

ARBORIST INDUSTRY

SAFE WORK PRACTICES

Third Edition



Table of Contents

Introduction & General Legislation	9
1.0 Introduction	11
2.0 Arborist Safe Work Practices Defined	12
3.0 How To Use The ASWP	13
4.0 General Legislation	14
Job Planning	16
1.0 Introduction	18
1.1 Hazards	
1.2 Legislation / Safe Work Practices	
2.0 Arborist Job Planning	19
2.1 Mandatory Information	
3.0 Protect Self and Others	20
3.1 Mandatory Information / Work Practice	
Ascending Trees	23
1.0 Introduction	25
2.0 Hazards	25
3.0 Legislation / Safe Work Practices	25
4.0 Mandatory Information / Work Practices	25
4.1 Job Planning	
4.2 Tree Structure Assessment	
4.2.1 Anchor Strength Assessment	
5.0 Inspect Fall Protection Equipment	31
6.0 Place Arborist Life Line in Tree	31
7.0 Ascending Techniques	32
7.1 Belay Technique	
7.1.1 Ascent	
7.1.2 Interim Anchor Point Repositioning Arborist Life Line	
7.1.3 Final Anchor Point	
7.2 Secured Foot Locking Technique	
7.2.1 Ascent	

7.2.2 Interim Anchor Point Repositioning Arborist Life Line	
7.2.3 Final Anchor Point	
7.3 Secured Body Thrust	
7.3.1 Ascent	
7.3.2 Interim Anchor Point Repositioning Arborist Life Line	
7.3.3 Final Anchor Point	
7.4 Ascend with Spurs	
7.5 Ascent with a Ladder	
8.0 Work Position Technique	44
8.1 Work Positioning Techniques	
9.0 Tree Descent Technique	46
10.0 Emergency Response Plan	46
Working at Heights	49
1.0 Introduction	51
2.0 Hazards	51
3.0 Legislation / Safe Work Practices	51
4.0 Mandatory Information / Work Practices	52
4.1 Inspect Worksite	
4.2 Ascend Tree	
4.3 Starting & Using a Chain Saw Aloft	
4.4 Cutting Limbs	
Tree Removal	57
1.0 Introduction	59
2.0 Hazards	59
3.0 Legislation / Safe Work Practices	59
4.0 Mandatory Information / Work Practices	60
4.1 Site Inspection	
4.2 Set Notch	
4.3 Perform Back Cut	
4.4 Limbing Trees	
4.4.1 Spring Poles	
4.5 Lodged Tree Removal	

4.6 Bucking-up Felled Trees

Rigging Trees	66
1.0 Introduction	68
2.0 Hazards	68
3.0 Legislation / Safe Work Practices	68
4.0 Mandatory Information / Work Practices	69
4.1 Site Inspection	
4.2 Rigging Trees for Removal	
4.3 Rigging Sections of Trees Aloft	
4.3.1 Establish Rigging Points	
4.3.2 Sectionalizing Trees	

Arborist Hand and Power Tools	75
1.0 Introduction	77
2.0 Equipment Used	77
2.1 Axes, Brush Hooks and Other Chopping Tools	
2.2 Pole Pruner, Pole Saws, Pneumatic Tools and Electrical Trimmers	
2.3 Log Handling Devices	
2.4 Wedges, Chisels and Gouges	
2.5 Hammers, Mauls, Shovels and Sledges	
2.6 Load Controlling Devices and Components	
3.0 Hazards	78
4.0 Legislation / Safe Work Practices	78
5.0 Mandatory Information	78
6.0 Work Practices	79
6.1 Axes, Brush Hooks and Other Chopping Tools	
6.2 Pole Pruner, Pole Saws, Pneumatic Tools and Electrical Trimmers	
6.3 Log Handling Devices	
6.4 Wedges, Chisels and Gouges	
6.5 Hammers, Mauls, Shovels and Sledges	
6.6 Load Controlling Devices and Components	
6.7 Telescopic Power Pole Saws. Power Pack Saws	
7.0 Ladders	82

Fertilizing and Aerating Soils for Woody Plants	83
1.0 Introduction	85
2.0 Hazards	85
3.0 Legislation / Safe Work Practices	86
4.0 Application Methods	86
5.0 Work Practices	86
5.1 Liquid – Soil Fertilization	
5.2 Granular – Broadcast Methods - Soil Fertilization	
5.3 Granular – Drill Hole Method – Soil Fertilization	
5.4 Trunk Implant Method - Fertilization	
5.5 Trunk Injection Method - Fertilization	
5.6 Aerating Soils	
5.7 Mechanical Aeration	
5.8 Pneumatic Aeration	
Installation of Hardware in Woody Plants	91
1.0 Introduction	93
2.0 Hazards	93
3.0 Legislation / Safe Work Practices	93
4.0 Mandatory Information	93
5.0 Work Practices	94
5.1 Site Inspection	
5.2 Installing Hardware in Tree	
5.3 Install Hardware from Ground	
Arborist Transplanting Woody Plants	96
1.0 Introduction	98
2.0 Hazards	98
3.0 Legislation / Safe Work Practices	98
4.0 Mandatory Information / Work Practices	99
5.0 Work Practice	99

Aerial Device Operation	101
1.0 Introduction	103
2.0 Hazards	103
3.0 Legislation / Safe Work Practices	103
4.0 Mandatory Information / Work Practices	104
5.0 Work Practice	105
5.1 Setup Aerial Device	
5.2 Operation of Aerial Device	
5.3 Starting & Using a Chain Saw Aloft	
5.4 Maintenance of Aerial Device	
5.5 Evacuation / Rescue from an Aerial Device	
 Chain Saw Operation	 110
1.0 Introduction	112
2.0 Hazards	112
3.0 Legislation / Safe Work Practices	112
4.0 Mandatory Information / Work Practices	113
5.0 Work Practice	114
5.1 Pre-operational Checks	
5.2 Maintenance	
5.3 Operate Chain Saw	
 Brush Chipper Operation	 116
1.0 Introduction	118
2.0 Hazards	118
3.0 Legislation / Safe Work Practices	118
4.0 Mandatory Information / Work Practices	119
5.0 Work Practice	119
5.1 Pre-operational Checks	
5.2 Operation of Chipper	
5.3 Emergency Shut Down of Chipper	
5.4 Removing a Blockage (Chipper)	

Stumper Operation	123
1.0 Introduction	125
2.0 Hazards	125
3.0 Legislation / Safe Work Practices	125
4.0 Mandatory Information / Work Practices	126
5.0 Work Practice	126
5.1 Pre-operational Checks	
5.2 Stumper Operation	
5.3 Emergency Shut Down of Stumper	
5.4 Normal shut Down of Stumper	
Clearing Saw Use	129
1.0 Introduction	131
2.0 Hazards	131
3.0 Legislation / Safe Work Practices	131
4.0 Mandatory Information / Work Practices	131
5.0 Work Practice	132
5.1 Site inspection	
5.2 Cutting Operation	
Use of a Mobile Crane to Remove Trees	134
1.0 Introduction	136
2.0 Hazards	136
3.0 Legislation / Safe Work Practices	136
4.0 Mandatory Information / Work Practices	137
5.0 Work Practice	138
5.1 Worksite Assessment	
5.2 Worksite Setup	
5.3 Arborist Work Positioning	
5.4 Crane Rigging	
5.4.1 Crane Rigging – Multi-leg Sling Configuration	
5.4.2 Crane Rigging – Single Sling Configuration	
5.5 Cut Section	

Appendix A	144
Appendix B	146
Appendix C	148
Appendix D	151
Glossary of Terms	157

ASWP 01 R0

Introduction & General Legislation



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

- 1.0 Introduction
- 2.0 Arborist Safe Work Practices Defined
- 3.0 How To Use The ASWP
- 4.0 General Legislation

1.0 Introduction

The Arborist Safe Work Practices (ASWP) are safe work guidelines, written by the industry, for the industry. The Arborist Safe Work Practices committee has evolved since its inception in 1999 to a well-defined working committee that provides support to various safety related issues in the arborist industry. A milestone was reached on January 1, 2011 when the committee put in place its Terms of Reference to ensure consistency within the committee structure and to ensure its continuance.

1.1 Purpose

The Arborist Industry Safe Work Practices (ASWP) committee is a volunteer committee for the arborist trade in Ontario whose purpose is to assist businesses, government agencies and Safe Workplace Associations to improve the health and safety of the arboricultural industry.

This purpose is satisfied by:

- The management and control of the content of the Arborist Industry Safe Work Practices document
- Providing a location for government agencies such as: Safety Associations, MoL to access knowledge, skills and experience on health and safety related to arboricultural matters

1.2 ASWP Committee

The guiding principle for Committee membership will be a commitment to improving health and safety of the arboricultural workplace.

Membership on the Committee is open to anyone employed or employs workers directly within the arboriculture sector.

Consideration for membership to the Committee will require an application to the Chair. The Chair will present the credentials of the new member to the Committee for consideration. Committee members will vote on all applicants to the Committee with a Majority Rule decision.

Committee makeup will attempt to have an equal representation of employers and employees. Committee makeup will be limited to twelve (12) members, including the Chair and Co-Chair positions, and will include all facets of the industry:

- Commercial (4 members)
- Municipal (4 members)
- Utility (4 members)

The ASWP Committee recognizes that without the dedication and volunteer hours of several organizations and individuals from within the industry and health and safety associations the safe work practices would not have been developed. The ASWP Committee recognizes those efforts of the organizations below.

Recognition of Organizations and Businesses	
Arbor Valley Tree Service	Davey Tree Service
Bruce Tree Service	Gardiner Tree Service
City of Toronto	Hydro One
Workplace Safety and Prevention Services	Ministry of Labour
Infrastructure Health & Safety Association	ISA – Ontario Chapter
WSIB	Ontario Commercial Arborist Association
MTCU	Ontario Parks Association
Humber College	Sir Sanford Fleming College

2.0 Arborist Safe Work Practices Defined

2.1 Scope

The Arborist Safe Work Practices (ASWP) contain arboricultural safety requirements for planting, pruning, repairing, maintaining and removing woody plants, cutting brush and for using equipment in such operations, outside of the Construction or Industrial Legislated Limits of Approach to energized electrical apparatus. For work within the Construction or Industrial legislated Limits of Approach the user should contact the Infrastructure Health and Safety Association.

2.2 Purpose

The work practices provide safety criteria for **arborists** and other workers involved in arboricultural work. They are to act as a guide to Provincial, Municipal and other local authorities in drafting regulations and may be adopted in whole or in part.

2.3 Application

The ASWP is intended to apply to all employees engaged in the business or trade of arboriculture including: planting, pruning, repairing, maintaining, removing woody plants, or cutting brush. They are not intended for use by nursery personnel, who are growing and planting trees for wholesale. The ASWP serves as a reference for safety requirements for those engaged in the practice of arboriculture. The safe work practices may require situational modifications in response to personnel emergencies and is not intended to limit the options available to emergency responders.

2.4 Detail of ASWP's

The Arborist Safe Work Practices contains several pieces of information to be used to create a safe work environment. The user should follow the document and all supporting information.

Each safe work practice document is broken into several sections:

Potential Hazards

This section will include some of the hazards that may be encountered while performing the work.

Legislation

Legislation that is applicable to the practice and the supporting Arborist Safe Work Practices document.

Mandatory Information

This information is required to be followed when performing the specific work practice.

Work Practice

This is a practice that should be used as a guideline for performing the work

3.0 How to Use the ASWP

The development of the ASWP included a review of legislative requirements found under the OHSA, Construction and Industrial Regulations. The Safe Work Practices do not supersede legislative requirements but enhance what is found there. The ASWP do not supersede what is found in the manufacturer's instructions. Electrical hazards must be identified prior to performing any work and readers are directed to the Electrical Safety Rule Book for further information.

In developing the ASWP each task was broken down to its most basic components and from those, a safe work practice was developed. There are no procedures in the ASWP but a series of suggested practices to follow. A task being performed may utilize one or more practices, but the basic safety steps will always be the same no matter how the task is performed.

Note: Suggestions for improvement or changes should be in writing, faxed or emailed to Workplace Safety & Prevention Services:

- Fax 1-877-494-9777 or
- customercare@wsps.ca

The ASWP documents are broken into individual documents. The Revision Number indicates to the reader the revision history of the document. The on line version is considered the most current document and the reader should consult the on line Revision Number to ensure they are viewing the most current version. The Revision History describes in brief detail the most recent changes to the document.

4.0 General Legislation

The following sections of the Occupational Health and Safety Act (OHSA) apply to the trade of arboriculture and form the foundation for all of the *Arborist Safe Work Practices*. It *should* be noted that the applicable legislation sets minimum standards for the trade. Specific legislation relating to a work practice will be indicated in each individual work practice section.

Note: Not all sections of the OHSA and Regulations have been indicated here or in other *Arborist Safe Work Practices*. It is the responsibility of individuals to know and understand applicable legislation and apply them as required. The most current edition of the OHSA is accessible through e-laws.

- OHSA 25 (1) (a) Duties of Employer: ensure that the equipment, materials and protective devices as prescribed are provided.
- OHSA 25 (1) (b) Duties of Employer: ensure that the equipment, materials and protective devices provided by the employer are maintained in good condition.
- OHSA 25 (1) (d) Duties of Employer: ensure that the equipment, materials and protective devices provided by the employer are used as prescribed.
- OHSA 25 (2) (a) Duties of Employer: provide information, instruction and supervision to a worker to protect the health or safety of the worker.
- OHSA 25 (2) (h) Reasonable Precautions: take every precaution reasonable in the circumstances for the protection of a worker.
- OHSA 26 (1) (k) Additional Duties of Employers: where so prescribed provide a worker with written instructions as to the measures and procedures to be taken for the protection of a worker.
- OHSA 27 (1) (a) Duties of Supervisor: *shall* ensure that a worker works in a manner and with the protective devices, measures and procedures required by this Act and the regulations
- OHSA 27 (1) (b) Duties of Supervisor: *shall* ensure that a worker uses or wears the equipment, protective devices or clothing that the worker's employer requires to be used or worn.
- OHSA 27 (2) (b) Duties of a Supervisor: *shall* where so prescribed, provide a worker with written instructions as to the measures and procedures to be taken for the protection of the worker.

- OHS 27 (2) (c) Duties of a Supervisor protection of a worker
- OHS 28 (1) (a) Duties of Worker: shall work in compliance with the provisions of the Act and the regulations
- OHS 28 (1) (b) Duties of Worker: shall use or wear the equipment, protective devices or clothing that the worker's employer requires to be used or worn.

ASWP 02 R0

Job Planning



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

- 1.0 Introduction
 - 1.1 Hazards
 - 1.2 Legislation / Safe Work Practices
- 2.0 Arborist Job Planning
 - 2.1 Mandatory Information
- 3.0 Protect Self and Others
 - 3.1 Mandatory Information / Work Practice

1.0 Introduction

Working in a safe worksite requires that all workers are made aware of the hazards and barriers to protect them from harm. This document covers off the information required to perform job planning utilizing the information found in sections on Work in a Safe Environment and Protect Self and Others.

1.1 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment:

Biotic Conditions	Gravity
Chemical	Mechanical
Climatic Conditions	Pedestrian Traffic
Electrical Conditions	Vehicular Traffic
Ergonomics	

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

1.2 Legislation / Safe Work Practices

The following information has been provided listing legislation requirements:

- Temporary Conditions – Ontario Traffic Manual

Legislation	RRO / RSO	Section Referenced
Industrial	851 / 90	4.2, 43, 79, 80, 81, 82, 83, 84
Construction	213 / 91	17, 21, 22, 23, 24, 25, 26, 27, 67, 69, 79, 93, 112, 181, 183, 188

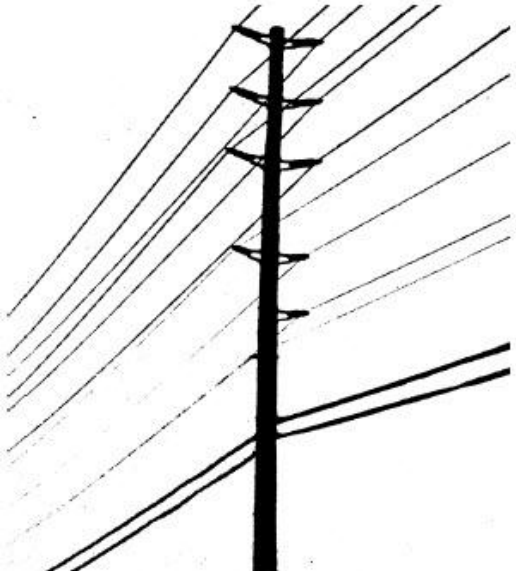
2.0 Job Planning


The purpose of this section is to outline the requirements for appropriate job planning while performing arboricultural work.

2.1 Mandatory Information / Work Practice

The following information will ensure appropriate job planning:

- Job planning is a process of identifying hazards and incorporating appropriate barriers to the hazards
- Job planning incorporates the use of the Safety Basics
- Job planning is an on-going process throughout the job and must be constantly monitored and changed as needed i.e. changes in plans, introduction of new work members or changes to work members
- Prior to the job starting a discussion shall be conducted, referred to as a Tailboard Discussion, outlining the hazards at the work site and required barriers
- All members of the crew shall be included in the discussion
- Hazards shall be eliminated and if they cannot be eliminated than measures put in place to control the potential harm from them
- Emergency Response Plan shall be included within the job planning process

Step	Action
<p>Identify hazards at job site (e.g. Figure 1)</p>  <p>Figure 1</p>	<p>Identify hazards such as:</p> <ul style="list-style-type: none"> • Utilities overhead and underground • Mechanical • Structural defects of tree • Public pedestrians flow • Vehicular traffic • Terrain specifics • Weather conditions • Hazardous <i>Biotic Conditions</i> • <i>Biohazards</i> <p>Identify barriers to <i>hazards</i>:</p> <ul style="list-style-type: none"> • Protective equipment / devices • Work practice(s) • Specialized training for the situation

Step	Action
<p>Identify Emergency Response Plans (e.g. 911 or appropriate phone number Figure 2)</p>  <p style="text-align: center;">Figure 2</p>	<p>Identify procedures to follow in case of emergency such as:</p> <ul style="list-style-type: none"> • Emergency phone numbers • Closest hospital • Location of work site • First Aid kit location • Fire Extinguisher location • Rescue equipment location
<p>Complete Tailboard Discussion</p>	<ul style="list-style-type: none"> • Ensure all crew members are present and participate • Ensure all assigned tasks are communicated to crew members and understanding is reached • Crew members introduced after the original Tailboard Discussion is completed must be included on the Tailboard and be introduced to the hazards and barriers in place
<p>Monitor the work site for changes to original Tailboard Discussion</p>	<ul style="list-style-type: none"> • Assess work site for changes to hazards throughout duration of the work <p>Note: Changes to hazards require the crew to stop and re-evaluate conditions and barriers.</p>

3.0 Protect Self and Others

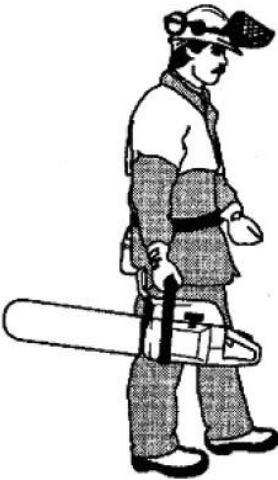
The purpose of this section is to outline how a worker can protect themselves and others at the work site as part of the job planning process.

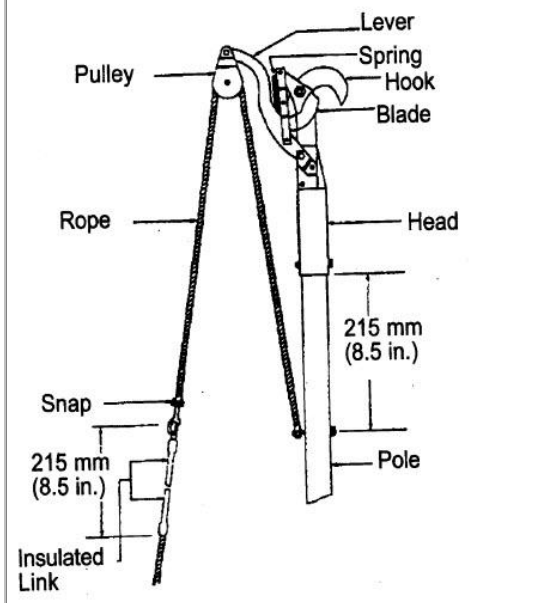
3.1 Mandatory Information / Work Practice

The following information has been provided to help ensure self and others are protected:

- All applicable Personal Protective Equipment (PPE) must be appropriately worn at all times
- PPE must be fitted properly

- PPE must not be modified or repaired except by the manufacturer or authorized by the manufacturer
- All tools and equipment must be inspected prior to use
- All guards and barriers shall be used as described in the manufacturer's instructions
- Head protection shall meet the applicable CSA standard and be appropriate to the circumstance i.e. Class E for electrical environments
- Hearing protection shall meet the applicable CSA standard and be appropriate to the circumstance
- Eye protection shall meet the applicable CSA standard (Z94.3-92) and be appropriate to the circumstance
- Foot protection shall meet the applicable CSA standard (Z195-M92) and be appropriate to the circumstance
- Leg protection shall meet the BNQ/CAN standard (1961.45)
- Hand protection shall be appropriate to the circumstance
- High visibility clothing shall be worn in appropriate circumstances i.e. night work, vehicular traffic situations

Step	Action
<p>Select, inspect, adjust, maintain and wear Personal Protective Equipment (PPE) appropriate to the circumstance daily / before use (e.g. Figure 4)</p>  <p>Figure 4</p>	<p>Inspect the following PPE components:</p> <ul style="list-style-type: none"> • Head protection • Eye protection • Hearing protection • Hand protection • High visibility clothing • Chainsaw leg protection • Foot protection • UV Protection

Step	Action
<p>Inspect tools and equipment required for the work.</p>  <p>Figure 5</p>	<p>Inspect tools for:</p> <ul style="list-style-type: none"> • Proper operation • Sharpness • Cracks, damage • Loose connections and leaks • Appropriate certification required i.e. di-electrical testing • Follow manufacturer's instructions
<p>Handle and carry equipment safely</p>	<ul style="list-style-type: none"> • Utilize guards and barriers as required

ASWP 03 R0

Ascending Trees



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES

DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

- 1.0 Introduction
- 2.0 Hazards
- 3.0 Legislation / Safe Work Practices
- 4.0 Mandatory Information / Work Practices
 - 4.1 Job Planning
 - 4.2 Tree Structure Assessment
 - 4.2.1 Anchor Strength Assessment
- 5.0 Inspect Fall Protection Equipment
- 6.0 Place Arborist Life Line in Tree
- 7.0 Ascending Techniques
 - 7.1 Belay Technique
 - 7.1.1 Ascent
 - 7.1.2 Interim Anchor Point Repositioning Arborist Life Line
 - 7.1.3 Final Anchor Point
 - 7.2 Secured Foot Locking Technique
 - 7.2.1 Ascent
 - 7.2.2 Interim Anchor Point Repositioning Arborist Life Line
 - 7.2.3 Final Anchor Point
 - 7.3 Secured Body Thrust
 - 7.3.1 Ascent
 - 7.3.2 Interim Anchor Point Repositioning Arborist Life Line
 - 7.3.3 Final Anchor Point
 - 7.4 Ascend with Spurs
 - 7.5 Ascent with a Ladder
- 8.0 Work Position Technique
 - 8.1 Work Positioning Techniques
- 9.0 Tree Descent Technique
- 10.0 Emergency Response Plan

1.0 Introduction

This document outlines the safe work practices for ascending trees and working at heights.

2.0 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment when ascending trees and working at heights:

Biotic Conditions	Gravity
Chemical	Mechanical
Climatic Conditions	Pedestrian Traffic
Electrical Conditions	Vehicular Traffic
Ergonomics	

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

3.0 Legislation / Safe Work Practices

The following information has been provided listing relevant arborist safe work practices and legislation requirements:

- ASWP01 General Legislation
- ASWP01 Work in a Safe Environment
- ASWP02 Protect Self and Others
- ASWP02 Arborist Job Planning

Legislation	RRO / RSO	Section Referenced
Construction	213 / 91	26

4.0 Mandatory Information / Work Practices

The following are the mandatory requirements for all fall protection systems for arborists ascending trees. In addition to these requirements, the work practice contains specific requirements that should also be followed.

- When ascending trees and working at heights the following must be considered as part of the Job Planning process to determine the appropriate Fall Protection System:
 - Job Planning
 - Risk Assessment
 - Hazard recognition
 - Appropriate training

- Equipment specifications
 - Emergency Response Plan
- The use of an aerial device (refer to ASWP12 Aerial Device Operation), where practical, should be considered first before attempting to physically ascend the tree
 - Those engaged in tree climbing shall be adequately trained or in the process of being trained in the following areas; job planning, perform pre-climb assessments/inspections, inspection of fall protection equipment, perform ascending methods, use work positioning techniques, descend from tree and Emergency Response Plan
 - Arborists engaged in climbing trees shall be accompanied by at least one ground assistant
 - At least one ground assistant at any given work site, where tree climbing is being performed, shall be trained in the Emergency Response Plan
 - Conduct a review, practice, and document annually an Emergency Response Plan
 - Prior to ascending a tree, all parts of the trees shall be inspected and assessed to ensure that they have the structural integrity to sustain the weight of the arborist and all potential loads (e.g. rigging or removing limbs)

Note: The arborist requires knowledge of tree structure, potential defects and species specific characteristics in order to safely assess the structural integrity of the tree and its components.

- Arborists shall inspect the Arborist Life Line, lanyards, and other climbing equipment for damage, cuts, abrasion, and/or deterioration before each use and shall remove them from service, if signs of excessive wear or damage are found. Refer to Appendix A for inspection techniques
- All appropriate Personal Protective Equipment (PPE) shall be worn while ascending trees and working at heights
- All Fall Protection Equipment shall meet the standard as set out in Appendix B
- Friction hitches used to secure the climber aloft must be from Appendix D
- The life line or friction saver shall be positioned around the main stem of the tree in its final anchor point
- All captive eye snaps and carabiners used as part of a fall protection system shall have a minimum of a triple action, double auto locking mechanism
- A figure'8' knot shall be at the running end of the arborist life line

- Fall protection equipment used to secure an arborist in the tree or from the bucket shall not be used for anything other than its intended purpose

EXCEPTION: The arborist life line may be used to raise and lower tools.

- Rope ends shall be finished in a manner to prevent unraveling
- Arborist life lines and climbing equipment shall be stored and transported in such a manner as to prevent damage through contact with sharp tools, cutting edges, gas, oil, chemicals or ultraviolet light
- Arborist life lines shall never be left in trees unattended
- When working aloft (refer to ASWP 04 Working at Heights) or ascending the tree and using sharp tools (e.g. handsaw, chain saw, or pole pruner) you shall be tied in twice in a position which will prevent a fall if one of the means of securement is cut
- All fall protection components shall be compatible

Note: If a knot used for fall protection other than found in Appendix D is desired; the proposed knot should be tested according to the Standards for Knot Testing protocol.

4.1 Job Planning

A thorough job plan shall be completed prior to ascending a tree. The following is a guideline of topics that should be discussed in the planning process. All crew members shall be party to the job planning process and job plans must be documented in writing (refer to ASWP 02 Job Planning).

Step	Action
Determine ascent route and work required within the crown of the tree	<ul style="list-style-type: none"> • Ascent route must consider hazards such as, electrical, structural integrity of the tree, insect or animals
Determine locations for interim anchor points	<ul style="list-style-type: none"> • Visually assess potential anchor points to ensure that they are strong enough to withstand the forces that will act on them • Look carefully for any structurally limiting defects that could lead to failure of the anchor point
Determine location of final anchor point	<ul style="list-style-type: none"> • The final anchor point location that will provide the best support and freedom of movement for the arborist is generally the highest, most centrally located point within the tree • Visually assess the structural integrity of this

	potential anchor point
Ensure Emergency Response Plan is in place	<ul style="list-style-type: none"> • Ensure a second person is available to initiate the emergency response plan • Ensure that emergency contact information is recorded on the job plan (e.g. emergency phone #s, directions to the work site, etc.)
Inspect immediate work site on ground and identify Drop Zone	<p>Identify hazards related to:</p> <ul style="list-style-type: none"> • Traffic conditions (pedestrian and vehicular) • Ground around tree (i.e. sloping or uneven terrain; general topography, buildings, sidewalks, fences, individual obstacles and other structures, etc.) • Environmental conditions such as: weather, temperature, light, visibility, animals (wild and domestic) and biotic conditions (poison ivy)
Determine appropriate barriers for the hazards identified	<ul style="list-style-type: none"> • Set up appropriate barriers for each hazard

4.2 Tree Structure Assessment

As part of the job planning process a thorough risk assessment of the structural integrity of the tree must be performed. The process allows a climber to determine whether the tree is safe to climb. This includes determining structural strength of the anchor locations.

Note: In arboriculture, diagnosing the structural strength of a tree is an inexact science. The arborist relies on knowledge and experience gained through formal training programs and related field experience to make a determination of the structural integrity of the tree.

Step	Action
Determine work to be performed	<ul style="list-style-type: none"> • During the assessment process, consideration must be given to the type of work to be performed (e.g. heavy loading of branches or the stem of the tree)
Assess root structure	<p>Visually inspect root system for visible decay or indication of decay such as:</p> <ul style="list-style-type: none"> • Fungal fruiting bodies • Grade changes • Extensive excavation • Circumferential soil cracking • Protruding root plate, etc.

	<p>Note: Further assessment of the root system may be necessary.</p> <ul style="list-style-type: none"> • Consider the history of the site to determine if there have been activities that could weaken the holding capacity of the root system (e.g. compacted soil creating rotting of roots)
<p>Assess stem structure</p>	<p>Visually inspect stem for: signs or symptoms of wood decay such as:</p> <ul style="list-style-type: none"> • Fungal fruiting structures • Conks • Cankers • Open wounds • Abnormally loose bark • Irregularities in trunk taper or normal round profile • Localized ridges or seams • Abrupt changes in normal linear configuration of trunk; whether the tree is alive or dead. Further assessment of the stem may be necessary <p>Note: This may involve techniques such as trunk sounding or the use of special tools and devices.</p> <p>However, all of these methods require special training and may be beyond the scope of an entry level arborist and should be verified by a more experienced arborist prior to ascending.</p>
<p>Assess branches and crown of tree</p>	<p>Visually inspect the crown of the tree for:</p> <ul style="list-style-type: none"> • Deadwood • Dieback • Stunted growth • Hanging or broken limbs • Weak unions • Splits • Cracks or missing sections
<p>Assess proposed interim anchor points</p>	<ul style="list-style-type: none"> • Assess anchor points for appropriate diameter, strength, and angle of attachment • Consider species of tree, current weather conditions, health of branch/stem and branching habit of tree • Anchor points must be able to withstand the anticipated load applied to them

Note: During the tree inspection, discovery of structural defects or potential hazards will require careful reconsideration of the methods originally selected for use. It may be necessary to select an alternative method for accessing the tree.

4.2.1 Anchor Strength Assessment

Many factors determine tree branch breaking strength. Listed below are descriptions of the most common conditions that could produce a limb failure.

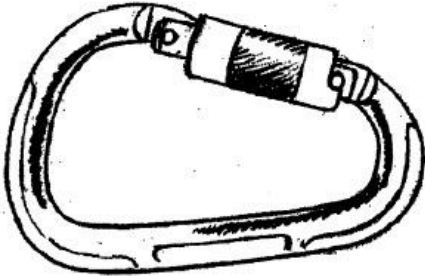
- Magnitude and type of load (e.g. dynamic vs. static) applied
- Type of loading (distance away from limb attachment to main stem)
- Other loads on the limb (foliage, snow, torque caused by limb length, weight distribution, etc.)
- Tree species
- Cross sectional area of solid wood (diameter of limb)
- Condition of wood (sound, decayed, hollow)
- Branch attachment relative to parent stem (angle, “V” or “U” shape)
- Season and temperature (winter versus summer)
- Stage of tree maturity
- Movement or rubbing between limbs

Assess the above conditions prior to using a limb as an anchor point. Some of the listed conditions can be scientifically proven without severing the limb from the tree. However, in most cases, combined knowledge and experience will prepare the arborist to determine whether the limb is safe to use as an *anchor point*. In the absence of adequate knowledge and/or experience, the arborist should request assistance from a more qualified person with respect to this decision.

In order to minimize the effect of leverage on the limb being used as an anchor, the arborist life line should be kept against the main stem of the tree while climbing. To facilitate this, limbs used as temporary anchor points must be horizontal or growing upwards.

5.0 Inspect Fall Protection Equipment

All fall protection equipment shall be inspected prior to ascending a tree (Refer to Appendix A).

Step	Action
<p data-bbox="136 346 602 422">Inspect fall protection equipment (e.g. Figure 1)</p> <p data-bbox="342 787 459 821">Figure 1</p> 	<p data-bbox="672 420 1487 489">See Appendix A for a sample of fall protection equipment inspection:</p> <ul data-bbox="727 531 1458 1081" style="list-style-type: none"><li data-bbox="727 531 1458 600">• Inspect fall protection equipment for defects and function before each use<li data-bbox="727 642 1458 711">• Refer to manufacture's instructions for proper inspections<li data-bbox="727 753 1458 823">• Fall protection equipment that arrests a fall must be immediately removed from service<li data-bbox="727 865 1458 934">• Fall protection carabiners with more than 1 mm wear shall be removed from service<li data-bbox="727 976 1458 1081">• Arborist life line shall be used exclusively for climbing, except when raising or lowering hand tools

6.0 Placing Arborist Life Line in Tree

There are several methods used to place the life line into the appropriate anchor point.

From the ground, the worker may utilize a throw ball or bag, throwing knot or noose knot. Sling shot devices are being used increasingly to assist in getting a throw bag high into a tree.

Once within the tree, the worker may use a rope poking tool, pole pruner or throwing knot to advance the rope up the tree.

7.0 Ascending Techniques

The ASWP committee has suggested five techniques for ascending trees. The committee recognizes that there are several different methods and techniques and to list all would be impossible. However, the essentials of a fall protection system must be met regardless of what system is used. The five techniques for ascending a tree are; Belay Technique, Secured Foot Locking, Secured Body Thrust, Spurs and Ladders.

Each technique requires:

- A thorough inspection of the tree, the site and the equipment
- Adequate training in climbing techniques and Emergency Response Procedures.

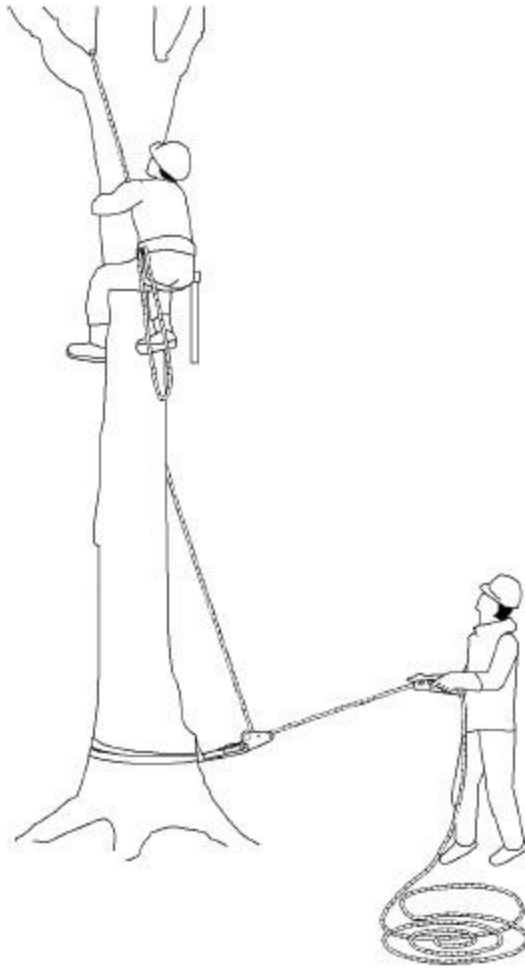
7.1 Belay Techniques

The Belay Technique (Figure 2) used by arborists is adopted from recreational rock climbing. The technique utilizes a worker on the ground to assist the arborist ascending the tree by securing the arborist to an anchor point on the ground, using either a mechanical fall arrestor or a friction hitch, through their life line.

As the arborist ascends, the ground worker removes the slack in the rope. If the arborist slips, the mechanical device or friction hitch attached to the anchor point prevents a fall.

Note: The anchor must be sufficient to support the forces generated by a worker in a fall occurs.

Figure 2



7.1.1 Ascent

Step	Action
Place arborist life line in tree at interim anchor location or if possible final anchor location	
Attach arborist life line to arborist	<ul style="list-style-type: none"> • Use a termination knot from Appendix D or a captive eye safety snap or carabiner
Secure the arborist to the belaying anchor point	<ul style="list-style-type: none"> • Use a mechanical arrester, or a friction hitch from Appendix D
Test belay to ensure it is secure	<ul style="list-style-type: none"> • Place weight into the system <p>Note: If the arborist life line slips through the mechanical arrester or friction hitch, the system is not safe to use. Either retie the friction hitch or remove/inspect/re-install the mechanical arrester. Re-check the system.</p>
Begin ascent	

7.1.2 Interim Anchor Point Repositioning Arborist Life Line

Once the arborist has climbed to an interim anchor point the following actions apply for continuing ascent.

Step	Action
Secure to tree using a work positioning lanyard	<ul style="list-style-type: none"> Place work positioning lanyard around the main stem of the tree or a suitably strong limb and connect to side “D” rings of arborist belt
Ensure that the work positioning lanyard is secure	<ul style="list-style-type: none"> Check snaps, place weight into lanyard
Communicate to Belayer	<ul style="list-style-type: none"> Receive and confirm e.g. “On/Off Belay”
Reposition arborist life line to next interim anchor point	<ul style="list-style-type: none"> The worker may use a rope poking tool or throwing knot to advance the rope up the tree.
Secure arborist life line to fall protection saddle	<ul style="list-style-type: none"> Secure life line using a termination knot or connector to appropriate load rated attachment point of saddle or fall protection harness.
Test belay is secure	<ul style="list-style-type: none"> Climber slowly places weight into system. Belayer must ensure that the arborist is secured, there must be no movement of the arborist life line through the mechanical fall arrestor or a friction hitch Belayer communicates that arborist is secured
Release work positioning lanyard	
Continue ascent	
Repeat interim anchor point process until reaching the final anchor point	

7.1.3 Final Anchor Point

The final anchor point is where the arborist will secure their arborist life line allowing the arborist mobility to work. The final anchor point is best situated as high in the tree as reasonable to allow mobility of the worker, similar to a pendulum. The final anchor point must meet the requirements of all anchor locations.

Step	Action
Secure to tree using a work positioning lanyard	<ul style="list-style-type: none">Place a work positioning lanyard around the main stem and over a sufficiently strong limb to secure to tree
Test lanyard is secured	<ul style="list-style-type: none">Place weight into lanyard to ensure it does not move
Communicate to Belayer	<ul style="list-style-type: none">Receive and confirm (e.g. "Remove Belay")
Adjust arborist life line to meet work requirements	<ul style="list-style-type: none">Place arborist life line or friction saver around the main stem
Tie approved friction hitch from list in Appendix D	
Test friction hitch	<ul style="list-style-type: none">Gradually place weight into friction hitch to ensure it does not move
Release work positioning lanyard	

7.2 Secured Foot Locking Technique

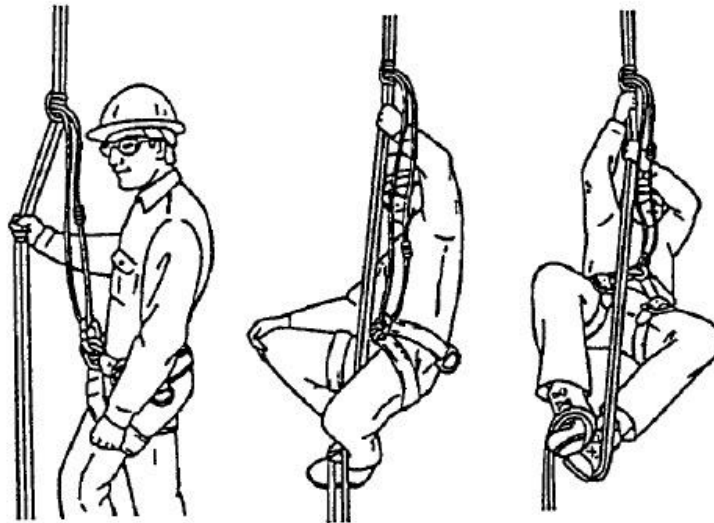
The secured foot locking technique replaces the need for a Belay person by securing him/herself to the arborist life line using an appropriate approved friction hitch from Appendix D.

Note: This system is for ascent only; in an emergency descent use an appropriate fall protection device or system.

While using the Foot Locking technique the following precautions must be adhered to (Figure 3):

- tie dress and set knot
- keep hands below the knot at all times
- used for ascent only
- avoid debris in knot,
- spread in rope 5:1; the knot must remain 5 times the diameter of the limb below the limb (e.g. for a limb that is 20 cm in diameter the knot must stay 100 cm below the limb to ensure the friction hitch does not fail).

Figure 3



7.2.1 Ascent

Step	Action
Place arborist life line in tree at first interim anchor point or final anchor point if possible	
Secure approved friction hitch from list in Appendix D around both legs of the arborist life line	
Secure friction hitch to arborist using a connecting device such as a carabiner	
Push friction hitch up the arborist life line to highest reach	
Test friction hitch	<ul style="list-style-type: none"> • Place weight into friction hitch • Slippage of friction hitch requires retying of hitch and retesting
Draw legs up and wrap arborist life line around one foot	
Straighten legs and stand up	
Slide friction hitch up arborist life line	
Grasp rope below friction hitch to support weight	
Draw legs up and wrap arborist life	

line around one foot	
Straighten legs and stand up	
Continue process until reaching interim anchor point or final anchor point	

7.2.2 Interim Anchor Point Repositioning Arborist Life Line

Once the arborist has climbed to an interim anchor point, the following Action applies for continuing ascent.

Step	Action
Secure to tree using work positioning lanyard	<ul style="list-style-type: none"> Place work positioning lanyard around the main stem of the tree or a suitably strong limb
Ensure that lanyard is secure	<ul style="list-style-type: none"> Check snaps, place weight into lanyard
Remove friction hitch	
Reposition arborist life line to next interim anchor point	<ul style="list-style-type: none"> The worker may use a rope poking tool, pole pruner or throwing knot to advance the rope up the tree.
Secure arborist life line to arborist	
Tie and test friction hitch	<ul style="list-style-type: none"> Slowly place weight into system. Slippage of friction hitch requires redressing of hitch and retesting
Release work positioning lanyard	
Continue ascent	
Repeat interim anchor point process as required	

7.2.3 Final Anchor Point

The final anchor point is where the arborist will secure their life line allowing the arborist mobility to work. The final anchor point is best situated as high in the tree as possible to allow mobility of the worker, similar to a pendulum. The final anchor point must meet the requirements of all anchor locations.

Step	Action
Secure to tree using a work positioning lanyard	<ul style="list-style-type: none"> Place work positioning lanyard around the main stem of the tree or a suitably strong limb
Ensure that lanyard is secured	<ul style="list-style-type: none"> Check snaps, place weight into lanyard
Remove friction hitch from life line	
Secure arborist life line around main stem of tree and over a suitably strong limb	
Secure rope to arborist using carabiner, termination knot or captive eye snap	
Tie friction hitch from approved list of friction hitches in Appendix D	
Adjust arborist life line to meet work requirements.	
Test friction hitch	<ul style="list-style-type: none"> Slowly place weight into system. Slippage of friction hitch requires redressing of hitch and retesting
Release work positioning lanyard	

7.3 Secured Body Thrust Technique

The secured body thrust technique is sometimes called a self-belay technique. The following action applies for continuing ascent.

7.3.1 Ascent

Step	Action
Place arborist life line in tree at the first interim anchor point or final anchor point if available	
Secure arborist life line to arborist	<ul style="list-style-type: none"> Use a termination knot, carabiner, captive eye snap
Secure arborist using a friction hitch (Figure 4) from the list of approved friction hitches in Appendix D	Figure 4

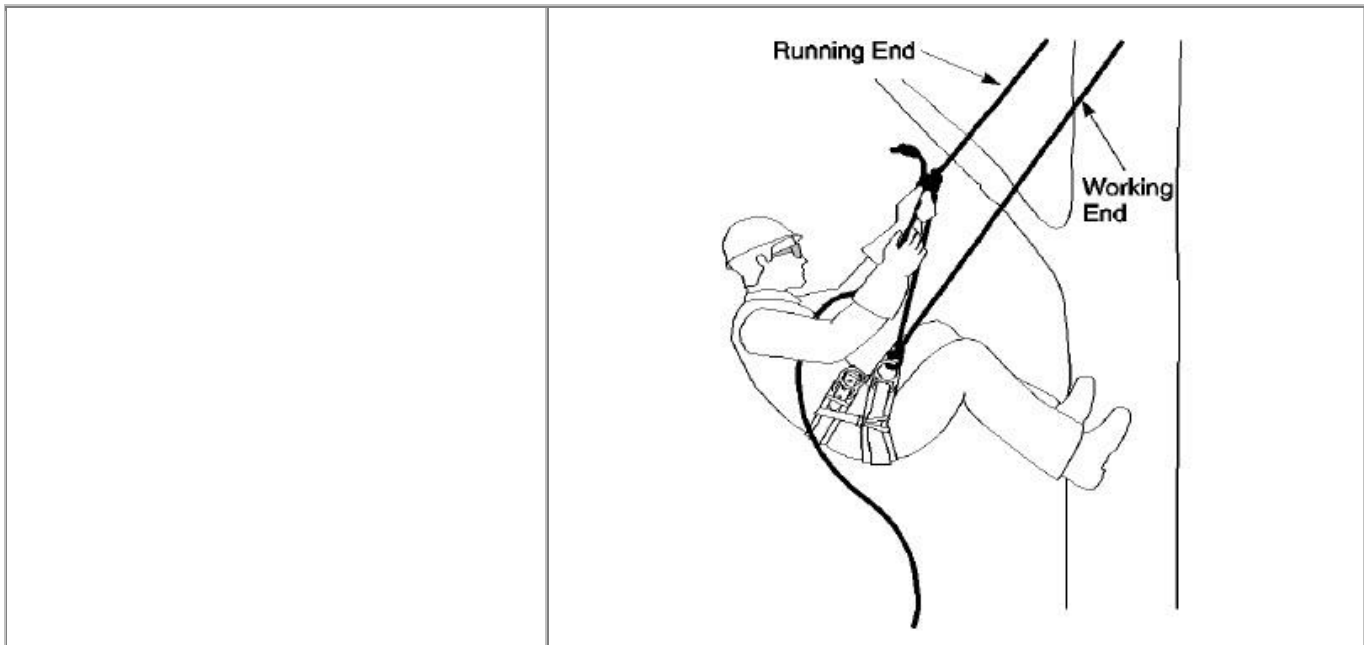


Figure 5

Pull down (Figure 5) on the running end of the arborist life line, which will pull the arborist up the tree

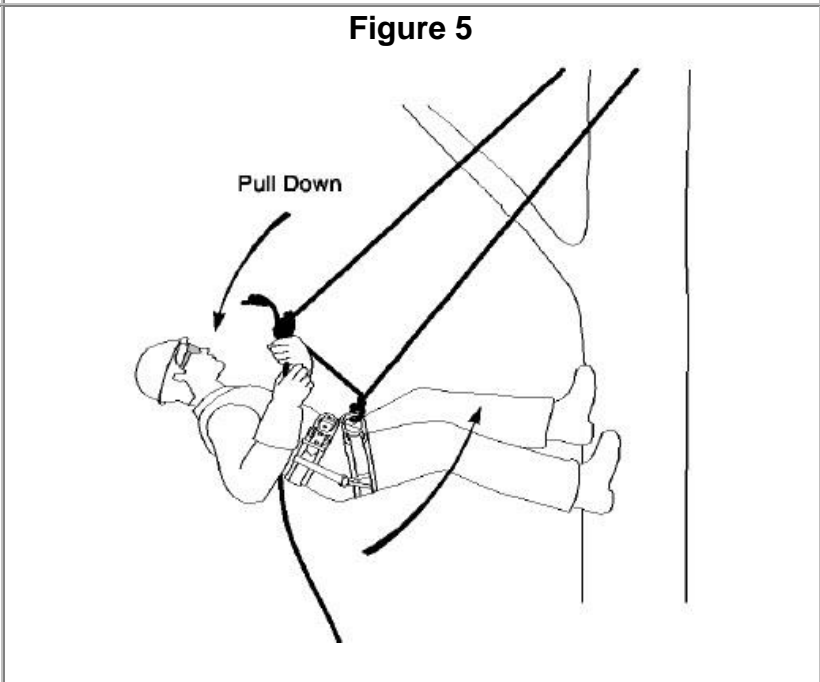
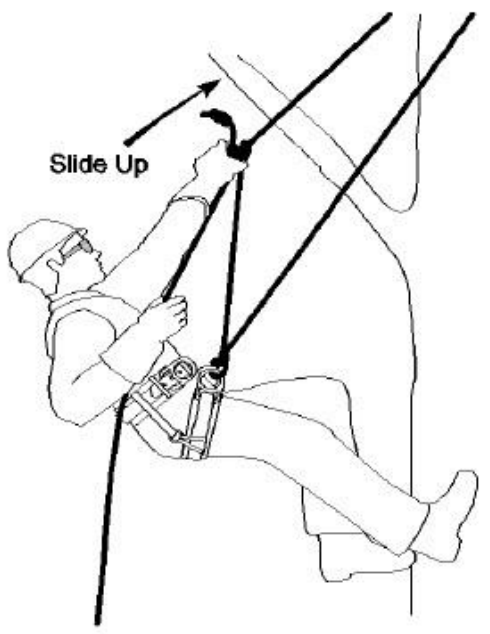


Figure 6

Slide Friction hitch up the arborist life line (Figure 6)

	
Repeat action until reaching the interim anchor point	

7.3.2 Interim Anchor Point Repositioning Arborist Life Line

Once the arborist has climbed to the interim anchor point, the following action applies for continuing ascent

Step	Action
Secure to tree using a work positioning lanyard	<ul style="list-style-type: none"> Secure work positioning lanyard around the main stem of the tree or a suitably strong limb
Ensure work positioning lanyard is secure	<ul style="list-style-type: none"> Check snaps and place weight into the work positioning lanyard
Remove friction hitch	
Reposition arborist life line to next interim anchor point	<ul style="list-style-type: none"> The worker may use a rope poking tool, pole pruner or throwing knot to advance the rope up the tree.
Secure arborist life line to arborist	
Test and or tie friction hitch from list of approved hitches in Appendix D	<ul style="list-style-type: none"> Slowly place weight into system Re test split tail friction hitch Tie and test friction hitch in conventional system
Release work positioning lanyard	
Continue ascent	
Repeat interim anchor point process as required	

7.3.3 Final Anchor Point

The final anchor point is where the arborist will secure their life line allowing the arborist mobility to work. The final anchor point is best situated as high in the tree as possible to allow mobility of the worker, similar to a pendulum. The final anchor point must meet the requirements of all anchor locations.

Step	Action
Secure to tree using a work positioning lanyard	
Ensure that lanyard is secured	<ul style="list-style-type: none"> • Check snaps, place weight into lanyard
Remove friction hitch	
Adjust arborist life line to meet work requirements	
Secure arborist life line around main stem of tree and over a suitably strong limb	
Secure arborist life line to arborist using carabiner, termination knot or captive eye snap	
Tie friction hitch from list of approved hitches in Appendix D	
Test friction hitch	<ul style="list-style-type: none"> • Slowly place weight into system. • Slippage of friction hitch requires redressing of hitch and retesting
Release work positioning lanyard	

7.4 Ascend with Spurs

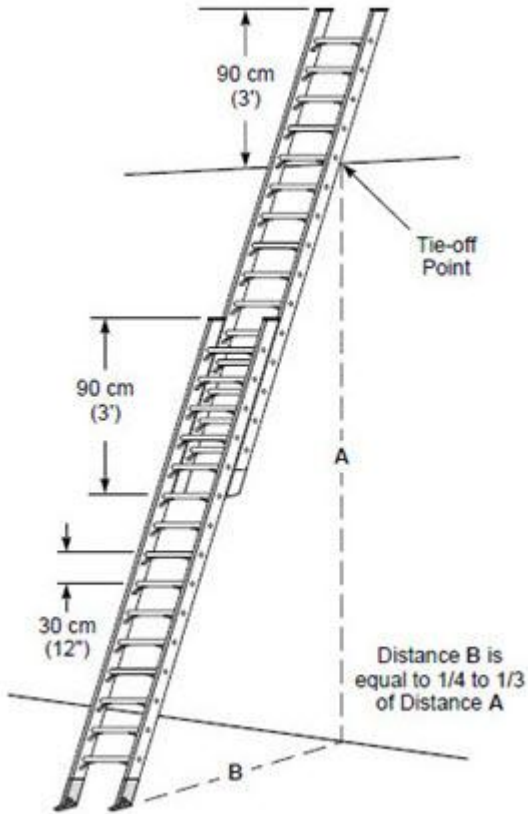
Note: A Fall Restricting system must be used when ascending a tree with spurs / climbers.

Step	Action
Inspect spurs	<ul style="list-style-type: none"> • Inspect spurs for sharpness, cracks and wear • Ensure gaff lengths are of sufficient length to penetrate the bark of the tree • Fit spurs appropriately <p>Note: Follow manufacturer's directions.</p>
Secure Fall Restricting System	<ul style="list-style-type: none"> • A fall restricting system must be used during tree ascent
Ascend tree	<ul style="list-style-type: none"> • Take small steps while ascending • Keep knees outward and back straight to prevent spurs from kicking out • Ensure spur is set into the wood of the tree before moving the next foot • Maintain a grip on the tree while ascending

7.5 Ascent with a Ladder

Note: A Fall Protection System must be used when working from a ladder.

Step	Action
Inspect ladder	<p>Inspect for:</p> <ul style="list-style-type: none"> • Cracks • Loose or missing rungs • Broken supports • Rotten sections • Missing parts • Broken welds <p>Note: Do not paint wooden ladders. Paint can hide deformations and hazards.</p> <ul style="list-style-type: none"> • Ensure the appropriate class of ladder is used for the circumstance

<p>Position ladder to work</p>	<ul style="list-style-type: none"> • Ensure ladder is positioned to a 4:1 ratio of vertical height to base distance (Example Figure 7) <p style="text-align: center;">Figure 7</p>  <ul style="list-style-type: none"> • Ensure that the feet of the ladder are securely set on the ground • Ensure that the ladder top is placed squarely on the tree or limb
<p>Ascend ladder</p>	<ul style="list-style-type: none"> • Utilize work-positioning lanyards as required • Ensure a ground person is available to hold the ladder during ascent and to warn people away from the base of the ladder
<p>Secure using Fall Protection System</p>	<ul style="list-style-type: none"> • While working from a ladder a Fall Protection System must be used • If climbing further, the life line can be placed into a suitable branch union from the top of the ladder

8.0 Work Positioning Technique

During the process of completing all work required in a tree, it is necessary for the arborist to move in the crown in order to access different work positions. However, the final anchor location may also be the first work position; in this case, the arborist must utilize a second point of attachment such as a work positioning lanyard.

8.1 Work Positioning Techniques

Step	Action
Move to work position	<ul style="list-style-type: none"> • Maintain a 3 point contact with tree to stabilize • Ensure that the arborist life line is tight at all times • Monitor the friction hitch throughout the climbing action to ensure the friction hitch does not loosen off • Inspect limb to be cut for defects
<p>When using sharp tools a second point of attachment such as:</p> <ul style="list-style-type: none"> • A work positioning lanyard (Figure 8) or • An arborist life line secured to a second anchor point (e.g. double tie in) (Figure 9) 	<ul style="list-style-type: none"> • A second point of attachment must be used at all times when using a sharp tool that could cut the life line except in circumstances where the hazards of using a second point of attachment are greater than not using a second point of attachment <p>Note: Every effort must be used to eliminate these hazards, so the worker can use a second point of attachment.</p> <p style="text-align: center;">Figure 8</p>

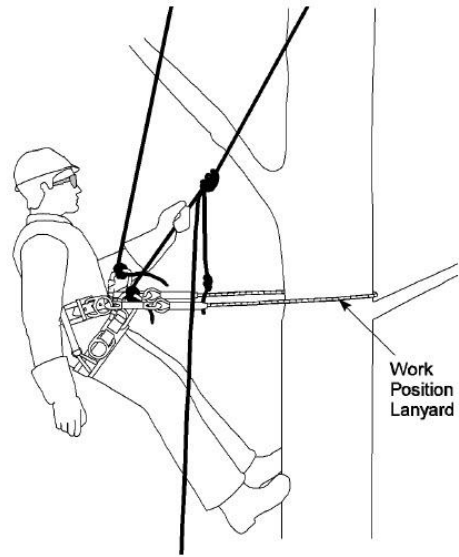
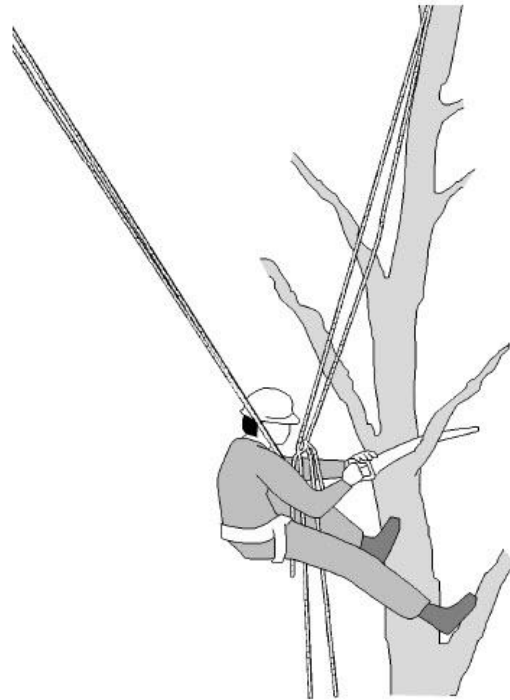


Figure 9



Perform work	
Release secondary attachment device to move to next work position	

9.0 Tree Descent Technique

Once all work is completed aloft, the arborist will ensure that all tools and severed limbs are removed from the tree. The arborist then descends from the tree; the following action applies for continuing descent.

Step	Action
Position arborist life line for descent	<ul style="list-style-type: none"> Position arborist life line vertical to the descent route
Ensure friction hitch is dressed and set	
Control descent speed by pulling the friction hitch down the arborist life line	<ul style="list-style-type: none"> Descend in a slow and controlled fashion

10.0 Emergency Response Plan

The following should be used as a guideline for developing your in-house Emergency Response Plan for a worker aloft. It is not intended to be used as a step by step procedure as each emergency situation will differ depending on the circumstances

Step	Action
Assess the Emergency	<p><u>Scene Observations</u></p> <ul style="list-style-type: none"> Electrical Conductors/Contact <p>Note: If there's electrical contact DO NOT proceed before calling the proper authorities.</p> <ul style="list-style-type: none"> Struck by limbs or tree sections, struck by lightning or victim pinned by tree structure etc. Medical conditions (bug/animal bites, heat exhaustion, diabetes, etc.) <p>Identify and assess hazards such as:</p> <ul style="list-style-type: none"> Rigging systems in tension Tangled ropes Dangling limbs Ground hazards Suspended chain saws Brush piles

	<p>Tree hazards:</p> <ul style="list-style-type: none"> • Root zone • Canopy • Trunk • Weather conditions • Availability of appropriate equipment and personnel
<p>Assess Worker Condition</p>	<p>Try to communicate with the worker:</p> <ul style="list-style-type: none"> • Verbally from the ground • Shaking of injured person's arborist life line • Are they able to descend by him/herself? • Are they unconscious? • Are they unresponsive? • Are they bleeding profusely?
<p>Initiate Emergency Medical Systems (EMS) if required</p>	<p>Call EMS:</p> <ul style="list-style-type: none"> • Use emergency phone numbers on Tailboard i.e. 911, Rural Fire and Rescue, High Angle Rescue Team (If available) • Utilize a third party to call and direct EMS to accident site <p>Convey site information to EMS:</p> <ul style="list-style-type: none"> • Municipal address • Rural fire number • Job site location e.g. backyard, bush, etc. • Worker condition e.g. unconscious or bleeding etc. • Other information EMS requires • Follow instructions from EMS
<p>Assess Success of an Aerial Rescue</p>	<p>Determining whether to initiate an aerial rescue should be based on many factors including:</p> <ul style="list-style-type: none"> • Electrical Conductors/Contact <p>Note: If there's contact DO NOT proceed before calling the proper authorities</p> <ul style="list-style-type: none"> • Safety of rescuer • Competency/abilities to perform an aerial rescue based on the Scene Observations, skill

	<p>level of ground workers, need for assistance to conduct rescue etc.</p> <ul style="list-style-type: none"> • Availability of equipment needed for the injuries e.g. advanced medical care for back or neck injuries • First Aid abilities and training • Need to assist EMS
<p>Monitor the emergency</p>	<p>Communicate with the worker:</p> <ul style="list-style-type: none"> • Verbally reassure help is on the way

ASWP 04 R0

Working at Heights



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

- 1.0 Introduction
- 2.0 Hazards
- 3.0 Legislation / Safe Work Practices
- 4.0 Mandatory Information / Work Practices
 - 4.1 Inspect Worksite
 - 4.2 Ascend Tree
 - 4.3 Starting & Using a Chain Saw Aloft
 - 4.4 Cutting Limbs

1.0 Introduction

This document outlines the requirements for an arborist working at heights.

2.0 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment when ascending trees:

- | | |
|-----------------------|--------------------|
| Biotic Conditions | Gravity |
| Chemical | Mechanical |
| Climatic Conditions | Pedestrian Traffic |
| Electrical Conditions | Vehicular Traffic |
| Ergonomics | |

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

3.0 Legislation / Safe Work Practices

The following information has been provided listing relevant arborist safe work practices and legislation requirements:

- ASWP01 General Legislation
- ASWP02 Work in a Safe Environment
- ASWP02 Protect Self and Others
- ASWP02 Arborist Job Planning
- ASWP03 Ascending Trees
- ASWP12 Chain Saw Operation

Legislation	RRO / RSO	Section Referenced
Industrial	851 / 90	45, 51
Construction	213 / 91	172, 173, 174, 179

4.0 Mandatory Information / Work Practices

The following are the general mandatory requirements for an arborist working at heights. In addition to these requirements, the work practice contains specific requirements that must also be followed.

- All trees must be inspected for hazards prior to climbing or working at heights (Refer to ASWP03 Ascending Trees)
- All appropriate Personal Protective Equipment must be worn while working at heights
- When one or more climbers are working at heights at least one Ground Assistant must be present
- At least one Ground Assistant at any given work site must know the Emergency Response Plan
- Those engaged in working at heights must be trained in proper knot tying, use of appropriate fall protection systems and techniques, conducting pre-climb inspection (Refer to ASWP03 Ascending Trees), aerial rescue techniques (Refer to ASWP11 Aerial Device Operation), appropriate descent and ascent methods and appropriate rigging techniques
- Drop Zone must be identified and controlled
- All rigging (Refer to ASWP06 Rigging Trees) and cutting equipment (Refer to ASWP12 Chain Saw Operation) must be inspected, as per manufacturer's recommendations, prior to daily use
- Ensure that chain saws and other gasoline-powered tools are fueled, sharp and running properly prior to sending aloft
- While working at heights climbers should use a second point of attachment for fall protection and to ensure a secure work position
- Follow ASWP06 Rigging Trees when performing work aloft and rigging equipment is required for the removal of limbs
- Precautions must be taken to eliminate the hazard of a potential 'reverse barber chair'
- All pruning tools and equipment not in use must be securely attached to a limb of sufficient strength to hold it and to keep it from coming in contact with any electrical conductor
- Corner cuts, two cuts on either side of notch, should be used to ensure that the bark does not strip down a limb
- When using a sharp tool (e.g. handsaw, chain saw, or pole pruner) aloft when climbing the tree, you shall be tied in twice with the second point of attachment shall be attached in a way to prevent a fall

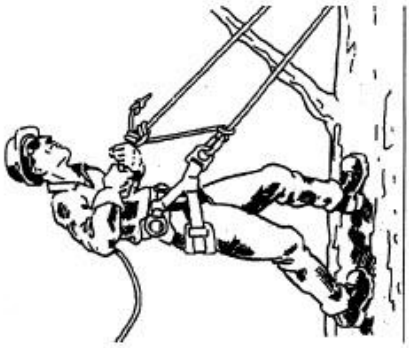
Note: A second point of attachment must be used when using sharp tools that could cut the life line except in circumstances where the hazards of using it are greater than not.

4.1 Inspect Worksite

A thorough inspection of the worksite should be completed identifying all hazards with a plan in place to perform the required work aloft (Refer to ASWP02 Job Planning for additional information).

Step	Action
Inspect worksite	Identify hazards such as: <ul style="list-style-type: none"> • Overhead wires • Traffic conditions (pedestrian and vehicular) • Soils and topography • Buildings, sidewalks, fences etc. • Weather conditions • Hazardous Biotic Conditions • Tree condition (Refer to ASWP02 Job Planning for additional information) • Determine access to tree (Refer to ASWP03 Ascending Trees for additional information)
Inspect rigging equipment	<ul style="list-style-type: none"> • Refer to ASWP06 Rigging Trees for additional information • Refer to manufacturer's data sheets for proper inspections on rigging equipment
Determine Drop Zone	<ul style="list-style-type: none"> • Ensure that ground assistants are aware of Drop Zone • Ensure appropriate measures are taken to protect against people and vehicles that may enter the Drop Zone

4.2 Ascend Tree

Step	Action
<p>Ascend tree Figure 1 Figure 1</p> 	<p>Refer to ASWP03 Ascending Trees.</p>
<p>Inspect limbs that will be removed</p>	<p>Check limbs for potential hazards such as:</p> <ul style="list-style-type: none"> • Decay • Bird holes • Cracks • Imbedded objects • Cankers • Structural integrity

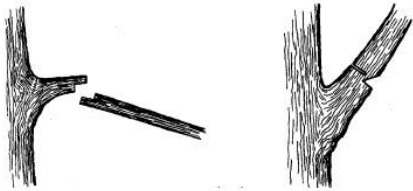
4.3 Starting and Using a Chain Saw Aloft

Step	Action
<p>Select appropriate chain saw</p>	<ul style="list-style-type: none"> • Consider work to be performed and hazards such as worker fatigue
<p>Inspect and fuel chain saw</p>	<ul style="list-style-type: none"> • Follow ASWP12 Chain Saw Operation
<p>Start chain saw and perform warm up</p>	<ul style="list-style-type: none"> • Start saw on ground following manufacturer's instructions • Secure chain saw in a safe location from pedestrian and vehicular traffic
<p>Verify chain brake operation</p>	<ul style="list-style-type: none"> • Follow manufacturer's instructions
<p>Raising chain saw to worker aloft</p>	<p>Ground person attaches saw to climbing rope or an appropriate rope for hoisting a chain saw:</p> <ul style="list-style-type: none"> • Secure saw using an appropriate knot to the chain saw handle(s) or manufacturer's attachment point • Ensure workers or pedestrians maintain

Step	Action
	clearance from underneath tree while raising saw
Raising a running chain saw	<p>For chain saws that must be running while being raised the following conditions must be met:</p> <ul style="list-style-type: none"> • Chain saw being raised is secured to tailstock of saw • Chain brake is secured and locked so that the chain brake cannot be inadvertently disengaged • All life lines or other ropes cannot entangle with chain saw • Workers or pedestrians must not be underneath the potential falling path of a chain saw • Chain saw should be raised in a direct route with few encumbrances • Worker aloft must be secured with two separate tie ins
Raise saw	<ul style="list-style-type: none"> • Maintain Limits of Approach to electrical apparatus • Ensure rope is not obstructed or will become obstructed when raising saw
Secure saw to climber	<ul style="list-style-type: none"> • Secure saw to either a manufactured chain saw lanyard or saw rope that is appropriate in size and strength
Climber positions for cut	<ul style="list-style-type: none"> • Maintain Limits of Approach, to electrical apparatus • Secure second tie-in position prior to operating the chain saw • Ensure climber has adequate balance and stability during cutting operation • Body should be facing direction of cut • Ensure climbing rope is not contacting the chain saw bar • Communicate with ground person prior to starting saw and actions to be taken
Start saw	<ul style="list-style-type: none"> • Ensure appropriate PPE is worn • Apply chain brake • Place body of saw into branch union of tree where available • Ensure saw body is secure • Ensure saw bar will be clear of branches/foilage • Secure footing to prevent slips • Maintain an upright and balanced position • Maintain Limits of Approach to electrical apparatus • Grasp handle securely

Step	Action
	<ul style="list-style-type: none"> • Start saw
Perform cut	<ul style="list-style-type: none"> • Inspect limb for life lines, rigging ropes, obstacles to the cut or worker • Detach saw from climber unless a break away system is used • Ensure adequate footing and second tie-in is used • Ensure appropriate cuts are used
Shut off saw	<ul style="list-style-type: none"> • Apply chain brake • Re attach saw to secured system
Relocate within the tree	<ul style="list-style-type: none"> • Ensure saw is attached to climber via lanyard or saw rope • Caution when moving long distances in the tree as the saw could cause a pendulum effect to the climber • Consider lowering saw when cuts are completed before final descent

4.4 Cutting Limbs

Step	Action
<p>Utilize appropriate cutting technique (Figure 2)</p> <p>Figure 2</p>  <p>From: ISA Tree Climbers Guide</p>	<p>Appropriate cuts will be dependent on the desired direction that the limb is to move (e.g. under cut if raising limb, two cuts on either side of the notch to ensure bark does not peel).</p>
Control descent of limb	<ul style="list-style-type: none"> • Ensure that there is two-way communication including confirmation between Ground Assistant and Climber • Ensure Drop Zone is identified and controlled • Climber shall direct the Ground Assistant's actions when rigging limbs • Ensure if directing limbs manually that they can be controlled easily

ASWP 05 R0

Tree Removal



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

- 1.0 Introduction
- 2.0 Hazards
- 3.0 Legislation / Safe Work Practices
- 4.0 Mandatory Information / Work Practices
 - 4.1 Site Inspection
 - 4.2 Set Notch
 - 4.3 Perform Back Cut
 - 4.4 Limbing Trees
 - 4.4.1 Spring Poles
 - 4.5 Lodged Tree Removal
 - 4.6 Bucking-up Felled Trees

1.0 Introduction

This document outlines the requirements for an arborist removing trees.

2.0 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment when arborist removing trees:

Biotic Conditions	Gravity
Chemical	Mechanical
Climatic Conditions	Pedestrian Traffic
Electrical Conditions	Vehicular Traffic
Ergonomics	

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

3.0 Legislation / Safe Work Practices

The following information has been provided listing relevant arborist safe work practices and legislation requirements:

- ASWP01 General Legislation
- ASWP02 Work in a Safe Environment
- ASWP02 Protect Self and Others
- ASWP02 Arborist Job Planning
- ASWP12 Chain Saw Operation

Legislation	RRO / RSO	Section Referenced
Industrial	851 / 90	22, 23, 39, 42, 43, 45, 60, 73,79, 80, 81, 82, 84, 103,139
Construction	213 / 91	43, 52, 53, 54, 55, 67, 68, 69, 78, 79, 80, 81, 82, 83, 84, 93, 94, 95, 96, 112, 113, 183, 186

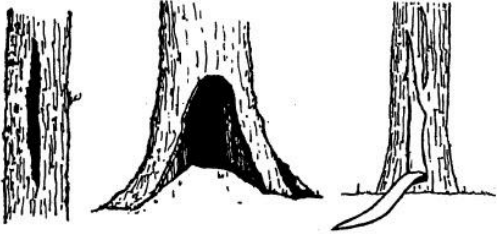
4.0 Mandatory Information / Work Practices

The following are the general mandatory requirements for an arborist removing trees. In addition to these requirements, the work practice contains specific requirements that must also be followed.

- All trees shall be inspected for hazards prior to cutting (Additional information found in ASWP03 Ascending Trees)
- All appropriate Personal Protective Equipment must be worn
- Escape Routes shall be cleared before felling operations
- All workers shall be notified that the "Back Cut" is being performed prior to starting the cut and all workers must confirm information has been received
- Workers shall stay outside of the Hazard Area with the exception of the saw operator and/or instructor/signal person
- Lodged trees shall not be left lodged
- Lodged trees shall not be climbed
- Work underneath or within striking distance of a lodged tree shall not be performed unless the work can be completed safely
- Other trees shall not be felled onto a lodged tree in an attempt to dislodge the tree
- When a tree is falling the worker should avoid turning their back to the falling tree
- Workers at the tree felling site shall be aware of all dangers
- Saw operator shall ensure there are no obstacles or hazards within the Hazard Area
- Notches should be used for all trees greater than 13 centimeters (5 inches) diameter at breast height (DBH)

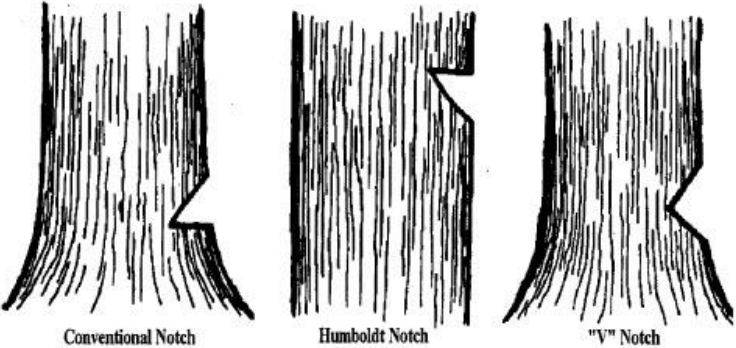
4.1 Site Inspection


A thorough inspection of the work site should be completed identifying all hazards with a plan in place to perform tree removal (Refer to ASWP02 Job Planning for additional information).

Step	Action
<p>Inspect tree for hazards (Figure 1) Figure 1</p> 	<p>Inspect tree for hazards and obstacles, including but not limited to:</p> <ul style="list-style-type: none"> • Lean • Crown weight distribution • Insect damage • Foreign bodies in tree (staples, nails, wire, etc.) • Structural deficiencies such as decay, cavities, cracks splits, rot etc. • Overhead utilities • Broken tops or limbs
<p>Identify hazards within the Hazard Area</p>	<p>Inspect tree for hazards and obstacles, including but not limited to:</p> <ul style="list-style-type: none"> • Terrain • Dead trees / chicots • Overhead utilities


Step	Action
	<ul style="list-style-type: none"> • Pedestrian and vehicular traffic • Workers • Climatic conditions / wind, snow loading, etc. • Ground conditions / slope • Slips, trips and fall hazards
Set control measures	Barriers include but not limited to: <ul style="list-style-type: none"> • Maintaining appropriate Limits of Approach • Utilize traffic and pedestrian control measures • Removing dead trees / chicots • Lowering stumps • Ensure tools are inspected and maintained (refer to manufacturer's instructions)
Determine Escape Route	<ul style="list-style-type: none"> • Clear Escape Route of trip hazards etc.
Inspect tools and equipment to be used	<ul style="list-style-type: none"> • Ensure tools and equipment are free of defects and readily available (Refer to Manufacture's Instructions) • Ensure tools are sharp (Refer to Manufacture's Instructions)
Set rigging equipment if required	<ul style="list-style-type: none"> • Refer to ASWP03 Ascending Trees • Refer to ASWP06 Rigging Trees

4.2 Set Notch

Step	Action
Determine notch to use	Ensure an appropriate notch is used (Figure 2). <p style="text-align: center;">Figure 2</p>  <p style="text-align: center;"> Conventional Notch Humboldt Notch "V" Notch </p> Consider: <ul style="list-style-type: none"> • Lean of tree • Wind • Potential targets (e.g. fences, ornaments, etc.)

Step	Action
	<ul style="list-style-type: none"> • Condition of tree (e.g. decay, splits, cracks, foreign objects) • Size of tree • Length of chain saw bar
<p>Secure tree to prevent Barber Chairing (Figure 3) Figure 3</p> 	<p>Consider options to prevent Barber Chairing:</p> <ul style="list-style-type: none"> • Bind trees using chains / load binders • Use of a plunge cut • Use of alternate notch styles
<p>Set notch</p>	<ul style="list-style-type: none"> • Set notch in accordance with the type of notch used • Ensure notch direction is in the correct location • Inspect notch for rot or decay

4.3 Perform Back Cut

Step	Action
<p>Determine location of Back Cut</p>	<ul style="list-style-type: none"> • Back Cut locations should be in accordance with the notch location
<p>Prepare to begin the Back Cut</p>	<ul style="list-style-type: none"> • Communicate to workers that the “Back Cut” is going to be performed <p>Note: Ensure all workers understand that the Back Cut will occur prior to beginning the cut.</p> <ul style="list-style-type: none"> • Ensure all workers are clear of the Hazard Area
<p>Perform Back Cut (Figure 4) Figure 4</p> 	<ul style="list-style-type: none"> • Set notch in accordance with the type of notch used • Ensure notch direction is in the correct location • Inspect notch for rot or decay

Step	Action
Monitor the tree as it falls	<ul style="list-style-type: none"> • Never turn your back to a falling tree • Watch for dead limbs and other objects falling from trees • Monitor the tree as it strikes the ground as the butt portion may move towards the saw operator • Ensure that the tree has completely settled before entering the Hazard Area • Ensure adjacent trees are secure before moving in to remove rigging or beginning bucking operations

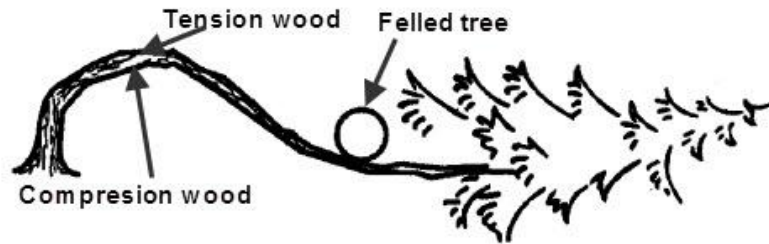
4.4 Limbing Trees

Step	Action
Clear spring poles (refer to 4.4.1 Spring Poles)	
Determine pressure points on the limbs	<p>Note: Limbs bent over objects or angled severely will have explosive pressure associated with them and must be treated with caution.</p> <ul style="list-style-type: none"> • Determine tension and compression wood (Figure 5) before performing the cuts
Begin cut	<p>Note: Cut limbs slowly to help ensure a slow release of the tension.</p> <ul style="list-style-type: none"> • Ensure body parts are clear of limbs / trunk should the tree drop or roll after the limb is cut • Monitor the nose of the saw (kickback zone) which may be impeded by other limbs when removing limbs

4.4.1 Spring Poles

Spring poles (Figure 5) are small trees which are bent over from pressure of a felled tree, heavy snow weight, ice build-up, etc. Spring poles have explosive forces and should be removed carefully.

Figure 5



The following is an example for removing a spring pole.

Step	Action
Clear spring poles	<ul style="list-style-type: none"> • Make several small cuts on the compression side to release the forces <p>Note: This should be completed slowly</p>

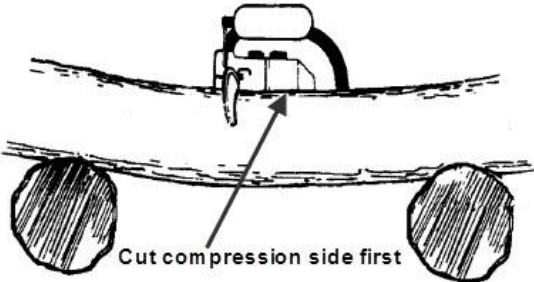
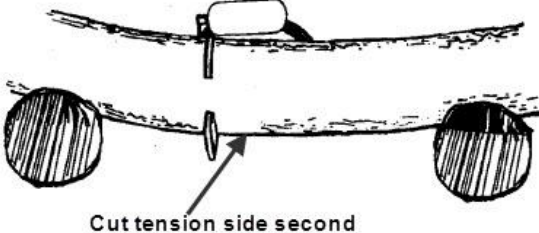
4.5 Lodged Tree Removal

The following are four examples for removing a lodged tree.

Step	Action
Cut tree from stump	<ul style="list-style-type: none"> • Inspect lodged tree and supporting tree for broken limbs / hangers • Sever lodged tree from stump <p>Note: Tree may roll free from stump once severed completely.</p>
Roll tree away from support tree	<ul style="list-style-type: none"> • Inspect lodged tree and supporting tree for broken limbs / hangers • Attempt to roll lodged tree off from support tree using either a cant hook or pull rope
Utilize a mechanical advantage to pull tree from lodged tree (e.g. trucks, crane, winch, etc.)	
Block lodged tree into smaller pieces	<ul style="list-style-type: none"> • Inspect lodged tree and supporting tree for broken limbs / hangers • Determine tension and compression wood before making cuts • Cut small blocks from the base of the lodged tree

Note: Lodged trees may slip and move uncontrollably. Caution must be exercised to ensure that the worker does not stand in the fall direction.

4.6 Bucking-up Felled Trees

Step	Action
Determine the length required to cut the wood	<ul style="list-style-type: none"> Smaller blocks of wood are lighter and easier to carry
Determine pressure points	<ul style="list-style-type: none"> Cut compression side first (Figure 6) Figure 6  Cut compression side first Cut tension side second (Figure 7) Figure 7  Cut tension side second <p>Note: Trees bent over or weight applied to one end will create compression and tension on the log.</p> <p>Note: Tree logs may bind the saw when pressure is released.</p> <p>Note: logs under pressure can break suddenly and explosively. Cut log slowly to relieve pressure.</p>
Begin Cutting	<ul style="list-style-type: none"> Cut logs from the high side of the terrain (i.e. the log will roll away from the chain saw operator) <p>Note: Logs not under pressure may require two cuts, one from the top and then roll the log over to make a second cut.</p>

ASWP 06 R0

Rigging Trees



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

- 1.0 Introduction
- 2.0 Hazards
- 3.0 Legislation / Safe Work Practices
- 4.0 Mandatory Information / Work Practices
 - 4.1 Site Inspection
 - 4.2 Rigging Trees for Removal
 - 4.3 Rigging Sections of Trees Aloft
 - 4.3.1 Establish Rigging Points
 - 4.3.2 Sectionalizing Trees

1.0 Introduction

This document outlines the requirements for rigging trees or sections of trees.

2.0 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment when rigging trees or sections of trees:

Biotic Conditions	Gravity
Chemical	Mechanical
Climatic Conditions	Pedestrian Traffic
Electrical Conditions	Vehicular Traffic
Ergonomics	

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

3.0 Legislation / Safe Work Practices

The following information has been provided listing relevant arborist safe work practices and legislation requirements:

- ASWP01 General Legislation
- ASWP02 Work in a Safe Environment
- ASWP02 Protect Self and Others
- ASWP02 Arborist Job Planning
- ASWP03 Ascending Trees
- ASWP04 Working at Heights
- ASWP12 Chain Saw Operation

Legislation	RRO / RSO	Section Referenced
Industrial	851 / 90	22, 23, 39, 41, 42, 43, 45, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 73, 79, 80, 81, 82, 83, 84, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 139
Construction	213 / 91	43, 52, 53, 54, 55, 67, 68, 69, 93, 94, 95, 96, 112, 113, 150, 151, 152, 153, 154, 156, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 183, 186, 188

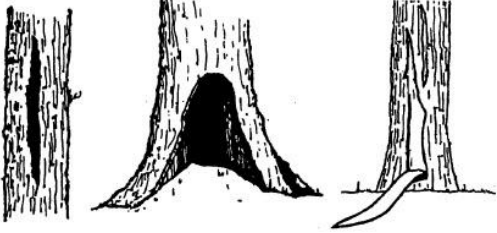
4.0 Mandatory Information / Work Practices

The following are the general mandatory requirements for an arborist rigging trees or sections of trees. In addition to these requirements, the work practice contains specific requirements that must also be followed.

- All rigging and pulling equipment must be inspected prior to use (follow manufacture's instructions)
- All appropriate Personnel Protective Equipment must be worn during rigging operations
- Establish appropriate job plan (refer to ASWP02 Job Planning)
- All persons at the work site shall know the Emergency Response Plan (refer to ASWP02 Job Planning)
- All trees must be inspected for hazards prior to climbing, (Refer to ASWP03 Ascending Trees) and (ASWP04 Working at Heights)
- All trees must be inspected for hazards prior to rigging or cutting (Refer to ASWP05 Tree Removal and ASWP12 Chain Saw Use)
- Those engaged in rigging shall have an understanding and are competent in:
 - Loads and forces applied to rigging equipment, rigging and anchor points
 - Manufacturer's specifications and compatibilities of all components
 - Loads (e.g. dynamic, static and shock)
 - Unbalanced loading of limbs
 - Estimating loads, wood weights (refer to Appendix C Ontario Green Wood Weight Chart)
 - Reaction wood
 - Tension and compression wood
- Synthetic slings must have a load rating capacity label attached
- All ropes slings blocks connecting devices and any other equipment used in rigging operation must not be subjected to forces greater than the manufacture's recommended safe working loads (SWL) or working load limits (WLL)
- A minimum safety factor of 5:1 must be incorporated into a rigging system
- The rigging system design should be so that the rope is the weakest link in the system
- Establish and review communication systems during operation including hand signals or 2 way radios
- All personnel must be aware of all hazards and barriers within the Drop Zone
- All personnel must ensure there are no obstacles or hazards within the Drop Zone
- All ground assistants involved in a rigging procedure must receive prior training and instructions appropriate for their given situation

4.1 Site Inspection

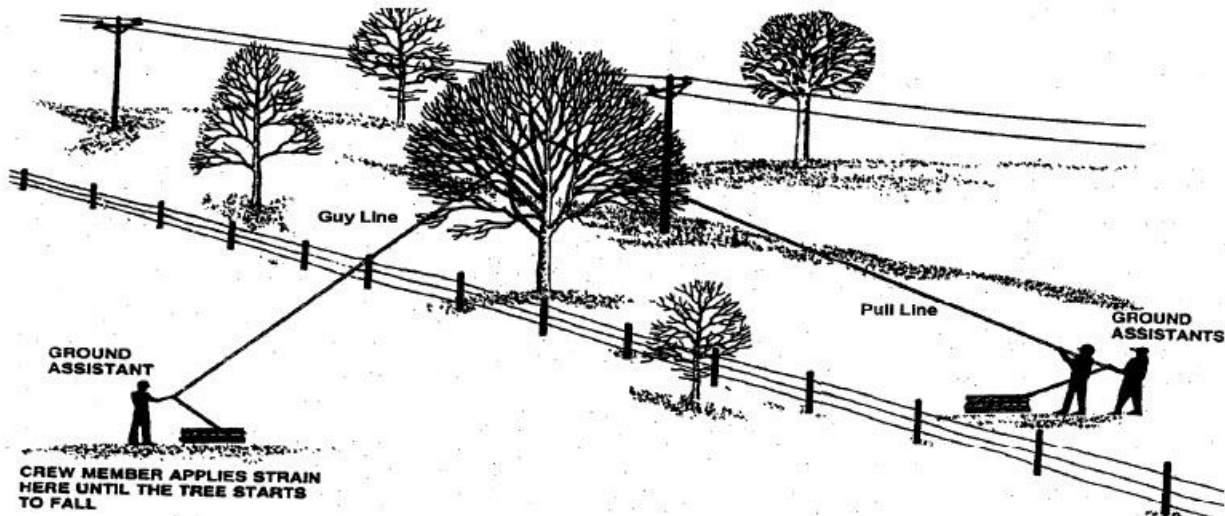
A thorough inspection of the worksite should be completed identifying all hazards with a job plan in place (Refer to ASWP02 Job Planning for additional information)

Step	Action
<p>Inspect tree for hazards (Figure 1) Figure 1</p> 	<p>Inspect tree for hazards including but not limited to:</p> <ul style="list-style-type: none"> • Lean • Crown weight distribution • Insect damage • Foreign bodies in tree (staples, nails, wire, etc.) • Structural deficiencies such as decay, cavities, cracks splits, rot etc. • Overhead utilities • Broken tops or limbs
<p>Identify hazards within the Drop Area</p>	<p>Hazards include but not limited to:</p> <ul style="list-style-type: none"> • Electrical • Traffic and pedestrian • Ground conditions / slope • Chicots • Climatic conditions / wind, snow loading, etc. • Slips, trips and fall hazards
<p>Set control measures</p>	<p>Barriers include but not limited to:</p> <ul style="list-style-type: none"> • Maintaining appropriate Limits of Approach • Ensure rigging equipment and tools are inspected and maintained (refer to manufacturer's instructions) • Identify and establish a Drop Zone • Utilize traffic and pedestrian control measures • Removing chicots • Lower stumps within the felling area • Positioning of climber and fall protection equipment (refer to ASWP03 Climbing Trees) • Positioning of aerial device and operator to perform work (refer to ASWP11 Aerial Device Operation)
<p>Determine rigging equipment required to complete the work</p>	<ul style="list-style-type: none"> • Identify rigging locations in the tree which will support the forces applied by the rigging equipment
<p>Inspect tools and equipment to be used</p>	<ul style="list-style-type: none"> • Ensure tools and equipment are free of defects and readily available (Refer to Manufacture's Instructions) • Ensure tools are sharp (Refer to Manufacture's Instructions)

4.2 Rigging Tree for Felling

Step	Action
<p>Determine appropriate attachment point(s) in the tree being rigged</p> <p>Note: All trees should have a pull rope installed into the tree, if the tree could fall in another direction then the intended direction of fall.</p>	<ul style="list-style-type: none"> • Place rope(s) at least 2/3 the distance up the tree (Figure 2) from the point intended for the cut location • Consider when roping a tree: <ul style="list-style-type: none"> ○ Multi-stemmed trees ○ Split trees ○ Diseases, tree defects, etc. <p>Note: Ropes must be of sufficient length to keep all workers and equipment out of the Drop Zone during felling operations.</p>
<p>Install Split Prevention system (if required)</p>	<ul style="list-style-type: none"> • Ensure split prevention system is in place if required <p>Note: Split prevention system must be able to withstand the loads applied to the tree being removed.</p>
<p>Install a guide rope (if required)</p> <p>Note: All trees shall have a guide rope installed if they could fall in a direction other than intended.</p>	<ul style="list-style-type: none"> • Guide rope (Figure 2) should be placed at least 2/3 the distance up the tree from the point intended for cutting <p>A guy rope:</p> <ul style="list-style-type: none"> • Helps keep the tree directed in the intended direction of fall • Prevents the tree from felling in an unintended direction of fall (e.g. overhead utilities, building, etc.)
<p>Install additional rigging equipment to be used (if required) for a re-direct or mechanical advantage</p>	<ul style="list-style-type: none"> • Install: <ul style="list-style-type: none"> • Slings • Blocks • Pulleys • Connecting Devices • Ensure rigging system and equipment are in appropriate locations and ready to use
<p>Determine method required to pull tree over</p>	<ul style="list-style-type: none"> • Use of ground persons (Figure 2) • Mechanical pulling devices • Mechanized pulling devices
<p>Begin procedure for cutting tree</p>	<ul style="list-style-type: none"> • Follow ASWP05 Tree Removal • Prior to cutting, operation must be stopped and all personnel must receive and confirm that everyone is ready for the “Back Cut”

Figure 2

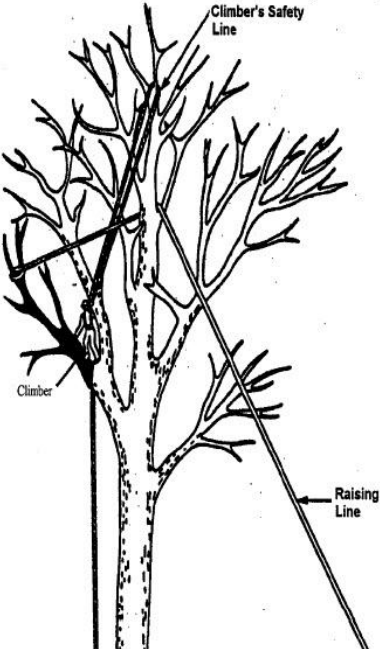


4.3 Rigging Sections of Trees Aloft

In some situations a tree will have to be rigged and sections of the tree cut and lowered to the ground because the tree cannot be removed in one piece. The following work practice outlines the process to sectionalize a tree for removal.

4.3.1 Establish Rigging Points

Step	Action
Choose limbs or branch unions to run lines over/through or attach rigging blocks	<ul style="list-style-type: none"> • Points for rigging must be in suitable locations that are of sufficient size and strength to carry loads applied • Rigging locations must be wide enough to allow free movement of rigging lines • Identify the path of travel for lowering limbs or sections of tree
Install lines, slings and or rigging blocks (Figure 3)	<ul style="list-style-type: none"> • Ensure rope size, strength; material and construction are appropriate for rigging line application • Ensure that anchor points are of sufficient size and strength, incorporating an applicable safety factor • Ensure ropes are compatible with other rigging devices such as friction devices, blocks or pulleys • Ensure rigging lines are attached using suitable knots and are at appropriate locations on the limb to be removed

Step	Action
<p data-bbox="354 191 477 222">Figure 3</p> 	
<p data-bbox="160 898 605 968">Climber secures to a safe work position</p>	<ul data-bbox="678 905 1455 1388" style="list-style-type: none"> • Climber should move to a safe position prior to cutting • A safe work position should be such that injury will not result due to an inadvertent limb or tree section moving • Climber must have adequate balance and stability during cutting operation • Ensure all ropes are not in close proximity of proposed cutting location • A second fall protection attachment point must be used when using sharp tools refer to ASWP04 Working at Heights
<p data-bbox="160 1423 574 1455">Prepare to start limb removal</p>	<ul data-bbox="678 1430 1382 1535" style="list-style-type: none"> • Ensure that climber and ground assistants are prepared and in agreement as to timing and co-ordination of instructions

4.3.2 Sectionalizing Trees

Step	Action
<p data-bbox="160 1759 574 1829">Position rope to achieve safe mechanical advantage</p>	<ul data-bbox="678 1766 943 1797" style="list-style-type: none"> • Install pull rope
<p data-bbox="160 1860 630 1929">Install split prevention system - if required</p>	<ul data-bbox="678 1860 1406 1929" style="list-style-type: none"> • Ensure split prevention system is above the Fall Protection System

Step	Action
	<p>Note: Reverse Barber Chairing can occur where trees are excessively leaning, straight grained trees or have excessive mechanical loading due to pulling forces.</p>
Set notch	<ul style="list-style-type: none"> • Refer to ASWP05 Tree Felling
Communicate Back Cut is to be performed	<ul style="list-style-type: none"> • Refer to ASWP05 Tree Felling • Place tension on pull rope • Prior to cutting, operation must be stopped and all personnel must receive and confirm that everyone is ready for the “Back Cut”
Begin Back Cut	<ul style="list-style-type: none"> • Monitor cut to ensure holding wood is not cut off completely • Monitor movement of the tree top
Pull on pull rope	<ul style="list-style-type: none"> • Apply constant tension on rope to tip over tree top

ASWP 07 R0

Arborist Hand and Power Tools



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

1.0 Introduction

2.0 Equipment Used

2.1 Axes, Brush Hooks and Other Chopping Tools

2.2 Pole Pruner, Pole Saws, Pneumatic Tools and Electrical Trimmers

2.3 Log Handling Devices

2.4 Wedges, Chisels and Gouges

2.5 Hammers, Mauls, Shovels and Sledges

2.6 Load Controlling Devices and Components

3.0 Hazards

4.0 Legislation / Safe Work Practices

5.0 Mandatory Information

6.0 Work Practices

6.1 Axes, Brush Hooks and Other Chopping Tools

6.2 Pole Pruner, Pole Saws, Pneumatic Tools and Electrical Trimmers

6.3 Log Handling Devices

6.4 Wedges, Chisels and Gouges

6.5 Hammers, Mauls, Shovels and Sledges

6.6 Load Controlling Devices and Components

6.7 Telescopic Power Pole Saws. Power Pack Saws

7.0 Ladders

1.0 Introduction

The purpose of this document is to outline the inspection and maintenance requirements for Arborist Hand and Power Tools.

2.0 Equipment Used

The following outlines some of the tools used in arboriculture.

2.1 Axes, Brush Hooks and Other Chopping Tools

- Axes
- Knives
- Loppers
- Picks
- Secateurs

Figure 1



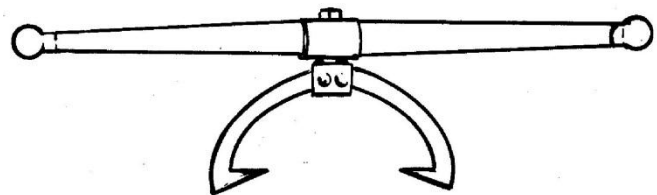
2.2 Pole Pruners, Pole Saws, Pneumatic Tools and Electrical Trimmers

- Back Pack Pole Pruner, Saws and Blowers
- Brush Saws
- Compressors
- Extension Cords
- Telescopic Power Pole Saw
- Hand Saw
- Hydraulic Pole Saws and Pruners
- Pole Pruners
- Pole Saws
- Power Pack Saws

2.3 Log Handling Devices

- Cant Dogs
- Cant Hooks
- Carrying Bars
- Felling Levers
- Peaveys tongs

Figure 2



2.4 Wedges, Chisels and Gouges

- Augers and bits
- Chisels
- Drills
- Wedges

2.5 Hammers, Mauls, Shovels and Sledges

- Brooms
- Mallets
- Rakes
- Shovels / Spades
- Sledge Hammers

2.6 Load Controlling Devices and Components

- Carabiners
- Come-A-Long
- Pulleys
- Slings
- Chainfalls
- Lowering Devices
- Rope Pullers
- Tackle Blocks

3.0 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment when working with arborist's hand and power tools:

Climatic Conditions

Ergonomics

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

4.0 Legislation / Safe Work Practices

The following information has been provided listing relevant arborist safe work practices and legislation requirements:

- ASWP01 General Legislation
- ASWP02 Work in a Safe Environment
- ASWP02 Protect Self and Others
- ASWP02 Arborist Job Planning

Legislation	RRO / RSO	Section Referenced
Industrial	851 / 90	41, 42, 43, 45, 51, 61,139
Construction	213 / 91	78, 79, 80, 81, 93,95,109, 113, 172, 173, 174, 176, 177, 179, 181, 195,

5.0 Mandatory Information / Work Practices

The following are the general mandatory requirements for an arborist when utilizing power or hand tools. In addition to these requirements, the work practice contains specific requirements that must also be followed.

- Inspect all equipment tools daily / before use. Inspect for loose handles, cracks, defects, loose bolts, sharpness etc.
- All tools and equipment use, inspection and maintenance shall adhere to the manufacturer's instructions where applicable
- All appropriate Limits of Approach to electrical apparatus shall be maintained
- Guards and sheaths should be used to protect sharpened edges of knives, blades or chains, etc.
- In electrical environment only tools designed, tested and maintained for electrical environment shall be used
- Gasoline, oil and gas powered equipment shall be stored separately from other personal tools
- Rigging equipment must be labeled with the appropriated Working Load Limit (WLL) or Safe Working Load (SWL)
- Power cords for electrical tools shall be monitored to ensure they are not cut or fall into water

6.0 Work Practices

The following information will provide general information that is required to conform to the use of hand and power tools.

- The correct hand tool(s) and equipment shall be selected for the job
- Hand tools and equipment that have been made unsafe by damage or defect shall not be used
- Arborists and other workers shall maintain a safe working distance from other arborists and workers when using hand tools and equipment
- When ascending a tree (Refer to ASWP03 Climbing Trees) arborist's shall not carry hand tools and equipment in their hands unless they are tools that are used to assist them in their climbing
- Tools other than ropes, or throw lines shall not be thrown into a tree, out of a tree or from arborist to arborist while in a tree
- Arborist climbing lines or hand lines should only be used for raising and lowering hand tools and equipment
- Arborists should raise or lower hand tools and equipment in a manner such that the cutting edge will not contact the climbing line or hand line
- Hand tools and equipment shall be properly stored or placed in plain sight out of the immediate work area when not in use

6.1 Axes, Brush Hooks and other Chopping Tools

- Chopping tools that have loose or cracked heads or splintered handles shall not be used. Chopping tools should not be used while working aloft.
- Chopping tools shall be swung away from the feet, legs, and body, using the minimum forces practical for control.
- Chopping tools shall not be used as wedges or used to drive metal wedges.
- Blade eyes shall be tight fitting and wedged to prevent slippage down the handle.
- A secure grip, firm footing and clearance of overhead hazards shall be maintained when swinging chopping tools.

6.2 Pole Pruners, Pole Saws, Pneumatic Tools and Electrical Trimmers

- Manual pole pruners, pole saws, and other similar tools with poles made of metal or other conductive material shall not be used in operations where electrical hazards exist.
- Structurally damaged poles shall be removed from service.
- When tools are not in use they shall not be:
 - Left laying on ground
 - Stored improperly or hung on a limb of insufficient strength to support the weight of the tool
- Extension cords must be monitored to ensure they are not cut.
- Inspect extension cords for cuts, frayed ends, and loose connections.

6.3 Log Handling Devices

- Cant hooks should be firmly set before applying force.
- Tools with cracked, splintered, or weakened handles should not be used.
- Arborists and other workers shall be warned and in the clear before logs are moved. Points of cant hooks should be maintained to manufacturer's specifications.
- Arborist and other workers shall stand to the rear and uphill when rolling logs.

6.4 Wedges, Chisels and Gouges

- Wedges, chisels, and gouges shall be inspected for cracks and flaws before use.
- Wedges and chisels shall be properly pointed and tempered.
- Tools with mushroomed heads shall not be used.
- Eye protection shall be used during impact operations.
- Only wood, plastic, or soft-metal wedges shall be used to stop binding while operating chain saws.
- Wood handle chisels should be protected with a ferrule on the striking end.

6.5 Hammers, Mauls, Shovels and Sledges

- Wood, rubber or high-impact plastic mauls, sledges or hammers **should** be used when striking wood handle chisels or gouges.

6.6 Load Controlling Devices and Components

- Load controlling devices and components shall be inspected according to manufacturer's recommendations immediately before use and removed from service if found to be defective.
- The components of load controlling systems shall be compatible and suitable for the application and load.
- Slings shall have working load information labels attached.

6.7 Telescopic Power Pole Saws, Power Pack Saws

- The saw and that which you are cutting shall never be used within Limits of Approach.
- Workers while working aloft should not use the tool.

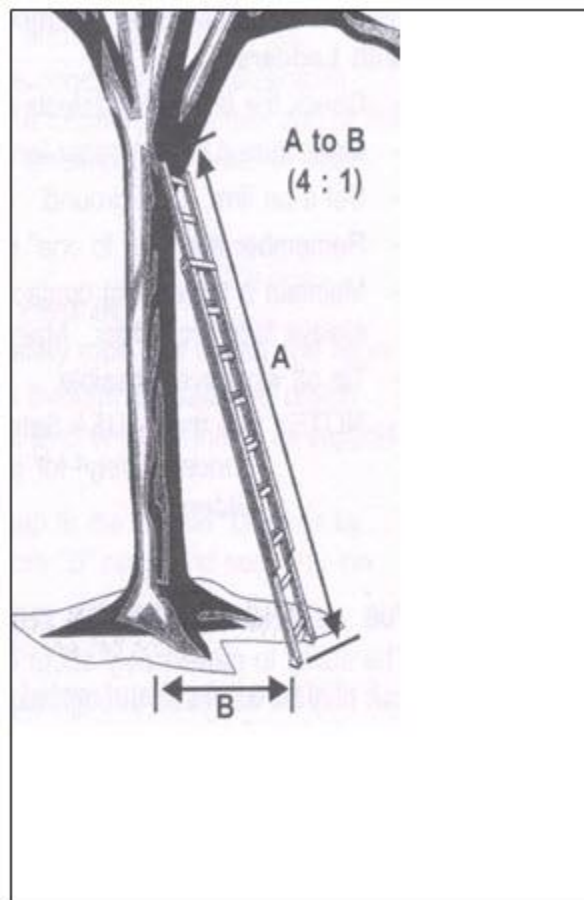
7.0 Ladders

- Ladders made of metal or other conductive material shall not be used where electrical hazards exist.
- Ladders shall conform to the appropriate CSA standard.
- Ensure that the appropriate grade of ladder is used.
- All ladders shall be inspected before use.
- Cleats, metal points, skid-resistant feet, lashing or other effective means of securing the ladder shall be used when there is danger of slipping.
- Ladders shall be supported while in storage to prevent sagging.

Note: Except when on mobile equipment, ladders **should** be stored under suitable cover, protected from the weather, and kept in a dry location away from excessive heat.

- Ladders shall not be used as bridges or inclined planes to **load** or handle logs or other material.
- The appropriate 4 to 1 ratio of vertical height to distance from base must be maintained (Figure 3).

Figure 3



ASWP 08 R0

Fertilizing and Aerating Soils for Woody Plants



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

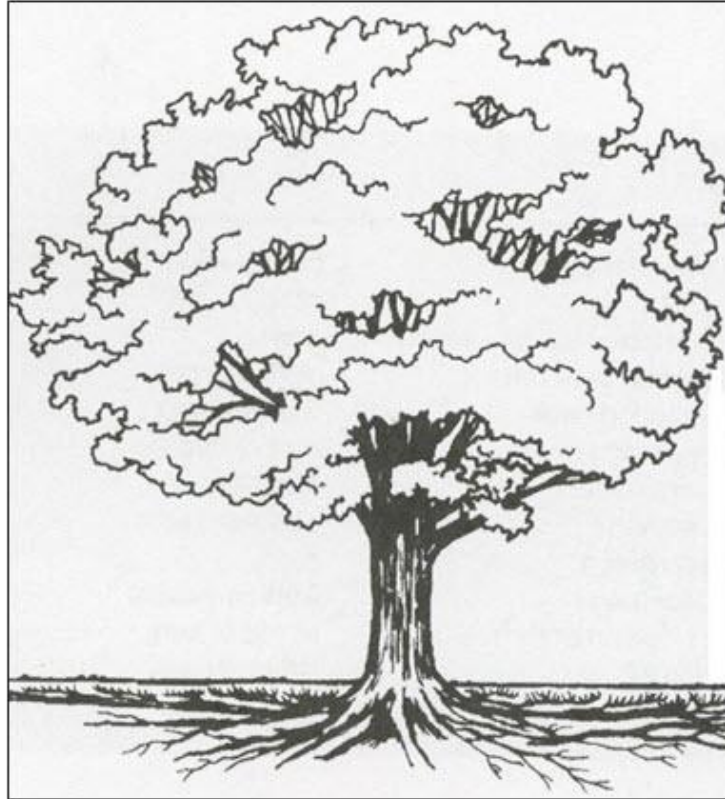
Contents

- 1.0 Introduction
- 2.0 Hazards
- 3.0 Legislation / Safe Work Practices
- 4.0 Application Methods
- 5.0 Work Practices
 - 5.1 Liquid – Soil Fertilization
 - 5.2 Granular – Broadcast Methods - Soil Fertilization
 - 5.3 Granular – Drill Hole Method – Soil Fertilization
 - 5.4 Trunk Implant Method - Fertilization
 - 5.5 Trunk Injection Method - Fertilization
 - 5.6 Aerating Soils
 - 5.7 Mechanical Aeration
 - 5.8 Pneumatic Aeration

1.0 Introduction

This document outlines the practice for fertilizing and aerating soils for woody plants (Figure 1).

Figure 1



2.0 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment when fertilizing and aerating soils for woody plants:

- Biotic Conditions
- Chemical
- Climatic Conditions
- Electrical
- Ergonomics
- Mechanical

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

3.0 Legislation / Safe Work Practices

The following information has been provided listing relevant arborist safe work practices and legislation requirements:

- ASWP01 General Legislation
- ASWP02 Work in a Safe Environment
- ASWP02 Protect Self and Others
- ASWP02 Arborist Job Planning
- Workplace Hazardous Material Information System (WHMIS)
- Material Handling

4.0 Application Methods

The following are the general mandatory requirements for an arborist when working with fertilizing and aeration equipment. In addition to these requirements, the work practices contain specific requirements that must also be followed.

- Operators must inspect equipment prior to using
- Operators must assess the work site for the need to locate underground utilities
- Operators must wear appropriate Personal Protective Equipment (PPE)

5.0 Work Practices

The following work practices provide the steps when utilizing fertilizing and aeration equipment.

5.1 Liquid – Soil Fertilization

Step	Action
Inspect equipment as per manufacturer’s instructions	Inspect pump and hoses to/for: <ul style="list-style-type: none"> • Ensure fittings are secured and attached • Leaks • Cracks Ensure valves are placed in the correct positions
Start pump Note: Ensure that the pump pressure is not overloading system.	Inspect for leaks under operating pressure: <ul style="list-style-type: none"> • Hoses • Connections • Fittings

Step	Action
	<ul style="list-style-type: none"> • Application equipment
Mix fertilizer as per Product Label	<ul style="list-style-type: none"> • Wear appropriate Personal Protective Equipment (PPE).
Inspect work site	<p>Assess for underground obstructions such as:</p> <ul style="list-style-type: none"> • Sprinkler system • Electrical system • Communications conductors • Gas line <p>Note: Locates may need to be established where required.</p>
Pull out hose	<ul style="list-style-type: none"> • Use proper body positioning to eliminate sprains and strains
Apply product	<ul style="list-style-type: none"> • Continually monitor the pressure of the application equipment
Secure equipment for transport	<p>Monitor hose for:</p> <ul style="list-style-type: none"> • Pinch points • Hose connector • Security on vehicle

5.2 Granular – Broadcast Method - Soil Fertilization

Step	Action
Inspect equipment	<ul style="list-style-type: none"> • Refer to manufacturer's instruction for inspection points
Inspect work site	
Fill spreader	<ul style="list-style-type: none"> • Wear appropriate Personal Protective Equipment (PPE) for the job
Apply product	<ul style="list-style-type: none"> • Be aware of spreader use when near hard surfaces, pools etc. to prevent unwanted over spreading
Secure equipment for transport	

5.3 Granular - Drill Hole Method – Soil Fertilization

Step	Action
Inspect equipment	<ul style="list-style-type: none"> • Inspect drill bit for cracks, sharpness
Inspect work site	<p>Assess for underground obstructions such as:</p> <ul style="list-style-type: none"> • Sprinkler system • Electrical system • Communications conductors • Gas lines <p>Note: Locates may need to be established where required.</p>
Drill holes	<ul style="list-style-type: none"> • Maintain distances from rotating shafts • Caution must be exercised for power head kick back • Ensure loose clothing and gloves are kept away from moving parts
Apply product	<ul style="list-style-type: none"> • Wear appropriate Personal Protective Equipment (PPE)

5.4 Trunk Implant Method - Fertilization

Step	Action
Inspect tools and equipment	<p>Inspect for:</p> <ul style="list-style-type: none"> • Cracks • Sharpness
Inspect tree	<p>Inspect for:</p> <ul style="list-style-type: none"> • Metal • Fences

Step	Action
	<ul style="list-style-type: none"> • Lightning protection • Cracks
Drill hole to appropriate depth	<ul style="list-style-type: none"> • Hold drill firmly to reduce potential for jamming and twisting of drill
Implant capsule	<ul style="list-style-type: none"> • Watch for pinch points

5.5 Trunk Injection Method - Fertilization

Step	Action
Inspect tools / equipment	Inspect for: <ul style="list-style-type: none"> • Sharpness • Cracks • Pressure system for operation
Inspect pressure system	Inspect for: <ul style="list-style-type: none"> • Leaks • Connections
Drill appropriate depth / width into tree	<ul style="list-style-type: none"> • Hold drill firmly to reduce potential for jamming and twisting of drill
Implant tip of system	<ul style="list-style-type: none"> • Watch for pinch points
Pressurize the system	<ul style="list-style-type: none"> • Check for leaks
Remove tip	<ul style="list-style-type: none"> • Cover microinjecting unit with one hand and pull out slowly • Wear safety glasses during this operation
Dispose of tip / clean equipment	<ul style="list-style-type: none"> • Follow appropriate directions from the manufacturer's instruction

5.6 Aerating Soils

Step	Action
Inspect work site	Assess for underground obstructions such as: <ul style="list-style-type: none"> • Sprinkler system • Electrical system • Communication conductors

	<ul style="list-style-type: none"> • Gas lines <p>Note: Locates may need to be established where required.</p>
--	--

5.7 Mechanical Aeration

Step	Action
Inspect equipment	Inspect for: <ul style="list-style-type: none"> • Cracks • Broken parts • Sharpness
Make holes	<ul style="list-style-type: none"> • Ensure obstructions are not hit • Watch for head kick back • Maintain distances from revolving shafts <p>Note: Locates may need to be established where required.</p>
Remove equipment	<ul style="list-style-type: none"> • Ensure equipment does not come loose quickly and strike the operator

5.8 Pneumatic Aeration

Step	Action
Insert probe into soil	<ul style="list-style-type: none"> • Ensure probe is inserted to the appropriate depth <p>Note: Locates may need to be established where required.</p>
Activate nozzle	<ul style="list-style-type: none"> • Ensure material does not blow back • Wear all appropriate Personal Protective Equipment (PPE)
Remove nozzle	<ul style="list-style-type: none"> • Ensure equipment does not come loose quickly and strike the operator

ASWP 09 R0

Installation of Hardware in Woody Plants



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist Safe Work Practices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

- 1.0 Introduction
- 2.0 Hazards
- 3.0 Legislation / Safe Work Practices
- 4.0 Mandatory Information
- 5.0 Work Practices
 - 5.1 Site Inspection
 - 5.2 Installing Hardware in Tree
 - 5.3 Install Hardware from Ground

1.0 Introduction

The following are the general mandatory requirements for an arborist when installing hardware in woody plants.

2.0 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment when installing hardware in woody plants:

Biotic conditions

Climatic Conditions

Electrical

Ergonomics

Gravity

Mechanical

Pedestrian and Vehicular traffic

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

3.0 Legislation / Safe Work Practices

The following information has been provided listing relevant arborist safe work practices and legislation requirements:

- ASWP01 General Legislation
- ASWP02 Work in a Safe Environment
- ASWP02 Protect Self and Others
- ASWP02 Arborist Job Planning
- ASWP07 Arborist Hand and Power Tools
- ASWP 04 Working at Heights
- Fire Marshall's Act

4.0 Mandatory Information

The following are the general mandatory requirements for an arborist when installing hardware in woody plants.

- All woody plants shall be inspected prior to ascending
- If pruning or dead wooding is required it should be done prior to installing hardware
- Arborists and other workers on the ground should not stand under the work area of a tree when a cabling system is being installed
- The Danger Zone must be identified and controlled when an overhead hazard exists

- Tools shall be raised, lowered and carried in a manner that will not create an overhead hazard
- All appropriate Personal Protective Equipment (PPE) must be worn
- Arborists in trees should be positioned off to one side in order to avoid injury in case of cable system failure, such as when a block and tackle or a hand winch, are released

5.0 Work Practices

The following information will provide general information that is required to place hardware in woody plants.

5.1 Site Inspection

Step	Action
Inspect woody plant	Identify hazards including but not limited to: <ul style="list-style-type: none"> • Electrical wires in close proximity to tree • Signs of tree decay • Cavities, cankers and splits • Dead and broken limbs • Root decay and damage
Inspect tools and equipment required for the work	Inspect tools for hazards including but not limited to: <ul style="list-style-type: none"> • Operational • Sharpness • Cracks, damage • Loose connections • Appropriate certification required (i.e. di-electrical testing)
Determine safest route of ascent	<ul style="list-style-type: none"> • Inspect for structurally sound tie in points • Refer to ASWP03 Climbing Trees and ASWP04 Work at Heights

5.2 Installing Hardware in Tree

Step	Action
Determine location for hardware	<ul style="list-style-type: none"> • Inspect tree for defects and hazards associated with the location of the work
Secure work position in the tree	<ul style="list-style-type: none"> • Ascend tree as per the Climbing Trees and Work at Heights documents
Raise tools	<ul style="list-style-type: none"> • Ensure tools are secured in a tool bag

Step	Action
Drill holes if required	<ul style="list-style-type: none"> • Maintain a firm grip on drills to protect from drill kick back twisting action • Maintain the appropriate Limits of Approach to electrical conductors • Maintain good body positioning while drilling
Install hardware	<ul style="list-style-type: none"> • Install hardware as per industry best practices

5.3 Install Hardware from the Ground

Step	Action
Determine location for hardware	<ul style="list-style-type: none"> • Inspect tree for defects and hazards associated with the location of the work
Install hardware	<ul style="list-style-type: none"> • Install hardware as per industry best practices

ASWP 10 R0

Arborist Transplanting Woody Plants



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist Safe Work Practices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

- 1.0 Introduction
- 2.0 Hazards
- 3.0 Legislation / Safe Work Practices
- 4.0 Mandatory Information / Work Practices
- 5.0 Work Practice

1.0 Introduction

The purpose of this document is to outline the safe work practice for manually or mechanically transplanting woody plants.

2.0 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment when transplanting woody plants:

- Biotic Conditions
- Cuts and Abrasions
- Climatic Conditions
- Electrical Conditions
- Ergonomics
- Gravity
- Mechanical
- Vehicle and pedestrian traffic

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

3.0 Legislation / Safe Work Practices

The following information has been provided listing relevant arborist safe work practices and legislation requirements:

- ASWP01 General Legislation
- ASWP01 Work in a Safe Environment
- ASWP02 Protect Self and Others
- ASWP02 Arborist Job Planning
- ASWP12 Chainsaw Operation
- Workplace Hazardous Material Information System (WHMIS)

Legislation	RRO / RSO	Section Referenced
Industrial	851/90	45
Construction	213 / 91	37, 91

4.0 Mandatory Information / Work Practices


The following are the general mandatory requirements for an arborist when transplanting woody plants.

- All appropriate Personal Protective Equipment (PPE) must be worn
- Establish need for locates for underground utilities prior to digging holes
- All mechanical devices for planting trees must be operated by qualified personnel only
- Assistants working around mechanical equipment must be oriented to the hazards of the machine

5.0 Work Practice

The following information will provide general information that is required when transplanting woody plants.

Step	Action
Inspect work site	Inspect site for: <ul style="list-style-type: none"> • Terrain obstacles. • Obstructions to planting site. • Vehicle and pedestrian traffic. • Overhead utilities.
Assess for underground obstructions	Assess for: <ul style="list-style-type: none"> • Sprinkler system. • Electrical system. • Communications conductors. • Gas line. Note: Locates shall be established.
Dig hole Note: Manual or mechanical means can be used to dig holes.	<u>Manual</u> <ul style="list-style-type: none"> • Ensure appropriate body positioning is used <u>Mechanical</u> <ul style="list-style-type: none"> • Ensure ground terrain is not hazardous for the machine used and potential for rolling over • Keep away from pinch points of machines used • Monitor loads on machine
Place tree into hole (Figure 1) Figure 1	<ul style="list-style-type: none"> • Use proper lifting techniques • Use appropriate equipment to move trees

Step	Action
	
Remove basket, if required	<ul style="list-style-type: none"> • Keep body parts away from sharp edges of cut baskets • Watch for pinch points of equipment used
Back fill hole	<ul style="list-style-type: none"> • Use appropriate body positioning when back filling • Ensure that sharp edges of baskets will not puncture footwear
Install anchor system	<ul style="list-style-type: none"> • Ensure underground utilities have been identified prior to installing • Use appropriate body positioning when installing anchors • Install guy anchor at the appropriate angle

ASWP 11 R0

Aerial Device Operation



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWork Practices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

- 1.0 Introduction
- 2.0 Hazards
- 3.0 Legislation / Safe Work Practices
- 4.0 Mandatory Information / Work Practices
- 5.0 Work Practice
 - 5.1 Setup Aerial Device
 - 5.2 Operation of Aerial Device
 - 5.3 Starting & Using a Chain Saw Aloft
 - 5.4 Maintenance of Aerial Device
 - 5.5 Evacuation / Rescue from an Aerial Device

1.0 Introduction

The purpose of this document is to outline the safe work practices involved in operating an Aerial Device.

2.0 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment when operating an Aerial Device:

- Biotic Conditions
- Cuts and Abrasions
- Climatic Conditions
- Electrical Conditions
- Ergonomics
- Gravity
- Mechanical

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

3.0 Legislation / Safe Work Practices

The following information has been provided listing arborist safe work practices and legislation requirements:

- ASWP01 General Legislation
- ASWP01 Work in a Safe Environment
- ASWP02 Protect Self and Others
- ASWP02 Arborist Job Planning
- ASWP12 Chain Saw Operation
- Workplace Hazardous Material Information System (WHMIS)
- Temporary Conditions – Ontario Traffic Manual

Legislation	RRO / RSO	Section Referenced
Industrial	851/90	42, 43, 57, 60, 79
Construction	213 / 91	26, 67, 68, 69, 93, 94, 95, 96, 97, 98, 101, 104, 105, 108, 109, 143, 144, 145, 146, 147, 148, 149, 182, 183, 186, 187, 188

4.0 Mandatory Information / Work Practices

The following are the general mandatory requirements for an arborist when working with an aerial device.

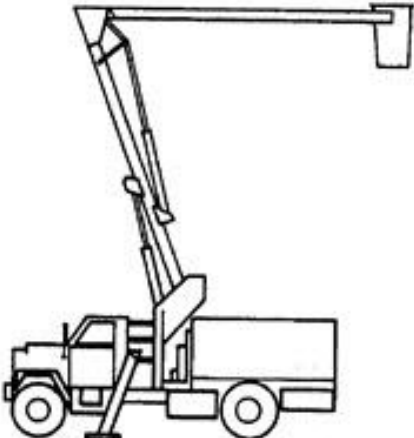
- The manufacturer's instructions must be followed for all maintenance and operation instructions
- Ensure manufacturer's instructions are readily available
- Operators shall wear appropriate Personal Protective Equipment (PPE)
- Operators shall wear an appropriate Fall Protection System
- The Operator of the Aerial Device will control the work site and communicate directions to the ground person
- Only Qualified Personnel may operate an Aerial Device
- All personnel must know the control measures needed for vehicle and pedestrian control
- All appropriate workers and their supervisors shall be familiar with, and competent in, the execution of the rescue technique; including review and practice Aerial Device rescue and evacuation procedures at least annually
- All buckets must contain a rope of sufficient length to raise a bucket evacuation device to be used in Aerial Device rescues
- Workers should maintain three-point contact when entering or exiting an Aerial Device
- When transferring between an Aerial Device to a tree or to another Aerial Device during an evacuation, the worker must be secured at all times with a fall protection system
- Ensure manufacturer's instructions are readily available and have been understood by the operator

5.0 Work Practice

The following information will provide general information which is required when working with aerial devices.

Note: Refer to owner / operator manuals for specific aerial device operation / maintenance.

5.1 Setup Aerial Device

Step	Action
Inspect job site for hazards	Inspect tree for: <ul style="list-style-type: none"> • Electrical hazards • Decay within the tree • Location of tree in relation to vehicle and pedestrian traffic • Ground conditions / slopes
Secure work site	<ul style="list-style-type: none"> • Refer to job plan • Identify Drop Zone • Setup appropriate work site boundaries • Inspect aerial device emergency equipment • Refer to Traffic Control – Temporary conditions – Ontario Traffic Manual Book 7
Inspect aerial device	<ul style="list-style-type: none"> • Follow the manufacturer’s instruction for specific checks and tests • Inspect bucket, booms, outriggers, etc.
Setup aerial device for checks (Figure 1) <p style="text-align: center;">Figure 1</p> 	<ul style="list-style-type: none"> • Follow the manufacturer’s instruction for setup procedures • Ensure that all personnel are clear of descending outriggers

Step	Action
Setup aerial device for work	<ul style="list-style-type: none"> • Follow manufacturer’s instruction in setup procedure of aerial device <p>Note: Ensure that all personnel are clear of descending outriggers.</p> <ul style="list-style-type: none"> • Ensure a rope of sufficient length to raise a bucket evacuation device to be used in Aerial Device rescues is with the basket • Inspect bucket, liner and chain saw scabbard for defects
Inspect Fall Arrest System	<ul style="list-style-type: none"> • Inspect full body harness and shock absorbing lanyard as per manufacturer’s information and Appendix “A” Inspection of Fall Protection System
Put on Fall Arrest System	<ul style="list-style-type: none"> • Adjust and put on Full Body Harness • Attach shock absorbing lanyard to full body harness and to the manufacturer’s approved anchor point on the aerial device

5.2 Operation of Aerial Device

Step	Action
Position booms to the work	<ul style="list-style-type: none"> • Operate Aerial Device according to manufacturer’s instruction • Ensure booms maintain the appropriate Limits of Approach to electrical apparatus • Ensure Ground Assistant(s) are clear of the Drop Zone of trees and brush
Begin work	<ul style="list-style-type: none"> • Control the Drop Zone • Ensure adequate communication between the operator and Ground Assistants • Operators must not stand on the lip of the bucket during operations • Maintain Limits of Approach of equipment and personnel from energized electrical apparatus • Refer to ASWP04 Working at Heights for use

Step	Action
	of chain saw aloft

5.3 Starting and Using a Chain Saw Aloft

Step	Action
Select appropriate chain saw for the work	
Inspect saw / fuel saw	<ul style="list-style-type: none"> • Refer to ASWP12 Chain Saw Operation
Start saw/ warm up	<ul style="list-style-type: none"> • Secure safe location from pedestrian and vehicular traffic • Start saw on ground following manufacturers manual
Verify chain brake operation	<ul style="list-style-type: none"> • Follow manufacturer's instructions
Shut off saw	
Select scabbard	<ul style="list-style-type: none"> • Ensure it is the appropriate size and weight for saw and aerial device basket design • Ensure scabbard is designed for an electrical environment if used in that environment
Inspect scabbard	<ul style="list-style-type: none"> • Check for physical damage of attachment mechanism • Check for cracks or damage to overall scabbard
Attach saw scabbard to bucket	<ul style="list-style-type: none"> • Determine location for scabbard on bucket for ease of work • Keep fingers away from pinch points when attaching scabbard • Ensure scabbard is securely attached to bucket prior to using
Insert saw in scabbard	<ul style="list-style-type: none"> • Keep fingers away from pinch points when inserting chain saw
Locate aerial device to cutting location	<ul style="list-style-type: none"> • Maintain Limits of Approach to electrical apparatus • Position body to ensure that safe work positioning can be maintained • Ensure work site is clear of vehicles and pedestrian traffic • Control Drop Zone
Remove saw from scabbard	<ul style="list-style-type: none"> • Communicate with ground person prior to starting saw on actions to be taken • Securely grasp saw
Start saw	<ul style="list-style-type: none"> • Engage chain brake • Appropriate Personal Protective Equipment is worn • Maintain Limits of Approach to electrical apparatus

Step	Action
	<ul style="list-style-type: none"> • Place body of saw into branch union of tree if available • Ensure saw bar will be clear of branches/foliage • Ensure area below saw is clear • Keep saw below lip of bucket. • Always start saw from the outside of the bucket structure • Secure footing in bucket • Grasp handle securely • Pull starter cord and push saw down and away from the bucket
Perform cut	<ul style="list-style-type: none"> • Ensure good footing inside the bucket • Maintain Limits of Approach to electrical apparatus • Keep all cuts below shoulder level • Maintain proper body positioning, try not to over extend body • Move aerial device to make body positioning easier • Ensure appropriate cuts are used
Shut off saw	<ul style="list-style-type: none"> • Apply chain brake • Replace chain saw in scabbard
Relocate aerial device	<ul style="list-style-type: none"> • Maintain Limits of Approach, to electrical apparatus • Ensure area is clear below cut area • Notify ground person of intentions to move • Secure chain saw between cuts to prevent falling

5.4 Maintenance of Aerial Device

Step	Action
Perform maintenance	<ul style="list-style-type: none"> • Perform and document maintenance as per manufacturer's instruction

5.5 Evacuation / Rescue from an Aerial Device

Step	Action
Aerial Device Evacuation	<ul style="list-style-type: none"> • Perform Aerial Device Evacuation at least annually.
Aerial Device Rescue	<ul style="list-style-type: none"> • Perform Aerial Device Rescue at least annually.

5.6 Transportation

Step	Action
Secure Aerial Device for transport	<ul style="list-style-type: none">• Secure Aerial Device as per manufacturer's instruction• Secure all tools and accessories

ASWP 12 R0

Chain Saw Operation



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES

DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

- 1.0 Introduction
- 2.0 Hazards
- 3.0 Legislation / Safe Work Practices
- 4.0 Mandatory Information / Work Practices
- 5.0 Work Practice
 - 5.1 Pre-operational Checks
 - 5.2 Maintenance
 - 5.3 Operate Chain Saw

1.0 Introduction

The purpose of this document is to outline the safe work practices involved in operating a chain saw while on the ground and aloft. This section excludes tools such as telescopic pole chain saws, power pack chain saws, motorized pole saws and hydraulic pole saws and pruners.

2.0 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment when operating a chain saw:

- Biotic Conditions
- Cuts and Abrasions
- Climatic Conditions
- Electrical Conditions
- Fire
- Mechanical

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

3.0 Legislation / Safe Work Practices

The following information has been provided listing **arborist** safe work practices and legislation requirements:

- ASWP01 General Legislation
- ASWP01 Work in a Safe Environment
- ASWP02 Protect Self and Others
- ASWP02 Arborist Job Planning
- ASWP04 Working at Heights
- ASWP05 Tree Felling

Legislation	RRO / RSO	Section Referenced
Industrial	851/90	39, 79, 80, 81, 82
Construction	213 / 91	21, 112

4.0 Mandatory Information / Work Practices

The following are the general mandatory requirements for an arborist when working with a chain saw.

- All power chain saws shall be equipped with a chain that minimizes the risk of kick back
- All chain saws shall be operated with two hands on the chain saw at all times
- Chain saws shall be operated and inspected as per manufacturer's instructions
- Chain saw operators shall wear appropriate Personal Protective Equipment (PPE)
- If face shields are used they must be used in conjunction with approved safety glasses
- The engine should not be started until the saw is in the immediate work site, except when a warm-up period is required at which time the saw shall not be left unattended
- The operator shall ensure that the work site is clear of obstructions on the ground and aloft i.e. dead limbs or tree tops that may be hazardous
- Control Drop Zone and Hazard Area if applicable
- Operators shall decide on and prepare an escape route before cutting commences
- No one, except the operator, shall be allowed within a radius of 3 metres (10 feet) of a chain saw when it is in operation
- No adjustment shall be made to the chain while the engine is running
- During all chain saw operations, the operator must be fully aware of the consequences of any cut before it is made
- Chain saw shall not be operated above shoulder level
- The engine shall be shut off when moving the chain saw from one location to another, except when trees are in close proximity and the approach is unobstructed
- When moving from tree-to-tree with the engine running, the chain brake shall be applied
- A chain saw shall be removed from service immediately if any defects are evident that could affect its safe operation
- Hot chain saws shall be cooled before refueling

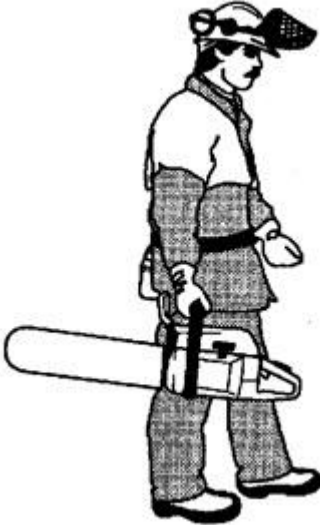
- A hot chain saw shall be placed on a log, stump or on bare ground, rather than in dry litter or slash
- Smoking, open flames, or other sources of ignition, are prohibited within 3 metres (10 feet) of the fuelling area
- Approved firefighting equipment shall be available
- When chain saws are stored or being carried a long distance, the chain should be guarded
- Chain saws shall be carried at the workers side with the guide bar pointed to the rear
- When not in use, the chain saw shall be turned off and placed in a location where it is clear of the work site and it will not be damaged by falling limbs
- Ensure manufacturer's instructions are readily available and have been understood by the operator

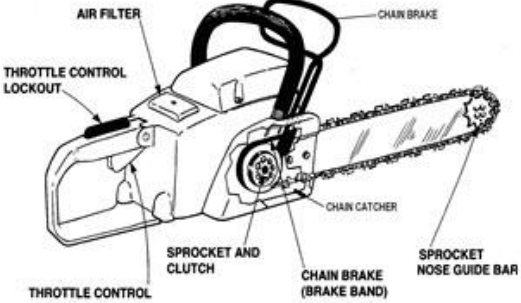
5.0 Work Practice

The following information will provide general information that is required when working with chain saw.

Note: Refer to owner / operator manuals for specific chain saw operation / maintenance.

5.1 Pre-operational Checks

Step	Action
<p>Inspect Personal Protective Equipment (PPE) (Figure 1)</p> <p style="text-align: center;">Figure 1</p> 	<p>Inspect and wear the following personal protective equipment (PPE), appropriate for the circumstance:</p> <ul style="list-style-type: none"> • Head protection • Hearing protection • Eye protection • Hand protection • Chain saw leg protection • Foot protection

Inspect chain saw for hazards	<ul style="list-style-type: none"> Inspect chain saw for loose components and missing components
<p>Perform pre-operational chain saw check (Figure 2)</p> <p style="text-align: center;">Figure 2</p> 	<ul style="list-style-type: none"> Start chain saw using a method described in the manufacturer's instructions Test chain brake by activating chain brake <p>Note: If chain brake does not work, the chain saw must be removed from service and repaired.</p>

5.2 Maintenance

Step	Action
Perform routine maintenance	<ul style="list-style-type: none"> Perform maintenance as per manufacturer's instructions

5.3 Operate Chain Saw

Step	Action
Operate chain saw	<ul style="list-style-type: none"> Refer to ASWP04 Working at Heights Refer to ASWP05 Tree Removal

ASWP 13 R0

Brush Chipper Operation



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES

DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

- 1.0 Introduction
- 2.0 Hazards
- 3.0 Legislation / Safe Work Practices
- 4.0 Mandatory Information / Work Practices
- 5.0 Work Practice
 - 5.1 Pre-operational Checks
 - 5.2 Operation of Chipper
 - 5.3 Emergency Shut Down of Chipper
 - 5.4 Removing a Blockage (Chipper)

1.0 Introduction

This document outlines the safe use of a brush chipper.

Note: Not all practices outlined are applicable to all models of chippers.

2.0 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment when operating a brush chipper:

- Biotic Conditions
- Climatic Conditions
- Electrical Conditions
- Ergonomics
- Mechanical

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

3.0 Legislation / Safe Work Practices

The following information has been provided listing arborist safe work practices and legislation requirements:

- ASWP01 General Legislation
- ASWP01 Work in a Safe Environment
- ASWP02 Protect Self and Others
- ASWP02 Arborist Job Planning
- ASWP12 Chain Saw Operation
- Temporary Conditions – Ontario Traffic Manual

Legislation	RRO / RSO	Section Referenced
Industrial	851/90	79, 80, 81, 82, 83, 84, 85
Construction	213 / 91	67, 68, 69, 93, 94, 95, 96, 101, 104, 105, 108, 109

4.0 Mandatory Information / Work Practices

The following are the general mandatory requirements for an arborist when working with a brush chipper.

- Operators shall wear appropriate Personal Protective Equipment (PPE)
- Only qualified personnel may operate a chipper
- Routine inspection and maintenance must be completed as per the manufacturer's instructions
- Do not wear jewelry or clothing that could become entangled in brush or moving parts
- Secure long hair so that it does not become entangled in moving parts
- Never place any body parts in the in-feed chute for any reason while the machine is operating
- Never place yourself in front of the discharge chute
- Inspect chipper prior to use
- Ensure all guards and protective devices are operational and in place
- Ensure manufacturer's instructions are readily available and have been understood by the operator

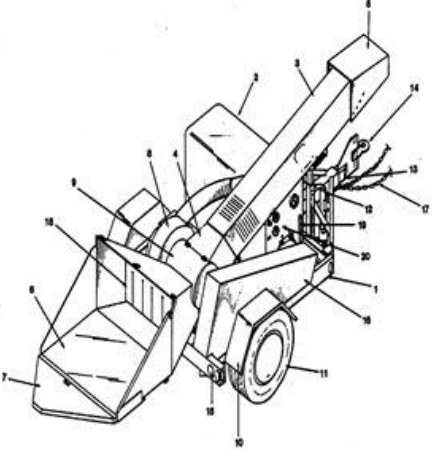
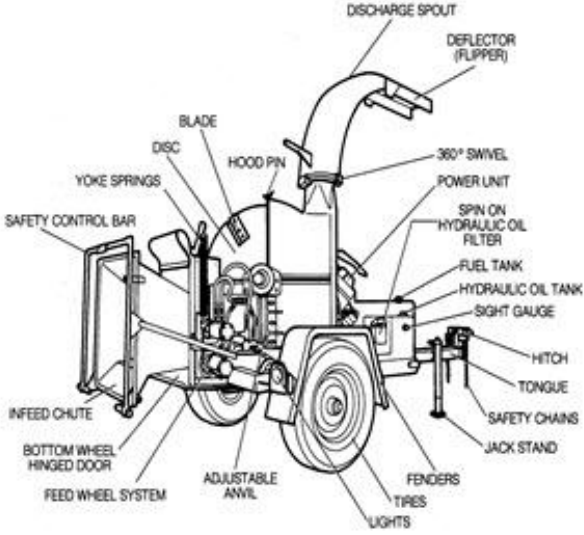
5.0 Work Practice

The following information will provide general information that is required when working with a brush chipper.

Note: Refer to owner / operator manuals for specific brush chipper operation / maintenance.

5.1 Pre-operational Checks

Step	Action
<p>Inspect chipper</p> <p>Note: An example of chipper inspection points are shown in Figure 1</p>	<ul style="list-style-type: none">• Inspect as per the manufacturer's instructions• Inspect guards• Ensure the manufacturer's instructions are available <p>Note: An example of a chipper inspection points are shown in Figure 2.</p>

Step	Action
<p style="text-align: center;">Figure 1</p>  <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>1. TRAILER 2. ENGINE 3. EXHAUST CHUTE 4. EXHAUST TRANSITION 5. DISCHARGE BONNET 6. FOLDING FEED TABLE 7. OPERATOR GUIDE 8. BLOWER AND FLYWHEEL HOUSING 9. ROTOR AND BLADES HOUSING 10. FENDERS</p> </div> <div style="width: 45%;"> <p>11. TIRES 12. DROPSTAND 13. DRAWBAR 14. TOWING EYE 15. LIGHTS 16. BELT GUARD 17. SAFETY CHAINS 18. RUBBER SHROUD 19. CLUTCH LEVER 20. ENGINE CONTROLS</p> </div> </div>	<p style="text-align: center;">Figure 2</p> 
Connect chipper	<ul style="list-style-type: none"> • Secure connection to towing vehicle • Secure safety chains • Plug in lights and brakes if applicable and ensure proper operation
Check directional control arm – if equipped	<ul style="list-style-type: none"> • Ensure directional control arm is stopping and redirecting in-feed rollers as per the manufacturer’s instructions
Secure work site	<ul style="list-style-type: none"> • Secure work site with traffic control devices and pedestrian barriers as per Ontario Traffic Manual Book 7

5.2 Operation of Chipper

Step	Action
Inspect brush pile	Inspect brush pile for: <ul style="list-style-type: none"> • Nails • Metal objects • Foreign objects. • Cut larger limbs into small sections to allow free movement through chipper
Lift brush onto feed table	<ul style="list-style-type: none"> • Bend at the knees to lift brush

Step	Action
Feed brush into chipper	<ul style="list-style-type: none"> • Ensure that hands and loose clothing do not become entangled with the brush • Do not stand directly behind the in-feed chute of the chipper • Do not feed chipper from the roadside • Turn away from roadside to retrieve more brush • Do not place hands or feet inside chipper in-feed chute • Larger limbs should be cut into smaller pieces to allow freer movement into chipper
Free stuck limbs	<ul style="list-style-type: none"> • Limbs lodged in machine can be freed by operating the directional control lever (if equipped) <p>Note: For chippers with no directional control valve, follow the Removing Blockage section below.</p>

5.3 Emergency Shut Down of Chipper

Step	Action
Refer to manufacturer's instruction for further specific information	
Move directional control arm to the neutral position – If equipped	<ul style="list-style-type: none"> • Stop movement of the in-feed rollers
Move directional control arm to the neutral position – If equipped	<ul style="list-style-type: none"> • Shut down machine to stop knives

5.4 Removing Blockage (Chipper)

Step	Action
Shut down chipper	<ul style="list-style-type: none"> • Shut down chipper • Secure chipper using Lock Out Procedures
Follow manufacturer's instructions for	

removal of blockage	
---------------------	--

ASWP 14 R0

Stumper Operation



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES

DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

- 1.0 Introduction
- 2.0 Hazards
- 3.0 Legislation / Safe Work Practices
- 4.0 Mandatory Information / Work Practices
- 5.0 Work Practice
 - 5.1 Pre-operational Checks
 - 5.2 Stumper Operation
 - 5.3 Emergency Shut Down of Stumper
 - 5.4 Normal shut Down of Stumper

1.0 Introduction

This document outlines the safe work practices involved in operating a stumper to remove a tree stump.

2.0 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment when operating a stumper to remove tree stumps:

- Biotic Conditions
- Climatic Conditions
- Electrical Conditions
- Ergonomics
- Mechanical

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

3.0 Legislation / Safe Work Practices

The following information has been provided listing relevant arborist safe work practices and legislation requirements:

- ASWP01 General Legislation
- ASWP01 Work in a Safe Environment
- ASWP02 Protect Self and Others
- ASWP02 Arborist Job Planning
- Temporary Conditions – Ontario Traffic Manual

Legislation	RRO / RSO	Section Referenced
Industrial	851/90	79, 80, 81, 82, 83, 84, 85
Construction	213 / 91	67, 68, 69, 93, 94, 95, 96, 101, 104, 105, 108, 109

4.0 Mandatory Information / Work Practices

The following are the general mandatory requirements for an arborist when working with a stumper to remove tree stumps.

- Operators shall wear appropriate Personal Protective Equipment (PPE)
- Only Qualified personnel may operate a stumper
- Routine inspection and maintenance shall be completed as per the manufacturer's instruction
- Do not wear jewelry or clothing that may or could become entangled in moving parts
- Secure long hair so that it does not become entangled in moving parts
- Never work near or on cutter wheel unless Lockout procedures have been followed
- Everyone must be clear of secure work area during operation (refer to Figure 2)
- Ensure locates have been obtained
- Inspect stumper prior to use
- Ensure all guards and protective devices are operational and in place prior to operation
- Ensure manufacturer's instructions are readily available and have been understood by the operator
- Transport the stumper as per manufacturer's instructions

5.0 Work Practice

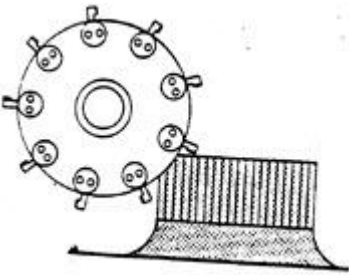
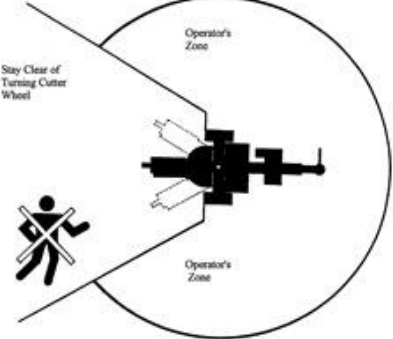
The following information will provide general information that is required when working with a stumper to remove tree stumps.

Note: Refer to owner / operator manuals for specific stumper operation / maintenance.

5.1 Pre-operational Checks

Step	Action
Inspect stumper	<ul style="list-style-type: none">• Inspect as per the manufacturer's instructions• Ensure guards and shields are in place and operational• Ensure the manufacturer's instructions are available
Inspect cutter wheel	<ul style="list-style-type: none">• Inspect for damaged or missing teeth
Secure work site	<ul style="list-style-type: none">• Secure work site with traffic control devices and pedestrian barriers as per OntarioTraffic Manual Book 7

5.2 Stumper Operation

Step	Action
Inspect stump and work site	Remove: <ul style="list-style-type: none"> • Nails • Metal objects • Foreign objects • Stones • Wires • Loose chunks of wood. <ul style="list-style-type: none"> • Assess potential of underground obstructions and obtain locates • Assess work site for ground conditions and slope
Start stumper	<ul style="list-style-type: none"> • Ensure cutter wheel is free of objects • Remove transporting pins as per manufacturer's instructions
Engage cutter wheel	<ul style="list-style-type: none"> • Ensure guards and curtains are in place
Begin cutting stump (Figure 1) using the manufacturer's recommended cutting area <p style="text-align: center;">Figure 1</p>  <p>The diagram shows a circular cutter wheel with several cutting teeth around its perimeter. A shaded rectangular area is shown on the ground in front of the wheel, indicating the recommended cutting zone.</p>	<ul style="list-style-type: none"> • Monitor work site to ensure no one enters the area where debris can be thrown from the machine (Figure 2) <p style="text-align: center;">Figure 2</p>  <p>The diagram shows a stumper machine with a large circular area around it labeled 'Operator's Zone'. A stick figure representing a person is shown with a large 'X' over it, indicating a warning to stay clear. A line points to the person with the text 'Stay Clear of Turning Cutter Wheel'. Arrows indicate the direction of debris being thrown from the machine.</p> <ul style="list-style-type: none"> • Monitor the direction of debris to ensure it stays within the work site

5.3 Emergency Shut Down of Stumper

Step	Action
Refer to manufacturer's instruction for further specific information	
Disengage cutter wheel	<ul style="list-style-type: none">• Move control lever to disengage wheel
Lower cutter wheel into stump	<ul style="list-style-type: none">• Lower wheel into stump debris
Shut down machine	<ul style="list-style-type: none">• Turn off ignition

5.4 Normal Shut Down of Stumper

Step	Action
Disengage cutter wheel	<ul style="list-style-type: none">• Wait for cutter wheel to stop revolving
Secure the stumper for road travel	<ul style="list-style-type: none">• Insert safety pins; roll up curtains as per manufacturer's instructions
Shut off unit	

ASWP 15 R0

Clearing Saw Use



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES

DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

- 1.0 Introduction
- 2.0 Hazards
- 3.0 Legislation / Safe Work Practices
- 4.0 Mandatory Information / Work Practices
- 5.0 Work Practice
 - 5.1 Site inspection
 - 5.2 Cutting Operation

1.0 Introduction

This document outlines the safe work practices involved in operating a clearing saw to remove brush.

2.0 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment when operating a clearing saw to remove brush:

- Biotic Conditions
- Animal Conditions
- Electrical Conditions
- Body Mechanics
- Mechanical

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

3.0 Legislation / Safe Work Practices

The following information has been provided listing arborist safe work practices and legislation requirements:

- ASWP01 General Legislation
- ASWP01 Work in a Safe Environment
- ASWP02 Protect Self and Others
- ASWP02 Arborist Job Planning

Legislation	RRO / RSO	Section Referenced
Industrial	851/90	22, 23
Construction	213/91	21

4.0 Mandatory Information / Work Practices

The following are the general mandatory requirements for an arborist when working with a clearing saw to remove brush.

- All Personal Protective Equipment (PPE) must be worn
- All workers shall maintain a distance of 10 metres (30 feet) away from the operator
- Cold saws shall be started on the ground
- Warm saws should be started on the ground or started using a second person if saw is attached to the operators harness

- All brush shall be monitored for falling direction
- Safe Limits of Approach shall be followed
- Brush greater than 10 cm (4 inches) DBH should not be cut with a clearing saw
- Ensure manufacturers' instructions are readily available and have been understood by the operator

5.0 Work Practice

The following information will provide general information that is required when working with a clearing saw to remove brush.

Note: Refer to owner / operator manuals for specific clearing saw operation / maintenance.

5.1 Site Inspection

Step	Action
Inspect equipment	Inspect for: <ul style="list-style-type: none"> • Cracks • Sharp blade • Set of blade is appropriate
Adjust clearing saw harness	<ul style="list-style-type: none"> • Adjust harness for saw so that the saw blade will not contact the feet of the operator
Inspect Personal Protective Equipment (PPE)	All PPE must be worn including: <ul style="list-style-type: none"> • Hardhat • Hearing protection • Eye protection • Foot protection.
Inspect work site	Inspect for and set appropriate barriers for all hazards and obstacles including but not limited to: <ul style="list-style-type: none"> • Electrical conductors • Terrain • Brush height • Brush size

Step	Action
Start saw	<ul style="list-style-type: none"> • Ensure saw blade is not touching the ground or obstacles • Maintain a firm grip on the saw <p><u>Cold Start</u></p> <ul style="list-style-type: none"> • Start saw on ground following manufacturer's instruction <p><u>Warm Start</u></p> <ul style="list-style-type: none"> • On the back of the operator using a second person • Assistant moves away from operator when started

5.2 Cutting Operation

Step	Action
Start cutting	<ul style="list-style-type: none"> • Monitor blade location • Ensure all workers maintain 10 metres away from operator • Do not cut brush above shoulder height • Brush greater than 10 cm (4 inches) DBH must not be cut with a brush saw • Monitor terrain to ensure good traction while cutting • Cut with the appropriate side of blade; refer to the manufacturer's instruction • Ensure the blade is operating at full speed before cutting

ASWP 16 R0

Use of a Mobile Crane to Remove Trees



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Contents

- 1.0 Introduction
- 2.0 Hazards
- 3.0 Legislation / Safe Work Practices
- 4.0 Mandatory Information / Work Practices
- 5.0 Work Practice
 - 5.1 Worksite Assessment
 - 5.2 Worksite Setup
 - 5.3 Arborist Work Positioning
 - 5.4 Crane Rigging
 - 5.4.1 Crane Rigging – Multi-leg Sling Configuration
 - 5.4.2 Crane Rigging – Single Sling Configuration
 - 5.5 Cut Section

1.0 Introduction

This document outlines the safe work practices for removing trees using a mobile crane.

2.0 Hazards

The following hazards have been identified to aid in establishing and maintaining a safe work environment when operating a crane to remove trees:

- Biotic Conditions
- Climatic Conditions
- Electrical Conditions
- Ergonomics
- Mechanical
- Pedestrian
- Gravity

Note: The above list of hazards is not a complete list and a thorough job plan should be completed to identify existing hazards found at the work site.

3.0 Legislation / Safe Work Practices

The following information has been provided listing arborist safe work practices and legislation requirements:

- ASWP01 General Legislation
- ASWP01 Work in a Safe Environment
- ASWP02 Protect Self and Others
- ASWP02 Arborist Job Planning
- ASWP03 Ascending Trees
- ASWP04 Working at Heights
- ASWP06 Rigging Trees
- ASWP11 Aerial Device Operation
- ASWP12 Chain Saw Operation
- Temporary Conditions – Ontario Traffic Manual

Legislation	RRO / RSO	Section Referenced
Industrial	851/90	51, 60
Construction	213 / 91	150, 156, 168, 180

4.0 Mandatory Information / Work Practices

The following are the general mandatory requirements for an arborist when working with a crane to remove trees.

Arborist aloft shall be:

- Competent to calculate wood weights using various methods including: green wood weight chart, estimating by sight, application of suitable safety factors, wood strengths and variability, and tree characteristics
- Familiar with crane performance charts (range and capacity)
- Familiar with crane operations and suitable crane dimensions
- Only competent personnel, deemed by the employer, shall work with a crane
- Familiar with characteristics, defects and imperfections in trees
- Knowledgeable of wood strength in tension wood
- Familiar with safe work procedures to identify hazards and place barriers to the hazards general and specific to crane work
- Able to communicate using – standard crane hand signals and or verbally
- Advanced knowledge in rigging techniques and equipment
- Familiar with the required Personal Protective Equipment and climbing equipment needed (inspection, maintenance and use)
- Familiar with appropriate safe work practices to access trees
- Familiar with safe work practices using a chain saw (aloft) and practical application of cuts when utilizing a crane
- Familiar with rigging and control options available when using a crane
- Aware of electrical hazards and appropriate procedures

Crane operators shall have:

- A valid certification (operator's license) Cranes 8 tons capacity and above or competency in operation of cranes 8 tons and below
- Knowledge and performed Critical Lifts
- Familiarity with the specific hazards associated with tree removal such as:
 - Estimating tree weight calculations
 - Safety factors used
 - Load balancing
 - Movements of load
 - Experience on uneven and unknown ground support conditions
 - Wind / sail conditions
 - Uneven or unbalanced loading
 - Challenging communication situations
 - Load paths through possible traffic areas
 - Landing zone restrictions
- Awareness of electrical hazards and appropriate procedures
- The operators manual available and be familiar with the contents

Crane Equipment:

The ASWP committee recommends that a load cell should be part of the mandatory equipment of the crane. The load cell can be used to verify the load being lifted against the estimated load to verify estimates and to ensure future loads will be adjusted accordingly. The ASWP committee recognizes that all mobile cranes do not have load cells and that crane operators develop a sense of what the loads are based on previous work experiences

Ground personnel and Arborist on ground shall have specific training in:

- Communication techniques with crane operator
- Sling usage
- Hazards associated with crane use and lifting heavy loads
- Lifting paths including lifting near pedestrian and or traffic areas
- Landing zone restrictions including releasing of loads on cranes, balancing loads on ground to ensure they do not roll, and clean up procedures

5.0 Work Practice

The following information will provide general information that is required when working with a crane to remove trees.

5.1 Worksite Assessment

Step	Action
Determine if crane can be used on worksite	<ul style="list-style-type: none">• Ensure crane can access the location (i.e. road conditions/weight limitations, access over/under bridges etc.), mobility within site, maintaining safe working loads at various boom angles• There is enough outrigger room and security• Ground stability for the crane• Ensure crane setup location will provide adequate protection from hazards such as electrical, overhead structures, buildings, septic systems, underground obstructions and services etc.• Ensure there is adequate space available for the crane, and applicable, work equipment (i.e. aerial device, chippers or trucks) to complete the work• Ensure there is adequate space for the crane and its boom to move freely in and maintain appropriate limits of approach to electrical apparatus• Assess tree for: rot, structural weaknesses, animal nests, loose bark, branching characteristics and any potential hazards for the lifting operation
Determine crane size required	<ul style="list-style-type: none">• Assess weights of potential loads

Step	Action
	<ul style="list-style-type: none"> Consider crane lifting capacity and Safe Work Loads at various boom angles for various crane sizes

Note: Prior to contracting a crane to perform the work, a thorough site analysis with the crane operator is needed to determine the size of crane required and whether the location is appropriate for a crane to safely work.

5.2 Worksite Setup

Step	Action
Determine potential lifting locations on tree from ground to establish a lifting plan for cuts – “picking the load”	<ul style="list-style-type: none"> Discuss with crane operator potential lift locations on the tree plus sequence of lifts to be conducted Assess potential loads considering: <ul style="list-style-type: none"> Wood weights using the Green Wood Weight Charts. Branching of tree sections Tree condition (i.e. dead or rotten wood) Centre of gravity of the load being lifted Weather conditions (wind, rain, sunlight) Bark conditions <p>Note: The potential of slippage of chokers must be considered when determining where to cut and the final weight of the cut section.</p> <ul style="list-style-type: none"> The estimated weight of the load and a safety factor of the lift shall be determined by competent workers Loads should be rigged butt heavy using the 2/3 rule for placing a choker on stem. Use of additional rigging equipment e.g. ropes, blocks etc. to control the load should be considered Consider use of multi leg sling configuration
Determine crane load path to Landing Zone	<ul style="list-style-type: none"> Ensure that the size of the section to be cut and the amount of room available to lower the cut section is adequate Install pedestrian / worker barriers to keep people from under load
Setup Landing Zone	<ul style="list-style-type: none"> Ensure adequate communications between workers and crane operator using either hand or radio communications Install pedestrian / worker barriers to keep people from under load being moved overhead <p>Note: Do not walk under load suspended by crane.</p>

Step	Action
Conduct Tailboard Conference	<ul style="list-style-type: none"> • Ensure all participants at the work site, including crane operator and ground persons, are part of the discussion • Instruct how slings are attached and used • Discuss positive locking pins for attachment points on the crane for devices that could come in contact with the tree • Identify hazards and Drop Zone(s)

5.3 Arborist Work Positioning

Step	Action
Ascend to predetermined work position in tree	<ul style="list-style-type: none"> • Ascend the tree using predetermined climbing techniques or aerial device (Refer to ASWP03 Climbing trees and or ASWP11 Aerial Device Operations) • Assess the tree condition throughout the ascending process to ensure tree is structurally sound for the work that will be conducted
Secure choker on tree	<ul style="list-style-type: none"> • Ensure there is an agreement between crane operator and climber for the choker location • Load should lift balanced • Ensure choker positioning will move the load away from climber when hoisted • Ensure location will consider the load twisting when tension is applied to the choker • Ensure tree section is structurally sound to support the lift • Ensure that the choker will not move due to bark slippage • If possible, place choker below a branch union • If needed for better control, attach butt and/or guide ropes to the section to be removed • Consider the location of the tree with respect to the energized conductor and other obstructions and the intended lowering location • Determine if multi leg sling rigging is needed to secure the load • Determine if further rigging to control the load will be required

5.4 Crane Rigging

Step	Action
Determine load	<ul style="list-style-type: none"> • Communicate with crane operator intended sling location and cut location • Determine weight of load to be cut using Green Wood Weight Charts, rules of thumb etc. • Relay weight of load to crane operator
Crane operator decides if load is within their lifting capabilities	<ul style="list-style-type: none"> • Crane operator communicates acceptance or rejection of proposed cutting location based on whether load is within their capabilities • Crane operator and worker aloft will agree on the final cutting location
Set choker around section of tree	<ul style="list-style-type: none"> • Ensure choker is secured to tree

5.4.1 Crane Rigging – Multi Leg Sling Configuration

Step	Action
Secure one leg of sling to limb Multi leg Sling Configurations	<ul style="list-style-type: none"> • Place choker so that headache ball is over the centre of gravity of the limb • Ensure that the Safe Working Loads (SWL) of the sling is not encroached • Ensure that when sharp angles are placed on connection between slings and load the Safe work Load (SWL) is not compromised • Utilize a Sling Angle Load Chart • Ensure bend ratios for slings are not exceeded
Secure second leg of sling to limb	<ul style="list-style-type: none"> • Ensure that there is no slack in the multi leg sling configuration

5.4.2 Crane Rigging – Single Sling Configuration

Step	Action
Place choker around tree and secure to headache ball	<ul style="list-style-type: none"> • Ensure choker is secured properly • Ensure sling bend ratios are not exceeded • Ensure the Safe Work Load (SWL) of the sling is not exceeded • Place choker so that when lifted the section of tree will move in a direction away from hazards or unintended targets • To prevent sling slippage it may be necessary to cut notches for securing slings
Communicate to crane operator to pretension line	<ul style="list-style-type: none"> • Communication between crane operator and arborist shall be clear and concise • Crane operator places tension on tree • Pretension on tree should normally equal the estimated weight of the load of the piece to be cut

5.5 Cut Section

Step	Action
Visually inspect rigging system to ensure it is secured to tree stem prior to lifting	<ul style="list-style-type: none"> • Check that the headache ball and crane lifting line are in a vertical line with the centre of gravity • Check that the choker(s) is secured • Check that there is no twisting of the lift line or choker(s) • Check that there is a direct path from choker(s) to hook and there are no limbs in the way
Worker aloft descends to cut location	<ul style="list-style-type: none"> • Cut location should be at shoulder level to allow for cut sections to swing away from the chain saw
Establish an escape route	<ul style="list-style-type: none"> • Escape route / method should allow the worker to move out of the way if a section or limb swings in a different direction than anticipated
Secure to tree using work positioning equipment – if ascending by climbing tree	<ul style="list-style-type: none"> • Ensure lift will not tangle climber's fall protection equipment
Determine style of chain saw cut to be made	<ul style="list-style-type: none"> • Angle Cut or Straight cut • Sawing should finish at the pinch point of the load working around the circumference of the section <p>Note: A Snap Cut should be avoided. The Snap Cut</p>

Step	Action
	requires the crane operator to break wood by creating lateral movements to the stem being cut through the boom and hoist line. This action can apply a great deal of stress to crane components.
Remove branches above the work location to ensure that other branches do not strike the worker	<ul style="list-style-type: none"> • Use appropriate fall protection with chain saw use • Ensure severed limbs are removed appropriately
Communicate to crane operator “beginning cut”	<ul style="list-style-type: none"> • Ensure crane operator has heard and responds
Perform chain saw cut	<ul style="list-style-type: none"> • Operate chain saw from the escape route side of the stem • Make a controlled cut • Monitor movement of tree stem • Communicate with crane operator to adjust lifting tension and or movement or direction to release tension on section as needed
Reposition to escape route/method	<ul style="list-style-type: none"> • Worker aloft moves to escape route/method • Worker communicates to crane operator to take the load
Crane operator takes load and lowers to ground	<ul style="list-style-type: none"> • Ensure load is moved away from climber and not over the climber’s head • Ensure load is not transferred over ground workers
Remove choker(s) from cut section on ground	<ul style="list-style-type: none"> • Secure load from movement prior to releasing choker(s) • Be aware of potential swing of headache ball • Remove the choker(s) from the headache ball hook • Remove the choker from the tree section • Replace the choker on the headache ball • Remove butt/guide ropes as necessary • Do not use crane to free slings that are stuck. Reposition loads to free slings

ASWP AA R0

Appendix A



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Appendix A

SAMPLE FALL PROTECTION EQUIPMENT INSPECTION

Arborist Life Line (Climbing Line) inspection:

Inspect for cuts, abrasion, contamination from dirt, grease, oil etc. It may be necessary to separate rope fibers for further internal inspection.

Full body harness / climbing saddle inspection:

Inspect for worn and damaged stitching. Inspect for damaged and pulled rivets. Check webbing for cuts and excessive wear. Look for damage and excessive wear to “D” rings.

Shock absorbing lanyard and work positioning lanyard inspection:

Evaluate lanyards for cuts and abrasion, excessive wear, safety snap function, wear and damage.

Connecting link inspection:

Carabiners and safety snaps generally have the same components therefore inspection will be the same. Locking devices shall be checked for function wear and damage. The body of connecting links shall be examined for cracks, wear and deformities. Dry graphite lubricant is recommended for moving parts.

Inspection of climbing spurs:

Inspect gaffs for cracks, deformities and proper attachment points. Ensure that the gaffs are sharp and properly shaped. Check pads, straps, leg irons, stirrups, and sleeves for defects and wear.

Ensure that climbers are properly adjusted and fitted.

Ladder Inspection:

Only fiberglass or wooden ladders **shall** be used if there is any possibility of an electrical contact. Check that all rung braces are tight and that rivets are in place. Inspect the rung locks on extension ladders to ensure they move freely. Lubricate moving parts and springs. Ensure that rung locks catch over the rungs. Safety shoes must be in place and moving freely. Inspect pulley on extension ladders for function and wear. Replace parts if necessary. Defective ladders **shall** not be used.

Note: These inspection items are in addition to and do not replace the manufacturers' suggested inspections.

ASWP AB R0

Appendix B



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Appendix B

ARBORIST FALL PROTECTION EQUIPMENT

Fall Protection Component	ASWP Performance Requirement	Applicable Standard
Life Line (Climbing Line)	Meets minimum breaking strength 6,000 lbs (27 kN), manufactured for tree climbing purposes	CSA Z259.2 .1-98
Connecting devices (carabiner, safety snap, friction device)	Minimum breaking strength 22 kN (5,000 lbs.). Self-locking, with two operations to unlock. Double action, pull down, twist to open gate Maximum slippage no more than 1 metre.	CSA Z259.12-01
Climbing Harness	Meet or exceed CSA Z259.1-M99	CSA Z259.1-95-M99
Full Body Harness	Meet or exceed CSA Z259.10-M90	CSA Z259.10-M90
Work Positioning Lanyard	Snaps automatically close and lock. Meet or exceed CSA Z259.1-M99	CSA Z259.1-M99
Shock Absorbing Lanyard (Expanding Lanyard)	Snaps automatically close and lock. Meet or exceed CSA Z259.1-M99	CSA Z259.1-M99

- kN kilonewton conversion - multiply kN by 224.81 = lbs. force

ASWP AC R0

Appendix C



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Appendix C

The following is a sample of Green Wood Weights for demonstration purposes. For more precise measurements consult your local Ministry of Natural Resources and Forestry Department.

Ontario Greenwood Weight Chart

Weight of Green Logs															
	Wt/ lb	Weight in Pounds, Per Foot in Length, Based on Average Diameter													
Species	Ft. 3	10 "	12 "	14 "	16 "	18 "	20 "	22 "	24 "	26 "	28 "	30 "	32 "	34"	
Apple	55	30	43	59	77	97	120	145	173	203	270	307	347	389	
Ash, White	48	26	38	51	67	85	104	126	150	177	205	237	263	339	
Aspen, Trembling	43	23	34	46	60	76	95	114	135	159	184	210	271	304	
Basswood	42	23	33	45	59	74	92	111	132	156	181	207	268	297	
Beech, American	54	29	42	58	75	95	118	142	169	199	230	263	300	381	
Birch, White	50	27	39	53	70	88	109	132	157	184	213	244	277	353	
Birch, Yellow	57	31	45	61	80	101	124	149	176	205	236	269	303	403	
Butternut	46	25	36	49	64	81	100	121	144	170	197	225	290	325	
Cedar, Western Red	28	15	22	30	39	49	61	74	88	103	119	137	177	197	
Cherry, Black	45	25	35	48	63	79	98	119	141	166	193	221	283	318	
Chestnut, Horse	41	22	32	43	57	72	89	109	129	154	181	209	258	289	
Cottonwood	49	27	38	52	68	86	107	129	154	181	209	237	310	346	
Elm, American	54	29	42	58	75	95	118	142	169	199	230	263	300	381	
Hemlock, Eastern	49	27	38	52	68	86	107	129	154	181	209	237	310	346	
Hickory, Shagbark	64	35	50	68	89	113	140	169	201	236	273	313	403	452	
Larch	51	28	40	54	71	90	111	135	161	188	217	248	322	360	
Locust, Black	58	32	45	62	81	102	126	151	178	207	238	271	364	409	
Locust, Honey	61	33	48	65	85	108	133	159	187	217	249	283	385	431	
Maple, Red	50	27	39	53	70	88	109	132	157	184	213	244	317	353	
Maple, Silver	45	25	35	48	63	79	98	119	141	166	193	221	283	318	
Maple, Sugar	56	31	44	60	78	99	122	146	172	200	229	260	353	396	
Oak, Live	76	41	60	81	106	134	162	191	221	252	284	317	478	536	
Oak, Red	63	34	49	67	88	111	137	164	193	223	254	287	397	445	
Oak, White	62	34	48	66	86	109	135	162	191	221	252	285	395	437	
Pine, White	36	20	28	38	50	64	78	95	113	128	154	171	227	254	
Spruce, Red	34	19	27	36	47	60	74	90	106	121	147	164	220	239	
Sycamore	52	28	41	55	72	92	113	137	162	191	221	252	327	366	
Tulip	38	21	30	40	53	67	83	99	119	140	162	184	239	268	
Walnut, Black	58	32	45	62	81	102	126	151	178	207	238	271	364	409	
Willow	32	17	25	34	45	56	70	84	100	118	137	157	201	226	
Species	Wt/ lb	10 "	12 "	14 "	16 "	18 "	20 "	22 "	24 "	26 "	28 "	30 "	32 "	34"	

ASWP AD R0

Appendix D



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Appendix D

Friction Hitches and Termination Knots

The following knots were evaluated to determine their characteristics when placed in a fall situation. The performance measures for fall arrestors found in CSA Standard Z259.2 Fall Arresting Devices, Personnel Lowering Devices and Vertical Life Lines were used as a guideline for the testing. Further information and testing information can be requested from the Arborist Safe Work Practices Committee Chair. The Arborist Safe Work Practices Committee urges users to use the following knots in their fall protection systems.

All knots and friction hitches must be tied, dressed and set properly. Repetitive loading and unloading of knots can potentially slacken off the knot. Therefore, all knots must be monitored throughout the climbing process.

Ascending Techniques

Ascending Technique	Knots
Belay	Blake's Hitch
Secured Foot Locking	Klemheist Prussik (6 coil)
Secured Body Thrust	Blake's Hitch Swabbish Tautline Hitch Gripping Hitch

Working at Heights

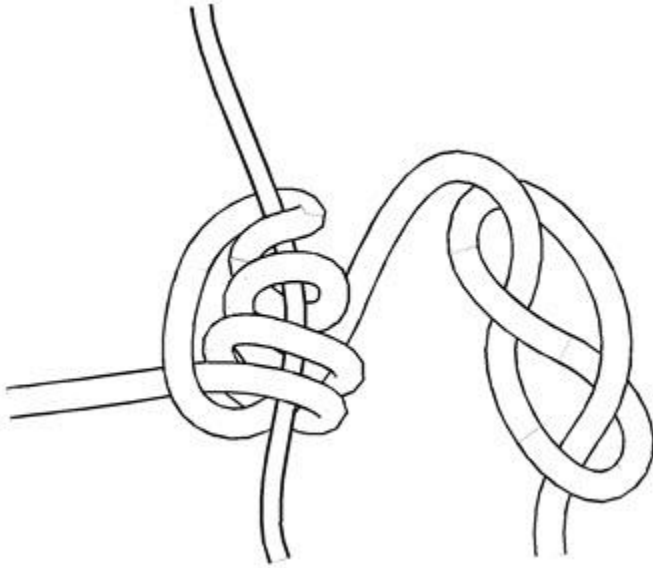
Working at Heights Technique	Knots
	Blake's Hitch Tautline Hitch Figure 8 Stopper Knot Swabbish Gripping Hitch

Termination Knot

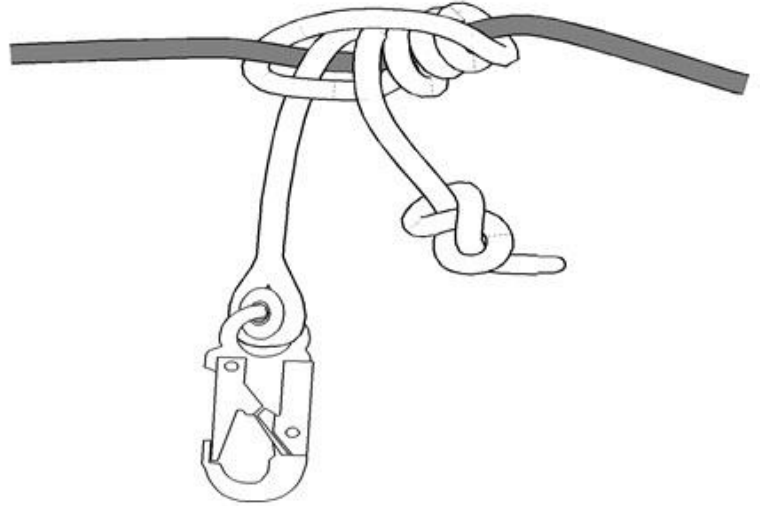
Ascending Technique	Knots
Open Climbing System	Figure 8 on a Bight Cow Hitch - Spliced Eye Triple Fisherman
Closed Climbing System	Bowling - Figure 8 Stopper Knot Triple Fisherman Double Fisherman Beckett - Figure 8 Stopper Knot

Friction Hitches

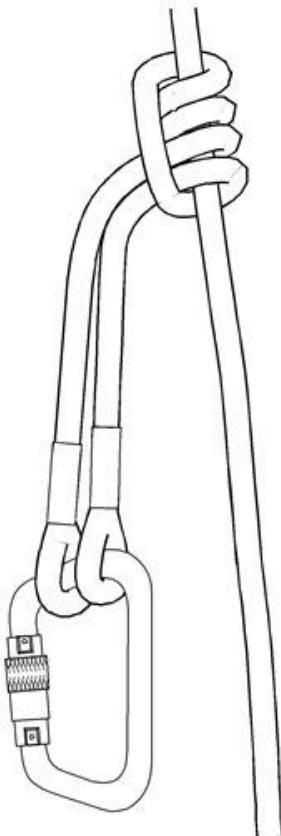
Blake's Hitch



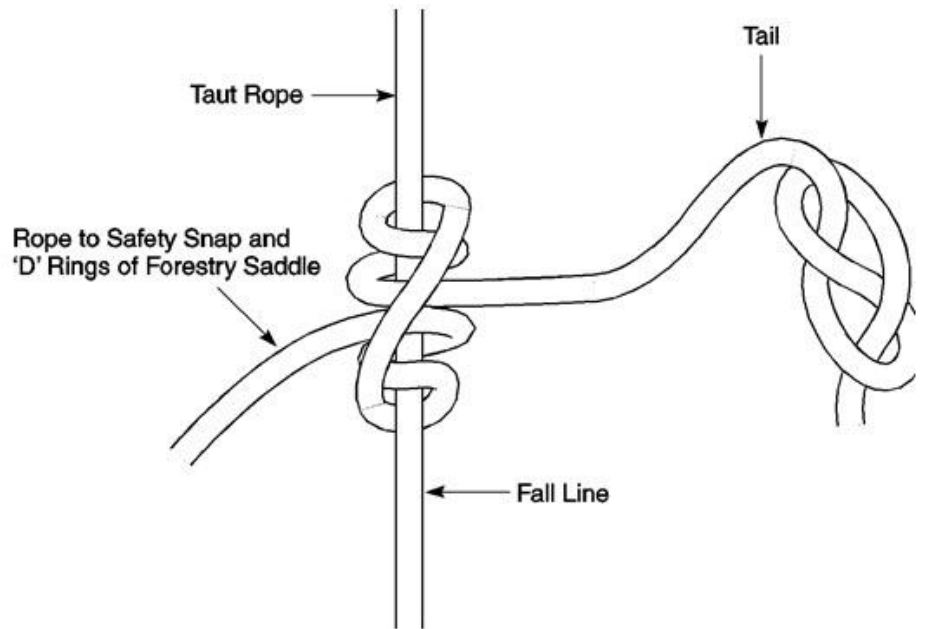
Gripping Hitch



Swabbish



Gripping Hitch

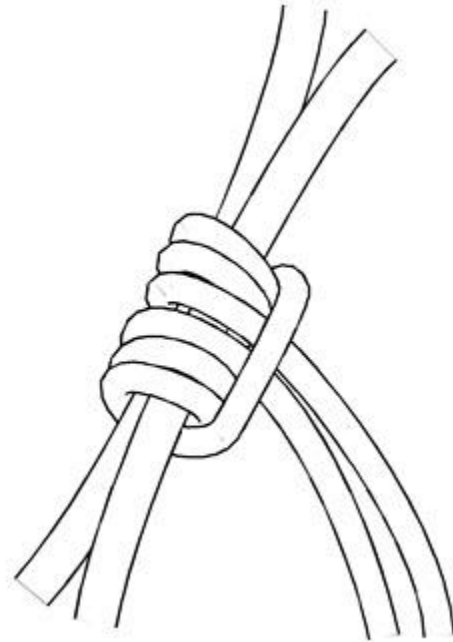


Friction Hitches con't

Klemheist



Prussik (6 Coil)



Termination Knots

Anchor Hitch

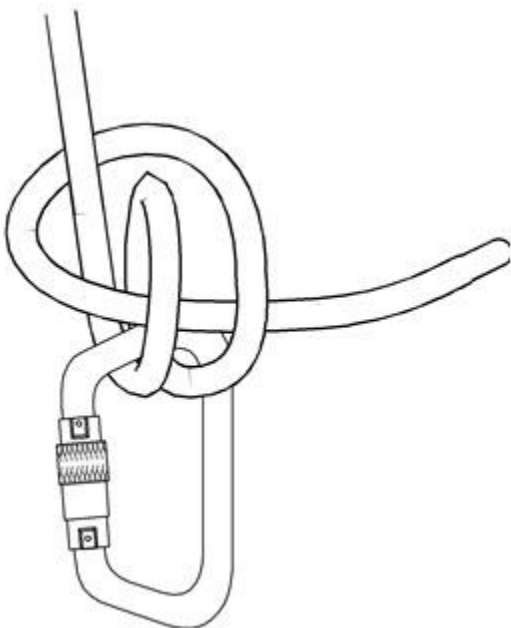
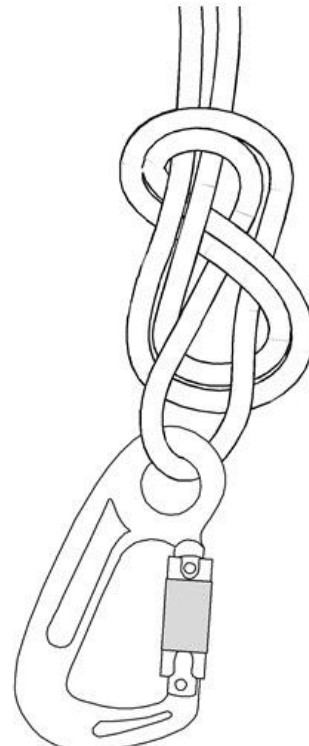
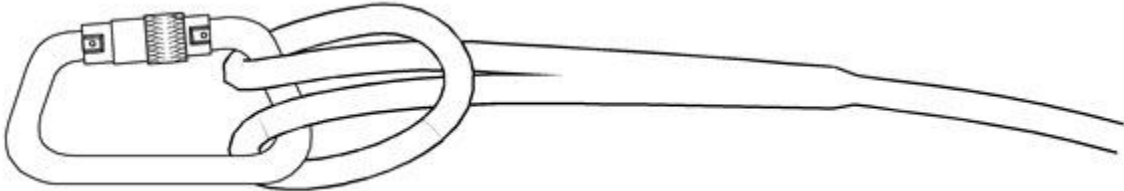


Figure 8 on a Bight

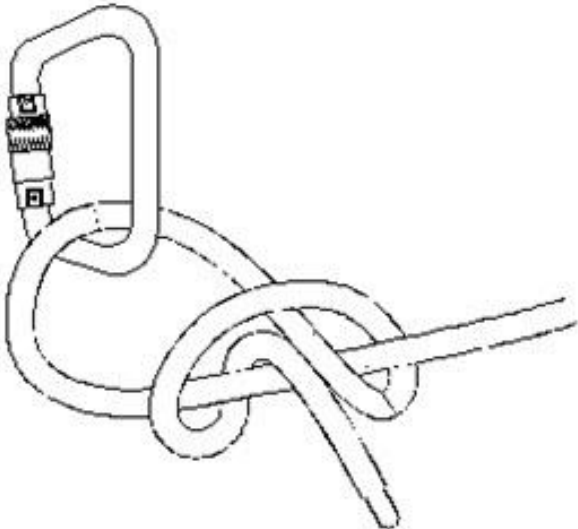


Termination Knots con't

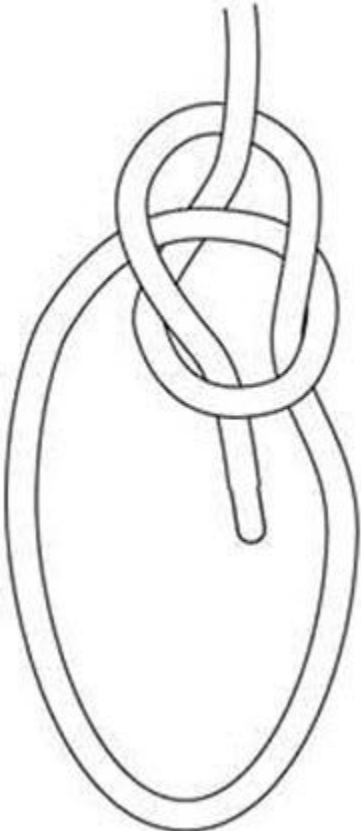
Cow Hitch



Beckett Bend

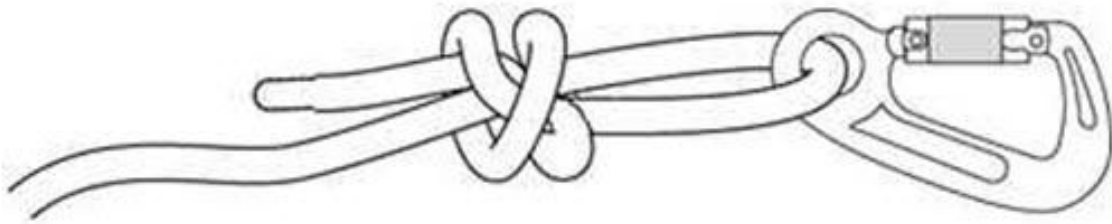
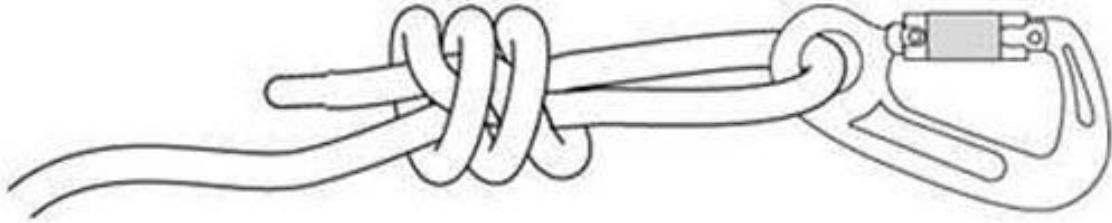


Bowline

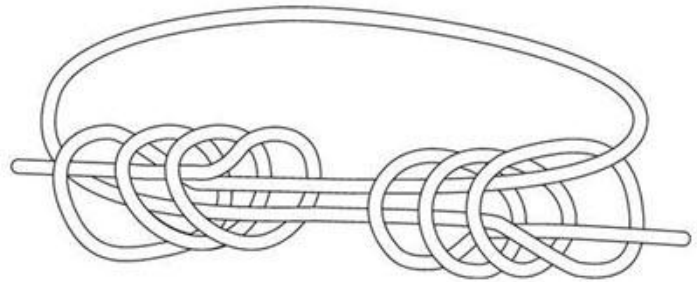
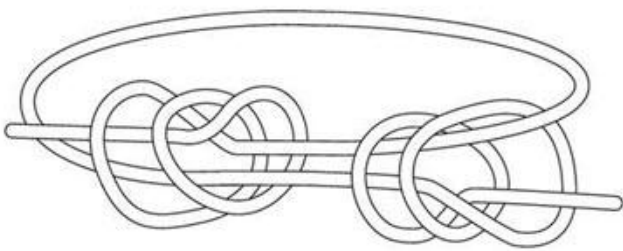


Termination Knots con't

Triple Fisherman



Double Fisherman



ASWP GT R0

Glossary of Terms



Revision History

Version	Revision Date	Brief Description of Revisions
R0	February 2016	Document has been updated to new format.

ARBORIST SAFE WORK PRACTICES DISCLAIMER

The contents of the **Arborist** Safe Work Practices (ASWP), including all advice, recommendations, and procedures are provided as a service by Workplace Safety & Prevention Services (formerly known as the Farm Safety Association of Ontario). No representation of any kind is made to any person whatsoever with regard to accuracy, completeness or sufficiency of the material. Any and all use of these practices, or anything found herein, is solely and entirely at the user's risk.

Workplace Safety & Prevention Services wishes to express its appreciation to those who have assisted in the preparation of the **Arborist SafeWorkPractices** guide.

Copyright © Workplace Safety & Prevention Services, 2011

Glossary of Terms

<p>Anchor Point</p>	<p>A limb or stem of sufficient size and strength to support the load to be applied. Factors to be considered should include but not be limited to:</p> <ul style="list-style-type: none"> • Weight of climber • Species characteristics • Diameter of limb or stem <p>Branch union angle should be wide enough to allow free running of the rope.</p> <p>The main stem and the support branch must be sound, inspect for:</p> <ul style="list-style-type: none"> • Decay • Bird holes • Cracks • Imbedded objects • Cankers <p>Ensure that the selected tie in point is located so that a slip or fall will swing the climber away from any electrical conductor or other potential hazard.</p> <p>If working within the legislated Limits of Approach contact Infrastructure Health and Safety Association for further information.</p>
<p>Approved</p>	<p>A device or method that has been evaluated and selected from alternatives that meet the specific requirement of the job.</p>
<p>Arboriculture</p>	<p>The art, science, technology and business of utility, commercial, municipal and government planting, removing and caring for woody plants.</p>
<p>Arborist Life Line</p>	<p>Arborist Life Line (climbing line) shall be constructed of a synthetic fiber, with a minimum nominal breaking strength of 6,100 pounds or 27Kn) when new. Arborist climbing lines should be identified by the manufacturer as suitable for tree climbing. Subject to CSA Z259.2.</p>
<p>Arborist</p>	<p>An individual engaged in the profession of arboriculture.</p>
<p>As Prescribed</p>	<p>Specific to a Regulation such as Construction or Industrial Regulation.</p>

Barber Chair	A result of an unusually strong pressure within the tree, causing it to split up the trunk. The back side of the tree snaps violently and quickly out and up.
Barriers	With respect to job planning a physical or non-physical object that eliminates, controls, protects from further injury, or minimize severity of a hazard.
Biotic Condition	Conditions such as stinging insects, biting insects, birds, wild life, poison ivy etc.
Chicot	Referring to a dead tree, or dead limb of a tree that may endanger a worker; (“chicot”).
Climber	Refer to Arborist
Climbing Harness	A combination of a belt and a saddle. The belt goes around the waist and the saddle is the actual seat or butt strap. Other names could be: tree saddle or climbing belt.
Cornering Cut	A cut or cuts that are made to prevent ripping down of the bark when felling a large piece of wood or tree.
Competent Individual	For the purposes of these work practices a competent individual could be either a competent worker or a competent person .
Competent Person	Means a person who: <ul style="list-style-type: none"> a) Is qualified because of knowledge, training and experience to organize the work and its performance b) Is familiar with this Act and the regulations that apply to the work, and, c) Has knowledge of all potential or actual danger to health or safety in the workplace
Competent Worker	In relation specific work, means a worker who: <ul style="list-style-type: none"> a) Is qualified because of knowledge, training and experience to perform the work b) Is familiar with the Occupational Health and Safety Act and with the provisions of the regulations that apply to the work and, c) Has knowledge of all potential or actual danger to health or safety in the work.
Critical lift	A lift that: <ul style="list-style-type: none"> a) Exceeds 75% of the rated capacity of the crane or derrick, or b) Requires the use of more than one crane or derrick, or c) Includes lifting a person with a crane, or d) Lifting a load over a worker

Drop Zone	The area where branches, wood, tools or equipment may fall to ground from workers working aloft. An area designated by the person in charge or supervisor to keep people and workers outside of during work operations.
Emergency Response Plan	An organized plan to be performed in an emergency. Part of the Job Planning process and must be communicated to all workers prior to the start of the job or when new workers join the work site.
Ergonomics	An applied science concerned with designing and arranging things people use so that the people and things interact most efficiently and safely, also called body mechanics.
Escape Route	The intended path the chain saw operator will move in case of emergency.
Fall Protection System	Fall protection system is a larger category for different fall protection systems including: <ul style="list-style-type: none"> • Fall Arrest Systems • Fall Restraint System • Fall Restrict System.
Fall Arrest Systems	Means of arresting a worker falling, generally includes a full body harness and shock absorbing lanyard.
Fall Restrict System	Means a type of fall protection system that has been designed to restrict a worker's fall to a specific distance.
Fall Restraint System	Means an assembly of components capable of restricting a worker's movement on a work surface and preventing the worker from reaching a location from which he or she could fall.
Final Tie In Location	See anchor point .
Full Body Harness	Means a device that can arrest an accidental vertical or near vertical fall of a worker and which can guide and distribute the impact forces of the fall by means of leg and shoulder strap supports and an upper dorsal suspension assembly which after the arrest, will not by itself permit the release of further lowering of the worker.
Hardware	Refers to cables, rods, bolts, lags and lighting systems installed in trees.

Hazard	Refers to a source of energy, when not controlled can cause injury to a worker. An identifiable risk posed to a worker.
Hazard Area	A worksite defined and controlled by the person in charge or supervisor.
Implant	Small encapsulated container containing such materials as fertilizer or pesticide that is installed by means of drilling a small hole into the tree's trunk and inserting the capsule.
Interim Anchor Point	<p>A limb of sufficient size and strength to support the load to be applied. Factors to be considered should include but not limited to:</p> <ul style="list-style-type: none"> • Weight of climber • Species characteristics • Diameter of limb or stem <p>Branch union angle should be wide enough to allow free running of the rope</p> <p>The main stem and the support branch must be sound, inspect for:</p> <ul style="list-style-type: none"> • Decay • Bird holes • Cracks • Imbedded objects • Cankers <p>Ensure that the selected tie in point is located so that a slip or fall will swing the climber away from any electrical conductor or other potential hazard.</p> <p>If working within the legislated Limits of Approach contact the Infrastructure Health and Safety Association for further information.</p>
Job Planning	A work plan agreed to by all workers involved that identifies all known hazards, eliminates the hazards where practical, controls the hazards that cannot be eliminated, protects against injury if a hazard gets out of control, minimizes the severity of an injury if one takes place and identifies each worker's responsibilities in the performance of the work.
Limits of Approach	A procedural barrier system for authorized workers or workers under the continuous direction of an authorized worker, intended to minimize the risk associated with working in proximity to exposed energized apparatus. Specific distances can be found in the Electrical Safety Rule Book and Regulations

	made under the Occupational Health and Safety Act.
Load	A force borne by or conveyed to a structure.
Locates Underground	The process of identifying underground utilities such as electrical, communications, or natural gas.
Mechanical Advantage	A measure of the force amplification achieved by using a tool, mechanical device or machine system.
Personal Protective Equipment (PPE)	Approved safety equipment worn and used to reduce the risk of personal injury.
Qualified Personnel	An individual who, by reason of training and experience has demonstrated the ability to safely perform assigned duties and, where required, is properly licensed in accordance with Federal, provincial or local laws and regulations.
Reverse Barber Chair	<p>A reverse barber chair can happen when a tree that is being cut by a climber some distance above ground level, splits below the notch.</p> <p>This splitting action can cause a climber to be crushed or severely injured. Tree size, species, loading and rigging forces are factors that can affect the probability of this occurrence.</p>
Risk Assessment	Process of identifying hazards to workers and determining the safest work method needed to proceed with the work.
Safety Basics	<p>A hierarchy of control methods to ensure a safe work site by following the process of:</p> <ul style="list-style-type: none"> • Identify the hazards • Eliminate the hazards where practical • Control the hazards that cannot be eliminated • Protect against injury if a hazard gets out of control • Minimize the severity of an injury if one takes place
Safe Working Load (SWL)	The maximum allowable working load established by the manufacturer or other authority. Often called the Working Load Limit. Takes into account a Safety Factor.
Safety Factor	Ratio of breaking strength to the force applied
Safety Lines	Short ropes or lanyards used for work positioning as a secondary point of attachment.

Shall	As used in these safe work practices, denotes a mandatory requirement.
Should	As used in these safe work practices, denotes an advisory recommendation.
Split Prevention System	A mechanical system that is designed to control the hazard of a tree splitting.
Spring Poles	Small trees bent over from pressure of the felled tree.
Supervisor	<p>The Occupational Health and Safety Act (OHSA) defines a supervisor as a person who has charge of a workplace or authority over a worker. This is a broad definition that can apply to many different people in a workplace, including people in management, on the shop floor, in a bargaining unit, and individuals whose job title does not include the word "supervisor".</p> <p>The definition of supervisor has two separate parts. Having either charge of a workplace, or authority over a worker, is sufficient for a person to be a supervisor. In general, "charge of a workplace" refers to broad control over the planning of work and how it is carried out, while "authority over a worker" can be seen as a more specific power to ensure a worker's compliance with directions.</p>
Tag Out Lock Out	Lockout-tagout (LOTO) or lock and tag is a safety procedure which is used in industry and research settings to ensure that dangerous machines are properly shut off and not started up again prior to the completion of maintenance or servicing work.
Tailboard Discussion	A discussion held with all crew members prior to beginning a job. All workers must be present and understand their duties.
Worker	<ol style="list-style-type: none"> 1. A person who performs work or supplies services for monetary compensation. 2. A secondary school student who performs work or supplies services for no monetary compensation under a work experience program authorized by the school board that operates the school in which the student is enrolled. 3. A person who performs work or supplies services for no monetary compensation under a program approved by a college of applied arts and technology, university or other post-secondary institution. 4. A person who receives training from an employer, but who, under the Employment Standards Act, 2000 (ESA), is not an employee for the purposes of that act because the conditions set out in subsection 1 (2) of that act have been met.

	<p>5. Other persons who work or provide services to an employer for no money, who may be prescribed by regulation. (At this time, no such persons have been prescribed as a “worker” under the OHSA.)</p> <p>The definition of “worker” does not include:</p> <ul style="list-style-type: none"> • an inmate of a correctional institution or similar facility who participates inside the institution or facility in a work project or rehabilitation program; • a volunteer who works for no monetary payment of any kind.
Working Load Limit (WLL)	Working Load Limit (WLL) is the maximum working load designed by the manufacturer. This load represents a force that is much less than that required to make the lifting equipment fail or yield.
Work Plans	A plan to perform the intended work.
Work Position	The location where the work is performed in a tree.
Work Site	The physical location where work is performed.