

6 Underground Requirements

6.1 Underground Service

The Customer or Developer *may* take the responsibility for the trenching, backfilling, and compaction of Customer or Developer dug trenches. Normally, the Power Company shall provide this function. The Power Company shall install conduit, transformer pads or vaults, and any other requirements to complete the construction for underground service. For some subdivisions, a Developer *may* be allowed to install conduit. The Developer **must** receive permission to install conduit before work is started on jobs that the Developer desires to install conduit. Developer shall be responsible for any problems associated with the conduit installation. Any conduit installed by customer or developer must be inspected prior to backfill, contact the Operations Department to schedule an inspection.

Where exposed to motorized vehicles, the customer must install and maintain Power Company approved barriers to protect padmounted transformers and other equipment. (See Figure 6-3)

The Power Company will install, maintain, and own the underground service lateral from the Power Company's distribution line or transformer to the point of delivery.

The Customer or developer is **required** to install and own secondary underground services for any installation that requires Current Transformer (C.T.) metering. This includes all primary metered services, single phase 400 ampere commercial services, single phase services over 400 amperes, three phase services over 200 amperes or irrigation services over 60 hp for 208Y/120V or 240/120V or over 125 hp for 480Y/277V.

Where underground services are CT metered and the Power Company's transformer is installed on top of a vault, the point of delivery (POD) shall be the point in the circuit at which the transformer secondary conductors exit the vault. Where transformers are installed on a pad with secondary conductors either direct-buried or in a conduit, the POD shall be the point in the circuit at which the secondary conductors pass through the cross section of earth directly below the transformer pad perimeter. While ownership of the secondary conductors transfers from the Power Company to the Customer at the POD, the Customer or developer is responsible for purchasing and installing a continuous length of secondary cable necessary to allow connection to the transformer secondary terminals. The Power Company retains exclusive responsibility for connection of secondary service conductors to the transformer and for oversight of all work activities within the transformer vault and/or transformer secondary termination cabinet.

Direct burial of conductors may be installed where approved: consult Power Company before installation. A long sweep elbow is required at the bottom of the service riser conduit in all cases.

Conduit is required under any paved areas. Refer to the Table 6-1 *Minimum Conduit Required for Utility Conductors* for the minimum conduit acceptable for Power Company service lateral conductors to be installed.

6.2 Residential Sockets

To comply with OSHA rules and OUCC standards when not shoring the trench, keep the soil at least two feet away from the open trench.

The location of the service entrance on the Customer's premises is an important consideration to both the Customer and Power Company. Customer responsibilities include:

Consulting the Power Company to determine the route and the point of attachment for underground service laterals, meter locations, service outlet locations, current transformers, and terminal cabinet enclosures. Routing conduit under buildings or other permanent obstructions shall not be allowed.

Locating the service entrance to make the meter and service easily accessible from Power Company distribution lines and convenient for the installation, operation, and maintenance of Power Company meters and equipment.

The Customer is responsible to recognize potential surface and sub grade water flows and coordinate with Power Company to minimize potential run-off problems.

6.2.1 Call Before You Dig

State law requires the Customer/Excavator to call for underground utility cable locates at least two full working days (48 hours) prior to excavation. The excavation must not be started until locates have been marked or the utilities have informed the excavator that they have no facilities in the area. ***Call 1-800-332-2344 before you dig.***

6.2.2 Backfill

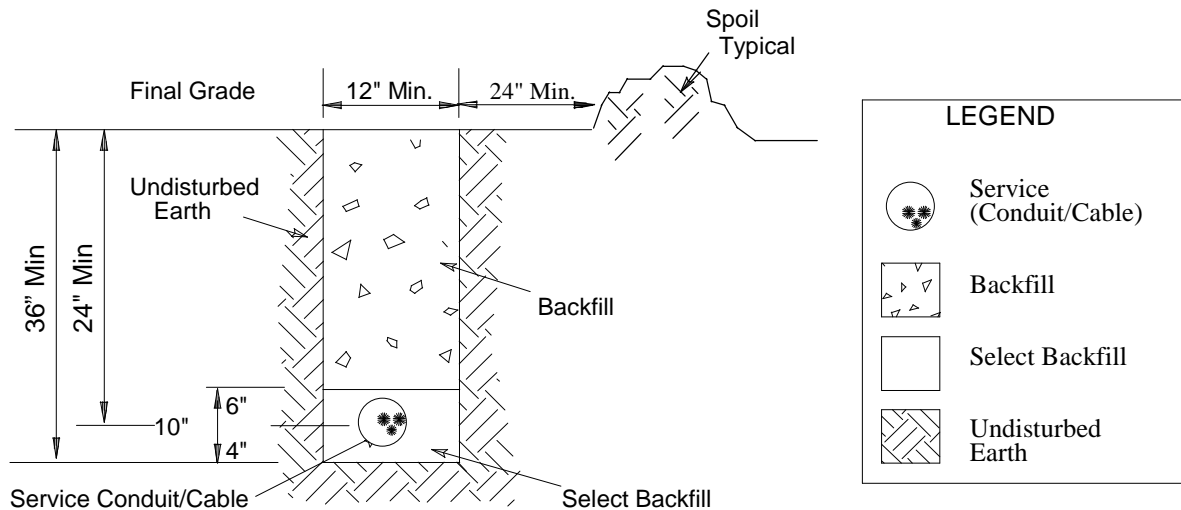
The Customer will be responsible for backfilling trenches he provides. The Customer must provide 10 inches of "shading" backfill material consisting of screened native soil or sand without any sharp or foreign objects. Shading backfill material must be on site either placed in the trench or along side the entire length of the trench. Contact the Power Company local office for the backfill procedure to be used. ***The Power Company will NOT energize conductors until the Customer completes backfill to Power Company satisfaction.***

6.2.3 Service Trench

When installing only service cable in the trench, follow "Power Cable Trench" dimensions in Figure 6-1. When installing service cable with other electric utilities (telephone, cable T.V.) follow "Service Trench With Other Utilities" Figure 6-2.

"Call Before You Dig"

Figure 6-1 Cable Trench (Only)



Notes:

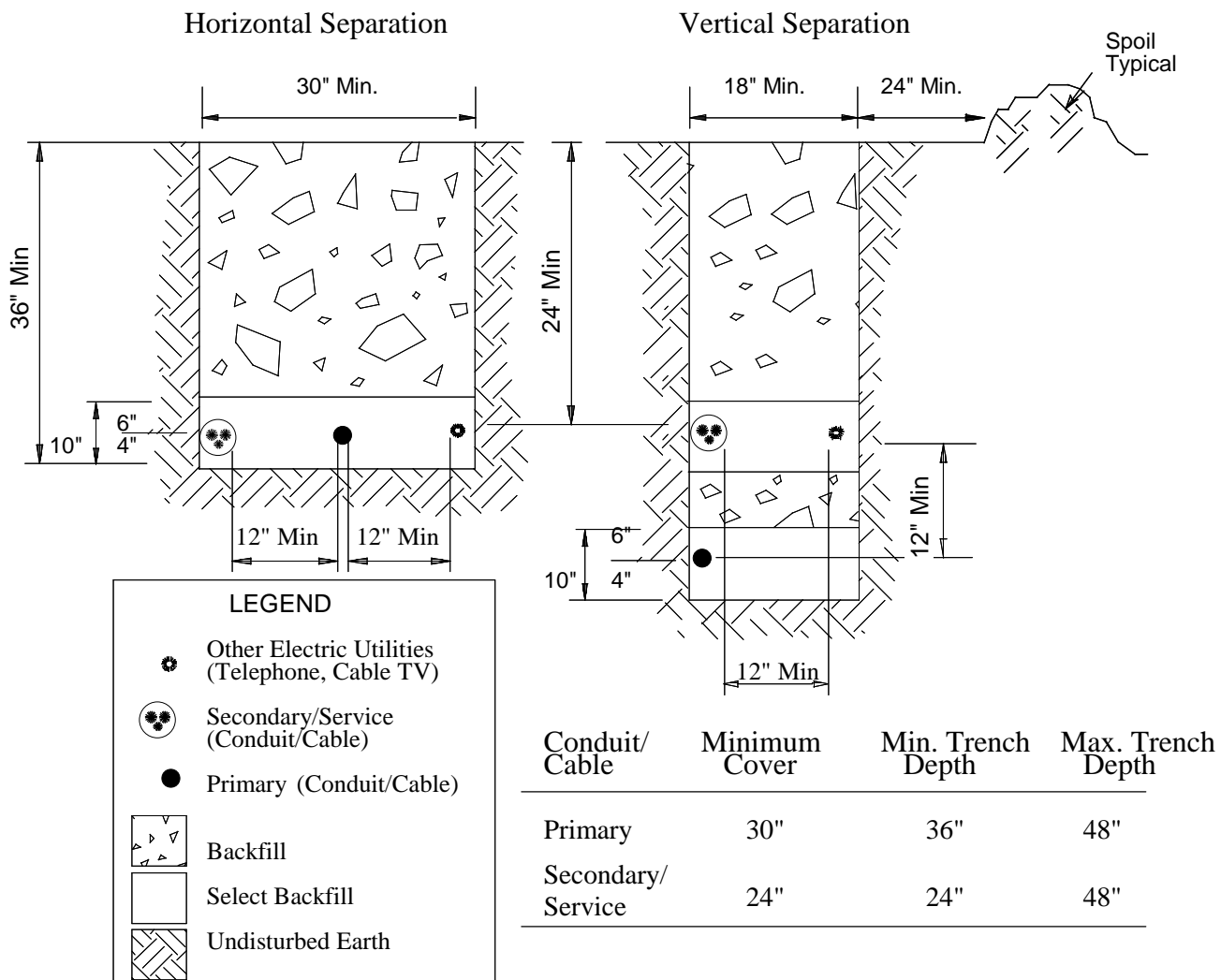
- a. Backfill material within 4” of the conduit shall pass through 3/4” sieve frame, backfill material within 4” of direct buried cable shall pass through 1/4” sieve frame and contain less than 5 percent rock solids by volume. Backfill in the remainder of the trench shall be free of rocks larger than 4” in diameter.
- b. When providing trench, the Customer will be responsible for backfilling trenches and site restoration.
- c. If a splice pit is required, it shall be a minimum of 3’ x 3’ x 3’ and minimum clearances from other utilities must be met.

6.2.4 Joint Use Trench

Joint use trench requirements may vary, consult Power Company for trench requirements before installation. The Customer may place communication, signal and other electrical conductors in the same trench as the Power Company conductors, provided that the installation meets Power Company specifications and all concerned parties agree on such replacement.

The Power Company will not install electrical conductors in a common trench with non-electric utilities such as water, gas, and sewer unless unusual conditions such as adverse soil or route restrictions exist. All such installations require the prior approval of the Power Company.

Figure 6-2 Joint Use Trench



Notes:

- a. Backfill material within 4" of the conduit shall pass through 3/4" sieve frame; backfill material within 4" of direct buried cable shall pass through 1/4" sieve frame and contain less than 5 percent rock solids by volume. Backfill in the remainder of the trench shall be free of rocks larger than 4" in diameter.
- b. When providing trench, the Customer will be responsible for backfilling trenches and site restoration.
- c. *The Power Company will NOT energize conductors until the Customer completes backfill to Power Company satisfaction.*
- d. *Customer shall not dig within 3 feet of transformer and under no circumstances shall Customer stub conduit into transformer or pedestal.*

6.3 Conduit

When pre-approved to install conduit, the Customer shall install either rigid steel or electrical-grade Schedule 40 gray PVC for acceptable conduit. If rock or other obstructions are encountered consult the Power Company. When the conduit terminates at a Power Company pole, consult the Power Company for exact conduit location. Table 6-1 shows minimum conduit requirements.

Table 6-1 Minimum Conduit Required for Utility Conductors
Secondary Voltage (Under 600 V)

This table is to be used typically for up to three bends, 270 degrees or less, and a maximum of 150 feet of conduit (see note e):

Service Entrance Ampacity	Single phase Three Wire	Three phase Four Wire
200 or Less	3" (see note d.)	One 3 inch
201 – 400	One 3 inch	One 4 inch
401 – 800	Two 4 inch	Three 4 inch
801 – 1,200	Consult Power Co.	Consult Power Co.
1,201 – Up	Consult Power Co.	Consult Power Co.

Notes:

- a.** Larger conduit size or bend radius may be required for longer runs, more bends, four-wire full neutral, or direct connection to utility conduit, 100% rated main services switch, or 208Y/120 conduit runs. Contractor shall consult Power Company for specific requirements.
- b.** See underground requirements for normal trench depth.
- c.** Customer’s service conductors must be in a separate conduit system from Power Company conductors.
- d.** To properly select wire and conduit size, the Power Company must take into consideration customer load, customer service equipment, and service length.
- e.** Elbows to be minimum 36" sweep radius. All bends must be factory made. If runs are longer than 150 feet or containing more than 270 degrees of bends, the elbows must be rigid steel.
- f.** Customer-installed conduit runs longer than 150 feet or containing more than 270 degrees of bends must be approved by the Power Company before installation.
- g.** Pull line or poly rope capable of withstanding 500 lbs. tension shall be provided by the Customer with 6 feet of line extending from each end of the conduit. Pull line shall be installed after conduit is jointed and glue is dry.
- h.** Power Company will not install conductors in conduit if conduit system is improperly constructed. The Customer is responsible to proof all conduit he has installed.
- i.** Conduit reducers shall be a smooth walled reducer (example: swedge).

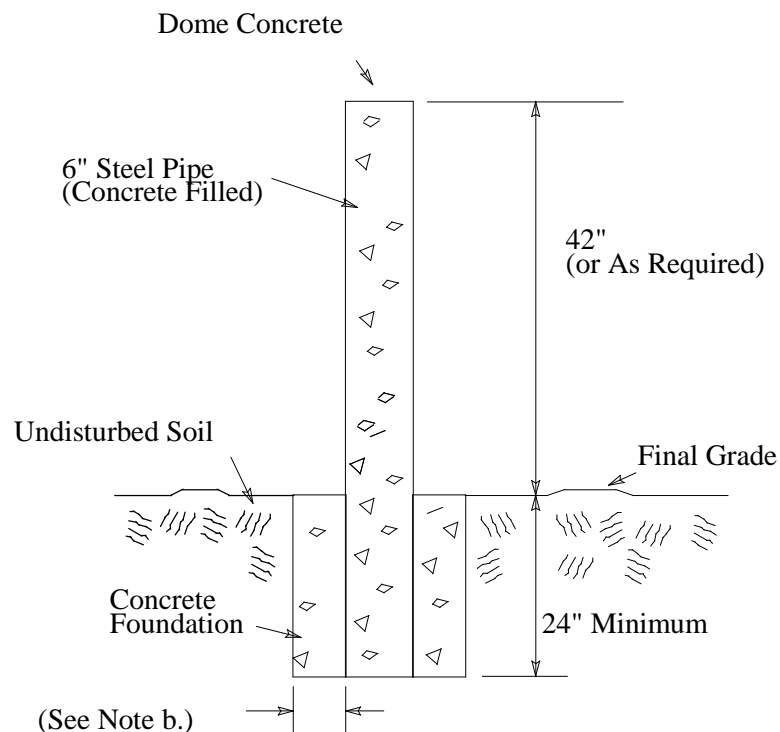
6.4 Concrete Pads and Vaults for Padmount Transformers

All concrete pads and vaults shall be purchased by the Power Company.

6.4.1 Barrier Post

Install 6" diameter steel, concrete-filled barrier post(s) around the Power Company equipment in areas where the equipment is exposed to vehicle traffic. For additional specifications and other options contact the Power Company local office.

Figure 6-3 Barrier Post



Notes:

- a. For barrier post height and placement locations contact local Power Company office.
- b. If barrier post is placed in stable soil a 6" foundation is required. If the soil is sand or unstable a 12" foundation will be required.
- c. Concrete must be domed at the top of the barrier post. Remove any sharp edges or burrs.