5.0 Environmental Standards

LCRA's Transmission Services Environmental and Safety Management System (ESMS) contain all the requirements LCRA workers must follow when performing ROW maintenance work. The ESMS is located at:
http://insidetransmission.lcra.org/env/ISMSP/iesmp.htm

.

The following contains specific information about the standards used on LCRA TSC ROWs:

5.01 Endangered Species Act (ESA)

Natural Resource Assessments (NRAs) are used to identify areas of known and potential habitat for federally and state-listed threatened or endangered species. An NRA should be conducted on new or existing facilities in accordance with the ESMS. The Natural Resource Review (NRR) procedure can be found on the Transmission Services Intranet at:
http://insidetransmission.lcra.org/env/Procedures.htm.

Additional requirements may be triggered when it is necessary to conduct vegetation maintenance or construction activities in areas that are potential or known threatened or endangered species habitat, or when vegetation management activities must occur before habitat within or adjacent to ROW can be assessed by an environmental staff member.

Vegetation management activities may be restricted to certain times of the year because some of the ROWs have potential habitat within or adjacent to them. Transmission Services management has determined that all possible efforts will be made to restrict vegetation management activities to occur outside the breeding season of the golden-cheeked warbler and the black-capped vireo when such habitat, or potential habitat, is identified. In situations where this strategy is not feasible, and vegetation management activities are required to maintain the safety and reliability of the system, SET and LO will coordinate the necessary clearing on a case by case basis. *Clearing will be limited to the minimum required by the clearance standard, will be conducted outside of the breeding season for the identified species, and will be done in consultation with U.S. Fish and Wildlife Service.*

The U.S. Fish and Wildlife Service (USFWS) recognizes that emergency situations can require utilities to restore power or avoid an outage, prevent a public hazard, or maintain system reliability. LCRA internal operating procedures relating to emergencies, approved by USFWS, dated April 8, 1992, outlines emergency procedures in endangered species habitat. The procedures are

posted on the Transmission Services Environmental Intranet at http://insidetransmission.lcra.org/env/Procedures.htm

The agreed-upon emergency procedure requires that:

1. An LCRA biologist must be contacted following the emergency to evaluate the potential impact.
2. To the extent practicable, the LCRA biologist should be present during the activities to ensure the least possible damage occurs.
3. Written notification should be provided to USFWS whenever emergency repairs have been made in known endangered species habitat.

5.01.01 Houston Toad

LCRA along with Aqua Water, Austin Energy and Bluebonnet Electric have a Section 10(a) permit and a Habitat Conservation Plan (HCP) for the Houston toad in Bastrop and Lee Counties. The Houston toad is an endangered amphibian native to Bastrop and the surrounding counties in Texas.

This HCP allows LCRA and the other permit holders to be authorized for incidental take during routine maintenance and repair of existing facilities as well as the installation of new facilities within the designated permit area. The permit outlines specific procedures and protocols for all LO activities. Specifically, Section 6.1.2 of the permit identifies measures and best management practices (BMPs) that are designed to avoid and minimize potential impacts to Houston toads during the installation of new facilities and the repair and maintenance of existing facilities within the permit area. A copy of the permit is posted on the Transmission Services Environmental Intranet at:
[redacted]
Click on Natural Resources

5.02 Balcones Canyonlands Conservation Plan (BCCP)

The BCCP, which covers most of western Travis County, allows LCRA to conduct maintenance and construction activities under the terms of the BCCP Infrastructure Guidelines. After conducting a Natural Resources Assessment, and in compliance with the existing Section 10(a) permit for the BCCP, LCRA submits an Infrastructure Habitat Assessment application to the City of Austin. Once the application is reviewed and approved, LCRA is authorized to clear the amount of ROW requested with the restrictions that the clearing has to be completed outside the breeding season, but construction could occur during the breeding season if it is started prior to March 1.

The breeding season for the black-capped vireo is March 15 through Aug. 31, and March 1 through Aug. 1 for the golden-cheeked warbler. Mitigation for these endangered species as well as karst features is accomplished by subtracting "credits" from acreage within LCRA's McGregor or Wheless preserves, which were created to mitigate for infrastructure needs within the BCCP. LCRA has the authority to clear the permitted areas over the life of the Section 10(a) permit, which is active for 30 years. The advantage to permitting is that lines do not have to be re-assessed the next time upgrades or routine maintenance is conducted, as long as future work is conducted according to the permit. A copy of the Balcones Canyonlands Preserve Management Handbook is posted on the Transmission Services Environmental Intranet at:
http://insidetransmission.lcra.org/env/default.htm
Click on Natural Resources

5.03 Migratory Bird Treaty Act (MBTA)

LCRA Transmission Services Avian Protection program is designed to address aspects of ROW maintenance with respect to the MBTA. The purpose of this program is threefold. First, it documents LCRA's current efforts that prevent or minimize potential impacts to migratory birds, their nests, eggs and young from the operation of transmission and transformation facilities, thus contributing to the safety and reliability of the LCRA TSC transmission system. Second, it describes methods to ensure that LCRA workers are in compliance with state and federal regulations when dealing with migratory birds.

Finally, it establishes a methodology for LCRA to comply with the MBTA, the Bald and Golden Eagle Protection Act, the Public Utility Regulatory Act, and federal or state regulations associated with these acts as they relate to the protection of migratory birds. Exceptions to this program may include emergency situations that cause an unsafe environment that endangers the public or LCRA workers or situations that have the potential to cause the reliability of the transmission or transformation systems to be impacted. For further information on the Migratory Bird Treat Act click on the following link:
http://www.fws.gov/pacific/migratorybirds/mbta.htm

5.04 Clean Water Act – Wetlands and Waters of the United States

Natural Resource Assessments also are used to identify jurisdictional wetlands and waters of the United States as regulated by the U.S. Army Corps of Engineers (USACE). An assessment should be conducted on new or existing facilities in accordance with the ESMS Natural Resource Review procedure found on the Transmission Services Environmental Intranet at: http://insidetransmission.lcra.org/env/Procedures.htm

Nationwide permits are general permits issued by the USACE for minor activities. For transmission line work, all installations of and/or modifications to water crossings must comply with the USACE Nationwide Permit (NWP) 12: Utility Line Activities. Activities include construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than ½ acre of waters of the United States. Access roads used for both construction and maintenance are authorized by this NWP. Pre-construction notifications (PCNs) will be required if any of the following criteria are met:

(1) The activity involves mechanized land clearing in a forested wetland for the utility line right of way; (2) a section 10 permit is required; (3) the utility line in waters of the U.S., excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdiction area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the U.S. with impervious materials.

Appropriate soil erosion and sediment controls must be used and maintained during construction at stream crossings.

An individual USACE permit may be required if conditions under NWP 12 are not met. General Condition 17 "Endangered Species" for the Nationwide Permit program requires nonfederal permit holders, such as LCRA, to notify the USACE if any listed species or designated critical habitat might be affected, is in the vicinity of the project, or is located in the designated critical habitat. Work shall not commence until the USACE notifies the applicant that the requirements of the Endangered Species Act have been satisfied, and that the activity is authorized by the USACE. As a result of its consultation with U.S. Fish and Wildlife Service, the USACE may add species-specific regional endangered species conditions to NWP 12. No activity is authorized under NWP 12 that is deemed "likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, or that will destroy or adversely modify the critical habitat of such species." Preconstruction notification (PCN) also is required when the waterway in question is a known cultural resource site. Individual permits and PCNs require 90 to 180 days prior to the start of any

activity in the area to be permitted in order to file and process through the USACE.

5.05 Cultural Resource Assessments

Cultural Resource Assessments are used to identify sensitive cultural areas in compliance with the Texas Antiquities Code as regulated by the Texas Historical Commission. An assessment should be conducted on new or existing facilities in accordance with the ESMS Cultural Resource Assessment procedure found on the Transmission Services Environmental Intranet at: http://insidetransmission.lcra.org/env/Procedures.htm.

Once a Cultural Resource Assessment has been conducted, the data is valid in perpetuity.

5.06 Stormwater Pollution-Prevention (SWPP) Plan

Any activity that will cause more than one acre of soil disturbance requires a Stormwater Pollution-Prevention Plan in accordance with the ESMS stormwater procedure found on the Transmission Services Environmental Intranet at: http://insidetransmission.lcra.org/env/Procedures.htm

5.07 Edwards Aquifer Protection

All construction activities that occur in Bexar, Comal, Hays, Kinney, Medina, Travis, Uvalde, and Williamson counties need to be reviewed for compliance with the TCEQ Edwards Aquifer Protection rules in accordance with the ESMS Edwards Aquifer procedure found on the Transmission Services Environmental Intranet at:
http://insidetransmission.lcra.org/env/Procedures.htm.

5.08 LCRA Highland Lakes Watershed Ordinance

All construction activities that occur in the Upper Highland Lakes and Lake Travis watersheds need to be reviewed for compliance with LCRA's applicable Highland Lakes Watershed ordinance in accordance with the Highland Lakes (formerly NonPoint Source) Procedure on the Transmission Services Environmental Intranet at http://insidetransmission.lcra.org/env/Procedures.htm

5.09 Property Transactions and Encroachment Issues

Phase I ESAs - for property acquisitions

Prior to property acquisition for transmission lines (including easements), LCRA Board Policy 401 - Land Resources requires an environmental due diligence assessment (Phase I Environmental Site Assessment) to be prepared on all land considered for acquisition. The purpose of the Phase I Environmental Site Assessment (ESA) is to identify any recognized environmental conditions

associated with the subject property, to the extent feasible pursuant to the processes described in ASTM standard practice E 1527-05. A recognized environmental condition is described as the presence or likely presence of any hazardous substance or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any such substance on the property or into the ground, groundwater, or surface water of the property.

Asbestos Surveys - for encroachment structures

In accordance to the LCRA Asbestos Standard, asbestos surveys shall be performed on all structures prior to demolition and/or remolding projects, in a manner that ensures the health and safety of all its employees and the general public and maintains a compliant program with existing regulations.

The main emphasis of the survey will be identifying friable and non-friable Asbestos Containing Material (ACM). Friable materials, when dry, can easily be crushed or reduced to powder by hand pressure. Friable ACM has a high potential to release asbestos fibers into the air when disturbed, thereby creating a respiratory hazard. The survey additionally considered materials that are currently non-friable, but could result in asbestos fiber release due to demolition, maintenance, or renovation activities.

Federal and state regulations require an asbestos survey be conducted prior to demolition or renovation of a facility. Regulations require removal of ACM from commercial, industrial, public, or residential structures prior to demolition or renovation activities that may disturb these materials.

6.0 Land Use Options

6.01 Natural Resource Management

The Natural Resource Management team at LCRA provides technical assistance to property owners on matters such as cultural and archaeological issues, wildlife management, soil and water conservation, reforestation, endangered species, and environmental assessments.

6.02 Revegetation Program

6.02.01 Urban ROWs

LCRA encourages the creation of wildscapes within ROWs as long as they do not interfere with the reliability, safety, or integrity of the line. LCRA ROW wildscapes consist of the creation or restoration of habitat for wildlife that may be found in urban areas. They enable Texans who reside within urban communities to contribute to wildlife conservation by developing wildlife habitats where they live and work.

LCRA TSC ROW wildscapes are habitats that provide the essential ingredients for a variety of wildlife – food, water, shelter and space. This is done by planting and maintaining native vegetation, installing water features, as well as creating structures that meet the needs of the wildlife species while not interfering with the reliability of the electric transmission system. The goal is to provide places for birds, small mammals, and other wildlife to feed and drink, escape from predators and raise their young.

Creating habitat along ROWs by planting native plants not only benefits wildlife, but is less expensive and easier to maintain. Less-manicured areas mean less mowing. Many native plants are hardy and drought-resistant, so they need little or no water or maintenance. Since these plants are more tolerant of native insects and diseases, they require minimal chemical treatments and thus are better for the environment.

6.02.02 Rural ROWs

Property owners interested in wildlife management can use ROWs to create wildlife food plots or native grasslands for upland game bird species. These activities also may assist property owners in meeting the need of a wildlife tax valuation of their property, if applicable.

Property owners managing their land for agricultural crops may use ROWs as long as the crops and equipment to manage them do not interfere with the reliability, safety, or integrity of the electric transmission line. Additionally, improved pastures for livestock grazing also can be established within ROWs.

6.03 *Resources Available to Property Owners*

LCRA works closely with private property owners as well as state and federal conservation agencies to assist landowners with the management of their property. LCRA's goal to enhance soil and water conservation as well as meeting the needs of wildlife is at the core of LCRA's mission as a conservation and reclamation district. The following paragraphs explain some of the programs LCRA provides to property owners.

6.03.01 Creekside Conservation and Brush Management Program

LCRA's Creekside Conservation and Brush Management Program was created in 1990 to work directly with landowners and state and federal agencies to reduce sedimentation and agricultural nonpoint-source pollution. The objective of the program is to use land treatments on private property designed to improve vegetative cover to hold the soil, improve land productivity, provide filtration, and enhance wildlife habitat. LCRA funds up to 50 percent of the costs of approved projects on private lands within the LCRA traditional service area.

6.03.02 Archaeology Services and Cultural Resources Program

The Archaeology Services program began in the late 1980s for the purpose of fulfilling regulatory responsibilities under the State Antiquities Code, identifying and preserving archaeological sites on LCRA lands, and providing cultural resource education programs for the general public. Programs for the general public are held at the Nightengale Archaeological Center at Kingsland.

6.03.03 Cooper Farm Natural Science Laboratory

Cooper Farm was created in 1988 as a research and public education facility in Fayette County. At the request of local landowners, as well as wildlife and agricultural professionals, Cooper Farm provides a place to study methods for improving the natural surroundings and shares that information with all interested parties.

7.0 Public Education Plan

7.01 Communications Goal

The general public is not necessarily concerned about, knowledgeable about, or involved with the subject of electric transmission lines. This public education program will focus on the following topics: "Power Lines and Public Safety" and "Planting the Right Tree in the Right Place."

7.01.01 Cooperation With Communities Served by LCRA TSC

LCRA will cooperate with and support the communities served by LCRA TSC in communications and public awareness campaigns and activities aimed at fostering "line-friendly living" by the general public. Campaigns will encompass areas within LCRA TSC's traditional service area as well as areas affected by LCRA TSC's recent transmission line expansion projects.

7.01.02 *Clean 'n' Green*

LCRA's forestation program, Clean 'n' Green, will support the "Power Lines and Public Safety" and "Planting the Right Tree in the Right Place" as part of its public awareness strategy and as part of its formal business plan. Information will be made available to communities throughout the LCRA service area about trees that are suitable for planting adjacent to overhead power lines.

8.0 Glossary

ANSI: American National Standards Institute.

ASTM: The American Society for Testing and Materials.

Border Zone: Refer to Section 4.07.01 Defined Zones.

Brush: Small trees and woody plants with a stem diameter less than 1 and 1/2 inches when measured and less than 4 and 1/2 feet above the ground.

CCN: Certificate of Convenience and Necessity issued by the Public Utility Commission for proposed new transmission line projects.

CDD: Conceptual Design Document that is developed by the Engineering group that defines the scope of a project.

Circuit: A conductor or a system of conductors through which electric current flows.

Clearance: The distance between a transmission line conductor or structure and any surrounding objects or vegetation.

Conductor: Metal wires, cables and bus-bar used for carrying electric current. Conductors may be solid or stranded, that is, built up by an assembly of smaller solid conductors.

Connection: The physical connection (e.g., transmission lines, transformers, switch gear, etc.) between two electric systems permitting the transfer of electric energy in one or both directions.

Current (electric): A flow of electrons in an electrical conductor. The strength or rate of movement of the electricity is measured in amperes.

Danger Zone: Refer to Section 4.07.03 Defined Zones.

Danger Tree Zone: Refer to Section 4.07.02 Defined Zones.

Debris: Fragmented vegetative matter (logs, chips, limbs, twigs, leaves, grass cuttings, etc.) resulting directly from vegetation management operations.

DOE: Department of Energy.

Easement: A document granting the easement holder the right to locate, operate, repair, maintain, etc., an electric transmission line on property not belonging to the easement holder.

Electric power grid: A system of synchronized power providers and consumers connected by transmission and distribution lines and operated by one or more

control centers. In the continental United States, the electric power grid consists of three systems: the Eastern Interconnect, the Western Interconnect, and the Texas Interconnect. In Alaska and Hawaii, several systems encompass areas smaller than the state (e.g., the interconnect serving Anchorage, Fairbanks, and the Kenai Peninsula; individual islands).

Electric system reliability: The degree to which the performance of the elements of the electrical system results in power being delivered to consumers within accepted standards and in the amount desired. Reliability encompasses two concepts, adequacy and security. Adequacy implies that there are sufficient generation and transmission resources installed and available to meet projected electrical demand plus reserves for contingencies. Security implies that the system will remain intact operationally (i.e., will have sufficient available operating capacity) even after outages or other equipment failure. The degree of reliability may be measured by the frequency, duration, and magnitude of adverse effects on consumer service.

Electricity: A form of energy characterized by the presence and motion of elementary charged particles generated by friction, induction, or chemical change.

Emergency: The failure of an electric power system to generate or deliver electric power as normally intended, resulting in the cutoff or curtailment of service or a condition that poses an imminent threat to human health and safety.

Encroachment: Something within the easement that creates access problems or jeopardizes the safe and reliable operation of the transmission line. (Refer to Attachment E "The LCRA Electric Transmission Easement Right-of-Way Use Guide")

Federal Energy Regulatory Commission (FERC): The federal agency with jurisdiction over interstate electricity sales, wholesale electric rates, hydroelectric licensing, natural gas pricing, oil pipeline rates, and gas pipeline certification. FERC is an independent regulatory agency within the Department of Energy and is the successor to the Federal Power Commission.

Integrated vegetation management (IVM): A methodology for controlling undesirable vegetation that requires target vegetation identification, action threshold consideration, and evaluation of all practical control options before selection and implementation of specific controls.

Landowner Contact Database: The location where all contacts from landowners are noted. This is where all restrictions, calls and requests are located.

Line (transmission line): Structures, poles, conductors, and related components used for the high-voltage transmission of electric power and energy from one substation to another.

LO: LCRA's Line Operations department.

Load (electric): The amount of electric power delivered or required at any specific point or points on a system. The load requirement originates at the energy-consuming equipment of the consumers.

Maintenance cycle: The scheduled interval that each ROW will undergo a vegetation maintenance activity (i.e. mowing, herbicide activity, tree trimming and removals, etc).

NESC: National Electrical Safety Code.

North American Electric Reliability Council (NERC): A council formed in 1968 by the electric utility industry to promote the reliability and adequacy of bulk power supply in the electric utility systems of North America. NERC consists of regional reliability councils and encompasses essentially all the power regions of the contiguous United States, Canada and Mexico. See various NERC Regional Reliability councils at **http://www.eia.doe.gov/neic/pubstyle/nerc.htm**.

Outage: An interruption of electric service to one or more customers. The period during which a generating unit, transmission line, or other facility is out of service.

Removal: Felling trees, brush and other woody vegetation by cutting it to the ground.

Rights of way (ROWs): The corridor through and across one or more parcels of real property within which LCRA TSC has the legal right to construct, operate, repair, maintain, etc. electric transmission facilities.

Safety: The condition of being safe from undergoing or causing hurt, injury or loss to the public or to associated equipment.

Slash: Debris resulting from the cutting of trees and brush.

Standing permission: Is a one-time verbal or written permission from the landowner or designee to the district operator or crew involved in work on the ROW. Verbal permission should be documented in writing and placed in LCRA files.

Stumps: The part of a tree or plant remaining in the earth after the stem or trunk is cut off. Also refers to the part of the limb remaining after part of it has been cut off.

Substation: A facility containing electrical equipment used to connect transmission lines and/or transform electric power and energy to different voltages for further transmission or for distribution to customers. Facility equipment that switches, changes or regulates electric voltage.

Target: Vegetation that has been identified as undesirable and that is to be removed or controlled.

Transmission (electric) (verb): The movement or transfer of electric energy over an interconnected group of lines and associated equipment between points of supply and points at which it is transformed for delivery to consumers or is delivered to other electric systems. Transmission is considered to end when the energy is transformed for distribution to the consumer.

Transmission circuit: A conductor used to transport electricity from generating stations to load.

Transmission line: A set of conductors, insulators, supporting structures, and associated equipment used to move large quantities of power at high voltage, usually over long distances between a generating or receiving point and major substations or delivery points.

Transmission network: A system of transmission or distribution lines so cross-connected and operated as to permit multiple power supply to any principal point.

Transmission system (electric): An interconnected group of electric transmission lines and associated equipment for moving or transferring electric energy in bulk between points of supply and points at which it is transformed for delivery over the distribution system lines to consumers or is delivered to other electric systems.

Tree: woody plants with a stem diameter more than 1 and 1/2 inches when measured and more than 4 and 1/2 feet above the ground.

Trim: To cut and remove portions of trees, brush and other woody vegetation without felling or removing the entire plant.

Voltage: The difference in electrical potential between any two conductors or between a conductor and ground. It is a measure of the electric energy per electron that electrons can acquire and/or give up as they move between the two conductors.

Wind displaced: The ultimate position of a conductor at the highest velocity of wind.

Wire Zone: Refer to Section 4.07.05 Defined Zones.

Work Zone: Refer to Section 4.07.06 Defined Zones.

9.0 References

"Pruning Trees Near Electric Utility Lines: A Field Pocket Guide For Qualified Line-Clearance Tree Workers" by Dr. Alex L. Shigo.

Balcones Canyonlands Preserve Management Handbook:

_____http://insidetransmission.lcra.org/env/whats_new/what%27s%20new.htm

Lower Colorado River Authority Highland Lakes Watershed Ordinance:
http://insidetransmission.lcra.org/env/whats_new/what%27s%20new.htm

Clean 'n' Green.

TXDOT Utility Accommodations Code

Texas Public Information Act.
http://www.oag.state.tx.us/AG_Publications/txts/2004publicinfohb_1_10.shtml

U.S. Army Corps of Engineers (USACE):
http://www.usace.army.mil/cw/cecwo/reg/nationwide_permits.htm

- Section 10 of the Rivers and Harbors Act of 1899 – navigable waters.
- Section 404 of the Clean Water Act – waters of the United States, including wetlands.

U.S. Fish and Wildlife Service (USFWS):
http://www.fws.gov/.

- Endangered Species Act of 1973, as amended, 16 USC 1531 *et seq.*
- Migratory Bird Treaty Act of 1918, as amended, 16 USC 703-712
  http://laws.fws.gov/lawsdigest/migtrea.html
- Bald and Golden Eagle Protection Act of 1998, 16 USC 668
  http://www.fws.gov/midwest/eagle/guidelines/bgepa.html

  Migratory Bird Permit Memorandum dated April 15, 2003.
- Interim Empty Nest Policy of the U.S. Fish and Wildlife Service (USFWS) Region 2 Effective May 2000. Revised Nov. 15, 2000.

Texas Parks and Wildlife Department (TPWD):
http://www.tpwd.state.tx.us/.

- Threatened and Endangered Animals – Chapter 67 and 68 of the TPWD Code – Title 31 TAC sections 65.171 – 65.184.
- Threatened and Endangered Plants – Chapter 88 of the TPWD Code – Title 31 TAC sections 69.01 – 69.14.

Texas Commission on Environmental Quality (TCEQ): http://www.tceq.state.tx.us/.

- Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit, Permit No [redacted] March 5, 2003: http://www.tnrcc.state.tx.us/permitting/waterperm/wwperm/txr150000.pdf.
- Edwards Aquifer Rules, Water Pollution Abatement Plan (WPAP) (30 TAC 213): Water Pollution Abatement Plan - Texas Commission on Environmental Quality - www.tceq.state.tx.us.
- Section 401 of the Clean Water Act – water quality:

http://www.tnrcc.state.tx.us/permitting/waterperm/wqstand/401cert.html.

Historic Preservation Officer (SHPO) - Texas Historical Commission (THC): http://www.thc.state.tx.us/.

- National Historic Preservation Act (NHPA) 1966, amended in 1980.
- Natural Resources Code: Title 9 - Antiquities Code of Texas.

Chamberlain, D.A., Kuhl, S., Melton, D. and Schumann, T. 1995. A Guide for the Protection of Endangered Species on LCRA Transmission Line Rights of Way. Lower Colorado River Authority Environmental Services, March 20, 1995.

Links:

Federal Energy Regulatory Commission (FERC): http://www.ferc.gov.

National American Electric Reliability Council (NERC): http://www.nerc.com.

National Electrical Safety Code (NESC): http://standards.ieee.org/nesc.

Occupational Safety and Health Administration (OSHA): http://www.osha.gov.

Public Utility Commission of Texas (PUCT): http://www.puc.state.tx.us/index.cfm.

Texas Utilities Code (TUC): http://www.capitol.state.tx.us/statutes/ut.toc.htm.

10.0 Attachments

The following attachments are listed in this section:

Attachment A – Field Log Sheet
Attachment B – Standard Notice Letter
Attachment C – Herbicide Permission Form
Attachment D – Emergency Notification Form
Attachment E – The LCRA Electric Transmission Easement Right-of-Way Use Guide
Attachment F – T/L Maintenance Assessment Form
Attachment G – Line Operations Pre-Work Study Checklist
Attachment H – Line Patrol Report
Attachment I – List of Approved Herbicides
Attachment J – LCRA Line Operations Tree Survey
Attachment K – ERCOT 345-kV Vegetation-Related Outage Report

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[redacted]

Field Log Sheet

Date: _____

Location Address: _____ **County:** _____

City: _____

Resident Last Name: _____ **Resident First Name:** _____

Caller Phone: (___) _____ **Category of Call:** ■ **Landowner Contact** ■ **Encroachment**

Initial Point of Contact: _____ **Flag: Yes / No Current Parcel No.** _____

Substation: _____ **T-Line:** _____ **Structure #:**_____ **Latitude:** _____ **Longitude:** _____

Description of Call/Issue:_____

_____

_____

_____

_____

_____

_____

_____

Submitted by:_____ ID#:_____

Resolution Date: _____

Resolution of Call/Issue:_____

_____

_____

_____

_____

_____

Referred to: _____
Resolved by: _____

Mail form to Transmission Real Estate Services BTC 151 or Fax 369-4193

ATTACHMENT B

LCRA
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Date

«First_Name» «Last_Name»
«Address_1»
«Address_2»
«City», «State» «Zip»

RE: LCRA Transmission Services Corporation's XXX-kilovolt, Transmission Line T-xxx, xxx to xxx;

Dear **«Title» «Last_Name»:**

We wanted to let you know that in the upcoming weeks LCRA crews or contractors will begin work along an electric transmission line easement that crosses or is near your property. Specifically, we will be **(list work to be performed)**. This work will be limited to the area within the easement and it could involve the use of large trucks, equipment, and other vehicles. It may be necessary, in limited cases, to cross adjacent property to access the easement area. The crews will work as quickly as possible, and they will make every effort to minimize disruptions and inconveniences to you and your property. If you have lessees, land managers, or others on your property, please notify them of these plans.

Right of way maintenance is a necessary part of our effort to assure that we transmit electricity reliably and safely. We maintain our rights of way so that our transmission line facilities can be readily accessed by vehicles and other large equipment in the event of an emergency or for regularly scheduled inspections. Vegetation that has the potential to grow too near the electric line or that can threaten the safe and reliable operation or accessibility to the facilities will be removed, except where there are pre-existing requirements or restrictions that prohibit such removal. Typically, the types of vegetation that will be removed are fast-growing or tall-growing species of trees.

We appreciate your cooperation and patience. If you need any additional information or have questions, please call me at 1-800-776-5272, ext. 4xxx or (512) 369-4xxx.

Sincerely,

Name
Real Estate Representative
LCRA Transmission Services

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ATTACHMENT C

Date

Name
Address
City, State ZIP

Re: **Line Description**

Dear :

As part of its ongoing vegetation maintenance program, LCRA is requesting your written permission to apply herbicides on the electric transmission line easement that crosses your property. The herbicides that LCRA uses are general-use products that are approved by the U.S. Environmental Protection Agency. The herbicides will be used to prevent the regrowth of undesirable plants such as mesquite and huisache.

Controlling undesirable species will promote the growth of beneficial plants, such as native grasses and wildflowers, on the right of way. This method of integrated vegetation maintenance will enhance the safety and reliability of the electric transmission line, while diversifying land use. Also, it will allow LCRA's inspection and maintenance crews to access the transmission right of way.

We sincerely appreciate your response and cooperation.

I hereby grant my permission to perform the above-listed work on said property,

_____
(Please print or type your name here)

_____
Street Address

_____
City, State, Zip Code

_____
Owner/Agent of Property

_____
(Signature) Date

If you have any questions about the work described above, please

contact me at 1-800-776-5272, Ext. **XXXX**.

We have provided two originals of this form. Please sign and return one original to LCRA in the self-addressed and stamped envelope provided. Please keep the other original for your records.

Sincerely,

Name
Real Estate Representative
LCRA Real Estate Services

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ATTACHMENT D

«First_Name» «Last_Name»
«Address_1 »
«Address_2»
«City» , «State» ((Zip))

RE: LCRA Transmission Services Corporation's kilovolt, Transmission Line X-XXX, X to X; «Legal Description»; X and X Counties, Texas; Tax ID

Dear ((Title)) ((Last_Name)):

We wanted to let you know that during a recent routine check of the electric transmission line crossing your property, LCRA personnel identified vegetation growing into the area around the transmission line wires. These trees presented a safety and fire risk. In order to prevent injuries, fire or shutdown of the transmission line, our crews immediately trimmed or removed them.

We typically notify landowners in advance of entering and maintaining the rights of way. But due to the imminent danger, our normal landowner notification process was not possible in this case.

The main concern with trees growing near power lines is the possibility of flashover. Flashover occurs when electricity arcs from wires to nearby trees, causing electric current to travel through the trees to the ground. Flashover endangers public safety, with the potential for serious injury or death from electrocution. It also can cause fires that could damage property. Additionally, trees and branches near or touching power lines can cause major outages that could disrupt electric service to homes, businesses and hospitals.

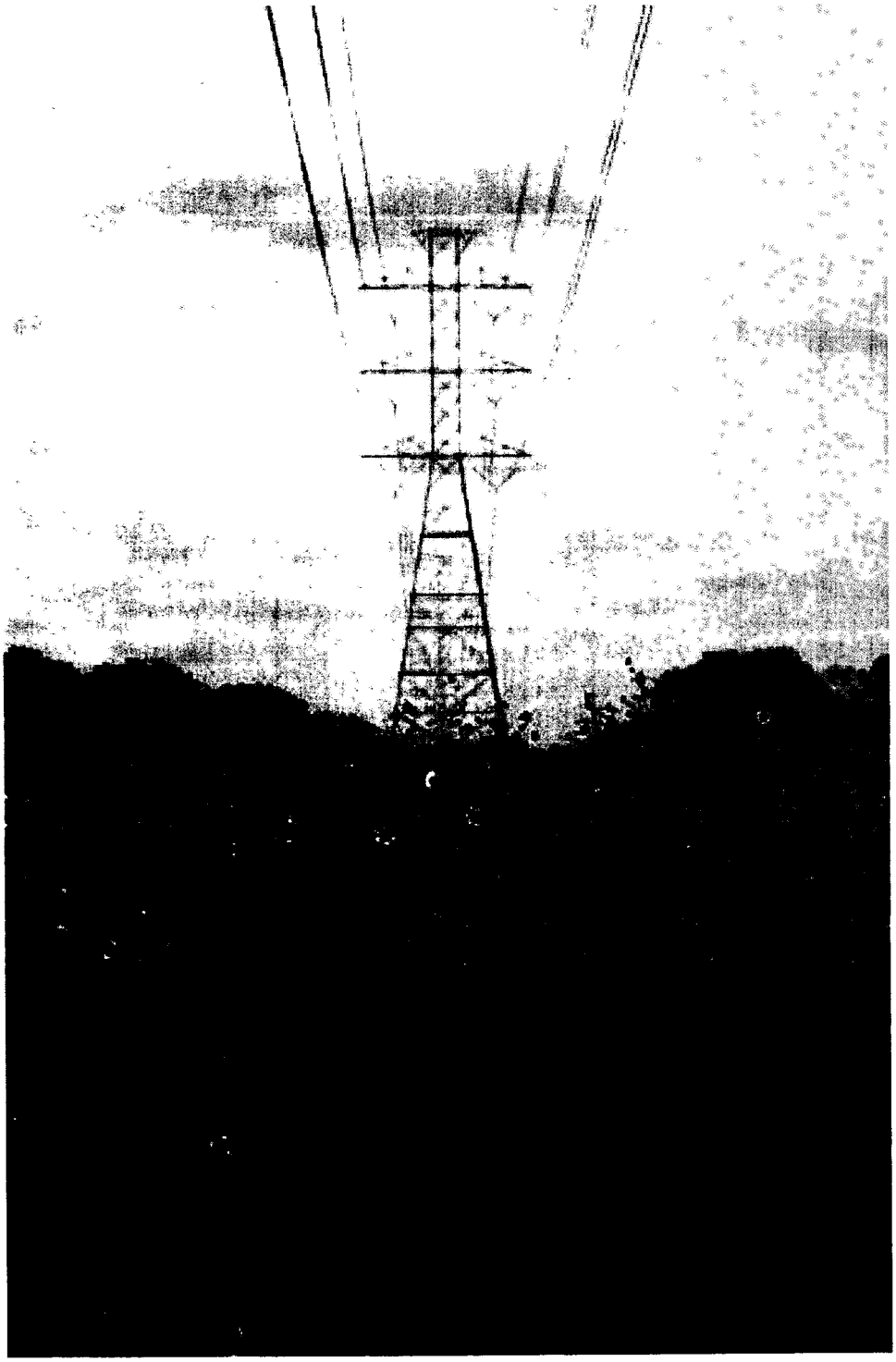
We appreciate your understanding of our efforts to maintain a safe environment. If you need any additional information or have questions, please call me at 1-800-7765272, Ext. xxxx, or (512) 369-xxxx.

Sincerely,

Real Estate Representative
LCRA Transmission Services

LCRA
ENERGY • WATER • COMMUNITY SERVICES

The LCRA Electric Transmission Easement and Right-of-Way Use Guide



CONTENTS

USING ELECTRIC TRANSMISSION EASEMENTS

GENERAL

This guide provides important information to property owners, developers, architects, engineers and others who are considering developing property within or directly adjacent to LCRA Transmission Services Corporation (LCRA TSC) electric transmission system easements (commonly known as rights of way).

This guide cautions landowners and others of the risks associated with placing facilities within transmission line easements. Doing so can obstruct or interfere with the use of the transmission line easement. Obstructions can, for example: 1) create safety hazards, 2) interfere with access, 3) interfere with structure locations or relocations or 4) impair or obstruct the ability to safely, reliably and efficiently operate and maintain electric lines.

To avoid conflicts and costly removal expenses, landowners and developers should not construct facilities that conflict with transmission line easements. Examples of obstructions include, but are not limited to, the following:

- Permanent structures
- Combustible materials
- Ponds, channels, septic systems
- Spoils and storage of cut/fill materials
- Certain grading, earth-retaining systems, excavations
- Certain plantings

These examples are discussed in more detail later in this document.

The Lower Colorado River Authority (LCRA) transferred its electric transmission lines, easements, and other electric transmission assets to LCRA TSC in 2002. LCRA staff continues to operate, maintain, improve, upgrade and expand that system as a service to LCRA TSC. LCRA and LCRA TSC are committed to the reliability and safety of this electric transmission system, which includes 69, 138 and 345-kilovolt (kV) transmission lines. Due to these high voltages, anyone working on or near these lines and their easements should exercise extreme care.

PURPOSE OF THIS GUIDE

This guide can help landowners and developers streamline the planning and review process to facilitate and expedite plans that involve LCRA TSC easements, while avoiding potential negative impact to transmission facilities and easements.

This guide provides information about appropriate and inappropriate uses of LCRA TSC's easements by landowners. However, it is not a complete directory of all requirements that may apply to specific properties. If you are considering developing a site or constructing within an LCRA TSC easement, please contact LCRA early in the development of your project and submit plans for review. LCRA typically requires four to

six weeks lead time to review plans. Written responses will be provided for each project.

Compliance with this guideline does not necessarily ensure automatic acceptance of a project.

Nothing in this guide is intended to amend or deprive LCRA or LCRA TSC of any rights granted by the terms of the written easements, nor is it intended to release landowners or developers from any liability due to negative effects upon LCRA's or LCRA TSC's facilities or easements.

For information or assistance, contact LCRA's Real Estate Services department at (800) 776-5272, Ext. 4176, or (512) 369-4176.

Mailings should be addressed to:

LCRA
Real Estate Services
Mailstop BTC 151
P.O. Box 220
Austin, Texas 78767

Overnight shipment or hand delivery should be made to:

LCRA
Real Estate Services
6800 Burleson Road
Building 310
Austin, Texas 78744

Your drawings should:

- Be signed, dated and include grading and site development plans (including geotechnical reports if applicable) for our review.
- Be drawn to an appropriate engineering scale (ranging from 1 inch = 10 feet to 1 inch = 400 feet) and the survey datum must be specified.
- Reference horizontal and vertical distances to existing LCRA TSC structures, anchors and easement boundaries.
- Refer to existing and proposed access roads, as well as refer to deed and easement recording information.

The Appendix contains typical dimensions for maintenance pads and work zones for typical transmission facilities. These are intended to assist you in understanding the types of uses for transmission line easements that utility crews require to safely work on the facilities.

Your project must comply with all applicable rules, regulations and orders of all jurisdictional authorities including federal, state, county, and local agencies, including, but not limited to, the Texas Health and Safety Code, the Texas Utility Code, National Electrical Safety Code (NESC), the Federal Clean Water Act, and the Federal Migratory Bird Treaty Act.

ENFORCEMENT

If an installation in the easement adversely affects the safe, reliable and efficient operation of a transmission line(s) or impedes our access to our facilities or our movement up and down the easement, LCRA TSC may remove the obstruction at the expense of the owner or developer. Necessary restoration of the easement to its original condition would be at the owner's or developer's expense. In such cases, LCRA TSC would not be liable for any expenses or damages to the facility.

TEMPORARY CONSTRUCTION AND MAINTENANCE EASEMENTS

No projects shall be constructed by the landowner or developer in temporary construction and maintenance easements for the term of the easement. These temporary easements are typically used for construction and wire-pulling.

PERMANENT STRUCTURES

Permanent structures should not be constructed within LCRA TSC easements. This includes, but is not limited to, billboards, signs, light poles, habitable structures such as residential, commercial and industrial buildings, recreational and playground equipment such as basketball goals, volleyball nets, above and below-ground swimming pools, diving boards and decks. Permanent structures can:

- interfere with or obstruct our right of access to the structures and along the easement
- impair the efficiency of maintenance, overhaul, construction and reconstruction
- interfere with future structure locations or relocations
- result in unsafe electrical clearances, which could cause electrical arcing from the transmission line to the structure.

COMBUSTIBLE MATERIALS

Combustible materials (other than approved pipeline crossings) should not be stored on LCRA TSC easements. Combustible materials include, but are not limited to, wood, chemicals, petroleum products, vessels containing combustible materials and waste materials. Combustible materials can pose fire hazards that may damage or interfere with the safe and efficient operation of transmission lines.

PONDS, CHANNELS, SEPTIC

Drainage, irrigation, retention or detention ponds, septic tanks and drain fields should not be constructed within LCRA TSC easements. They may:

- interfere with or obstruct access
- be damaged by cranes, bucket trucks and other heavy vehicles
- compromise the integrity of the transmission structure

SPOILS AND STORAGE FOR CUT/FILL MATERIAL

Spoils and storage for cut/fill material should not be placed in the easements since they:

- may result in unsafe electrical safety clearances
- interfere with access to and along the easement

GRADING, EARTH-RETAINING STRUCTURES, EXCAVATIONS, OTHER FACILITIES

Cross-Slope: Finish grades should not introduce slopes exceeding 5 degrees (approx. 12 horiz. to 1 vert.) measured across the easement. LCRA TSC's easements are used for access by cranes, bucket trucks and other vehicles, where grades exceeding 5 degrees could result in unsafe conditions for electric utility workers. The 5-degree slope requirement is based on ANSI A92.2 "Vehicle-Mounted Elevating and Rotating Aerial Devices (Section 4.5.2 Stability on Slopes).

Longitudinal Slope: Finish grades should not increase slope relative to existing grade measured along the easement.

Clearances: Finish grades and fill material must not adversely affect electrical clearances. Grades or fill materials resulting in unsafe electrical clearances should not be constructed. The easement should not be used for temporary storage of spoils. Minimum clearances as established by state law and the National Electrical Safety Code (NESC). State law requires a 22-foot minimum clearance from roads to high-voltage electric lines at their maximum design sag. The NESC requires other clearances that may be more restrictive, especially at higher voltages such as 345 kV. Caution! Maximum design sag usually far exceeds those found in the field due to weather conditions and transmission line loading. Please contact LCRA when planning to increase grades or add fill material within LCRA TSC easements.

Access: Finish grades and construction of any walls or other earth-retaining structures must not adversely affect access

Structures: Finish grades must not contact or encapsulate LCRA TSC structures or create standing or running water, around or in contact with LCRA TSC structures. Fill around and in contact with structures is unsafe and may cause dangerous corrosion due to alternate wetting and drying of the soil or due to standing water.

Excavations, cuts and trenching: Grade cuts and trenching may not be constructed in close proximity to LCRA TSC's support structures, generally no closer than a horizontal distance equal to the sum of the support structure foundation depth and the excavation, cut or trench depth. In no event should any excavation, cut or trench be made closer than 30 feet to a support structure. This is only general guidance for you to consider, and you must contact LCRA if you plan to excavate, cut or trench within an easement.

Retaining Systems and Excavations: Retaining systems and other facilities should not be constructed unless they enhance (rather than detract from) access to the transmission line and protect the transmission line without adverse effects.

Fill Compaction: Any and all fill must be placed with a minimum compaction of 95 percent maximum dry density, as determined by American Society for Testing and Materials (ASTM) D1557. LCRA may require compaction tests at the owner's or developer's expense.

Environmental: Texas Commission on Environmental Quality (TCEQ) requires stormwater pollution-prevention plans on certain projects that disturb soil.

PLANTINGS

Crops and grasses are generally acceptable anywhere in the easement as long as they do not adversely affect access or support structure and foundation integrity and full mature height will not exceed 10 feet.

Plantings, other than the aforementioned crops and grasses, should meet the following requirements:

- **Location**: Plantings should be confined to the outer perimeter of the easement area, located outside the maintenance pads and work zones such as those described in the appendix.
- **Height**: Any species with a full mature height exceeding 10 feet should not be planted in the easement. Plantings whose full mature heights exceed 10 feet may pose hazards to the safe and reliable operation of transmission lines. Plantings that reach dangerously close to electric transmission lines may result in electricity arcing from the plantings and into the surrounding soil, potentially creating safety hazards such as fire or possible electrocution.
- **Access:** Plantings may not be placed in or interfere with LCRA TSC's existing access roads or work areas, such as maintenance pads and work zones, nor restrict LCRA TSC's access to any of its facilities.
- **Working Zone**: Please note that clear working zones are required around LCRA TSC's support structures. Plantings other than crops and grasses should be avoided in these areas.
- **Irrigation:** Irrigation systems should not be installed in easements and should not spray directly onto any electric facilities, access roads, maintenance pads or work zones. Irrigation systems may be damaged by large equipment accessing the line.

In general, only low-growing vegetation with a mature height of 10 feet or less should be planted in the outer edges of LCRA TSC's easements. Low-growing crops and grasses may be planted in LCRA TSC's easements. However, no vegetation should be located in such a way as to hinder access or adversely affect safety clearances. Landowners and developers are encouraged to use licensed landscape architects. Plantings other than crops and grasses should be avoided in working zones around support structures.

Keep in mind that soil conditions and rainfall/watering rates can affect heights of plantings. The Appendix contains a list of tree species offered as examples of trees that may meet the above requirements.

ROADS AND DRAINAGE

LCRA TSC must maintain 24-hour access to its facilities, structures and anchors for patrol, maintenance, and emergency vehicles. The following minimum guidelines for roads constructed within LCRA TSC easements help ensure adequate access at all times:

- Design
  - Widths: Minimum width on access roads should be 14 feet. Curves require additional road width (see below – Horizontal Curves).
  - Wearing Surface: Reviewed on a case-by-case basis.
  - Grades: Roads will be reviewed on a case-by-case basis.
  - Cross Slopes: The road should be sloped, using a minimum 2 percent typical cross slope, to prevent standing water or damage from undirected water flow. When the road is designed to slope away from the cut bank, the water should be allowed to drain as sheet flow onto the downhill slope unobstructed by drainage swales or berms. Any fill in the downhill slope must be compacted to avoid erosion. When the road is sloped toward the cut bank, a drainage swale should be constructed along the inside edge of the road. Water bars also are required across the road to direct water into the drainage swale.
  - Horizontal Curves: All road curves must have a minimum radius of 75 feet, measured from the centerline of the usable road surface. Road grades are measured from the inside edge of the curves, which shall be used as the control for establishing road grades.

Radius of Curvature	Additional Road Width
75 to 100 feet	6 feet
101 to 150 feet	5 feet
151 to 200 feet	4 feet
201 to 400 feet	3 feet
Over 400 feet	2 feet

  - Vertical Curves: LCRA will review vertical curves to guard against high-centering and tail dragging when grade breaks exceed 6 percent.
  - Stopping Sight Distance: Stopping sight distance, according to typical Texas Department of Transportation (TxDOT) standards, should be maintained at all intersections with other roadways, public or private.
  - Loading Requirements: All private roadways within LCRA TSC easements, or roads used as access for LCRA TSC, should be sized to handle heavy construction vehicular traffic (passable with a 100-ton crane and H-20 loading as specified by the American Association of State Highway Transportation Officials (AASHTO)).
  - Driveway Entrances: If commercial aprons are not installed, curbs must be designed for 100-ton crane and AASHTO H-20 loading and painted red.

- Dead-Ends/Turnarounds: All dead-end or stub roads longer than 345 feet shall include a Y-type, T-type, or circular type turnaround.

- Drainage
  - Reviewed on a case-by-case basis. Standing water should not be allowed. Where an access road meets a publicly maintained road, drainage must meet the minimum requirement of the municipality or agency with jurisdiction over the publicly maintained road (usually a 100-year storm)
  - Dip Section: Dip sections should be constructed at a natural grade to allow upstream runoff to cross the road.
  - Swales: Brow ditches, swales, etc. should be avoided except transverse to the easement. When allowed, they must provide access for heavy construction equipment. Drainage swales shall be emptied by means of a culvert to the down slope side of the road, which then empties onto an energy dissipater or into a natural drainage path.
  - Culverts: Corrugated Metal Pipes (CMP), with a minimum of two feet of cover, should be used for culverts. CMPs must have a specified service life of 25 years, based on soil characteristics. Coupling bands and cut-off walls are required. Damaged coating must be repaired according to manufacturers' recommendations. The size of the CMP culvert must meet the minimum requirement of the municipality or agency with jurisdiction or be 12 inches in diameter, whichever is greater
- Erosion Control: Erosion control, using best management practices (BMPs) is required on all roads and slopes during and after construction. Erosion control shall not block access roads at any time. The developer assumes responsibility for obtaining any and all stormwater pollution- prevention plan (SWPPP) permits and maintaining any and all required BMPs, inspections, repairs and logs as required by the permit and the permitting authority.
  - Energy Dissipaters: All energy dissipaters, standpipes, desiltation basins, etc. must remain outside LCRA TSC's easement.
  - Flume/dip apron: Where subject to erosion, galvanized steel intakes (dip aprons) and down slope drains (troughs) must be used to protect roadway banks and natural soil. Energy dissipaters are to be installed at drain outlets outside of the easement.
  - Water Bars: Water bars shall be open at the lower end to allow drainage and should be placed at an approximate angle of 30 to 45 degrees to the transverse section of the road spaced as follows:

Average Road Grade	Maximum Spacing
0 – 5 percent	Not required
5 percent	125 feet
10 percent	80 feet
15 percent	60 feet
20 percent	50 feet

- Utility and Street Crossings: Design should minimize utility and street crossings. Crossings should be as close to 90 degrees as possible and located no closer than 30 feet from any transmission structure.

- Linear facilities running parallel to the transmission line such as streets, trenches, sewer, water, gas, culverts, drainage culverts, etc., should not be constructed within the easement.
- Blasting: Blasting is not permitted in the easements. Care should be taken to protect and prevent transmission line structures from being damaged by blasting on adjacent lands.

FENCES, WALLS, GATES, OTHER TEMPORARY FACILITIES

Temporary facilities, such as fences, walls and gates, must meet the electrical clearance requirements of the NESC.

Temporary facilities, such as fences, walls and gates near electric lines should be properly grounded to prevent exposure to induced voltages and currents, and in accordance with the National Electric Code and the National Electrical Safety Code.

Fences: Fences must not obstruct access to transmission structures or prevent movement up and down the easement. Fences must be properly grounded and gates must be provided to allow access to and up and down the easement. Gates should be at least 16 feet wide.

Walls: Walls, except those that enhance access and meet safety requirements, should not be constructed across LCRA TSC easements (refer to Appendix).

Gates: Gates will be required if an LCRA TSC access road is obstructed. Gates must meet the following criteria:

- All gate openings must be at least 16 feet wide.
- all gates must include either an LCRA TSC standard lock or an electric gate override key.

High Pressure Valves: Fire hydrants, air release valves, backflow preventers, PIV's, or any other high pressure valves are not allowed within LCRA TSC easements.

Manholes: Below-ground manholes (sewer, water, CATV, etc.) are not allowed within LCRA TSC easements.

Trash Receptacles: Dumpsters or other large trash receptacles should not be placed within LCRA TSC easements.

RELOCATION OF TRANSMISSION FACILITIES

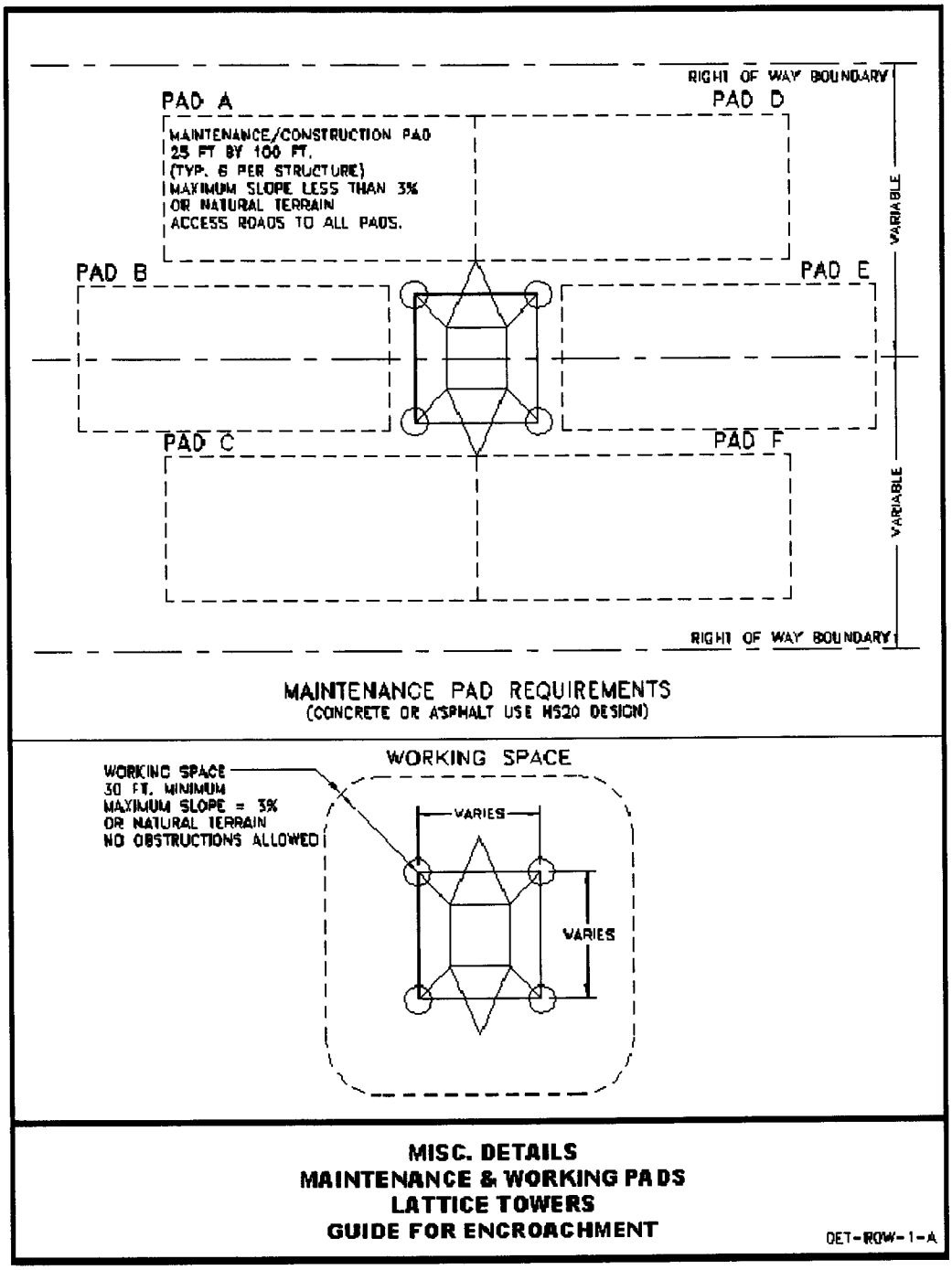
Relocation of transmission facilities can be complex and costly. All costs associated with requested relocations are borne by the applicant.

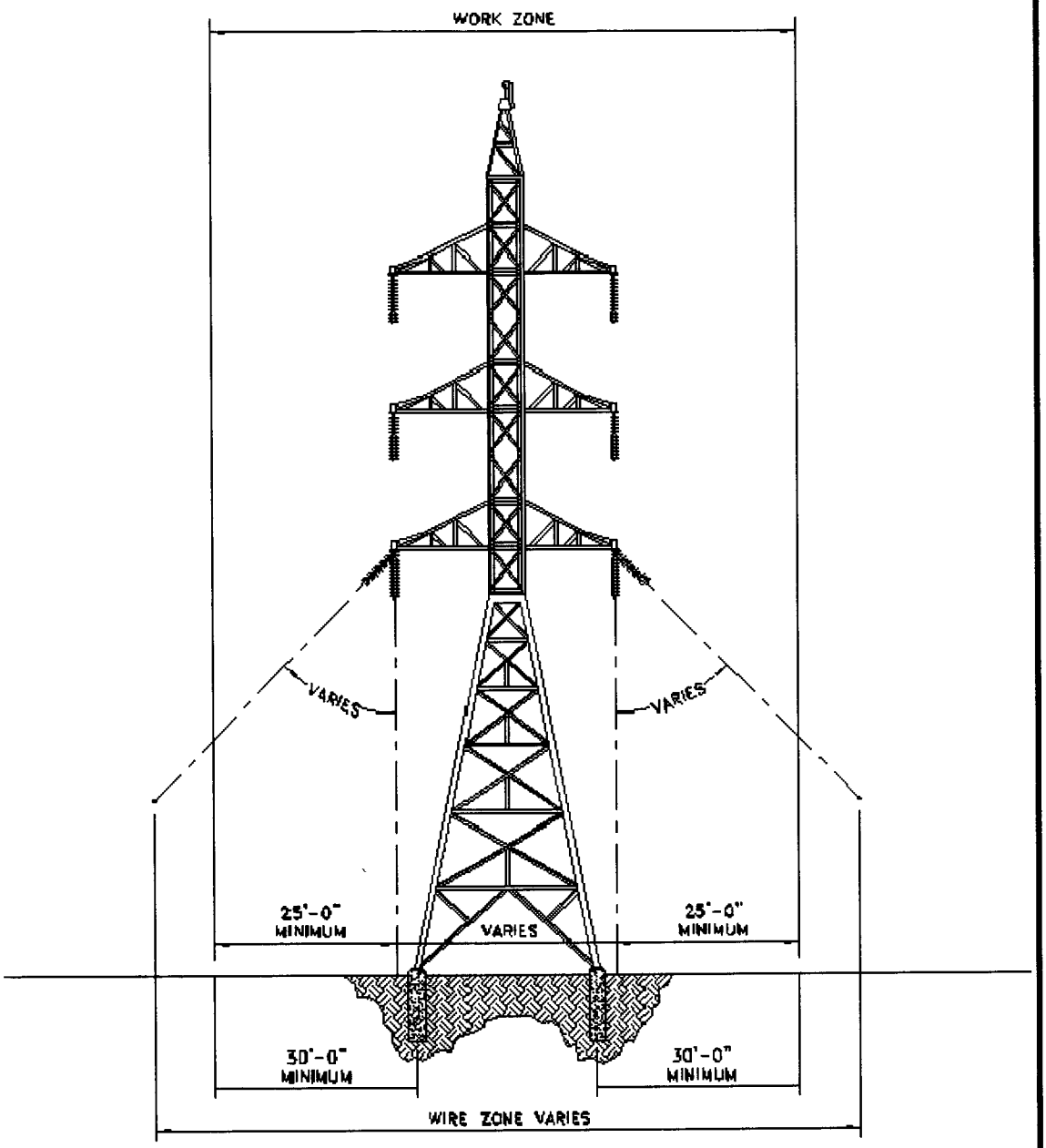
The time frame needed to accomplish relocation often exceeds 12 months. In many cases, early planning with LCRA can provide alternatives to relocation.

LCRA TSC will consider relocating transmission facilities when:

- The resulting alignment is acceptable to LCRA TSC
- The relocated transmission line can be safely, reliably and efficiently operated and maintained
- All landowners within 300 feet of the relocation have given written consent to the relocation.
- The proposed relocation provides access for maintaining and reconstructing, reconductoring, restringing or other activities granted in the easements
- All relocation costs are paid by the landowner including, but not limited to: engineering, surveying, environmental assessment; cost of relocating existing facilities including all materials and construction; applicable differential cost of future construction; applicable additional life-cycle operating and maintenance cost; taxes; overheads and interest during construction.
- Appropriate easements are provided to LCRA TSC at no cost and in a form acceptable to LCRA TSC.
- All regulatory requirements, if any, are met.

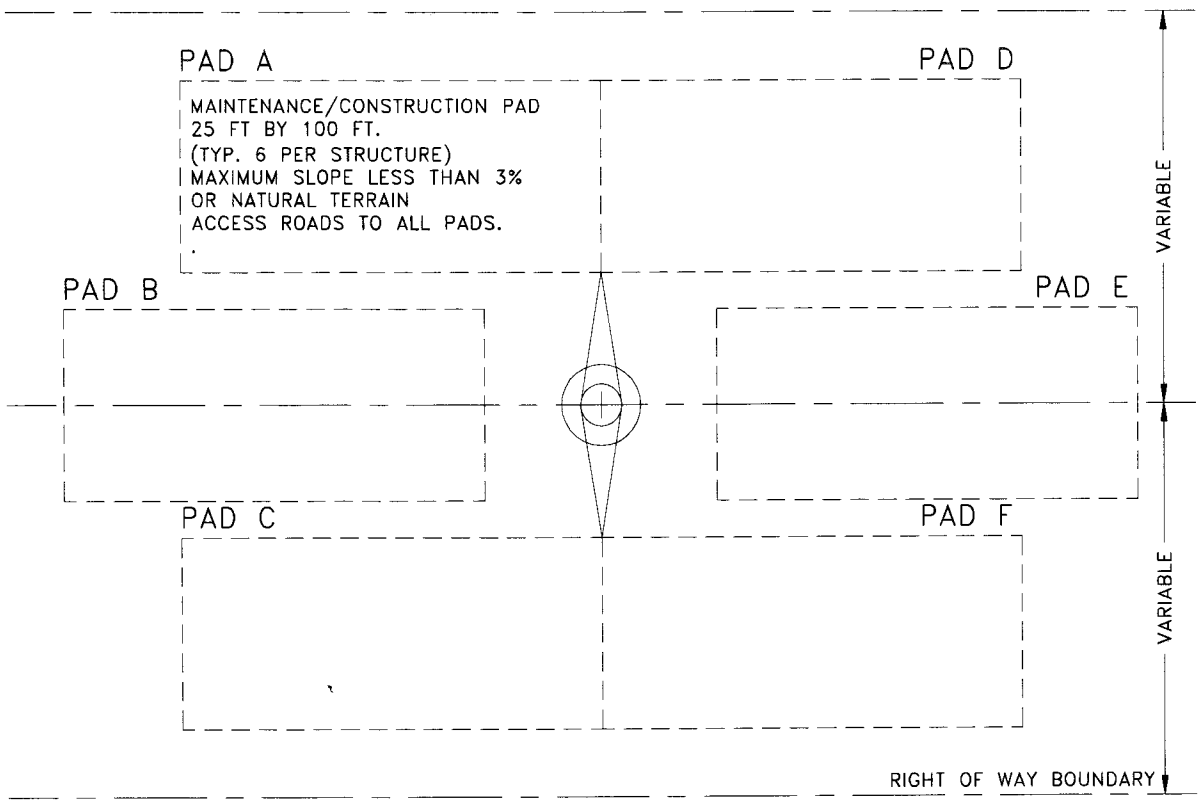
APPENDIX


RIGHT OF WAY BOUNDARY
PAD A
PAD D
MAINTENANCE/CONSTRUCTION PAD
25 FT BY 100 FT.
(TYP. 6 PER STRUCTURE)
MAXIMUM SLOPE LESS THAN 3%
OR NATURAL TERRAIN
ACCESS ROADS TO ALL PADS.
PAD B
PAD E
PAD C
PAD F
VARIABLE
VARIABLE
RIGHT OF WAY BOUNDARY
MAINTENANCE PAD REQUIREMENTS
(CONCRETE OR ASPHALT USE HS20 DESIGN)
WORKING SPACE
WORKING SPACE
30 FT. MINIMUM
MAXIMUM SLOPE = 3%
OR NATURAL TERRAIN
NO OBSTRUCTIONS ALLOWED
VARIES
VARIES
MISC. DETAILS
MAINTENANCE & WORKING PADS
LATTICE TOWERS
GUIDE FOR ENCROACHMENT
DET-ROW-1-A

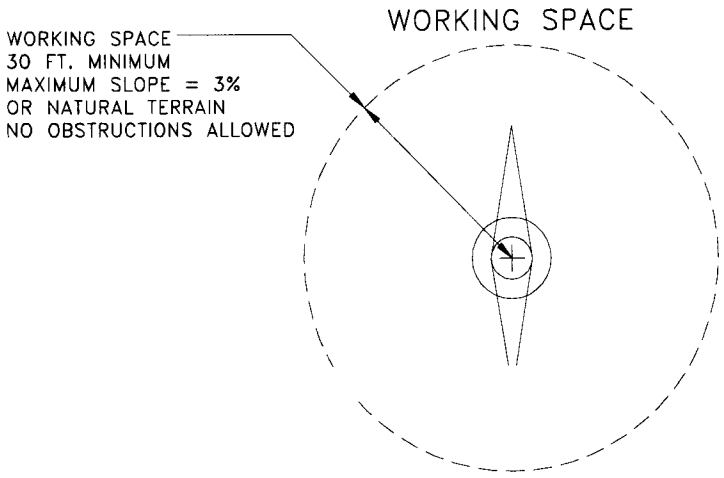


MISC. DETAILS
MAINTENANCE & WORKING PADS
LATTICE TOWERS
GUIDE FOR ENCROACHMENT

DET-ROW-1-B

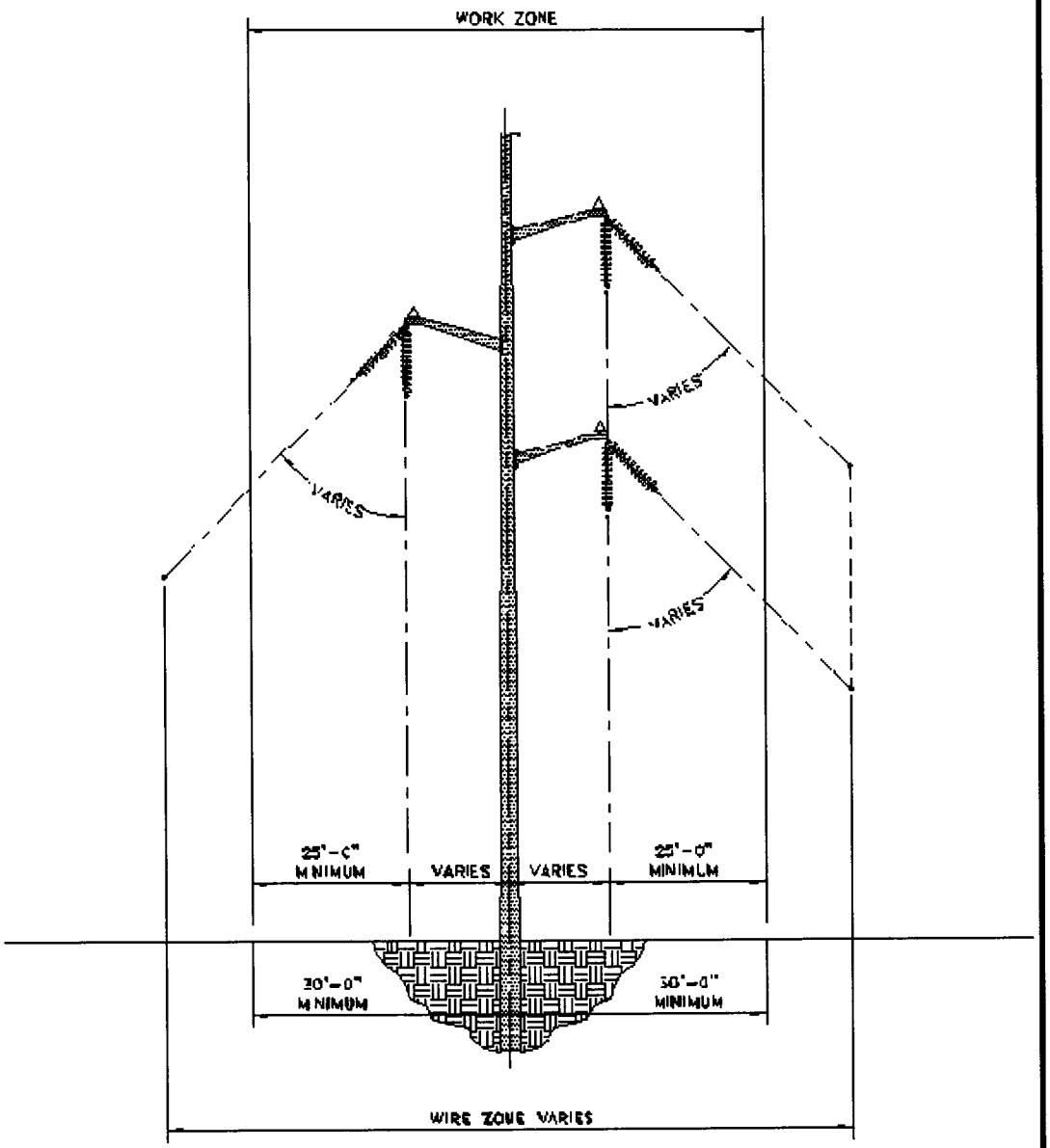


MAINTENANCE PAD REQUIREMENTS
(CONCRETE OR ASPHALT USE HS20 DESIGN)



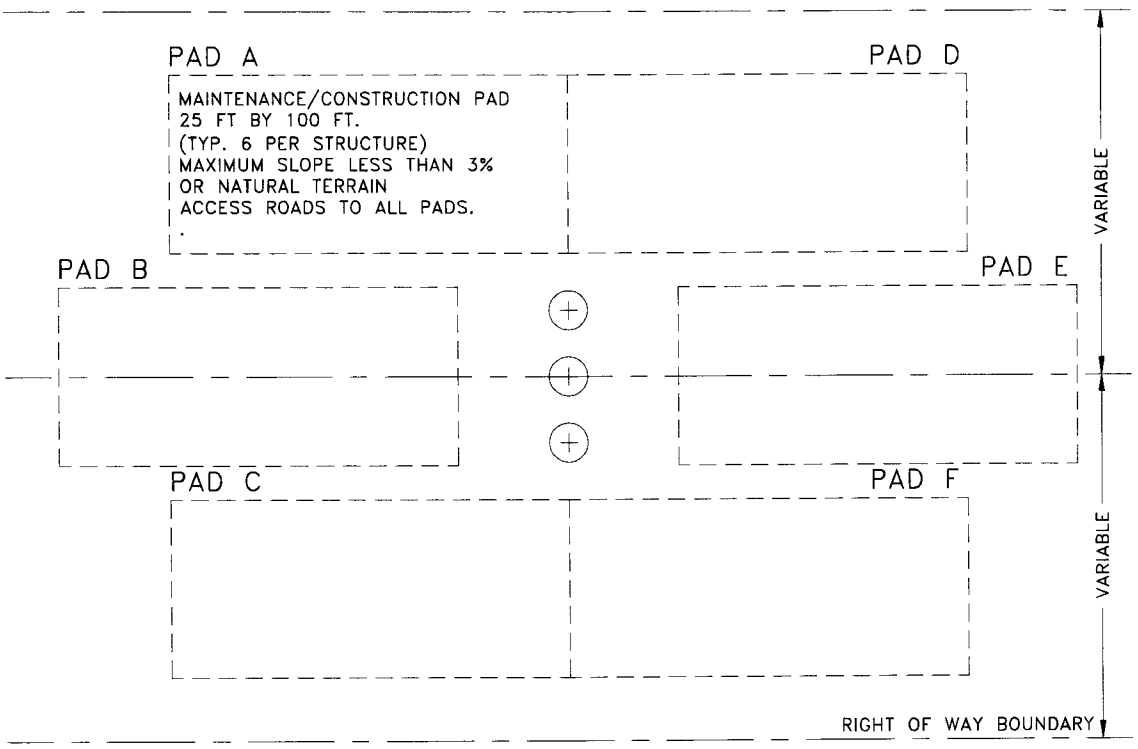
MISC. DETAILS
MAINTENANCE & WORKING PADS
TUBULAR STEEL POLES
GUIDE FOR ENCROACHMENT

DET-ROW-2-A

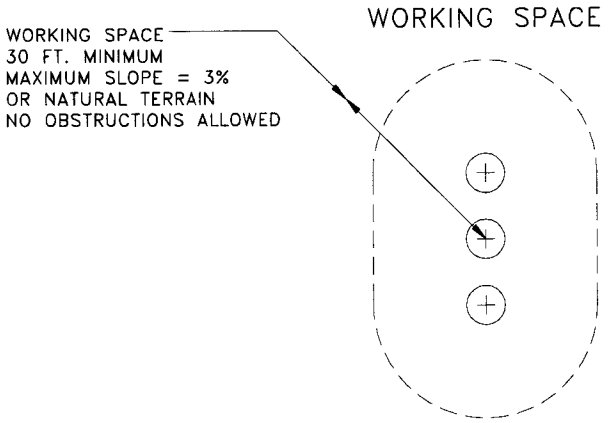


MISC. DETAILS
MAINTENANCE & WORKING PADS
TUBULAR STEEL PADS
GUIDE FOR ENCROACHMENT

DET-ROW-2-8



MAINTENANCE PAD REQUIREMENTS
(CONCRETE OR ASPHALT USE HS20 DESIGN)



MISC. DETAILS
MAINTENANCE & WORKING PADS
MULTIPLE WOOD POLE STRUCTURES
GUIDE FOR ENCROACHMENT

DET-ROW-3-A

OVERSIZED CHART – AVAILABLE FOR VIEWING IN CENTRAL RECORDS

OVERSIZED CHART – AVAILABLE FOR VIEWING IN CENTRAL RECORDS

OVERSIZED CHART – AVAILABLE FOR VIEWING IN CENTRAL RECORDS

ATTACHMENT F

T/L Right of Way Assessment

Line:

Structures	Description of Tree Maintenance	Men	Hrs/Men	Total Hours	Labor	Materials	Tools	Services	Total Costs
				0.0	$ -				$ -
				0.0	$ -				$ -
				0.0	$ -				$ -
	Totals:	**0.0**	**0.0**	**0.0**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Structures	Description of Seppi/Shredding Maintenance	Men	Hrs/Men	Total Hours	Labor	Materials	Tools	Services	Total Costs
				0.0	$ -				$ -
				0.0	$ -				$ -
	Totals:	**0.0**	**0.0**	**0.0**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Structures	Description of Gate Maintenance	Men	Hrs/Men	Total Hours	Labor	Materials	Tools	Services	Total Costs
EB				0.0	$ -				$ -
				0.0	$ -				$ -
	Totals:	**0.0**	**0.0**	**0.0**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Structures	Description of Herbicide Application	Men	Hrs/Men	Total Hours	Labor	Materials	Tools	Services	Total Costs
				0.0	$ -				$ -
				0.0	$ -				$ -
	Totals:	**0.0**	**0.0**	**0.0**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Structures	Description of Skidsteer/Dozer Maintenance	Men	Hrs/Men	Total Hours	Labor	Materials	Tools	Services	Total Costs
				0.0	$ -				$ -
				0.0	$ -				$ -
	Totals:	**0.0**	**0.0**	**0.0**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

ATTACHMENT G

LINE OPERATIONS
PRE-WORK CHECKLIST

This checklist shall be used by everyone, prior to any field work.

Project - _____

___ **Real Estate Services Notified** Date: _____
(this will need to be done on line inspections with heavy equipment, overhauls, misc. ROW projects as previously identified)

Landowners Notified Date:_ ___
(note the date that letters were mailed or when RES called landowners)

Contacts: (West Rep), Ext. 4536 / (East Rep) , Ext. 4161 (landowner notifications and day-to-day service requests)

___ **Environmental Issues – Refer to Environmental Assessment prior to starting work.**
(notification and/or permit required prior to working in sensitive areas)

Contact: Environmental Rep, Ext. 6212

___ **Plan and profile researched / DIGTESS Notified as needed**

___ **Landowner database checked for:**Pertinent landowner information along with any Special Conditions

___ **Patrol report and backlog checked for other work on the same line**

___ **Easements researched (*if needed*)** *(this will be done if the work warrants it)*

___ **Work scheduled with planner/scheduler**

___ **Work order received**

___ **Materials ordered or planned** *(for long-range projects the planner/scheduler will plan the materials)*

___ **Materials received**

___ **Telecom notified 8 days prior to start of work**
**** (this is only required during line crew activities on lines with fiber)***

___ **Review of project completed with employees doing the work**

___ **Project completed** *(completion of all pertinent paperwork)*

_____ _____
Person Completing Checklist Date

√ - Completed N/A - Not Applicable

[redacted]

LINE PATROL REPORT

LOWER COLORADO RIVER AUTHORITY
LINE PATROL REPORT

DATE: | DISTRICT: | PREPARED BY:

T-NUMBER: T-309 | LINE DESCRIPTION:

LENGTH: | DOUBLE CIRCUITS:

Failure	Problem	Cause	Veg Qnty.	Veg Height.

Location:	Failure:	Problem:	Cause:	Vegetation Quantity:	Vegetation Height:	Tree Location	Tree to Phase Distance:	Phase Height:	Comments:

ATTACHMENT I

LIST OF APPROVED HERBICIDES

Type	Brand Name	Common Name (Active Ingredient)
Bareground	Sahara	Imazapyr/Diuron
	Oust	Sulfometuron
	Krovar	Bromacil/Diuron
	Roundup	Glyphosate
	Rodeo	Glyphosate
	Arsenal	Imazapyr
	Escort	Metsulfuron
	Endurance	Prodiamine
	Pendulum	Pendimethalin
	Journey	Imazapic / Glyphosate
	Garlon 3A	Triclopyr (amine)
Rights of way	Garlon 4	Triclopyr (ester)
	Garlon 3A	Triclopyr (amine)
	Tordon K	Picloram
	Transline	Clopyralid
	Arsenal	Imazapyr
	Escort	Metsulfuron
	Spike 80W	Tebuthiuron
Aquatic	Habitat	Imazapyr

ATTACHMENT J

LCRA
LINE OPERATIONS
TREE SURVEY

T#_____ Evaluated by:_____

Line:_____ Date:_____

TAG	PHOTO #	SPECIES	LOCATION OF TREE	HEIGHT	DIAMETER	HEIGHT OF PHASE	DISTANCE FROM PHASE	ULTIMATE SAG	ULTIMATE SWING	WEATHER CONDITION TEMP./ETC

Instructions on filling out the form

Tag -	use this area to mark the specific tree
Photo# -	each tree or group of trees will have a picture taken
Species -	identify the species of the tree in question
Location of Tree	identify the location of the tree in relation to the phases
Height	identify the height of the tree
Diameter	identify the diameter of the tree
Height of Phase	note the height of the phase
Distance From phase	note how far the tree/limbs are from the nearest phase
Ultimate Sag	note the ultimate sag from the plan and profile
Ultimate Swing	get this info from TLD (Transmission Line Design) engineer
Weather Condition /Temp./Etc.	note weather condition, temperature and time of day

ATTACHMENT K

Policy – Corporate Environmental
Title: Oak Wilt Prevention

1.0 Purpose and Scope

The purpose of this Oak Wilt Prevention Policy is to document measures LCRA staff and contractors will take to prevent the spread of oak wilt while handling oak trees.

2.0 Definitions

Oak Wilt: A tree disease caused by the fungus, *Ceratocystis Fagacearum.* The fungus infects the conductive tissue *(xylem)* of the tree, which contains vessels that transport moisture throughout the tree. The oak wilt fungus causes the infected tree to produce tylosis. The production of tylosis becomes so significant that the tree can no longer transport water throughout its vascular system. The end result, in most cases, is tree mortality.

3.0 Prevention Policy

3.1 LCRA will initially train all staff involved with projects dealing with oak trees and follow up with annual refresher trainings. Staff receiving such training would include, but is not limited to, project managers and equipment operators responsible for removing or trimming trees. In addition, LCRA staff will train all right-of-way workers and contractors involved with projects dealing with oak trees before they start field work in areas with oak trees.

3.2 When possible, staff and contractors should avoid trimming or pruning Live Oak trees and other species of Red Oak (Spanish, Shumard, Water, and Black Jack) during February to June.

3.3 At all times, sterilization of equipment and painting wounds are mandatory when trimming or pruning susceptible species,.

3.4 Sterilization of tree removal and trimming equipment will occur before leaving the project area and will involve using either aerosol disinfectant or a 10 percent bleach-water solution. In addition, the trimming equipment would be sterilized thoroughly before it is used again.

3.5 Irrespective of limb size, all cuts and wounds must be painted with an asphalt or latex-based tree paint. Such painting will include stump-cuts and damaged roots both above and below ground.

3.6 At a minimum, LCRA will seal cuts of all oak trees. But as a conservative measure LCRA may elect to seal cuts of all hard wood trees on a case by case basis.

4.0 Disposal Policy

4.1 Chipping or shredding the wood from infected trees to use as mulch is an acceptable means of recycling the wood. Chipping or

shredding allows the wood to dry out quickly, thereby killing the fungus.

4.2 Burning diseased wood is an acceptable means of disposal. Burning diseased logs kills the oak wilt fungus; in addition, the fungus does not spread with smoke.

4.3 Firewood from diseased trees should not be stored near healthy trees because fungal spores or insects which carry the spores have the potential spread the fungus. If the brush or logs are to be left for firewood, the LCRA representative must explain to the land owner or land owner representative that the brush or logs may be infected and warn them of the hazards associated with storage. LCRA representatives may fulfill this landowner notification obligation by providing pertinent information in 4.3 and 4.4 of this policy to the landowner or landowner's representative. Logs over four inches or 10 centimeters in diameter at breast height must be girdled (bark removed), as fungal mats have been found on logs this size and larger after the tree has been felled.

4.4 It is recommended to store oak firewood under a sheet of clear plastic and tightly seal the edges of the plastic with soil or bricks. Doing so will prevent any spore-carrying beetles from escaping. It is also important to use clear plastic, as black plastic will reveal any escape holes to the beetles.

4.5 LCRA staff or its contractors will recycle or appropriately dispose of all unused disinfectants.

Approved: _____
for Henry Eby, Manager, Corporate Regulatory and Environmental Services

Approved: _____
Rick Bluntzer, Assistant General Manager, Chief Administrative Officer

Approved: _____
Marcus Pridgeon, Assistant General Manager, Chief Operating Officer

ATTACHMENT L

Report Month and Year:_____
Transmission Operator:_____
Transmission Owner(s) Covered in This Report:_____

Transmission Owner Contact Information :

_____
Name

_____
Phone

_____
E-mail Address

Requirement: All vegetation-related transmission line trips on 345-kV lines or any other lower voltage lines designated by ERCOT to be critical to the reliability of the electric system will be reported by transmission owners to their respective transmission operator. Transmission operators will forward this form to ERCOT Compliance on a monthly basis by the 20th day of the following month.

Reporting

All outages shall be reported where the cause of the outage is the line faulting due to contact with vegetation, except:

- Multiple outages on an individual line, if caused by the same vegetation, shall be reported as one outage regardless of the actual number of outages within a 24-hour period.
- A single trip followed by a successful automatic reclose within a 24-hour period shall not be a reportable outage.
- Vegetation contacts due to natural disasters or storm related [Examples: earthquakes, fires, tornadoes, hurricanes and wind shear (micro-bursts) ice storms, hail storms and floods] are not considered vegetation related.

Categories for Vegetation Contact Outages Reporting

- Category 1 – Grow-ins: Outages caused by vegetation growing into lines from vegetation inside and/or outside of the ROW;
- Category 2 – Fall-ins: Outages caused by vegetation falling into lines from inside the ROW;
- Category 3 — Fall-ins: Outages caused by vegetation falling into lines from outside the ROW.

DATE:	TIME:	LINE AFFECTED:	CATEGORY:

☐ CHECK IF NO VEGETATION-RELATED OUTAGES IN THIS MONTH