

1 **Q. Does Newfoundland Power have any formal vegetation management program**
2 **documents other than the short section on page 3 of the Distribution Inspection and**
3 **Maintenance Practices attached to the response to PUB-NP-067? If yes, provide the**
4 **documents and an explanation of the vegetation management policy, program and**
5 **practices.**

6
7 A. Newfoundland Power's policies and program for the inspection and maintenance of
8 distribution and transmission lines, which include vegetation management, are stated in
9 the respective inspection and maintenance practices. These were provided for both
10 distribution and transmission line in the responses to Requests for Information
11 PUB-NP-67 and PUB-NP-60 respectively.

12
13 The policy statements are provided below:

14
15 *Distribution Policy Statement*

16 Scheduled inspection and maintenance procedures shall be undertaken on all
17 distribution lines. The inspection and repair process is intended to ensure safe and
18 reliable operation. Regional Managers are ultimately responsible to ensure that
19 distribution line inspection and maintenance activities are completed in
20 accordance with this policy in their respective regions.

21
22 *Transmission Policy Statement*

23 Regularly scheduled inspections and correction of identified deficiencies will be
24 undertaken on all transmission lines to provide for safe and reliable operation.
25 Regional Managers are responsible to ensure that transmission line inspection and
26 maintenance activities are completed in accordance with this policy.
27 Responsibility for maintaining and revising this policy rests with the
28 Superintendent, responsible for Transmission.

29
30 All preventative and corrective maintenance activities shall be recorded in the
31 Company's computerized Transmission Asset Management System (TAMS).

32
33 A distribution line shall have a vegetation inspection completed twice every 7 years.
34 This inspection shall be completed as part of the distribution line ground inspection every
35 7 years, and as a drive by inspection once in between. A transmission line shall have a
36 vegetation inspection completed annually as part of the transmission line ground
37 inspection.

38
39 Newfoundland Power has detailed specifications for both brush clearing and tree timing.
40 These documents explain, in detail, the specifics of Newfoundland Power's vegetation
41 management program and practices. The documents are provided as Attachment A –
42 Specifications for Brush Clearing and Attachment B – Specifications for Vegetation
43 Management to this response.

Specifications for Brush Clearing

Specifications for Brush Clearing



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2. Map of Island Generation and Transmission Grid
3. Standard Easement Widths
4. Brush Clearing Drawings
5. Energized Trees and Minimum Approach Distances Drawing

PART A – GENERAL

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1. Definitions

The following are defined in an effort to standardize their meaning for the purpose of this brush clearing Specification:

Brush: Any of a variety of trees and shrubs. Also, limbs, twigs and leaves that have been removed from a tree.

Close Proximity (to a live electrical conductor): Within 1.5 m (5 ft) radial distance for conductors energized at $\leq 30,000$ Volts and within 3 m (10 ft) radial distance for conductors energized at $> 30,000$ Volts and $\leq 150,000$ Volts.

Contractor: The Contractor is the person, firm or corporation identified as such in the Agreement.

Construction Contractor: The Contractor who performs the following types of Work, which includes but may not be limited to: building/facility construction, including electrical, mechanical, structural types of construction; electrical maintenance; blasting; demolition of any type; pipe lines and surge tank/line construction; pole setting and erection; vegetation management, including tree trimming/brush clearing/right-of-way clearing; backhoe use and excavation; boom truck and crane operation; diving.

Cutting: The removal of trees including proper disposal of the trunk and branches.

Danger Tree: A standing tree, either live or dead, having visible defects, singly or combined, which predisposes it to mechanical failure in whole or in part (whether on its own or from the effects of a storm or disturbance), and which is so located that such a failure has a probability of contacting, or coming in close proximity to, a live electrical conductor. Also, a danger tree is a live, healthy tree that, once cut, has the potential to contact, or come in close proximity to, a live electrical conductor. The Owner's Representative may, at his discretion, designate any tree as a danger tree.

Easement: The legal right to use a person's land for a specific purpose such as the right to construct, operate and maintain transmission and distribution lines. An easement for access to another person's property is also called a right-of-way.

Energized: Electrically energized or electro-statically charged.

Energized Tree: A tree that is in contact with, or is in close proximity to, a live electrical conductor. A tree that is intertwined with an energized tree is itself to be considered as an energized tree.

Owner: The Owner is Newfoundland Power Inc. and Newfoundland Power.

PART A – GENERAL

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Owner's Representative: The Owner's Representative is the person(s) or firm(s) designated by the Owner to act on behalf of the Owner and is the contact for coordination of field reviews, specification inquiries, pre-job coordination and safety meetings, coordination of the issuance of Work and is the final interpreter of the Agreement in accordance with the Contract Document.

Right-of-Way (ROW): Land on which Newfoundland Power has rights to construct, operate and maintain lines for transmission and distribution of electricity (i.e. a strip of land on which the Company has an easement).

Shall: As used in this Specification, denotes a mandatory requirement.

Should: As used in this Specification, denotes an advisory recommendation.

Work Site: The Work Site is the land and structure on which the Work is to be constructed or which is otherwise made available to the Contractor by the Owner for the performance of the Work. Generally, a Work Site will be a distribution line (feeder), a transmission line, a communication line, or hydro-electric generating facilities. The Work will be carried out at multiple Work Sites.

2. Description of the Work

The Work to be carried out consists of the cutting, piling, chipping, and/or otherwise removing brush and shrubs near distribution lines, transmission lines, communications lines, and/or hydro-electric generating facilities.

3. Location

For the purpose of this Work, Newfoundland Power's service territory has been divided as follows:

- St. John's Area
- Avalon Area
- Clarenville Area
- Burin Area
- Gander Area
- Grand Falls Area
- Corner Brook Area
- Stephenville Area

The Areas are shown on the attached map of the Newfoundland Power service territory showing operating Regions and Areas. For clarity, the Baie Verte Peninsula is included in the Grand Falls Area.

PART A – GENERAL

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4. Hours of Work

Normal hours of Work will be 8:00 A.M. to 4:00 P.M., Monday to Friday. Newfoundland Power statutory holidays will also apply. If requested by the Contractor, the Owner's Representative may agree to different hours.

Hours of work, other than those specifically noted above, must be agreed upon prior to commencement of the Work.

5. Work Schedule

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6. Overtime

Should it be found necessary to carry out overtime Work in order to complete the Contract within the time agreed upon by the Owner and Contractor, such overtime shall be provided without extra cost to the Owner.

For emergency situations requiring mobilization of crews and work outside normal hours, an overtime rate of 1.5 times the contract rate shall apply.

7. Working Conditions

The Contractor shall carry out all Work under ordinary job conditions and not necessarily those that he considers most desirable. Work carried out by others in the immediate vicinity, the necessity of moving materials from storage to the Work Site and all other circumstances characteristic of the Work, are to be expected and shall not be the basis for any claim for extra compensation or delayed completion.

8. Supplied by the Contractor

The Contractor shall supply all labour, supervision, construction equipment, tools and material required to complete the Work in accordance with this Contract.

9. Access Roads

The Contractor shall construct, at his own expense, all access roads required to perform the Work. The Contractor shall be responsible for obtaining any permission necessary from landowners or authorities for right-of-way for such

PART A – GENERAL

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access roads.

10. Permits and Fire Protection

The Contractor must obtain all permits necessary for completion of the Work, unless specifically noted as supplied by the Owner.

The Contractor shall take all necessary precautions in regard to fire and shall provide all necessary fire fighting equipment in accordance with the regulations of the Provincial Forestry Department.

11. Safety Overview

Newfoundland Power's objective is to prevent injuries to persons and damage to property by creating a safe work environment, and by promoting safety awareness to all employees and contractors.

The Contractor (and all its subcontractors) shall ensure they are familiar, and comply with, all legislated and recognized guidelines for safe working practices, including the Occupational Health and Safety Act and Regulations, and all Newfoundland Power health and safety standards, policies, and procedures related to the work they are undertaking. In the case of inconsistencies, the most stringent requirements shall apply.

Contract personnel shall ensure the work site is safe. Hazards not noted on the original job plan, or at the pre-job meeting, should be assessed as they arise and appropriate controls implemented. A hazard assessment shall also be conducted whenever changes occur that cause a deviation from the original job plan.

Detailed Contractor Safety Responsibilities are outlined in Newfoundland Power's Operations Manual OPR-100.

12. Incident Reporting - Line Contacts

All contacts with any energized conductor (regardless of the voltage) during vegetation management work must be reported to the Owner's Representative immediately. As well, the work area must be left untouched until an authorization to clear the line has been made by the Owner's Representative.

Detailed Accident Reporting and Investigation procedures are outlined in the Contractor Safety Responsibilities in the attached Schedule B – Contractor Safety Responsibilities.

PART B – PERSONNEL

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1. Qualified Personnel

All Brush Cutters will be required to have successfully completed the:

1. Brush Clearing / Tree Felling Safety Course
2. Power Line Hazard Course

All other personnel, including labourers, must have successfully completed the:

1. Power Line Hazard Course

The Brush Clearing / Tree Felling Safety Course and the Power Line Hazard Course shall both be completed at the College of the North Atlantic, or Owner approved equivalent.

The Contractor must comply with Section 4 of the Occupational Health and Safety First Aid Regulations under the Occupational Health and Safety Act. A minimum of two persons on any crew must hold valid Emergency First Aid and CPR certificates.

The Contractor will be responsible for ensuring that all Contractor's personnel are thoroughly familiar with Newfoundland Power's Operations Manual, OPR-100, Health & Safety Procedures, Worker Protection Code, Contractor Safety Responsibilities and Contractor Environmental Management Procedures before Work begins.

2. Project Supervision

The Contractor must appoint a Supervisor in charge of the Work. The Supervisor will be responsible for all crews and will remain on the Work Site at all times when Work is being carried out by the Contractor. The name of the Supervisor must be communicated to the Owner in writing. If the Contractor changes the Supervisor, the Owner must be notified in writing and the Supervisor must be acceptable to the Owner's Representative.

The Supervisor must have successfully completed both the Brush Clearing / Tree Felling Safety Course and the Power Line Hazard Course at the College of the North Atlantic, or Owner approved equivalent.

The supervisor shall demonstrate knowledge and competence regarding the Contract specifications and all relevant safety requirements. The Owner reserves the right to refuse Supervisor status to any person. Should the Owner refuse a Supervisor, the Contractor would be required to appoint a replacement Supervisor that is acceptable to both parties.

PART B – PERSONNEL

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3. Construction Camp

All camps, camp equipment, facilities and operation of the camp or camps shall be supplied and operated by the Contractor at his expense.

PART C – COMMUNICATIONS

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1. Contractor Communications

The Contractor shall provide a reasonable means by which the Owner's Representative may contact him at any time during the work day. The means of communications must be acceptable to the Owner's Representative.

Each Work Site shall be equipped with reasonable means of communications supplied by the Contractor at no additional cost to the Owner.

The Contractor will be responsible for providing any radios – radios will not be provided by the Owner.

The Contractor shall have a relevant list of all emergency contact telephone numbers posted in at least one readily accessible, common area at the Work Site. All employees on the Work Site shall be made aware of the location of these emergency numbers.

2. Public Safety

The Work shall be conducted in a manner that provides protection to the public.

The Contractor shall provide and maintain appropriate warning devices such as barricades, signs, lights, traffic control, etc. at the Work Site as may be required for public convenience and safety until completion of the Work.

Trees identified as energized trees (Reference Part F – Work Methods, Section 7.1) shall not be touched and there shall be a 'No Work Zone' established by the Contractor in the area surrounding the tree(s) using 'Caution' tape or other such visible indicator. The Owner's Representative shall be notified immediately of any energized trees that are identified.

3. Identification of Contractors' Vehicles

Any vehicles used by the Contractor during the execution of the Work must be positively and easily identifiable as that of the Contractor.

Any expenses incurred to implement the identification described herein will be at the expense of the Contractor.

4. News Releases

Information for publicity of any nature with respect to any facet of the Owner's business or operations or of the Work being performed on the Work Site by the Contractor, or others, shall not be released or disclosed without prior consent of the Owner's Representative.

PART D – EQUIPMENT

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1. Contractor's Equipment

The Contractor's equipment must be maintained in a condition acceptable to the Owner's Representative.

As per the attached Schedule of Equipment:

During the term of the Contract, all heavy equipment to be used for the Work of this Contract shall be maintained to the standards required for Vehicle Inspection Certification. All heavy equipment shall have a Vehicle Inspection Certificate from a recognized truck and trailer heavy equipment repair facility licensed under the Government of Newfoundland and Labrador, Department of Work Services and Transportation - Motor Vehicle Registration Division. All inspection stickers shall be placed in the windshield of the heavy equipment inspected and all Vehicle Inspection Certificates shall be made available to the Owner upon request.

The Contractor shall maintain, repair and overhaul all heavy equipment in accordance with the approved maintenance schedule and manufacturer's maintenance and overhaul procedures; and comply with all manufacturers' mandatory service bulletins or recall notices. The Contractor shall maintain complete and accurate maintenance records for all heavy equipment, and the records shall be made available upon request from the Owner and/or any governmental authorities or agencies having jurisdiction.

The Contractor will be responsible to ensure that all heavy equipment to be used by Subcontractors hired by the Contractor for this Contract is maintained to the standards outlined above. The Owner shall have the right to request from the Contractor a copy of the Subcontractor's equipment inspection certificates and maintenance records at any time during the term of the Contract.

The Contractor or Subcontractor shall forthwith replace at the request of the Owner any equipment that the Owner deems to be in an unsatisfactory condition, and the equipment deemed to be unsatisfactory shall be considered unserviceable in terms of the Contract unless and until it has been restored to a condition that meets the Owner's requirements. Any necessary replacement of equipment, for any reason, shall be at the Contractor's expense.

Heavy equipment is defined as any Cab & Chassis (Truck) with a gross vehicle weight of 10,000 lbs. These trucks must have a Motor Vehicle Inspection (MVI) every 12 months.

For off-road equipment such as Go-Tracts, an MVI (sticker) is not required.

PART D – EQUIPMENT

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With any truck, go-tract or aerial device, there must be periodic inspections & servicing that must be done at Manufacturer's recommendations. This should be done at least twice a year and all records must be kept in a file showing the inspection form for the chassis and aerial device, the work performed and a list of parts & labour.

2. Worker Protective Equipment

The Contractor must follow all rules pertaining to worker personal protective equipment as per Newfoundland Power's Operations Manual, OPR-100, Health & Safety Procedures.

3. All Terrain Vehicles

The Contractor shall comply with the All Terrain Vehicle Use Regulations and all regulations pertaining to the fording of water bodies.

Do not travel through forest land, during the forest fire season, on an all terrain or motorized vehicle unless the exhaust pipe(s) of that vehicle is fitted in accordance with the manufacturer's original specifications (e.g., with a muffler and proper screening and/or baffling devices to prevent the escape of sparks or particles of burnt carbon) and the exhaust system is kept clean of all debris.

The Contractor shall ensure that each vehicle is at all times equipped with a ULC listed ABC class dry chemical fire extinguisher.

4. Chainsaws and Brush Saws

Safety requirements for chain and brush saws are specified in the Newfoundland Power Operations Manual, OPR-100, Health & Safety Procedures and shall be strictly adhered to by the Contractor.

Use of a chainsaw aloft from a tree may be permitted if the ability to work safely has been demonstrated. The weight of the chainsaw shall be restricted to a maximum of 4 kg. Notwithstanding the above, the Contractor shall use all care and judgement in completion of any Work.

Chainsaws, whether hydraulic or gasoline operated, shall be equipped with chain brakes and safety chains.

Brush saws may be utilized in ground clearing operations.

PART D – EQUIPMENT

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5. Wood Chippers

Wood chippers shall be equipped with a workable “kill” switch in the feed location consistent with relevant standards and legislative requirements.

Wood chippers shall be inspected each working day before start-up for defects such as broken or missing hood latches and pins or cracked and worn hinges. Broken, damaged, or missing machine components must be repaired or replaced before the machine is placed in service.

All safety devices and controls, such as emergency shut-off devices, are to be tested and verified to be functioning properly before the chipper is used.

Workers shall be trained in safe work procedures, including operating wood chipper safety devices and safety controls. These procedures should be based on the manufacturer’s recommendations for each machine.

At least two workers shall be in close contact with each other when operating the chipper.

Workers feeding material shall be positioned such as to allow quick operation of the emergency shut-off device and to minimize the risk of entanglement in branches.

The hood covering the chipper knives must be completely closed and latched according to manufacturer’s recommendations before starting the machine and during operation.

PART E – PROTECTION

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1. Hold-Off

No Work will be allowed in the vicinity of energized lines without the required “Hold-Off” from the Newfoundland Power System Control Centre. This is explained in detail in the Owner’s Worker Protection Code. The Contractor shall be familiar with all relevant sections of the document.

When the Contractor is required to clear a right-of-way near, or parallel to, an existing energized power line, the Contractor shall contact the Owner’s Representative to advise the Owner of his Work location before Work begins each day and after Work is completed each day. The Owner’s Representative will ensure that the required Hold-Off is in place.

Planned outages may be required to complete Work on specific transmission or distribution lines outside normal working hours. No additional payment will be made for this Work. The Contractor will be paid for the area cleared at the same unit rate as similar Work on the Site.

Hold-off provides limited worker protection.

2. Hours of Work – For Hold-Off

The Owner will not charge the Contractor for placing feeders or transmission lines in hold-off at the start of normal work hours (8:00 AM) or restoring the feeder or transmission line to normal at the end of normal work hours (4:00 PM). Placing feeders or transmission lines in hold-off and restoring them to normal outside of these hours will be chargeable to the Contractor, unless otherwise agreed upon in conjunction with alternate hours of work.

Hold-off charges will not apply if the contractor is asked to work outside of normal work hours by the Owner’s representative. The Owner’s Representative may, at his discretion, waive hold-off charges.

3. Arrangement for Interruptions

The Contractor will be responsible for ensuring that all its personnel and subcontractors are thoroughly familiar with the applicable sections of Newfoundland Power’s Operations Manual, OPR-100, Health & Safety Procedures, Worker Protection Code, Contractor Safety Responsibilities and Contractor Environmental Responsibilities before Work begins.

PART E – PROTECTION

If in the course of the Work, an interruption to service (planned outage / de-energization) on a transmission or distribution line is required, any switching operations necessary for the isolation and grounding of the equipment will be performed by the Owner's personnel and be properly processed through the Owner's System Control Centre.

4. Minimum Approach Distances

All brush clearing personnel must be trained in power line hazard awareness. Before any brush clearing is permitted, a pre-site meeting must be held and hold-off protection must be in place.

Crew members must be constantly aware of the location of, and maintain minimum clearances from, energized power lines, apparatus, or other devices which may present a hazard.

The transfer of electrical energy can occur without actual physical contact.

Electric lines and equipment are to be treated as energized unless they are positively known to be de-energized and grounded.

Minimum Approach Distance is defined as the shortest allowable distance between an energized power line or apparatus, and any part of the employee's body or conductive item, including previously cut trees or cut tree branches the employee may be handling.

Wind deflection and branch rebound must be added to Minimum Approach Distances. As well, changes in conductor sag due to changes in ambient air temperature, electrical loads, mechanical loads, etc. can impact clearances and so clearances should be regularly assessed.

The following minimum approach distances to energized lines shall apply for brush clearing operations.

Table 1 – Minimum Approach Distances

Voltage Range	NP Nominal Voltage(s)	Minimum Approach Distance
≤ 75,000	4.16 kV, 12.5 kV, 25 kV, 33 kV, 66 kV, 69 kV	3 m (10 ft)
> 75,000 and ≤ 150,000	138 kV	4.5 m (15 ft)

If these minimum approach distances cannot be obtained, the brush/trees are to be clearly identified and the owner's representative notified.

PART E – PROTECTION

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The tailboard discussion must identify the highest nominal voltage in the work area and to which the trees and/or branches are in proximity.

PART F – WORK METHODS

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1. Job Planning / Risk Management

The Contractor must review the Work to identify safety hazards and establish barriers to allow the Work to be completed safely. The job planning / risk management steps and conditions plan shall be completed for the entire area (section of the transmission or distribution line) on which Work is to take place before the Work commences. In particular, locations where cover-up or outages are necessary must be identified and noted. This information shall be provided to the Owner.

Tailboard meetings and forms shall be completed daily to identify the hazards. Applicable barriers shall be put in place to address the hazards.

During the planning of the work:

- Set work area for both the work unit and the general public
- Identify lines to be worked
- Identify adjacent lines
- Ensure required Protection Guarantees are in place
- Survey adjacent structures for abnormalities
- Identify and sequence hazards for their severity and apply barriers

Always communicate any changes in plan or work procedure as soon as possible.

2. Workmanship

Unless specifically noted otherwise, the clearing, chipping, and/or piling of all brush is to be conducted as specified in this section.

All stumps shall be cut to within 10 cm (4 inches) of the existing grade and where possible, the tree is to be cut below the bottom limb. Any stumps left from previous cutting shall be recut so as to meet this Specification.

All wood, including branches and spindly sticks, must be cut to a maximum of 2.4 meter (8 feet) lengths. All salvageable wood is to be cut in 2.4 meter (8 feet) lengths.

All slashings, cuttings, trees, deadfall, brush and debris shall be cleared up or chipped as specified herein or by the Owner's Representative.

In areas where the right-of-way cannot be seen from any roads, etc. and in other areas specifically noted by the Owner's Representative, the Contractor shall pile all brush and debris along the edge of the right-of-way.

PART F – WORK METHODS

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Where brush and timber are to be piled at the edge of the right-of-way, there shall be cleared areas on each side of brush or the timber piles as illustrated in the attached drawings.

The Contractor shall chip all brush, which when piled, is visible from a roadway, is a safety hazard, or where requested by the property owner and as agreed upon by the Owner's Representative.

It is not permitted to haul brush away as an alternative to chipping, unless specifically directed by the Owner's Representative.

The burning of brush is not permitted.

The burning of tires is not permitted.

The Contractor shall maintain the Work and the Work Site in a tidy condition and free from the accumulation of waste products and debris, other than that caused by the Owner, other contractors or their employees.

2.1 Buffer Zones

The Contractor shall not clear the right-of-way within 150 metres (492 feet) of a stream or other water body without first consulting the Owner's Representative for specific instructions regarding selective cutting in the area. The Contractor, by means of flagging, must identify buffer zones before cutting can take place.

Buffer zones will be a maximum of either:

- 50 metres (164 feet) of any salmon river or 20 metres (65 feet) of any other body of water or stream that is identified on the latest 1:50,000 topographic map and around water bodies greater than 1 metre in width that do not appear on the maps.

or

- 20 metres (65 feet) on side slopes less than 30% and a minimum of 20 metres (65 feet) plus 1.5 x slope(%) in areas where slope is greater than 30%.

PART F – WORK METHODS

3. Clearing Area

Distribution, transmission, and communication lines shall be cut to the following widths:

Line Type	ROW Width
138 kV H-frame	26 metres
66 kV H-frame	20 metres
66 kV Single Pole	15 metres
Three-phase Distribution	7.4 meters
Two-phase Distribution	7.4 meters
Single-phase Distribution	5.4 meters
Secondary Distribution	5.4 meters
Non-joint Use (communication only)	3.0 meters

Unless otherwise specified, the center of the pole line will be the center of the right-of-way area. Refer to attached drawing of standard easement widths for more information.

Prior to cutting, the Contractor shall flag the width of the right-of-way. The width of the right-of-way will apply from ground-to-sky (refer to attached drawing). This means that trees with branches overhanging the right-of-way must be removed as a part of the Contract. Such trees are not considered to be danger trees.

Slope of the land is to be considered when establishing the width of the area to be cut. When a section of line is located on a side slope, the width is to be measured level with the base of the pole or structure.

The areas which will not be included in the clearing area are; water crossings, pasture land, open bogs, barrens and other like areas.

The Owner's Representative may vary the width of the right-of-way. If the Owner's Representative changes the width of the right-of-way from a standard width as stated in this Specification, the Contractor will be paid for the additional area cleared at the unit rate identified in the attached Schedule of Prices.

PART F – WORK METHODS

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4. Land Ownership

It is anticipated that the different landowners that may be encountered include private landowners, pulp and paper companies, and the Crown.

4.1 Private Landowners

On land owned by private landowners, the Contractor shall cut, limb, salvage and pile for the property owner's use, all trees in excess of 5 cm (2 inches) in diameter. This timber shall be piled along the edge of the right-of-way clearing in such a manner as will not obstruct the access to the power line. Trees, which are suitable for commercial use, shall not be cut in lengths any shorter than 2.4 meters (8 feet) unless the Owner's Representative otherwise instructs the Contractor.

No clearing shall be started on private properties without the approval of the Owner's Representative. The Contractor's attention is drawn to the fact that the clearing of certain private lands may be delayed until permission to clear has been obtained from the landowner. Any such delays are expected to be resolved in time to allow the Work to be completed in a reasonable time. The Contractor shall take these possible delays into consideration when submitting his bid and shall plan his operations accordingly.

4.2 Land Where Pulp and Paper Companies hold Timber Rights

All pulpwood shall be salvaged and shall become the property of the Contractor. The Contractor shall deliver this pulpwood to Abitibi Consolidated Inc., Corner Brook Pulp and Paper, or to others as specified by the Owner's Representative.

Payment retained by the Owner will not be released by the Owner until acceptable evidence is submitted to the Owner's Representative that the pulpwood has been delivered to one of the paper companies as specified.

The Contractor may, at his option, salvage firewood and other merchantable timber on these lands. All timber so salvaged shall become the property of the Contractor and must be removed from cleared areas before the end of December in the year cut.

The Contractor will be required to pay stumpage on any pulpwood cut.

4.3 Crown Land

On Crown land, the Contractor shall cut, limb, salvage and pile all merchantable timber. The Contractor's attention is hereby drawn to the Provincial Forest Department Regulations regarding the use of merchantable timber cut from such lands. All salvageable timber shall be piled to the edge of the right-of-way clear of the piled brush to allow for easy access and retrieval.

PART F – WORK METHODS

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5. Danger Trees

For a tree to be considered a danger tree, it will generally have demonstrable weaknesses or flaws and have an imminent potential for failure. Upon failure, the tree (or a branch or limb of the tree) must have potential to fall onto, come in contact with, come in close proximity to a live electrical conductor, or otherwise damage the Newfoundland Power transmission or distribution system or it must be a danger to the public.

Danger trees will generally have some of the following characteristics:

Mostly dead trees. Trees which have over 50% dead material should be treated as dead. In particular, concerns arise with dead trees leaning towards the conductor or dead, straight trees on the windward side of the conductor.

Leaning live trees. These trees, leaning and possibly growing toward the power line, pose a distinct threat under heavy winds or should they become coated with ice or snow. This is particularly true of trees that are top heavy.

Shallow rooted trees. These usually occur under one or more of the following conditions:

- i) rocky terrain with shallow over burden
- ii) wet or swampy areas with a high water table
- iii) trees situated in a beaver flood area
- iv) roots exposed due to fire or other reason

Diseased trees. The presence of fungus fruiting bodies, cankers, galls, etc., indicates a declining condition and/or internal decay.

Unsound trees. Live, straight trees with outward signs of physical defect. Split trees, trees showing trunk or base cavities, girdled trees, and trees with exposed roots are all considered to be unstable.

Other. Islands or strips of trees left from right of way construction or logging. Trees outside the cleared area could hit a power line if they are unstable and of a height greater than the distance to the line.

Also, a danger tree is a live, healthy tree that, once cut, has the potential to contact, or come in close proximity to, a live electrical conductor.

The Owner's Representative may, at his discretion, designate any tree as a danger tree.

PART F – WORK METHODS

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5.1 Type 1 Danger Trees

A tree is considered to be a Type 1 Danger Tree when some part the tree exists within the distances specified in Table 1, and the tree has the potential to contact, or come in close proximity to, a live electrical conductor.

5.2 Type 2 Danger Trees

A tree is considered to be a Type 2 Danger Tree when no part the tree exists within the distances specified in Table 1, but the tree has the potential to contact, or come in close proximity to, a live electrical conductor.

6. Energized Trees

An energized tree is a tree that is in contact with, or in close proximity to, a live electrical conductor. A tree shall be considered to be energized when any part of the tree is intertwined with an energized tree or is within the distance identified in Table 2 of an energized conductor or energized equipment. The distance varies according the voltage at which the conductor or equipment is energized.

Table 2 – Distances for Energized Trees

Voltage Range	NP Nominal Voltage(s)	Radial Distance
≤ 30,000	4.16 kV, 12.5 kV, 25 kV	1.5 m (5 ft)
> 30,000 and ≤ 150,000	33 kV, 66 kV, 69 kV, 138 kV	3 m (10 ft)

7. Danger Tree and Energized Tree Removals

This section applies to the marking and removal of danger trees which have potential to fall onto, come in contact with, come in close proximity to a live electrical conductor, or otherwise damage overhead power lines and other equipment. It also applies to the marking and removal of energized trees.

7.1 Marking Trees for Removal

All danger trees, both on and off the right-of-way, shall be marked, in advance by the Contractor, to identify them for removal (e.g., using paint or flagging ribbon). The identification of danger trees will be a joint effort between the Contractor and a qualified Newfoundland Power representative. Yellow, orange, or red are the acceptable colors for the paint or flagging ribbon. Flagging ribbon used for this purpose shall be of a different color than that which is used to mark the width of the right-of-way.

PART F – WORK METHODS

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Energized trees shall not be touched, but instead, there shall be a 'No Work Zone' established by the Contractor in the area surrounding the tree(s) using 'Caution' tape or other such visible indicator.

The marking of energized trees shall be different from that of Type 1 and Type 2 danger trees to allow workers to distinguish between the three types.

As well, all danger trees and energized trees shall be identified and described on the job plan and discussed during the applicable daily tailboard conference.

7.2 Tree Removals

Permission to remove all energized trees and danger trees must be obtained from the Owner's Representative.

The Contractor shall cut and remove all energized trees and danger trees as a part of the Contract. No additional money will be paid for removing energized trees or danger trees over and above the specified unit rate.

Should the Owner determine that it is not possible to de-energize the line to allow the Contractor to remove the energized trees within a reasonable timeframe (i.e. prior to Contractor's demobilization upon completion of all other specified Work on that line or in that Area), the removal of these energized trees will be considered as a change to the Work or extra Work.

An attached drawing illustrates the definitions of limits of approach and energized trees.

7.2.1 Energized Trees

Energized trees shall not be touched or removed until the nearby energized line is positively known to be de-energized and grounded and confirmation has been received from the Owner's Representative.

Trees shall be carefully felled and suitably controlled during their removal to prevent contact with and/or damage to power lines or adjacent infrastructure.

Where there is a danger that a tree may contact and/or damage property, a block and tackle, or other suitable combination of tag lines and rigging, shall be used to control the direction of fall and ensure safe tree removal.

A sufficient number of tag lines shall be used to safely control the tree during the felling operation and prevent the tree from making contact with and/or causing damage to power lines or adjacent infrastructure. While a minimum of one tag line shall be used, the total number of tag lines required will vary depending on

PART F – WORK METHODS

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the nature and complexity of the tree removal and shall be determined through an on-site risk assessment completed by the Supervisor and Brush Cutters.

Alternatively, all limbs may be first cut off for a sufficient height to avoid any part of the tree falling in close proximity to a live electrical conductor. In cases of difficult or risky removals, trees shall be removed in sections.

A felling operation, once started, must be finished before the crew leaves the work location.

7.2.2 *Danger Trees*

Where there is a danger that a tree may come within the distances stipulated in Table 2, a block and tackle, or other suitable combination of tag lines and rigging, shall be used to control the direction of fall and ensure safe tree removal.

A sufficient number of tag lines shall be used to safely control the tree during the felling operation and prevent the tree from falling within the distances stipulated in Table 2 and/or causing damage to power lines or adjacent infrastructure. While a minimum of one tag line shall be used, the total number of tag lines required will vary depending on the nature and complexity of the tree removal and shall be determined through an on-site risk assessment completed by the Supervisor and Brush Cutters.

Alternatively, in the case of a live, healthy danger tree, all limbs may be first cut off for a sufficient height to avoid any part of the tree falling in close proximity to a live electrical conductor.

In cases of difficult or risky removals, danger trees shall be removed in sections.

Workers climbing danger trees to cut limbs or attach tag lines or rigging shall:

1. Ensure that the tree is safe to climb and that it has no demonstrable weaknesses or flaws and not have an imminent potential for failure.
2. Maintain the minimum approach distance specified in Table 1.
3. Ensure that the tree is climbed and work performed in a manner that will not cause any part of the tree to encroach on the distances stipulated in Table 2.
4. Comply with all legislated and recognized guidelines for safe working practices, including the Occupational Health and Safety Act and Regulations, and all Newfoundland Power health and safety standards, policies, and procedures related to the work they are undertaking. In the case of inconsistencies, the most stringent requirements shall apply.

A felling operation, once started, must be finished before the crew leaves the work location.

PART F – WORK METHODS

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If a path needs to be cut in order to remove a danger tree, the area of that path shall be added to the area of the line and payment for the path shall be at the same unit rate as for the remainder of the line.

The Owner's Representative may increase the width of the right-of-way to remove a number of trees that pose a danger. The Contractor will be paid for the area cleared at the same unit rate as similar Work on the Site. The Contractor is encouraged to bring to the attention of the Owner's Representative areas where it may be prudent to increase the width of the right-of-way.

7.2.2.1 Additional Requirements for the Removal of Type 1 Danger Trees

When any part of a danger tree exists within the distances specified in Table 1, the tree removal shall be supervised by a qualified person. That is, for voltages ≤ 25 kV either a qualified Electrical Utility Arborist or a qualified Newfoundland Power employee shall supervise the removal. For voltages > 25 kV a qualified Newfoundland Power employee must supervise the removal.

PART G – COMPLETION

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1. Reporting Work Completed

The Contractor will report the number of hectares cleared to the Owner's Representative on a weekly basis and include the name of the distribution line, transmission line, or other location where the Work was completed.

2. Measurement for Payment

The Owner, at its discretion, will inspect the Work completed and confirm field measurements prior to payment of any invoice.

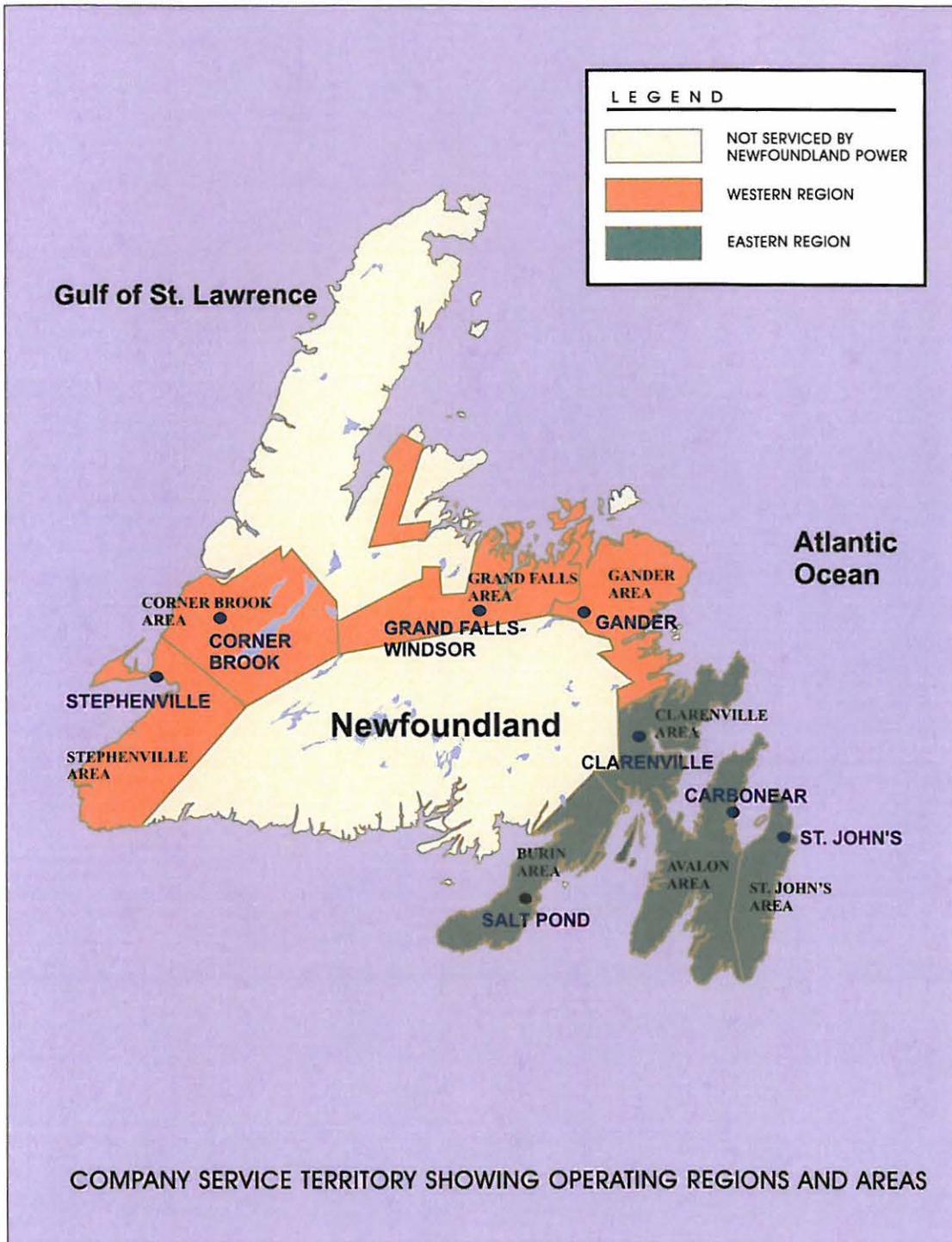
Payment for Work may be withheld if the inspection reveals that the Work completed does not meet this Specification. The Contractor will be notified by the Owner, in writing, of any corrective action required. Any and all corrective action shall be completed in a timely manner as agreed to by the Contractor and the Owner's Representative. The Contractor shall notify the Owner, in writing, when the corrective action is completed. Payment will be made when the Contractor remedies the defects as verified by the Owner's Representative.

In the event of a disagreement between the Owner's Representative and the Contractor regarding the field measurements of Work complete, the decision of the Owner's Representative will be final.

3. Clean-up

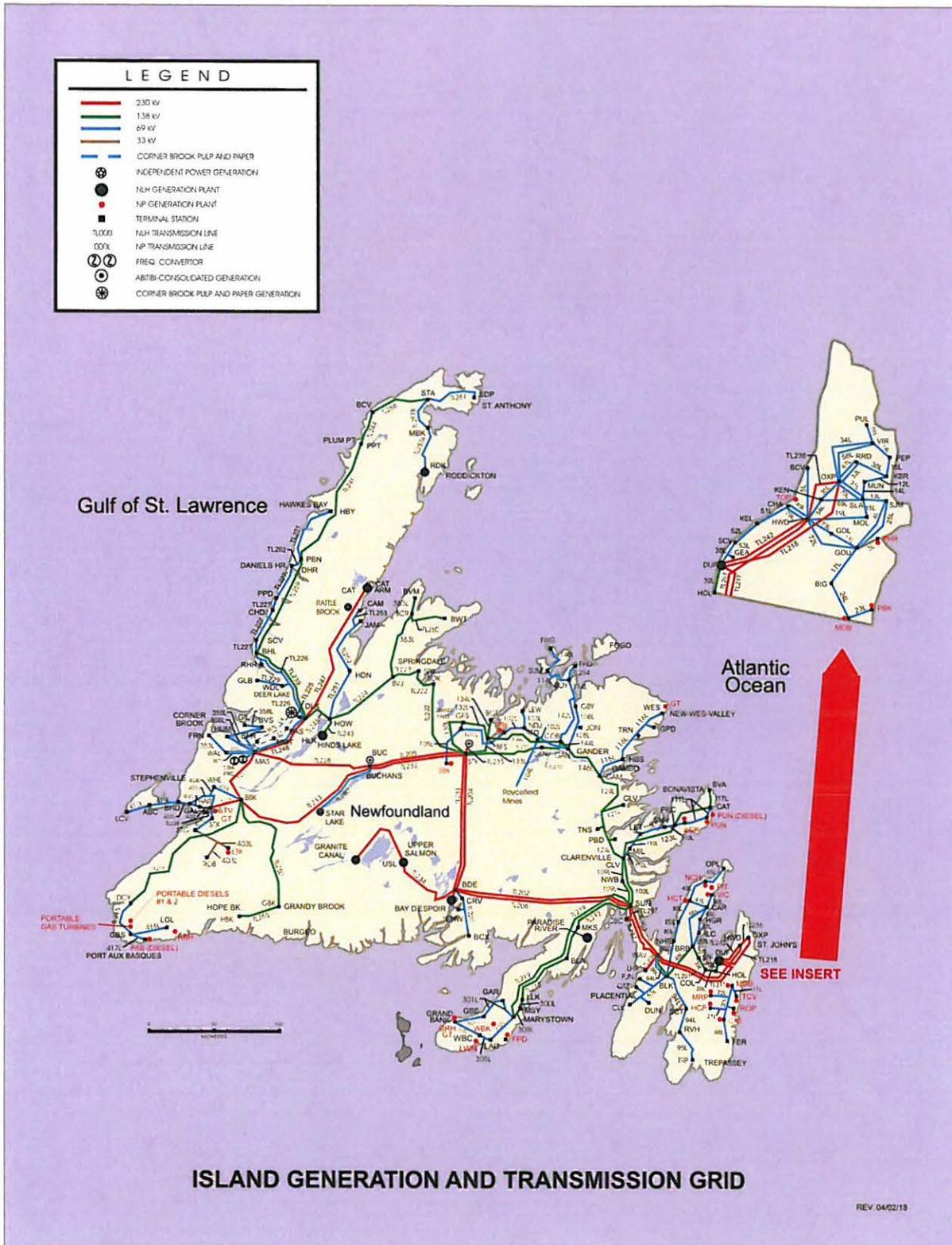
When the Work is complete, the Contractor shall remove all his surplus products, tools, construction machinery and equipment from the Site. He shall also remove any waste products and debris and leave the Work and Work Site clean and tidy.

Attachment 1
Map of Company Service Territory
Showing Operating Regions and Areas

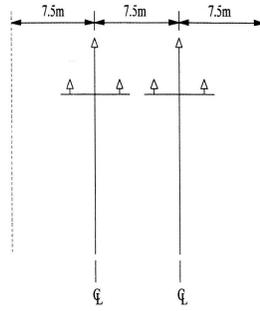


The Baie Verte Peninsula is included in the Grand Falls Area.

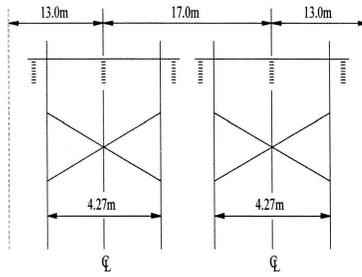
Attachment 2
Map of Island Generation
and Transmission Grid



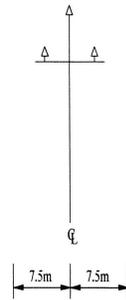
Attachment 3
Standard Easement Widths



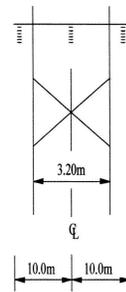
Voltage: 66kV Transmission
Type: 2 Single Pole
Standard Structure
R.O.W: 22.5 Metres Wide



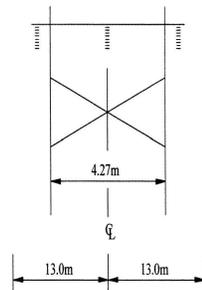
Voltage: 138kV Transmission
Type: 2 H-Frame
Standard Structure
R.O.W: 43 Metres Wide



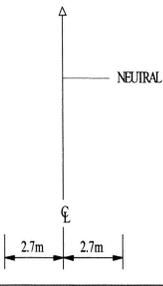
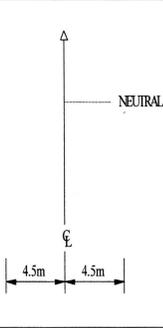
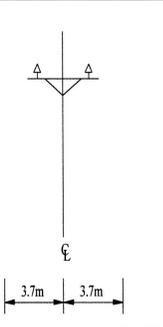
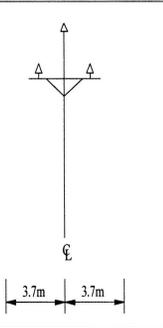
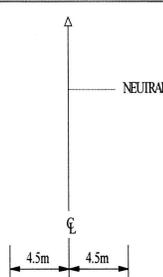
Voltage: 66kV Transmission
Type: Single Pole
Standard Structure
R.O.W: 15 Metres Wide



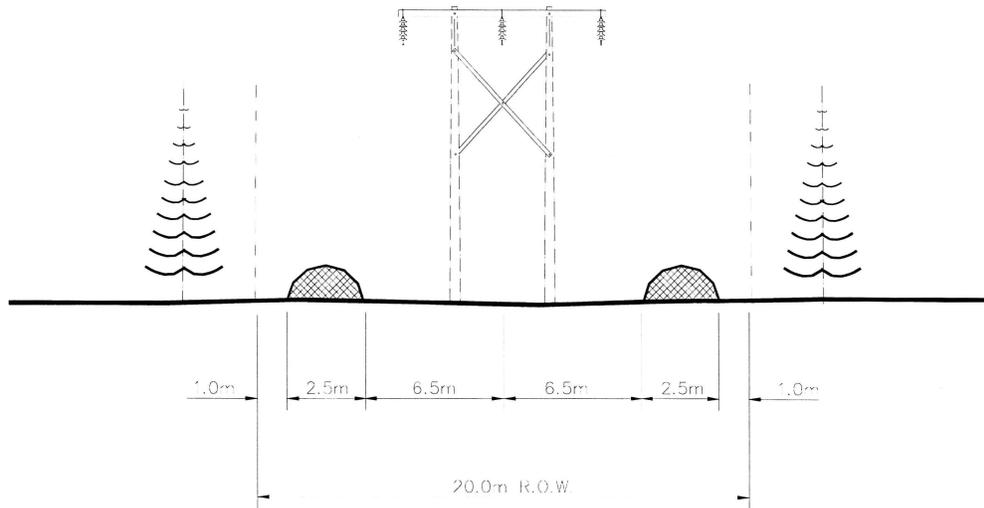
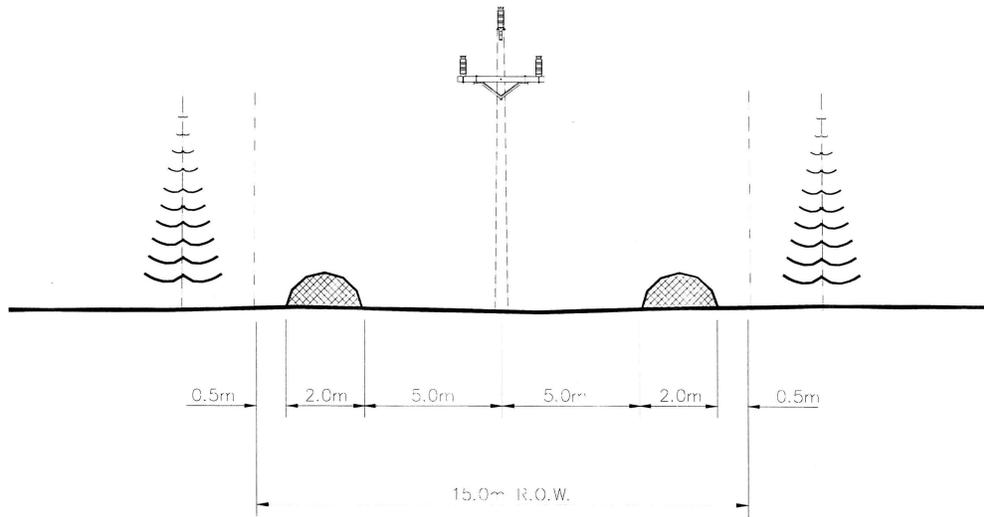
Voltage: 66kV Transmission
Type: H-Frame
Standard Structure
R.O.W: 20 Metres Wide



Voltage: 138kV Transmission
Type: H-Frame
Standard Structure
R.O.W: 26 Metres Wide

	<p>Voltage: 12.5 or 25kV Transmission</p> <p>Type: Single Pole, Single Phase Standard Structure</p> <p>R.O.W: 5.4 Metres Wide</p>
	<p>Voltage: 12.5 or 25kV Transmission</p> <p>Type: Single Pole, Type: Single Phase Standard Structure</p> <p>R.O.W: (Rural Areas Outside Settlements)</p>
	<p>Voltage: 12.5 or 25kV Transmission</p> <p>Type: Single Pole, Two Phase Standard Structure</p> <p>R.O.W: 7.4 Metres Wide</p>
	<p>Voltage: 12.5 or 25kV Transmission</p> <p>Type: Single Pole, Type: Three Phase Standard Structure</p> <p>R.O.W: 7.4 Metres Wide</p>
	<p>Voltage: 12.5 or 25kV Transmission</p> <p>Type: Single Pole, Type: Three Phase Standard Structure</p> <p>R.O.W: (Rural Areas Outside Settlements)</p>

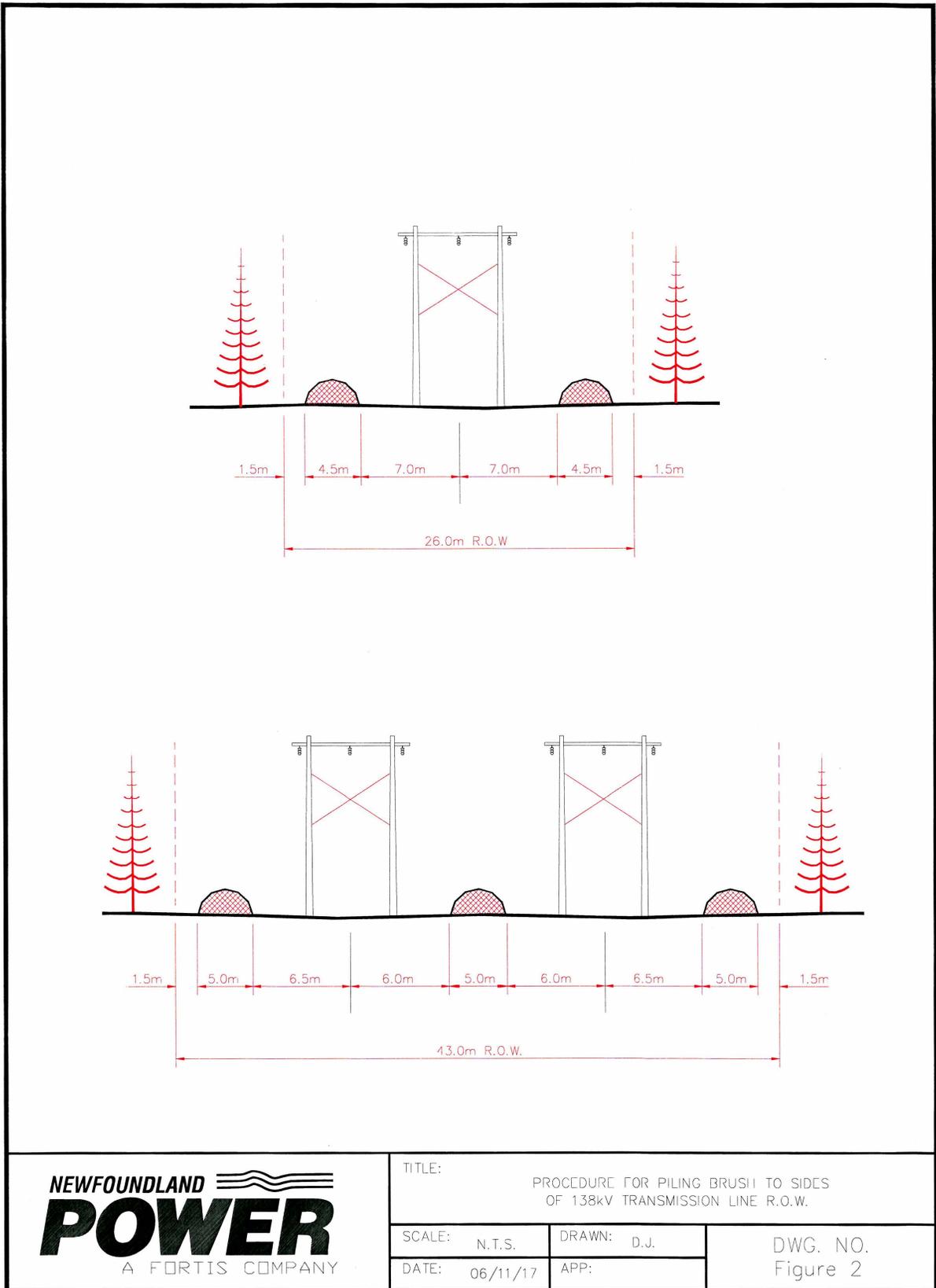
Attachment 4
Brush Clearing Drawings



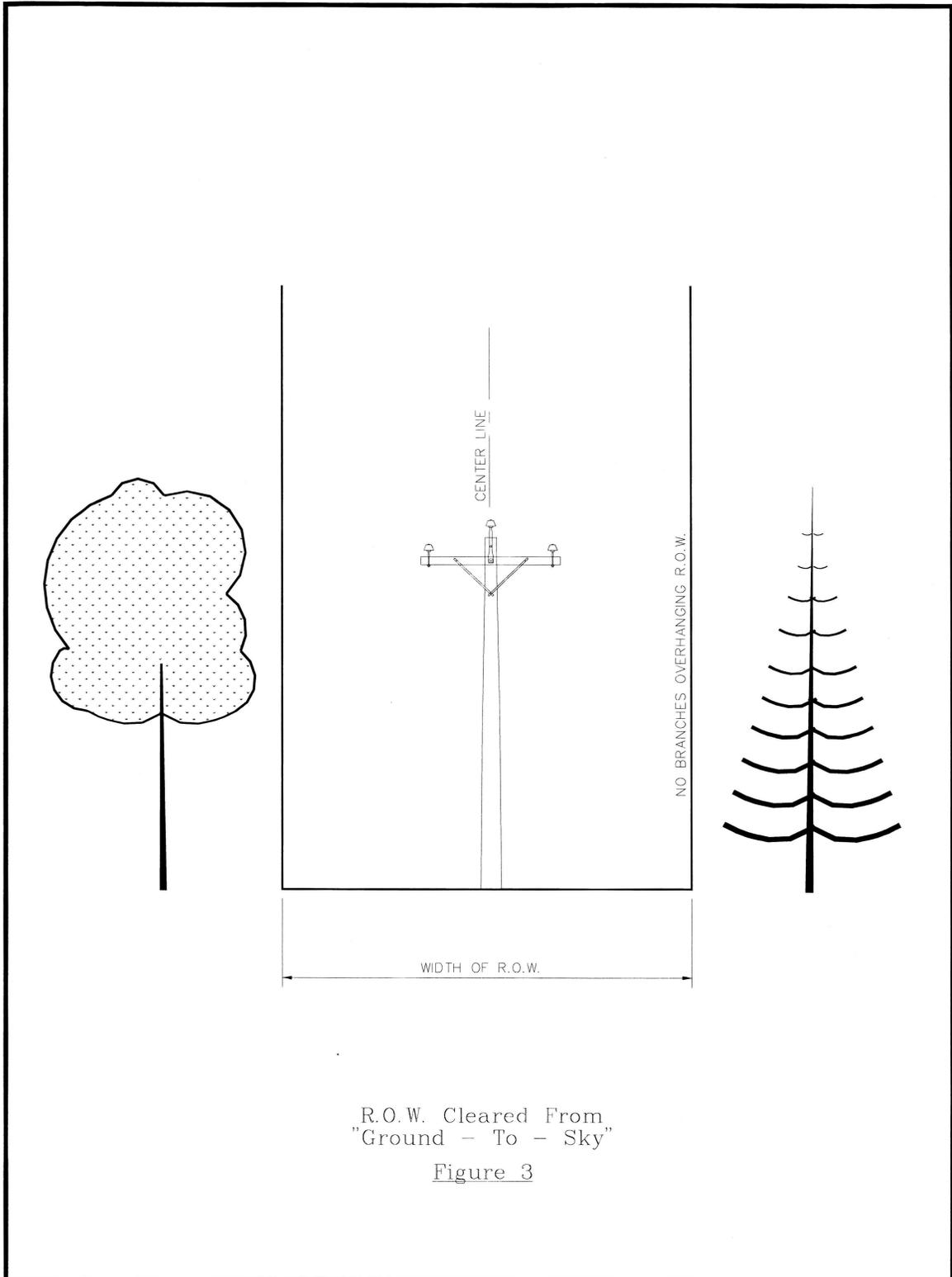
TITLE: PROCEDURE FOR PILING BRUSH TO SIDES
OF 66kV TRANSMISSION LINE R.O.W.

SCALE: N.T.S. DRAWN: D.J.
DATE: 06/06/29 APP:

DWG. NO.
Figure 1

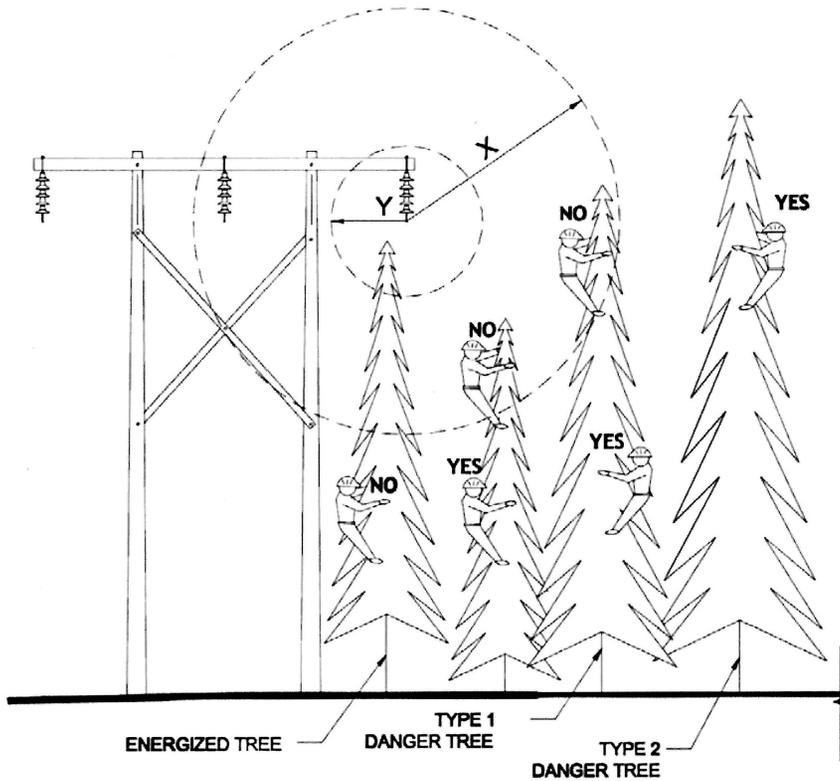


TITLE:		PROCEDURE FOR PILING BRUSH TO SIDES OF 138kV TRANSMISSION LINE R.O.W.
SCALE:	N.T.S.	DRAWN: D.J.
DATE:	06/11/17	APP:
		DWG. NO. Figure 2



**Attachment 5
Energized Trees and
Minimum Approach Distances
Drawing**

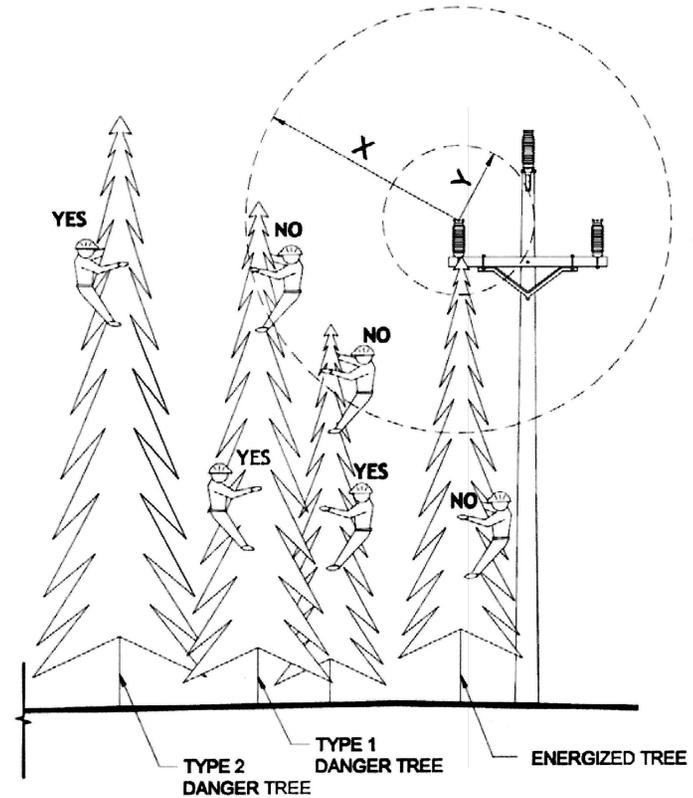
H-FRAME



MINIMUM APPROACH DISTANCE

X= 3.0m (10FT.) FOR ANY CONDUCTOR
ENERGIZED AT ≤ 69kV
= 4.5m (15FT.) FOR ANY CONDUCTOR
ENERGIZED AT 138kV

SINGLE POLE



ENERGIZED TREE

Y= 1.5m (5FT.) FOR ANY
CONDUCTOR ENERGIZED AT ≤ 25kV
= 3.0m (10FT.) FOR ANY CONDUCTOR
ENERGIZED AT > 25kV TO ≤ 138kV



TITLE:		BRUSH CLEARING	
OF DISTRIBUTION OR TRANSMISSION LINE R.O.W.			
SCALE:	N.T.S.	DRAWN:	S.G.H.
DATE:	2009-01-12	APP:	
			DWG. NO.

**Specifications for
Herbicide Application**



Prepared by: Kingsley Gifford
Revision: July 17, 2009
Revised by: Robert D. Daye
February 11, 2010

1. Description of Work

The Work to be carried out under this Contract is the application of herbicide to vegetation growth along the rights-of-way of the Owner's transmission lines as specified herein for the purpose of controlling tree and brush growth.

The transmission line rights-of-way to be treated are described generally in Schedule "A" - Schedule of Pricing and the location of the transmission lines are indicated in the Drawings Section.

The Owner may extend or shorten this distance or exempt other areas from treatment depending on the slope of the right-of-way or other factors affecting line appearance.

2. Pesticide Operators Licence

The Contractor must possess a valid Pesticide Operators Licence issued by the Department of Environment and Conservation.

In completing this Contract the Contractor shall adhere to the Terms and Conditions of the Pesticide Operators Licence. In the event of a conflict between these Specifications and the Terms and Conditions of the Pesticide Operators Licence, the Terms and Conditions of the Pesticide Operators Licence will prevail.

Any costs associated with adhering to the Terms and Conditions of the Pesticide Operators Licence shall be the sole responsibility of the Contractor.

3. Contractor's Crew and Equipment

Crew size must not be less than two people per unit, both of whom must hold a Class Three (3) licence from the Department of Environment and Conservation for pesticide application. Herbicides may only be applied by a licenced pesticide applicator.

All Contractors' equipment is to be clearly marked for easy identification by the public and any interested parties.

The Contractor shall comply with all applicable provincial regulations pertaining to the fording of water bodies and all terrain vehicle use regulations.

The Contractor shall supply and use a portable bridge for traversing brooks and streams encountered along the power line rights-of-way.

4. Herbicide Selection and Guaranteed Control

The herbicide solution to be used shall be TORDON 101 (a Dow Elanco product) and SYLGARD 309 (a Dow Corning product). The herbicide solution shall be applied as per product labels.

The Contractor must guarantee ninety-five percent (95%) control or kill of brush. The degree of control or kill will be based on a survey carried out by the Owner following the treatment. The percentage kill will be determined by using random sampling blocks chosen prior to inspection (the total number of trees killed divided by the total present will give the percentage kill).

The Contractor will retreat at his expense (within a reasonable period of time and when retreatment is most likely to be effective) any areas where kill is less than ninety-five percent (95%).

The herbicide shall remain in the manufacturer's sealed containers until approved for use by the Owner.

5. Method of Application

The method of application shall generally be a directed leaf-stem application using single nozzle ground application equipment. All vegetation is to be completely covered until wet but not to the point of run-off.

All buffer zones are to be flagged by the Contractor before treatment of the right-of-way begins.

Extreme care shall be exercised in any type of treatment to ensure no drift of material is allowed off the right-of-way. It is the responsibility of the Contractor to determine if weather conditions, such as wind speed and direction, are suitable for spraying in a given area. In addition, the adjustment of the gun nozzle must always be maintained to produce a minimum amount of fog or fine particles. Any claims for off right-of-way damage shall be the responsibility of the Contractor.

To reduce the likelihood of spray drift, off right-of-way kill, and inadequate brush coverage, the maximum width right-of-way that should be treated in a single pass by a muskeg sprayer unit is twenty (20) meters. Rights-of-way in excess of twenty (20) meters should be treated using a single pass using two sprayer units. Do not use high spray pressures in order to reach distant vegetation.

The Contractor shall use reasonable judgement when any type of treatment is being executed immediately prior to a rainstorm or soon after rain has ceased. Spray material shall not be applied if an imminent rain will wash it off or if the leaves are saturated with water.

Heavy dew will tend to dilute the herbicide being applied. Special effort shall be made to obtain complete coverage during periods when dew is prevalent.

6. Records

The Contractor shall keep written or electronic records in accordance with the Terms and Conditions of their Pesticide Operators Licence. In addition the Contractor shall keep a daily log detailing areas sprayed by transmission line structure number and application rates. The Daily Brush Control Records form found in Appendix A of these Specifications shall be used to record this information. The Contractor shall submit all records to the Owner on a weekly basis.

Contractors shall maintain a written record of all herbicides brought onto the site and also retain copies of all product labels and Material Safety Data Sheets (MSDS).

7. Program of Work

Work shall be carried out after foliage is fully developed and before foliage has lost its normal green colour and vigour. Commence on or about June 15, 2009 and complete on or before August 31, 2009.

The Contractor shall provide sufficient workers and equipment to complete the contract in the timeframe set out above.

8. Supplied by the Contractor

The Contractor shall supply all herbicide materials, labour, supervision, equipment, tools, and facilities required to complete the Work in accordance with this Contract. The Contractor shall supply equipment to provide a means of communication with crews. The Contractor shall be responsible for transportation and storage of materials and providing transportation and accommodations for his own workforce. The Contractor is responsible for supplying portable bridging for machinery to cross over brooks and streams.

9. Regulations and Permits

The Owner will obtain the necessary permits as required under existing fording regulations to cover crossing of water bodies to be encountered along the rights-of-way to be travelled.

The Contractor shall take all necessary precautions in regard to fires and shall provide all necessary fire fighting equipment in accordance with the regulations of the Provincial Forestry Department.

10. Determination of Acreage

In determining the total treated area for which payment shall be made it is agreed that the length of the area shall be the Owner's recorded chainage of the line or section thereof and the width shall be as specified herein. Where records of the length of right-of-way are not available, the parties hereto shall agree upon the length and in the event of disagreement, the length of the area treated shall be measured jointly by representatives of both parties. Payment will be based on actual hectares treated and not the total hectares travelled in the course of covering the line right-of-way.

11. Safety

The Contractor is responsible for the proper and safe use and handling of all herbicides. The Contractor will be responsible for the safety of his employees in the application of herbicides and the supply and use of all recognized safety equipment. The Contractor shall ensure that all employees use Personal Protective Equipment (PPE) as per Newfoundland Power Inc. OPR 104.01. Employees involved in the mixing, loading, application, and disposal of pesticides shall use PPE as per the pesticide manufacturer's product label and/or Material Safety Data Sheet (MSDS).

Any vehicle used for applying herbicides must be equipped with the following:

- i) An approved emergency eye wash station (i.e., "port-stream 1" or equivalent) available through a safety supply store. Mount the eye wash station, at eye level, to every herbicide spray vehicle.
- ii) An extra 20 litre container of clean water. Use this water for general washing and to refill the eye wash station.
- iii) An emergency set of coveralls to be used only in the event of an accidental spill.
- iv) Other medical and environmental response supplies required in the case of exposure or accidental release as per the pesticide manufacturer's product label and/or MSDS.

APPENDIX A

Daily Brush Control Records Form



Daily Brush Control Records

VG 2

Line No. _____ Area _____

Description _____

Start Structure _____ End Structure _____

Length (m) _____ Width (m) _____

Hectares Treated _____ Herbicide Used _____

Volume of Mix Litres _____ Percent Concentration _____

Lbs. or Litres of Actual Product Used _____

Date of Treatment _____ Vegetation Density _____

Weather Conditions _____ Wind Speed (KPH) _____

Notes _____

Inspector's Signature _____

VEGETATION MANAGEMENT

Page 64 of 151

Brush Control Records Form VG2

This sheet is used by the Inspector in the field whose responsibility it is to supervise and inspect the herbicide spraying program.

Complete this form, in its entirety, at least once daily.

There may be times when a number of forms will have to be used daily (e.g., this situation occurs where there is a change of line, where large buffers exist, or where the herbicide tank has to be refilled).

"Brush Control Records Form VG2" Interpretation:

Area: The geographic area of the Company.

Start and end structure: Includes all structures covered for that day or treatment period. This will include structures skipped due to water and buffers; indicate in the notes section at the end of the sheet, those areas which were skipped.

Length and width in metres: The total length of the area covered and the width of the line. Complete the form at the point where the width of the line changes and start a new one to show the different width.

Hectares treated: The actual number of hectares treated with herbicide, not the total number of hectares covered.

Herbicide used: The actual name of the product (i.e., Tordon 101, Dycleer, Tordon 101 with Sodium TCA).

Volume of mix: The actual number of litres of product and water that was used to cover the area treated (i.e., 1000L of mix to cover the area treated).

Percent concentration: The amount of herbicide mixed with water to give the percentage of the mix (i.e., 10L herbicide mixed with 1000L of water to give a 1% solution).

Actual product: The actual number of litres of herbicide mixed with water to give the percentage concentration.

Vegetation density: L - Light, M - Medium, H - Heavy

Notes: Used to identify buffers, etc. Notes section should be brief.

Specifications for Vegetation Management

SPECIFICATIONS
FOR
Vegetation Management

Specifications for Tree Trimming



Prepared by: Trina L. Troke
March 18, 2009
Revised by: Robert D. Daye
April 02, 2012

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PART A – GENERAL

Page 1

1. Definitions

The following are defined in an effort to standardize their meaning for the purpose of these tree trimming Specifications:

Aerial Device: Any device, extensible, articulating or both, that is primarily designed and used to position personnel. The device may also be used to handle material, if designed and equipped for that purpose.

Approved: Acceptable to appropriate provincial or local authority or other regulating body, or recognized standards association such as CSA, ANSI, ASTM, IEEE etc.

Authorized Worker: An employee who is not a qualified electrical worker but who may be required to work in the vicinity of energized equipment. An authorized person through experience and training must know the applicable Minimum Approach Distances and all the associated hazards and safety requirements for work in the proximity to energized power lines and equipment.

Brush: Any of a variety of trees and shrubs. Also, limbs, twigs and leaves that have been removed from a tree.

Conductor: Any line, wire, bus, apparatus or substance capable of transmitting electrical energy.

Contractor: The Contractor is the person, firm or corporation identified as such in the Agreement.

Construction Contractor: The Contractor who performs the following types of Work, which includes but may not be limited to: building/facility construction, including electrical, mechanical, structural types of construction; electrical maintenance; blasting; demolition of any type; pipe lines and surge tank/line construction; pole setting and erection; vegetation management, including tree trimming/brush clearing/right-of-way clearing; backhoe use and excavation; boom truck and crane operation; diving.

Cover-up: Electrically rated physical barrier placed between the energy source and a second point of contact.

Crown: The leaves and branches of a tree measured from the lowest branch on the trunk to the top of the tree.

Cutting: The removal of trees including proper disposal of the trunk and branches.

PART A – GENERAL

Danger Tree: A standing tree, either live or dead, having visible defects, singly or combined, which predisposes it to mechanical failure in whole or in part (whether on its own or from the effects of a storm or disturbance), and which is so located that such a failure has a probability of contacting, or coming in close proximity to, a live electrical conductor. Also, a danger tree is a live, healthy tree that, once cut, has the potential to contact, or come in close proximity to, a live electrical conductor. The Owner's Representative may, at his discretion, designate any tree as a danger tree.

Easement: The legal right to use a person's land for a specific purpose such as the right to construct, operate and maintain overhead power lines. An easement for access to another person's property is also called a right-of-way.

Electrical Utility Arborist: An individual who, through related training and on-the-job experience, to the satisfaction of the Owner, is familiar with the equipment and hazards, has demonstrated the ability to perform the special techniques involved, and has successfully completed the Electrical Utility Arborist program at The College of the North Atlantic or equivalent training (as approved by Newfoundland Power).

Electrical Utility Arborist in Training: An individual who is undergoing training, shall work under the direct supervision of an Electrical Utility Arborist, and, to the satisfaction of the Owner, has successfully completed the Electrical Utility Arborist pre-employment program (Electrical Safety In Line Clearing / Tree Trimming Operations, pre-employment course) at The College of the North Atlantic or equivalent training (as approved by Newfoundland Power).

Energized: Electrically energized or electro-statically charged.

Energized Tree: A tree that is in contact with, or is in close proximity to, a live electrical conductor. A tree that is intertwined with an energized tree is itself to be considered as an energized tree.

Ground Worker: An individual who, because of electrical hazard awareness training, is able to provide ground support in tree trimming operations. It is understood that this individual is limited to only cutting and or working on vegetation which has been removed from its position in proximity to energized power lines.

High Voltage: Greater than 750 volts.

Insulated Aerial Device: An aerial device with dielectric components designed and tested to meet the specific electrical insulation rating consistent with the manufacturer's identification plate.

PART A – GENERAL

Page 3

Isolation: Physically separated, electrically and mechanically, from all sources of electrical energy.

Line Clearances: The shortest distance between overhead power lines, other overhead lines, structures, or apparatus, and parts of a tree.

Low Voltage: Less than 750 volts.

Operating Lineperson: A person having a valid Operating Journeyman Lineperson Certificate.

Owner: The Owner is Newfoundland Power Inc. and Newfoundland Power.

Owner's Representative: The Owner's Representative is the person(s) or firm(s) designated by the Owner to act on behalf of the Owner and is the contact for coordination of field reviews, specification inquiries, pre-job coordination and safety meetings, coordination of the issuance of Work and is the final interpreter of the Agreement in accordance with the Contract Document.

Plane of the Conductor:

Horizontal plane – an imaginary line from the conductor parallel to the landscape.

Vertical plane – an imaginary line from the conductor perpendicular to the landscape.

Project Site: The Project Site is the land and structure on which the Work is to be constructed or which is otherwise made available to the Contractor by the Owner for the performance of the Work. Generally, a Project Site will be a power line (distribution line (feeder) or transmission line), a communications line, or a substation. The Work will be carried out at multiple Project Sites.

Pruning: The selective removal of parts of a tree and their disposal to maintain clearance from overhead power lines, other overhead lines, structures or apparatus.

Right-of-Way: Land on which Newfoundland Power has rights to construct, operate and maintain power lines (i.e. a strip of land on which the Company has an easement).

Shall: As used in this Specification, denotes a mandatory requirement.

Should: As used in this Specification, denotes an advisory recommendation.

PART A – GENERAL

Page 4

2. Scope of Work

The Work consists of tree trimming/removals, chipping, on-site mulching, removal, cleanup, disposal in approved landfills of all trimmed limbs, branches, and debris, as Specified herein and in the attached Schedule of Prices, and/or as required in accordance with Provincial laws and regulations, during the year in which the Contract is in effect.

The Contractor shall supply all labour, supervision, tools, equipment, and, materials required for the completion of all tree trimming and/or removals as specified in this agreement as well as for any additional Work that may later be identified by the Owner's Representative.

Tree Trimming Work completed under this contract will be limited to distribution lines with nominal voltages of 25 kV or less.

3. Location

The Owner's operating Regions and Areas are defined as follows:

The Eastern Region which consists of the following operating Areas:

- St. John's
- Avalon (Carbonear)
- Clarenville
- Burin

The Western Region which consists of the following operating Areas:

- Gander
- Grand Falls
- Corner Brook
- Stephenville

These locations are shown on the attached map of the Newfoundland Power service territory showing operating Regions and Areas. For clarity, the Baie Verte Peninsula is included in the Grand Falls Area.

4. Hours of Work

Normal hours of Work will be 8:00 A.M. to 4:00 P.M., Monday to Friday. Newfoundland Power statutory holidays will also apply. If requested by the Contractor, the Owner's Representative may agree to different hours.

Hours of work, other than those specifically noted above, must be agreed upon prior to commencement of the Work.

PART A – GENERAL

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5. Work Schedule

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6. Overtime

Should it be found necessary to carry out overtime Work in order to complete the Contract within the time agreed upon by the Owner and Contractor, such overtime shall be provided without extra cost to the Owner.

For emergency situations requiring mobilization of crews and work outside normal hours, an overtime rate of 1.5 times the contract rate shall apply.

PART B – PERSONNEL

Page 6

1. Qualified Personnel

“Qualified Personnel” means workers who have been formally trained in procedures of working near energized power lines and apparatus. For the purposes of this Work, individuals who have successfully completed the College of the North Atlantic “Electrical Utility Arborist” program, or Owner Approved equivalent training, combined with sufficient field experience will be considered qualified.

All personnel who trim trees in close proximity to energized power lines must be qualified as defined and must be trained:

- In electrical safety and awareness
- To evaluate conditions where branch and tree removal should only be executed using qualified Newfoundland Power linepersons
- And knowledgeable in proper rescue techniques from a tree
- In Arboriculture

Evidence showing the required training and past experience in this type of Work is a requirement of the bid and must be available for Newfoundland Power to review upon request.

A minimum of two qualified personnel will be required on each crew.

All times during tree trimming operations around primary conductors, there shall be, within such a distance that normal (unassisted) voice communications is possible, a qualified Electrical Utility Arborist who is fully qualified in rescue methods for forestry work, including rescue from trees and rescue from aerial devices.

The Electrical Utility Arborist training requires that the Electrical Utility Arborist in training complete half of their training hours on the ground. However, a qualified Electrical Utility Arborist always required to be on the ground to be available for a rescue. In this case, a three person crew would be required, with one aloft, and both a qualified Electrical Utility Arborist and Electrical Utility Arborist in training on the ground.

One person must be designated as the Crew Leader. Each Crew Leader must have a minimum of 1200 logbook recorded hours. The Owner reserves the right to refuse Crew Leader status to any person with the required hours.

All personnel involved in tree trimming in energized power lines must keep a logbook recording their hours worked, the location of the Work, a running total of hours worked trimming trees near the primary conductor and near the secondary conductor. The Owner’s Representative must sign off each entry in the logbook.

PART B – PERSONNEL

Page 7

Logbooks are to be updated on a weekly basis. As evidence of a worker's experience, copies of all logbooks shall be submitted to Newfoundland Power for review, upon request of the Owner's Representative.

For those who are new to the tree trimming trade and who have graduated from the College of the North Atlantic "Electrical Safety In Line Clearing / Tree Trimming Operations" pre-employment course, 600 hours must be logged working in an electrical environment, 300 hours of which shall be aloft on the secondary conductor and services. The person is then to return to College of the North Atlantic for the "Electrical Safety In Line Clearing / Tree Trimming Operations" advanced level course before being permitted to trim trees supervised around the primary conductor. The person must then log 600 hours around the primary conductor under the supervision of a qualified Crew Leader, 300 hours of which must be aloft on primary conductors. The person is then to return to College of the North Atlantic for a final assessment and certification as an Electrical Utility Arborist.

Ground workers involved in the tree trimming operation must have completed the "Electrical Hazard Awareness Program" at the College of the North Atlantic, or Newfoundland Power approved equivalent, which prepares them to work safely in the electrical utility tree trimming industry. Contractors shall submit ground worker qualifications to Newfoundland Power upon request of the Owner's Representative.

The Contractor shall, upon request, provide a copy of its Procedures on rescue methods for forestry work, including rescue from trees and rescue from aerial devices and be able to demonstrate that employees have completed training in these Procedures.

The Contractor must comply with Section 4 of the Occupational Health and Safety First Aid Regulations under the Occupational Health and Safety Act. In addition, a minimum of two people on any crew must hold valid emergency first aid and CPR certificates.

PART B – PERSONNEL

2. Supervision

The Contractor must appoint a Supervisor in charge of the Work. The Supervisor will be responsible for all crews and will remain on the Project Site at all times when Work is being carried out by the Contractor.

Where three or more tree trimming crews are working, a non-working supervisor is required.

The Owner reserves the right to refuse Supervisor status to any person. Should the Owner refuse a Supervisor, the Contractor would be required to appoint a replacement Supervisor that is acceptable to both parties.

The name of the Supervisor must be communicated to the Owner in writing. If the Contractor changes the Supervisor, the Owner must be notified in writing and the Supervisor must be acceptable to the Owner's Representative.

The supervisor shall demonstrate knowledge and competence regarding the Contract specifications and all relevant safety requirements.

3. Contractor's Camp

The Contractor shall be responsible for accommodations for his personnel and shall make all arrangements and pay all associated costs.

PART C – COMMUNICATIONS

Page 9

1. Notification and Permission to Prune or Remove Trees

The Contractor is responsible for delivering a letter and brochure to each property owner, affected by the upcoming Work, a minimum of five (5) working days and a maximum of ten (10) working days prior to Work commencing on the property. The letters and brochures will be printed, folded, and supplied by the Owner along with weather resistant bags. The Contractor is responsible for inserting 1 letter and 1 brochure into each weather resistant bag and delivering the package as noted above.

The Contractor is responsible for getting permission from property owners on pruning/removal of trees and for keeping records on the Work completed. The Contractor will not commence pruning until a reasonable effort has been made to obtain permission from the property owner and, if not, until permission has been granted by the Owner's Representative. The Owner's Representative shall be contacted prior to commencing Work at any location where permission could not be obtained or should a dispute arise.

A reasonable effort to contact a property owner will be defined as ensuring the letter and brochure package was delivered as outlined in this section of the Specification, and making at least three separate attempts to contact the property owner prior to commencing Work on the property. At least one attempt to contact the property owner shall be after 6 pm on weekdays or on the weekend. The Contractor should record details of property owner contact attempts, including the civic address, date and time. The form for recording this information, entitled "Customer Contact Record Form", is attached. The Contractor should also note the meter numbers of customers that cannot be contacted so the Owner can supply the Contractor with telephone numbers to facilitate after hours contacts.

The Owner's Representative must approve trimming where property owner permission could not be obtained. In this case, once the trimming Work is complete, the Contractor will be responsible for delivering an Owner supplied "Sorry We Missed You" letter to the property owner.

During the time when the actual Work is in progress, inquiries as to the nature or degree of the operation by the property owner or others, shall be handled in a manner which promotes good public relations between the interested party and Newfoundland Power.

PART C – COMMUNICATIONS

Page 10

2. News Releases

Information for publicity of any nature with respect to any facet of the Owner's business or operations or of the Work being performed on the Project Site by the Contractor, or others, shall not be released or disclosed without prior consent of the Owner's Representative.

3. Identification of Contractors' Vehicles

Any vehicles used by the Contractor during the execution of the Work must be positively and easily identifiable as that of the Contractor.

Any expenses incurred to implement the identification described herein will be at the expense of the Contractor.

4. Public Safety

The Work shall be conducted in a manner that provides protection to the public.

The Contractor shall provide and maintain appropriate warning devices such as safety signage, barricades, lights, traffic control (two (2) flag persons), etc. at the Project Site as may be required for public convenience and safety until completion of the Work. This shall be provided by the Contractor at no additional cost to the Owner.

5. Contractor Communications

The Contractor shall provide a reasonable means by which the Owner's Representative may contact him at any time during the work day. The means of communications must be acceptable to the Owner's Representative.

Each Project Site shall be equipped with reasonable means of communications supplied by the Contractor at no additional cost to the Owner.

The Contractor will be responsible for providing any radios. Radios will not be provided by the Owner.

PART D – EQUIPMENT

Page 11

1. Contractor's Equipment

The Contractor's equipment must be maintained in a condition acceptable to the Owner's Representative.

As per the attached Schedule of Equipment:

During the term of the Contract, all heavy equipment to be used for the Work of this Contract shall be maintained to the standards required for Vehicle Inspection Certification. All heavy equipment shall have a Vehicle Inspection Certificate from a recognized truck and trailer heavy equipment repair facility licensed under the Government of Newfoundland and Labrador, Department of Work Services and Transportation - Motor Vehicle Registration Division. All inspection stickers shall be placed in the windshield of the heavy equipment inspected and all Vehicle Inspection Certificates shall be made available to the Owner upon request.

The Contractor shall maintain, repair and overhaul all heavy equipment in accordance with the approved maintenance schedule and manufacturer's maintenance and overhaul procedures; and comply with all manufacturers' mandatory service bulletins or recall notices. The Contractor shall maintain complete and accurate maintenance records for all heavy equipment, and the records shall be made available upon request from the Owner and/or any governmental authorities or agencies having jurisdiction.

The Contractor will be responsible to ensure that all heavy equipment to be used by Subcontractors hired by the Contractor for this Contract is maintained to the standards outlined above. The Owner shall have the right to request from the Contractor a copy of the Subcontractor's equipment inspection certificates and maintenance records at any time during the term of the Contract.

The Contractor or Subcontractor shall forthwith replace at the request of the Owner any equipment that the Owner deems to be in an unsatisfactory condition, and the equipment deemed to be unsatisfactory shall be considered unserviceable in terms of the Contract unless and until it has been restored to a condition that meets the Owner's requirements. Any necessary replacement of equipment, for any reason, shall be at the Contractor's expense.

Heavy equipment is defined as any Cab & Chassis (Truck) with a gross vehicle weight of 10,000 lbs. These trucks must have a Motor Vehicle Inspection (MVI) every 12 months.

For off-road equipment such as Go-Tracts, an MVI (sticker) is not required.

PART D – EQUIPMENT

Page 12

With any truck, go-tract or aerial device, there must be periodic inspections & servicing & must be done at Manufacturer's recommendations. This should be done at least twice a year and all records must be kept in a file showing the inspection form for the chassis and aerial device, the work performed and a list of parts & labour.

2. Approved Pruning Equipment

All tools and equipment must be maintained in good condition.

Tree pruners shall be fitted with approved fibreglass reinforced plastic (FRP) handles (live line tools or hot sticks) which shall be kept clean and dry.

Hand pruning saws may be utilized for the Work. Bucksaws will not be permitted for use on a final pruning cut. The proper pruning back-cut saw must be used.

Ropes and rigging to be used must be kept clean and dry. An approved insulating link shall be used with the clean, dry polypropylene rope.

Only wooden or fibreglass ladders may be used. Wire or metal reinforcing side rails are NOT permitted.

3. Chainsaws and Brush Saws

Safety requirements for chain and brush saws are specified in the Newfoundland Power Operations Manual, OPR-100, Health & Safety Procedures and shall be strictly adhered to by the Contractor.

Use of a chainsaw aloft from a tree may be permitted if the ability to work safely has been demonstrated. The weight of the chainsaw shall be restricted to a maximum of 4 kg. Notwithstanding the above, the Contractor shall use all care and judgement in completion of any Work.

Chainsaws, whether hydraulic or gasoline operated, shall be equipped with chain brakes and safety chains.

Hydraulic long reach chainsaws with approved fibreglass reinforced plastic (FRP) handles (live line tools or hot sticks), that shall be kept clean and dry, shall be only used with an approved aerial device or power pack complete with nonconductive hose (Parker 518C or equivalent).

Brush saws may be utilized in ground clearing operations.

PART D – EQUIPMENT

Page 13

4. Rubber Gloves

Rubber gloves shall be approved Class 3, 30 kV or higher rated meeting standard ASTM F-496-02. The gloves must be tested every 90 days as per ASTM F-496-02.

All rubber gloves shall:

- Be air tested before use
- Have the required leather protectors
- Be stored inverted in bag in clean, dry area.

5. Live Line Tools

Live line tools (hot sticks) shall conform to ASTM F 711-00 Specification and must be tested in accordance with both ASTM F 711-00 and IEEE 516-1995. Live line tools must be Wet tested and Hi-Pot tested at least once every year. Test specifications and time frame shall apply as minimum criteria.

Live line tools (hot sticks) must be tested once every two weeks with the Owner's Hastings Portable Tester. All live line tools (hot sticks) must be uniquely numbered and the Contractor must keep a record of their testing history on file. The attached "Live Line Tool Testing Record" form is to be completed each time a test is performed.

One of the most important factors in the care of live line tools is to keep them dry. Wipe tool before use each day with absorbent towel and Hot Stick Wiping Cloth. Wipe tool in circular motion. Inspect for contamination and damage.

Clean and refurbish tools as required to maintain tool integrity. Dry before storage. Store in a dry, non-abrasive environment.

6. Aerial Devices

Aerial Devices, as defined by CSA (Vehicle Mounted Aerial Devices) used for tree trimming must at least meet CSA -C225-00. A Category C aerial device is acceptable unless lifting capacity is required (to lift branches), in which case, a Category B unit or Category C unit with rated material handling ability is required. Lifting capacity of aerial devices shall not be exceeded.

PART D – EQUIPMENT

An electrically tested insulated aerial device, as defined by CSA, is required if it is necessary to move the bucket above an energized conductor or when working in the proximity (within 5.5 m (18 ft)) of energized equipment. All such aerial devices shall have an annual dielectric test as per CSA-C225-00.

For each device to be used to complete any Work contained in this Agreement, the following information shall be maintained and, upon request, submitted to the Owner in a written report:

Boom Manufacturer	
Type	
Serial Number	
Truck Number	
Test Voltage	
Authorized By	
Conditions	
Boom Configuration (Degrees), Upper, Lower	
Leakage Current - Micro Amperes	
Insulated Boom - Top Section Test Voltage	
Leakage Current - Micro Amperes	
Chassis Insulation Section - Test Voltages	
Leakage Current - Micro Amperes	
Insulating Liner(s) (if required)	
Tested by	
Test Date	

Only authorized persons who have been formally trained shall operate an insulated aerial device.

Insulated portions of insulated aerial devices are to be cleaned by washing with a mild detergent and waxing.

All boom and bucket covers to be removed if an insulated aerial device is used to position personnel within 5.5 m (18 ft) of energized equipment.

Chassis insulating systems must not be shunted.

PART D – EQUIPMENT

Page 15

Outrigger pads shall be on vehicles in sufficient quantities and used as per the Newfoundland Power Operations Manual, OPR-100, Health & Safety Procedures.

Wheel chocks shall be on vehicles in sufficient quantities and used as per the Newfoundland Power Operations Manual, OPR-100, Health & Safety Procedures.

A holding valve check shall be performed weekly.

Hydraulic pruners powered by aerial device fluid supply and operated within the Minimum Approach Distances shall only be used with an insulated aerial device.

7. Wood Chippers

Wood chippers shall be equipped with a workable “kill” switch in the feed location consistent with relevant standards and legislative requirements.

Wood chippers shall be inspected each working day before start-up for defects such as broken or missing hood latches and pins or cracked and worn hinges. Broken, damaged, or missing machine components must be repaired or replaced before the machine is placed in service.

All safety devices and controls, such as emergency shut-off devices, are to be tested and verified to be functioning properly before the chipper is used.

Workers shall be trained in safe work procedures, including operating wood chipper safety devices and safety controls. These procedures should be based on the manufacturer’s recommendations for each machine.

At least two workers shall be in close contact with each other when operating the chipper.

Workers feeding material shall be positioned such as to allow quick operation of the emergency shut-off device and to minimize the risk of entanglement in branches.

The hood covering the chipper knives must be completely closed and latched according to manufacturer’s recommendations before starting the machine and during operation.

PART E – PROTECTION

Page 16

1. Existing Utilities and Structures

The Contractor shall use extreme care in all Work taking place in the tree trimming area so as not to interfere with the operations of the existing plant and buildings. Structures and equipment must be protected from damage due to the Contractors' operations.

The Contractor shall be held responsible for any damages to, and for maintenance and protection of, existing utilities and structures.

The prices quoted shall take into account all precautions required for the continuous operation and protection of all existing facilities.

2. Arrangement for Interruptions

The Contractor will be responsible for ensuring that all Contractor's personnel are thoroughly familiar with Newfoundland Power's Operations Manual, OPR-100, Health & Safety Procedures, Worker Protection Code, Contractor Safety Responsibilities and Contractor Environmental Responsibilities before Work begins.

If in the course of the Work, an interruption to service on a distribution line is required by the Contractor, any switching operations necessary for the isolation of the equipment will be performed by the Owner's personnel and be properly processed through the Owner's System Control Centre.

3. Weather Conditions

Tree trimming will not be permitted near lines or equipment energized at high voltages during precipitation.

4. Hold-Off

No Work will be done in the vicinity of energized power lines without the required "Hold-Off" from the Newfoundland Power Control Authority; this is explained in detail in the Owner's Worker Protection Code. The Contractor shall be familiar with all relevant sections of the document.

PART E – PROTECTION

Page 17

No Work shall be done near the primary conductor of distribution lines (feeders) until Newfoundland Power personnel have placed a “hold-off” on the feeder which will require the feeder to be placed in the non-reclose position. The Contractor must notify the Owner’s Representative when finished working on the feeder or at the end of each day. The Contractor must have acceptable two-way communications to permit quick contact in the event of a feeder outage. Newfoundland Power will not supply radios. The Contractor will be responsible for the cost of communications.

When tree trimming is taking place around structures or spans containing ungrounded primary conductor circuits, a hold-off must be in place on the feeder. For secondary conductor circuits and services, a hold-off is not normally required. A hold-off is required when the secondary conductor or services exist on the same right-of-way as the primary conductor.

Hold-off provides limited worker protection.

Planned outages may be required to complete Work on specific feeders outside normal working hours. No additional payment will be made for this Work over and above the cost to complete that feeder as recorded in the attached Schedule of Prices.

5. Hours of Work – For Hold-Off

The Owner will not charge the Contractor for placing distribution lines (feeders) or transmission lines in hold-off at the start of normal work hours (8:00 AM) or restoring the distribution line (feeder) or transmission line to normal at the end of normal work hours (4:00 PM). Placing lines in hold-off and restoring them to normal outside of these hours will be chargeable to the Contractor, unless otherwise agreed upon in conjunction with alternate hours of work.

Hold-off charges will not apply if the Contractor is asked to work outside of normal work hours by the Owner’s Representative. The Owner’s Representative may, at his discretion, wave hold-off charges.

6. Installing Cover-up

When cover-up is required as per the work method and/or this Specification, the Contractor shall notify the Owner’s Representative as soon as possible. All required cover-up will be installed by Newfoundland Power.

PART E – PROTECTION

7. Minimum Approach Distances

Crew members must be constantly aware of the location of and maintain minimum clearance from energized power lines, apparatus, or other devices which may present a hazard.

The transfer of electrical energy can occur without actual physical contact.

Electric lines and equipment are to be treated as energized unless they are positively known to be de-energized and grounded.

Minimum Approach Distance is defined as the shortest allowable distance between an energized power line or apparatus, and any part of the employee's body or conductive item, including trees or tree branches the employee may be handling.

Wind deflection and branch rebound must be added to Minimum Approach Distances. As well, changes in conductor sag due to changes in ambient air temperature, electrical loads, mechanical loads, etc. can impact clearances and so clearances should be regularly assessed.

Minimum Approach Distances also apply to the termination ends of such electrical configurations as underground dips and aerial cable.

The Minimum Approach Distance varies according to line voltage. The values are outlined in Table 1 below:

Table 1 – Minimum Approach Distances

Nominal Circuit Voltage Phase to Phase (Volts)	Minimum Approach Distances	
	(Meters)	(Feet)
750 - 30,000	1.2	4
30,000 - 75,000	1.5	5
75,000 - 150,000	1.8	6

Personnel will not be allowed to approach or bring an object, other than with approved hot line pruning equipment, closer to exposed energized power lines or apparatus of the distribution system than 1.2 m (4 ft) for voltages between 750 V and 30,000 V.

Personnel utilizing approved hot line pruning equipment must wear approved and tested lineperson's rubber gloves that meet the requirements outlined in PART D – EQUIPMENT, 4. Rubber Gloves.

PART E – PROTECTION

Page 19

The tailboard discussion must identify the highest nominal voltage in the work area and to which the trees and/or branches are in proximity. This includes distribution lines (feeders) under built on transmission lines and other feeders.

All distribution lines (feeders) that require tree pruning under this agreement operate at 4,160/2,400, 12,500/7,200 or 25,000/14,400 volts.

Non insulated sections of pruning tools must not be worked or pass through the minimum air insulation distance specified in the Minimum Approach Distance table

Trees / branches outside the Minimum Approach Distances above the plane of the conductor must be trimmed in 15 cm (6 in) increments to prevent insulator shunting or cross phasing. Severed branches shall not be allowed to make contact with energized conductors.

Trimming trees / branches that are intertwined and are within the Minimum Approach Distances must be conducted under dry weather conditions.

When the Work requires persons to encroach beyond the Minimum Approach Distances, only qualified, Newfoundland Power, operating linepersons shall be used. Tree trimming carried out in the immediate vicinity of ungrounded distribution lines and shall be completed only by qualified personnel.

7.1 Energized Trees

An energized tree is a tree that is in contact with, or in close proximity to, a live electrical conductor.

A tree is energized when there is direct contact between the tree and an energized conductor or piece of equipment.

A tree shall be considered to be energized when any part of the tree is intertwined with an energized tree or is:

- Less than 1 m (3 ft) above the plane of the energized conductor or energized equipment
- Less than 1 m (3 ft) beside the energized conductor or energized equipment
- Less than 0.3 m (1 ft) below the energized conductor or energized equipment

Step and touch potential hazards may be present.

Minimum Approach Distances apply to all parts of the tree.

PART E – PROTECTION

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7.2 Isolation work

Isolation from a tree that is considered energized is best described as working from a location where step and touch potential are no longer a hazard. This may be a location not in contact with the suspect tree or a location that is separated by insulation such as an insulated aerial device.

Isolation may be accomplished by preparing a suitable isolation area as a work step.

PART F – WORK METHODS

Page 21

1. Job Planning / Risk Management

The Contractor must review the Work to identify safety hazards and establish barriers to allow the Work to be completed safely. Where an entire distribution line (feeder) will be trimmed, the Job Planning / Risk Management steps and conditions plan will be completed for the entire feeder before the Work commences. In particular, locations where cover-up or outages are necessary must be identified and noted. This information shall be provided to the Owner.

Tailboard meetings and forms shall be completed daily to identify the hazards. Applicable barriers shall be put in place to address the hazards.

There shall be a second, qualified Electrical Utility Arbourist capable of affecting a rescue within normal (unassisted) voice communications during all tree-trimming operations on primary conductors.

During the planning of the work:

- Set work area for both the work unit and the general public
- Identify circuits to be worked
- Identify adjacent circuits
- Consider minimum approach distances and energized trees
- Ensure required Protection Guarantee
- Survey adjacent structures for abnormalities
- Identify and sequence hazards for their severity and apply barriers

Always communicate any changes in plan or work procedure as soon as possible.

2. Tree Removal

When a tree requiring trimming has been identified, the initial approach shall be to receive permission to remove the tree, rather than just the encroaching branches. This will be the procedure for trees that, if not removed, will require trimming on every tree trimming cycle.

The approval of the Owner's Representative shall be obtained before any tree, greater than 15 cm (6 in) in diameter near the butt of the tree, is removed.

PART F – WORK METHODS

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Trees that are to be removed shall be:

- Trimmed below the neutral and the secondary conductors before being removed.
- Cut as close to the ground as root swell will permit. Particular attention shall be taken along street and sidewalks where the stumps shall be made flush with the ground.
- Suitably controlled during their removal to prevent damage to power lines, communication lines and neighbouring property. In cases of difficult removals, trees shall be removed in sections.

Ropes and rigging may be needed to ensure safe tree removal.

During tree removal operations involving trees that are diseased or suspected of being diseased, tools and equipment used in the operation shall be disinfected before they are again used on healthy trees.

The removal of underbrush shall be limited to those species that with normal growth would reach the level of line conductors.

Climbers with spurs designed for tree climbing may be used to climb trees that are to be removed.

3. Tree Trimming Clearances

Trimming requires the consideration of:

- The tree-to-conductor clearance required to ensure public and employee safety for the length of the cycle
- The tree-to-conductor clearance required to ensure reliability of the system for the length of the cycle.

The scope of the work for all distribution lines (feeders) specifically identified in the attached Schedule of Prices, includes obtaining required clearances for all trees and branches around the primary conductor, secondary conductor, and the neutral conductor of the entire feeder.

The scope of work for provisional items (i.e. hourly rate) may include obtaining required clearances for the primary conductor, secondary conductor, neutral conductor, service drop wires, street light wires, streetlights, communication cables, or any combination thereof.

PART F – WORK METHODS

Page 23

In general, the required tree trimming clearances as follows:

- 0.9 m (3 ft) radius around the communication cable and service drop wire (including CATV); i.e. no tree or branch to be within 0.9 m (3 ft) of cable and service drop wire following trimming operations.
- 1.8 m (6 ft) radius around the primary conductor and 0.9 m (3 ft) radius around the secondary conductor and neutral.
- 0.9 m (3 ft) radius around service wire.
- 0.9 m (3 ft) radius around street light wires.

These clearances are illustrated in the attached Figures 1 to 8.

No tree or branch shall be within 1.8 m (6 ft) of the primary conductor and 0.9 m (3 ft) of the secondary conductor and the neutral conductor following trimming operations.

The primary leads and bushings of transformers, primary jumpers, cutouts, switches, and associated leads are all considered to be part of the primary conductor and the specified clearances must be obtained.

It should be realized that in some situations providing these clearances may not be practical or desirable and that discretion and good judgement are required in consultation with the Owner's Representative.

It is not permissible to reduce any of the above clearances without the permission of the Owner's Representative. The Owner's Representative's decision in situations involving reduced clearances shall be final.

All clearances must be relative to the estimated position of maximum sag and swing of the nearest conductor.

In obtaining clearance, the possibility of children climbing trees and contacting live conductors must always be borne in mind and particular attention should be exercised regarding trees on or near schools, playgrounds, and recreational areas.

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4. Tree Trimming in Proximity of Energized Power Lines

The following sections make reference to the attached drawing - Tree Trimming in Proximity of Energized Power Lines.

Workers must maintain Minimum Approach Distances at all times.

4.1 Trees Located in Proximity to Pole

4.1.1 *Trees / Branches Located Under the Energized Conductor or Energized Equipment*

If all parts of the tree are located 30 cm (1 ft) or more below the plane of the conductor, the tree may be climbed and trimmed.

Care must be taken to avoid simultaneously contacting the primary conductor with the pruning head and tree branches or pole line hardware.

If a part of the tree is located closer than 30 cm (1 ft) below the horizontal plane of the primary conductor the tree shall be considered potentially energized cannot be climbed until tree has been trimmed to 30 cm (1 ft) or greater using isolation.

A 5 m (16.4 ft) radial distance shall be maintained from the subject tree by all ground workers during this procedure.

4.1.2 *Trees / Branches Located Beside the Energized Primary Conductor or Energized Equipment*

If all parts of the tree are located outside the 91 cm (3 ft) arc, the tree can be trimmed using the same tree as a work platform.

If part of the tree is located closer than and up to the 91 cm (3 ft) arc to 30 cm (1 ft) below horizontal plane of the conductor, the tree is considered energized and cannot be climbed. The conductor shall be covered and the tree trimmer must maintain Minimum Approach Distances. If a worker can be isolated (Minimum Approach Distances) from the tree, trees in contact with the subject tree, the pole, guys and neutral messenger wires or other points of non-equal-potential the tree may be trimmed using live line tools and progressive trimming techniques and by cutting the branches in 15cm (6 in) increments with the addition of cover-up.

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Care must be taken to avoid simultaneously contacting the primary conductor with the pruning head and tree branches or pole line hardware.

A 5 m (16.4 ft) radial distance shall be maintained from the subject tree by all ground workers during this procedure.

An alternate approach is to de-energize and ground.

4.1.3 *Trees / Branches Located Above the Energized Conductor or Energized Equipment*

If all parts of the tree are located outside the 91 cm (3 ft) arc to the horizontal plane of any energized primary conductor, the tree can be trimmed from a ladder or the subject tree.

If part of the tree is located closer than the 91 cm (3 ft) arc to the horizontal plane of any energized conductor, the tree must be trimmed by cutting the branch in 15cm (6 in) increments from an insulated aerial device with the addition of cover-up. If a worker can be isolated (Minimum Approach Distances) from the tree, trees in contact with the subject tree, the pole, guys and neutral messenger wires or other points of non-equal-potential the tree may be trimmed using live line tools, progressive trimming techniques and by cutting the branch in 15cm (6 in) increments with the addition of cover-up.

A 5 m (16.4 ft) radial distance shall be maintained from the subject tree by all ground workers during this procedure.

An alternate approach is to de-energize and ground.

4.2 *Trees Located Away From Pole*

In preparation for the Work:

- Set imaginary horizontal and vertical lines to the plane of energized conductor.
- Set imaginary arc to horizontal plane of the energized conductor.
- Apply conductor wind sway to Minimum Approach Distances.

If all parts of the tree are located outside the 91 cm (3 ft) arc to the imaginary horizontal or vertical plane of any energized primary conductor, the tree can be trimmed from a ladder or the subject tree.

If part of the tree is located closer than the 91 cm (3 ft) arc to the imaginary horizontal or vertical plane of any energized conductor, the tree must be trimmed by cutting the branch in 91 cm (3 ft) increments. If a worker can be isolated

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(Minimum Approach Distances) from the tree, trees in contact with the subject tree, the pole, guys and neutral messenger wires or other points of non-equal-potential the tree may be trimmed using live line tools, progressive trimming techniques and by cutting the branch in 15cm (6 in) increments. Cover-up is discretionary at this location.

Care must be taken to avoid simultaneously contacting the primary conductor with the pruning head and tree branches or pole line hardware.

A 5 m (16.4 ft) radial distance shall be maintained from the subject tree by all ground workers during this procedure.

An alternate approach is to de-energize and ground.

5. Proper Tree Trimming Methods and Workmanship

Proper arboriculture practices are required and a thorough knowledge and professional application of the recognized techniques is mandatory. The attached Figures 9 to 20 provide additional information.

Natural trimming is the technique that shall be employed. With natural trimming, branches are cut back to a lateral of at least 1/3 the size of the branch being cut. Laterals are cut back to main branches. In all cases, proper trimming methods and proper trimming cuts are used.

The objectives of natural trimming are to:

- Reduce or remove any limbs, or branches that might contact Newfoundland Power lines.
- Minimize damage to the tree, and as much as possible, retain a natural appearance and form.

Natural trimming employs drop crotch pruning techniques. Drop crotch pruning is the practice of proper trimming methods when trimming a tree. It involves properly applied methods of cutting, properly made trimming cuts, and reduction of leaders and laterals to either the main stem or an appropriate crotch. Trimming to influence the direction of future growth (directional pruning) is also a part of this practice.

Spurs or other similar climbing devices shall not be used for pruning operations on live trees.

Live limbs shall be pruned so as to affect the natural shape and the appearance of the tree to a minimum.

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On any branch where greater than one half of leaf bearing stems are to be removed, the whole branch should be cut back to a major branch or stem.

The removal of branches or other parts of a tree, shall be done in a manner which will not cause hanging branches, improper pruner or saw cuts, stripping of the bark at pruner or saw cuts or tree mutilation.

When cutting a stem, cut close to and on an angle with the branch bark ridge. The remaining branch should be at least 1/3 the diameter of the trunk.

5.1 Collar Cuts

All cuts shall be made just outside the branch collar leaving as small a stub as possible to minimize the growth of suckers and to assure proper healing.

When removing a lateral branch from a stem or limb or when reducing an upright to a lateral, the final cut must be made at the correct place in order to minimize damage to the tree and prevent re-sprouting. These "cut lines" are indicated by the branch collar and by the branch bark ridge. Proper cuts will minimize decay and promote closure of the cut.

When removing a branch, cut as close as possible to the branch collar. Do not injure or remove the collar, as injury will destroy a major defence system of the tree and also lead to excessive sprouting.

There is no set angle for a correct cut. The size and shape of the collar determine the position and angle of the cut. Always cut at nodes (where branches meet other branches or the trunk); making cuts between nodes (internodal) leads to excessive sprouting and to cracks and rot. Cracks and rot are major causes of branch and trunk failure.

When branches are trimmed properly, rings or "doughnuts" of living tissue will form around the cut after one growing season. Incomplete rings of tissue indicate improper cuts and decay may increase as a result.

Prior to limb removal, consideration must be given to the exact position of the cut, the size of the leader required to take the sap flow and overall balance between the reduced top and the root system.

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5.2 Pruners

Pruners are to be used for finishing, cleaning up and pruning in the immediate vicinity of the line.

Limbs over or so close to a conductor that a climber's movement would bring the limbs in contact with the conductor, shall be cut free with insulated pole pruners.

5.3 Drop Cut

The bark of trees being pruned shall be protected from mechanical injury. Only recognized arboricultural techniques shall be used.

Limbs that are not removed with a pruner, shall be removed from a tree using the "drop cut" method followed by a flush cut. The drop cut and the flush cut permits removal without needless injury and promotes faster healing.

The drop cut shall be used on limbs that are leaning rather than vertical. The following procedures shall apply:

- About 30 to 45 cm (12 to 18 in) from where the flush cut will be made, start at the bottom and saw upwards until the wood starts to bind the saw.
- On the upper side of the limb and beyond the undercut, a distance equal to the diameter of the limb, saw until the limb breaks free.

When cutting leaders or laterals of more than 25 mm (1 in), three cuts need to be made in order to ensure that bark does not rip and wood does not split. The first cut is a notch.

5.4 Hinge Cut

Heavy limbs which would damage property below the tree or the tree itself, when being removed, shall be lowered with ropes or sectioned into smaller pieces and dropped onto a protective surface where deemed necessary.

The hinge cut shall be used on limbs that must be hinged away from conductors before they can be cut off completely and lowered safely. The hinge cut may be used to swing branches to the side by making the cut on the side opposite the direction of swing.

Hinge cuts shall be made 45 cm (18 in) or more from the final or flush cut due to the tearing effect they have on wood and bark.

Hinge cuts on overhanging limbs are made on the underside. If the limb is too large to be manhandled, a guide rope should be used to hinge the limb upward and prevent the saw from binding.

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5.5 Stubs

Do not leave stubs. Stubs are entry points for rot-causing fungi. Do not paint trimming cuts. Wound dressings do not stop rot.

Stubs and/or dead limbs remaining from previous tree pruning operations and within the tree trimming clearances indicated herein shall be removed, as well as stubs on the line side of the tree resulting from storm damage.

5.6 Directional Trimming

Directional trimming is the practice of removing appropriate limbs or laterals to encourage the tree or limb to grow in a desired direction. The use of proper cuts is essential to make this practice successful.

Proper cuts will minimize re-sprouting and encourage directional growth. Improper (internodal cuts) will encourage re-sprouting and defeat the directional trimming.

All pruning shall be done so as to encourage future growth away from the conductors and to allow the training of the tree canopy around the conductors to provide the specified tree trimming clearances.

6. Types of Tree Trimming

When trimming operations are undertaken, proper arboriculture trimming practices must be applied in order to optimize long-term clearances. Proper trimming methods will lengthen the control cycle and optimize desirable tree form. It will also influence the direction of branch growth so trees can be directed away from conductors.

Where permission to remove the tree can not be obtained, the types of trimming employed will be crown reduction and crown raising. If circumstances warrant, with the approval of the Owner's Representative, crown cleaning may be applied. All types of trimming use drop-crotch trimming techniques.

6.1 Crown Reduction

Crown reduction is simply the reduction of the crown of a tree to a smaller size. This involves cutting back leaders and laterals to an appropriate crotch where the stem remaining is no less than 1/3 the size of the portion of stem removed. Crown reduction also employs directional trimming practices. The smaller interior branches are usually left to provide form for the tree, along with adequate

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leaf area to sustain the tree. Crown reduction provides adequate clearance and minimizes re-growth. Directional trimming is employed to ensure re-growth is directed away from the lines.

In cases where removal is not possible, crown reduction using drop crotch trimming techniques is the correct procedure for trees growing both under and beside the lines.

Tall and weak trees such as poplars, balsam, fir, spruce, etc., which tower above the line, shall have their tops lowered as much as practicable. The drop crotch method shall be used so that the tree will not appear to have been cut off at a definite height.

6.2 Crown Reduction (Through Trimming)

Through trimming, a variation of crown reduction is used by utilities for deciduous trees when removal is not possible. It involves the removal of central leaders on trees growing under the lines, and the directional trimming of other branches to create a "V" in the center of the tree to provide clearance for lines to pass through the tree. Proper trimming is essential to minimize re-growth. Do not trim side branches that are growing away from the lines.

This specialized form of crown reduction uses proper trimming cuts to allow the lines to pass through the center of the canopy of the tree, and is only applied to deciduous trees where removal is not possible.

Crown pruning refers to pruning performed in the upper crown or branch spread of a tree. Crown pruning will be performed in the following situations:

- Trees growing up under the conductors where its normal growth will contact the line.
- Trees growing beside the line where dead wood or broken limbs present a hazard to the line.
- Tall and spindly trees leaning toward the line.

6.3 Crown Raising (Side Trimming and Under Trimming)

In crown raising, lower lateral branches are removed to increase the branch to ground clearance. All laterals are removed at the main stem or limb.

In cases where the tree is a mature conifer and long lower limbs shade the right-of-way, the lower limbs may be left. Deciduous trees should have all lower branches removed. An exception is when the branch diameter exceeds 35% of the diameter of the trunk and may cause a large wound. In all cases, clearance requirements must be met.

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6.3.1 Side Trimming

Side trimming is a variation of crown raising in which the canopy of the tree is removed on one side, giving clearance for the lines from ground to sky.

In cases where older mature trees which have previously been trimmed and large lateral branches have been left growing under the conductors, side trimming from the lower lateral to sky may be acceptable if:

- Removal of the lateral will significantly damage the tree
- Growth from the lateral will not grow into Newfoundland Power lines.

Side trimming is used for trees growing immediately adjacent to the lines where limbs are growing into the conductors or are overhanging the conductors and could sag into them when carrying the additional weight of snow or ice.

Side trimming is acceptable only where removal is not possible. This procedure results in an unbalanced tree; therefore, removal is the preferred alternative.

Limbs on the opposite side of the tree from the conductor may need to be removed to retain the symmetrical appearance of the tree if requested by the property owner or the Owner's Representative. Branches that are left on the trunk shall be large enough to maintain life without appearing stubby. Where this is not possible, the entire limb should be removed at the trunk.

Limbs growing up into line conductor from the side of a tree or limbs grow parallel with the conductors where they could sway or blow into the conductors, shall be removed if practicable; otherwise, they shall be shortened.

6.3.2 Under Trimming

Under trimming is a variation of crown raising, used with very tall trees, in which the canopy of the tree is raised to a level that provides adequate clearance above the conductors. It refers to pruning of the under or lower part of the crown while the upper crown is either left intact or thinned. Under trimming is acceptable with some species where removal is not possible.

Such pruning shall be done when the crown over tops the line being cleared. Under pruning will be subject to the following conditions:

- Limbs above line level shall be shortened by pruning to ensure that they will clear the line when cut free.
- When using a pruner, the cut portions shall be short enough to pass between the conductors.

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Under trimming leaves overhanging branches and a lop-sided tree, and is not a recommended approach. This trimming method is acceptable for cedars and other stable branched species, but should not be applied to alders, poplars or Douglas fir. Under trimming is usually used for large trees beside the right-of-way, when removal or side trimming is inappropriate or uneconomical.

Overhanging limbs shall be removed, if practicable; otherwise they shall be shortened sufficiently to prevent their contact with the line under the additional weight of snow or ice.

6.4 Crown Cleaning

Crown cleaning involves using proper trimming methods to remove deadwood, damaged or diseased limbs, and rubbing or crossing branches from the crown. Inappropriate interior branches are generally removed at the same time. Dead, crossed or rubbing limbs will break and fall far more often than will live healthy limbs.

Crown cleaning is generally done on larger mature trees and substantially reduces its hazard potential and improves the health of the tree. Deadwood, which is level with or above the conductors, in trees immediately adjacent to power lines shall be removed. Also, dead limbs that might be blown into the line shall be removed.

Large dead limbs must not be broken off but removed by sawing. All saw cuts must be made flush immediately outside the branch collar. Smaller limbs that can fall through conductors may be cut free with pruners or pulled out.

Crown cleaning of dead limbs or branches should be done, as approved by the Owner's Representative, on any large tree adjacent to Newfoundland Power lines.

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7. Full Shaping of Trees

Full shaping of trees for aesthetic reasons must only be performed at the request of the Owner's Representative.

This applies for:

- The removal or shortening of long or straggly branches at the side of trees.
- The removal or shortening of branches at the "backs" of trees to restore balance or symmetry to the tree which may have suffered as the result of pruning to obtain clearance from power lines. Care must be taken to avoid a girdling effect on the tree by removing too many adjacent branches.
- The removal or shortening of branches to eliminate or reduce a gouged effect as the result of limb shortening or removal near power line conductors.
- The removal or shortening of branches in the crown of the tree. In such cases the following will apply:
 - Sufficient growth must be left on the cut back branches to keep them alive and healthy.
 - Hedge pruning or excessive clipping with pole pruners shall be avoided.
 - "V", "U", or "L" shaped openings in crowns shall be avoided whenever practical, and if necessary, they shall be kept to a minimum consistent with the species of tree involved.

8. Unacceptable Tree Trimming Practices

Previously, trees near lines have been trimmed using the methods called "heading back", "rounding over" or "topping". These methods produce multiple, rapid-growing, upright water shoots that require increased trimming work while shortening the control cycle. These methods are not acceptable, except where specifically approved by the Owner's Representative.

The following methods of vegetation control are not acceptable.

- Heading Back
- Rounding Over
- Topping
- Stubs

These methods encourage vigorous re-growth, create weak branch attachments to the tree, and promote decay that may lead to tree failure.

PART F – WORK METHODS

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Application of proper trimming methods is required in all cases. Improper trimming is not acceptable even if minimum required clearance is obtained. Drop crotch pruning must be employed.

Stubs or inter-nodal cuts are not acceptable. These promote rapid re-growth and increase decay.

Except in special circumstances, when side trimming or under trimming is done, all branches or limbs below the conductors must be removed. Stubs are unacceptable; use proper flush cuts only.

8.1 Pollarding

Pollarding is an ornamental pruning technique that requires the annual trimming back of all new shoots. New growth is headed back every year to form a massive callused knob at the branch terminals. Vigorous re-sprouting occurs every spring.

Pollarding is not an acceptable method to be employed by Newfoundland Power or Newfoundland Power contractors.

9. Limb and Tree Disposal

Prior to pruning or cutting trees, a proper plan for the disposal of debris shall be determined. In cases involving private property, the property owner may request action particular to his situation. Otherwise all branches, limbs, and brush are to be chipped on the Project Site. Approved dumping sites shall be used for chips and debris too large for the chipper.

No branches, limbs, brush, etc. shall be piled or stored on sidewalks, street shoulders, public walkways, etc. unless the Owner's Representative has given permission.

PART G – COMPLETION

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1. Reporting Work Completed

The Contractor will report the number of trees trimmed or removed to the Owner's Representative on a weekly basis and include the distribution line (feeder) and location (civic address) of the trimmed trees. This report shall closely follow any tables contained in the attached Schedule of Prices and any related attachments to the Schedule.

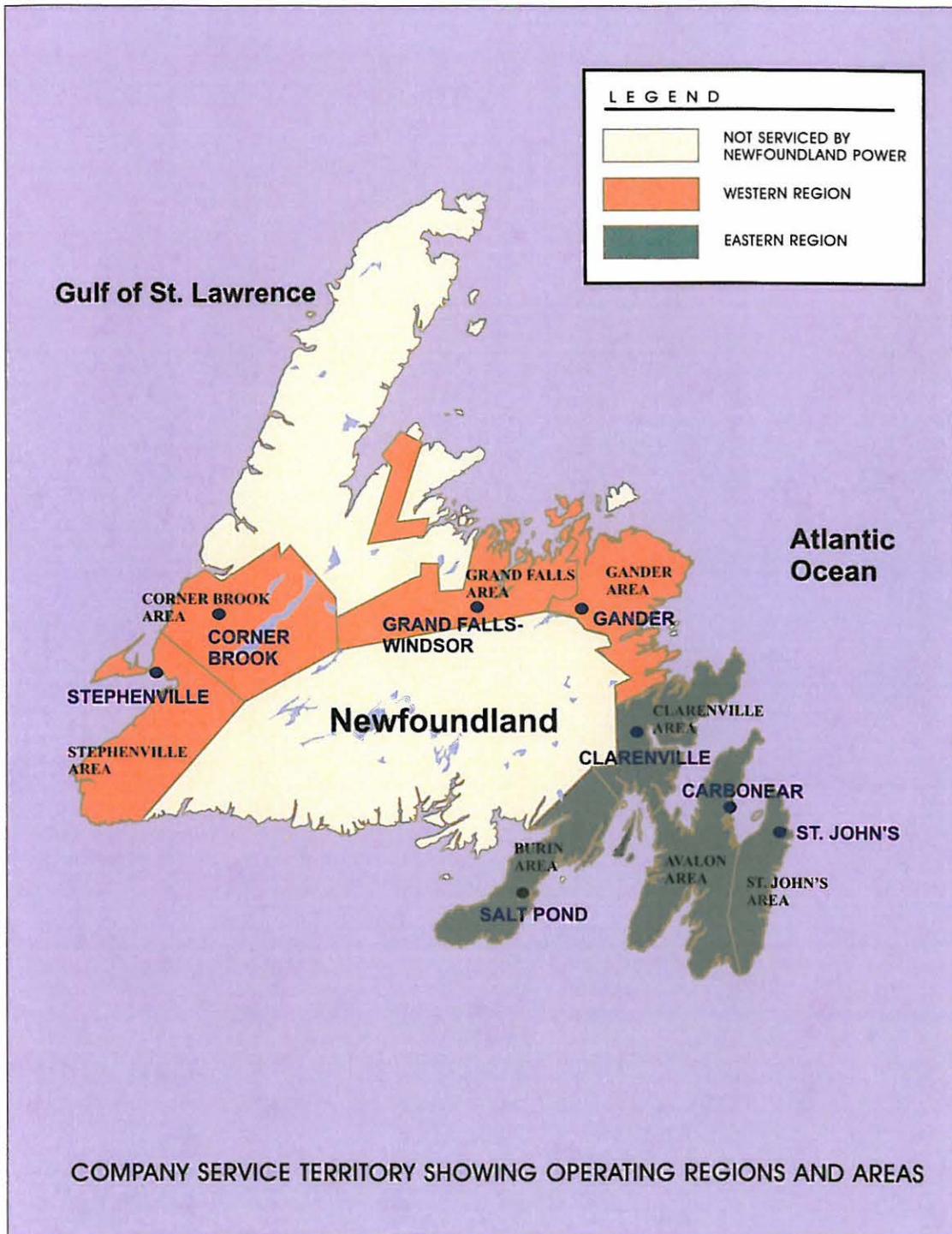
2. Measurement for Payment

The Owner, at its discretion, will inspect the Work completed and confirm field measurements prior to payment of any invoice.

Payment for Work may be withheld if the inspection reveals that the Work completed does not meet this Specification. The Contractor will be notified by the Owner, in writing, of any corrective action required. Any and all corrective action shall be completed in a timely manner as agreed to by the Contractor and the Owner's Representative. The Contractor shall notify the Owner, in writing, when the corrective action is completed. Payment will be made when the Contractor remedies the defects as verified by the Owner's Representative.

In the event of a disagreement between the Owner's Representative and the Contractor regarding the field measurements of work complete, the decision of the Owner's Representative will be final.

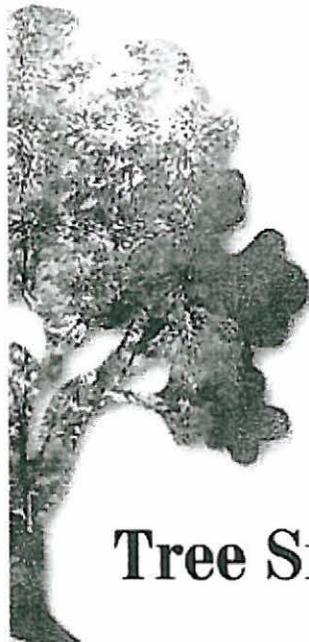
Attachment 1
Map of Company Service Territory
Showing Operating Regions and Areas



The Baie Verte Peninsula is included in the Grand Falls Area.

Attachment 2
Sample Communications Material

Tree Smart Brochure



Tree Smart

*Newfoundland Power's
Vegetation Management
Program*

Tree Trimming Notice

Newfoundland Power wishes to advise that our contractors will be tree trimming in your neighbourhood over the next few weeks.

We understand how important trees are to customers and care about the beauty of our communities and the environment. However, we also have an obligation to provide safe, reliable, low-cost electricity to more than 228,000 customers 365 days a year.

When trees grow too close to power lines, it creates public safety and reliability risks. Our goal is to identify trees that pose a risk and trim them before safety or reliability problems can occur.

We employ contractors whose skilled, professional crews trim trees to provide enough clearance between branches and power lines for safe and reliable electricity service with a minimum of inconvenience to you.

Never prune or trim trees near power lines yourself. Contact with a high-voltage power line can result in serious injury or death.

Thank you for your cooperation while we work to enhance safety and reliability for you. If you wish to discuss this matter further, please contact us at 1-800-663-2802.



October 2006

Sorry we missed you

Newfoundland Power wishes to advise that our contractors were in your neighborhood today and carried out tree trimming on your property.

We attempted to contact you on three separate occasions, but were unsuccessful in reaching you.

Some of the trees on your property required trimming, as they were in close proximity to power lines, and posed safety and reliability risks.

Our skilled, professional contractors exercised due care and consideration when trimming your trees to provide enough clearance between branches and power lines for safe and reliable electricity service with a minimum of inconvenience to you.

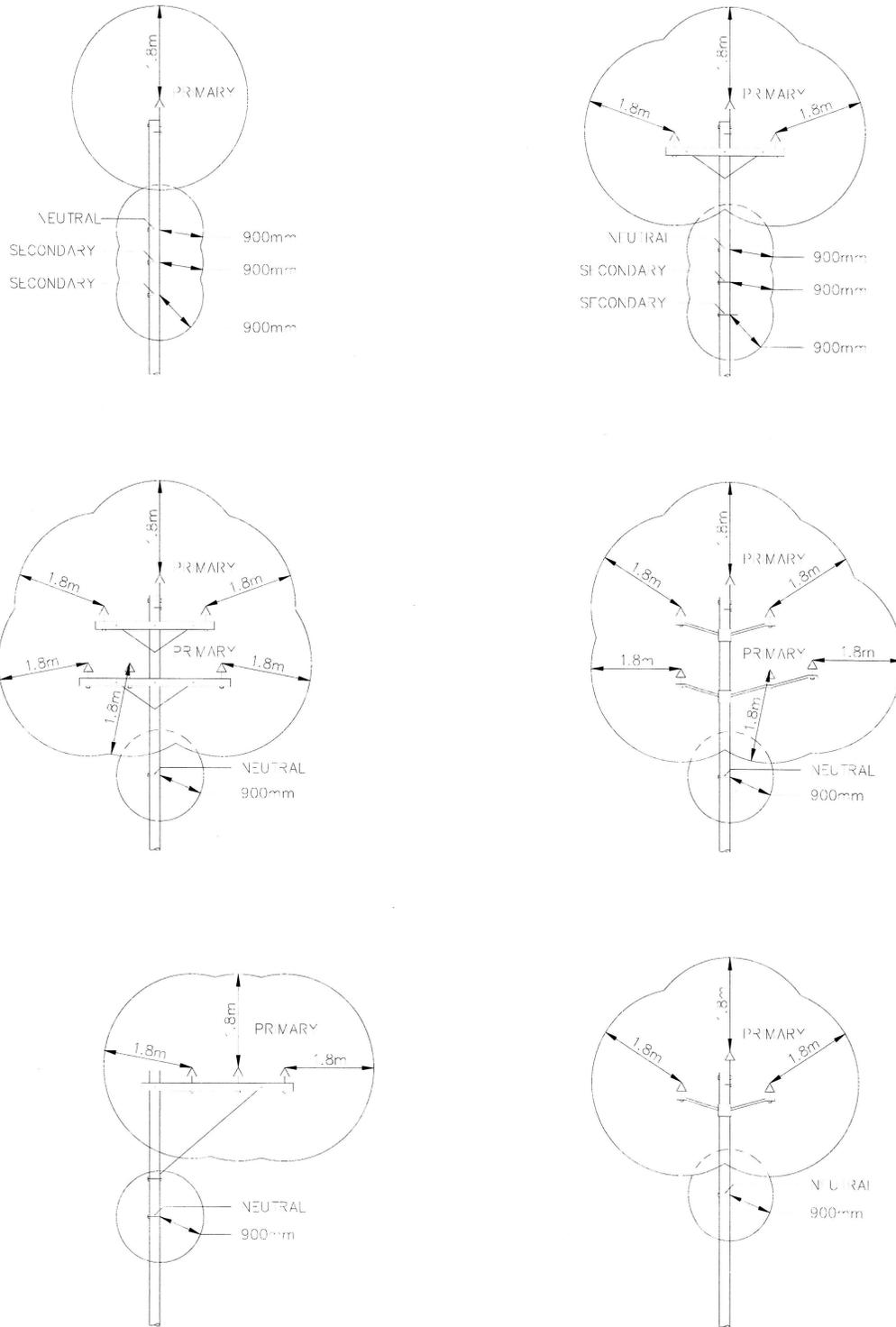
Never prune or trim trees near power lines. Contact with a high-voltage power line can result in serious injury or death.

Thank you for your cooperation while we work to enhance safety and reliability for you. If you wish to discuss this matter further, please contact us at 1-800-663-2802.

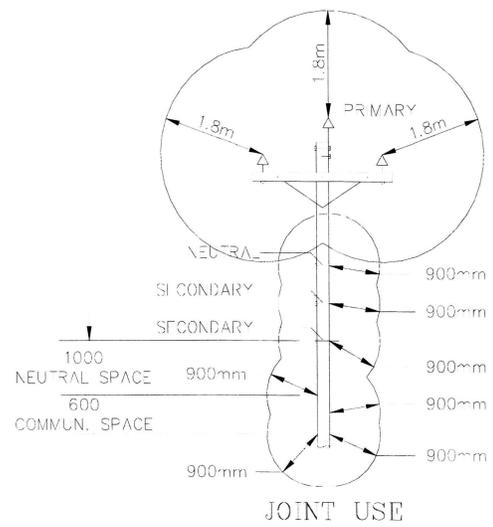
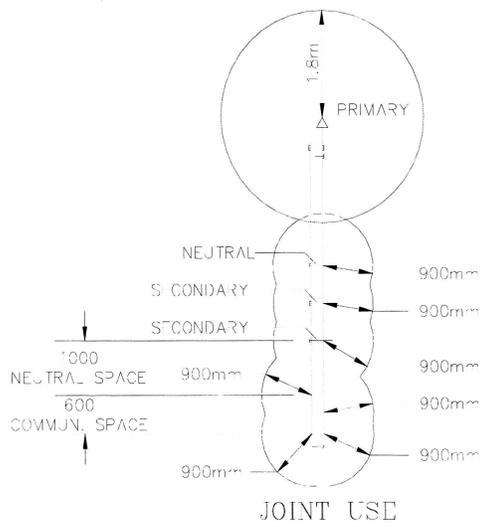
Attachment 3
Customer Contact Record Form

Attachment 4
Live Line Tool Testing Record Form

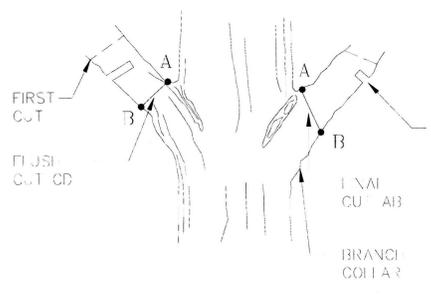
Attachment 5
Figures



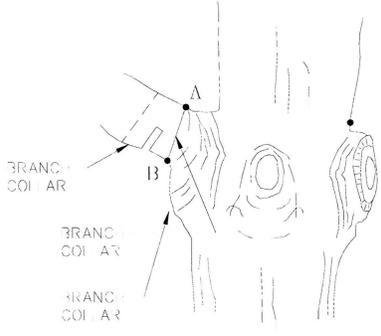
Figs 1 to 6



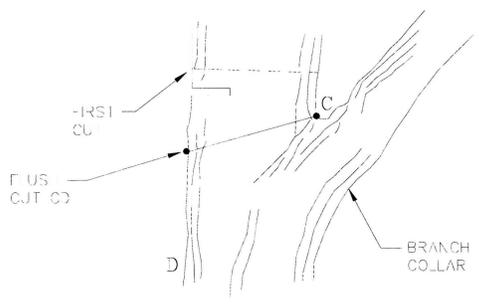
Figs 7 to 8



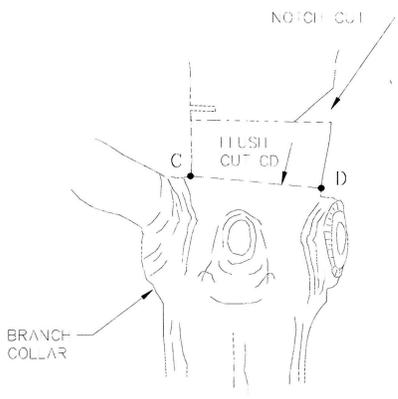
Pruning Deciduous



Pruning Conifers

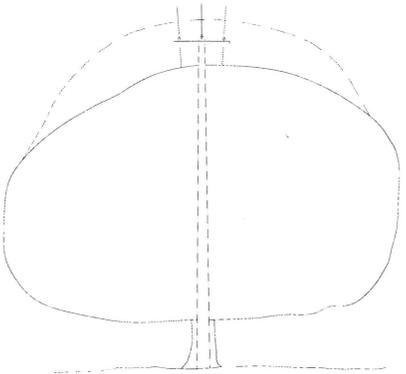


Topping Deciduous

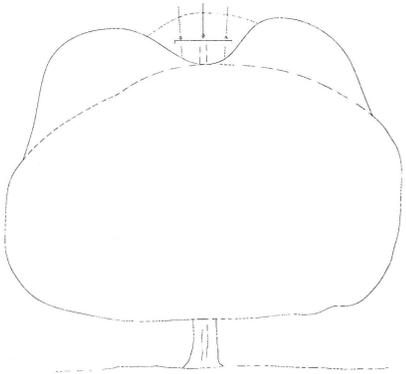


Topping Conifers

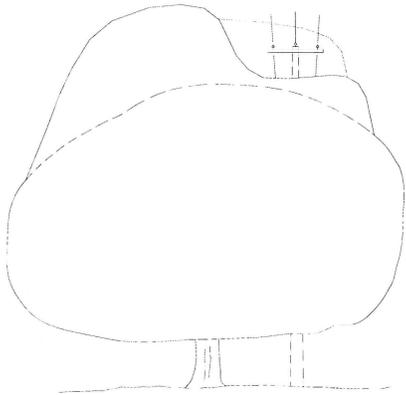
Correct Pruning Techniques
Fig. 9



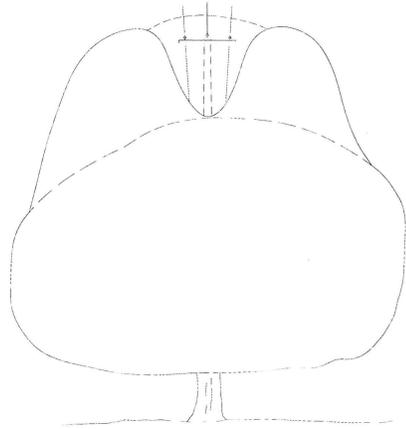
Full Shape



"U" Shaped

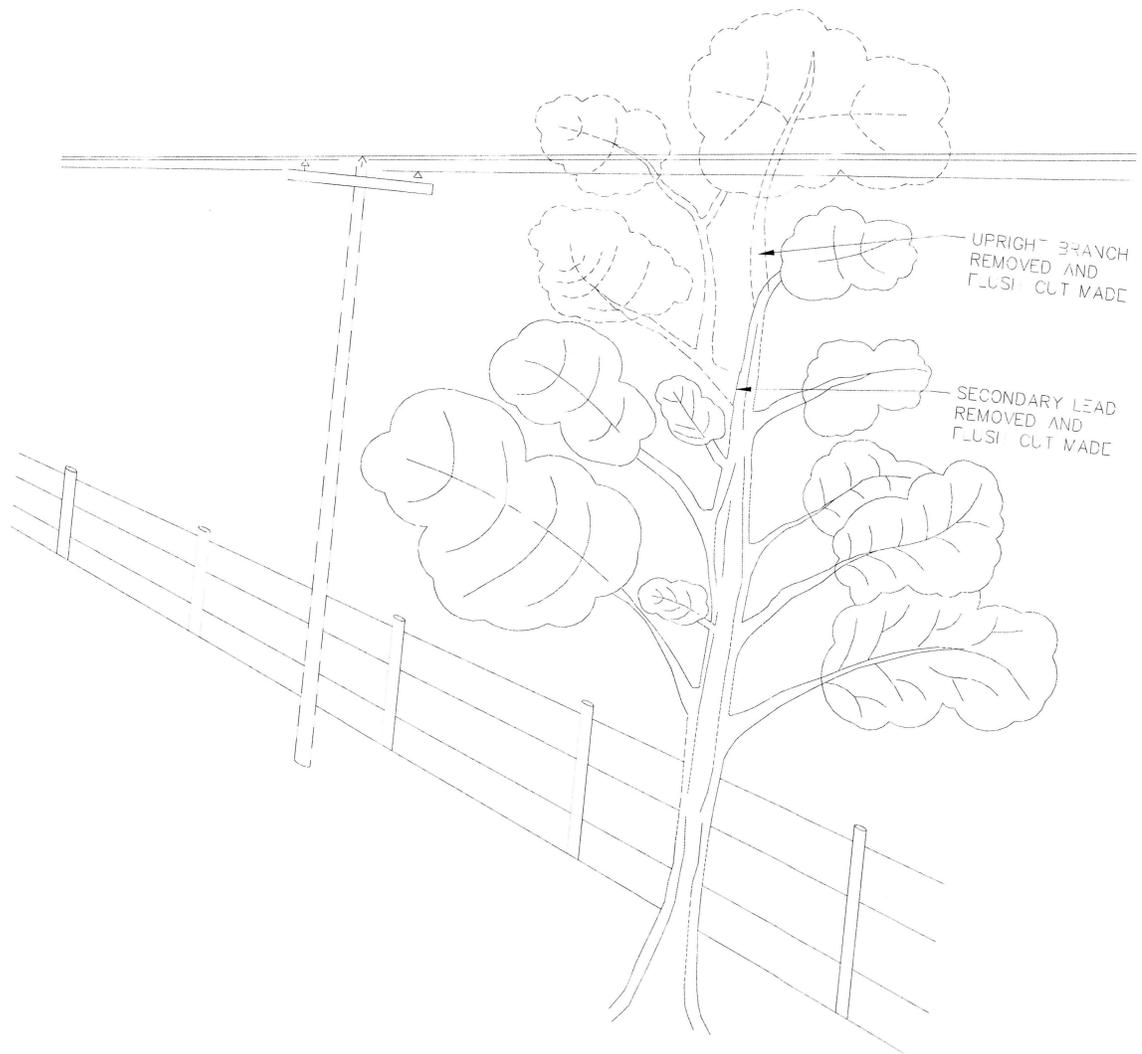


"L" Shaped



"V" Shaped

Crown Pruning
Fig. 10



Drop Crotch Method Of Crown Pruning
Fig. 11

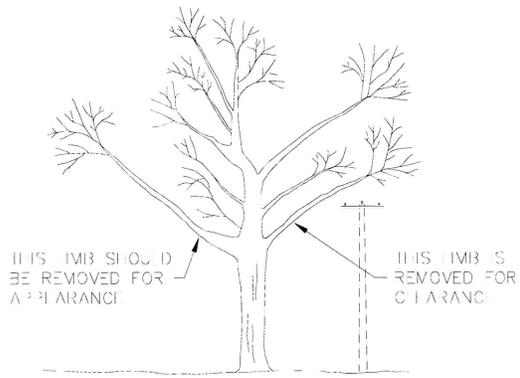
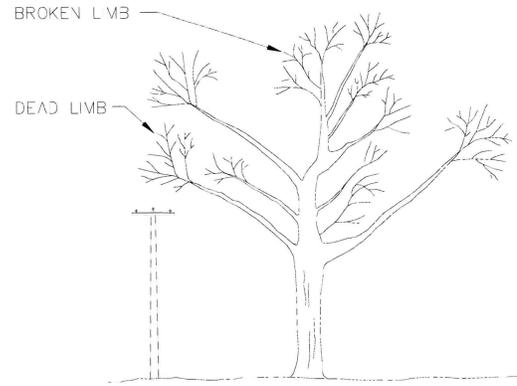
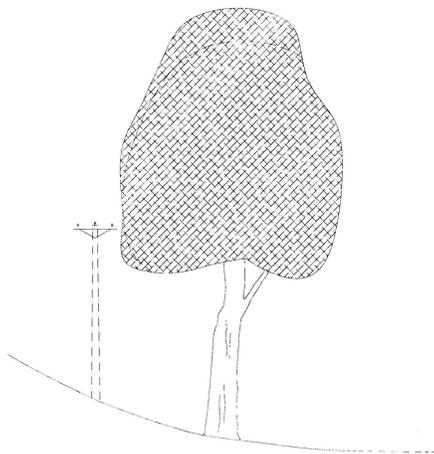


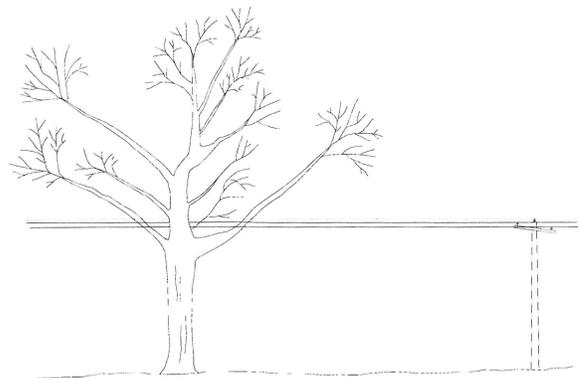
Fig. 12



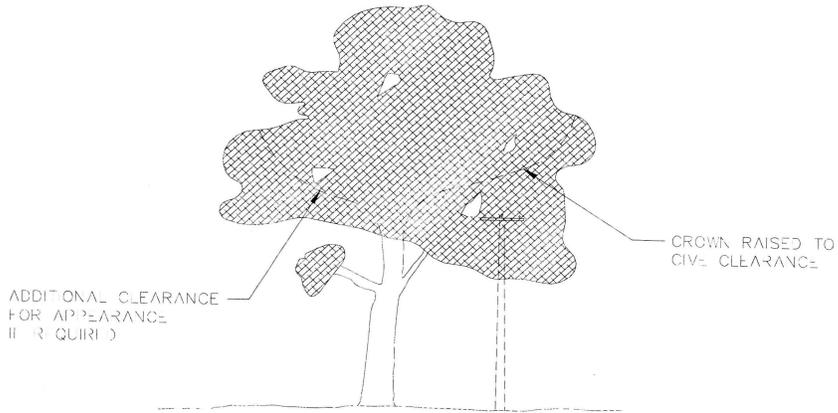
Deadwood Pruning
Fig. 13



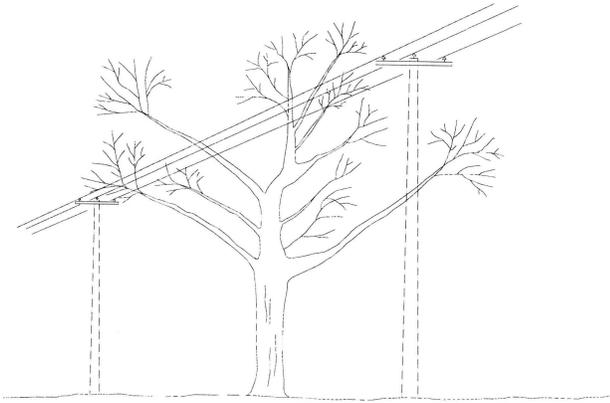
Shaping if Required
Fig. 14



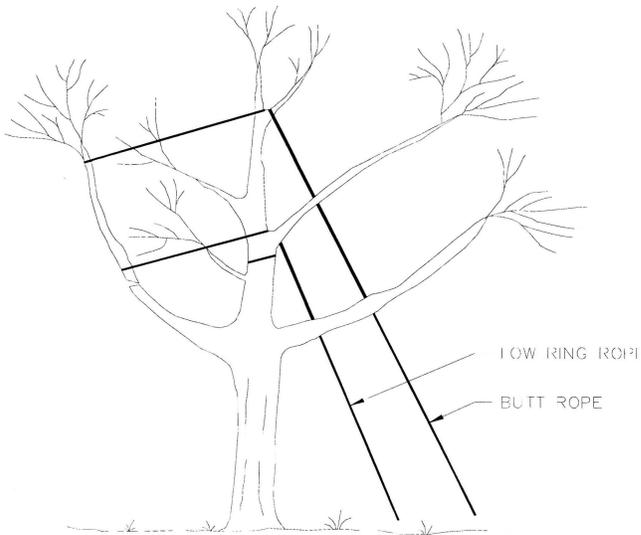
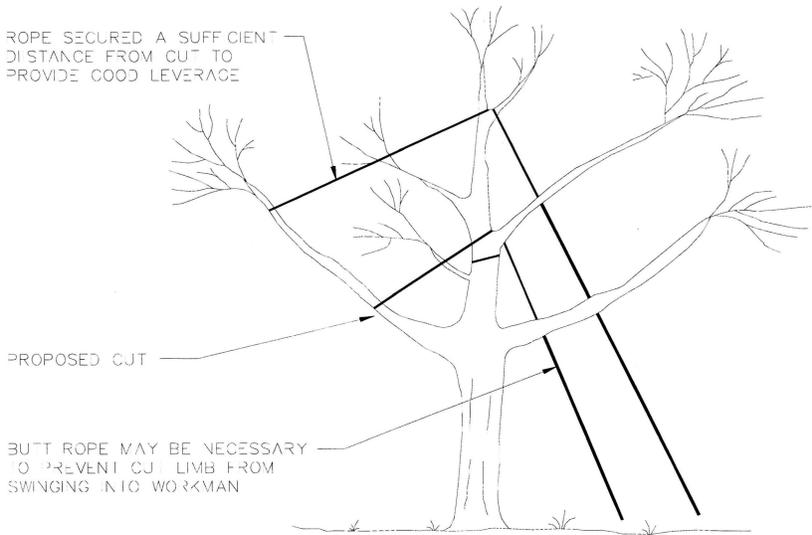
Side Pruning
Fig. 15



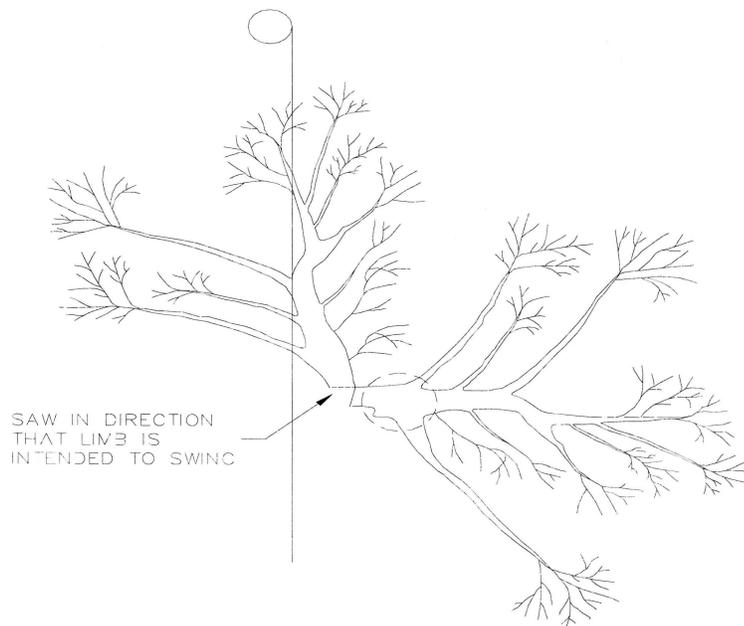
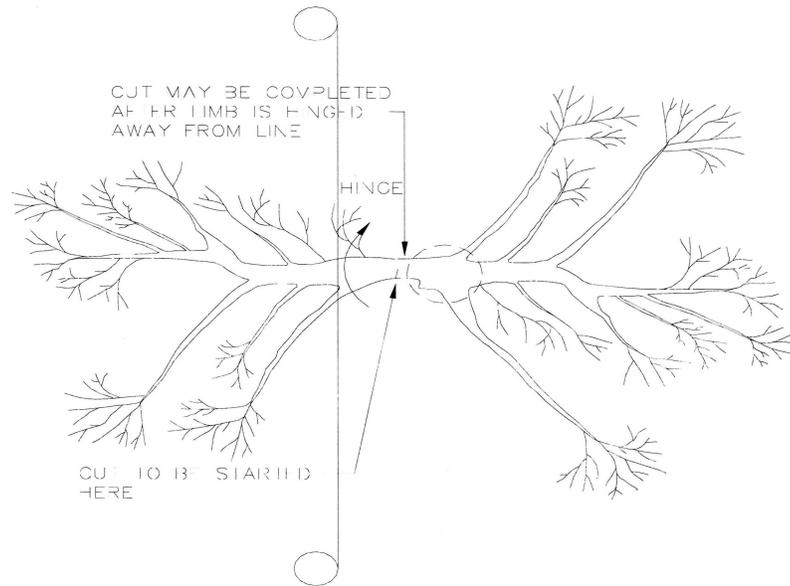
Under Pruning
Fig. 16



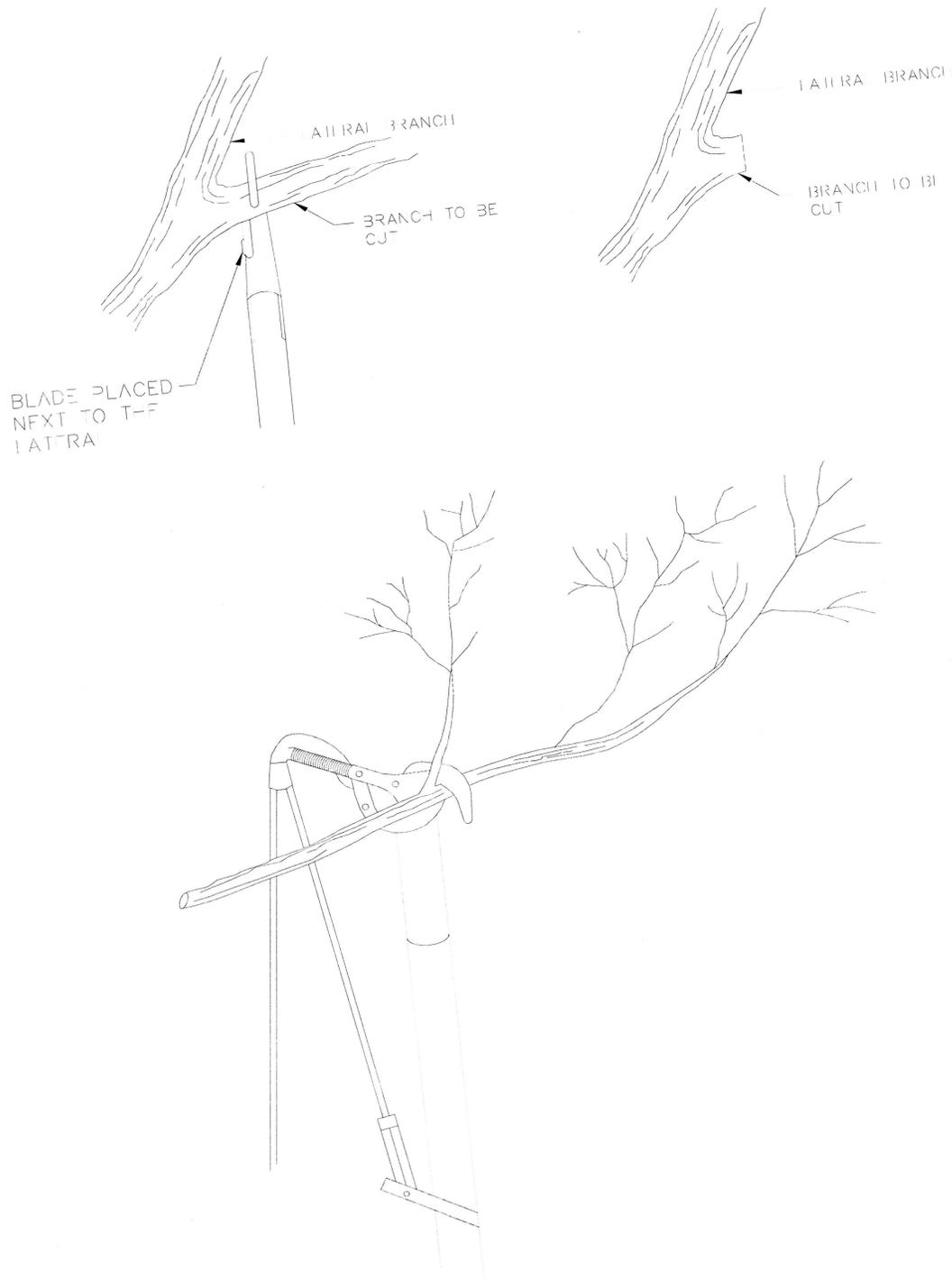
Through Trimming
Fig. 17



Hinge Cutting
Fig. 18



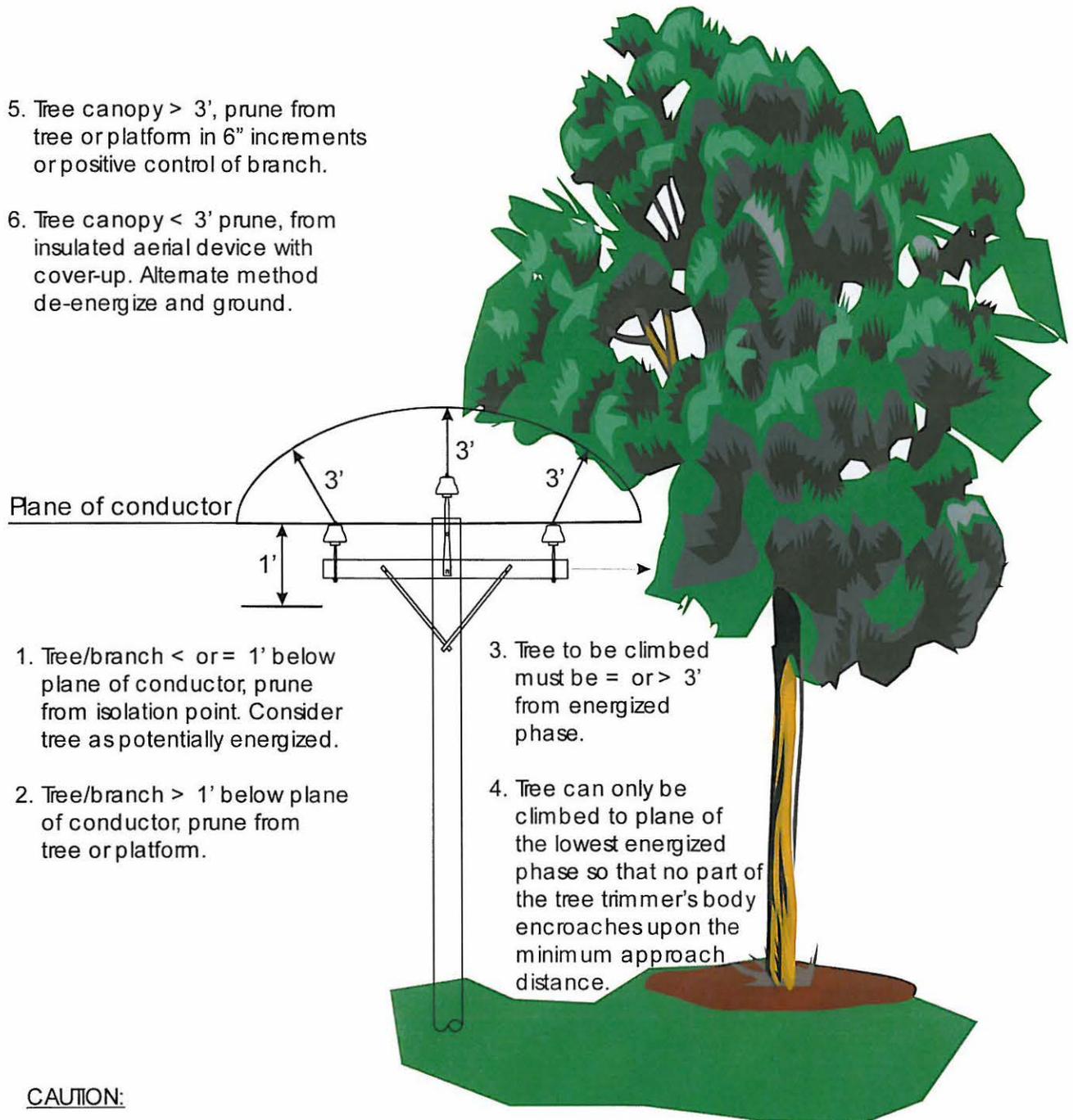
Hinge Cutting
Fig. 19



Pruner Cuts
Fig. 20

Attachment 6
Tree Trimming in Proximity of Energized Power Lines

5. Tree canopy > 3', prune from tree or platform in 6" increments or positive control of branch.
6. Tree canopy < 3' prune, from insulated aerial device with cover-up. Alternate method de-energize and ground.



CAUTION:

Tree/branch < 1' below/beside plane of conductor or < 3' in canopy be considered energized by arbourist.