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General Guidelines for OUC's Electric Distribution System

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The following are general guidelines to follow with respect to providing sufficient clearance for the installation and maintenance of OUC's overhead and underground electric distribution systems. **Since every project is unique in nature, these guidelines are not intended to be used as design specifications. OUC Electric Distribution Engineering Division must be contacted in order to develop an approved electric distribution design. The electric distribution design by OUC cannot be finalized until the project's electrical plans have been approved by the City of Orlando. All new projects must be submitted through OUC's Development Services department.**

1. Overhead Electric Distribution Systems

OUC's overhead electric distribution systems consist of wood and concrete poles, overhead transformers, overhead bare conductors ranging from 12,000 volts to 34,500 volts and other overhead equipment necessary to maintain the overall electric distribution system.

- a. Guidelines- The owner/developer must provide and maintain the following:
 1. A standard 12-foot wide electric utility easement
 2. Truck accessibility to all overhead equipment
 3. A minimum clearance of 10' for all overhead bare conductors, 600 volts to 34,500 volts, from structures subject to any maintenance activities such as cleaning, painting, roof repair, rebuilding, etc. Where customer encroaches on existing overhead facilities, the customer will be responsible for all costs of adjustment, relocation or under grounding of directly affected facilities.
 4. A minimum of 4' from the back of curb to OUC poles. Distance may be greater than 4' based on the speed limit and classification of roadway. Clearance from roadway shall comply with the Florida Department of Transportation (FDOT) Utility Accommodation Manual (UAM). If this distance can not be maintained, OUC requires the installation of permanent guard posts to protect poles. (See Attachment A).

2. Underground Electric Distribution Systems

OUC's underground electric distribution system consists of padmounted transformers, padmounted switchgear, secondary junction boxes, primary pullboxes, primary manholes, conduit systems ranging from 2" to 6" schedule 40 PVC and other underground equipment necessary to maintain the overall electric distribution system.

- a. Guidelines- The owner/developer must provide and maintain the following:
 1. A standard 12-foot wide electric utility easement
 2. A 12' unobstructed clearance in front of transformer and switchgear doors
 3. Truck accessibility to all equipment.
 4. 36" of cover for conduit systems.
 5. A minimum of 4' from the back of curb to OUC padmounted equipment. If this distance can not be maintained, OUC requires the installation of permanent guard posts to protect equipment (see Attachment A). Clearance from roadway shall comply with the FDOT UAM. If this distance can not be maintained, OUC requires the installation of permanent guard posts to protect equipment. (See Attachment A).
 6. A minimum unobstructed area of 40"X40"X6" to a maximum of 48"X60"X6" for single phase transformer pad installations
 7. A minimum unobstructed area of 13"X24"X18" for secondary junction box installations
 8. A minimum unobstructed area of 90"X72"X10" to a maximum of 114"X102"X12" for three phase transformer pad installations
 9. A minimum unobstructed area of 64"X48"X6" to a maximum of 94"X96"X30" for three phase switchgear installations
 10. A minimum unobstructed area of 48"X78"X66" for primary pullbox installations
 11. A minimum unobstructed area of 6'X15'X7' to a maximum of 10'X20'X8' for primary manhole installations
 12. A minimum separation of 2' from underground conduit and other underground utilities, measured from the outside edge of OUC's conduit system to the nearest outside edge of other utility.
 13. A minimum separation of 3' from OUC padmounted equipment to building walls, measured from the outside edge of building wall to the nearest outside edge of padmounted equipment.
 14. A minimum overhead clearance of 20' for padmounted equipment, measured vertically from final grade to structure directly above padmounted equipment.

3. Vault Installations

The following are general guidelines and specifications with respect to the installation and maintenance of OUC primary transformers located in vault rooms within a Customer's building. Since the specifications for vaults may vary depending upon application, the following should be utilized as an initial guideline. The customer should consult with OUC engineering to determine the specific specifications for their project prior to designing their vault.

- a. The Orlando Utilities Commission shall provide, install and maintain the following:
 1. All primary cables and terminations
 2. All primary transformers

- b. The owner/developer is responsible for, but not limited to provide, install and maintain the following:
 1. Compliance with the latest version of Article 450 of the National Electric Code as it pertains to vaults.
 2. All secondary cable, secondary conduits, spade extensions, supports and connections utilizing terminal lugs, including any secondary cables needed to tie 3 single phase transformers into a three phase "transformer bank".
 3. Ventilation:
 - a. The vault shall be force air ventilated. This system shall be designed to exhaust heat using fans that are thermostatically controlled with an on/off switch.
 - b. This system shall exchange the volume of air in the room once per minute.
 - c. The air filter should be externally accessible from the vault.
 - d. The ventilation system shall be maintained by the owner.
 4. Doors:
 - a. Service entrance door shall have a locking arrangement operable by an OUC key only. Standard hasp lock or lock box is required. OUC provides the ring type locks.
 - b. All doors shall open out and have a 2" removable sill under the door and door jam.
 - c. Doors must have a minimum fire rating of 3 hours.
 5. Lighting and Receptacles:
 - a. Vault lighting and receptacles must be connected to an emergency generator circuit.

- b. Light switches to be located on adjacent wall to all entrance doors to vault.
6. Drainage:
 - a. Floor shall have a trough large enough to contain volume of fluid from one transformer.
 - b. Floor shall be sloped 1/8" per foot toward trough.
 - c. Grating on trough must be capable of supporting weight of equipment installed in vault.
 - d. Grating on trough shall be removable in 2' sections.
7. Access:
 - a. Provide an unrestricted and unlocked passageway to vault. OUC engineer to determine minimum width and height based on equipment size.
 - b. Floor shall be capable of supporting maximum weight of equipment installed in vault.
 - c. Minimum height and width through doorways to be determined by OUC engineer based on equipment size.
8. Elevator:
 - a. Elevator shall be labeled "Freight/Personnel" to distinguish it from other elevators in the building.
 - b. Elevator shall have a minimum rated capacity to support the weight of a single transformer. This information will be provided by OUC engineer.
 - c. Elevator shall have a minimum door opening width and height to provide sufficient ingress/egress of equipment being installed in vault. This information shall be provided by OUC engineer.
9. Soundproofing:
 - a. Soundproofing shall be adequate enough to contain the noise from transformers.
 - b. No soundproofing material shall be installed inside the vault.
10. Structural:
 - a. Vault shall have an adequate structural strength to support the weight of equipment installed in the vault. The weight of equipment shall be provided by OUC engineer.
 - b. Vault shall have adequate dimensions to provide safe ingress/egress of equipment and OUC personnel. This information shall be provided by OUC engineer.
 - c. The installation of galvanized pull irons will be required. Exact location and tension strength to be provided by OUC engineer.

11. Primary Conduits:

- a. Concrete encased schedule 40 electrical grade PVC conduit shall be installed from “main vault” to each “stacked vault”. Number and size of conduits to be determined by OUC engineer.
- b. Galvanized conduits shall be used on all sweeps and ells.
- c. Conduit ells shall have a minimum radius of 24”.
- d. Heating conduit to form sweeps and ells is not permitted.
- e. A polyolefin pulling string shall be installed in each conduit. Tape the string around conduit stub.

12. Restrictions:

- a. Fire sprinklers shall not be installed in vault unless required by local authorities.
- b. Vault shall not contain any customer owned equipment for building services such as meters, load control equipment, secondary fuses, secondary switches, sanitary plumbing, gas, oil, steam or water pipes.
- c. Unauthorized persons shall not be permitted to enter vaults.

4. Vault Sizing

The following are general guidelines for sizing electrical equipment vault rooms. Since the specifications and dimensions for vault rooms may vary depending upon the application, **the customer should always consult with OUC engineering prior to the vault design to determine the specific OUC specifications and vault dimensions for their project.**

a. General Vault Requirements:

1. Vault ceiling height: 10’ (min.)
2. Vault Door Opening: 8’-10’
3. Vault should be built at grade (typically in garage area) with immediate exterior truck access to street right-of-way

b. Buildings with retail/office space

(Assuming one secondary voltage offered – typically 480V)

1. Case 1: Building with more than 350,000 square feet
 - a. Vault dimension: 24’ X 36’
2. Case 2: Building with 350,000 square feet or less
 - a. Vault dimension: 16’ X 30’

c. Buildings with residential/retail space

(Assuming one secondary voltage offered – typically 208V)

1. Case 1: Building with more than 350,000 square feet
 - a. Vault dimension: 24' X 36'
2. Case 2: Building with 350,000 square feet or less
 - a. Vault dimension: 16' X 30'

d. Buildings with mixed-use (residential/retail/office) space

(Assuming two secondary voltages offered – typically 208V & 480V)

1. Case 1: Building with less than 700,000 square feet
 - a. Vault dimension: 24' X 36'
2. Case 2: Building with more than 700,000 square feet
 - a. Vault dimension: Custom Design