SPECIFICATIONS FOR CUSTOMER-INSTALLED UNDERGROUND DISTRIBUTION FACILITIES (NON-RESIDENTIAL)

This specification covers the general requirements for customer installation of a direct buried conduit system for the primary voltage cables within the bounds of a development (including all trenching and backfilling), for purposes of providing distribution facilities to the point(s) of delivery designated by the company. This spec also describes the customer responsibility for the secondary conductors between the point of delivery (usually the secondary terminals of the transformer) and the meter installation. The term "company" in this document refers to one of the Ameren Illinois utilities, whereas the term "customer" refers to the customer or their designated contractor.

1.0 Notice to Inspect

1.1 Unless otherwise arranged, the customer shall provide the company representative with at least three full working days advanced notice before the completion of the conduit system for the primary voltage cables. The purpose of this notification is to arrange a site visit by the company, prior to the trench being backfilled to insure for proper materials, depth, workmanship, etc.

1.2 Customer installed service equipment shall meet Ameren standards as well as all local codes, ordinances, and inspection authority requirements, or the latest National Electric Code, whichever is applicable.

2.0 Trenching for primary voltage conductors

2.1 The route of the ducts for primary voltage conductors shall be maintained as specified on the company drawings. Straight routes shall be maintained unless specified otherwise on the company drawings.

2.2 Turns and bends to avoid surface or hidden obstructions shall be made within the limits specified and only with approval of the company representative.

2.3 Burial Depths - Standard burial depths are 36" to 42" of cover from final grade for primary cables. Any exceptions to the specified burial depths must be approved by the company representative.

2.4 The customer shall be responsible for having all underground facilities located prior to trenching or boring. Approximate final grade within 6 inches shall be established before trenching is started. The customer is responsible for all property restoration and/or property damages occurring as a result of trenching or boring.

3.0 Conduit for primary voltage conductors

3.1 All conduits which will contain company owned primary voltage conductors shall be electrical grade, rigid, nonmetallic, gray schedule 40 or 80 PVC conduit or coiled HDPE conduit (typically black with red stripe) when conduit is installed using a boring technique for the below grade portion. Appropriate conduit sizes are 2" (for single phase primary voltage cables), 3", 4", 5", or 6" sizes, as specified on the company drawings. All conduit installed above ground shall be schedule 80 PVC. Conduit bends may be schedule 40 PVC as long as the entire bend is installed below grade. Otherwise, schedule 80 PVC bends shall be used. A sleeve is required where the conduit extends through concrete or asphalt to allow for expansion and contraction.

3.2 Easements and ROW - Deviations outside the boundaries of the associated easement or right-of-way are not allowed. Problems concerning the use of the easement or right-of-way shall be referred to the company representative for approval of customer's proposed resolution.

3.3 Bend Radii - All primary voltage conduit bends shall have a minimum radius of 36". Larger radius bends may be required to accommodate longer pulls, larger cable sizes, field obstructions or future considerations, and shall be called out specifically on the company drawings. The primary voltage conduit bend at the pad mount transformer shall extend above the transformer pad opening according to the attached specification drawing.

3.4 The customer shall install a flat pulling tape or nylon rope rated at a minimum of 2500 lbs. in all completed duct sections, with a minimum of 10 feet left extending out each duct end. Note the company may specify a flat pulling tape on specific jobs for longer conduit runs to avoid burning through conduit bends.

3.5 Conduit Sealing - All vertical bends penetrating grade, whether through any type of concrete or fiberglass pad shall have their open ends closed off with duct plugs, conduit caps or duct tape. The pulling tape or rope shall extend out the end of each bend, regardless of its being capped, with the minimum of 10 feet exposed.

3.6 Voids and Foreign Matter - Voids around the conduit(s) where water can collect shall be avoided. Any conditions that produce crushing pressures on the duct are unacceptable. Trenches shall be kept clear of foreign materials during the backfill process.

3.7 Backfill Material - Except as noted on the company drawings and specifications, native soil free of rock and debris may be used as backfill material unless disqualified by the company representative. The soil shall pass through a 2" screen. ¼" minus limestone screenings may be used as an alternate to soil when backfilling. In some cases, concrete encasement of ducts for primary voltage cables may be specified by the company representative.

4.0 Terminal Poles and Risers

4.1 Customer Responsibility, Primary Riser - The customer's responsibility at terminal (i.e. "riser") poles for primary voltage cables, includes extending the conduit(s) continuously from the location of the transformer pad up to and including the 90 degree sweep out of the ground and the first full section of conduit on the pole. The conduit should be securely "tied off" to the pole. The customer shall provide the remaining pieces of conduit required to complete the riser up to the connection point. All conduits installed above ground and attached to the pole shall be gray schedule 80 PVC. The company shall provide and install all hardware required for the standoff brackets on the pole. All primary voltage cable operating at > 600 V will be installed, owned, and maintained by the company. For primary cable, sufficient pulling tape or rope shall be exposed to reach the top of the riser conduit once installed by the company.

4.2 Customer Responsibility, Secondary Service Riser - The customer's responsibility at terminal (i.e. "riser") pole includes extending the customer owned secondary voltage service cables to the base of the pole. If the cables are installed in a conduit system, the customer's responsibility includes extending the conduit(s) continuously from the customer meter installation up to and including the 90 degree sweep out of the ground and the first full section of conduit on the pole. The conduit should be securely "tied off" to the pole. The customer shall provide the remaining pieces of conduit required to complete the riser up to the connection point. All conduits installed above ground and attached to the pole shall be gray schedule 80 PVC. Note, where required by local authority, the customer will provide a weatherhead to be installed by the company at the top of the riser. The Company shall provide and install all hardware required for the standoff brackets on the pole. The customer shall leave a sufficient amount of service cable coiled at the top of the first

section of conduit on the pole in order for the company to extend up the riser and make terminations to the overhead distribution system. All service cable operating at < 600V will be installed, owned, and maintained by the customer.

5.0 Service Cable Installations (< 600V) to pad mount transformer

5.1 The service cable to a non residential building shall be installed, owned, and maintained by the customer from the meter installation out to the pad mounted transformer or other point of delivery designated by the company.

5.2 Secondary Cables to a New Pad Mount Transformer - When the company's designated point of delivery is a pad mounted transformer, the customer shall install the cables through the opening in the concrete pad prior to the transformer being set, leaving a sufficient amount of cable for the company to make final terminations to the transformer. It shall be the customer's responsibility to mark the cables as required for identification purposes.

5.3 Secondary Cables to an Existing Pad Mount Transformer – When the customer owned service cables are to be brought out to an existing pad mount transformer, the customer shall leave sufficient service cable coiled outside of the transformer for installation by a company employee.

5.4 A PVC expansion coupling with a minimum travel of 12" is required at the metering equipment for all service installations. See service installation company drawings for more information.

SPECIFICATION DRAWINGS

Pole Riser - Secondary Voltage
Pole Riser - Primary Voltage
Concrete Pad - Single Phase Pad Mounted Transformer
Concrete Pad - Three Phase Pad Mounted Transformer (75KVA through 750KVA)
Concrete Pad - Three Phase Pad Mounted Transformer (1000KVA through 2500KVA)