

SAFETY FIRST

The safety of customers, contractors, company employees, and the general public is the number one priority of providing residential electric service connections.

The purpose of this document is to provide Liberty Utilities' electric underground residential service installations rules for basic requirements essential for maintaining satisfactory service or interconnection compatible with Liberty utilities' electric power system. These rules supplement, and may not exceed standards of safety regarding the Customer's electrical service installation set forth in the National Electrical Code (NEC) and the National Electrical Safety Code (NESC) and other applicable codes. These rules are not a substitute for the NEC, NESC, municipal codes, or any other authority having jurisdiction. Any service not installed in accordance with all applicable codes and installation rules in this document will not be connected to the Company's system. The Company accepts no liability for direct or indirect damages resulting from the Company's refusal to energize a service or the Company's termination of a service that does not meet these rules and all other applicable codes.

Builder/owner/developer/electrician must contact Liberty Utilities and request for a new electric underground residential service installation (120/240V – 200A or 320A rated) and obtain a work request number. This should be done as soon as practical in the process to provide for applicable planning, material order, and construction schedule.

Builder/owner/developer/electrician responsibilities:

- Obtaining any required municipal electrical permits and arranging electrical inspections.
- Providing, prior to the start of the *Company's* design, all applicable documents required for the *Company* to design an electric service.
- Providing, prior to the start of the *Company's* installation, a signed easement if required, drafted by the *Company*, for *Company* owned equipment on private property.
- **Service trench** – The trench shall be in as direct line as possible without reverse bends from the distribution facility to the customer service entrance. In order to minimize cable pulling forces, no more than two bends (not including riser at house or pole) exceeding a total combined change of 45 degrees shall be permitted.
 - Trench shall be of such depth to accommodate 24 inches minimum to 36 inches maximum cover.
 - In order to prevent the conduit from being pulled out of the meter box, conduit shall be installed on virgin or well tamped soil. Trench bottom shall be undisturbed or relatively smooth earth, well tamped, and free of any debris that may be detrimental to the conduit.
 - Conduit in the trench should have a 4-inch-per 100 feet downward pitch towards the distribution facility, if physically possible. (This provides drainage away from the service entrance, and prevents stagnant water in the duct.)
 - The *Company* or Authority Having Jurisdiction (AHJ) will inspect and approve the conduit system and trenching prior to backfill.

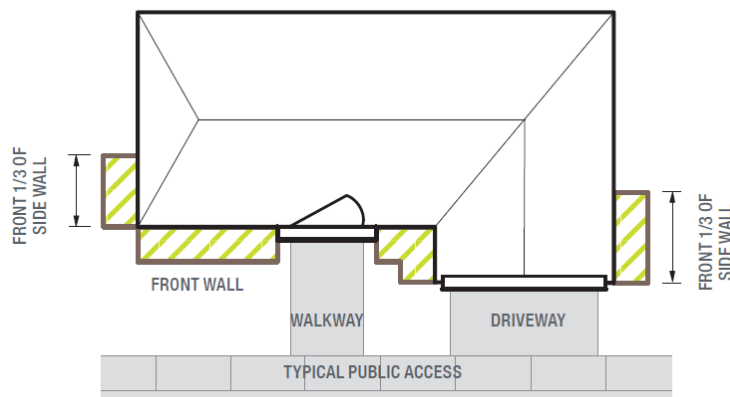


ESB No. 759C Residential Underground Services

Electric underground residential service installation requirements (120/240V – 200A & 320A rated) October 2018

- Backfill shall not contain frozen material or stones larger than 2 inches in maximum dimension. Care should be exercised to avoid damage to conduit during backfilling. Backfill shall be compacted, and shall be completed before the *Company* schedules cable installation. Caution tape should be installed in trench above conduit 12" below finished grade.
- When required, coordination with telephone, cable TV, or other utilities is the Customer's responsibility.
- **Conduit** – Standard conduit shall be 3-inch diameter, rigid PVC, heavy wall, sunlight resistant (6 percent – 7 percent titanium dioxide by weight), Schedule 40 as per ANSI/NEMA TC 2-2003.
 - All 90 degree sweeps will be made using Schedule 40 PVC with a minimum radius of 24 inches for 3-inch diameter.
 - Conduit should cross paved areas at approximately 90 degrees.
 - A 1/4 inch nylon pull rope (minimum), including 10 feet of slack, shall be installed in the conduit. Secure the pull line to a plastic conduit plug for 3-inch diameter
- Providing and installing *Company* approved Self-contained Meter Socket at location **Pre-Approved By the *Company***. Refer to Liberty Utilities ESB # 750 Specifications for Electrical Installations, latest version, Section 7.0 Metering, for self-contained Meter Socket requirements

Meter locations and clearances:



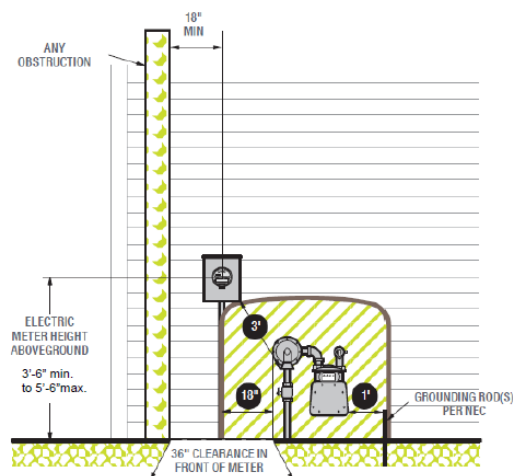
Meters shall not be located outside the shaded area in the diagram above.

Meters for newly installed services shall be located outdoors.

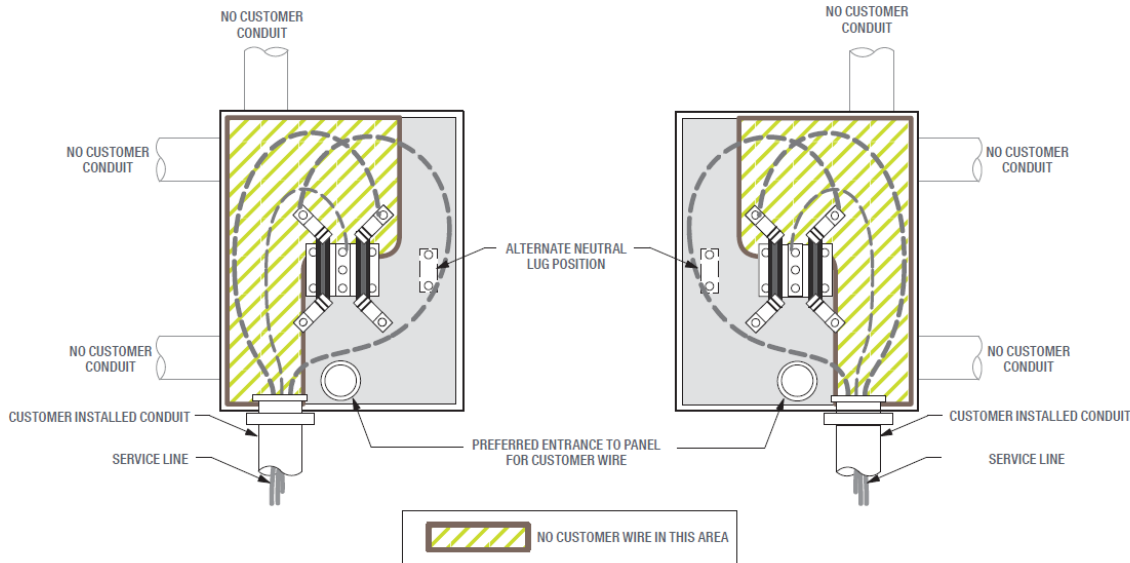
Meters must be located where they can be easily served from distribution system, identified, and accessed by Liberty Utilities.

Meters may be located on the front wall of the house relative to the driveway, or on the front third of either side wall relative to the driveway (see diagram above).

Electric meter to Gas Meter Clearances



Electric meter base wiring and service conduit placement:



SERVICE PANEL SIZE	MIN LUG SIZE	BOTTOM KNOCKOUT	SERVICE WIRE SIZE	CONDUIT SERVICE RISER (@ METER)	CONDUIT DIAMETER. & TYPE	MIN. BEND RADIUS
100 AMP	1/0 AWG	2 INCH	1/0 AWG	2 IN GREY SCH 40 PVC	2 IN GREY SCH 40 PVC	24 INCH
200 AMP	4/0 AWG	3 INCH	4/0 AWG	3 IN GREY SCH 40 PVC	3 IN GREY SCH 40 PVC	24 INCH
320 AMP	350 KCMIL	3 INCH	350 KCMIL	3 IN GREY SCH 40 PVC	3 IN GREY SCH 40 PVC	24 INCH

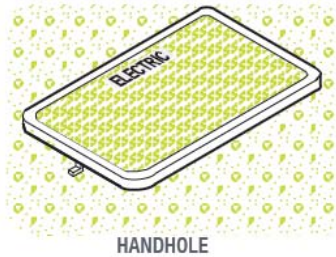
Company's Responsibilities:

- Developing a plan to provide underground electric service.
- Designating the service location and meter location.
- Designating the *Company* distribution facility to supply the underground service.
- Provide *Company* easement documents, if required, for signature for the *Company* owned cable and equipment on private property.
- Approving trench and conduit system installation.
- Install, own, and maintain secondary cable and meter.
- Attach 2 ½" x 2 ½" adhesive-backed signs: "WARNING, UNDERGROUND CABLE" and 3" X 5" ELECTRIC SERVICE IN CONDUIT refer to diagram.
- Install *Company* identification tags on secondary cable at distribution facility supplying underground service.
- Connect service when the *Company* has been notified by the Wire Inspector or authority having jurisdiction (AHJ) of an electrical inspection approval.

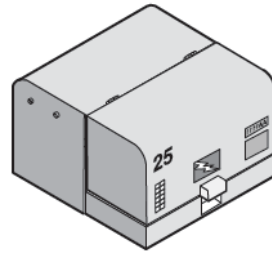
Service from Handhole/Padmount Transformer:

- Extend conduit to designated *Company* handhole/padmount transformer foundation and mate to previously installed 10-foot 3" conduit stub. If no conduit stub is installed contact *Company* to assist with installation into existing handhole/padmount transformer foundation.

Caution – Customer/contractor shall not enter any Company structure because it could be energized.



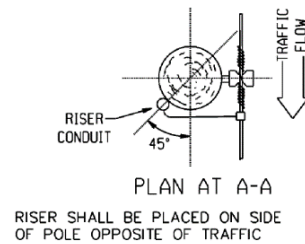
HANDHOLE



PADMOUNT TRANSFORMER

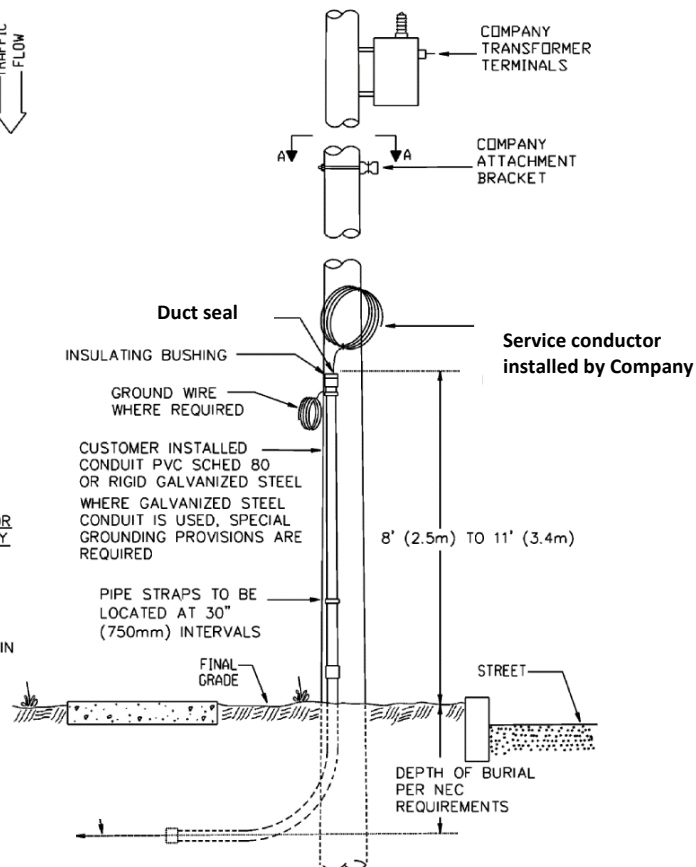
Service from Company Pole:

- Company will determine if underground residential service from an overhead distribution system is feasible and generally will be granted only from same side of street or roadway.
- Company will designate pole location, refer to Secondary Service Riser Pole detail below:



SPECIAL GROUNDING PROVISIONS FOR STEEL CONDUIT INSTALLATIONS ONLY

- INSTALL LISTED "U" BOLT WITHIN 6" (150mm) FROM TOP OF STEEL CONDUIT
- PROVIDE 30' (9.1m) OF GROUND WIRE PER NEC REQUIREMENTS. MIN #4 AWG COPPER FOR COMPANY CONNECTIONS
- PVC CONDUIT REQUIRES NO GROUNDING PROVISIONS



Limitations:

- In the event that a cable cannot be successfully pulled through the completed conduit system due to installation or construction, it will be the contractor's/customer's responsibility to locate and repair the involved conduit. The contractor will be responsible for all resulting expenses.