

GUIDELINE
FOR TREE CARE IN
NOVA SCOTIA

1.0 SCOPE

To provide safety requirements for arborists involved in tree pruning, removal and related operations, including work from aerial lifts or trees themselves, and associated ground work.

2.0 DEFINITIONS

- 2.1 **Aerial Lift** - A vehicle mounted aerial device used to elevate personnel to job sites above the ground.
- 2.2 **Approved** - acceptable to the appropriate federal, provincial or local authority or other regulating body, or recognized standards association (such as CSA, ANSI etc.).
- 2.3 **Arboriculture** - the art, science, technology and business of utility, commercial and municipal tree care.
- 2.4 **Arborist** - a person possessing the technical competence through experience and related training to provide for or supervise the management of trees and other woody plants in the residential, commercial and public landscape.
- 2.5 **Arborist Climbing Line** - arborists climbing lines shall have a minimum diameter of **2** inch (12.5 mm) and be constructed of a synthetic fibre, with a minimum normal breaking strength of 5400 pounds (24 kn) when new. Maximum working elongation shall not exceed 7 percent at a load of 540 pounds (2.4 kn). Arborists climbing lines shall be identified by the manufacturer as suitable for tree climbing.

EXCEPTION: In arboricultural operations not subject to regulations that supersede Z133.1, a line of less than **2** inch diameter (12.5 mm) may be used, provided the employer can demonstrate it does not create a safety hazard for the arborist and they have been instructed in its use. The strength and elongation ratings of the line shall meet or exceed that of **2** inch arborist climbing line.

- 2.6 **Belay** - secured roping technique managed by the ground person, to safeguard the climbing arborist. (a prusik can be installed by the climbing arborist to function as a self belay system)
- 2.7 **Carabineer, Positive Locking** - a carabineer, which upon closing, automatically moves into the locked position which requires a minimum of two separate operations to prepare the gate to open. For example, having to move the thimble up or down before the thimble can be rotated into the position that will permit the gate to be depressed into the open position. Standard 1/4 turn, twist lock carabineers do not have a positive-locking mechanism and shall not be used.
- 2.8 **Climbing Hitch** - a hitch used for securing a tree climber to the climbing line, permitting controlled ascent, decent, and work positioning. Examples of climbing hitches include, but are not limited to: tautline hitch, blakes hitch and the prusik hitch. (Note - the prusik hitch shall be used for ascent and work positioning only)
- 2.9 **Electrical Conductor** - any overhead or underground electrical device, including power lines and other related equipment.
- 2.10 **False Crotch** - a system used to support an arborist climbing line other than a natural crotch. A false crotch shall incorporate rings or a pulley, or some other device that will protect the system and/or arborist line from damage or failure. Each component of the system shall have a minimum tensile strength of 5,000 pounds.
- 2.11 **High Voltage Equipment** - lines or equipment energized at 750 volts or above.
- 2.12 **Lineperson** - a qualified journeyman electrical lineperson as recognized by Nova Scotia Department of Education, Apprenticeship Division and performing work for an electrical utility. This person should have training equivalent to a Utility Treeworker.
- 2.13 **Qualified** Personnel** - an individual who, by reason of training and experience has demonstrated the ability to safely perform assigned duties and, is knowledgeable of all hazards/risks associated with such assigned duties and, is knowledgeable of the regulations pertinent to such assigned duties.
- 2.14 **Qualified** Arborist** - an individual who, by possession of a recognized degree, certification, or professional standing, or through related training and on the job experience, is familiar with the equipment and hazards involved in arboricultural operations and who has demonstrated ability in the performance of the special techniques involved.

- 2.15 **Qualified** Arborist Trainee** - an individual undergoing on-the-job training who, in the course of such training, is familiar with the equipment and hazards involved in arboricultural operations and who has demonstrated ability in the performance of the special techniques involved. This individual shall be under the direct supervision of a qualified arborist.
- 2.16 **Qualified** Line-Clearance Arborist** - an individual who, through related training and on the job experience, is familiar with the equipment and hazards in line-clearance and has demonstrated ability to perform the special techniques involved. This individual may or may not be currently employed by a line-clearance contractor.
- 2.17 **Qualified** Line-Clearance Trainee** - an individual undergoing line-clearance training and who, in the course of such training, is familiar with the equipment and hazards in line-clearance and has demonstrated ability in the performance of the special techniques involved. This individual shall be under the direct supervision of a qualified line-clearance arborist.

Qualified - for clarity, qualified in this Code of Practice is deemed to include the definition of Acompetent persons® in Section 2 (g) i and ii of the Occupational Safety General Regulations.**

- 2.18 **Secured** - the term that describes an arborist who is safeguarded from unintended movement by a climbing system that is attached to the arborist and connected to a tree or other stable support. Examples of being secured include but are not limited to:
1. when tied in
 2. when using a work positioning lanyard
 3. when on belay
 4. when ascending the arborist climbing line using the footlock technique while utilizing a prusik loop or ascenders
- 2.19 **Tied In** - the term that describes an arborist whose climbing line has been run through a natural or false crotch attached to an arborist's saddle and completed with a climbing hitch or mechanical device, permitting controlled movement and work positioning.
(see figures #1, #2 and #3)

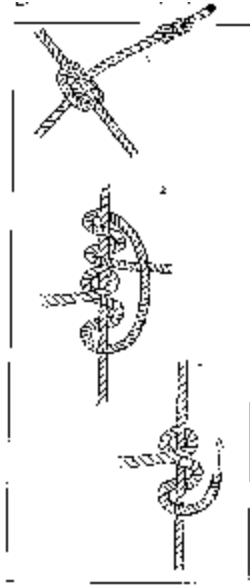
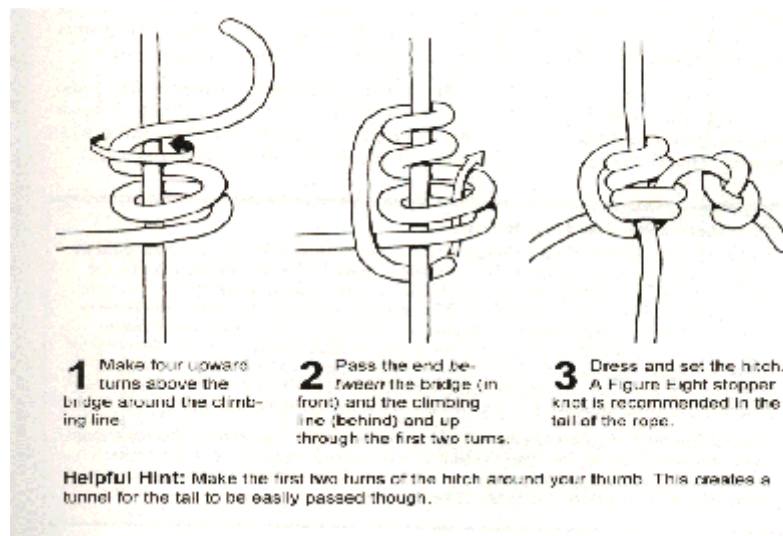
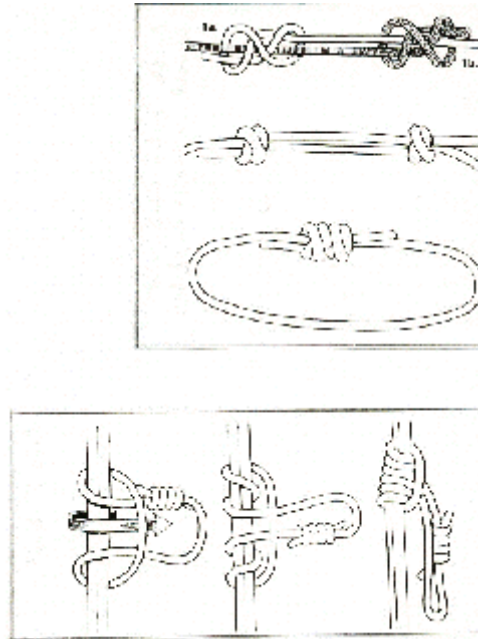


Fig. 1 Tautline hitch.(above) The tautline hitch is one of the recognized "climbing hitches" used to tie in. It must be kept tight to be effective. A figure eight stopper knot shall be tied in the tail of the rope.



BLAKE'S HITCH

Fig. 2 Blake's hitch.(above) The Blake hitch is one of the recognized "climbing hitches" used to tie in. It must be kept tight to be effective. A figure eight stopper knot is recommended in the tail of the rope.



PURSIK

Fig. 3 Double fisherman's knot (top) tied to form a suitable prusik loop. The prusik loop (bottom) installed on the climbing line as a self belay. Note - the prusik hitch shall be used for ascent and work positioning only.

3.0 **TRAINING AND EXPERIENCE**

All Arborists (Treeworkers) shall meet the training and experience requirements of the International Society of Arboriculture Treeworker Certification or equivalent as outlined below.

3.1 **Arborist (Treeworker) Trainee** - An Arborist (Treeworker) Trainee shall be trained to effect an appropriate aerial rescue and work under direct supervision of a qualified Arborist (Treeworker) within normal visual and voice communication distances.

3.2 **Arborist (Treeworker)-Aerial Lift**

3.2.1 An Arborist (Treeworker) working from an aerial lift shall have appropriate formal and on the job training in the following topics:

1. Basic electrical awareness
2. Aerial rescue and bucket evacuation
3. Proper roping and rigging
4. Safe vehicle operation and maintenance
5. Proper use and care of appropriate tools
6. Proper pruning techniques

Basic tree biology and physiology

3.2.2 An Arborist (Treeworker) - Aerial Lift - shall have a minimum of 1200 hours of tree related work under the supervision of a qualified Arborist (Treeworker), of which 600 hours must be aloft in an aerial device.

3.3 **Arborist (Treeworker) - Climber**

3.3.1 An Arborist (Treeworker) working from a tree shall have appropriate formal and on-the-job training in the following topics:

1. Basic electrical awareness
2. Aerial rescue from a tree
3. Proper roping and rigging
4. Safe climbing techniques
5. Proper use and care of appropriate tools
6. Proper pruning techniques

3.3.2 An Arborist (Treeworker) - Climber shall have a minimum of 1200 hours of tree related experience under the supervision of a qualified Arborist (Treeworker), of which 600 hours must be above ground in a tree.

3.4 **Line-Clearance Arborist (Utility Treeworker)**

3.4.1 A Line Clearance Arborist (Utility Treeworker) shall have all the training required for an Arborist (Treeworker) in the appropriate operation (aerial lift or climber) plus electrical safety training. The electrical safety training shall include:

1. Description of the electrical utility system
2. Basic electrical theory
3. Effects of electricity on the human body
4. Proper work procedures around powerlines
5. Local electric utility procedures and regulations
6. Recognition of electrical equipment and associated hazards
7. Protective equipment care and use

3.4.2 The Line-Clearance Arborist shall have the appropriate experience listed in 3.2.2 or 3.3.2. A least 600 of the 1200 required hours must be around powerlines under the supervision of a qualified Line-Clearance Arborist, 300 of the 600 hours must be above ground in the appropriate operation (aerial lift or climber).

3.5 **Line-Clearance Arborist Trainee** - A Line-Clearance Arborist Trainee shall have completed appropriate formal training in effecting an aerial rescue and the electrical safety training described for a Line-Clearance Arborist. He/she shall work under the direct supervision of a qualified Line-Clearance Arborist within normal visual and voice communication distances.

3.6 **Worker Qualification**

3.6.1 The employer shall ensure that all workers have received the required training and experience. The employer is responsible to certify each worker to the appropriate level of qualification for the work he/she is to perform.

3.6.2 The employer shall maintain documentation of each workers training and experience as it relates to the level of qualification described in 3.1 - 3.5 above.

3.6.3 The employer shall issue a wallet card declaring the appropriate qualifications of each worker. This card shall follow the format shown in Appendix 2.

3.7 All workers shall be experienced in work similar to the specific task they are performing.

4.0 **PERSONAL PROTECTIVE EQUIPMENT**

Personal protective equipment as outlined below shall be required where there is reasonable probability of injury that can be prevented by such equipment and where required by existing occupational health and safety regulations.

4.1 **Head Protection** - CSA approved for Industrial Protective Headware.

4.2 **Eye Protection** - shall be worn when operating chainsaws, chippers, brush saws or circular saws or wherever there is a danger of foreign objects or particles striking or entering the eye.

4.3 **Hearing Protection** - Wear CSA Class A or Class B hearing protection when noise level is above 85 decibels "A" weighted or above. As a rule chainsaws and chippers exceed 85 decibels.

4.4 **Leg Protection** - adequate chainsaw cut resistant leg protection (BNQ or UL/cUL approved) shall be worn when operating chainsaws.

4.5 **Foot Protection** - wear boots with CSA Class "1" toe caps, and minimum of 15 cm high uppers.

4.6 **Fall Protection Equipment** - Where a worker is using an aerial lift and is exposed to the hazard of a fall that is 3 m or more above the nearest safe surface the worker, as soon as entering the bucket, shall use a means of fall protection as outlined in the Nova Scotia Fall Protection and Scaffolding Regulations (Appendix 3).

4.7. **Ropes**

4.7.1 **Climbing Rope**

Climbing ropes shall be used when working aloft in trees. Arborists climbing lines shall meet the minimums defined in section 3.4 in this code. When crotched into the tree the arborist climbing line shall be secured to the climbers saddle using an approved connector and tied in with an approved climbing hitch, rope grab or other ascending or descending devices approved by ANSI C133 standard. Climbing ropes should be a different colour than working ropes, and must not have a metallic core.

Climbing ropes shall be identified by the manufacturer as suitable for tree climbing.

Climbing ropes shall not be used to raise or lower limbs, but may be used to raise or lower hand tools or other ropes providing there is no risk of abrasion or damage to the climbing rope.

Climbing ropes shall only be spliced by the manufacture or an approved supplier.

Climbing ropes shall be inspected daily and discarded if worn.

4.7.2 **Working Rope**

Ropes used in proximity to electrical lines or equipment shall not have a metallic core and shall be kept clean and dry. Ropes shall be capable of supporting the weight of the limb being worked. (See Table 1).

4.7.3 **Shock Loading Ropes**

Arborists shall strive to minimize the shock loading ropes at all times, and maintain a 10 to 1 safety factor when choosing ropes for a particular operation.

4.8 **First Aid Equipment and Emergency Response**

All crews shall have at least two members qualified in Standard First Aid Training (for remote locations), to administer first aid treatment and CPR; and an adequately stocked Nova Scotia #2 first-aid kit as per the Regulations Respecting first aid made pursuant to the Occupational Health and Safety Act.

Employers shall ensure that all tree workers and tree worker trainees (utility) perform a practice aerial rescue at least once per year. The practice rescue is to be documented, signed by both employee and employer and recorded in the employers files.

TABLE 1: WEIGHT TABLE FOR GREEN LOGS

To use: multiply length of log in feet by the weight of a 1-foot section, using the average or mean diameter of the log.

| SPECIES | Weight per cubic foot | | Weight of 1-foot sections -- based on mean diameters | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|--------------------------------|--------|--|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|--|--|--|--|--|--|--|--|--|--|
| | Lbs. | inches | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | | | | | | | | | | |
| Apple | 55 | 30 | 43 | 59 | 77 | 97 | 120 | 145 | 173 | 203 | 235 | 270 | 307 | 347 | 388 | | | | | | | | | | | |
| Ash, white | 48 | 26 | 38 | 51 | 67 | 85 | 104 | 126 | 150 | 177 | 205 | 235 | 267 | 302 | 338 | | | | | | | | | | | |
| Basswood | 42 | 23 | 33 | 45 | 59 | 74 | 92 | 111 | 132 | 155 | 180 | 206 | 235 | 265 | 297 | | | | | | | | | | | |
| Beech | 54 | 29 | 42 | 58 | 75 | 95 | 118 | 142 | 169 | 199 | 231 | 265 | 301 | 340 | 381 | | | | | | | | | | | |
| Birch, paper | 50 | 27 | 39 | 53 | 70 | 88 | 109 | 132 | 157 | 184 | 214 | 245 | 279 | 317 | 353 | | | | | | | | | | | |
| Birch, yellow | 57 | 31 | 45 | 61 | 80 | 101 | 124 | 151 | 179 | 210 | 244 | 280 | 319 | 360 | 403 | | | | | | | | | | | |
| Butternut | 46 | 25 | 36 | 49 | 64 | 81 | 100 | 121 | 144 | 170 | 197 | 226 | 257 | 290 | 325 | | | | | | | | | | | |
| Cherry, black | 45 | 25 | 35 | 48 | 63 | 79 | 98 | 119 | 141 | 166 | 192 | 221 | 251 | 283 | 318 | | | | | | | | | | | |
| Chestnut | 55 | 30 | 43 | 59 | 77 | 97 | 120 | 145 | 173 | 203 | 235 | 270 | 307 | 347 | 388 | | | | | | | | | | | |
| Cottonwood | 49 | 27 | 38 | 52 | 68 | 86 | 107 | 129 | 154 | 180 | 209 | 240 | 273 | 310 | 346 | | | | | | | | | | | |
| Elm, American | 54 | 29 | 42 | 58 | 75 | 95 | 118 | 142 | 169 | 199 | 231 | 265 | 301 | 340 | 381 | | | | | | | | | | | |
| Gum, black | 45 | 25 | 35 | 48 | 63 | 79 | 98 | 119 | 141 | 166 | 192 | 221 | 251 | 283 | 318 | | | | | | | | | | | |
| Gum, red | 50 | 27 | 39 | 53 | 70 | 88 | 109 | 132 | 157 | 184 | 214 | 245 | 279 | 317 | 353 | | | | | | | | | | | |
| Hackberry | 50 | 27 | 39 | 53 | 70 | 88 | 109 | 132 | 157 | 184 | 214 | 245 | 279 | 317 | 353 | | | | | | | | | | | |
| Hickory, shagbark | 64 | 35 | 50 | 68 | 89 | 113 | 140 | 169 | 201 | 236 | 273 | 314 | 357 | 403 | 452 | | | | | | | | | | | |
| Honeylocust | 61 | 33 | 48 | 65 | 85 | 108 | 133 | 161 | 192 | 225 | 261 | 299 | 341 | 385 | 431 | | | | | | | | | | | |
| Magnolia, evergreen | 59 | 32 | 46 | 63 | 82 | 104 | 129 | 156 | 185 | 217 | 252 | 289 | 329 | 372 | 417 | | | | | | | | | | | |
| Maple, red | 50 | 27 | 39 | 53 | 70 | 88 | 109 | 132 | 157 | 184 | 214 | 245 | 279 | 317 | 353 | | | | | | | | | | | |
| Maple, silver | 45 | 24 | 35 | 48 | 63 | 79 | 98 | 119 | 141 | 166 | 192 | 221 | 251 | 283 | 318 | | | | | | | | | | | |
| Maple, sugar | 56 | 31 | 44 | 60 | 78 | 99 | 122 | 148 | 176 | 206 | 239 | 275 | 313 | 353 | 396 | | | | | | | | | | | |
| Oak, black | 62 | 34 | 48 | 66 | 86 | 109 | 135 | 163 | 194 | 228 | 265 | 304 | 346 | 390 | 437 | | | | | | | | | | | |
| Oak, live | 76 | 41 | 60 | 81 | 106 | 134 | 166 | 200 | 238 | 280 | 324 | 372 | 424 | 478 | 536 | | | | | | | | | | | |
| Oak, red | 63 | 34 | 49 | 67 | 88 | 111 | 137 | 166 | 198 | 232 | 269 | 309 | 351 | 397 | 445 | | | | | | | | | | | |
| Oak, white | 62 | 34 | 48 | 66 | 86 | 109 | 135 | 163 | 194 | 228 | 265 | 304 | 346 | 390 | 437 | | | | | | | | | | | |
| Osageorange | 62 | 34 | 48 | 66 | 86 | 109 | 135 | 163 | 194 | 228 | 265 | 304 | 346 | 390 | 437 | | | | | | | | | | | |
| Pecan | 61 | 33 | 47 | 65 | 85 | 108 | 133 | 161 | 192 | 225 | 261 | 299 | 341 | 385 | 431 | | | | | | | | | | | |
| Persimmon | 63 | 34 | 49 | 67 | 88 | 111 | 137 | 166 | 198 | 232 | 269 | 309 | 350 | 397 | 445 | | | | | | | | | | | |
| Poplar, yellow | 38 | 21 | 30 | 40 | 53 | 67 | 83 | 99 | 119 | 140 | 162 | 186 | 211 | 239 | 268 | | | | | | | | | | | |
| Sassafras | 44 | 24 | 34 | 47 | 61 | 78 | 96 | 116 | 138 | 162 | 188 | 215 | 245 | 277 | 310 | | | | | | | | | | | |
| Sycamore | 52 | 28 | 41 | 55 | 72 | 92 | 113 | 137 | 163 | 191 | 222 | 254 | 290 | 327 | 366 | | | | | | | | | | | |
| Walnut, black | 58 | 32 | 45 | 62 | 81 | 102 | 126 | 153 | 182 | 213 | 248 | 284 | 323 | 364 | 409 | | | | | | | | | | | |
| Hemlock, eastern | 50 | 27 | 39 | 53 | 70 | 88 | 109 | 132 | 157 | 184 | 214 | 245 | 279 | 317 | 353 | | | | | | | | | | | |
| Pine, n. white | 36 | 20 | 28 | 38 | 50 | 64 | 78 | 95 | 113 | 133 | 154 | 176 | 201 | 227 | 254 | | | | | | | | | | | |
| Spruce, red | 34 | 19 | 27 | 36 | 47 | 60 | 74 | 90 | 106 | 125 | 145 | 166 | 189 | 214 | 239 | | | | | | | | | | | |
| Tamarack | 47 | 26 | 37 | 50 | 65 | 83 | 102 | 124 | 147 | 173 | 200 | 230 | 262 | 295 | 331 | | | | | | | | | | | |

5.0 SAFE WORK PRACTICES

5.1 General

- 5.1.1 Every employer and employee shall observe all applicable federal, provincial and local laws and regulations and ensure the health and safety of persons at or near the workplace.
- 5.1.2 All safety equipment and devices shall conform with applicable standards and shall be maintained in safe, functional condition.
- 5.1.3 All equipment, including ropes, harnesses and belts, upon which the worker must rely for his/her safety, shall be inspected by the worker each day before use. Employers shall instruct their employees in the proper use and care of all equipment and shall require that safe work practices are observed.
- 5.1.4 A minimum of two workers shall be required on each crew for all work above ground, one of whom will remain on the ground to assist the climber or aerial lift operator.
- 5.1.5 All treework performed above ground level shall be performed by a qualified arborist or a qualified arborist trainee. Note - An International Society of Arboriculture - "Certified Treeworker" is deemed to be equivalent to a qualified arborist for the purpose of this Code of Practice.
- 5.1.6 Only qualified personnel shall operate or utilize equipment used in arboriculture operations. Example - brush chippers, root grinders

5.2 Climbing

- 5.2.1 Before climbing the tree the worker shall:
 - (a) visually assess the structural stability of the tree;
 - (b) select and inspect the safest path of ascent;
 - (c) select an appropriate crotch for crotching-in;
 - (d) identify the location of any electrical conductors and plan a path to maintain adequate clearance;
 - (e) identify any other electrical hazards such as branches contacting electrical conductors;
 - (6) identify or locate any dead, lodged or hanging limbs that may become dislodged and also check for wasp/bee/hornet nests or rodents that may be in the tree;
- 5.2.2 While working above ground the worker shall be tied-in with an approved type of harness or arborist saddle, and arborist climbing-rope or safety-strap. An additional safety-strap or climbing-rope shall be used for additional stability and back-up fall-protection whenever possible.

- 5.2.3 Continuous fall-arrest or fall-protection will be used whenever workers are climbing, working or descending a tree and are greater than 3 m above the ground, except when:
- (a) ascending a ladder to gain access to a tree, providing the base of the ladder is secured by an assistant or,
 - (b) the density of branches (such as Balsam fir or spruce) prevent the climber from crotching a climbing or safety line. In such cases three points of contact (eg. 1 foot and 2 hands or 1 hand and 2 feet) shall be maintained.
- 5.2.4 The worker shall remain tied-in until work is completed and he/she has returned to the ground. If it is necessary to re-crotch while in the tree the worker shall re-tie in or use a safety strap before releasing the previous tie.
- 5.2.5 Climbers shall keep unnecessary slack out of safety ropes at all times when working aloft and not climb above the tie-point unless tied in with another rope or safety strap secured at or above the level of the climber.
- 5.2.6 Climbers who wish to access a tree from an aerial lift shall ensure that they are tied into an appropriate crotch in the tree with safety rope and taut-line-hitch or if this is not practical, a safety strap, before releasing themselves from their lanyard attachment to the boom.

5.3 **Aerial Lifts**

- 5.3.1 All aerial lifts shall be maintained and operated within the limitations of the manufacturers' specifications, including dielectric rating, use of outriggers and wheel chocks, and bucket capacity.
- 5.3.2 A daily inspection of the vehicle shall be done prior to starting work.
- 5.3.3 Riding from one spot to another in an aerial bucket shall not be permitted, except in accordance with manufacturers specifications.
- 5.3.4 Aerial lifts used in proximity to energized electrical conductors or equipment shall be equipped with upper and lower controls. The lower controls shall be capable of positively overriding the upper controls and be clearly marked and protected from falling branches.
- 5.3.5 No part of the aerial lift, including booms and buckets, shall be allowed to make contact with electrical conductors or equipment energized at greater than 300 volts or less than 300 volts and open configuration. Every attempt should be made to avoid contact with other electrical conductors or equipment energized at 300 volts or less.

- 5.3.6 Any aerial lift being used in proximity to high voltage electrical equipment shall have its boom dielectrically tested annually to ANSI Standard A92.2 Vehicle Mounted Elevating and Rotating Aerial Devices.
- 5.3.7 Aerial lifts used in proximity to energized electrical equipment shall be equipped with approved bucket liners.
- 5.3.8 Bucket liners shall be tested annually as per ANSI Standard A92.2 Vehicle Mounted Elevating and Rotating Aerial Devices.
- 5.3.9 Bucket liners shall be inspected at regular intervals to check for gouges, cracks or other deterioration of the liner's integrity.
- 5.3.10 Bucket liners and buckets shall be kept clean and free of debris and transported and stored with a cover.

5.4 **Pruning and Trimming**

- 5.4.1 Pole pruners or pole saws, whether manual, hydraulic or pneumatic, used in proximity to energized electrical conductors or equipment shall have handles manufactured of dielectrically rated nonconductive material. These tools shall be kept clean and dry and shall be dielectrically tested and certified according to applicable standards every year, and regularly wiped with silicone cloth.

Such hot line pruning tools shall be stored and transported in a manner that protects them from weather, contamination and mechanical damage.

- 5.4.2 Pole pruner ropes used in proximity to energized electrical equipment shall be clean and dry polypropylene and/or equipped with insulated inserts of a minimum of 21.5 cm (8½ inches). This insert shall be near the head of the pruner.
- 5.4.3 Pole pruners and pole saws shall not be hung on electrical wires or cables.
- 5.4.4 The tree worker shall give warnings to people on the ground before a limb is dropped and make sure the area is clear.
- 5.4.5 When limbs cannot be dropped safely, or are too heavy to be controlled by hand, they shall be lowered by a rope or ropes capable of holding the limb, separate from the climbing rope. (See Table 1). Ropes used for controlling limbs shall not contain a wire core when used around high voltage electrical lines.
- 5.4.6 Cut branches or "hangers" shall be removed from the tree before the climber or bucket operator moves on to other trees or shuts down for the day.

- 5.4.7 All possible efforts, including appropriate cuts and use of ropes, shall be made not to allow branches to strike, or make contact with, exposed energized electrical conductors.

6.0 ELECTRICAL HAZARDS

- 6.1 Prior to any work in or around a tree the worker shall make a careful inspection to determine the presence and location of any electrical equipment or lines. A crew briefing shall be held to discuss work involved and appropriate work methods to avoid hazards.
- 6.2 All electrical conductors shall be considered to be energized with potentially lethal voltages and must never be contacted with a conductive item held, or otherwise touching the body of a worker.
- 6.3 The local office of the electric utility shall be notified prior to any work in proximity to electrical conductors rated at 750 volts or greater.
- 6.4 Where tree-trimming is performed near energized electrical equipment or lines the following rules shall apply.
- 6.4.1 A Lineperson or Line-Clearance Arborist (Utility Treeworker) shall be responsible for the work.
- 6.4.2 Only a Lineperson, Line-Clearance Arborist (Utility Treeworker) or Line - Clearance Arborist Trainee (Utility Treeworker Trainee) under the continuous direction of a Lineperson or Line-Clearance Arborist (Utility Treeworker), shall perform tree-trimming closer to exposed energized electrical equipment than the Normal Limits of Approach for unqualified personnel specified in Table I (ie. 10 feet for distribution lines rated between .75 and 25 kV phase to phase).
- 6.4.3 A minimum of two workers shall be required on each crew, one of whom will be a Lineperson or Line-Clearance Arborist (Utility Treeworker) and the other a Lineperson, Line-Clearance Arborist (Utility Treeworker) or Line-Clearance Arborist Trainee (Utility Treeworker Trainee).
- 6.4.4 One worker shall remain on the ground within normal voice communication of the worker aloft. This person shall be capable of effecting an aerial rescue.
- 6.4.5 When aerial lifts are used near energized circuits, workers on the ground shall not contact the vehicle until the aerial lift operator has ceased operation and given authorization to do so. The worker on the ground shall also guard against the possibility of members of the public making contact with the vehicle or attached equipment while work is being performed.
- 6.4.6 Normal work shall be suspended when weather conditions are such as to make the job hazardous (e.g. wind, moisture, ice).

6.5 Limits of Approach

The Limits of Approach are the shortest allowable distance between an energized high voltage line or apparatus and any part of the employee's body or conductive item being handled.

Workers shall observe the limits of approach to live high voltage conductors as specified in the following tables:

6.5.1 Qualified Workers

Only Linepersons, Line-Clearance Arborists (Utility Treeworkers) or Line Clearance Arborist Trainees (Utility Treeworker Trainees) shall trim or remove trees near exposed energized high voltage lines. All other workers are considered unqualified.

6.5.2 Unqualified personnel shall not approach or allow any object including tools and tree branches to come closer to live exposed electrical apparatus than the distances specified in Table I or as specified in the Occupational Safety General Regulations, which ever is greater. (ie. distance for 138kv is 6.0 meters in the general Regulations)

Note - For clarification, the term qualified worker in this code of practice shall have the same meaning as competent person in the definition section of the Occupational Safety General Regulations. Conversely, an unqualified person is a person who does not meet the definition of a competent person.

Remember - permission from the authority / utility is required when working on or near a power line.

Table I - Normal Limits of Approach (Unqualified Personnel)

| Nominal Circuit Voltage (Phase to Phase) | C.S.A. Voltage Range (Phase to Ground) | | Limits of Approach | |
|--|--|----------|--------------------|--------|
| | Metres | Feet | Metres | Feet |
| 0.75 - 25 kV | 0.4 | - 22 kV | 3.0 | - (10) |
| - 69 kV | 22 | - 50 kV | 3.0 | - (10) |
| - 138 kV | 50 | - 90 kV | 4.6 | - (15) |
| - 230 kV | 120 | - 150 kV | 6.1 | - (20) |
| - 345 kV | 190 | - 220 kV | 6.1 | - (20) |

- 6.5.3 Under normal working conditions qualified workers shall not approach or allow conducting objects to approach closer to exposed energized electrical conductors than the distance specified in Table II.
- 6.5.4 Branches or other parts of the tree that are closer than the Absolute Limits of Approach for qualified workers as specified in Table III shall be removed only by qualified Linepersons, Line-Clearance Arborists (Utility Treeworkers) or Line-Clearance Arborists Trainees (Utility Treeworker Trainees) wearing approved and tested rubber gloves and using insulated pruners or saws and working from an insulated aerial lift with an approved and tested bucket liner.

Table II - Normal Limits of Approach (Qualified Worker)

| Nominal Circuit Voltage (Phase to Phase) | C.S.A. Voltage Range (Phase to Ground) | | Limits of Approach | |
|--|--|------|--------------------|-------------|
| | Meters | Feet | Meters | Feet |
| 0.75 | - 25 kV | 0.4 | - 22 kV | 1.2 - (4) |
| | - 69 kV | 22 | - 50 kV | 1.5 - (5) |
| | - 138 kV | 50 | - 90 kV | 1.8 - (6) |
| | - 230 kV | 120 | - 150 kV | 2.3 - (7.5) |
| | - 345 kV | 190 | - 220 kV | 2.9 - (9.5) |

- 6.5.5 Under normal working conditions no person other than a qualified Line-Clearance Arborist (Utility Treeworker), shall climb or enter a tree that has branches closer to exposed energized electrical equipment than the Normal Limits of approach for qualified workers as specified in Table II; or has branches that through wind or activity of the tree worker may be brought closer than these Normal Limits of Approach (Table II).
- 6.5.6 When the type of job requires any worker, other than a qualified Line-Clearance Arborist (Utility Treeworker), to enter or work a tree which encroaches on the Normal Limits of Approach, the line must be first de-energized and grounded or be adequately insulated from contact by using approved and tested cover-up equipment.

6.5.7 Under no circumstances shall any worker climb or enter a tree that has branches closer to exposed energized electrical equipment than the Absolute Limits of Approach for qualified workers as specified in Table III; or has branches that through wind or activity of the Treeworker may brought closer than these Absolute Limits of Approach (Table III).

6.5.8 When the work requires the Line-clearance Arborist (Utility Treeworker), while working from a tree, to remove branches that are closer than the Absolute Limits of Approach (Table III) the line must be first de-energized and grounded or adequately insulated from contact by using approved and tested cover-up equipment.

Table III - Absolute Limits of Approach (Qualified Worker)

| Nominal Circuit Voltage (Phase to Phase) | C.S.A. Voltage Range (Phase to Ground) | | Limits of Approach | |
|--|--|--------------|--------------------|-------|
| | Meters | Feet | Meters | Feet |
| 0.75 | - 25 kV | 0.4 - 22 kV | 0.3 | (1) |
| | - 69 kV | 22 - 50 kV | 0.6 | (2) |
| | - 138 kV | 50 - 90 kV | 0.9 | (3) |
| | - 230 kV | 120 - 150 kV | 1.4 | (4.5) |
| | - 345 kV | 190 - 220 kV | 2.0 | (6.5) |

6.5.9 De-energizing, switching, grounding or installation of cover-up equipment shall only be done by qualified linepersons in consultation with the local electric utility.

6.6 Rubber Gloves

Approved and tested high voltage rubber gloves, rated for the voltage involved, shall be worn when carrying out any activity aloft that could place any part of the body or any conductive material, including tree branches, within 1.2 m (4 ft.) of exposed energized lines or equipment.

6.6.1 High voltage rubber gloves shall be carried in approved containers. They shall not be folded or stored in locations where the temperature exceeds 32°C (90°F) and if wet, the gloves shall be dried before storing.

6.6.2 Workers shall not wear finger rings while using high voltage rubber gloves when the size or shape of the ring could result in stress or damage to the rubber gloves.

- 6.6.3 Rubber gloves shall always be worn with approved clean leather outer gloves for protection. These protectors shall not be used for any other purpose.
- 6.6.4 High voltage rubber gloves shall not be worn inside out.
- 6.6.5 High voltage rubber gloves shall be visually inspected and air tested before each use and shall be exchanged any time they become damaged, or doubt exists regarding their condition.
- 6.6.6 High voltage rubber gloves shall be inspected and electrically tested at regular intervals (6 months) as per ASTM-F496, In-Service Care of Insulating Gloves and Sleeves.

7.0 **GASOLINE POWERED CHAINSAWS**

- 7.1 All gasoline powered chainsaws shall be equipped and operated in accordance with the Forest Professional*, Nova Scotia Department of Environment and Labour. The latest Edition* requires saws to be C.S.A. approved.
- 7.2 Power saws weighing more than 7 kg (15 lbs) that are used in trees shall be supported by a separate line and taut line hitch.
- 7.3 Only workers who through experience and training have demonstrated they are competent in its use, shall use a chainsaw aloft.
- 7.4 The chain brake shall be set when moving from one location to another.

Note - The Forest Professional has now been adopted by all four Atlantic Provinces

8.0 **TRAFFIC CONTROL**

- 8.1 Effective means for control of pedestrian and vehicular traffic shall be instituted on every job site.
- 8.2 When working over sidewalks or areas frequented by the public, a "safety zone", under the tree, plus at least 3 m beyond shall be maintained. Where major limbs are being removed or where an entire tree is being felled, the entire full area of the tree plus at least 6 m shall be maintained. Ground personnel shall be responsible for ensuring that passers-by remain outside the "safety zone." This "safety zone" should be delineated by a barricade, cones or other visible manner.
- 8.3 Traffic control devices and procedures shall conform to the Nova Scotia Department of Transportation and Public Works - Temporary Workplace Traffic Control Manual, Office Edition. (latest revision)

TREE-TRIMMING CODE OF PRACTICE

APPENDIX I

Related Regulatory Agencies, Standards
Organizations and Associated References

NOTE: This appendix is not part of the Code of Practice but is included for information only.

ANSI - **American National Standards Institute 1430 Broadway, New York, New York, USA 10018**

Z133.1 - 2000 - American National Standard for Tree Care Operations - Pruning, Trimming, Repairing Maintaining and Removing Trees and Cutting Brush - Safety Requirements.

A92.2 - 1990 - American National Standard for Vehicle Mounted Elevating and Rotating Aerial Devices.

ASTM - **American Society for Testing and Materials 1916 Race St., Philadelphia P.A., USA 19103**

ASTM - F496 - ASTM Standards for Electrical Protective Equipment for Workers.

CSA - **Canadian Standards Association 178 Rexdale Blvd., Rexdale (Toronto), ON M9W 1R3**

294.1-M1977 - Industrial Protective Head wear

294.2-M1984 - Hearing Protectors

2195-M1984 - Protective Footwear

2259.2-M1979 - Fall Arresting Devices, Personal Lowering Devices and Life Lines

2259.11-M1992 - Shock Absorbers for Personal Fall Arrest Systems

C225-M88 - Vehicle Mounted Aerial Devices

NSDEL - **Nova Scotia Department of Environment and Labour Occupational Health and Safety Division P.O. Box 697, Halifax, NS B3J 2T8**

- The Forest Professional (latest edition)

- Occupational Health and Safety Act.

- Fall Protection and Scaffolding Regulations

- Occupational Safety General Regulations.

- Occupational Health Regulations

- First Aid Regulations

- Disclosure of Information Regulations

- Workplace Hazardous Materials Information System Regulations

- Temporary Workplace Traffic Control Regulations

NSPI - **Nova Scotia Power Inc., P.O. Box 910, Halifax, NS B3J 2W5**

- Nova Scotia Power Safety Manual

ISA - **International Society of Arboriculture Atlantic Chapter
P.O. Box 20152, Spryfield, Halifax, NS B3R 2L1**

- Arborists' Certification Study Guide.

- Tree Climbers Guide.

APPENDIX 2 - Sample Certification Cards

Instructions

Copy the appropriate blank certification card, or design one with the same information, and fill in the blanks as shown below. Cut the card out, fold along the dotted line and plastic laminate the card.

| |
|---|
| <p>TREWORKER CLIMBER</p> <p>_____ (name)</p> <p>_____ (company)</p> <hr/> |
| <p>I, _____ (name) _____, _____ (position) _____, representing _____ (company) _____ certify that _____ (worker) _____ has met all training and experience requirements to qualify as a Treeworker Climber as described in the Code of Practice for Tree Trimming in Nova Scotia.</p> <p>_____ (signature) _____ (date) _____</p> |

| |
|---|
| <p>TREWORKER CLIMBER</p> <p>_____ Joe Treeman</p> <p>_____ Acme Tree Ltd.</p> <hr/> |
| <p>I, _____ Peter Branch _____, _____ General Manager _____, representing _____ Acme Tree Ltd. _____ certify that _____ _____ Joe Treeman _____ has met all training and experience requirements to qualify as a Treeworker Climber as described in the Code of Practice for Tree Trimming in Nova Scotia.</p> <p>_____ Peter Branch _____ June 6, 1995</p> |

TREWORKER
CLIMBER

I, _____, _____,
representing _____ certify that _____
_____ has met all training and experience
requirements to qualify as a Treeworker Climber as
described in the Code of Practice for Tree Trimming
in Nova Scotia.

UTILITY TREWORKER
CLIMBER

I, _____, _____,
representing _____ certify that _____
_____ has met all training and experience
requirements to qualify as a Treeworker Climber as
described in the Code of Practice for Tree Trimming
in Nova Scotia.

TREWORKER
AERIAL LIFT

I, _____, _____,
representing _____ certify that _____
_____ has met all training and experience
requirements to qualify as a Treeworker Climber as
described in the Code of Practice for Tree Trimming
in Nova Scotia.

UTILITY TREWORKER
AERIAL LIFT

I, _____, _____,
representing _____ certify that _____
_____ has met all training and experience
requirements to qualify as a Treeworker Climber as
described in the Code of Practice for Tree Trimming
in Nova Scotia.
