

**OCCUPATIONAL SAFETY
AND HEALTH STANDARDS BOARD**

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**NOTICE OF PROPOSED MODIFICATION TO
CALIFORNIA CODE OF REGULATIONS**

**TITLE 8: Division 1, Chapter 4, Subchapter 7, Article 12,
Sections 3420 – 3428 of the General Industry Safety Orders; and
Chapter 4, Subchapter 5, Article 38, Section 2950 of the
High Voltage Electrical Safety Orders**

Tree Work, Maintenance or Removal

Pursuant to Government Code Section 11346.8(c), the Occupational Safety and Health Standards Board (Standards Board) gives notice of the opportunity to submit written comments on the above-named standards in which modifications are being considered as a result of public comments and/or Standards Board staff consideration.

On March 15, 2012, the Standards Board held a Public Hearing to consider revisions to Title 8, Division 1, Chapter 4, Subchapter 7, Article 12, Sections 3420 – 3428 of the General Industry Safety Orders; and Chapter 4, Subchapter 5, Article 38, Section 2950 of the High Voltage Electrical Safety Orders. The Standards Board received oral and written comments on the proposed revisions. The standards have been modified as a result of these comments and Standards Board consideration.

A copy of the revised text with these modifications clearly indicated is attached for your information. In addition, a summary of all oral and written comments regarding the original proposal and staff responses is included.

Any written comments regarding these modifications must be received by 5:00 p.m. on July 18, 2012, at the Occupational Safety and Health Standards Board's Office, 2520 Venture Oaks Way, Suite 350, Sacramento, California 95833 or submitted by fax to (916) 274-5743 or e-mailed to oshsb@dir.ca.gov. This proposal will be scheduled for adoption at a future Business Meeting of the Occupational Safety and Health Standards Board.

The Standards Board's rulemaking files on the proposed action are open to public inspection Monday through Friday, from 8:00 a.m. to 4:30 p.m., at the Standards Board's office.

Inquiries concerning the proposed changes may be directed to the Executive Officer, Marley Hart, at (916) 274-5721.

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Date: June 28, 2012

Marley Hart, Executive Officer

PROPOSED MODIFICATIONS
(Modifications are indicated in bold,
underline wording for new language
and bold, ~~strikeout~~ for deleted language.)

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General Industry Safety Orders

Article 12. Tree Work, Maintenance or Removal
Amend Article 12 to read as follows:

§3420. Scope and Definitions.

(a) Scope. This standard applies to work performed and equipment used in tree and ornamental palm maintenance and removal.

NOTE 1: Requirements for fall protection in date palm operations and for ladders attached to date palms are provided in the General Industry Safety Orders, Sections 3458 and 3458.1.

NOTE 2: For ~~Line~~ line clearance tree trimming operations in proximity to high voltage energized conductors, refer to ~~shall be performed in accordance with~~ the provisions of Article 38 of the High-Voltage Electrical Safety Orders, Title 8, California Code of Regulations.-

(b) Definitions.

Apex. The point at which two saw cuts meet to form a notch.

Back Cut. The cut made in the tree limb or trunk on the side opposite the intended direction of fall. [From Z133.1-2006]

Brush Chipper. Equipment used to reduce tree debris to wood chips. [Ed note: TCIA comment]

Bucking. The process of cutting the downed tree into appropriate lengths.

Climbing Hitch. A hitch used for securing a tree climber to the climbing line, permitting controlled ascent, descent, and work positioning. [Ed note: ANSI Z133.1 definition]

Climbing Lines (Climbing Ropes). Rope that is designed by the manufacturer to support the climber while aloft in a tree.

Climbing Spurs. Sharp devices strapped to a climber's lower legs to assist in climbing trees. [Ed note: TCIA comment]

Come-along. A portable, hand-operated winching device, using cable or ropes to draw two objects closer together. [Ed note: TCIA comment]

Crotch. Branch union; the angle formed by two branches in the tree.

Double-crotching. A climbing method that uses the rope's opposite end or a second rope to enhance stability.

Drop Zone. The area **established by a qualified tree worker** beneath employees aloft involved in tree work operations and/or where the potential exists for struck-by injuries from objects dropped or lowered from above.

Felling. Cutting down an entire tree or standing section of a tree in one piece, from the ground, by incorporation of a notch and back cut.

Fron. A large compound leaf of a palm.

False Crotch. A system, other than a natural crotch, used to support a climbing line. [Ed note: Z133.1-2006 definition]

Hinge. A strip of uncut wood fibers created between the face cut or notch and the back cut that helps control direction in tree felling or limb removal.

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Leader. The stem or trunk of a tree usually growing in the upright position. [Ed note: TCIA comment]

Lightning Protection System. Hardware installed in a tree intended to reduce the risk of damage from a lightning strike.

Limbing. The removal of branches from either standing or downed trees.

Notch. A wedge cut into the tree or tree section, facing the intended direction of fall to control the felling direction.

(A) Conventional Notch. A directional felling cut into the side of a tree, facing the intended direction of fall and consisting of a horizontal face cut and an angle cut above it, creating a notch of approximately 45 degrees.

(B) Humboldt Notch. A directional felling cut into the side of a tree, facing the intended direction of fall and consisting of a horizontal face cut and an angled cut below it, creating a notch of approximately 45 degrees. A Humboldt notch is usually reserved for larger trees on steep slopes.

(C) Open-faced Notch. A directional felling cut into the side of the tree, facing the intended direction of fall and consisting of two cuts creating a notch greater than 70 degrees.

Ornamental Palm. A palm that is primarily for landscaping or scenery and not grown for the production and harvesting of fruits, such as dates for personal use or sale.

Palm Frond Skirt. One or more year's accumulation of dead and drooping palm fronds at the bottom of the palm's canopy and along its trunk. [Ed note: TCIA comment]

Proximity. An area within 10 feet (3.05 meters) of energized overhead electrical conductors rated 50 kilovolts (kV) phase to phase or less. For overhead electrical conductors rated more than 50 kV phase to phase, the distance is increased 4/10 inch (10 millimeters) for each additional kV.

Prusik Loop. An endless loop of rope used to fashion the Prusik knot (**which is a sliding friction knot**). The endless loop may be spliced or knotted with, at minimum, a double fisherman's knot.

Qualified Tree Worker. An employee who, through related training and on-the-job experience, has demonstrated familiarity with the techniques and hazards of tree maintenance, removal, and the equipment used in the specific operations involved.

Root Collar. A flared area at the tree trunk base where the roots and trunk come together. [Ed note: TCIA comment]

Rope(s). Includes climbing lines and climbing ropes unless otherwise stated, and includes all other ropes and lines used in tree work, maintenance and removal operations.

Secured (person). A tree worker that is safeguarded **from unintended movement** by utilizing a climbing system attached to the tree worker and connected to a tree or other stable support.

Split Tail. A short section of climbing line with one end connected by a self-closing, self-locking carabiner or snap hook to the suspension D-rings of the tree saddle and the opposite end connected to the climbing line by a climbing hitch.

Step Potential. The voltage difference between the feet of a person standing near an energized grounded object. It is equal to the difference in voltage, given by the voltage distribution curve, between two points at different distances from the electrode.

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Structural Support System. Consists of cabling between branches, installation of rods or bracing or other hardware used to keep the tree or its limbs structurally solid.

Tied In. When a tree worker's climbing line has been run through a natural or false crotch attached to the tree worker's saddle and completed with a climbing hitch or mechanical device, permitting controlled movement and work positioning.

Tree Climbing System. A collection of equipment used together for work positioning in a tree and generally consisting of a tree worker's saddle, one or more climbing lines, one or more work positioning lanyards and associated hardware.

Tree Worker's Saddle. An arrangement of straps, fittings, and buckles or other elements in the form of a waist belt with a low attachment element or elements and connecting support encircling the legs, suitably arranged to support the body in a sitting position.

Work-positioning Lanyard. For purposes of Article 12, a component of a tree climbing system consisting of a short section of approved rope, strap or line that has a rope snap or carabiner at either end, and that is used as a point of attachment to the tree or ornamental palm for securing the worker in the tree while aloft.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

§3421. General.

(a) ~~An accident prevention program~~ Injury and Illness Prevention Program shall be ~~inaugurated~~ implemented and maintained in accordance with Section 3203 of these Orders.

(b) Each work location where tree trimming, tree repairing or removal is to be done, shall be under the direction of a qualified tree worker.

(c) Employees shall be trained and instructed in areas that include, but are not limited to the following:

(1) ~~in the~~ The hazards involved in their job assignments;

(2) ~~including the~~ The proper and safe use of all equipment, utilized in tree work, maintenance or removal operations. including, but not limited to, safety equipment and personal protective equipment.

(3) The identification of, and preventive measures relating to, common poisonous plants and harmful animals. [moved with edits from 3421(f)]

(4) Operations that include pesticide and fertilizer applications for employers whose employees are exposed to, or engage in, such operations.

(5) The recognition and avoidance of electrical hazards applicable to employee job assignments including the instructions and training outlined in Section 3423 for tree work performed in proximity to energized power lines and conductors.

(d) ~~Such training~~ Training shall be documented by the employer to certify that the employee has satisfactorily completed the training program prior to performing the job assignment without the oversight and observation of a qualified person.

(e) The employer shall provide refresher or additional training on applicable provisions of this standard for any employee who has:

(1) Been observed to violate the requirements of this Article;

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(2) Been involved in an accident or near miss incident; or

(3) Receives a new job assignment that includes the use of equipment, machinery, tools or safety-related work practices that the employee is unfamiliar with.

(f) ~~(d)~~ A job briefing shall be conducted by a qualified tree worker before each work assignment is begun. Such job briefing shall include the description of the hazards unique to a specific job the work assignment, the appropriate work procedures to be followed, work assignment the appropriate personal protective equipment needed, and any other items necessary to ensure that the work can be accomplished safely. Additional job briefings shall be held if significant changes which might affect the safety of the employees occur during the course of the work.

(g) All equipment shall be operated by qualified persons, and where required, qualified tree workers. [moved with edits from 3428(a)(1)]

(h) ~~(e)~~ **Except for the inspections required by Sections 3422(j) and 3424(a)(2), Prior to use, all other** equipment and safety devices shall be inspected **prior to daily use** by a qualified tree worker and any found to be defective shall be immediately repaired or removed from service.

~~(f) Employees shall be trained in the identification and preventive measures relating to common poisonous plants and harmful animals. [moved to 3421(c)(3)]~~

(i) ~~(g)~~ An adequate supply of potable water shall be provided in accordance with the requirements of Section 3363 of these Orders.

(j) ~~(h)~~ Where vehicular or pedestrian traffic may endanger employees, traffic control shall be provided that conforms to the requirements of the applicable provisions of Article 11 Sections 1598 and 1599 of the Construction Safety Orders, Title 8, California Code of Regulations.

(k) ~~(i)~~ Internal combustion engine fuel tanks shall be refilled in accordance with Section 3319 of these Orders.

(l) ~~(j)~~ The employer shall establish rescue procedures and provide training in emergency response. Training in aerial rescue procedures shall be provided for employees whose job assignments may require them to perform aerial rescues. ~~first-aid, cardiopulmonary resuscitation (CPR) and aerial rescue. First aid and CPR training shall be performed by a certified instructor.~~

(m) The employer shall provide training in first aid and cardiopulmonary resuscitation (CPR). For field work involving two or more employees at a work location at least two trained persons in first aid and CPR shall be available. All new employees shall be trained in first aid and CPR within 90 days of their hiring dates. First aid and CPR training shall be performed by a certified instructor and shall be equal to that of the American Red Cross or the Mine Safety and Health Administration.

(n) ~~(k)~~ When employees are required to work in areas in which the noise levels exceed the allowable standards for occupational noise, the employer shall provide hearing protection and training as required in Article 105 of these General Industry Safety Orders.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

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§3422. ~~Tree Workers' Saddles, Ropes and Tree Worker Climbing Equipment.~~

(a) Tree workers' saddles shall be approved for their intended use as defined in Section 3206 of these orders. All load bearing components of a climbing system shall have a minimum tensile strength of 5,000 pounds.

EXCEPTION: Equipment such as a mechanical ascending device, provided that it is used with a secondary device that meets the minimum tensile strength requirements of this subsection.

(b) Tree worker saddles, work positioning lanyards and climbing lines shall be designed by the manufacturer as suitable for tree climbing. This climbing equipment shall not be altered in a manner that would compromise the integrity of the equipment.

(c) Climbing lines shall be designed by the manufacturer to support the climber while aloft in a tree. Climbing lines shall be constructed from a synthetic fiber with a minimum rated tensile strength of 5,000 pounds (22.24 kilonewtons [kN]) and shall have a minimum diameter of ~~7/16~~ 1/2 inch (~~11~~ 12.7 mm). Maximum working elongation shall not exceed seven percent at a load of 500 pounds (2.22 kN).

EXCEPTION: Climbing line not less than 7/16 inch (11 mm) in diameter may be used when all of the following conditions are met: 1) the strength and elongation requirements meet that of 1/2 inch diameter climbing line; 2) the climbing line is identified by the manufacturer as suitable for tree climbing and is used in accordance with the manufacturer's recommendations; and 3) the employee has been trained in its use.

[Ed note: climbing line/rope design criteria is revised and moved from Section 3426(c)(1)]

(d) Prusik loops, split tails, and work-positioning lanyards used in a tree climbing system shall meet the minimum strength requirements for tree climbing lines. [Ed note: ANSI Z133.1-2006, Section 8.1.9]

(e) Equipment used to secure the tree worker in the tree or aerial lift shall not be used for anything other than its intended purpose.

EXCEPTION: The climbing line may be used to raise and lower tools. [Ed note: Z133.1-2006, 8.1.14]

(f) If a ~~C~~limbing lines shall not be used to lower limbs or other parts of trees is used for any purpose other than to support the worker aloft or for use as permitted in subsection (e), it shall not be used again to serve as a tree worker's climbing line. [Ed note: moved from Section 3426(c)(3)]

(g) Climbing lines shall never be left in trees unattended **when there is no qualified tree worker at the job site location.**

[Ed note: Z133.1-2006, 8.1.17]

(h) Rope ends shall be finished in a manner to prevent raveling. [Ed note: Z133.1-2006, 8.1.15]

(i) Rope and climbing equipment shall be stored and transported in a manner that prevents damage by contact with sharp tools and cutting edges, gas, oil and chemicals. [Ed note: Z133.1-2006, 8.1.16]

(j) Ropes, climbing equipment, tackle blocks and pulleys shall be inspected for damage, cuts, abrasions and/or deterioration before each use **that involves re-rigging or moving the climbing system.** Defective equipment and components shall be immediately removed from service.

[Ed note: Similar to Z133.1, 8.1.4]

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(k) Climbing lines shall not be spliced to effect repair. [Ed note: 29 CFR 1910.269(r)(7)]

(l) Climbing spurs shall be of the tree-climbing type and shall have gaffs of the type and length suitable for the tree being climbed. [Ed note: moved from Section 3426(d)(1)]

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

§3423. Electrical Hazards, General.

(a) Employees engaged in tree work operations such as, but not limited to, tree trimming, maintenance and removal in proximity to electrical equipment and conductors, shall be instructed ~~to~~ regarding the following:

(1) To consider all such equipment to be energized with potentially fatal voltages, never to be touched (contacted) either directly or indirectly.

(2) 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.

(3) 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 with its outriggers down comes into contact with a conductor.

(4) In the event of a downed energized electrical conductor or energized grounded object, there exists the hazard of step potential. [Ed Note: language in (a)(2) – (4) is similar to Z133.1-2006, 4.1.3] ~~Except as permitted in Section 3423(b), employees shall not be permitted to work closer than 6 feet to electrical equipment and conductors energized in excess of 600 volts.~~

~~(b) Work performed as described in Section 3423(a) shall be in accordance with Article 38 of the High Voltage Electrical Safety Orders, Title 8 of the California Code of Regulations.~~

(b)(1) Employees shall not perform tree trimming activities within 10 feet of high voltage energized power lines and conductors unless the employee meets the requirements of subsection (c).

(2) A qualified tree worker shall be permitted to perform tree trimming activities within 10 feet, but no closer than 1 foot, of energized low voltage (600 volts or less) power lines and conductors, provided that the qualified tree worker is trained and competent in the following:

(A) The skills and techniques necessary to identify components of an electrical system, including the ability to distinguish exposed live parts from other parts of electric equipment;

(B) The skills and techniques necessary to determine the difference between low and high voltage energized conductors and equipment;

(C) The minimum approach distances that must be maintained as specified in this section corresponding to the voltages to which an employee will be exposed, and

(D) The skills and work practices necessary to avoid contact with electrical lines and conductors, including the use of personal protective equipment and insulating or non-conductive tools.

(c) Line clearance tree trimming operations as defined in Section 2700 of the High-Voltage Electrical Safety Orders (related to electrical equipment and conductors in excess of 600 volts)

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shall be conducted in accordance with Article 38 of the High-Voltage Electrical Safety Orders. Only qualified line clearance tree trimmers, or trainees, as defined in Section 2700 of the High-Voltage Electrical Safety Orders shall be permitted to perform such line clearance tree trimming work.

NOTE: Sections 2940.2 and 2951 of the High-Voltage Electrical Safety Orders provide minimum approach distances and requirements for line clearance operations.

(d) Metal core rope used in a climbing system shall not be used in proximity to energized electrical equipment and conductors.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

§3424. Mobile Equipment.

(a) General.

(1) All vehicles and mobile equipment shall be equipped, maintained and operated in accordance with the manufacturer's recommendations, applicable safety orders of the California Code of Regulations, Title 8, California Administrative Code, and these orders. including, but not limited to, the provisions contained in this Article 12 of the General Industry Safety Orders.

(2) Prior to the daily use of vehicles and mobile equipment, visual inspections and operational checks shall be made in accordance with the manufacturer's instructions.

(3) No part of the employee's body shall be used to locate or attempt to stop a hydraulic leak. [Ed note: moved with edits from Section 3428(a)(2)]

(4) Transportation of employees and materials shall be conducted in accordance with the provisions of Article 27 of these Orders.

(5) Vehicles shall not be operated at speeds which will endanger the driver or workers. [Ed note: moved from Section 3428(a)(7)]

(b) Aerial Devices.

(1) All aerial devices used for operations within the scope of this standard shall be in accordance with Article 24 of the General Industry Safety Orders and except as modified by these orders: the provisions contained in this Article 12 of the General Industry Safety Orders.

(2) Placement of an employee in a tree with the aid of an aerial device shall be accomplished in the following manner:

(A) Prior to leaving the personnel basket or platform for entry into the tree, employees shall be safety secured to the tree in accordance with the requirements in Sections 3422 and 3427 before removing releasing the safety line personal fall protection system attached to the basket aerial device. The procedure shall be reversed when entering the personnel basket or platform from a tree.

(c) Brush Chippers.

(1) Each rotary drum tree or brush chipper or disk-type tree or brush chipper not equipped with a mechanical infeed system shall be equipped with an infeed hopper not less than 85 inches, measured from the blades or knives to ground level over the centerline of the hopper, and shall have sufficient height on its side members so as to prevent personnel from contacting the blades or knives of the machine during normal operations.

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(2) Each rotary drum tree or brush chipper or disk-type tree or brush chipper not equipped with a mechanical infeed system shall have a flexible anti-kickback device installed in the infeed hopper for the purpose of protecting the operator and other persons in the machine area from the hazards of flying chips and debris.

(3) All brush chippers shall be equipped with a locking device on the ignition system to prevent unauthorized starting of the equipment.

(4) Trailer chippers detached from trucks shall be chocked or otherwise secured.

(5) Cutting bar and blades shall be kept sharp, properly adjusted and otherwise maintained in accordance with the manufacturer's recommendations.

(6) Each disk-type tree or brush chipper equipped with a mechanical infeed system shall have a quick stop and reversing device on the infeed. The activating lever for the quick stop and reversing device shall be located across the top, along each side of, and as close to the feed end of the infeed hopper as practicable and within easy reach of the operator.

(7) Rotary drum or disk-type brush chippers shall be fed from the side of the centerline, and the operator shall immediately turn away from the feed table when the brush is taken into the rotor.

[Ed note: moved from Section 3428(a)(3)]

(8) Employees shall never place hands, arms, feet, legs, or any other part of the body on the feed table when the brush chipper is in operation or the rotor is turning. [Ed note: moved from Section 3428(a)(4)]

(9) Climbing equipment, ropes, body belts, harnesses and lanyards shall not be worn while operating chippers. [Ed note: similar to Z133.1-2006, 8.6.3]

(10) The brush chipper discharge chute or cutter housing cover shall not be opened or removed while any part of the chipper is turning or moving. [Ed note: moved with edits from Section 3428(a)(5)]

(11) Material such as stones, nails, and similar debris shall not be fed into the brush chipper.

Ropes that present an entanglement hazard shall be prevented from entering the point of operation of the chipper.

[Ed note: moved from Section 3428(a)(6) with edits]

(12) Chipper mounted winches shall be used in accordance with the manufacturer's instructions.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

§3425. Portable Power Hand Tools.

(a) ~~Gasoline Engine~~ Power Saws.

(1) Power saws shall be operated and maintained in accordance with the manufacturer's instructions.

~~(2)~~ (2) Power saws weighing more than ~~twenty~~ fifteen pounds (service weight) that are used in trees shall be supported by a separate line or tool lanyard, except when working from an aerial-lift device or during topping or removing operations where no supporting limb is available.

[Ed note: Similar to Z133.1-2000, 7.2.2 and Z133.1-2006, 6.3.3]

~~(2)~~ (3) All power saws shall be equipped with a constant pressure control that will return the saw to idling speed when released.

~~(3)~~ (4) Power saws shall be so adjusted that the chain drive will not engage at idling speed.

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(5) Power saw engines shall be stopped when carried for a distance greater than 100 feet, or in hazardous conditions such as slippery surfaces or heavy underbrush. Chain brakes shall be engaged or the saw engine stopped when the saw is carried a distance greater than 10 feet.

[moved with edits from Section 3428(a)(8)]

(6) The saw shall be stopped for all cleaning, refueling, adjustments, and repairs to the saw or engine where practicable, except where manufacturers' instructions require otherwise. [Ed note: moved from Section 3428(a)(9) with edits]

(7) Tree workers shall use a second point of attachment such as a work-positioning lanyard or double-crothed rope when operating a chain saw in a tree, unless the employer demonstrates that a greater hazard is posed by using a second point of attachment while operating chain saws in that particular situation. [Ed note: similar to Z133.1-2006, 6.3.8]

~~(b) Backpack Power Units (Pruning, Clearing, Etc.).~~

~~(4) (8) While a the powered pole saw or brush saw unit is running, no one shall be permitted within 10 feet of the cutting head of the brush saw, except the operator.~~

~~(2) (9) The power unit Powered saws shall be equipped with a quick shutoff switch readily accessible to the operator.~~

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

§3426. Hand Tools.

(a) General.

(1) Hand tools shall be used in accordance with Section 3556 of these Orders.

(2) When climbing into a tree, tree workers shall not carry hand tools and equipment in their hands unless they are tools used to assist them in their climbing. Tools other than ropes or throwlines shall not be thrown into a tree, out of a tree or between workers aloft. [See Z133.1-2006,7.1.4]

(3) Employees shall maintain a safe working distance from other employees when using hand tools. [Ed note: moved from Section 3428(a)(12)]

(4) Chopping tools shall be swung away from the feet, legs, and body. [Ed note: moved from Section 3428(a)(16)]

(5) Chopping tools shall not be driven as wedges or used to drive metal wedges unless specifically designed to be driven or to be used to drive wedges. [Ed note: moved with edits from Section 3428(a)(17)]

(6) Hand tools and equipment shall be properly stored or placed in plain sight out of the immediate work area when not in use. [Z133.1-2006, 7.1.6]

(b) Pruners and Saws.

(1) Pole pruners, pole saws, and other similar tools shall be equipped with non-conducting poles and actuating cords.

(2) Pole pruners and pole saws shall be hung securely in a vertical position to prevent dislodging. Pole pruners or pole saws shall not be hung on utility wires or cables, or left in the tree overnight. Pole saws shall be hung so that the sharp edge is away from the employee.

[Ed note: moved from Section 3428(a)(14)]

~~(c) Ropes.~~

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~~(1) Climbing ropes shall be used when working aloft in trees. These ropes shall have a minimum diameter of 1/2-inch and shall be 3 or 4 strand, first grade manila, with a nominal breaking strength of 2,300 pounds, or its equivalent in strength and durability. [Ed note: 1st sentence covered by proposed 3427(a)(2) & (3) – 2nd sentence covered by proposed 3422(c)]~~

~~(2) Polypropylene or other synthetic ropes having similar low melting points shall not be used. [Ed note: covered by 3422(b)]~~

~~(3) Climbing ropes shall not be used to lower limbs or other parts of trees. [Ed note: moved to 3422(f)]~~

~~(d) Climber Spurs.~~

~~(1) Climber spurs shall be of the tree climbing type and shall have gaffs of the type and length suitable for the tree being climbed. [Ed note: moved to 3422(l)]~~

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

§3427. Safe Work Procedures.

(a) Climbing and Access.

(1) Prior to climbing the tree, the employer shall ensure that the tree, including the root collar, is visually inspected by a qualified tree worker who shall determine and ensure a safe method of entry into the tree. The location of all electrical conductors and equipment within the work area shall be identified in relation to the work being performed. Climbing lines, ropes, lanyards, and other climbing equipment shall be inspected in accordance with the provisions of Section 3422(j) of this Article 12.

Section 3427 continued:

~~(2) The climbing line must be crocheted as soon as practicable after the employee is aloft, and a taut line hitch tied and checked. When working aloft, employees shall wear a tree workers' saddle and have at least two means of being secured, such as a climbing line and a work positioning lanyard. [Ed note: Similar to Z133.1-2006, 8.1.18]~~

~~(3)(A) Employees shall be tied in or secured while ascending the tree and remain tied in or secured until the work is completed and they have returned to the ground. [Ed note: Similar to Z133.1-2006, 8.1.19]~~

~~(B) Employees shall not work from or leave a ladder to gain access to a tree unless the employee is tied in or otherwise secured to the tree. [Ed note: Similar intent to Z133.1-2006, 8.1.20]~~

~~EXCEPTION: Employees may work from a self-supporting ladder in accordance with the manufacturer's instructions.~~

~~(3) (4) The climbing rope tie-in point shall be ~~passed~~ established on or around the main leader or a major upright branch of the tree as high as necessary using branches with a wide crotch to prevent any binding of the ~~safety rope~~ climbing line. The crotch selected for tying-in shall be over the work area as nearly as possible, but located in such a way that a slip or fall would not permit the employee to come in contact with any electrical conductor, equipment or other hazard. ~~The rope shall be passed around the main leader or an upright branch, using a limb as a stop.~~ Feet, hands, and ropes should, where possible, be kept out of tight V-shaped crotches.~~

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~~(4) When working aloft, employees shall be required to wear tree workers' saddles and tie in with an approved safety strap or rope. [Ed note: moved with edits to Section 3427(a)(2)]~~

~~(5) Employees shall remain tied in until the work is completed and they have returned to the ground, unless it is necessary to recrotch. [Ed note: covered by Section 3427(a)(3)(A)]~~

~~(b) Pruning, and Trimming and Tree Removal Operations.~~

~~(1) Employees shall be instructed to give an audible warning before a limb is dropped. "Timber," "headache" or "heads up" can be used for this purpose.~~

The employer shall establish a method of verbal or visual communication which shall be reviewed during the job briefing, prior to the start of pruning or removal operations. The verbal or visual communication system shall use an established command and response system or pre-arranged, two-way hand signals. The communication method shall be clearly understood and used during all rigging operations. The command "stand clear" from aloft and the response "all clear" from the ground are some terms that may be used for verbal communication.

(2) A drop zone shall be established prior to the start of pruning or removal operations.

Employees not directly involved in the pruning or removal operation shall stay out of the pre-established drop zone until it has been communicated by a qualified tree worker directly involved in the operation that it is safe to enter the drop zone. Employees shall be positioned and their duties organized so that the actions of one employee will not create a hazard for any other worker. (Ed note: similar to Z133.1-2006, 8.4.12)

(3) Only qualified tree workers directly involved in the operation shall be permitted in the drop zone when a load is being suspended by a rigging system.

(4) When a rigging system is necessary, a qualified tree worker shall determine the appropriate rigging system for the removal project based on factors that include, but are not limited to, the species, size, weight, and length of tree sections or limbs being removed.

(5) When it is necessary to remove branches or sections of a tree that will be removed, a qualified tree worker who is trained and experienced in rigging operations shall determine whether the tree can withstand the strain of the lowering procedures. If the determination is that the tree cannot do so, other means of removing the tree shall be considered. (Similar to Z133.1-2006, 8.5.5)

(6) Wedges, block and tackle, rope, and other lowering devices shall be used when there is a danger that a tree or trees being removed may fall in the wrong direction or damage property. All limbs and sections shall be removed to a height and width sufficient to allow the tree to fall clear of any wires or other objects in the vicinity. (Z133.1-2006, 8.5.9)

~~(2) (7) A separate line~~ Separate ropes for lowering limbs shall be attached to limbs which cannot be dropped or are too heavy to be controlled by hand. The use of the same crotch for both safety-rope and work rope shall be avoided. Climbing lines shall not be attached to the same crotch as ropes used for lowering limbs.

~~(3) (8) Cut branches (hangers) shall be removed from the tree prior to leaving the job site.~~

~~(4) (9) With the exception of minor tree trimming, at~~ When an employee is elevated above 12 feet in any tree work operations including climbing ladders, climbing into the tree or using an aerial device, involving tree maintenance or removal, a second employee shall be used at each work location present to render immediate assistance.

[Ed note: subsection (b)(6) is similar in its intent to Z133.1-2006, 8.1.2]

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(10) Palm frond skirts shall be removed from the top down. Qualified tree workers performing this work shall be supported by a climbing line and a false crotch attached above the frond skirt, or they shall work from an aerial device.

EXCEPTION: Fronds may be trimmed from below the dead frond accumulation only when a qualified tree worker who is competent and experienced in palm tree work and the hazards associated with removing dead fronds makes a determination that this task can be safely performed from below.

NOTE: Because palm frond skirts have the potential of unexpectedly releasing onto a worker below, the ANSI Z133.1-2006 standard "Arboricultural Operations-Safety Requirements" Section 8.2.7 states that tree workers shall never attempt to remove palm frond skirts of three years or more growth by positioning themselves below the work areas while being supported by a lanyard.

(11) When dry conditions exist, no employee shall smoke in or near dead palm fronds. All chain saws used under such conditions shall have mufflers and spark arresters in good working condition. (Similar to Z133.1-2006, 8.2.6)

(c) Felling.

(1) The work area shall be cleared to permit safe working conditions, and an escape route shall be planned before any cutting is started.

(2) A planned escape route for all workers shall be prepared before cutting any standing tree or trunk.

(3) ~~(2)~~ A notch and back cut shall be used to establish a hinge when in felling trees over ~~10~~ 5 inches in diameter.

(A) Notches and back cuts shall be made at a height that enables the chain-saw operator to safely begin the cut, control the tree or trunk, and have freedom of movement for escape.

(B) The notch cut used shall be a conventional notch, an open-faced notch, or a Humboldt notch as defined in Section 3420(b).

(C) The notch depth shall not exceed one-third of the diameter of the tree.

(D) The back cut shall not penetrate into the predetermined hinge area.

(E) With a conventional notch or Humboldt notch, the back cut shall be 1 to 2 inches above the apex of the notch to provide an adequate platform to prevent kick-back of the tree or trunk. With an open-face notch (greater than 70 degrees), the back cut shall be at the same level as the apex of the notch.

(F) The two saw cuts that form a notch shall not cross at the point where they meet.

(4) ~~(3)~~ Just before the tree or trunk is ready to fall, an audible warning shall be given to those in the area. **Pre-arranged, two-way hand signals may also be used as a warning, provided that only qualified persons shall give such signals.** All non-involved personnel in the vicinity shall be safely out of range before the tree or trunk falls.

(5) Prior to the start of any tree felling or removal operations, the hazards and relevant factors pertaining to the tree and the site are to be considered by undertaking actions that include, but are not limited to, the following:

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(A) Identifying potential hazards in the area surrounding the tree to be removed, including nearby trees.

(B) Determining the species and shape of the tree.

(C) Evaluating the lean of the tree.

(D) Inspecting for loose limbs and wood chunks, or other overhead material.

(E) Evaluating the wind force and direction.

(F) Identifying decayed or weak spots in the tree.

(G) Providing a means to protect other persons, property, and electrical conductors.

(H) Evaluating the terrain characteristics and/or limitations of the work area; and

(I) Identifying evidence of bees or other wildlife habitation in the tree that may present hazards.

(d) Bucking.

(1) The employee shall work from the uphill side whenever possible during limbing or bucking operations. [Ed note: moved from 3428(a)(18)]

(2) The employee shall block the log during bucking operations to prevent rolling, when necessary. [Ed note: moved with edits from 3428(a)(19)]

(3) When bucking trunks of trees, wedges shall be used when necessary to prevent binding the chain saw guide bar or chain. [Ed note: moved from 3428(a)(20) with edits.]

(e) Structural Support Systems, and Lightning Protection Systems.

(1) Employees on the ground shall not stand in the drop zone during the installation of structural support systems or lightning protection systems.

(2) Tools used to install structural support systems or lightning protection systems shall be carried in a bag or on a belt designed to hold such tools or attached to a tool lanyard.

(3) Employees installing cabling, support systems or lightning protection systems shall be positioned off to one side in order to avoid injury in case of a cable system failure that could occur when a block and tackle or hand winch is released.

(4) When removing a cable from a tree, a block and tackle or come-along system shall be used before removing the cable.

(5) When installing a replacement cable, the replacement cable shall be fully installed before removing the outdated cable.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

~~§3428. Operating Rules. Repealed~~ [Ed note: Provisions of this section are in large part relocated as outlined below]

~~(a) Every employer engaged in tree work shall have and employees shall be instructed in a set of operating rules, including but not limited to, the appropriate rules below:~~

~~(1) All equipment shall be operated by qualified personnel.~~ [Ed note: moved to 3421(g)]

~~(2) No part of the body shall be used to locate or attempt to stop a hydraulic leak.~~ [Ed note: moved to 3424(a)(3)]

~~(3) Rotary drum or disk type brush chippers shall be fed from the side of the center line, and the operator shall immediately turn away from the feed table when the brush is taken into the rotor.~~ [Ed note: moved to 3424(c)(7)]

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- (4) ~~Employees shall never place hands, arms, feet, legs, or any other part of the body on the feed table when the brush chipper is in operation or the rotor is turning.~~ [Ed note: moved to 3424(c)(8)]
- (5) ~~The brush chipper chute shall not be raised while rotor is turning.~~ [Ed note: moved to 3424(c)(9)]
- (6) ~~Material such as stones, nails, sweepings, etc., shall not be fed into the brush chipper.~~
[Ed note: moved to 3424(c)(10)]
- (7) ~~Vehicles shall not be operated at speeds which will endanger the driver or workers.~~ [Ed note: moved to 3424(a)(5)]
- (8) ~~Power saw engines shall be stopped when carrying for a distance greater than 100 feet, or in hazardous conditions such as slippery surfaces or heavy underbrush. Saw shall be at idle speed when carried short distances.~~ [Ed note: moved to 3425(a)(5)]
- (9) ~~The engine shall be stopped for all cleaning, refueling, adjustments, and repairs to the saw or engine where practical, except where manufacturer's procedures require otherwise.~~ [Ed note: moved to 3425(a)(6)]
- (10) ~~When using back power units for pruning or clearing, the operator shall heed the position of all personnel while the unit is running.~~ [Ed note: deleted]
- (11) ~~Tree workers shall not carry tools in their hands while climbing.~~ [Ed note: deleted, covered by proposed 3426(a)(2)]
- (12) ~~Employees shall maintain a safe working distance from other employees when using hand tools.~~ [Ed note: moved to 3426(a)(3)]
- (13) ~~Employees shall not throw or drop tools from trees unless warning has been given and the ground area is clear, and the act of dropping will not endanger personnel.~~ [Ed note: deleted and covered by new 3426(a)(2)]
- (14) ~~Pole pruners and pole saws shall be hung securely in a vertical position to prevent dislodging. Pole pruners or pole saws shall not be hung on utility wires or cables, or left in the tree overnight. Pole saws shall be hung so that the sharp edge is away from the employee.~~
[Ed note: moved to 3426(b)(2)]
- (15) ~~Climbers shall inspect the ropes for cuts or abrasions before starting work. If any cuts or serious abrasions are found, the rope shall be immediately repaired or removed from service.~~
[Ed note: covered by proposed Section 3422(j)]
- (16) ~~Chopping tools shall be swung away from the feet, legs, and body.~~ [Ed note: moved to 3426(a)(4)]
- (17) ~~Chopping tools shall not be driven as wedges or used to drive metal wedges.~~ [Ed note: moved with edits to 3426(a)(5)]
- (18) ~~The employee shall work from the uphill side whenever possible when doing limbing or bucking.~~ [Ed note: moved to 3427(d)(1)]
- (19) ~~The employee shall block the log to prevent rolling, when necessary.~~ [Ed note: moved to 3427(d)(2)]
- (20) ~~When bucking up trunks of trees, wedges shall be used so that the tree will not bind the guide bar or chain.~~ [Ed note: moved with edits to 3427(d)(3)]

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

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Group 2. High-Voltage Electrical Safety Orders
Article 38. Line Clearance Tree Trimming Operations

Amend Section 2950 to read as follows:

§2950. Application.

(a) This article shall apply to all line clearance tree trimming operations performed in the vicinity of exposed energized overhead conductors and equipment where any part of the employee's body, tools or equipment being used, or parts of trees being worked upon, is likely to come within the distances specified in ~~Section 2946(b)(2)~~ Table 1 of this section.

(b) Minimum approach distances to energized conductors for persons other than qualified line clearance tree trimmers and trainees shall be maintained in accordance with Table 1.

EXCEPTION NO. 1: A qualified tree worker as defined in the General Industry Safety Orders (GISO), Section 3420(b) may perform tree trimming activities within 10 feet, but no closer than 1 foot, of energized low voltage (600 volts or less) power lines and conductors, provided the provisions in GISO Section 3423 related to such work are met.

EXCEPTION NO. 2: A qualified telecommunication worker as defined in Section 8601 of the Telecommunication Safety Orders when performing restoration work or other emergency work, provided the employee is trained, and experienced in the special techniques and work procedures required to avoid the hazards of line clearance tree trimming operations.

EXCEPTION NO. 3: A qualified electrical worker as defined in Section 2700 of the High Voltage Electrical Safety Orders when performing restoration work or other emergency work, provided the employee is trained, and experienced in the special techniques and work procedures required to avoid the hazards of line clearance tree trimming operations.

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Table 1.

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

<u>Nominal voltage in kilovolts (kV) phase to phase*</u>	<u>Distance</u>	
	<u>ft-in</u>	<u>Meters</u>
<u>0.0 to 1.0</u>	<u>10-00</u>	<u>3.05</u>
<u>1.1 to 15.0</u>	<u>10-00</u>	<u>3.05</u>
<u>15.1 to 36.0</u>	<u>10-00</u>	<u>3.05</u>
<u>36.1 to 50.0</u>	<u>10-00</u>	<u>3.05</u>
<u>50.1 to 72.5</u>	<u>10-09</u>	<u>3.28</u>
<u>72.6 to 121.0</u>	<u>12-04</u>	<u>3.76</u>

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<u>138.0 to 145.0</u>	<u>13-02</u>	<u>4</u>
<u>161.0 to 169.0</u>	<u>14-00</u>	<u>4.24</u>
<u>230.0 to 242.0</u>	<u>16-05</u>	<u>4.97</u>
<u>345.0 to 362.0</u>	<u>20-05</u>	<u>6.17</u>
<u>500.0 to 550.0</u>	<u>26-08</u>	<u>8.05</u>
<u>785.0 to 800.0</u>	<u>35-00</u>	<u>10.55</u>

*Exceeds phase to ground minimum approach distances per the federal standard, 29 CFR 1910.333.

NOTE 1: Minimum approach distances to energized conductors for qualified line clearance tree trimmers and trainees as defined in Section 2700 are provided in the provisions and references of Section 2951 of these Orders.

NOTE 2: Additional requirements for Tree Work, Maintenance or Removal, are contained in Article 12 of the General Industry Safety Orders, Title 8, California Administrative Code of Regulations.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

SUMMARY AND RESPONSE TO COMMENTS

SUMMARY AND RESPONSE TO WRITTEN AND ORAL COMMENTS

I. Written Comments

Mr. Mark Garvin, President, Tree Care Industry Association (TCIA), by letter dated February 7, 2012.

Comment:

TCIA served on the advisory committee that helped to draft the amendments for this rulemaking action. He noted that the proposed revisions will help Cal/OSHA make the most efficient and effective use of its human resources. Whether in consultation or enforcement, Cal/OSHA's field personnel will be better informed to assess the potential risks in the tree care operations they encounter, and to provide more constructive guidance to employer and employee, using the revised General Industry Safety Orders (GISO) Sections 2950 and 3420-3428 as their guide. These revisions provide tree care workers and employers with unambiguous, easily accessible regulatory guidance on the specific safety measures needed to reduce or eliminate the unique risks in our industry. In summary, TCIA supports the Board's rulemaking process and encourages the Board to adopt the proposed revisions to Title 8.

Response:

The Board thanks Mr. Garvin and TCIA for their support of the proposal, comments and participation in the Board's rulemaking process.

Mr. Bill Taylor, CSP, Public Agency Safety Management Association-South Chapter, Legislative/Regulatory Chairperson, by letter dated March 9, 2012.

Comment No. 1:

Several of his organization's members' cities and counties respond to emergency situations such as windstorms, floods, and other weather events which often result in the removal of tree branches from public streets and right of ways. He stated that most public agencies will dispatch all available trained public works personnel to respond to these emergency incidents in order to restore essential public services.

Their concern is that Section 3421(m) would essentially mandate that every public works employee with a field assignment maintain a current First Aid/CPR certification, even though fatality and injury data do not justify such a requirement.

Response:

Section 3420(a) states that the standard applies to work performed and equipment used in tree maintenance and removal. If public works personnel are used to remove or pickup tree branches or brush that have fallen onto areas such as public streets, driveways and sidewalks, that clean up and road clearing work would not necessarily fall within the description and requirements of Article 12, including Section 3421(m). In this scenario, the requirements for first aid would be provided in the GISO Section 3400.

However, if workers are performing activities in a crew that is using tree work equipment such as chain saws in combination with brush chippers, or are involved in bucking operations, (cutting/sawing branches, limbs or tree trunks that have fallen into appropriate removal lengths) or

are using saws to trim branches or limbs still attached to the tree then they are performing tree work with equipment that is known to be hazardous and has caused serious injuries and fatalities.

The existing regulation in Section 3421(m) requires that the employer provide training in first aid and CPR. The Division enforces this to require that all employees on a site with tree work operations have first aid and CPR training. The proposed amendment was developed with the assistance of the advisory committee to provide clarity and relief on job sites with more than two persons. As an example, a tree work crew size of 3 or more employees would only require 2 first aid/CPR trained employees. Thus, not all employees require the training if they are working with at least 2 employees in work crew that are trained.

Imminent safety hazards were identified with a two-person tree work crew when only one employee is trained and one is not, and this situation is exacerbated when neither employee has training. If only one employee has the training and that is the employee injured in a serious accident, the other employee would not have the first aid training to stop the bleeding or take other appropriate measures. If neither employee is trained, as could be the case in the commenter's recommended exception for public/government employees involved in infrequent emergency tree work operations, then neither employee would have the training to perform emergency first aid/CPR until medical personnel arrives.

Employee tree work injuries and accident data often do not specify whether the injurious activity was during routine tree work, maintenance or during emergency or storm aftermath activities. Lack of training in first aid and/or CPR does not cause or result in injuries. However, in first aid and CPR training, it is taught that a serious accident can easily become a fatal accident if no one is available to apply immediate and adequate first aid and/or CPR until medical personnel arrive.

The Board does not believe that modification to the proposal is necessary as a result of this comment.

Comment No. 2:

The amendment of Section 3421(m) will likely result in significant additional costs to public agencies. For those public agencies that have tree workers, or other employees who are assigned to tree work, maintenance, and removal activities on a regular and routine basis, we feel the First Aid/CPR mandate is justified. However, for the other employees who may only be assigned to tree work, maintenance, and removal activities on an emergency basis we believe it does not make sense, and it will likely result in significant additional costs for public agencies. An exception is recommended to the first aid and CPR requirements for employees of local government entities (any county, city, or district, or any public or quasi-public agency) during emergency related work, as a result of emergencies or other natural disasters.

Response:

Existing Section 3421(j) requires employers to provide employees involved in tree work operations with first aid and CPR training. There are no exceptions. Local government entities currently assigning public works type employees (e.g., street sweepers, lawn care, building maintenance, landscaping, refuse removal, etc.) to perform tree work activities in crews where employees are not trained/available to provide first aid/CPR would be in violation of the existing standard. Also, see the responses to Comment No. 1.

The Board disagrees with the concept that employees who are assigned to tree work, maintenance, and removal activities on an infrequent or emergency only basis should be exempt from first aid and CPR training requirements. There is a greater risk for injury when employees are performing duties outside their regular and routine assignments. Tree work, maintenance and removal work includes the use of machinery and equipment and operations that are inherently hazardous and injuries frequently would require first aid and follow up medical treatment.

The Board does not believe that modification to the proposal is necessary as a result of Mr. Taylor's comments. The Board thanks Mr. Taylor for his comments and participation in the Board's rulemaking process.

Mr. Kevin Bland, Attorney, Ogletree, Deakins, Nash, Smoak & Stewart, P.C., by letter dated March 13, 2012.

Comment No. 1:

His letter is written on behalf of the Utility Line Clearance Coalition (ULCC). ULCC members use specialized techniques that allow utility line clearance work to be done safely and, in most cases, without de-energizing electric supply lines to communities. ULCC members perform an estimated ninety percent of all utility line clearance tree trimming work performed in the nation. Subject to the recommended revisions in its comments, ULCC supports the proposed standard. The first comment recommends a definition for the word "proximity" that should be added to the definitions in Section 3420(b). A recommended definition for the meaning of "proximity" was included in this comment.

Response:

The term "proximity" is used in this GISO Article 12, proposed standard in Sections 3420(a) Note 2; Section 3421(c)(5) and Section 3423(a) and (d). The Board agrees that clarity would be improved by defining this term. A modification of the proposal adds a definition to Section 3420(b) that is similar to that recommended in the comment and consistent with the ANSI Z133.1-2006 definition of this term.

Comment No. 2:

The definition for "drop zone" in Section 3420(b) should be revised. The clause "as determined by the arborists in charge prior to commencement of work" should be added after the word "above" in the current definition.

Response:

The reference to tree workers as "arborists" in Article 12 is avoided in order to eliminate confusion with the existing and suitable definition of a qualified tree worker. However, the Board believes there is merit in clarifying who establishes the area that encompasses the drop zone. A qualified tree worker is competent to establish the area of the drop zone, and a modification to the definition has been added accordingly.

Comment No. 3:

This comment recommends deleting the words, "unintended movement" from the definition of "secured." The word "safeguarded" establishes the purpose of the term "secured." Inclusion of the phrase "unintended movement" creates confusion for both compliance and enforcement as the meaning would clearly be too restrictive.

Response:

Mr. Bland discussed with staff that the term “unintended movement” could include situations with no safety consequences such as a minor slip or misstep and that the provision as written is unnecessary for safety or clarity. Board staff concurs that the comment has merit and a modification is provided to delete the term “from unintended movement.”

Comment No. 4:

The term “prior to assignment to job duties” should be added before the word “employee” in Section 3421(c) to clearly identify the timing of when such training should be performed under Section 3421(c).

Response:

The Board believes that this recommended revision is unnecessary and is already addressed in proposed Section 3421(d). Therefore, the Board does not believe that modification to the proposal is necessary as a result of this comment.

Comment No. 5:

Delete the wording “including, but not limited to” from Section 3421(c), and add an additional Section 3421(c)(6) that would require training in “other hazards known to the employer” prior to beginning work.

Response:

The phrase “including, but not limited to” or similar language is used throughout Title 8 health and safety standards. It is intended to point out that requirements that follow may not be all inclusive of the hazards associated with a procedure or operation. An example is GISO Section 5157(d)(3) related to confined space entry precautions and requirements. The hazards involved in tree work vary greatly depending on the employer’s specialty and operations and it is not possible to create an all inclusive hazard and training list for the industry as a whole. The Board believes that the language proposed is effective in stating the basic training and instruction for a safe operation.

As to adding a new subsection requiring that training include hazards known to the employer, this type of requirement would lack enforceability because an employer with an ineffective safety program and unsafe operations could argue that it was not aware of a hazard even though it may be an obvious and frequent hazard encountered in that industry. The Board does not believe that modification to the proposal is necessary as a result of the recommendations in Comment No. 5.

Comment No. 6:

This comment pertains to the provisions in Section 3421(h) and questions what is intended by the requirement that “prior to use” all equipment and safety devices shall be inspected. It is unclear whether the employer would be expected to perform the inspection prior to initial use at the beginning of each shift or a particular project. For example, a block and tackle attached to a tree used to lower limbs may be used multiple times, but it would not be possible to inspect the block and tackle prior to each use.

Response:

The term “prior to use” is longstanding language that is located in Section 3421(e) of the existing standard. However, Board staff agrees that the comment raises clarity issues in light that the proposal requires several new specific inspections as outlined below. Board staff believes that this

language has not been problematic in the past, because most stakeholders take this requirement to mean that a daily inspection shall be made prior to use. For certain types of equipment or devices, it is suitable to perform daily inspections. However, the ANSI Z133.1-2006 standard specifically and intentionally requires in Section 8.1.4 that climbing lines and other climbing equipment be inspected before each use. Tree industry representatives have indicated that the term “before each use” is intended to mean each time the climbing lines and associated climbing equipment (climbing system) are taken down for re-rigging or moved (e.g., installed on a new job site). Therefore, a modification for clarity is proposed for Section 3422(j).

Proposed Sections 3422(j) and 3424(a)(2) address inspections of ropes and climbing equipment; and vehicles and mobile equipment respectively and a modification to Section 3421(h) is necessary to reference these inspection requirements in order to clarify the requirements of Section 3421(h).

Section 3421(h) is located under “General” requirements and the Board believes that a “daily” inspection prior to use is reasonable and consistent with tree industry practices and Division compliance expectations in order to determine the condition of equipment and safety devices other than those covered by Sections 3422(j) and 3424(a)(2). An additional modification is proposed to Section 3421(h) to require that all other equipment and safety devices shall be inspected for any defects prior to “daily” use.

Comment No. 7:

Confirm that the term “common,” as it modifies the terms “poisonous plants” and “harmful animals,” in Section 3421(c)(3) is limited to those plants and animals that are found in the local area in which the work is being performed.

Response:

This provision is existing language that is relocated with non-substantial minor edits only. This subsection has not caused clarity concerns in the past and was not an item that raised any comments or concerns during the two-day advisory committee. The term “common” as defined in the American Heritage Dictionary includes the following descriptions: 1) Pertaining to the community as a whole, 2) Generally known, 3) Of frequent or habitual occurrence; usual. The Board believes that the existing language, as proposed with minor edits, is suitable for the intended purpose. Therefore, the Board does not believe that modification to the proposal is necessary as a result of this comment.

Comment No. 8:

The term “climbing line” is a defined term. However, as used in this section, the term seems to be more of a category of use rather than the design strength. To clarify this ambiguity, Section 3422(f) should include the term “used in climbing” following the term “climbing rope” to eliminate this ambiguity.

Response:

The comment lacks some clarity as to the concern or issue. However, Board staff is advised by TCIA that climbing line is used in tree work operations for other purposes when it is no longer used as a climber’s line, such as the lowering of low weight loads (small limbs or branches). The proposal would prohibit ever using climbing line for any purpose other than to support the tree worker aloft as part of a fall protection system or as permitted in the exception to Section 3422(e). According to TCIA representatives, once a climbing line is used for other purposes, such as lowering loads or moving materials, it should never be used again to serve as a climber’s line. Therefore, modifications to Section 3422(f) are proposed to address this concern.

Comment No. 9:

The term “unintended” creates an ambiguous statement within Section 3422(g). This subsection states that “climbing lines shall never be left unattended.” The term “unattended” has proven to be problematic in other proposals for Title 8, such as the proposed standards related to pneumatic nailers. It is not clear if this term means merely “out of sight” or something more. For example, if the climber comes down to get a tool and leaves the rope in the tree for a few moments while he retrieves the tool, would the Division consider that “unattended?”

Response:

Section 3422(g) mirrors ANZI Z133.1-2006, Section 8.1.17. However, the Board agrees that the term “unattended” may lack clarity. Staff believes that the intent of this ANSI standard was to prevent climbing lines from being left in trees overnight and/or in situations where a tree worker was not present to ensure that the condition and security of the climbing line was not compromised by situations such as contact with animals or unauthorized persons, etc. A modification is proposed that would require climbing lines never be left in trees when there is no qualified tree worker at the job site location.

Comment No. 10:

The last sentence in the exception to Section 3427(b)(10) should have the word “both” added after the word “in.”

Response:

The proposed exception to 3427(b)(10) applies when a qualified tree worker who is competent and experienced in palm tree work and the hazards associated with removing dead fronds makes a determination that the task can be safely performed from below. The Board believes that the existing proposal is sufficiently clear without the word “both” being added to this provision. The Board does not believe that modification to the proposal is necessary as a result of this comment.

Comment No. 11:

Section 3427(b)(1) should include the word “audible” so that the section reads “verbal, audible or visual communication or pre-arranged two-way hand signals...” In addition, Section 3427(c)(4) (which Mr. Bland refers to as “(C)(3)(F)(4)”) should include the wording “audible, visual or pre-arranged two-way hand signals” following the word “verbal.”

Response:

Proposed Section 3427(b)(1) pertains to communications during pruning and tree removal operations. It is modeled after, and consistent with, the similar provision in ANSI Z133.1-2006 Section 8.4.11. The Board believes that adding “audible” warnings to this type command and response communication system does not add additional safety or clarity to the existing proposal and further modification to this provision is unnecessary.

Section 3427(c)(4) pertains to warnings that must be given in felling operations. The existing proposal already permits an “audible” warning which does not prohibit the use of “verbal” warnings. The Board believes it is unnecessary to add the word “verbal” to this subsection. However, the ANSI Z133.1-2006 standard, Section 8.5.18 addresses felling of trees and tree trunks and provides that pre-arranged, two-way hand signals may also be used as a warning method. Therefore, a modification to Section 3427(c)(4) is made that permits the use of two-way hand signals.

The Board thanks Mr. Bland and ULCC for their comments and participation in the Board's rulemaking process.

Mr. David Shiraishi, Area Director, U.S. Department of Labor (Federal OSHA), by letter dated March 14, 2012.

Comment No. 1:

As written, the proposed standard appears not to be commensurate with the Federal standard. 29 CFR 1910.269(r)(7)(i) requires climbing ropes to have a minimum diameter of ½ inch with a minimum breaking strength of 2300 pounds. The proposed standard allows employees to use ropes with a 7/16 inch diameter.

Response:

Representatives from TCIA and other tree care companies at the advisory committee in this matter stated that the climbing line diameter alone does not necessarily correlate to the strength of the climbing line, but rather, what is important is how the line is constructed and designed. The proposed standard requires the climbing line to have a minimum tensile strength of 5,000 pounds. The federal standard requires a minimum breaking strength of only 2,300 pounds for climbing rope.

This 2,300 pound requirement is usually associated with the use of manila rope that is no longer used for climbing rope/line. Sherrill Tree Company is one of the major manufacturers of climbing rope/line. Its climbing rope charts include a wide range of selections. At least three of their rope selections designed for use as climbing line are 7/16 inch (11mm) in diameter. The average tensile strength for these types of climbing line ranges from 5,600 pounds to 8,000 pounds. The Board believes that a climbing line with design strength of 5,000 pounds exceeds the federal counterpart provision that requires less than one half of that strength. However, see the response to Comment No. 2 that discusses permitting the 7/16 inch climbing line only as an "exception" for consistency with the ANSI Z133.1 consensus standard for arboricultural operations - safety requirements.

Comment No. 2:

Federal OSHA stated a concern with the interpretation of ANSI Z133.1-2006. Paragraph 8.1.8 which indicates arborist climbing lines shall have a minimum diameter of 1/2 inch and be constructed from a synthetic fiber, with a minimum breaking strength of 5,400 pounds (24.02 kilonewtons (kN) when new). Maximum working elongation shall not exceed 7 percent at a load of 540 pounds (2.402 kN). Arborist climbing lines shall be identified by the manufacturer as suitable for tree climbing. The exception indicates in arboricultural operations not subject to regulations that supersede Z133.1, a line of not less than 7/16 inch diameter may be used, provided the employer can demonstrate it does not create a safety hazard for the arborist and the arborist has been instructed in its use. The strength and elongation ratings of the line selected shall meet or exceed that of ½ inch arborist climbing line. Section 3422(c) does not convey this meaning in the proposed standard.

Response:

The proposal requires a minimum tensile strength (equivalent to breaking strength) for climbing lines of 5,000 pounds instead of the 5,400 pound requirement in the ANSI Z133.1 standard for consistency with similar fall protection equipment in Title 8 standards that require fall protection lanyards and lifelines to have a minimum breaking strength of 5,000 pounds. The ANSI Z133.1-2006 standard, Section 8.1.8 permits the use of 7/16 inch diameter climbing line but only as an "exception" as outlined in federal OSHA's Comment No. 2.

The ANSI standard includes that 7/16 inch climbing line may be used but it must meet the strength and elongation ratings for ½ inch diameter climbing line and employees must be instructed in its use. Board staff is not aware of any hazards associated with 7/16 diameter climbing line used in accordance with the manufacturer’s recommendations. Therefore, in order to address federal OSHA’s concern, modifications are proposed to add an “exception” to Section 3422(c) that addresses the use of 7/16 inch diameter climbing line.

The Board thanks Mr. Shiraishi and federal OSHA for their comments and participation in the Board’s rulemaking process.

Ms. Barbara Materna, Ph.D., CIH, Chief, Occupational Health Branch, California Department of Public Health (CDPH), by letter dated March 15, 2012.

The Occupational Health Branch conducts selected workplace fatality investigations under the California Fatality Assessment and Control Evaluation (CA/FACE) program, funded in part by the National Institute for Occupational Safety and Health. Since 1992, they have investigated ten fatalities regarding tree work, maintenance or removal, and five of these involved a wood chipper. They produce educational fact sheets for employers and an instructional digital video as part of efforts to prevent fatalities.

They support the efforts of the Standards Board in proposing revisions to the current language in the Title 8 General Industry Safety Orders regarding this hazardous work. In general, the proposed revisions strengthen the safety regulations in many important areas that they have seen in the FACE investigations as crucial to prevention. However, they note there are four issues on which they have made recommendations in their investigations because they believe improved work practices would have made a difference:

Comment No. 1:

In two wood chipper deaths, the victim was working alone, and a safety watch could have probably prevented the incident from occurring. The New York State FACE program has also investigated a fatal case and suggested some useful language regarding a safety watch that could be considered by the Standards Board:

“When the brush chipper is in operation, at least one worker in addition to the operator shall be placed in the immediate vicinity of the work area and in close contact with the operator.”

We concur with this recommendation and suggest adding this language to the proposed standard.

Response:

In order to be effective, the additional safety watch employee at the chipper would be dedicated to observing the chipper operator and the material being prepared and put into the chipper at all times without other duties. This would essentially add an additional employee to all tree work crews using a brush chipper and altogether eliminate two-man crews, which are prevalent in many tree work operations. The economic impact upon tree work companies and their clients would be significant.

Furthermore, in order to be effective, the designated watch employee would need to be positioned in the immediate vicinity of the operator and the work area and alert at all times. Dedicated watch positions can become boring, and if the watch employee becomes distracted or complacent, this employee could be a potential injury victim standing in the working area of the chipper which, by the

nature of its operation, presents hazards where branches and limbs are being fed into the chipper. The concept is not practicable or feasible for tree work employers, and as mentioned, presents an additional employee in a hazardous working area. The Board believes that suitable and appropriate training and experience in the safe operation of chippers is the best means of avoiding hazards. Therefore, the Board does not believe that modification to the proposal is necessary as a result of this comment.

Comment No. 2:

In two cases rope entangled in the debris pile was fed into the wood chipper. In both cases, victims were struck by the rope and died as a result. Staging the debris pile and inspecting it prior to being fed into the chipper would be a logical safety procedure that could lead to a more systematic work flow and lessen the chance that a worker would be entangled and injured by foreign objects that are in debris. The following language is recommended:

“When material is brought to the chipper for processing, it shall be placed into the staging area and inspected for removal of foreign objects prior to being fed into the chipper.”

Response:

In some tree work operations, branches and limbs may be staged in an area and then fed into the chipper. However, it is more likely that small limbs, branches and twigs may be staged in piles. In many operations after being cut, the branch or limb is picked up only once and carried or pulled to the chipper for processing. A requirement that all material (branches and limbs) be stocked in piles and then inspected would change the work flow of many typical tree work operations. Also, some branches and limbs are quite heavy and once lifted, it is ergonomically better to place it on the chipper feed table for processing. If it were required to be lifted, carried or dragged over to a staging pile, then in many cases, these heavier wood stock items would need to be lifted twice (once to the pile and then over to the chipper feed table). It may be problematic for the employer and the Division as to how these inspections would be conducted and documented (e.g., hundreds of limbs, branches, and tree parts enter the chipper on one jobsite).

However, from the referenced accidents in this comment, it is evident ropes that present entanglement hazards have been a factor in serious and fatal accidents. The Board notes that ropes long enough to catch or grasp the worker in any manner and at the same time are long enough to enter the chipper’s point of operation present a serious hazard to the operator. The Board believes that a modification should be added to proposed Section 3424(c)(11) that would require ropes that present entanglement hazards be prevented from entering the point of operation of the chipper. In order to meet this performance based requirement, the employer would need to instruct employees on the hazards of such ropes, provide procedures to keep such ropes away from the chipper, and provide training regarding visual inspections of branches, limbs and other parts of the tree before these items are fed into the chipper.

Comment No. 3:

This comment is related to proposed Section 3427(b)(10) regarding the removal of dead fronds. A worker died from suffocation from palm fronds that fell on him from above. This worker was not trained or experienced in this operation. If a palm tree is trimmed from below, this should be done by a qualified tree worker, as the proposal states. However, language should be added that permits trimming from below only if there is less than three years' accumulation of dead fronds.

This is consistent with current American National Standards Institute standards (Z133.1-2006) as well.

Response:

This issue was discussed by advisory committee, and it was evident from comments by Division representatives, as well as tree work stakeholders, that it would be nearly impossible to determine what constitutes three-years of dead frond growth below the crown of the palm. The fronds grow at different rates based on the variety of the palm, irrigation practices, soil conditions, weather and geographical location of the palm. Consequently, a provision similar to that in ANZI Z133.1 would be problematic from a clarity and enforcement perspective. However, an informational note to proposed Section 3427(b)(10) reminds the employer about the hazards associated with removing dead frond accumulations and references the ANSI standard provision. Therefore, the Board does not believe that modification to the proposal is necessary as a result of this comment.

Comment No. 4:

Many of the fatal incidents involving tree work, maintenance or removal have occurred among workers who were not adequately trained. To prevent future such incidents, tree work, maintenance or removal should be performed or supervised by an individual who has received training and certification by an organization such as the Tree Care Industry Association, or equivalent. The current proposal does not specify training by these organizations; it is our understanding that many companies already employ individuals who have gone through such training and are certified, which should become a standard in the industry.

Response:

The Board agrees that a number of tree work companies have individuals that have completed the certification programs offered by TCIA and this is encouraging. Companies that have operations in multiple states may have better means, resources and ability to participate in these certification programs. The concept is good in that training is beneficial in promoting awareness of hazards and work procedures to avoid them. However, the tree care industry has a high employee turnover rate according to stakeholders. A requirement that tree work, maintenance or removal work be performed under the supervision of an employee that has been certified by TCIA or an equivalent program is a logistical and availability problem. For example, the certification programs are limited in the number of times a year that they are offered, and this could leave many companies unable to have a sufficient number of certified employees available at all times.

Furthermore, the content of the certification programs can be broad and general in scope, and given that companies can specialize in certain types of operations, certification may not be as effective as the employer ensuring that qualified tree workers are trained and experienced in the special hazards and unique operations specific to the individual employer's operations. The Board is also not aware of an organization that would monitor and verify the suitability and content of programs that would be considered "equivalent" to those offered by TCIA. Therefore, the Board does not believe that modification to the proposal is necessary as a result of this comment.

The Board thanks Ms. Materna and CDPH for their comments and participation in the Board's rulemaking process.

Mr. Jay A. Weir, Senior Manager, EHS Strategic Compliance, AT&T Environment Health & Safety, by letter dated March 15, 2012.

Comment:

AT&T is concerned with the proposed changes to Title 8, Article 38, Section 2950(b) minimum approach distances to energized conductors for persons other than qualified line clearance tree trimmers and trainees as specified in Table 1 of that section. The heading of Table 1 leaves out two classes of qualified persons: qualified electrical workers and qualified telecommunications workers. Both classes appear to have been placed into the “other” category (not qualified to remove limbs, branches, brush growth, etc.) within the minimum clearances specified in Table 1 of the proposal. The exception to subsection (b) should also include qualified telecommunications workers and qualified electrical workers, as both may be required to do similar work during trouble outages to maintain service for our customers. AT&T ensures their employees have the proper tools and training necessary to keep them safe and on the job.

Response:

Both qualified telecommunications workers (QTWs) and qualified electrical workers (QEWs) are highly trained and skilled to work in proximity to high voltage energized conductors. Minimum approach distances to energized overhead power lines and parts for QTWs are provided in the Telecommunication Safety Orders, Section 8602(h) Table TC-1. Minimum approach distances to energized parts for QEWs and qualified line clearance tree trimmers are provided in the High Voltage Electrical Safety Orders, Section 2940.2. As an example, Section 2940.2 permits work for these employees as close as 2 feet, 1 inch to energized high voltage lines. During power outages and similar emergencies it may be necessary for a QTW or QEW to remove a limb, branches or other growth from areas in the vicinity of overhead power lines. Therefore, exceptions Nos. 2 and 3 to Section 2950(b) are added to the proposal for QTWs and QEWs, provided that they are trained and experienced in the special techniques and work procedures required to avoid the hazards of line clearance tree trimming operations.

The Board thanks Mr. Weir for his comments and participation in the Board’s rulemaking process.

II. Oral Comments.

Oral comments received at the March 15, 2012, Public Hearing in Sacramento, California.

Kevin Bland, Attorney, representing the Utility Line Clearance Coalition (ULCC).

Comment:

Mr. Bland stated support for the proposal subject to minor changes and clarifications. He specified the need for clarification of the term “unattended” as used in proposed Section 3422(g). He also stated that the definition in Section 3420(b) for “secured” person lacked clarity with respect to what constitutes “unintended movement.”

Response:

See the responses to Mr. Bland’s written Comments Nos. 3 and 9. The Board thanks Mr. Bland and ULCC for their comments and participation in the Board’s rulemaking process.

Mr. Larry Pena, Manager of Corporate Safety Policy and Regulation, Southern California Edison, also speaking on behalf of Mr. Louis Renner, of Pacific Gas and Electric Company.

Comment:

Mr. Pena expressed concern about the utility company's ability to safely restore service to the general public and the issue of safety in line clearing. He expressed concern that, as written Section 2950(a), applies to "all" line clearance activities, and that the word "trouble" needs to be defined in the regulation. He asked the Board to consider adding an exception to Section 2950 that would apply to operations or conditions not specifically covered in both Article 3 and Article 36, in order to allow Qualified Electrical Workers to continue to do their work.

Response:

Board staff contacted Mr. Pena by phone in order to clarify his concerns. The reference to the word "trouble" is not used in the proposal and pertains to the word's use in other sections of the High Voltage Electrical Safety Orders which are outside the scope of this rulemaking. Mr. Pena confirmed that his concerns with respect to a qualified electrical worker to be permitted to remove a branch or limb in power restoration/outages are the same as those expressed in the written comment from Mr. Jay Weir of AT&T. See the responses to Mr. Weir's written comment and the resulting proposed modifications. The Board thanks Mr. Pena for his comments and participation in the Board's rulemaking process.

Mr. Jack Kastorff, Board Member.

Comment No. 1:

Mr. Kastorff stated that the definition for "prusik loop" includes reference to a "prusik knot," and this seems unclear, since he and others may not know what a "prusik knot" is.

Response:

The definition for "prusik loop" is verbatim of ANSI Z133.1 – 2006. The Board notes that the ANSI standard also omits a definition for "prusik knot," likely because the prusik knot is a sliding friction knot that is familiar to tree workers and it is frequently used as an aid in ascending the tree. However, a parenthetical modification after the word "prusik knot" is added for clarity.

Comment No. 2:

Mr. Kastorff stated that the term "raveling" used in Section 3422(h) should be changed to "unraveling."

Response:

Section 3422(h) is verbatim to the requirement in the ANSI Z 133.1 standard, Section 8.1.15 that states "rope ends shall be finished in a manner to prevent raveling." The American Heritage Dictionary denotes that one explanation of the term "ravel" means to "unravel" and that one explanation of the term "unravel" means to "ravel." Consequently, either term works. The Board believes that the definition should remain unchanged for consistency with the ANSI standard use of the word.

Comment No. 3:

Mr. Kastorff expressed concern with regard to the requirement for aerial rescue [addressed in proposed Section 3421(I)] and stated that relying on “911” does not provide adequate safety, because not all fire stations are capable of an aerial rescue.

Response:

Employers’ tree work operations differ greatly and range from those that focus on residential and ornamental landscaping that include smaller trees to those who specialize in aspects such as line clearance. Not all employers are involved in operations that would necessitate an aerial rescue by climbing into the tree.

Several tree work employers emphasized that aerial rescues present hazards to the rescuer, and an aerial climbing rescue is not indicated or appropriate for a number of situations. Aerial rescue requires significant training and experience on the job, and one employer noted the training can take up to 5 months before the employee is qualified to perform a climbing rescue. The advisory committee agreed, in large part, with the proposal’s requirement that training in aerial rescue procedures is to be provided for employees whose job assignments may require them to perform aerial rescues. Therefore, it is expected that employees appropriately trained to perform aerial rescue would be present on the job site that requires such rescue, thereby mitigating the need for reliance on other responding agencies such as fire departments. Therefore, the Board does not believe that modification to the proposal is required as a result of this comment.

Comment No. 4:

Mr. Kastorff expressed concern regarding the provisions in Section 3427(b)(10) that address the requirements for removal of fronds from palm trees. He was concerned about the difficulty in identifying the age of palm frond skirts and suggested leaving room for discretion in that area.

Response:

Stakeholders shared Mr. Kastorff’s concerns that it would be difficult and likely not possible to accurately determine the numbers of years that dead fronds have been accumulating below the crown of the palm. Therefore, reference to the ANSI standard provision that recommends workers never remove palm frond skirts of three years or more growth from below is written as an informational “note” in the proposal. The Board does not believe that modification to the proposal is required as a result of this comment. Also see the response to Ms. Barbara Materna’s written Comment No. 3.