

Underground Residential Distribution
(Specifications for Installation)

PES

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Spec 11

Underground Residential Distribution (URD)

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**Underground Residential Distribution (URD)
General Discussion**

1. To offset the extra installation cost for underground electrical service over cost of overhead service, the owner or developer (O/D) will be required to furnish and / or install a portion of the required facilities where underground is requested.
2. Easements must be provided and clearly indicated on subdivision plats and other property plans. Except for individual services, these easements designate reserved areas for construction and maintenance activities as necessary, and must remain accessible to personnel and equipment of Pulaski Electric System (PES). Trees, large shrubs, structures, or objects that impede access or cause damage to electrical facilities will not be allowed within easements or in proximity to them.
3. Electrical facilities will not be totally below ground. Items such as transformers, switching enclosures, and service pedestals will be pad or surface mounted for durability, easy access, and serviceability. These will be low profile, natural green color, and easy to shield.
4. Generally, single-phase underground cables with loop feed will be used. Switching enclosures will be used for multi-cable taps and as required to limit pulling runs.
5. Units with alternate heating and/or otherwise low usage may require a cash contribution for underground service.
6. Should a special request or change result in extra cost of construction, O/D must bear these extra costs.
7. Multi-family units such as apartments or condominiums may require pedestals for cluster mounting of meters, and these will be furnished by O/D to meet PES specifications.

8. Special arrangements for temporary service per agreement of PES must be at O/D's expense.
9. Progression of installations by O/D must allow for timely inspections by PES before backfilling or pouring concrete. This applies especially to conduits, crossings, pads, sleeves, pull boxes, etc.
10. A pull rope of $\frac{1}{4}$ " (or larger) must be left in all conduits.
11. All material furnished and installed by O/D in completion of the project become property and under control of PES. However, PES will not be responsible for negligent acts of employees or agents of O/D.
12. Descriptions and drawings provide guidelines for construction.
"O/D" or "Consumer" indicates Owner or Developer.
"EU", "Utility", or "PES" indicates Pulaski Electric System.

Underground residential distribution (URD)

Easements

A continuous strip fifteen feet in width at front edge of lots on both sides of street shall be designated as electric utility easement, plus other shared 15ft easements along common lot lines as may be needed should front-to-back runs be required.

Trenching and Excavation

O/D shall perform all trenching, excavation, backfill, and compaction (including street crossings) as required by PES. O/D must obtain any permits required for crossings or other work on public or private property or right-of-way, and install warning tape (provided by PES at time of inspection). O/D must lay #4 SDBCu ground wire in bottom of every trench except for services.

Conduits and foundations

O/D shall furnish and install, to PES's satisfaction, all conduit and fittings, including stub-ups at riser poles, foundation pads, or sleeves, and at secondary pedestals or pull boxes. PES shall furnish and O/D shall install to PES's satisfaction conduit vents, pedestals, and pull boxes. O/D shall furnish and install to PES's satisfaction all materials for any concrete pads or structures required by PES for construction of the underground facilities.

Pole Risers

O/D shall furnish and install first ten feet of galvanized conduit past conduit vent (of specified diameter) for pole riser. PES will provide conduit vent to be installed by O/D. Remaining riser material will be furnished and installed by PES. Location of riser on pole must be followed per drawing to prevent over lapping of phone.

Electrical Cables

PES shall furnish and install all primary, secondary, and service cables, terminations, and accessories at pole risers, transformers, pedestals, and source side of meter bases.

Metering

O/D shall furnish and install meter base, and all conduits and supports required in the metering installation.

PVC Conduit and Trench

Primary cable to be at 48" depth:
 3" diameter for one primary cable
 3 - 3" diameter conduit for 3-phase primary
Secondary cable to be at 36" depth:
 3" diameter for 1- 4/0 UG trip or 1- 350 UG trip

Concrete Enclosed Duct

At small stream or deep ditch crossings, pole risers, and at all locations at less than normal conduit depths, to extend 3 (three) feet beyond such crossing, PVC conduit must be concrete encased with minimum of three inches concrete cover according to construction drawings. Road crossings for primary cable must be concrete enclosed duct also, or galvanized metal conduit.

Primary Cable

1/0 Aluminum 7 strand XLP, full cu. Conc. neut., overall PVC jacket, type URD, tree resistant, 15KV, 220 mil insulation.

750 Aluminum 60 strand, full cu. Conc. neut., overall PVC jacket, type URD, tree resistant, 15KV, 220 mil insulation.

Primary cable to be furnished and installed by PES.

Secondary and Service Cable

4/0 Aluminum 19 strand XLP with 2/0 aluminum 19 strand XLP neut., triplex, type USE, 600 volt

350 Aluminum 19 strand XLP with 4/0 aluminum 19 strand XLP neut., triplex, type USE, 600 volt

Secondary cables to be furnished and installed by PES.

Primary Connectors (LBT)

15kv load break elbow terminators, 200amp, dead-front, for bushing inserts, feed-thru junctions, and parking stands. To be furnished and installed by PES.

Secondary transformer connectors (TSC)

Dead-front "flood seal" for one hole aluminum compression plug lug, with sealing sleeves, for phase, and bare ku-bar conn. For neut., 4 place and 8 place (HOMAC FTU) for transformer threaded stud. To be furnished and installed by PES.

Transformers (PMT)

Low profile pad Mounted 7200-120/240 volt single phase, with bayonet expulsion, and backup current limiting fuse (where fault current dictates), in series, and with co-coordinated pressure relief device to prevent catastrophic failure, with two-way load bread feed through bushings and two parking stands. To be furnished and installed by PES.

Primary switching enclosure (PSW)

Low profile pad mounted 15kv, with three single-phase feed through junctions and six parking stands, 200 amp Continental Columbus CW-360 (Typical) to be furnished and installed by PES.

Secondary to service connectors (T Conn)

Submersible PVC covered parallel connectors with sealing sleeves for one-hole AL compression lugs, 4 place and 6 place, HOMAC flood seal bus connector. To be furnished and installed by PES.

Secondary Pedestal Enclosure (SP)

Fiberglass bell-shape covered enclosure for above ground secondary pedestal connectors, Blackburn SDF.

Conduit

Use schedule 80 PVC 3" for below grade at 36" or 48" depth, with 12" minimum separation vertically, and 12" minimum horizontally from other utilities. Use galvanized sweep elbow stub-ups (36" radius for primary).

Surge Arresters

MOV type elbow and riser arresters, 8.3kv MCOV

Outdoor terminators, 200amp (OD Term)

Heat shrink type with rain shields and one-hole AL compression lug.

Warning Tape

Red warning tape buried 12" below final grade in trench above electrical facilities. Provided by PES at time of passed inspection, to be install by O/D.

Conduit Standoff Bracket for pole risers

Alumaform 6CSO-18 with STK-3 strap. Furnished by O/D and install as per drawings.

Termination Stub

Compression pin connector with sleeve, Burndy Hyplug AYP. To be installed on multiple service applications

Secondary to service pull box (SPB)

Enclosure with flush mounted cover, Blackburn SDR2G

Feed Through Enclosure (FTE)

Primary enclosure for use at future transformer location, Kearney 653-0033 CTC with feed through junction (2-way) and 2 parking stands.

Stub-outs for Future

Conduit stub-outs for future primary, secondary, or service must extend five feet beyond pad, sleeve, pull box, etc., with ends sealed.

Concrete Pad

Poured reinforced concrete mounting pad with stub-outs for transformer, switching enclosure, or feed through enclosure, to be used where specified.

Concrete Pad with retaining wall

Concrete pad with retaining wall to be used on slope as required.

3-1c URD Cable Ampacities
 2-25-81
 Aluminum Conductor - Concentric Bare Neutral
 In duct in earth
 (Applies for PVC elbow stub-outs)
 (Based on 75% L.F. in 25deg C)

Size	AMPS	
	Full N.	1/3 N.
#2	146	---
1/0	180	---
2/0	200	---
4/0	250	250
350 kcmil	325	330
500 kcmil	390	403
750 kcmil	469	495
1000 kcmil	528	563

Ref.: 2-25-81 Curve sheet
 & IEEE Table 9