Section not citable as the language is advisory in nature “may”]**

16VAC25-73-90.D.14.

Option 1: Arborists working aloft did not position themselves so as to be above or to the side of the piece being rigged.

Option 2: Arborists working aloft did not position themselves so as to be out of the path of movement of the piece when it was cut.

Option 3: Climbers and their climbing systems were not positioned outside of the rigging system itself when a cut was being made

Option 4: Climbers and their climbing systems were not positioned outside of the rigging system itself when a load was being moved or lowered.

Option 5: Climbers did not have an escape plan prepared.

16VAC25-73-90.D.15. The spars, limbs, or leaders being worked on and the spars being used for tie-in and/or rigging points were not assessed for structural integrity and potential reaction forces that could cause a spar to split when it is cut.

16VAC25-73-90.D.16.

Option 1: Steps were not taken to prevent spars from splitting or tearing during the rigging operation. Load binders are one possible means of preventing splitting.

Option: Climbers did not take steps to avoid trapping, pinning, or entangling themselves in the system should the tree split or the rigging fail.

E. Tree removal.

16VAC25-73-90.E.1. Before beginning any tree removal operation, the chain-saw operator and/or crew leader did not carefully consider all relevant factors pertaining to the tree and site and take appropriate actions to ensure a safe removal operation. [FILL IN LANGUAGE FROM a. through i. BELOW AS FACTS INDICATE].

- a. The area surrounding the tree to be removed, including nearby trees;
- b. Species and shape of the tree;
- c. Lean of the tree;
- d. Loose limbs, chunks, or other overhead material;
- e. Wind force and direction;
- f. Decayed or weak spots throughout the tree (be aware of additional hazards if these conditions exist in the hinge area);
- g. Location and means to protect other persons, property, and electrical conductors;
- h. Size and terrain characteristics or limitations of the work area; and
- i. Evidence of bees or wildlife habitation in the tree.

16VAC25-73-90.E.2. Work plans for removal operations were not communicated to all workers in a job briefing before commencing work.

16VAC25-73-90.E.3. Workers not directly involved in the removal operation and not necessary to remove a particular tree were not kept clear of the work area, beyond the length of the tree.

16VAC25-73-90.E.4.

Option 1: A planned escape route for all workers was not prepared before cutting any standing tree or trunk. The preferred escape route is 45 degrees on either side of a line drawn opposite the intended direction of the fall.

Option 2: Obstructions were not cleared along the escape path.

Option 3: The chain-saw operator did not use the escape path for egress once the cut was completed.

16VAC25-73-90.E.5. When it was necessary to shorten or remove branches before removing the tree, the arborist did not determine whether the tree could withstand the strain of the lowering procedures. Other means of removing the tree were not considered and used.

16VAC25-73-90.E.6. The crew leader did not determine the number of workers necessary for tree removal operations.

16VAC25-73-90.E.7. The crew leader did not develop a work plan so that operations did not conflict with each other, thereby creating a hazard.

16VAC25-73-90.E.8. Climbing spurs did not have gaffs of a type and length compatible for the tree being climbed.

16VAC25-73-90.E.9.

Option 1: Wedges, block and tackle, rope, wire cable (except where an electrical hazard exists), or other appropriate devices were not used when there was a danger that the tree or trees being removed may fall in the wrong direction or damage property.

Option 2: All limbs were not removed to a height and width sufficient to allow the tree to fall clear of any wires and other objects in the vicinity.

16VAC25-73-90.E.10.

Option 1: Tackle blocks and pulleys and their connecting links were not inspected immediately before use.

Option 2: Tackle blocks and pulleys and their connecting links were not removed from service when found to be defective.

16VAC25-73-90.E.11. Workers entered the work area before the chain-saw operator acknowledged that it was safe to do so.

16VAC25-73-90.E.12. When a pull line was being used, workers involved in removing a tree or trunk were not clear by a minimum of one tree length.

16VAC25-73-90.E.13. All workers other than the individual engaged in manual land-clearing operations were not at least two tree lengths away from the tree or trunk being removed. **[This requirement does not apply in the presence of site restrictions, such as waterways or cliffs. Other arborists and workers shall be beyond the trees' striking range and at a distance as close to twice the tree's height as possible.]**

16VAC25-73-90.E.14. Notches were not used on all trees and trunks greater than five inches (12.7 cm) in diameter at breast height.

16VAC25-73-90.E.15. Notches and back cuts were not made at a height that enables the chain-saw operator to safely begin the cut, control the tree or trunk, and have freedom of movement for escape:

[FILL IN LANGUAGE FROM a. through d. BELOW AS FACTS INDICATE].

- a. The notch cut used shall be a conventional notch, an open-face notch, or a Humboldt notch.
- b. Notches shall be 45 degrees or greater and large enough to guide the fall of the tree or trunk to prevent splitting.
- c. Notch depth shall not exceed one-third the diameter of the tree.
- d. The back cut shall not penetrate into the predetermined hinge area.

16VAC25-73-90.E.16.

Option 1: With a conventional notch or Humboldt notch, the back cut was not one to two inches (2.5 to 5 cm) above the apex of the notch to provide an adequate platform to prevent kickback of the tree or trunk.

Option 2: With an open-face notch (greater than 70 degrees), the back cut was not at the same level as the apex of the notch.

16VAC25-73-90.E.17. The two cuts that form the notch crossed at the point where they met.

16VAC25-73-90.E.18.

Option 1: Before making the back cut, there was no command such as "stand clear" from the arborist operating the chain saw and a response such as "all clear" from the workers supporting the removal operation. **[Pre-arranged, two-way hand signals may also be used in accordance with subdivision B 1 of this section. Only designated persons shall give such signals.]**

Option 2: All workers in the vicinity were not out of range when the tree or trunk fell.

Option 3: Visual contact was not maintained with the tree or trunk until it is on the ground.

16VAC25-73-90.E.19. When the back cut was completed, the chain-saw operator did not immediately move a safe distance away from the tree or trunk using the planned escape route.

16VAC25-73-90.E.20. Workers approached mechanical tree removal or mechanical re-clearing operations, such as with a rotary or flail mower, before the operator acknowledged that it was safe to do so.

F. Brush removal and chipping.

16VAC25-73-90.F.1. Traffic control around the jobsite was not established prior to the start of chipping operations along roads and highways.

16VAC25-73-90.F.2. Brush and logs were left to create hazards in the work areas.

16VAC25-73-90.F.3. Loose clothing, climbing equipment, body belts, harnesses, lanyards, or gauntlet-type gloves (for example, long-cuffed lineman's or welder's gloves) was worn while operating chippers, creating an entanglement hazard.

16VAC25-73-90.F.4. Personal protective equipment was not worn when in the immediate area of chipping operations in accordance with 16VAC25-73-40 D.

16VAC25-73-90.F.5. Training was not provided to employee(s) in the proper operation, feeding, starting, and shutdown procedures for the chipper being used.

16VAC25-73-90.F.6. The employer failed to assure that maintenance was performed only by those persons authorized by the employer and trained to perform such operations.

16VAC25-73-90.F.7.

Option 1: The employer failed to assure that brush and logs were fed into chippers, butt or cut end first, from the side of the feed table center line.

Option 2: The employer failed to assure that the operator immediately turn away from the feed table when the brush is taken into the rotor or feed rollers.

Option 3: Chippers were not fed in accordance with the manufacturer's instructions.

16VAC25-73-90.F.8.

Option 1: The employer did not prohibit the brush chipper discharge chute or cutter housing cover from being raised or removed while any part of the chipper was turning or moving.

Option 2: A Chipper was used without a discharge chute of sufficient length or design to prevent personal contact with the blades.

16VAC25-73-90.F.9. Foreign material, such as stones, nails, sweepings, and rakings, were fed into chippers.

16VAC25-73-90.F.10. The employer failed to assure that employees fed small branches into chippers with longer branches or by being pushed with a long stick.

16VAC25-73-90.F.11.

Option1: Hands or other parts of the body were placed into the infeed hopper.

Option 2: The employer failed to prohibit employees from leaning into or pushing material into infeed hoppers with their feet.

16VAC25-73-90.F.12. While material is being fed into the chipper infeed hopper chute, pinch points continually develop within the material being chipped and between the material and machine. The operator shall be aware of this situation and respond accordingly.

16VAC25-73-90.F.13. The employer did not assure that when feeding a chipper during roadside operations, the operator did so in a manner that prevents him from stepping into traffic or being pushed into traffic by the material that is being fed into the chipper.

16VAC25-73-90.F.14. The operator did not ensure that when using a winch in chipper operations, the winch cable was properly stored before initiating chipper operations.

G. Limbing and bucking.

16VAC25-73-90.G.1. Work plans for limbing and bucking operations were not communicated to all workers in a job briefing before work began.

16VAC25-73-90.G.2. The employer failed to assure that when more than one worker was limbing or bucking a tree, each was positioned and their duties organized so that the actions of one worker would not create a hazard for any other worker.

16VAC25-73-90.G.3. Chain saws were not operated away from the vicinity of the legs and feet. Natural barriers, such as limbs between the saw and the body, shall be employed where possible, while ensuring proper balance.

16VAC25-73-90.G.4.

Option 1: The worker did not make sure of firm footing before and during limbing and bucking.

Option 2: The worker shall stand on loose chunks or logs that could roll when the log being bucked was sawed off.

16VAC25-73-90.G.5. Appropriate cutting techniques and precautions were not followed when trees, limbs and/or saplings were under tension.

16VAC25-73-90.G.6. Wedges were not used to prevent binding of the guide bar or chain when bucking trunks of trees.

16VAC25-73-90.G.7. Cant hooks or peaveys were not used as an aid in rolling large or irregular logs to complete bucking.

16VAC25-73-90.G.8. Where mechanized equipment was used, the equipment operator did not establish an effective means of communication with other workers.

16VAC25-73-90.G.9. Workers were permitted to approach mechanized equipment operations before the equipment operator had acknowledged that it was safe to do so.

H. Pesticide application.

16VAC25-73-90.H.1. The applicator did not follow label instructions in regard to pesticide applications.

16VAC25-73-90.H.2. The applicator did not follow pesticide label instructions in regard to laundering his clothing.

16VAC25-73-90.H.3. The applicator did not comply with the manufacturer's instructions with regard to showering or bathing at the end of each workday.

16VAC25-73-90.H.4.

Option 1: The employer failed to provide a clean water source at the worksite, which could be used for emergency personal decontamination.

Option 2: The employer failed to assure that precautions were taken to prevent contamination of the clean water source.

Option 3: Drinking water and decontamination water was not kept in separate containers.

16VAC25-73-90.H.5. The applicator directed a solid spray column into contact with electrical conductors.

APPENDIX B

Interpretations

Last Updated: April 27, 2011

Procedures for Obtaining Agency Interpretations.

All outside requests for interpretations of the regulation shall be referred to the VOSH Director at:

VOSH Director
Virginia Department of Labor and Industry
13 South 13th Street
Richmond, VA 23219

Interpretations.

[NOTE: During the regulatory promulgation process, the Department issued explanatory and interpretive information to commenters as the regulation progressed from the proposed to the final stage. Interpretive guidance for regulatory language that did not change from the proposed to the final regulation remains the official position of the VOSH Program. Interpretations based on proposed language that was later changed in the final regulation is provided for background purposes only.]

16VAC25-73-10, Scope, Purpose and Applicability

- A. This regulation contains arboriculture safety requirements for pruning, repairing, maintaining, and removing trees; cutting brush; and for using equipment in such operations. (Note: Terms specific to the safe practice of arboriculture are defined in 16VAC25-73-20.)
- B. The purpose of this regulation is to provide safety criteria for arborists and other workers engaged in arboricultural operations.
- C. This regulation is intended to apply to all employers engaged in the business, trade, or performance of arboriculture, including employers engaged in tree pruning, repairing, maintaining; removing trees; cutting brush; or performing pest or soil management during tree care operations who hire one or more persons to perform such work. This regulation may require situational modifications in response to personnel emergencies and is not intended to limit the options available to emergency responders. This regulation does not apply to nonarboricultural landscaping operations. This regulation does not apply to line-clearance tree trimming activities as defined in 16VAC25-73-20. Such activities are covered by 16VAC25-90-1910.269. This regulation does not apply to logging operations covered by 16VAC25-90-1910.266. This regulation does not apply to tree removal activities where the primary objective is land clearing in preparation for construction, real estate development, rights-of-way for new utility installations or other related activities, unless directly supervised by a qualified arborist or qualified line-clearance arborist. Such activities are covered by 16VAC25-90-1910.266.

Comment: "... line-clearance tree trimming is already regulated by an industry-specific standard – 29 C.F.R. Section 1910.269. As such, the ULCC concludes that an additional regulation covering the operations of its members is unnecessary. If, however, VOSHA determines that an additional regulation would present some safety benefit in relation to costs of implementation, then the ULCC has a number of suggested changes.

Section 1910.269 Regulates the Hazards of Line-Clearance Tree Trimming Work, and a Separate Regulation Applicable to Line-Clearance Tree Trimming is Unnecessary

Based on the ULCC's analysis, the provisions in Section 1910.269 cover many – if not most – of the hazards addressed in VOSHA's proposal. Specifically, the following hazards or issues are currently addressed in Section 1910.269:

- First aid (in fact, the first aid and CPR provisions in Section 1910.269 are more stringent than those proposed by VOSHA)
- Brush chippers
- Communication, *i.e.* the requirement for a second line-clearance tree trimmer to have voice-communication with the first trimmer for certain work (in fact, Section 1910.269(r)(1)(ii) is more protective than the provisions proposed by VOSHA in Section 25-73-50(B)(4))
- Minimum approach distances for workers and equipment
- Insulated tools
- Prohibitions on work during adverse weather conditions
- Sprayers, including walking and working surfaces requirements applicable when employees stand on top of equipment
- Stump cutters
- Power and chain saws
- Climbing ropes
- Fall protection requirements, which allow fall protection used for aerial lifts to consist of either full-body harness with six foot lanyards or body belts with shorter lanyards
- Provisions that mandate substantial training in “the safety-related work practices, safety procedures and other safety requirements” that “pertain to their respective job requirements,” as well as “applicable emergency procedures”
- “Regular supervision” and “inspections” to determine whether employees are complying with safety-related work practices
- Refresher or re-training because of: deficiencies found during the inspections; the introduction of new technology or equipment; or the performance of tasks that are performed less than once per year
- An assessment of the potential electrical hazards presented by the work as well as a job briefing are required before each job
- Requirements for mechanical equipment, including inspections, operating requirements, and the use of outriggers

VOSHA proposes regulating these same hazards. VOSHA's reasoning in proposing a second regulation to cover the same hazards already addressed in Section 1910.269 is unclear. This is particularly true given the confusion that a second regulation would cause. For example, how would compliance officers decide whether to cite Section 1910.269 or the Tree Trimming Operations regulation? Would employers be required to cull through both regulations and determine which provisions to include in compliance programs and training materials? What if Section 1910.269 and the VOSHA regulation have different requirements for the same hazard – how would employers identify the provisions that apply?

Uncertainty about compliance obligations will result in citations that do not target true safety hazards, and may even result in additional hazards if front-line supervisors are unable to determine which regulation applies to the work being performed. As such, VOSHA should exempt line-clearance tree trimming from the Tree Trimming Operations regulation.

Finally, the ULCC concludes that VOSHA has underestimated the costs associated with implementing a second vertical standard for the line-clearance industry. ULCC member companies estimated that developing programs to comply with Section 1910.269 resulted in costs of between \$1 million to \$10 million. The cost of training an employee to the level of a qualified line-clearance arborist was approximately \$12,000. While there is clearly overlap between the VOSHA proposal and Section 1910.269, the costs of developing and implementing an entirely new program and providing training will be substantial. These costs are not justified by any safety benefits in the line-clearance industry. “

Response: The Department agrees that some additional language in the Applicability section of the proposed regulation would help to clear up any confusion on the issue of line-clearance tree trimming.

First, we would note that it has been the Department's stated intent, at the request of the tree trimming industry, to use as

much of ANSI Z133.1-2006 as possible because of the familiarity of the industry with the national consensus standard, to limit costs of compliance as much as possible, to aid in ease of developing standardized training programs, to ease the burdens of compliance as much as possible for multi-state employers, and because it represents the input of many varied interest groups, including employer representatives, employee representatives, government agencies, public utility companies, safety professionals and others. In fact, five of ULCC's members were participants in the development of ANSI Z133.1-2006 (Asplundh Tree Expert Co., The Davey Tree Expert Co., Lewis Tree Service, Inc., McCoy Tree Surgery, Inc., and Wright Tree Service, Inc.). The Department made no initial attempt to change the scope or application of the proposed regulation with regard to line-clearance tree trimming with the understanding that the industry did not have any significant concerns with ANSI Z133.1-2006, but is willing to do so now to address more recent concerns that have apparently developed since its adoption in 2006.

In developing a proposed language change to address line-clearance tree trimming issues, the Department took into consideration that work around overhead powerlines can be done by several different groups:

Group 1: tree trimmers working for the owner or operator of the lines,

Group 2: tree trimmers who contract with the owner or operator of the lines, and

Group 3: tree trimmers who have no connection with the owner or operator of the lines.

The Department also had to consider the implications of the Virginia Overhead High Voltage Line Safety Act, Va. Code §59.1-406, *et seq.*, which contains requirements and prohibitions against working around overhead high voltage lines (voltage in excess of 600 volts as defined in the Act), but does not apply to work "performed by the employees of the owner or operator of the systems or independent contractors engaged on behalf of the owner or operator of the system to perform the work."

The Department recommends the following changes to the regulatory language in the Application section. The effect of the changes will be to:

- * exempt line-clearance tree trimming, as defined in the proposed regulation, from coverage under the proposed regulation
- * provide that work around overhead power lines that does not meet the definition of line-clearance tree trimming in the proposed regulation, must either be conducted in accordance with the Virginia Overhead High Voltage Line Safety Act (voltage in excess of 600 volts as defined in the Act), or for lesser voltages conducted in accordance with 16VAC25-90-1910.333(c)(1)

The recommended changes are as follows:

16VAC25-73-10.C.

"C. This regulation is intended to apply to all employers engaged in the business, trade, or performance of arboriculture, including employers engaged in tree pruning, repairing, maintaining; removing trees; cutting brush; or performing pest or soil management who hire one or more persons to perform such work. This regulation may require situational modifications in response to personnel emergencies and is not intended to limit the options available to emergency responders. **This regulation does not apply to line-clearance tree trimming activities as defined in 16VAC25-73-20. Such activities are covered by 16VAC 25-90-1910.269.** This regulation does not apply to logging operations covered by 16VAC25-90-1910.266. This regulation does not apply to tree removal activities where the primary objective is land clearing in preparation for construction, real estate development, or other related activities, unless directly supervised by a qualified arborist. Such activities are covered by 16VAC25-90-1910.266."

The Department recommends the following change to the definition of "line-clearance tree trimming," which, with the exception of the last sentence (which is derived from Va. Code §59.1-413), is identical to the corresponding definition in 16VAC25-90-1910.269(x):

16VAC25-73-20

"Line clearance" **"Line-clearance tree trimming"** means the pruning, trimming, repairing, maintaining, removing,

~~treating, or clearing of trees or the cutting of brush (vegetation management) that is within 10 feet (3.05 m) of electric supply lines and equipment; and vegetation management work performed by qualified line-clearance arborists or qualified line-clearance arborist trainees for the construction or maintenance of electric supply lines and/or the electric utility right-of-way corridor.~~ Line-clearance tree trimming activities are performed by the employees of the owner or operator of the electrical or communication systems, or independent contractors engaged on behalf of the owner or operator of the system to perform the work.

The above changes will clarify that Groups 1 and 2 will be covered by 16VAC25-90-1910.269 generally and -1910.269(r) specifically when engaged in "line-clearance tree trimming" activities, while Group 3 will be covered by the proposed regulation.

Please also see the Department's response to **Commenter 1** that clarifies that the following activities, even when undertaken by employees of the owner or operator of the power lines or a subcontractor on behalf of the owner/operator are not covered by 16VAC25-90-1910.269(r), but will be covered by the Logging Standard, 16VAC25-90-1910.266, unless the tree removal activities are directly supervised by a qualified arborist or qualified line-clearance arborist, in which case the proposed regulation would apply:

1. Right-of-way clearance for new power generation, transmission and distribution lines, where no exposure to electrical lines is present.
2. Land clearing activities associated with the construction of new power generation, transmission and distribution facilities, where no exposure to electrical lines in present.
3. Tree trimming operations around buildings, offices, facilities owned or operated by the cooperatives or other utility companies, where no exposure to electrical lines is present.

The following changes will be made to 16VAC25-73-50, Electrical hazards:

16VAC25-73-50. Electrical hazards.

"A. General.

1. All overhead and underground electrical conductors and all communication wires and cables shall be considered energized with potentially fatal voltages. **This section does not apply to line-clearance tree trimming as defined in 16VAC25-73-20, which shall be conducted in accordance with 16VAC25-90-1910.269. Non-line-clearance tree trimming wrk around overhead high voltage lines covered by §§ 59.1-406 through 59.1-414 of the Code of Virginia, Overhead High Voltage Line Safety Act (Act)(oltage in excess of 600 volts as defined in the Act), shall be conducted in accordance with the Act. Non-line-clearance tree trimming work around overhead electrical lines of 600 volts or less not covered by the Act shall be conducted in accordance with 16VAC25-90-1910.333(c)(1).**

(Source: TH-03, Final Regulation Agency Background Document, September 8, 2009).

Comment: "The [Virginia, Maryland, and Delaware Association of Electric] cooperatives are regulated at various levels, including by the U.S. Department of Agriculture's Rural Utilities Service and the Virginia State Corporation Commission. In addition, tree trimming work, when performed by electric utilities in Virginia, complies with federal OSHA requirements, see 29 C.F.R. § 1910.269(r), and American National Standards Institute standard Z133.1. The cooperatives have a variety of tree trimming operations: some have an arborist on staff and conduct all trimming in-house, others use all outside contractors, still others use a hybrid arrangement somewhere in between the two. Whatever the case, utility tree trimming operations in Virginia are guided by standards set forth by the Division of Energy Regulation of the State Corporation Commission. The cooperatives respectfully submit that safety requirements for right-of-way maintenance and other utility operations are adequately regulated outside the scope of the Proposed Rule."

Response: With regard to a broader exemption that would cover all electric utility operations performed by both cooperatives and large utility companies, the Department agrees that additional language in the Applicability section of the

proposed regulation would help to clear up any confusion. The Department generally agrees that 16 VAC 25-90-1910.269, Electric power generation, transmission, and distribution, should remain the primary regulation applicable to the industry, whenever exposure to tree-related electrical hazards covered by that regulation are present.

However, there are at least three tree-related activities not directly addressed by 16 VAC 25-90-1910.269, for which further clarification is needed. These activities present hazards to employees which need to be addressed by either the proposed regulation or the Logging Standard, 16 VAC 25-90-1910.266, to assure similarly situated employees are provided equivalent protections, no matter what the tree trimming/removal activity involves. This regulatory coverage is needed, because although 16 VAC 25-90-1910.269 contains requirements in some areas that are covered by the proposed regulation (e.g., Brush chippers, Sprayers and related equipment, Stump cutters, Rope, Fall protection), the regulation is silent on such essential requirements as Climbing and tie-in requirements, Rigging, and Tree Removal, all of which come into play in the following tree trimming/removal activities:

1. Right-of-way clearance for **new** power generation, transmission and distribution lines, where no exposure to electrical lines is present.
2. Land clearing activities associated with the construction of new power generation, transmission and distribution facilities, where no exposure to electrical lines in present.
3. Tree trimming operations around buildings, offices, facilities owned or operated by the cooperatives or other utility companies, where no exposure to electrical lines is present.

Section 16 VAC 25-73-10.C. currently addresses tree removal activities where the primary objective is land clearing in preparation for construction, real estate development or other related activities, and makes clear that such activities are exempt from the proposed regulation and covered by the Logging Standard, 16 VAC 25-90-1910.266; unless the tree removal activities are directly supervised by a qualified arborist, in which case the proposed regulation would still apply. The exemption as currently drafted clearly addresses **item 2** above and would offer the described options for compliance to the cooperatives and utility companies without further change.

The Department recommends addressing **item 1** above by adding the following language to 16 VAC 25-73-10.C:

....
“This regulation does not apply to tree removal activities where the primary objective is land clearing in preparation for construction, real estate development, **right-of-ways for new utility installations**, or other related activities, unless directly supervised by a qualified arborist. Such activities are covered by 16VAC25-90-1910.266.

With regard to **item 3** above, such activities clearly fall under the current scope of the proposed regulation, regardless of whether the tree trimming work is done by a subcontractor to the cooperative or utility company, or by their own employees, so no additional change to the proposed regulation is necessary. (Source: TH-03, Final Regulation Agency Background Document, September 8, 2009).

(Source: TH-03, Final Regulation Agency Background Document, September 8, 2009).

Comment: “16VAC25-73-10(C). The latter part of the statement should be revised. Our suggested new language is underlined: This regulation does not apply to tree removal activities where the primary objective is land clearing in preparation for construction, real estate development, or other related activities, unless directly supervised by a qualified arborist or qualified line clearance arborist.”

One would probably infer that the original reference to “qualified arborist” encompasses the qualified line clearance arborist; but since the latter term is separately defined in the proposal, it should be made unmistakably clear that either a qualified arborist or a qualified line clearance arborist may supervise a land clearing operation, making said operation subject to the proposed standard.”

Response: The Department agrees with the Commenter’s proposed language change and recommends the following change to the regulatory language:

16VAC25-73-10.C.

“C.

....

This regulation does not apply to tree removal activities where the primary objective is land clearing in preparation for construction, real estate development, or other related activities, unless directly supervised by a qualified arborist **or qualified line-clearance arborist**. Such activities are covered by 16VAC25-90-1910.266.

(Source: TH-03, Final Regulation Agency Background Document, September 8, 2009).

16VAC25-73-40.E,

E. Fire protection.

1. Equipment shall be refueled only after the engine has stopped. Spilled fuel shall be removed from equipment before restarting.
2. Equipment shall not be operated within 10 feet (3.05 m) of refueling operations or areas in which refueling has recently taken place.
3. Flammable liquids shall be stored, handled, and dispensed from approved containers.
4. Smoking shall be prohibited when handling or working around flammable liquids.
5. Clothing contaminated by flammable liquid shall be changed as soon as possible.
6. Open flame and other sources of ignition shall be avoided.

Comment: The provisions in Section 25-73-40(E) address fire protection, but do not mention the burning of vegetation in open areas. ULCC member companies may perform open burning, provided that it is permitted in the local jurisdiction. VOSHA should clarify that open burning is permitted.”

Response: See response to this Commenter above which exempts “line-clearance tree trimming” activities, as defined in 16VAC25-73-20, from the proposed regulation.

In addition, the language questioned by the Commenter is original to ANSI Z133.1-2006. As previously mentioned, it has been the Department’s stated intent, at the request of the tree trimming industry, to use as much of ANSI Z133.1-2006 as possible because of the familiarity of the industry with the national consensus standard, to limit costs of compliance as much as possible, to aid in ease of developing standardized training programs, to ease the burdens of compliance as much as possible for multi-state employers, and because it represents the input of many varied interest groups, including employer representatives, employee representatives, government agencies, public utility companies, safety professionals and others. Five of ULCC’s members were participants in the development of ANSI Z133.1-2006 (Asplundh Tree Expert Co., The Davey Tree Expert Co., Lewis Tree Service, Inc., McCoy Tree Surgery, Inc., and Wright Tree Service, Inc.).

The Department does not recommend any change to the proposed regulatory language.

(Source: TH-03, Final Regulation Agency Background Document, September 8, 2009).

16VAC25-73-60.A.7.

7. If previously installed by the manufacturer, step surfaces and platforms on mobile equipment shall be properly maintained.

Comment: Second, Section 25-73-60(A)(7) proposes that “platforms on mobile equipment” be “skid resistant.” This provision is taken directly out of the ANSI standard. ULCC member companies, many of which are on the

ANSI Committee, have never interpreted this provision to require skid resistance for aerial lifts. The ULCC requests that VOSHA confirm that interpretation.”

Response: With regard to 16VAC25-73-60.A.7, Va. Code §40.1-22(5) provides in part that:

“Such standards [as adopted by the Virginia Safety and Health Codes Board] when applicable to products which are distributed in interstate commerce shall be the same as federal standards unless deviations are required by compelling local conditions and do not unduly burden interstate commerce.”

The requirement in 16VAC25-73-60.A.7 is a provision that could be interpreted to place a burden on manufacturers of covered mobile equipment to install skid resistant materials, and could therefore be covered by Va. Code §40.1-22(5). To avoid possible legal ramifications of this code section, the Department recommends the following language change:

16VAC25-73-60.A.7.

“7. **If previously installed by the manufacturer, skid resistant** ~~S~~ step surfaces and platforms on mobile equipment shall be **properly maintained skid resistant**.”

(Source: TH-03, Final Regulation Agency Background Document, September 8, 2009).

16VAC25-73-60.A.9.

9. Riding or working outside or on top of units shall not be permitted unless the units are designed for that purpose or the operator is performing maintenance or inspection. Fall protection shall be provided for employees performing maintenance on top of units six feet or more above a lower level. Fall protection is not required when performing inspections on top of units six feet or more above a lower level.

Comment: 16VAC25-73-60(A)(9). The second sentence of this paragraph, “Fall protection shall be provided for employees performing maintenance or inspection on top of units six feet or more above a lower level,” does not appear in the ANSI Z133 Standard, and for good reason. The dilemma centers on aerial lift devices with what are called cab guards or “headache racks.”

The cab guard is primarily to protect the truck cab and any occupants from falling debris. Secondly on some units, the operator must take one or two steps on the top of the cab guard to climb into the bucket. Most lift manufacturers and employers require the lift operator to perform a brief visual inspection of the upper boom’s critical components and again, this brief inspection is performed from the top of the cab guard.

Whether alighting into the bucket or performing the brief inspection, there is no feasible form of fall protection that can be provided. Guardrails on top of the cab guard interfere with the boom’s rotation and could easily cause catastrophic damage to the boom or bucket. The fall restraint or fall arrest device has not yet been invented that would allow the operator the necessary mobility to perform the safety inspection and prevent the operator from contact with some lower level, including the road surface.

The current language of Z133 from which this is borrowed minimizes any risk to a negligible level, akin to climbing a ladder. Work shall not be performed from the top of the cab guard. Certainly we would agree that if inspection or maintenance that must be performed is more extensive than a very brief, visual inspection, then the employer must make provisions for fall protection.

The second sentence of the proposed 16VAC25-73-60(A)(9) must be stricken.”

Response: The Department agrees in part and disagrees in part with the Commenter’s suggested language changes.

First, the Department notes that the provision in question applies to all vehicles and mobile equipment, so deleting the

suggested language merely to address a concern about aerial lift devices, unnecessarily weakens employee fall protection requirements.

Second, the Department agrees that inspections can be reasonably excluded from the requirement for fall protection, since the employee when mounting the vehicle will normally have the use of hands and feet for climbing as would be the case on a ladder (in fact, there is nothing in the proposed regulation that would prohibit the use of a ladder to conduct the inspection in lieu of climbing on the vehicle). There is also precedence in OSHA regulations for exempting employees from using fall protection while conducting inspections in 16 VAC 25-175-1926.500(a)(1), Fall Protection (in Construction):

“The provisions of this subpart do not apply when employees are making an inspection, investigation, or assessment of workplace conditions prior to the actual start of construction work or after all construction work has been completed.”

OSHA explained this exception to the general fall protection requirements in the preamble to the regulation:

“OSHA has set this exception because employees engaged in inspecting, investigating and assessing workplace conditions before the actual work begins or after work has been completed are exposed to fall hazards for very short durations, if at all, since they most likely would be able to accomplish their work without going near the danger zone. Also, the Agency's experience is that such individuals who are not continually or routinely exposed to fall hazards tend to be very focused on their footing, ever alert and aware of the hazards associated with falling. These practical considerations would make it unreasonable, the Agency believes, to require the installation of fall protection systems either prior to the start of construction work or after such work has been completed. Such requirements would impose an unreasonable burden on employers without demonstrable benefits.

OSHA notes that the operations covered by paragraph (a)(1) are normally conducted in good weather, that the nature of such work normally exposes the employee to the fall hazard only for a short time, if at all, and that requiring the installation of fall protection systems under such circumstances would expose the employee who installs those systems to falling hazards for a longer time than the person performing an inspection or similar work. In addition, OSHA anticipates that employees who inspect, investigate or assess workplace conditions will be more aware of their proximity to an unprotected edge than, for example, a roofer who is moving backwards while operating a felt laying machine, or a plumber whose attention is on overhead pipe and not on the floor edge.”

59 Fed. Reg. 40672-40753

Third, while inspections can be classified as potentially of short duration, maintenance activities cannot be routinely assumed to be of short duration. Maintenance activities also involve employees using their hands to do the actual maintenance work, instead of being able to use their hands to hold onto parts of the vehicle/equipment to avoid falls. Accordingly, the Department does not recommend that fall protection requirements be eliminated for maintenance activities. As referenced above, there is nothing to prohibit an employer from allowing its employees to use ladders, scaffolds, scissor lifts, etc., for maintenance activities, all of which would avoid the need for guard rails or a personal fall arrest system by the employee.

The Department recommends the following change to the regulatory language:

16 VAC 25-73-60.A.9.

“9. Riding or working outside or on top of units shall not be permitted unless the units are designed for that purpose or the operator is performing maintenance or inspection. Fall protection shall be provided for employees performing maintenance ~~or inspection~~ on top of units six feet or more above a lower level. **Fall protection is not required when performing inspections on top of units six feet or more above a lower level.**”

(Source: TH-03, Final Regulation Agency Background Document, September 8, 2009).

16VAC25-73-60.B.1.

9. Riding or working outside or on top of units shall not be permitted unless the units are designed for that purpose or the operator is performing maintenance or inspection. Fall protection shall be provided for employees performing maintenance on top of units six feet or more above a lower level. Fall protection is not required when performing inspections on top of units six feet or more above a lower level.

Comment: VOSHA proposes throughout the regulation that employers must “tag” and “remove from service” any equipment that is “damaged.” See e.g. Section 25-73-60(B), (C) and (D). It is not clear why damaged equipment must be both tagged and removed from service. Employers could certainly tag equipment warning employees not to use it, or could remove the equipment from the site or disable it so that it cannot be used.

The ULCC suggests amending the language to read as follows: “Damaged [insert type of equipment] must be tagged or removed from service such that employees cannot use the [equipment].”

Response: See response to this Commenter above which exempts “line-clearance tree trimming” activities, as defined in 16VAC25-73-20, from the proposed regulation.

The Department has encountered numerous instances during VOSH inspections where employers have removed from service such items as damaged ladders or damaged extension cords, which were then put back in to use by an employee that did not realize the damaged item was not to be used, because they had not been informed of the employer’s action. Tagging items removed from service provides that notice to any employee on any workshift that the item is damaged and not to be used.

The Department does not recommend any change to the proposed regulatory language.

(Source: TH-03, Final Regulation Agency Background Document, September 8, 2009).

16VAC25-73-60.B.22.

22. All underground hazards shall be located prior to operating aerial lift devices off-road. These hazards could include natural gas tanks, underground oil tanks, and septic systems.

Comment: Proposed Section 25-73-60(B)(22) states that employers “shall locate” underground hazards prior to using aerial devices off-road. Proposed Section 25-73-60(E)(6) states that the operator “shall be aware” of underground utilities prior to performing work with a stump cutter.

While the ULCC understands the intent of this provision, it is simply not practical. First, there is no evidence that the use of aerial devices or stump cutters in off-road locations typically poses a hazard from underground utilities. Second, requiring line-clearance arborist employers to contact providers of underground utilities each and every time an aerial device or stump cutter is used off-road would be time-consuming and costly, and would most often provide little or no safety benefit. It is evident from the proposal that VOSHA has not tried to quantify these costs or assessed whether there would be a safety benefit. Given the lost work time that would result if these provisions are adopted, the costs would be substantial.”

Response: See response to this Commenter above which exempts “line-clearance tree trimming” activities, as defined in 16VAC25-73-20, from the proposed regulation.

In addition, the language questioned by the Commenter is original to ANSI Z133.1-2006 - see Agency Response to item 10 above.

With regard to stump cutters, their use could constitute an excavation under Va. Code § 56-265.14, et. seq., the Underground Utility Damage Prevention Act, which provides in §56-265.17, that:

“...no person, including operators, shall make or begin any excavation or demolition without first notifying the notification center for that area. Notice to the notification center shall be deemed to be notice to each operator who is a member of the notification center. The notification center shall provide the excavator with the identity of utilities that will be notified of the proposed excavation or demolition. Except for counties, cities, and towns, an excavator who willfully fails to notify the notification center of proposed excavation or demolition shall be liable to the operator whose facilities are damaged by that excavator, for three times the cost to repair the damaged property, provided the operator is a member of the notification center. The total amount of punitive damages awarded under this section, as distinguished from actual damages, shall not exceed \$10,000 in any single cause of action.”

(Source: TH-03, Final Regulation Agency Background Document, September 8, 2009).

16VAC25-73-60.G.9.

9. The use of a crane to hoist a qualified arborist into position is prohibited, except when the use of conventional means of reaching the work area, such as, but not limited to, an aerial lift, would be more hazardous or is not physically possible because of worksite conditions. If the above exception applies, a qualified arborist may be hoisted into position utilizing a crane if the crane manufacturer's specifications and limitations do not prohibit such use, and any fall protection requirements of the crane manufacturer are complied with, and the arborist is tied in with an arborist climbing line and arborist saddle and secured to a designated anchor point on the boom line or crane....

Comment: “16VAC25-73-60(G)(9). We take exception solely to the phrase, “...if the crane manufacturer's specifications and limitations do not prohibit such use.” This one short phrase completely undermines the purpose of the remainder of (G)(9).

ANSI Z133.1 provides VOSH with the most contemporary, most realistic and safest guidance for arborist operations employing cranes, bar none. As VOSH already knows, ANSI Z133.1-2006 contains provisions allowing the use of a crane to lift (hoist) a qualified arborist, using an arborist climbing line and arborist saddle, and secured to a designated anchor point on the boom line or crane. The standard goes on to lay out two pages of requirements that must be met by the overall crane operation before the climber can be hoisted, all of which VOSH proposes to adopt.

By contrast, OSHA general industry regulation and other crane standards prohibit lifting a worker on the load line, but are silent with respect to the circumstances faced by arborists with the removal of trees too dangerous to climb, because such circumstances were not considered when these documents were drafted.

Specifically, the arborists' practice of being hoisted by a crane has been deemed to be contrary to 29 CFR §1910.180, Crawler, Locomotive and Truck Cranes. However, we are convinced that this guidance, when it was written over 30 years ago, was intended to prevent a worker from placing his foot into the crane hook, grabbing the load line and being hoisted into the air. That practice bears no semblance whatsoever to the carefully controlled, safe work practice utilized by arborists.

Paradoxically, if crane manufacturer's operating guidelines address the practice at all, they mimic §1910.180 or other outdated and inappropriate guidance on the matter.

This concern of hoisting a worker with a crane has been recognized repeatedly by both federal and state agencies, as well as industry professionals. For example, in 1993, Mr. Roy Gurnham of the Directorate of Construction issued a letter of interpretation stating that “OSHA has already determined that when the use of a conventional means of access to an elevated worksite would be impossible or more hazardous, a violation of 1910.180(h)(3)(v) will be treated as de minimis if the employer has complied with the provisions set forth in 1926.550(g)(3), 1926.550(g)(4), 1926.550(g)(5), 1926.550(g)(6), 1926.550(g)(7) and 1926.550(g)(8).” The exception

that OSHA made was to allow the use of a personnel basket, sometimes called a man-cage, to hoist workers, under construction conditions, on the load line. With this interpretation, OSHA made an important exception to a dated rule that benefited worker safety.

Our industry has attempted to use man-cages to enter trees under certain conditions, but at times the man-cage can actually place the tree worker in an extremely hazardous situation. Often, the lack of balance as well as the interference from the cables and metal structure while attempting to use a chain saw creates a situation that increases risk, even jeopardizing the lives of the workers. It is, in part, for these reasons that our industry's safety professionals developed procedures for tying into a crane above the headache ball or on a clevis near the jib or boom tip with an arborist saddle and climbing line meeting ANSI Z133 requirements. As an industry, we have been using cranes this way for almost 50 years with no fatalities.

This practice was recognized and condoned by California OSHA in 2004 when it adopted an emergency amendment, which subsequently became a permanent regulation, in their tree access standard, Title 8, Section 3427. Their original justification was: "[f]or the preservation of the public safety and the safety of the affected workforce, it is necessary to immediately adopt standards that would prescribe a safe alternative means and method to access trees." Amendments to Title 8, Section 3427 now permit a qualified tree worker to enter a tree suspended by the closed safety type hook of a crane when a tree cannot be safely accessed by conventional methods permitted in existing standards.

In addition, Oregon OSHA has issued a letter of interpretation condoning the practice of hoisting a climber, and Washington State OSHA regulations spell out under what circumstances a "boatswain's chair" may be used to hoist a worker with a crane. To further understand this issue, we point to OSHA's industry-specific standards for marine terminals contained in 29 CFR 1917.45(j)(1)(ii) that permit the employee to be hoisted by a crane or derrick in a "boatswain's chair" or other device rigged to prevent it from accidental disengagement from the hook or supporting member.

For clarification, a boatswain's chair is a seat supported by slings attached to a suspended rope, designed to accommodate one employee in a sitting position. It is an archaic term for something that was the precursor to the modern-day work-positioning arborist saddle we use in a tree or on a crane load line.

The overarching reason that the tree worker is hoisted by the crane or uses the crane as a tie-in point is because it presents the *safest alternative* for that removal operation. Moreover, in all of the thousands and thousands of hazardous tree removal jobs in which arborists have used cranes, not one climber in our industry has been killed by using the ANSI-compliant and safe work practice of being hoisted by the crane.

Juxtaposed against this statistic are at least 11 tree workers who died in calendar years 2006 and 2007 when the tree they were in failed. Indeed, there are several fatalities among the 27 "tree trimming" accidents cited by VOSH in which a tree failed while the climber was in it. Exercising hindsight, a crane would have offered a far more safe and secure tie-point to any one of them.

In the interest of worker safety and in consideration of the fact that it is writing a standard applicable solely to arborist operations and not the full scope of all crane operations, VOSH needs to make a clean break from old crane standards and their one-size-fits-all requirements. The phrase, "...if the crane manufacturer's specifications and limitations do not prohibit such use" must be removed from 16VAC25-73-60(G)(9)."

Response: The Department respectfully disagrees with the Commenter's recommendation that the regulation be amended to permit an employer to use a crane contrary to its manufacturer's specifications and limitations:

First, the Department disagrees with the Commenter's assertion that the language cited "completely undermines the purpose of the remainder of (G)(9)." That would only be accurate if all crane manufacturer's prohibited the practice, but the Department has no information to indicate that is the case. Even the commenter notes "aradoxically, if crane manufacturer's operating guidelines address the practice at all, they mimic §1910.180 or other outdated and inappropriate guidance on the matter," which certainly implies that some manufacturers do not address the practice in their crane manuals. If a manufacturer does not reference the practice, then the employer can proceed with using a crane under the conditions listed in 16VAC25-73-60.G.9.

Second, it is longstanding policy of the Department to require employers to comply with manufacturer's specifications and limitations during the use of vehicles, equipment, machinery, tools, etc., through the use of the "General Duty Clause" (Va. Code §40.1-51.1(a)); specific requirements in existing OSHA standards (e.g., 1926.550(a)(1)), and more recently through VOSH regulation §16 VAC 25-60-120, which provides:

"The employer shall comply with the manufacturer's specifications and limitations applicable to the operation, training, use, installation, inspection, testing, repair and maintenance of all machinery, vehicles, tools, materials and equipment; unless specifically superseded by a more stringent corresponding requirement in Part 1910. The use of any machinery, vehicle, tool, material or equipment which is not in compliance with any applicable requirement of the manufacturer is prohibited, and shall either be identified by the employer as unsafe by tagging or locking the controls to render them inoperable, or be physically removed from its place of use or operation."

It simply is not the policy of the Department to sanction through regulation a practice that would abrogate a manufacturer's specifications and limitations on the safe use of its machinery, vehicles, tools, materials and equipment. If, as the Commenter suggests, the manufacturer's limitations are based on outdated ideas, and safety of the employees being lifted is no longer a concern, it is up to the industry to reach out to the manufacturers to get those limitations changed.

(Source: TH-03, Final Regulation Agency Background Document, September 8, 2009).

16VAC25-73-60.I.10.

10. The winch shall never be used with personnel, including the operator, within the span of the winch cable and the winch.

Comment: "16VAC25-73-60(I)(10). It is infeasible to comply with the statement: "The winch shall never be used with personnel, including the operator, within the span of the winch cable and the winch."

The statement could be interpreted to mean that workers cannot be situated anywhere between the winch and where the winch line is attached to a limb, even if they are to the side of the winch line. We believe that the original intent of the Z133 language was to address the hazard of a worker in very close proximity being clipped by a winch line that is suddenly tensioned. If this is the case, there has to be a better way to phrase it.

We suggest the following revision:

"10. All personnel shall be sufficiently clear of the winch and winch cable (line) before the winch is activated and while the winch cable is under tension so as to avoid being struck."

Response: The Department respectfully disagrees with the Commenter's contention that compliance with the provision would be infeasible, and that the provision may have only been designed to address the hazard of a worker being clipped by a winch line that is suddenly tensioned. The Department does not recommend adoption of the language proposed by the Commenter.

First, the Department notes that the language in question is original to ANSI Z133.1-2006, with no changes having been made by the Department. It has been the Department's stated intent, at the request of the tree trimming industry, and the TCIA in particular, to use as much of ANSI Z133.1-2006 as possible because of the familiarity of the industry with the national consensus standard, to limit costs of compliance as much as possible, to aid in ease of developing standardized training programs, to ease the burdens of compliance as much as possible for multi-state employers, and finally because it represents the input of many varied interest groups, including employer representatives, employee representatives, government agencies, public utility companies, safety professionals and others. TCIA was a participant in the development of ANSI Z133.1-2006.

Second, while Department personnel were not part of the ANSI Committee and cannot speak directly to the intent of the original language, there are a number of potential hazards associated with winches other than the winch line being

suddenly tensioned. They include the winch line breaking under tension which would expose employees to whipping winch lines; a catastrophic failure of the winch or the winch anchoring point, which would not only expose employees to a winch line out of control, but could expose them to flying parts from the winch itself; or a failure of the tree while the winch line was under tension which would expose employees to both falling tree sections and the out-of-control winch line. The Department believes the hazards of using a winch line under tension are sufficiently dangerous to warrant such a strong prohibition as is described in the original ANSI language. Employees need to be required to be well-clear of the winch line path while it is under tension, with only the tree climber and the winch operator in any proximity to the winch line while it is under tension, with those two employees not being in the path but on either end of the winch line connection points.

(Source: TH-03, Final Regulation Agency Background Document, September 8, 2009).

16VAC25-73-90.A.9.

9. The qualified arborist shall assure that each component of the climbing system is approved by the manufacturer for its intended use as well as its compatibility with other components of the climbing system.

Comment: “16VAC25-73-90(A)(9). The following statements must be re-phrased to clarify their intent: “All components of a climbing system (e.g., ropes, pulleys, etc.) shall meet the manufacturer's design, specifications, and limitations. Components from different climbing systems shall not be combined without prior approval of the manufacturers.”

Perhaps it is because these statements are not derived from ANSI Z133.1-2006 language that we cannot decipher their intent. As goals they would be unattainable, and as VOSH requirements, they would be both unattainable to the employer and unenforceable by VOSH.

No manufacturer that we are aware of creates a complete climbing system, although some manufacturer may produce more than one of the main components. Competition and product liability being what they are, Company X is not likely to grant “prior approval” for the use of Company Y’s rope, if Company X manufactures both a rope and a saddle. Even if a manufacturer wanted to give prior approval, it could not possibly anticipate all the combinations of components that the arborist may wish to employ.

To clarify what we believe is VOSH’s intent with this paragraph, we suggest the following wording:

16VAC25-73-90(A)(9). The qualified arborist shall assure that each component of the climbing system is approved by the manufacturer for its intended use as well as its compatibility with other components of the climbing system.

Misunderstanding and confusion stems from the fact that “climbing system” was never defined in Z133. We suggest the following definition:

“Climbing system” means the various pieces of gear (components) that the arborist relies upon to secure himself/herself while aloft in the tree, such as but not limited to: an arborist saddle, one or more arborist climbing lines, and one or more lanyards as well as carabiners and/or snap hooks approved by their manufacturer for climbing.

On behalf of our members and the hundreds of workers this proposal potentially affects, we thank you for the opportunity to comment. We sincerely appreciate the dedication and diligence of the VOSH personnel who brought the proposal to this point, and we look forward to working with VOSH for the expedient adoption of an effective arborist standard to keep our workforce safe.”

Response: The original language was developed in response to discussions held during the Department’s meeting with interested parties of June 10, 2008, which was attended by TCIA representatives. Nonetheless, the Department agrees with the Commenter’s recommendation to amend 16VAC25-73-90.A.9., as follows:

16VAC25-73-90.A.9.

~~“9. All components of a climbing system (e.g., ropes, pulleys, etc.) shall meet the manufacturer's design, specifications, and limitations. Components from different climbing systems shall not be combined without prior approval of the manufacturers. The qualified arborist shall assure that each component of the climbing system is approved by the manufacturer for its intended use as well as its compatibility with other components of the climbing system.”~~

The Department agrees with the Commenter's recommendation to add a definition of "climbing system", as follows:

16VAC25-73.20

"Climbing system" means the various pieces of gear or components that the arborist relies upon to secure himself/herself while aloft in the tree, such as but not limited to: an arborist saddle, one or more arborist climbing lines, and one or more lanyards as well as carabiners and/or snap hooks approved by their manufacturer for climbing.

(Source: TH-03, Final Regulation Agency Background Document, September 8, 2009).

16VAC25-73-90.E.13.

13. All workers other than the individual engaged in manual land-clearing operations shall be at least two tree lengths away from the tree or trunk being removed. This requirement does not apply in the presence of site restrictions, such as waterways or cliffs. Other arborists and workers shall be beyond the trees' striking range and at a distance as close to twice the tree's height as possible.

NOTE: This regulation does not apply to tree removal activities where the primary objective is land clearing in preparation for construction, real estate development, or other related activities, unless directly supervised by a certified arborist. Such activities are covered by 16VAC25-90-1910.266.

Comment: "Second, the note to Section 25-73-90(E)(13) is similar to proposed Section 25-73-10(C), but states that the work must be "directly supervised by a *certified* arborist." (emphasis added). The term "certified arborist" is not defined, and the ULCC is unclear about what VOSHA means by using this term. To the extent that VOSHA is considering requiring arborists to be certified by the International Society of Arboriculture (ISA), the ULCC urges VOSHA to reject that position. Given the statement in the preamble to the regulation, VOSHA has apparently decided that requiring ISA certification would be expensive and provide little safety benefit. As such, the use of the term "certified" appears to be a mistake. VOSHA should correct Section 25-73-90(E)(13) to state that work "directly supervised by a qualified arborist or qualified line-clearance arborist" is covered by the regulation and is therefore not "logging."

Response: The Department agrees with the Commenter and recommends the following language change:

16VAC25-73-90.E.13.

13. All workers other than the individual engaged in manual land-clearing operations shall be at least two tree lengths away from the tree or trunk being removed. This requirement does not apply in the presence of site restrictions, such as waterways or cliffs. Other arborists and workers shall be beyond the trees' striking range and at a distance as close to twice the tree's height as possible.

NOTE: This regulation does not apply to tree removal activities where the primary objective is land clearing in preparation for construction, real estate development, or other related activities, unless directly supervised by a **certified qualified** arborist. Such activities are covered by 16VAC25-90-1910.266.

16VAC25-73-90.E.13. CONTINUED

Comment: “Third, the term “directly supervised” is not defined. On some line-clearance projects, multiple crews consisting of some qualified line-clearance arborists and some trainees may be supervised by a single foreman. The foreman and other qualified line-clearance arborists are involved in assessing the hazards of the job and planning the work pursuant to the job briefing process, but may not be directly involved in the work tasks, and may even leave the job site at certain times during the work. Given these factors, VOSHA must clarify that the qualified line-clearance arborist is not required to be directly involved in each job task. Rather, a qualified line-clearance arborist must be involved in assessing the hazards, planning the work, and identifying any special measures that must be taken to mitigate hazards. VOSHA should change the language in Sections 25-73-10(C) and 25-73-90(E)(13) to read, in relevant part: “This regulation does not apply to tree removal activities where the primary objective is land clearing in preparation for construction, real estate development, or other related activities, unless a qualified arborist or qualified line-clearance arborist assesses the work, identifies potential hazards, and identifies any protective measures or work methods that must be followed during the work.”¹

Response: The Department respectfully disagrees with the Commenter’s suggested change and does not recommend any change to the proposed regulation. The intent of the language referenced is to assure, that since the more stringent requirements contained in the Logging Standard would not have to be complied with, the immediate presence of and direct supervision by a qualified arborist or qualified line-clearance arborist will provide an added level of protection to prevent accidents and avoid employee exposure to tree felling hazards.

(Source: TH-03, Final Regulation Agency Background Document, September 8, 2009).

¹ The introduction to the regulation states that VOSHA currently applies the Logging standard to work involving the felling of any tree. This policy is not consistent with federal OSHA’s. See Federal OSHA Compliance Directive 02-01-045 (August 21, 2008). Moreover, applying the Logging standard under these circumstances raises serious due process concerns in that line-clearance employers arguably have no notice that they are subject to the Logging standard, particularly given that OSHA did not consider or evaluate the impact of the logging standard on line-clearance or tree care industries when the standard was promulgated.

Appendix C

List of Tree Trimming Regulations Subsections, IMIS Codes and Corresponding Virginia Administration Code

| | | | |
|------------------|---------------------|----------------|--------------------|
| TREE 0030 A | 16VAC25-73-30.A | TREE 0050 B 06 | 16VAC25-73-50.B.6 |
| TREE 0030 B | 16VAC25-73-30.B | TREE 0050 B 07 | 16VAC25-73-50.B.7 |
| TREE 0030 B 01 | 16VAC25-73-30.B.1 | TREE 0050 B 08 | 16VAC25-73-50.B.8 |
| TREE 0030 B 02 | 16VAC25-73-30.B.2 | TREE 0050 B 09 | 16VAC25-73-50.B.9 |
| TREE 0030 B 03 | 16VAC25-73-30.B.3 | TREE 0050 B 10 | 16VAC25-73-50.B.10 |
| TREE 0040 A 01 | 16VAC25-73-40.A.1 | TREE 0050 B 11 | 16VAC25-73-50.B.11 |
| TREE 0040 A 02 | 16VAC25-73-40.A.2 | TREE 0050 B 12 | 16VAC25-73-50.B.12 |
| TREE 0040 A 03 | 16VAC25-73-40.A.3 | TREE 0050 B 13 | 16VAC25-73-50.B.13 |
| TREE 0040 A 04 | 16VAC25-73-40.A.4 | TREE 0060 A 01 | 16VAC25-73-60.A.1 |
| TREE 0040 B 01 | 16VAC25-73-40.B.1 | TREE 0060 A 03 | 16VAC25-73-60.A.3 |
| TREE 0040 B 02 | 16VAC25-73-40.B.2 | TREE 0060 A 04 | 16VAC25-73-60.A.4 |
| TREE 0040 B 03 | 16VAC25-73-40.B.3 | TREE 0060 A 05 | 16VAC25-73-60.A.5 |
| TREE 0040 C 01 | 16VAC25-73-40.C.1 | TREE 0060 A 06 | 16VAC25-73-60.A.6 |
| TREE 0040 C 02 | 16VAC25-73-40.C.2 | TREE 0060 A 07 | 16VAC25-73-60.A.7 |
| TREE 0040 C 03 | 16VAC25-73-40.C.3 | TREE 0060 A 08 | 16VAC25-73-60.A.8 |
| TREE 0040 C 04 | 16VAC25-73-40.C.4 | TREE 0060 A 09 | 16VAC25-73-60.A.9 |
| TREE 0040 C 05 | 16VAC25-73-40.C.5 | TREE 0060 A 10 | 16VAC25-73-60.A.10 |
| TREE 0040 D 01 | 16VAC25-73-40.D.1 | TREE 0060 A 11 | 16VAC25-73-60.A.11 |
| TREE 0040 D 02 | 16VAC25-73-40.D.2 | TREE 0060 A 12 | 16VAC25-73-60.A.12 |
| TREE 0040 D 03 | 16VAC25-73-40.D.3 | TREE 0060 A 13 | 16VAC25-73-60.A.13 |
| TREE 0040 D 04 | 16VAC25-73-40.D.4 | TREE 0060 A 14 | 16VAC25-73-60.A.14 |
| TREE 0040 D 05 | 16VAC25-73-40.D.5 | TREE 0060 A 15 | 16VAC25-73-60.A.15 |
| TREE 0040 D 06 | 16VAC25-73-40.D.6 | TREE 0060 A 16 | 16VAC25-73-60.A.16 |
| TREE 0040 D 07 | 16VAC25-73-40.D.7 | TREE 0060 A 17 | 16VAC25-73-60.A.17 |
| TREE 0040 D 08 | 16VAC25-73-40.D.8 | TREE 0060 A 18 | 16VAC25-73-60.A.18 |
| TREE 0040 E 01 | 16VAC25-73-40.E.1 | TREE 0060 A 19 | 16VAC25-73-60.A.19 |
| TREE 0040 E 02 | 16VAC25-73-40.E.2 | TREE 0060 B 1 | 16VAC25-73-60.B.1 |
| TREE 0040 E 03 | 16VAC25-73-40.E.3 | TREE 0060 B 2 | 16VAC25-73-60.B.2 |
| TREE 0040 E 04 | 16VAC25-73-40.E.4 | TREE 0060 B 3 | 16VAC25-73-60.B.3 |
| TREE 0040 E 05 | 16VAC25-73-40.E.5 | TREE 0060 B 4 | 16VAC25-73-60.B.4 |
| TREE 0040 E 06 | 16VAC25-73-40.E.6 | TREE 0060 B 5 | 16VAC25-73-60.B.5 |
| TREE 0050 A 01 | 16VAC25-73-40.A.1 | TREE 0060 B 6 | 16VAC25-73-60.B.6 |
| TREE 0050 A 02 | 16VAC25-73-40.A.2 | TREE 0060 B 7 | 16VAC25-73-60.B.7 |
| TREE 0050 A 03 a | 16VAC25-73-40.A.3.a | TREE 0060 B 8 | 16VAC25-73-60.B.8 |
| TREE 0050 A 03 b | 16VAC25-73-40.A.3.b | TREE 0060 B 9 | 16VAC25-73-60.B.9 |
| TREE 0050 A 03 c | 16VAC25-73-40.A.3.c | TREE 0060 B 10 | 16VAC25-73-60.B.10 |
| TREE 0050 B 01 | 16VAC25-73-50.B.1 | TREE 0060 B 11 | 16VAC25-73-60.B.11 |
| TREE 0050 B 02 | 16VAC25-73-50.B.2 | TREE 0060 B 12 | 16VAC25-73-60.B.12 |
| TREE 0050 B 03 | 16VAC25-73-50.B.3 | TREE 0060 B 13 | 16VAC25-73-60.B.13 |
| TREE 0050 B 04 | 16VAC25-73-50.B.4 | TREE 0060 B 14 | 16VAC25-73-60.B.14 |
| TREE 0050 B 05 | 16VAC25-73-50.B.5 | TREE 0060 B 15 | 16VAC25-73-60.B.15 |

| | | | |
|-----------------|---------------------|-----------------|---------------------|
| TREE 0060 B 16 | 16VAC25-73-60.B.16 | TREE 0060 G 8 | 16VAC25-73-60.G.8 |
| TREE 0060 B 17 | 16VAC25-73-60.B.17 | TREE 0060 G 9 a | 16VAC25-73-60.G.9.a |
| TREE 0060 B 18 | 16VAC25-73-60.B.18 | TREE 0060 G 9 b | 16VAC25-73-60.G.9.b |
| TREE 0060 B 19 | 16VAC25-73-60.B.19 | TREE 0060 G 9 c | 16VAC25-73-60.G.9.c |
| TREE 0060 B 20 | 16VAC25-73-60.B.20 | TREE 0060 G 9 d | 16VAC25-73-60.G.9.d |
| TREE 0060 B 21 | 16VAC25-73-60.B.21 | TREE 0060 G 9 e | 16VAC25-73-60.G.9.e |
| TREE 0060 B 22 | 16VAC25-73-60.B.22 | TREE 0060 G 9 f | 16VAC25-73-60.G.9.f |
| TREE 0060 C 1 | 16VAC25-73-60.C.1 | TREE 0060 G 9 g | 16VAC25-73-60.G.9.g |
| TREE 0060 C 2 | 16VAC25-73-60.C.2 | TREE 0060 G 9 h | 16VAC25-73-60.G.9.h |
| TREE 0060 C 3 | 16VAC25-73-60.C.3 | TREE 0060 G 9 i | 16VAC25-73-60.G.9.i |
| TREE 0060 C 4 | 16VAC25-73-60.C.4 | TREE 0060 G 9 j | 16VAC25-73-60.G.9.j |
| TREE 0060 C 5 | 16VAC25-73-60.C.5 | TREE 0060 H 1 | 16VAC25-73-60.H.1 |
| TREE 0060 C 6 | 16VAC25-73-60.C.6 | TREE 0060 H 2 | 16VAC25-73-60.H.2 |
| TREE 0060 C 7 | 16VAC25-73-60.C.7 | TREE 0060 H 3 | 16VAC25-73-60.H.3 |
| TREE 0060 C 8 | 16VAC25-73-60.C.8 | TREE 0060 I 1 | 16VAC25-73-60.I.1 |
| TREE 0060 C 9 | 16VAC25-73-60.C.9 | TREE 0060 I 2 | 16VAC25-73-60.I.2 |
| TREE 0060 C 10 | 16VAC25-73-60.C.10 | TREE 0060 I 3 | 16VAC25-73-60.I.3 |
| TREE 0060 D 1 | 16VAC25-73-60.D.1 | TREE 0060 I 4 | 16VAC25-73-60.I.4 |
| TREE 0060 D 2 | 16VAC25-73-60.D.2 | TREE 0060 I 5 | 16VAC25-73-60.I.5 |
| TREE 0060 D 3 | 16VAC25-73-60.D.3 | TREE 0060 I 6 | 16VAC25-73-60.I.6 |
| TREE 0060 D 4 | 16VAC25-73-60.D.4 | TREE 0060 I 7 | 16VAC25-73-60.I.7 |
| TREE 0060 D 5 | 16VAC25-73-60.D.5 | TREE 0060 I 8 | 16VAC25-73-60.I.8 |
| TREE 0060 D 6 | 16VAC25-73-60.D.6 | TREE 0060 I 9 | 16VAC25-73-60.I.9 |
| TREE 0060 D 7 | 16VAC25-73-60.D.7 | TREE 0060 I 10 | 16VAC25-73-60.I.10 |
| TREE 0060 D 8 a | 16VAC25-73-60.D.8.a | TREE 0060 I 11 | 16VAC25-73-60.I.11 |
| TREE 0060 D 8 b | 16VAC25-73-60.D.8.b | TREE 0060 I 12 | 16VAC25-73-60.I.12 |
| TREE 0060 D 8 c | 16VAC25-73-60.D.8.c | TREE 0060 I 13 | 16VAC25-73-60.I.13 |
| TREE 0060 E 1 | 16VAC25-73-60.E.1 | TREE 0060 I 14 | 16VAC25-73-60.I.14 |
| TREE 0060 E 2 | 16VAC25-73-60.E.2 | TREE 0060 I 15 | 16VAC25-73-60.I.15 |
| TREE 0060 E 3 | 16VAC25-73-60.E.3 | TREE 0060 I 16 | 16VAC25-73-60.I.16 |
| TREE 0060 E 4 | 16VAC25-73-60.E.4 | TREE 0070 A 1 | 16VAC25-73-70.A.1 |
| TREE 0060 E 5 | 16VAC25-73-60.E.5 | TREE 0070 A 2 | 16VAC25-73-70.A.2 |
| TREE 0060 E 6 | 16VAC25-73-60.E.6 | TREE 0070 A 3 | 16VAC25-73-70.A.3 |
| TREE 0060 F 1 | 16VAC25-73-60.F.1 | TREE 0070 B 1 | 16VAC25-73-70.B.1 |
| TREE 0060 F 2 | 16VAC25-73-60.F.2 | TREE 0070 B 2 | 16VAC25-73-70.B.2 |
| TREE 0060 F 3 | 16VAC25-73-60.F.3 | TREE 0070 B 3 a | 16VAC25-73-70.B.3.a |
| TREE 0060 F 4 | 16VAC25-73-60.F.4 | TREE 0070 B 3 b | 16VAC25-73-70.B.3.b |
| TREE 0060 F 5 | 16VAC25-73-60.F.5 | TREE 0070 B 3 c | 16VAC25-73-70.B.3.c |
| TREE 0060 G 1 | 16VAC25-73-60.G.1 | TREE 0070 B 4 | 16VAC25-73-70.B.4 |
| TREE 0060 G 2 | 16VAC25-73-60.G.2 | TREE 0070 B 5 a | 16VAC25-73-70.B.5.a |
| TREE 0060 G 3 | 16VAC25-73-60.G.3 | TREE 0070 B 5 b | 16VAC25-73-70.B.5.b |
| TREE 0060 G 4 | 16VAC25-73-60.G.4 | TREE 0070 B 5 c | 16VAC25-73-70.B.5.c |
| TREE 0060 G 5 | 16VAC25-73-60.G.5 | TREE 0070 C 1 | 16VAC25-73-70.C.1 |
| TREE 0060 G 6 | 16VAC25-73-60.G.6 | TREE 0070 C 2 | 16VAC25-73-70.C.2 |
| TREE 0060 G 7 | 16VAC25-73-60.G.7 | TREE 0070 C 3 | 16VAC25-73-70.C.3 |

| | | | |
|----------------|--------------------|-----------------|---------------------|
| TREE 0070 C 4 | 16VAC25-73-70.C.4 | TREE 0080 E 9 | 16VAC25-73-80.E.9 |
| TREE 0070 C 5 | 16VAC25-73-70.C.5 | TREE 0090 A 1 a | 16VAC25-73-90.A.1.a |
| TREE 0070 C 6 | 16VAC25-73-70.C.6 | TREE 0090 A 1 b | 16VAC25-73-90.A.1.b |
| TREE 0070 C 7 | 16VAC25-73-70.C.7 | TREE 0090 A 1 c | 16VAC25-73-90.A.1.c |
| TREE 0070 C 8 | 16VAC25-73-70.C.8 | TREE 0090 A 1 d | 16VAC25-73-90.A.1.d |
| TREE 0070 C 9 | 16VAC25-73-70.C.9 | TREE 0090 A 2 | 16VAC25-73-90.A.2 |
| TREE 0070 C 10 | 16VAC25-73-70.C.10 | TREE 0090 A 3 | 16VAC25-73-90.A.3 |
| TREE 0070 C 11 | 16VAC25-73-70.C.11 | TREE 0090 A 4 | 16VAC25-73-90.A.4 |
| TREE 0070 C 12 | 16VAC25-73-70.C.12 | TREE 0090 A 5 | 16VAC25-73-90.A.5 |
| TREE 0070 D 1 | 16VAC25-73-70.D.1 | TREE 0090 A 6 | 16VAC25-73-90.A.6 |
| TREE 0070 D 2 | 16VAC25-73-70.D.2 | TREE 0090 A 7 | 16VAC25-73-90.A.7 |
| TREE 0070 D 3 | 16VAC25-73-70.D.3 | TREE 0090 A 8 | 16VAC25-73-90.A.8 |
| TREE 0070 D 4 | 16VAC25-73-70.D.4 | TREE 0090 A 9 | 16VAC25-73-90.A.9 |
| TREE 0070 D 5 | 16VAC25-73-70.D.5 | TREE 0090 A 10 | 16VAC25-73-90.A.10 |
| TREE 0070 D 6 | 16VAC25-73-70.D.6 | TREE 0090 A 11 | 16VAC25-73-90.A.11 |
| TREE 0080 A 1 | 16VAC25-73-80.A.1 | TREE 0090 A 12 | 16VAC25-73-90.A.12 |
| TREE 0080 A 2 | 16VAC25-73-80.A.2 | TREE 0090 A 13 | 16VAC25-73-90.A.13 |
| TREE 0080 A 3 | 16VAC25-73-80.A.3 | TREE 0090 A 14 | 16VAC25-73-90.A.14 |
| TREE 0080 A 4 | 16VAC25-73-80.A.4 | TREE 0090 A 15 | 16VAC25-73-90.A.15 |
| TREE 0080 A 5 | 16VAC25-73-80.A.5 | TREE 0090 A 16 | 16VAC25-73-90.A.16 |
| TREE 0080 A 6 | 16VAC25-73-80.A.6 | TREE 0090 A 17 | 16VAC25-73-90.A.17 |
| TREE 0080 B 1 | 16VAC25-73-80.B.1 | TREE 0090 A 18 | 16VAC25-73-90.A.18 |
| TREE 0080 B 2 | 16VAC25-73-80.B.2 | TREE 0090 A 19 | 16VAC25-73-90.A.19 |
| TREE 0080 B 3 | 16VAC25-73-80.B.3 | TREE 0090 A 20 | 16VAC25-73-90.A.20 |
| TREE 0080 B 4 | 16VAC25-73-80.B.4 | TREE 0090 A 21 | 16VAC25-73-90.A.21 |
| TREE 0080 C 1 | 16VAC25-73-80.C.1 | TREE 0090 A 22 | 16VAC25-73-90.A.22 |
| TREE 0080 C 2 | 16VAC25-73-80.C.2 | TREE 0090 A 23 | 16VAC25-73-90.A.23 |
| TREE 0080 C 3 | 16VAC25-73-80.C.3 | TREE 0090 A 24 | 16VAC25-73-90.A.24 |
| TREE 0080 C 4 | 16VAC25-73-80.C.4 | TREE 0090 B 1 | 16VAC25-73-90.B.1 |
| TREE 0080 C 5 | 16VAC25-73-80.C.5 | TREE 0090 B 2 | 16VAC25-73-90.B.2 |
| TREE 0080 C 6 | 16VAC25-73-80.C.6 | TREE 0090 B 3 | 16VAC25-73-90.B.3 |
| TREE 0080 C 7 | 16VAC25-73-80.C.7 | TREE 0090 B 4 | 16VAC25-73-90.B.4 |
| TREE 0080 D 1 | 16VAC25-73-80.D.1 | TREE 0090 B 5 | 16VAC25-73-90.B.5 |
| TREE 0080 D 2 | 16VAC25-73-80.D.2 | TREE 0090 B 6 | 16VAC25-73-90.B.6 |
| TREE 0080 D 3 | 16VAC25-73-80.D.3 | TREE 0090 B 7 | 16VAC25-73-90.B.7 |
| TREE 0080 D 4 | 16VAC25-73-80.D.4 | TREE 0090 B 8 | 16VAC25-73-90.B.8 |
| TREE 0080 D 5 | 16VAC25-73-80.D.5 | TREE 0090 C 1 | 16VAC25-73-90.C.1 |
| TREE 0080 E 1 | 16VAC25-73-80.E.1 | TREE 0090 C 2 | 16VAC25-73-90.C.2 |
| TREE 0080 E 2 | 16VAC25-73-80.E.2 | TREE 0090 C 3 | 16VAC25-73-90.C.3 |
| TREE 0080 E 3 | 16VAC25-73-80.E.3 | TREE 0090 C 4 | 16VAC25-73-90.C.4 |
| TREE 0080 E 4 | 16VAC25-73-80.E.4 | TREE 0090 C 5 | 16VAC25-73-90.C.5 |
| TREE 0080 E 5 | 16VAC25-73-80.E.5 | TREE 0090 D 1 | 16VAC25-73-90.D.1 |
| TREE 0080 E 6 | 16VAC25-73-80.E.6 | TREE 0090 D 2 | 16VAC25-73-90.D.2 |
| TREE 0080 E 7 | 16VAC25-73-80.E.7 | TREE 0090 D 3 | 16VAC25-73-90.D.3 |
| TREE 0080 E 8 | 16VAC25-73-80.E.8 | TREE 0090 D 4 | 16VAC25-73-90.D.4 |

| | | | |
|------------------|----------------------|------------------|----------------------|
| TREE 0090 D 5 | 16VAC25-73-90.D.5 | TREE 0090 E 15 c | 16VAC25-73-90.E.15.c |
| TREE 0090 D 6 | 16VAC25-73-90.D.6 | TREE 0090 E 15 d | 16VAC25-73-90.E.15.d |
| TREE 0090 D 7 | 16VAC25-73-90.D.7 | TREE 0090 E 16 | 16VAC25-73-90.E.16 |
| TREE 0090 D 8 | 16VAC25-73-90.D.8 | TREE 0090 E 17 | 16VAC25-73-90.E.17 |
| TREE 0090 D 9 | 16VAC25-73-90.D.9 | TREE 0090 E 18 | 16VAC25-73-90.E.18 |
| TREE 0090 D 10 | 16VAC25-73-90.D.10 | TREE 0090 E 19 | 16VAC25-73-90.E.19 |
| TREE 0090 D 11 | 16VAC25-73-90.D.11 | TREE 0090 E 20 | 16VAC25-73-90.E.20 |
| TREE 0090 D 12 | 16VAC25-73-90.D.12 | TREE 0090 F 1 | 16VAC25-73-90.F.1 |
| TREE 0090 D 13 | 16VAC25-73-90.D.13 | TREE 0090 F 2 | 16VAC25-73-90.F.2 |
| TREE 0090 D 14 | 16VAC25-73-90.D.14 | TREE 0090 F 3 | 16VAC25-73-90.F.3 |
| TREE 0090 D 15 | 16VAC25-73-90.D.15 | TREE 0090 F 4 | 16VAC25-73-90.F.4 |
| TREE 0090 D 16 | 16VAC25-73-90.D.16 | TREE 0090 F 5 | 16VAC25-73-90.F.5 |
| TREE 0090 E 1 a | 16VAC25-73-90.E.1.a | TREE 0090 F 6 | 16VAC25-73-90.F.6 |
| TREE 0090 E 1 b | 16VAC25-73-90.E.1.b | TREE 0090 F 7 | 16VAC25-73-90.F.7 |
| TREE 0090 E 1 c | 16VAC25-73-90.E.1.c | TREE 0090 F 8 | 16VAC25-73-90.F.8 |
| TREE 0090 E 1 d | 16VAC25-73-90.E.1.d | TREE 0090 F 9 | 16VAC25-73-90.F.9 |
| TREE 0090 E 1 e | 16VAC25-73-90.E.1.e | TREE 0090 F 10 | 16VAC25-73-90.F.10 |
| TREE 0090 E 1 f | 16VAC25-73-90.E.1.f | TREE 0090 F 11 | 16VAC25-73-90.F.11 |
| TREE 0090 E 1 g | 16VAC25-73-90.E.1.g | TREE 0090 F 12 | 16VAC25-73-90.F.12 |
| TREE 0090 E 1 h | 16VAC25-73-90.E.1.h | TREE 0090 F 13 | 16VAC25-73-90.F.13 |
| TREE 0090 E 1 i | 16VAC25-73-90.E.1.i | TREE 0090 F 14 | 16VAC25-73-90.F.14 |
| TREE 0090 E 2 | 16VAC25-73-90.E.2 | TREE 0090 G 1 | 16VAC25-73-90.G.1 |
| TREE 0090 E 3 | 16VAC25-73-90.E.3 | TREE 0090 G 2 | 16VAC25-73-90.G.2 |
| TREE 0090 E 4 | 16VAC25-73-90.E.4 | TREE 0090 G 3 | 16VAC25-73-90.G.3 |
| TREE 0090 E 5 | 16VAC25-73-90.E.5 | TREE 0090 G 4 | 16VAC25-73-90.G.4 |
| TREE 0090 E 6 | 16VAC25-73-90.E.6 | TREE 0090 G 5 | 16VAC25-73-90.G.5 |
| TREE 0090 E 7 | 16VAC25-73-90.E.7 | TREE 0090 G 6 | 16VAC25-73-90.G.6 |
| TREE 0090 E 8 | 16VAC25-73-90.E.8 | TREE 0090 G 7 | 16VAC25-73-90.G.7 |
| TREE 0090 E 9 | 16VAC25-73-90.E.9 | TREE 0090 G 8 | 16VAC25-73-90.G.8 |
| TREE 0090 E 10 | 16VAC25-73-90.E.10 | TREE 0090 G 9 | 16VAC25-73-90.G.9 |
| TREE 0090 E 11 | 16VAC25-73-90.E.11 | TREE 0090 H 1 | 16VAC25-73-90.H.1 |
| TREE 0090 E 12 | 16VAC25-73-90.E.12 | TREE 0090 H 2 | 16VAC25-73-90.H.2 |
| TREE 0090 E 13 | 16VAC25-73-90.E.13 | TREE 0090 H 3 | 16VAC25-73-90.H.3 |
| TREE 0090 E 14 | 16VAC25-73-90.E.14 | TREE 0090 H 4 | 16VAC25-73-90.H.4 |
| TREE 0090 E 15 a | 16VAC25-73-90.E.15.a | TREE 0090 H 5 | 16VAC25-73-90.H.5 |
| TREE 0090 E 15 b | 16VAC25-73-90.E.15.b | | |