Vegetation Management Guidelines

Effective January 1, 2023

(subject to periodic PCEC revision)

ABOUT THE VEGETATION MANAGEMENT GUIDELINES

These guidelines apply whenever performing vegetation management services for Platte-Clay Electric Cooperative (PCEC). Vegetation management includes vegetation removal, cutting, pruning and Herbicide application around distribution lines. Regardless of the service performed, every work site has its own safety and work requirements.

The objective of these vegetation management guidelines is to provide safe, reliable, electric service through a cost-effective, integrated vegetation management program. These guidelines are designed to address both the minimum and optimum clearance requirements necessary to sustain safe, reliable electric service. This information addresses procedures for PCEC employees or contractors, and is not intended for use as personal safety guidelines. **Contractors are responsible for developing a program and following their own safety procedures.**

Contractors performing vegetation management services must have a copy of these guidelines with them in the field. Those performing line clearance activity are also required to have the book "*Best Management Practices- Utility Pruning of Trees*" by the International Society of Arboriculture on each truck or work location at all times. Contractors are required to supply their own copy of this publication.

1. SAFETY

All personnel performing vegetation management work on or near PCEC facilities or rights of way shall follow approved safety guidelines and procedures. Contractors performing work for PCEC must comply with all applicable governmental safety and health regulations, and the safety and health provisions of their companies. A partial list of applicable legal standards and regulations follows:

1.1 OSHA REQUIREMENTS *(1910.269)* AND OTHER FEDERAL REQUIREMENTS

OHSA 1910.269 is the Occupational Safety and Health Administration's (OSHA) vertical standard pertaining to the generation, transmission and distribution of electricity. Among other things, OHSA 1910.269 requires that everyone performing tree work in proximity to electric hazards be qualified and their training be documented.

RUS bulletins and regulations regarding vegetation management practices, including but not limited to Electric System Operation & Maintenance Bulletin 1730-1

1.2 ANSI REQUIREMENTS *(Z-133.1)*

ANSI Z-133 is the American National Standard Institute's *Standard for Safety Requirements in Arboricultural Operations*, including pruning, repairing, maintaining and removing trees, and cutting brush. It has the force of law because it is the document an OSHA compliance officer would reference when identifying safety violations by employees engaged in vegetation management. Therefore, it is considered the definitive safety standard for arboricultural operations.

In short, ANSI Z-133 defines an electric hazard to exist anytime a tree worker, tool, tree or any other conductive object is closer than 10 feet from an energized conductor with a voltage of 50,000 volts or less. ANSI Z-133 provides tables that outline minimum approach distances for both qualified and non-qualified tree workers based on voltage and elevation.

Contractor managers are required to provide ANSI Z-133 minimum approach distance tables to their employees.

1.3 STATE REQUIREMENTS

Only qualified employees of an electric utility can perform any activity bringing an individual or equipment within 10 feet of high voltage overhead lines (lines in excess of 600 volts). Employees and contractors working directly for the utility are considered qualified. Non-qualified employees or individuals must contact the appropriate utility to make arrangements for safe activity.

1.4 NATIONAL ELECTRIC SAFETY CODE (NESC) REQUIREMENTS

State regulatory entities (Public Utilities Commission) and federal agencies (Rural Utilities Service) require electric utilities to maintain facilities in accordance with the NESC. The NESC generally requires the removal or trimming of interfering trees.

1.5 PCEC REQUIREMENTS

All employees and contractors must be aware of the nature and characteristics of the electric facilities before work begins. Contractors will understand that the electric facilities must remain energized during the performance of work unless special arrangements are made with an authorized PCEC representative in accordance with these guidelines.

The following additional procedures pertain to contractors performing vegetation management work for PCEC:

- The contractor shall at all times conduct work in a manner to safeguard the public from injury and property from damage.
- The contractor must use all necessary protection for its employees and the public, and guard against interference with normal operation of the circuits. If, in the judgment of the contractor's general foreman/supervisor, it is too hazardous to remove or prune trees with the circuits energized, the contractor must contact an authorized PCEC representative(s). If appropriate, PCEC will de-energize circuits to ensure the safe removal or pruning of the tree(s).
- When practical and when a significant time savings would occur by de-energizing a single-phase line serving less than 10 meters, the contractor shall contact the PCEC Dispatch to request said line be de-energized and grounded to ensure the most efficient and economical removal or pruning of trees on that section of line.
- Should the contractor knock down or come into contact with PCEC conductors (power lines), the contractor must notify PCEC Dispatch immediately and take the necessary protective measures.
- If a contractor becomes aware of any dangerous, broken, loose, or faulty PCEC line facilities in the normal course of its line clearance performance, the contractor shall promptly advise PCEC Dispatch as to the exact equipment location(s) and nature of the condition found.

2. GENERAL LINE CLEARANCE: WHY ELECTRIC UTILITIES ARE REQUIRED TO CONDUCT VEGETATION MANAGEMENT ACTIVITIES

Trees are a major contributor to electric service interruptions nationwide. Trees cause outages in two ways: mechanical and electrical. Mechanical damage refers to entire trees or portions of trees falling and physically damaging facilities (knocking down wires, poles, etc.). Because trees can be conductive, electrical outages can also occur. These interruptions are caused when a portion of a tree becomes a short circuit path for electricity to flow, causing a protective device to operate and stop the flow of electricity. Trees must therefore be maintained an adequate distance from the conductors in an attempt to prevent interruptions of electric service.

Factors to consider in determining the extent of vegetation management required include, but are not limited to: line voltage class, species growth rates and failure characteristics, right-of-way limitations, the vegetation's location in relation to the conductors, the potential combined movement of vegetation and conductors during routine winds, and the probability to reach energized lines within a seven-year growth cycle.

3. VEGETATION MANAGEMENT

3.1 GENERAL PHILOSOPHY

Vegetation management is a data-driven, progressive system of information gathering utilized to best plan and complete work. It involves the use of various types of vegetation management treatments including removing, pruning, mowing and Herbicide application of vegetation. **Emphasis shall be placed on removing trees, in or out of the right-of-way, whenever possible**.

3.1.1 Work within the Right-of-Way/Easement

PCEC ROW areas shall be as defined below.

Definitions:

Maintain Yard area – A plot of land where a landowner has dedicated time and incurred expense to landscape, consistently tend to, and mow grass to an even height to establish a yard or yard like area. PCEC reserves the right to make the final determination of the above areas.

Rural ROW – Defined as any primary lines not within a maintained yard near a business, dwelling including the maintained driveway entrance.

Urban ROW - Defined as any primary lines within a maintained yard near a business, dwelling excluding the maintained driveway entrance.

Single phase ROW

Rural – 30 (15 feet either side of center line). Ground to sky cutting, trimming, mowing, and herbicide application.

Urban – 20 (10 feet either side of center line). Ground to sky cutting, trimming, mowing, and herbicide application.

Three phase or Crossarm Construction ROW

Rural – 40 (20 feet either side of center line). Ground to sky cutting, trimming, mowing, and herbicide application.

Urban – 30 (15 feet either side of center line). Ground to sky cutting, trimming, mowing, and herbicide application.

Before entering any easement or private property for right-of-way tree removal, clearing, or trimming, the contractor as a courtesy will contact property owner before beginning work.

- The property owner will be informed of the work to be done.
- If the Contractor is unable to contact/locate the owner of any property where work is required, report the situation to PCEC's ROW manager (or other designated representative).
- If it is necessary to enter the property owner's land to gain access to the right-of-way, an agreement should be reached as to the best route. If an agreement cannot be reached or in the case of an absentee owner, the contractor shall notify PCEC's ROW Manager (or other designated representative).
- If any damage to property or crops results, the contractor shall promptly contact the property owner and PCEC's ROW Manager (or other designated representative).
- **NOTE: Exceptions may be made for certain operational and/or emergency safety issues.**

3.1.2 Work outside PCEC Easement

PCEC general easements typically provide for 30 foot easement (15' on either side of centerline). Missouri state law as outlined in Section 3.1.3 provides for additional clearing.

3.1.3 Refusal

If clearing is necessary and the landowner refuses either access or to allow removal and or appropriate trimming, the contractor will notify PCEC's ROW Manager for resolution. Missouri State law provides for all electric utilities the right to manage vegetation as outline below:

Missouri Statute RSMo 537.340

2. Notwithstanding the provisions of subsection 1 of this section, the following rules shall apply to the trimming, removing, and controlling of trees and other vegetation by any electric supplier:

(1) Every electric supplier that operates electric transmission or distribution lines shall have the authority to maintain the same by trimming, removing, and controlling trees and other vegetation posing a hazard to the continued safe and reliable operation thereof;

(2) An electric supplier may exercise its authority under subdivision (1) of this subsection if the trees and other vegetation are within the legal description of any recorded easement or, in the absence of a recorded easement, the following:

(a) Within ten feet, plus one-half the length of any attached cross arm, of either side of the centerline of electricity lines potentially energized at or below 34.5 kilovolts measured line to line and located within the limits of any city (urban 10-14 ft); or

(b) Within thirty feet of either side of the centerline of electricity lines potentially energized at or below 34.5 kilovolts measured line to line and located outside the limits of any city; or

(c) Within fifty feet of either side of the centerline of electricity lines potentially energized between 34.5 and one hundred kilovolts measured line to line; or

(d) Within the greater of the following for any electricity lines potentially energized at one hundred kilovolts or more measured line to line:

a. Seventy-five feet to either side of the centerline; or

b. Any required clearance distance adopted by either the Federal Energy Regulatory Commission or an Electric Reliability Organization authorized by the Energy Policy Act of 2005, 16 U.S.C. Section 824o. Such exercise shall be considered reasonable and necessary for the proper and reliable operation of electric service and shall create a rebuttable presumption, in claims for property damage, that the electric supplier acted with reasonable care, operated within its rights regarding the operation and maintenance of its electricity lines, and has not committed a trespass;

(3) An electric supplier may trim, remove, and control trees and other vegetation outside the provisions in subdivision (2) of this subsection if such actions are necessary to maintain the continued safe and reliable operation of its electric lines;

(4) An electric supplier may secure from the owner or occupier of land greater authority to trim, remove, and control trees and other vegetation than the provisions set forth in subdivision (2) of this subsection and may exercise any and all rights regarding the trimming, removing, and controlling of trees and other vegetation granted in any easement held by the electric supplier;

(5) An electric supplier may trim or remove any tree of sufficient height outside the provisions of subdivision (2) of this subsection when such tree, if it were to fall, would threaten the integrity and safety of any electric transmission or distribution line and would pose a hazard to the continued safe and reliable operation thereof;

(6) Prior to the removal of any tree under the provisions of subdivision (5) of this subsection, an electric supplier shall notify the owner or occupier of land, if available, at least fourteen days prior to such removal unless either the electric supplier deems the removal to be immediately necessary to continue the safe and reliable operation of its electricity lines, or the electric supplier is trimming or removing trees and other vegetation following a major weather event or other emergency situation;

(7) If any tree which is partially trimmed by an electric supplier dies within three months as a result of said trimming, the owner or occupier of land upon which the tree was trimmed may request in writing that the electric supplier remove said tree at the electric supplier's expense. The electric supplier shall respond to such request within ninety days;

(8) Nothing in this subsection shall be interpreted as requiring any electric supplier to fully exercise the authorities granted in this subsection.

3. For purposes of this section, the term **"electric supplier"** means any rural electric cooperative that is subject to the provisions of chapter 394; any electrical corporation which is required by its bylaws to operate on the not-for-profit cooperative business plan, with its consumers who receive service as the stockholders of such corporation, and which holds a certificate of public convenience and necessity to serve a majority of its customer-owners in counties of the third classification as of August 28, 2003; any municipally owned or operated electric power system that is subject to the provisions of chapter 91; and any municipally owned utility whose service area is set by state statute, service agreement, or other authority to include areas which are not incorporated into city limits.

3.2 TREE OF INTEREST MITIGATION

Any tree with the potential to contact an electric supply line within a seven-year maintenance cycle is considered a "tree of interest." Trees of interest with an unacceptable risk of falling before the next maintenance cycle should be removed, topped or trimmed to a point they will not be a hazard to PCEC facilities.

Conditions that might indicate the presence of a tree of interest having an unacceptable risk of falling could include but are not limited to the following:

Biological Factors

- Decay/deadwood/dead trees
- Cracks
- Weak branch unions
- Cankers/fungal bodies

Environmental Factors

- Root damage, restrictions
- Changes in exposure
- Poor architecture (leaning, structural overloading, imbalance due to wounding, etc.)

3.3 WORK GUIDELINES

PCEC's clearance guidelines are based on local tree growth rates on a seven-year maintenance cycle. The primary objective of the distribution line clearance program is to keep the facilities clear of all tall-growing trees, brush and other vegetation that could grow too close to conductor on a seven-year maintenance cycle.

This is accomplished by routine maintenance on each circuit including tree removal, pruning and mowing. Again, emphasis shall be placed on removing trees rather than trimming/pruning.

Contractors are responsible for obtaining the appropriate clearances on all facilities existing in the field.

Routine Maintenance is proactive, scheduled work performed on a circuit/maintenance map basis. In general, all debris is removed, while logs are cut into manageable-sized pieces and left in neat stacks on the property for the member unless otherwise agreed upon.

3.3.1 Removal

Tree removal is the selective clearing of entire trees and brush at ground level. In most cases, tree removal eliminates hazardous conditions, improves access to facilities, and reduces future work. All tree and brush species within the required right-of-way width shall be cut, leaving a stump three inches or less in height, or flush with the grade whenever possible. Exceptions would include trees grown up in fence lines where trees may be topped above fence level. Other exceptions are to be directed by PCEC's ROW Manager.

All trees of interest inside PCEC's easement or rights-of-way are candidates for removal, and emphasis shall be placed on removing these trees rather than pruning. Trees of interest outside PCEC's easement or rights-of-way are also candidates for removal and, where appropriate and where the landowner has agreed, removal may occur. (Without landowner agreement, trimming on a seven-year cycle shall occur in areas outside PCEC's easement or rights-of-way.)

Tree Removal Criteria:

- "Cycle Busters"—*i.e*., fast- or medium-growing trees that will interfere with PCEC facilities before the next seven-year maintenance cycle.
- Trees of interest within PCEC's right-of-way.
- Trees of interest outside of PCEC's right-of-way that have an unacceptable risk of falling due to biological or environmental factors.
- Trees that can't be trimmed to obtain the guideline clearance to the conductor plus the re-growth in the 7-year cycle, or which require extensive drop-crotch trimming to obtain a seven-year cycle.
- Trees that, after pruning, would leave less than fifty (50) percent of the remaining tree.

Generally:

- Remove tall-growing trees that fit the removal criteria.
- Remove tall-growing brush that has the potential to grow into the conductor.
- All trees and brush should be cut as close to the ground as practical. Remove all second growth from stumps cut on previous pruning cycles. Also spray if applicable.
- Mitigate all trees of interest, whether inside or outside of the right-of-way, that present an unacceptable risk of falling.
- Keep all poles, guy wires and switch grates clear of vegetation (five-foot minimum).
- Trees are not removed from the vicinity of secondary, streetlight and service wires unless it is determined to be a cost-effective, long-term solution Trees should be trimmed if limbs are distorting the path or rubbing against wires.

3.3.2 Trimming/Pruning

While keeping in mind that emphasis shall be placed on removing trees of interest inside or outside PCEC's rights-of-way, trimming/pruning is another vegetation management practice.

Tree trimming/pruning is the selective removal of branches that are not an adequate distance from the primary line, or that will grow too close to the power line before the next maintenance cycle. Secondary, street light and service wires are not routinely trimmed for clearance unless overbuilt primary exists. In addition, secondary or streetlight wires may be trimmed if major interference, such as a broken limb, exists.

PCEC's guideline clearance to energized distribution conductor(s) is the distance of the seven-year regrowth rate being pruned. The contractor, together with PCEC's ROW Manager, shall determine additional

clearances required based on normal movement or sag of conductors, normal regrowth patterns and movement of vegetation. When limbs are growing in the direction of energized line with a reasonable likelihood of reaching energized lines within a seven-year growth cycle, the limbs should be trimmed to the PCEC average re-growth guidelines.

Lesser dimensions may be acceptable when individual tree characteristics are such that growth patterns are not a threat to the conductor until the next scheduled trimming cycle.

If practical, trimming methods will be based on procedures and examples set forth by ANSI A-300. As a general rule, trees should be pruned to improve or re-establish the clearance provided from previously performed right-of-way maintenance. Directional pruning promotes growth away from utility lines. Rounding over or topping is unacceptable as it promotes rapid re-growth and damages the tree.

Trimming/pruning should be done to remove or shorten dangerous limbs, such as those overhanging wires that have a high potential for breaking or bending into PCEC conductors due to ice, snow or wind loading.

Factors to consider when trimming/pruning include:

- Tree species
- Growth rates (how fast the branches grow back)
- Wood strength (the chance of the branch breaking under the load of strong wind, snow or ice)
- Branch size (larger-diameter branches coming in contact with conductors by failure or deflection create the greatest risk for tree-related interruptions)
- Framing and spacing between phases of multi-phase lines (compact design and multi-phase lines pose higher risk to tree-related interruptions).

3.3.3 Use of Chemicals and Sprays

- All right-of-way spraying shall be performed or supervised by a certified and licensed applicator. Contractor shall be responsible for purchasing, storing, record keeping, and furnishing chemicals to its crews. PCEC shall be consulted prior to any use of chemicals and sprays by Contractor.

- Right-of-way may be done at various locations using suitable herbicides to control vegetation particular to that location. Accurate, completed, detailed records of the applicator's name, date, location, wind direction, amount and type of herbicide used shall be kept and copies furnished to PCEC either on a routine weekly basis or upon completion of that particular electrical circuit. Prior to commencement of any Services involving the application of chemicals, Contractor shall thoroughly familiarize and inform itself of all local conditions and other factors which could or might affect chemical spraying. Any growth regulator chemicals shall follow the same application policies listed herein.

- Unless otherwise specified by PCEC, the Contractor shall mix and apply the chemicals on stumps following manufacturer recommendations. In addition, on all new stumps at any season of the year, stumps shall be sprayed as soon as possible, but within thirty (30) minutes of when cutting is performed. A chemical mixture shall be applied in sufficient volume to completely wet the

sapwood, bark area, root crown and any exposed roots. No spraying shall be done within thirty (30) minutes after fog, dew, or rain sufficiently heavy to cause runoff.

- Herbicides will be reapplied to ROWs cleared three years prior. Retreatment every 7 years or as conditions warrant.

- Herbicide may be applied to foliage to a height of 10 feet or less, unless agreed to otherwise.

- Contractor shall not be obligated to spray any area where damages to crops, orchards, or ornamental plants may result from chemical drift.

- PCEC may issue additional policies regarding when and where chemical application and/or chemical spraying will be used in rural areas or otherwise.

- Contractor's use of chemicals in connection with the Services shall strictly comply with all federal and state laws, rules and regulations which from time to time govern the use of those chemicals. By undertaking to perform any part of the Services in which chemicals are used, the Contractor certifies that Contractor is familiar with, has complied with, and at all times will comply with all requirements (including but not limited to those relating to training and the giving and posting of all required notices) under all of the foregoing laws, rules and regulations and further, the Contractor shall indemnify and hold harmless PCEC and its directors, officers, employees and agents from and against any liability, claim, demand, cause of action of every kind and description, damage, loss and expenses, including attorney's fees through appeals, arising or resulting from the Contractor's noncompliance with or violation of any of the foregoing laws, rules or regulations.

- Contractor shall be solely responsible for accurately recording and submitting all forms required by the applicable regulatory agencies and other governing authorities in connection with the use of chemicals.

- Chemical spills shall be immediately cleaned up in a manner consistent with label restrictions, federal and state regulations, and acceptable environmental procedures mandated by law. All notifications to proper authorities in connection with such spills shall be made by the Contractor. Each crew responsible for chemical applications shall be supplied with a suitable spill response kit for cleaning up and neutralizing spills of chemicals, all at the sole expense of the Contractor. Contractor shall insure that its employees are trained in the proper techniques for spill response, and are supplied with the necessary personal protective equipment required to perform spill mitigation duties.

- Contractor shall at all times be solely responsible for the continuous safeguarding of its workforce, including compliance with all applicable Federal, State, and local laws, together with its responsibilities for training its employees in the proper methods and use of personal protective equipment required for handling chemicals used in connection with these Services.

4 Safety Zone Requests

Only qualified tree workers can work on trees that have grown closer than non-qualified tree worker minimum approach distances. PCEC therefore provides adequate clearance so that work by non-qualified workers (for example, a member or a member's contractor) can be performed safely. These clearance requests are known as "safety zone" requests.

PCEC crews and contractor personnel should respond to these requests in a timely manner and in accordance with any laws and regulations. Work personnel must also determine the most effective, efficient course of action to provide adequate clearance. Examples include:

4.1.1 Pruning a portion of a tree back an adequate distance

4.1.2 Dropping a tree on the ground

4.1.3 Requesting that a conductor be de-energized

4.1.4 If the request pertains to a service line, street light wire or other secondary line, advise the requesting party to call PCEC ROW Manager at (816) 628-3121 and request a "line drop" to temporarily remove the wire from the work zone.

PCEC does not currently charge a fee for the trimming or dropping of trees related to safety zone requests, but it is important that PCEC and contractor personnel clearly communicate to the requesting party that all debris related to safety zone requests will be left on site.

A service fee may apply to the de-energizing of primary and secondary conductors. The requesting party should consult PCEC ROW Manager for more information by calling (816) 628-3121.

If contractor determines that the tree for which the safety zone request has been submitted has adequate clearance, the requesting party has the option to have any necessary work performed on its own or, if applicable, to wait until routine maintenance is performed.

4.2 Other Requests

Individual members or entities within PCEC's service area may request assistance from vegetation management crews to mitigate tree issues. Valid requests for assistance may be due to potential safety or service reliability problems. PCEC or contractor personnel will respond to these requests in a timely manner and in accordance with any instructions provided with the request. PCEC expects tree personnel to follow these guidelines in determining the appropriate course of action.

4.3 Emergency/Storm Response

PCEC and contractor personnel are required to respond to storm situations. Only actions necessary for the restoration of power will be performed. A reasonable attempt should be made in the circumstances to notify customers in advance of such activities. Generally speaking, no debris disposal will be attempted in emergency/storm response situations.

5 DEBRIS DISPOSAL

5.1 Ordinary Debris Disposal

Except as provided elsewhere in these guidelines (e.g., those situations described in Section 4.2.4), PCEC or its designated contractor shall attempt to establish mutually agreeable methods of tree, limb and brush disposal. It is acceptable for debris to remain on site, provided that the disposal method is communicated with the property owner and complies with federal, state, and local regulations.

Debris shall be stacked along the edge of the right-of-way so as to provide maximum access to the right-of-way by PCEC personnel. In addition:

- All tree, limb, and brush disposal that remains along the right-of-way with property owner approval shall be neatly piled along the edge of the right-of-way so as to ensure future accessibility by PCEC or contractor personnel.
- When limbs, wood, and debris must be removed from the site, contractor shall endeavor to remove such debris in a timely manner. When such removal is impractical, the contractor shall inform the customer of when clean-up will be completed.
- Broadcasting of chips into the right-of-way is acceptable, unless the available area to do so is obviously landscaped or within public view.

6 MISCELLANEOUS VEGETATION MANAGEMENT

6.1 PAD-MOUNTED TRANSFORMER CLEARANCE (Illustrated Notes):

A. Top pad of pre-cast concrete transformer vault. Not all pads are the same dimensions.

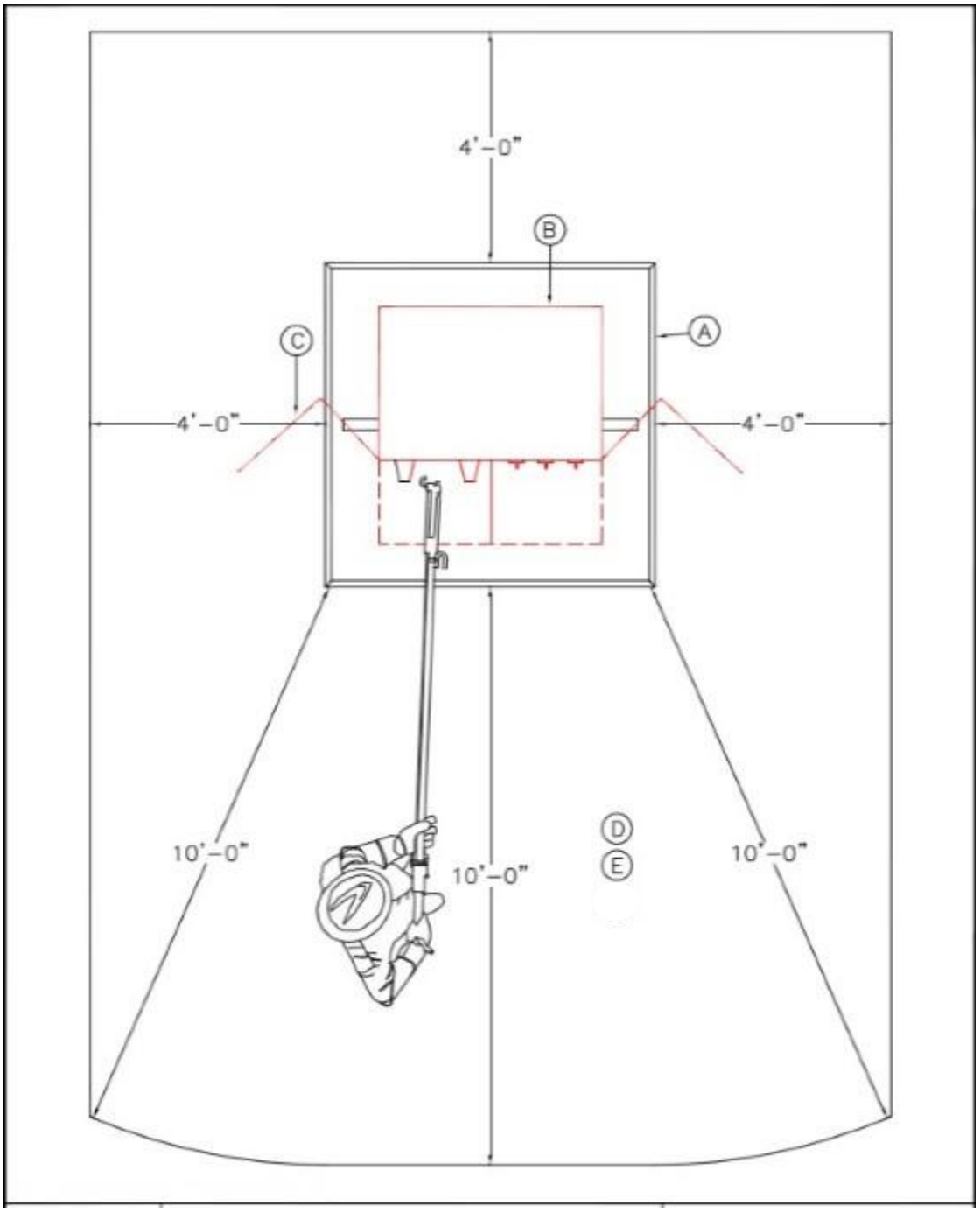
B. Transformers. Not all transformers are the same dimensions.

C. Transformer door. Transformer doors hinge at various positions on the transformers.

D. Clear areas are required around pad mounted transformers to allow the following:

1. Access to the primary and secondary compartments of the transformer.
2. Hot stick operation of the elbows, switch and bay-o-net fuse associated with the primary compartment of the transformer.
3. Air circulation for cooling the transformer during peak load conditions.
4. Boom truck access for replacing the transformer.
5. Routine inspection and maintenance.

E. The clear area shall have no obstructions that would impede PCEC personnel in the operation, maintenance, installation, removal, or repair of the transformer or any other PCEC facilities at this location.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