

## CLEARING AND RIGHT-OF-WAY

### TABLE OF CONTENTS

- A. General
- B. Marking For Clearing
- C. Easement List and Special Instructions
- D. Clearing
- E. Tree Pruning & Special Tree Removal
- F. Seeding
- G. Fences and Gates
- H. Construction and Patrol Roads
- I. Culvert Installation
- J. Tower Islands
- K. Notifications and Complaints
- L. Herbicides
- Directional Tree Pruning - Procedure Details

---

#### A. GENERAL

1. This Section covers clearing of the right-of-way, installation of fences and gates, installation of construction roads, clean up and restoration of the right-of-way. All work shall be in accordance with COMPANY SPECIFICATIONS SECTION 15100 "General Instructions", the detailed plans, and instructions detailed in this section.
2. ENVIRONMENTAL PROTECTION
  - a. The COMPANY has taken measures to select a transmission line route that will have minimal environmental impact and comply with applicable environmental laws and regulations. It is mandatory that the CONTRACTOR employ construction methods and techniques that will not cause unnecessary environmental impact.
  - b. The COMPANY will enforce ecologically sound construction practices by the CONTRACTOR to ensure public acceptance and minimal environmental impact and comply with environmental laws and regulations. Any unreasonable environmental impacts or potential noncompliance issue as determined by the ENVIRONMENTAL SERVICES DEPT. or appropriate regulatory agency, shall be noted and rectified at the Contractor's expense, to the satisfaction of the ENVIRONMENTAL SERVICES DEPT and/or the appropriate regulatory agency.
  - c. Archaeological Considerations: - Prior to construction, the corridor may be examined by archaeologists. Certain areas may be designated as areas of archaeological interest and will be shown on the drawings. The CONTRACTOR shall take precautions to ensure that these areas will not be disturbed, by either construction activities or scavenging by his personnel. If items or areas of possible archaeological interest are uncovered during construction, construction at that site shall be halted and the SUPERVISOR or INSPECTOR notified. Archaeologists will be called in to analyze the find. At their discretion, construction may either be continued or the design modified.

## CLEARING AND RIGHT-OF-WAY

- d. Waterway Protection:
  - (1) Machine clearing is not permitted within 25 feet of any stream bed or river crossing. Vegetation within 25 feet of the crossing must be hand cleared. All woody vegetation that has a normal mature height of greater than 12 ft., shall be cut as close to the ground line or water line as possible. Vegetation that has a mature height of **less than** 12 ft. should be left as a buffer.
  - (2) Blasting shall not be done in or near stream channels.
  - (3) Care shall be taken to avoid oil or chemical spills or other pollution while working in or near bodies of water. Oil and fuels near bodies of water where they can reasonably be expected to discharge to watercourses shall be diked so that any oil spilled can be retained until cleaned up. Any spills should be reported immediately to FPC.
- e. Maintenance of equipment shall not cause damage to the right-of-way. Crankcase and transmission fluids and coolants shall not be drained onto the right-of-way or any FPC property. If a release occurs, the CONTRACTOR shall remediate affected area to the satisfaction of the ENVIRONMENTAL SERVICES DEPT and/or the appropriate regulatory agency.
- f. Care shall be taken not to disturb the nests of any migratory birds. Any such nests encountered shall be brought to the immediate attention of the SUPERVISOR or INSPECTOR.
- g. Threatened and endangered species are to be protected at all times on the Right-of-Way. Any species encountered should be reported to the SUPERVISOR or INSPECTOR and the ENVIRONMENTAL SERVICES DEPT.
- h. Herbicide use - ONLY EPA and FPC approved herbicides shall be applied in accordance with label directions.

### B. MARKING FOR CLEARING

- 1. Unless otherwise indicated, all clearing limits shall be measured by the Contractor from the transmission line centerline or other reference provided by FPC.
- 2. Where right-of-way boundaries and/or clearing limits are marked by the company, they shall be marked on both sides of transmission line centerline by wood lathe and yellow ribbon approximately every **100** feet, where applicable as described in section D. Selective clearing of trees will be designated and marked as follows:

Removal: Yellow paint at chest level.

Trim: White ribbon and/or white paint at chest level.

## **CLEARING AND RIGHT-OF-WAY**

### **C. EASEMENT LIST AND SPECIAL INSTRUCTION**

1. An easement list, or equivalent clearing permission document, is included with the right-of-way clearing WORK ORDER.
2. All special instructions noted under “Remarks” column of easement list, or appended to easement list, shall be adhered to in strict Compliance with agreements made.
3. Any other special instructions are detailed in WORK ORDER and are to be strictly adhered to.
4. This section will include notes regarding sensitive property owners, special agreements made by FPC or any special instructions as provided by the engineer or others involved with the design.

### **D. CLEARING**

1. Right-of-way is to be completely cleared for total widths specified in WORK ORDER. Should this be not possible, special clearing instructions will be detailed in the WORK ORDER.
2. In upland areas, all trees (except citrus trees and those trees specifically referred to in easement list), stumps, palmetto, and underbrush shall be up-rooted using bull-dozing equipment, except as noted in the WORK ORDER. All holes resulting shall be refilled to average ground level.

Upland clearing is defined as removing all vegetation from “ground to sky” in the areas defined in the WORK ORDER. “Ground to sky” means no overhanging branches and no branches, or trees under the conductor. All branches will be pruned to the appropriate branch collar. For detail procedures refer to sheet 13 and 14 of this section. All required tree pruning shall conform to the latest approved edition of ANSI Z133 Safety Standards, ANSI A-300 Plant Maintenance, and OSHA 1910.269 as a minimum to assure safety and industry standards are maintained.

#### **TYPE A - Uplands Right-of-Way Clearing:**

Removal of all trees and brush in the width specified in the WORK ORDER and as measured by the clearing contractor. Stumps will be cut at ground line and treated with a herbicide as approved and identified in this specification. Where specified, stumps are to be ground a minimum of 6” below grade and backfilled with natural soil after removal of debris. All other stumps will be removed. Chipping material or debris may be spread up and down the right-of-way ( Max. depth of 6” ) as directed by the Inspector.

#### **TYPE B - Structure Work Areas in Uplands:**

Grubbing of all trees, brush and stumps in a limited area as specified in the WORK ORDER. Chipping material or debris may be spread up and down the right-of-way as directed by the inspector.

## **CLEARING AND RIGHT-OF-WAY**

3. In waters and wetland sections of the state, trees, stumps, and brush shall be cut, using low ground pressure equipment, to ground or to water level. All trees and debris are to be removed from the right-of-way and disposed of by the CONTRACTOR. Care shall be taken to prevent disruption of the root mat.

The Contractor will be responsible for complying with all state and federal regulations pertaining to clearing in all wetlands. Wetland areas will be cleared by the use of hand chain saws or mechanized equipment (low ground pressure) to cut the trees as close as possible to the soil surface or water line at time of clearing. The cut material will be removed from or spread along the wetland utilizing either low ground pressure equipment or temporary construction mats. Care must be taken at all times to minimize rutting and disturbing the root mat. No chipped material or brush may be placed in wetland areas, without direction from the ENVIRONMENTAL SERVICES DEPARTMENT.

**TYPE C** - Wetlands Right-of-Way Clearing shall consist of the removal of all trees with a mature height greater than 12' in the width specified in the WORK ORDER. Stumps will be treated in the wetland areas if the herbicide is EPA approved for wetland application.

**TYPE D** - Access and Structure Work Areas in Wetlands Structure work areas will be cleared to the ground, removal of stumps will be at the direction of the ENVIRONMENTAL SERVICES DEPARTMENT. Access through the wetlands will be cleared to the ground in a width specified in the WORK ORDER, including the removal of all stumps.

When necessary, danger trees outside the cleared right-of-way are to be cut to ground line. Danger tree requirements will be detailed as part of the special instructions in the WORK ORDER

**DANGER TREES ARE:** Trees outside the initially cleared right of way whose height plus five feet equals or exceeds the distance from the tree's base to the nearest conductor or a point on the ground directly underneath the nearest conductor. Identification details for " Danger Trees " refer to page 12 of this section.

5. Limbs, brush, stumps and debris may be piled and burned within the limits of the right-of-way with the appropriate STATE and COUNTY PERMITS. Extreme caution is to be exercised to prevent damage to adjacent property and to standing trees. **NO FIRES ARE TO BE LEFT UNATTENDED.** Where local ordinances prohibit burning, items described above are to be hauled away and disposed of at the nearest public dumping ground. Under no circumstances are brush, stumps, and debris to be buried within the right-of-way.

### **TREE PRUNING AND SPECIAL TREE REMOVAL**

1. This instruction covers requirements governing pruning of *Street trees and Yard trees* and individual tree removals on private property in urban or suburban areas, and on public rights-of-way. It also governs the removal of grove trees where line construction dictates the necessity for tree removal, such as at tower sites in citrus groves.

## **CLEARING AND RIGHT-OF-WAY**

2. PERMITS : Certain municipalities, counties, and the Department of Transportation have passed ordinances governing tree cutting, or require permits for such action. Evidence that proper permits, or permissions, have been obtained will be included in the WORK ORDER. This shall include any special instructions covering replacement of trees with other plant material in accordance with permit or ordinance requirements.
  
3. TREE PRUNING: When *Street tree or yard tree* pruning is required, the locations and quantities will be noted in easement list, WORK ORDER, and/or on drawings accompanying WORK ORDER, and will be specially marked in field. All required tree pruning shall conform to the latest approved edition of the following standards: ANSI Z133 Safety Standards, ANSI A300 Plant Maintenance, and OSHA 1910.269 as a minimum to assure safety and industry standards are maintained. All branches shall be cut at the appropriate branch collars. For detail procedures refer to sheet 13 and 14 of this section. (unless otherwise noted in the WORK ORDER.)

*STREET TREE* is any tree planted or maintained by a city or municipality (usually planted on road rights of way).

*YARD TREE* is any tree planted or maintained on private property or is located in a privately maintained area adjacent to a transmission line right of way.

4. TREE REMOVAL-RESIDENTIAL PROPERTY : Trees to be removed will be noted in the easement list, WORK ORDER, and/or drawings accompanying WORK ORDER, and will be specially marked in field. Extreme care must be exercised to avoid damage to buildings, lawns, shrubbery, walks and driveways. Stumps shall be removed (unless otherwise specified) by grinding to 6" below grade and resulting holes backfilled. All damage to property or grounds must be repaired to property owner's satisfaction. Municipal ordinance requirements, covered in E.2 above, shall be complied with.
  
5. TREE REMOVAL-PUBLIC RIGHTS-OF-WAY : Trees to be removed will be noted in WORK ORDER, and will be marked in field. Copies of any permits required, specific treatment instructions, and drawings per E.2 above shall be included in WORK ORDER. All stumps will be removed by grinding to 6" below grade (unless otherwise specified), holes backfilled, and right-of-way left in a condition satisfactory to the controlling agency's representative.
  
6. MANGROVE TRIMMING : The MANGROVE TRIMMING and PRESERVATION ACT allows an electrical utility company to trim mangrove trees in, or adjacent to, a public or private easement for the maintenance of existing lines or facilities, including substations, and provided it is conducted to avoid any unnecessary alteration of mangrove trees.

While there are no numeric restrictions, trimming activity should be limited to only the amount reasonably necessary for access and work areas. The act defines "trim" as to cut mangrove branches, twigs, limbs, and foliage, but does not mean to alter, by removing, defoliating, or destroying the mangroves. " In addition, any cut material must be removed from the area."

7. TREE REMOVAL-GROVES : Trees to be removed will be noted in WORK ORDER, in easement list, and on special tree removal drawings. They will also be marked in the field. Extreme care must be taken in removal work that no trees outside the removal perimeter be damaged. Special instructions as to grove entry, disease and parasite prevention, equipment cleaning, etc., noted in easement list or WORK ORDER are to be strictly complied with. Removed grove trees are to be disposed of in accordance with all local and state laws.

**CLEARING AND RIGHT-OF-WAY**

8. DISPOSAL OF TREES AND DEBRIS : All trees, stumps, limbs, and debris (unless otherwise specified) are to be hauled away from properties and parkways and disposed in an approved manner. Burning or burying of debris on properties or parkways will not be permitted.

F. SEEDING

1. When seeding is required on the line right-of-way, public rights-of-way, or private property, this requirement will be noted on the easement list, in permits, or in the WORK ORDER. Special instructions as to the type and extent of seeding will be contained in WORK ORDER.

G. FENCES AND FENCE GATES

1. EXISTING FENCES Fences are to be maintained at all times. Under no circumstance is a fence to be let down or cut without prior arrangement with the property owner. If fences are damaged, they shall be repaired and put in first class condition entirely acceptable to the owner. Repair work is to be accomplished at time of damage, or as soon thereafter as possible.
2. NEW FENCES When the easement list or WORK ORDER specifies a new fence it shall be installed as specified in the WORK ORDER.
3. EXISTING GATES Wherever feasible, access to right-of-way shall be through existing gates. With agreement of OWNER, a COMPANY lock shall be locked with the OWNER'S lock with a length of chain ( chain length to be a minimum of three (3) links ) this is to prevent lock out to owner's property and/or Right-of -way and allow use of gate independently by either party. Gates shall be closed immediately after each passage of COMPANY or CONTRACTOR-owned equipment.
4. NEW GATES New permanent locked gates are to be installed at locations specified in the WORK ORDER where existing gates do not allow suitable access. Fence gate installations will include a minimum 14' X 4 1/2' hog-proof drive gate, and shall be installed per STANDARD 11-3120 or 11-3121.

H. CONSTRUCTION AND PATROL ROADS

1. EXISTING ROADS Wherever feasible, access to right-of-way shall be over existing roads. These roads shall be maintained in a passable condition while COMPANY or Contractor's equipment is using road. Any improvement on an existing road needs to be reviewed by the Environmental Services Dept. to determine if any permits will be required. At close of construction, roads shall be left in a condition as good as they were in prior to construction.
2. NEW ROADS New roads shall be constructed so that the roadway is suitable for traversing by construction vehicles such as concrete mixer trucks. Any new roads constructed in wetland areas must comply with all applicable permits. ENVIRONMENTAL SERVICES DEPART. will work with the engineer to include these requirements as specific conditions in the work order. Where land conditions dictate the necessity of constructing either permanent or temporary roads, the following types of roads shall be constructed as specified in the WORK ORDER.

**CLEARING AND RIGHT-OF-WAY**

a. Type 1

A road 18 feet in top width, one-half the width on each side of the designated centerline.

- (1) Type 1 road is to consist of insitu material shaped and leveled to provide drainage and compacted to 90% of maximum theoretical density in accordance with ASTM D-1557.
- (2) Type 1 road will be used where the insitu material is adequate to support intended traffic as is or with only minor modifications.

b. Type 2

A sand/clay fill road 18 feet in top width, one-half the width on each side of the designated centerline. The depth shall be as specified on the plan profile drawings, but not less than two feet. The top one foot layer shall be the surface of the road and the types of materials shall be determined by their availability locally. Sugar sand or non-compactible sand is not acceptable as fill in the top one foot layer.

- (1) Type 2 road is to consist of imported fill shaped to provide drainage (provide a 3" crown), constructed with side slopes of 1:2 or as specified and compacted to 90% of maximum theoretical density in accordance with ASTM D-1557.
- (2) Type 2 road must be provided with a riding surface which could consist of a 1' layer of clayey sand, crushed stone, or shell.

c. Type 3

A rock fill road 18 feet in top width, one-half the width on each side of the designated centerline. The depth shall be as specified on the plan profile drawings. The rock shall be placed, shaped, and compacted with side slopes of 1:2 or as specified.

- (1) Type 3 road shall consist of pit rock and contain coarse and fine material so that it will readily compact, with a maximum of 40 percent sand. The road shall be compacted to 90% of maximum theoretical density in accordance with ASTM D-1557.
- (2) Type 3 road is to have a 3" crown and to be graded to promote drainage.

**CLEARING AND RIGHT-OF-WAY**d. Type 4

A sand/clay fill over Corduroy Road 18' in top width, one-half the width on each side of the designated centerline except at structure locations. At structure location corduroy shall not be placed at structure excavation locations. This type of road will be constructed in swamp areas with poor soil conditions. These areas are to be hand cut within six inches of the waterline and the debris disposed of by the CONTRACTOR. The trunks of trees that are found along and beside the proposed road shall be used for road corduroy. The trunks shall be cut to a length as wide as the specified road. Minimum acceptable diameter for these logs shall be five inches. These logs are to be laid side by side perpendicular to the centerline of the road and in a layer not to exceed 2.5 feet in depth. Excess logs are to be removed from the right-of-way and disposed of by the CONTRACTOR.

- (1) A sand/clay fill road with a three-inch crown at the centerline, and side slopes of 1:2 or as specified shall be built on top of the Corduroy road bed with a minimum depth of one foot of sand over the corduroy. The sand/clay fill shall be as specified for Type 2 roads.

e. Type 5

A coarse sand or fine crushed stone mixed with a small percentage of, and finally topped with a clean fine to sandy clayey soil placed on a road bed liner Typar Style 3401 or equal. The top of the road is to be 18' wide with slopes as called for on the construction permit drawings. Type 5 road is to be compacted to 90% of maximum theoretical density in accordance with ASTM D-1557. At structure locations, pads shall be constructed of the same material as the road in between the pads, and with a gradual slope to meet the road slope without any change in elevation. Fill areas shall have 3" crown to promote drainage. Preparations must be made for placement of Typar liner by:

- (1) Fill all holes and ruts where there is more than 6" grade change in 3 feet.
- (2) Roll out the Typar providing a three-foot lap minimum at the junctures of the individual sheets.

I. CULVERT INSTALLATION

1. Where specified in the WORK ORDER, install permanent culverts. All culvert installation shall be in accordance with all applicable environmental permits and have appropriate erosion control as approved by the ENVIRONMENTAL SERVICES DEPARTMENT. Installation of culverts shall be as follows or as outline in the work order.
  - a. Install conforming to manufacturer's recommendations.
  - b. Corrugated-metal culverts and coupling bands for permanent installation shall be galvanized or coated with bituminous coating as outlined in the work order.

## **CLEARING AND RIGHT-OF-WAY**

- c. Lift or roll culvert to protect coating. Do not drag over gravel or rock. Avoid striking rocks or hard objects when lowering into trench.
- d. Where bituminous coating is damaged, repair by applying trowel-grade Bitumastic prior to placing backfill.
- e. Install culvert with longitudinal laps at the side or quarter points, and with inside circumferential laps pointing downstream.
- f. Install lower portion of two-piece connecting band before positioning succeeding culvert length. Make sure corrugations of band and culvert sections line up.
- g. Attach end sections with bolted coupling bands.
- h. Alignment shall follow the channel of the waterway.
- i. Prepare the ground surface to provide uniform bearing.
- j. Set the inlet slightly below ground level. Set the outlet slightly above ground level.
- k. Fill for permanent pipe installation shall be granular fill as specified for Type 2 road.
- l. The fill shall be carefully and evenly tamped on all sides of the pipe. Depth of fill over the pipe shall be a minimum of 1/2 the pipe diameter, but not less than 12 inches.

### **J. TOWER ISLANDS**

- 1. This instruction covers the general requirements for constructing tower islands in wet or flooded areas of right-of-way to raise ground level above water level when the WORK ORDER specifies island installation. All tower island installation shall be in accordance with all applicable environmental permits and have appropriate erosion control as approved by the ENVIRONMENTAL SERVICES DEPARTMENT.
- 2. The specific dimensions of islands to be installed will be detailed in the WORK ORDER and on drawings. Grades shall be staked in field.
- 3. Fill required for islands shall be obtained from outer 30 feet of right-of-way adjacent to structure location, unless otherwise noted in WORK ORDER or easement list. Cuts are to be limited to 3 feet in depth, sloped at the sides and are to be parallel to right-of-way.
- 4. Only clean fill, free from muck, roots, and debris, is to be used for islands. Any muck is to be pushed back into borrow areas. Roots and debris are to be burned with other materials from clearing operations. Should local ordinances prohibit burning, roots and debris shall be hauled away and disposed of at the nearest public dumping ground.
- 5. The island is to be compacted to 90% of maximum theoretical density in accordance with ASTM D-1557 and rough-graded after filling.

## CLEARING AND RIGHT-OF-WAY

6. Any minor drainage ditches, obstructed by islands, are to be rerouted around fill. The rerouted ditch is to be same width and depth as original ditch. Consideration should be given to direction of flow of existing ditch.

### K. NOTIFICATIONS AND COMPLAINTS

1. NOTIFICATIONS TO PRIVATE OWNERS The clearing CONTRACTOR shall be responsible for notifying property owners as to time of entry on property. He shall also secure any permits for burning required. Any exceptions to this shall be noted in the easement list or in the WORK ORDER.
2. NOTIFICATIONS TO PUBLIC AGENCIES The CONTRACTOR shall be responsible for any notifications required to public agencies, such as Department of Transportation, city authorities, etc., to conform with permits or agreements with said agencies.
3. COMPLAINTS Any complaints received from property owners or public agencies shall be handled promptly by the FPC Representative (INSPECTOR or CONSTRUCTION SUPERVISOR) and the PROJECT LEADER shall be notified as soon as possible.

### L. HERBICIDES

All stumps of fast growing woody species that are left in the right of way shall be treated with an EPA and Florida Power approved herbicide to prevent re-growth. (Except as noted in the WORK ORDER.) All herbicides shall be applied by a qualified, licensed herbicide Applicator. Label directions must be followed at all times. Florida Power shall expect 90% effectiveness 4 months after the project has been completed. Re-treatment, if required, will be at the Contractors expense. *The Contractor shall be responsible for all liability associated with non-target impacts resulting from the use of herbicides and the cost of remediation.*

The following is a list of approved herbicides for use in cut stump treatment.

#### Upland Approved

Accord  
Arsenal  
Garlon 3A  
Garlon 4  
Pathfinder II  
Rodeo  
Roundup Pro

#### Wetland Approved ( ONLY)

Accord  
Rodeo

**CLEARING AND RIGHT-OF-WAY**

APPLICABLE SPECIFICATIONS

**ANSI Z133** (approved 1994)

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

**ANSI A300** (approved 1995)

American National Standard for Tree Care Operations – Tree, Shrub and Other Woody Plant Maintenance  
Standard Practices.

**OSHA** 1910.269

Line Clearance Tree Trimming Operations.

**ASTM D-1557-91** (approved 1998)

Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effect (56,000 ft-lb/ft<sup>3</sup> (2700kN-m/m<sup>3</sup>))

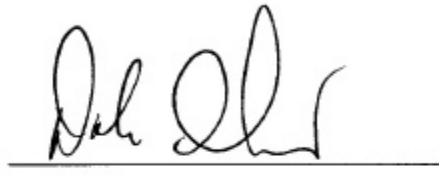
**CLEARING AND RIGHT-OF-WAY**


Signature Page

Revised: November 2001

---

  
Bobby Burgess  
Director, Transmission Construction

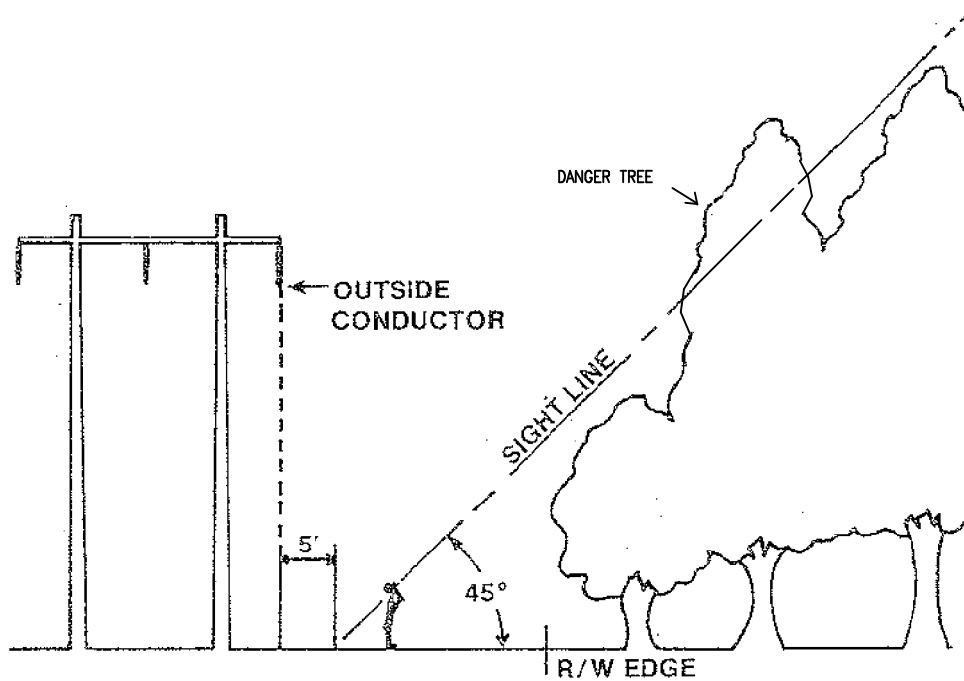
  
Dale Oliver  
Director, Engineering

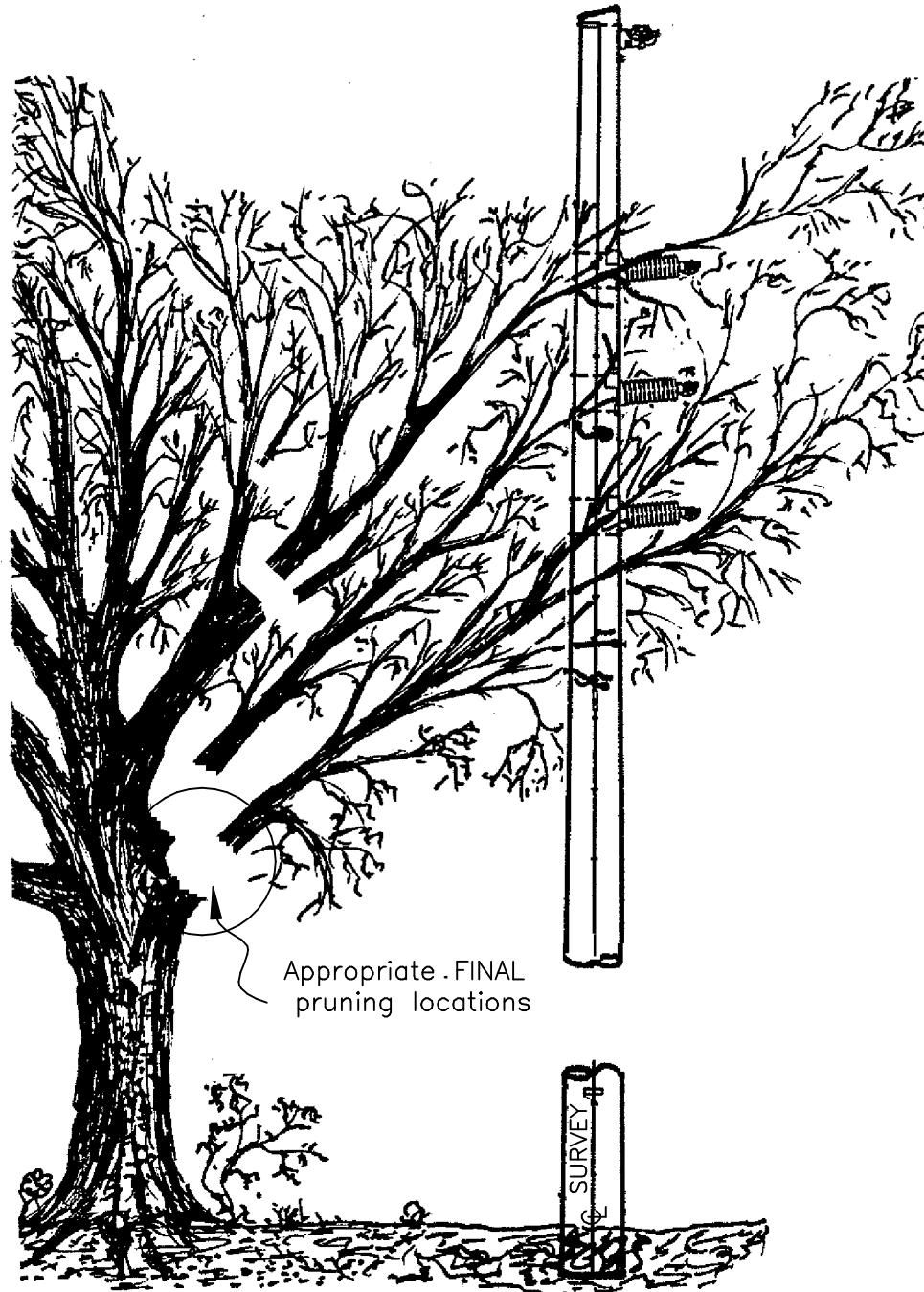
  
Michael J. Nix  
Manager, Trans. Support Services

  
Gary E. Clayton  
Manager, Line Engineering

## IDENTIFYING DANGER TREES

Danger Trees will be determined by locating the point on the ground directly below the outside conductor and then measure five feet toward the right of way edge. Next, a sight line is made from this reference point at a 45° angle from horizontal. Any tree that extends above this sight line is considered a "danger tree" and, therefore, must be cut. The five feet is necessary to allow Florida Power to keep up with the rapid tree growth caused by Floridas' temperate climate and long growing season.





Appropriate .FINAL  
pruning locations

MINIMUM LINE APPROACH BY TREES:

After pruning from any direction or under conductors.

69kV.----- 10FT.

115kV.----- 15FT.

230kV.----- 20FT.

500kV.----- 25FT.

1. Do not prune side branches that are growing away from the conductors. Side branches provide energy, and suppress sprouting by shading the center of the tree.

- \* 2. Remove tree completely if minimum approach cannot be obtained.

All or portions of this drawing are reproduced, with permission of Shigo and Trees, Associates Dr. Alex Shigo. (1999)

NOTES:

ALL CUTS REFER TO SHEET 14 OF 14  
NATURAL TARGET PRUNING DETAIL 3  
REFER TO MINIMUM APPROACH

REVISIONS

A ring or "doughnut" of living tissue will form around a correct cut after one growing season.