Lebanon UTILITIES

Electric Service Installation Manual

How to install electric services at residential, commercial, and industrial sites.

January 2025

Table of Contents

CHAPTER 1: INTRODUCTION

Installing new electric service is a joint project between the customer and the power company. The power company is responsible for bringing power to the site, for installing the meter in the socket, and for energizing the service. The customer is responsible for obtaining permits and inspections, providing and maintaining the overhead path or underground trench and conduit for the power company's wires, and for installing the equipment at the service entrance.

1.1 RESIDENTIAL SERVICE

The Utility's Rate Schedules, except as provided for in items (A) and (B) hereunder, are predicated upon the supply of service to one premise, at one standard for incidental income, the service will be provided under a Residential Rate Schedule.

A. When service is supplied to a residential dwelling unit primarily for serving one family and where boarders or roomers are accommodated for incidental income, the service will be provided under a Residential Rate Schedule.

B. When service supplied to a residential dwelling unit where the use is primarily for the accommodations of boarders, roomers, renters, or leasers (whether of short duration, such as hotels, motels, boarding houses, etc. or for long-term, such as apartments, efficiencies, etc.), the service will be provided under a non-residential Rate Schedule, unless separate circuits are furnished by the Customer to permit the Utility to separately meter and bill the residential and non-residential users or to be bill the residential users individually.

1.2 TEMPORARY SERVICE

Temporary service is defined as electric service to a site for less than one year. The most common use of temporary service is to deliver power during the construction phase of a project. When the project is complete, the temporary service is replaced by permanent service.

Temporary services are usually 120/240 volts, single-phase, 200 amperes.

1.3 BUSINESS SERVICE

Business service is defined as electric service to a commercial or industrial site.

CHAPTER 2: OVERHEAD SERVICES

2.1 GENERAL

The cost for overhead service depends on the extent of special engineering required. All new services will be subject to the most current General Terms and Conditions from approved Ordinances. The least complicated and cheapest situation is when a transformer is on a pole on, or near the property. If this is the case, engineering may not be required. The determination for required engineering will be at the discretion of the utility. The customer sets up a utility account, installs the service entrance equipment at the agreed upon location, has it inspected, and calls the utility to have service connected.

The customer is responsible for providing, installing, and maintaining all equipment from the point of delivery except for the meter. All meter bases, with the exception of CT-rated, are provided and installed by the customer. Meter bases must meet utility standards at the time of installation or upgrade. Any meter base that holds more than one meter, must be submitted for approval prior to installation. See construction standards for approved metering equipment.

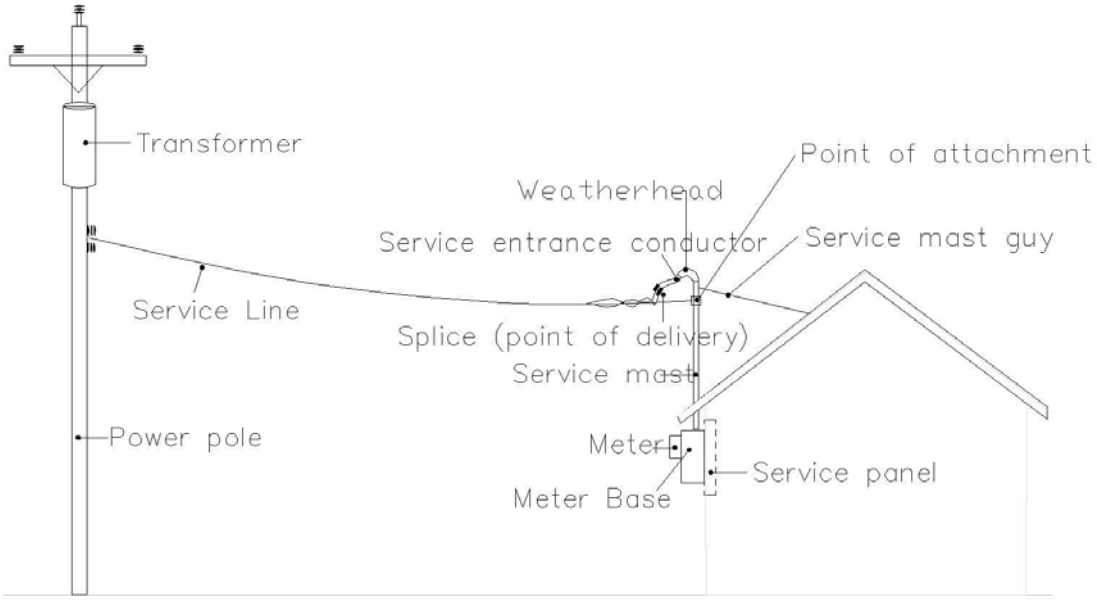
The power company is responsible for providing and installing the meter, completing the connections between the meter and the incoming service conductors, and making the final connections at the point of delivery. If current transformers (CTs) are being used for metering, the utility installs the CTs and makes the connections to them and to the meter.

Any inventory or equipment provided by the utility will be billed to the customer at the cost of the item. This could include, but is not limited to, the electric meter, CTs, PTs, specialty metering bases, transformers and poles as well labor services for inspections, wiring, and special engineering.

2.2 OVERHEAD INSTALLATION

Figure 2.2 shows a finished installation of an overhead service using a service mast. The customer provides everything shown here, except the meter, the overhead service line, and the power pole and pole- mounted equipment.

Figure 2.2 – Typical Overhead Service



After the customer installs the required equipment, the power company installs the meter in the meter socket, strings the service line, attaches the service line supporting wire (neutral) to the insulated clevis, and splices the conductors together.

2.3 OVERHEAD LINE CLEARANCES

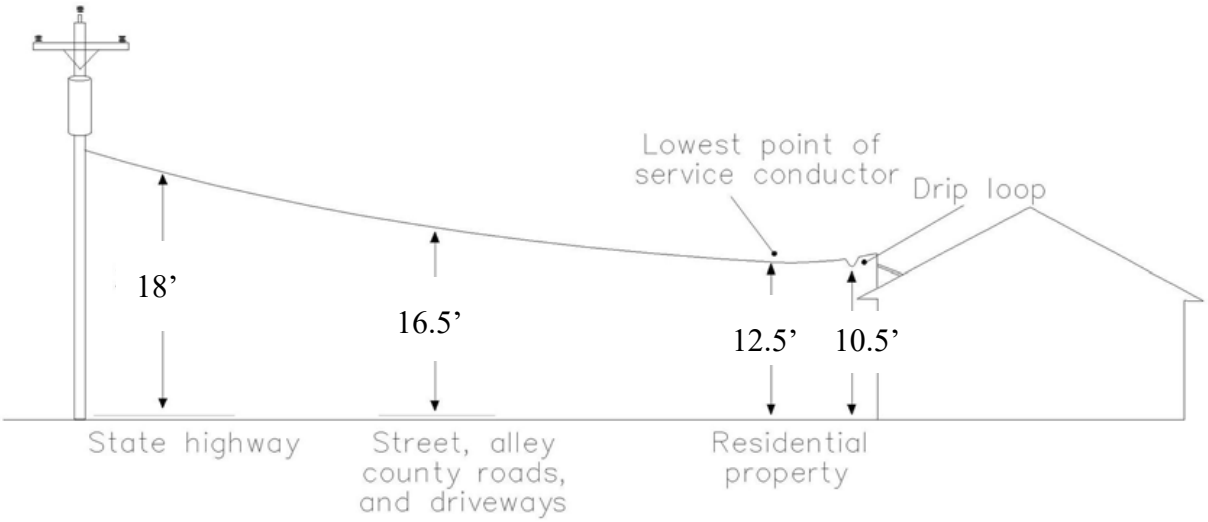
Sections 2.3.1 and 2.3.2 describe clearances for overhead supply lines below 750V, for the conditions most encountered. For other situations and for details, see the National Electric Code (NEC), the National Electric Safety Code (NESC), or contact the electrical inspector for your area.

2.3.1 CLEARANCES FROM SURFACES

The customer does not string the service conductor, but is required to provide a point of attachment high enough and strong enough, to allow the utility to install the service line and maintain the required clearances. Some installations will require riser guying.

If the span of the service line exceeds 125 feet, an intermediate support pole may be required to relieve the tension on the service mast. If a support pole is needed the cost of the pole will be passed along to the customer. The placement of the pole will be determined by the utility and must be accessible by the utility company.

Figure 2.3.1 – Clearances from Surfaces for Supply Conductors (below 750V)



Surface	**Minimum Vertical Clearance (ft)**	**Reference Standard**
State Highway	18	INDOT Utility Accommodation Policy Section 12.2
Roads, Streets, and other areas subject to truck traffic	16.5	NESC Table 232-1(2)
Driveways, established parking areas, and alleys	16.5	NESC Table 232-1(3)
Spaces and ways subjected to pedestrians or restricted traffic only	12.5	NESC Table 232-1(5)
Insulated drip loops of supply conductors limited to 300V	10.5	NESC Table 232-1(5), table note 8(b)

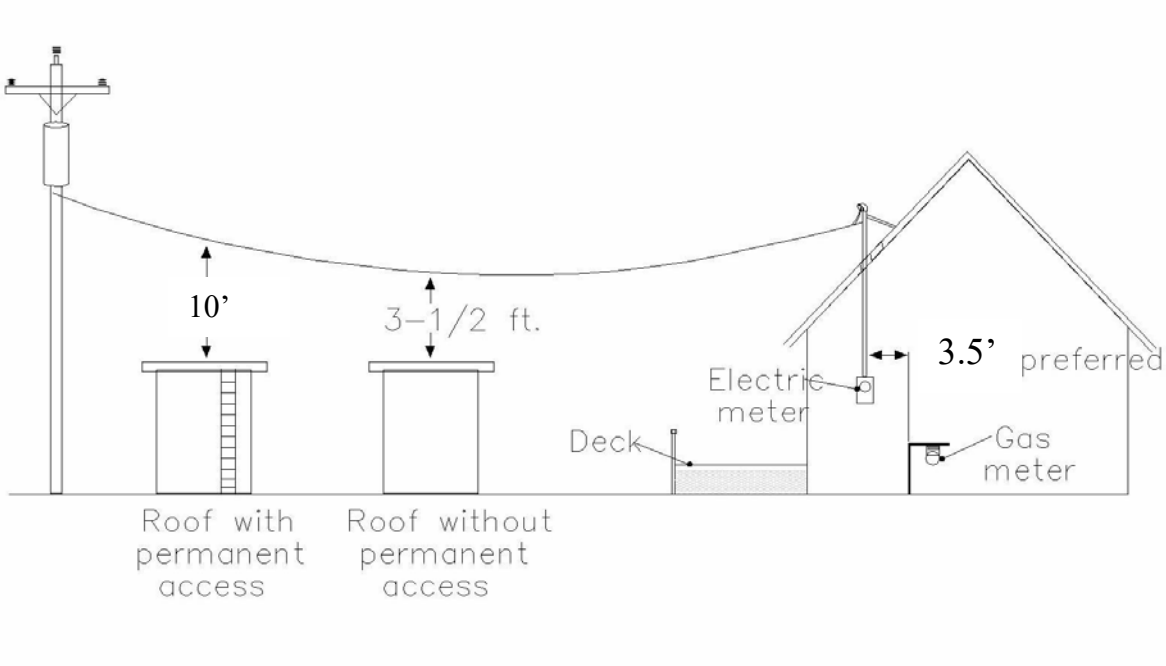
2.3.2 CLEARANCES OVER OTHER STRUCTURES

Service line that passes over a driveway shall maintain the minimum clearances as stated in Figure 2.3.1. Lines which cross driveways can be struck by tall trucks and other vehicles, causing damage to the service equipment and to the building.

If the service line will pass through trees, the customer must prune the trees to provide a clear path for the line. The customer is also responsible for regular tree pruning, and if necessary, tree removal to keep the path clear.

If the service line will pass over brush, the customer must clear a path for the power company's installation service personnel.

Figure 2.3.2 – Clearances from Structures for Supply Conductors (below 750V)



Structure	Minimum Horizontal Clearance (ft)	Minimum Vertical Clearance (ft)	Reference Standard
1. Buildings			
To walls, projections, and guarded windows	5.0	--	NESC Table 234-1 1(a)(1)
To unguarded windows	5.0	--	NESC Table 234-1 1(a)(2)
To balconies and areas readily accessible to persons	5.0	--	NESC Table 234-1 1(a)(3)
Over or under roofs or projections not readily accessible to persons	--	3.5	NESC Table 234-1 1(b)(1)
Over or under roofs, balconies, decks, or similar structures readily accessible to persons	--	10.0	NESC Table 234-1 1(b)(2)
Over roofs, ramps, decks, and loading docks accessible to vehicles but not subject to truck traffic	--	10.0	NESC Table 234-1 1(b)(3)
2. Non-support structures: Signs, chimneys, billboards, antennas, flagpoles, banners, tanks, and other installations not classified as buildings, supporting structures, or bridges.			
To portions that are readily accessible to persons	5.0	--	NESC Table 234-1 2(a)(1)
To portions that are not readily accessible to persons	3.5	--	NESC Table 234-1 2(a)(2)
Over or under catwalks and other surfaces upon which personnel walk	--	10.0	NESC Table 234-1 2(b)(1)
Over or under other portions of such installations	--	3.5	NESC Table 234-1 2(b)(2)

2.4 CHECK LIST FOR INSTALLING OVERHEAD SERVICE

The customer is responsible for providing, installing, and maintaining all equipment from the point of delivery, except for meter, CTs, and PTs. All Service entrance conductors shall be copper or aluminum properly sized per the most recently adopted National Electric Code (NEC).

The power company is responsible for providing and installing the meter, completing the connections between the meter and the service conductors, and making the final connections at the point of delivery. If CTs are being used, the utility also installs the CTs and makes the connections between them and the meter.

To obtain new overhead service, the customer:

1. Checks if local regulations permit the installation of overhead service.
2. Contacts the utility to open an account, to determine where the service line will originate from, and to request service.
3. If requested, provides the power company with:
    a. Site drawings
    b. Load information provided via a Load Data Sheet
    c. An easement for permanent equipment owned by the power company and installed on the customer's property
    d. Payment for pre-construction costs
4. Obtains an electrical work permit from the inspecting agency.
5. Installs the service equipment.
6. Obtains an electrical inspection, then contacts the utility.

The power company then:

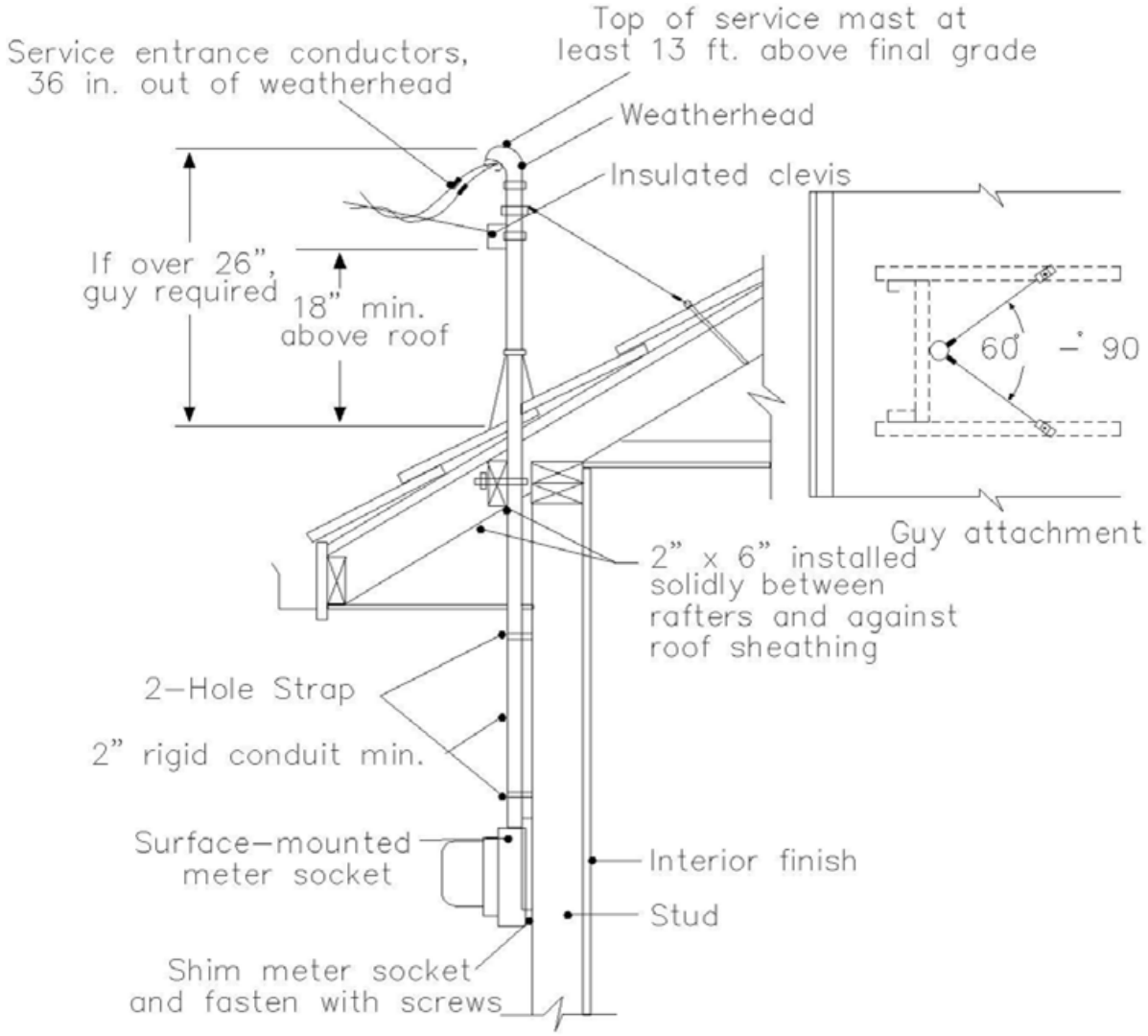
1. Selects a location for the meter. The service line strung from the power pole to the meter location must not cross property belonging to others. Line clearances are shown on previous pages.
2. Installs the meter in the meter socket.
3. Strings the wires from the pole-mounted transformer to the service mast.
4. Attaches the neutral to the insulated clevis on the service mast.
5. Splices the service line conductors at the service mast, the point of delivery.

2.5 SERVICE MAST, SURFACE-MOUNT METER

Figure 2.5 shows details of a service mast, with the meter on the surface of the building. The service could be wired to an exterior meter as shown here, or to service equipment inside the building. The customer installs everything in the picture, except the meter.

After the customer installs the service equipment, the power company installs the meter in the meter socket, strings the service line, attaches the service line supporting wire (neutral) to the insulated clevis, and splices the conductors together.

Figure 2.5 – Service Mast, Surface-mount Meter

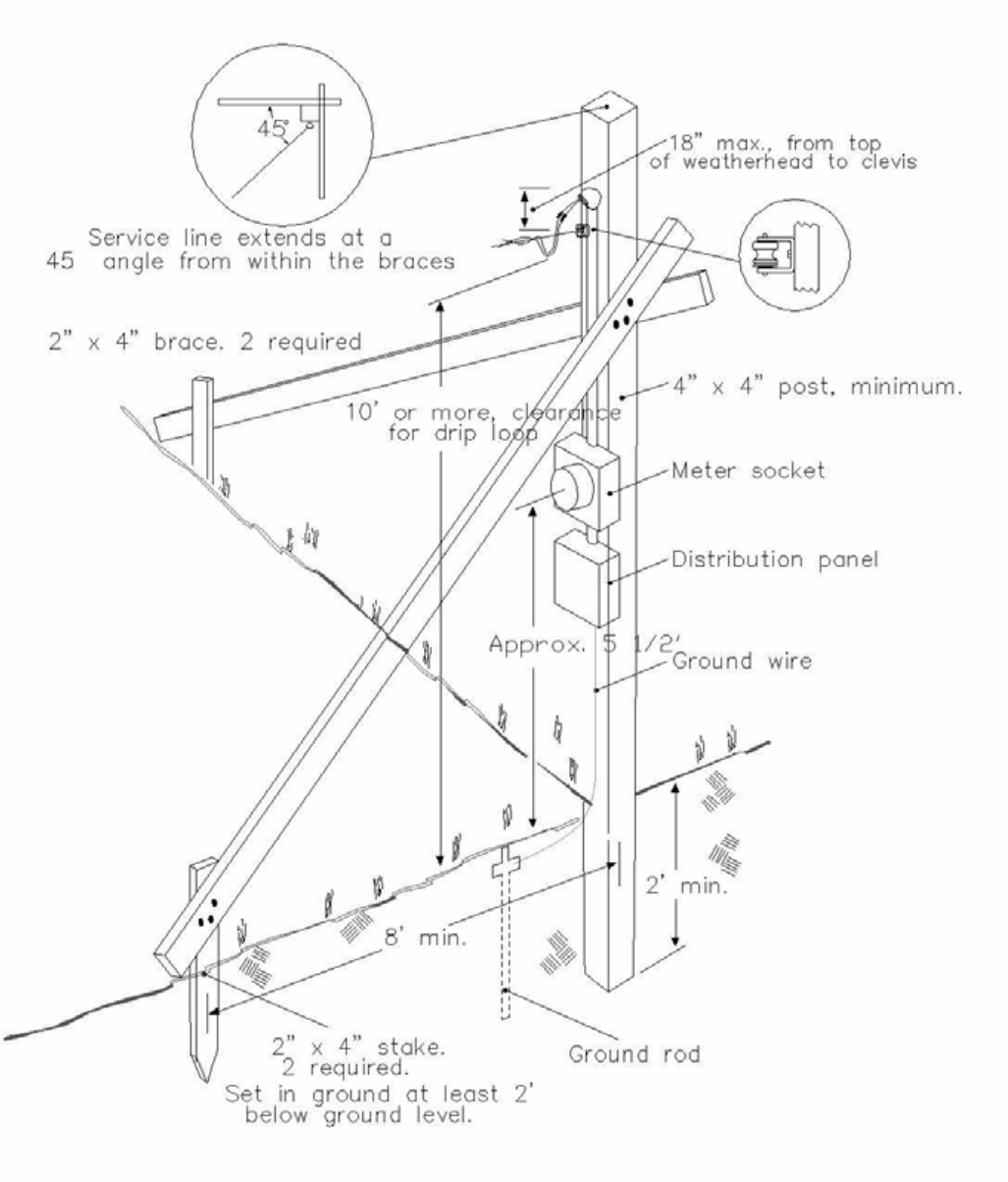


2.6 OVERHEAD SERVICE, BRACED METER POST

Figure 2.6 shows a finished installation for temporary service, using a braced meter post. The service is overhead from the power company to the post. From the post, the service to the building could be overhead or underground. The customer provides everything shown, except the meter and the overhead service line.

After the customer installs the service equipment, the power company installs the meter in the meter socket, strings the service line, attaches the service line supporting wire (neutral) to the insulated clevis, and splices the conductors together.

Figure 2.6 – Overhead Service, Braced Meter Post (Temporary)

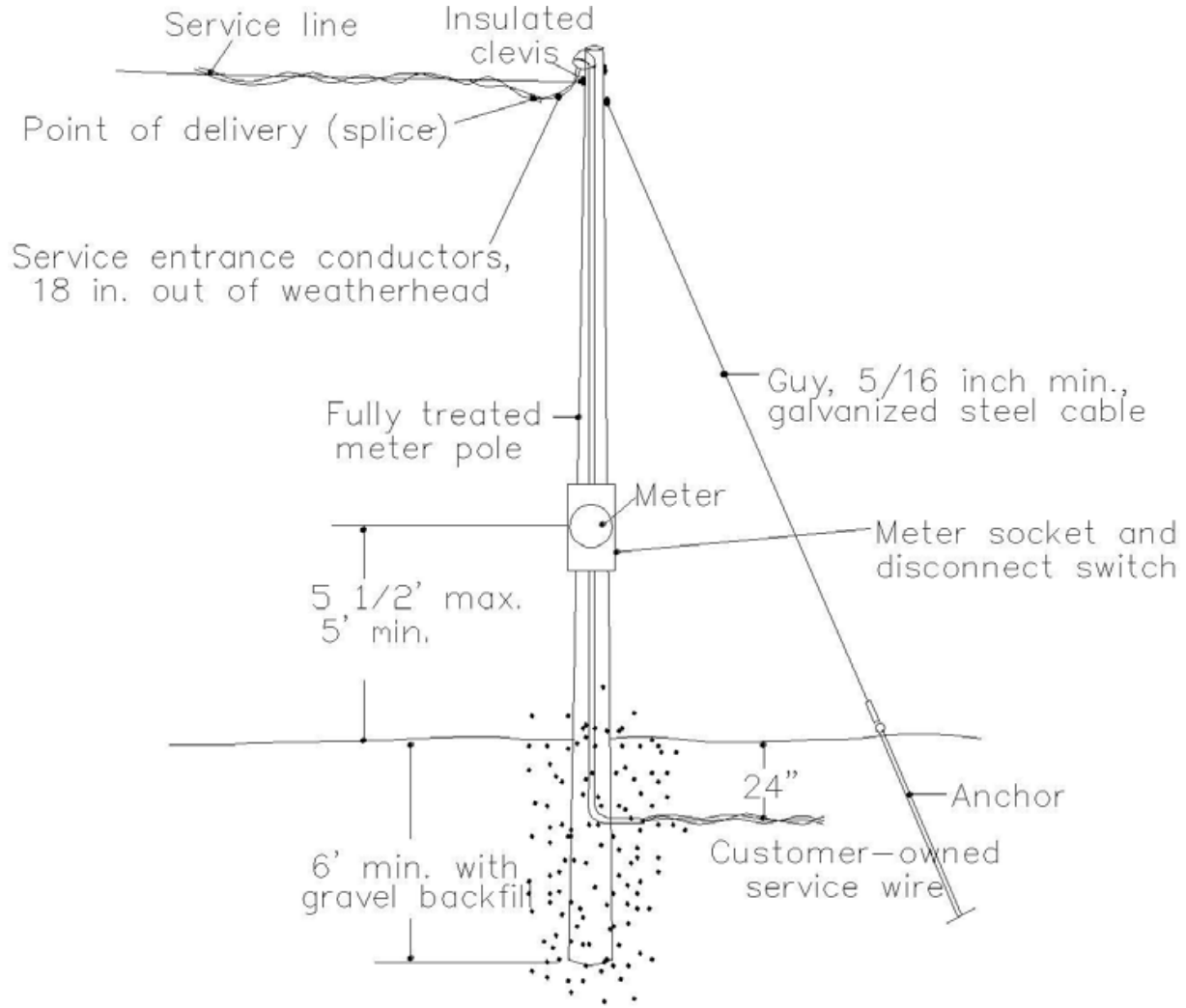


2.7 OVERHEAD SERVICE, GUYED METER POLE

In Figure 2.7, the service is overhead from the power company to the guyed pole. From the pole, the service could be overhead to the building, or underground as shown here. The customer provides everything in the picture, except the meter and the overhead service line.

After the customer installs the service equipment, the utility installs the meter in the meter socket, strings the service line, attaches the service line supporting wire (neutral) to the insulated clevis, and splices the conductors together. The pole is owned and installed by the customer. The utility does not allow meter bases to be attached to their poles.

Figure 2.7 – Overhead Service, Guyed Meter Pole (Temporary)



CHAPTER 3: UNDERGROUND SERVICES

3.1 GENERAL

The cost for underground service depends on the extent of special engineering required. The customer will be responsible for digging the trench (or directional boring), providing and installing the properly sized conduit with a pull rope, complying with any additional utility requirements, and obtaining approval by the city building inspector. The customer will install the service entrance equipment, meter base, and the outside disconnect switch (if required). The customer shall have all equipment inspected by the city building inspector. The customer must call the utility 48 hours prior to the inspection to have service connected.

The customer is responsible for providing, installing, and maintaining all equipment from the point of delivery except for the meter.

The power company is responsible for providing and installing the meter, pulling in the underground service conductors, completing the connections between the meter and the service conductors, and making the final connections at the point of delivery. If CTs are being used, the utility will install the CTs and make the connections to them and to the meter.

3.2 CHECK LIST FOR INSTALLING UNDERGROUND SERVICE

To obtain new underground service, the customer:

1. Contacts the utility to discuss the project, to determine where the service line will originate from and the point of delivery, and to request the service.
2. If requested, provides the power company with:
    a. Site drawings
    b. Load information provided via a Load Data Sheet
    c. An easement for permanent equipment owned by the power company and installed on the customer's property
    d. Payment for pre-construction costs and any meter related expenses
3. Obtains an electrical work permit from the Building Inspector.
4. Selects the type meter installation that fits the situation. There are two options:
    a. Surface-mount meter (with approval from the utility meter department)
    b. Pedestal-mount meter (with approval from the utility meter department)
5. Installs the service equipment.

6. Calls the locating service "Indiana 811" to locate any existing underground wires, cables, or pipes.
7. Digs a trench from the connection point to the meter location. Any underground electric service will be owned by the utility. The customer shall provide a permanent easement so the utility can properly access and maintain the electric service.
8. Provides labels and color-codes for the customer-provided, load-side conductors at the meter location, and connects these conductors to the customer-side of the meter socket.
9. Covers the conduit in the trench. Conduit must be installed with a pull string to facilitate the installation of the underground service conductor by the utility. During the filling of the trench, the customer must place direct burial marking tape provided by the utility 12 inches below finished grade.
10. Obtains an electrical inspection.
11. Contacts the utility.

Then the utility:

1. Installs the meter in the socket.
2. If CTs are being used, install the CTs and completes the wiring between the CTs, the meter, and the service lines.
3. Pulls the underground service conductor from the connection point to the point of delivery through the customer installed conduit that was properly sized per the NEC.
4. Connects the conductors at connection point and the point of delivery, the utility-side of the meter socket.

3.3 LOCATING UNDERGROUND UTILITIES

The customer must call "Indiana 811" at least two full working days (48 hours) before trenching or excavating for underground service. One call to the locating service notifies all utilities that locates are required. In some areas, not all utilities are members of the one-call system. In those areas, the customer must contact each utility individually.

Excavation must not begin until the locations of underground wires, cables, and pipes have been marked, or the utilities have informed the customer that they have no facilities in the area.

Any digging within 24 inches of location marks must be done by hand or hydro-excavation. The color code for marking underground utilities is:

Color	Underground Service
Red	Electric
Yellow	Gas, Oil, Steam
Orange	Telephone, Cable TV, Fiber Optic
Blue	Water
Purple	Reclaimed Water
Green	Sewer
Pink	Temporary Survey Marks
White	Proposed Excavation

3.4 TRENCHING

The customer is responsible for digging the service trench and providing and installing the properly sized conduit per the NEC with a pull rope. The customer installs the utility provided burial marking tape and backfills and compacts the trench.

Trenching rules and tips:

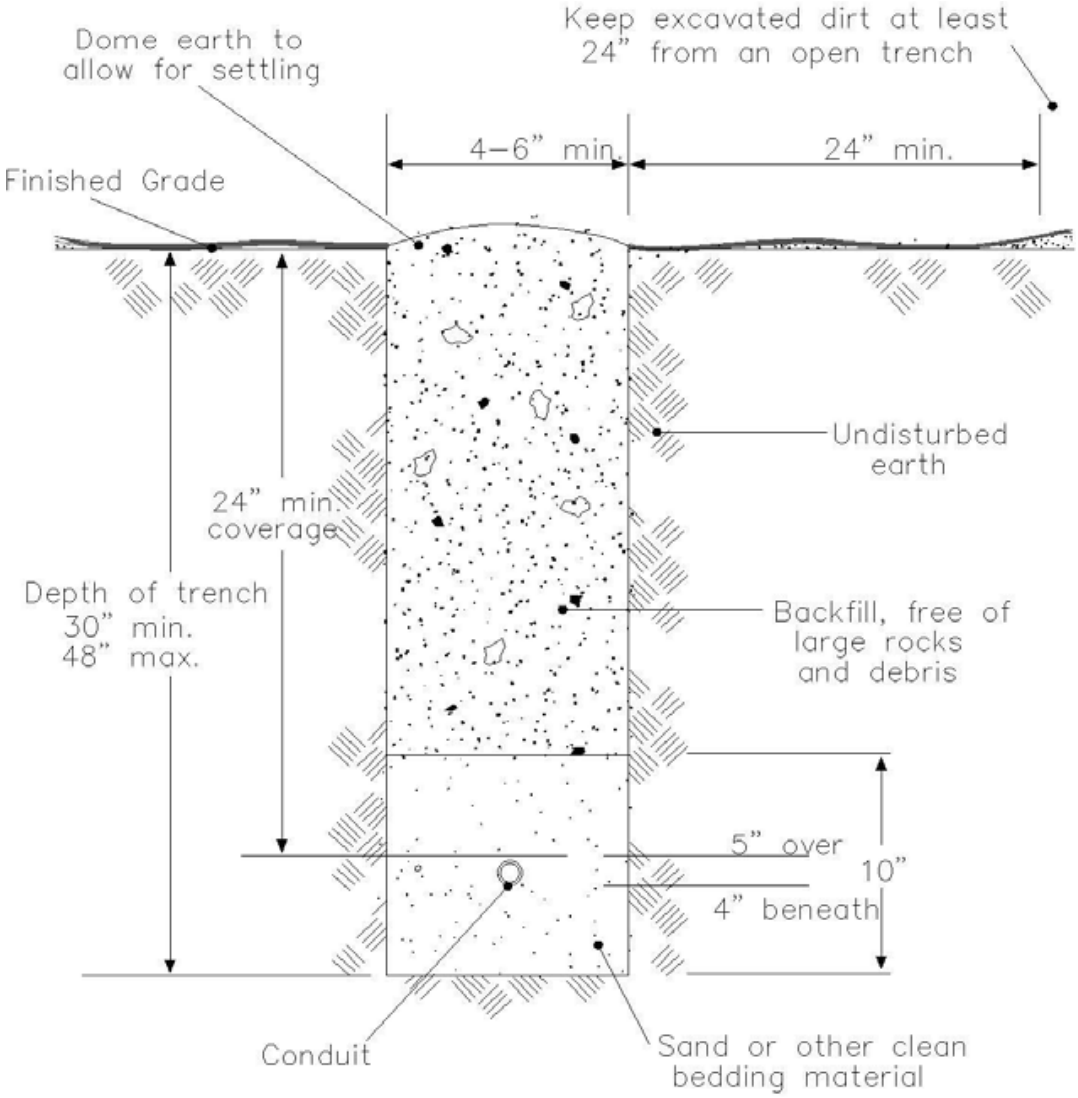
- Dig trenches in straight lines between takeoff points, to the greatest extent possible.
- Trench to the nearest side of the pole, access hole, or transformer, leaving the conduit exposed. If further digging is required, power company personnel will complete it.
- Any trenching within 2 feet of power company facilities must be done by hand.
- If any conductors or pipes are encountered while digging, leave them covered.

- If rock or other extremely difficult digging is involved, contact the power company to discuss the situation.
- Provide extra depth when digging joint-use trenches to allow for soil falling into the trench during the laying of the first cables, reducing the depth of the trench for other cables.
- Keep the spoils pile at least 24 inches away from the edge of the trench.
- Schedule the trenching so the trench is open for the shortest practical time to avoid creating a public hazard and to minimize the possibility of the trench collapsing due to other construction activity, rain, etc.
- Prior to backfilling, the customer and electric utility jointly inspect the trench for adequate depth, conduit placement, cable slack at termination points, riser material, pedestal stakes, and other items that will be covered after backfilling. If corrections are required, a second inspection is required after the changes are completed.
- Place the conduit in the trench, ensuring that a pull string is installed in the conduit to facilitate the installation of the underground service conductor. Then cover the conduit with a 6-inch layer of clean bedding material. Clean bedding material is defined as sand or clean soil with no solid material larger than 1 inch in diameter. At 12 inches below finished grade, install the utility provided burial marking tape.
- The remainder of the trench is backfilled using available clean material or soils removed during trench excavation. Pieces of scrap cable and other construction items shall not be buried in the trench. Tamp the soil, leaving a slight mound to allow for settling.
- Soil within 36 inches of riser poles, transformer pads, pedestals, and terminal points must be compacted mechanically.
- All rock, debris, scrap cable, and other construction items must be removed from the site.

3.5 SINGLE-USE TRENCH

Figure 3.5 shows a typical cross section of a single-use trench where only electric underground service is to be installed.

Figure 3.5 – Single-Use Trench



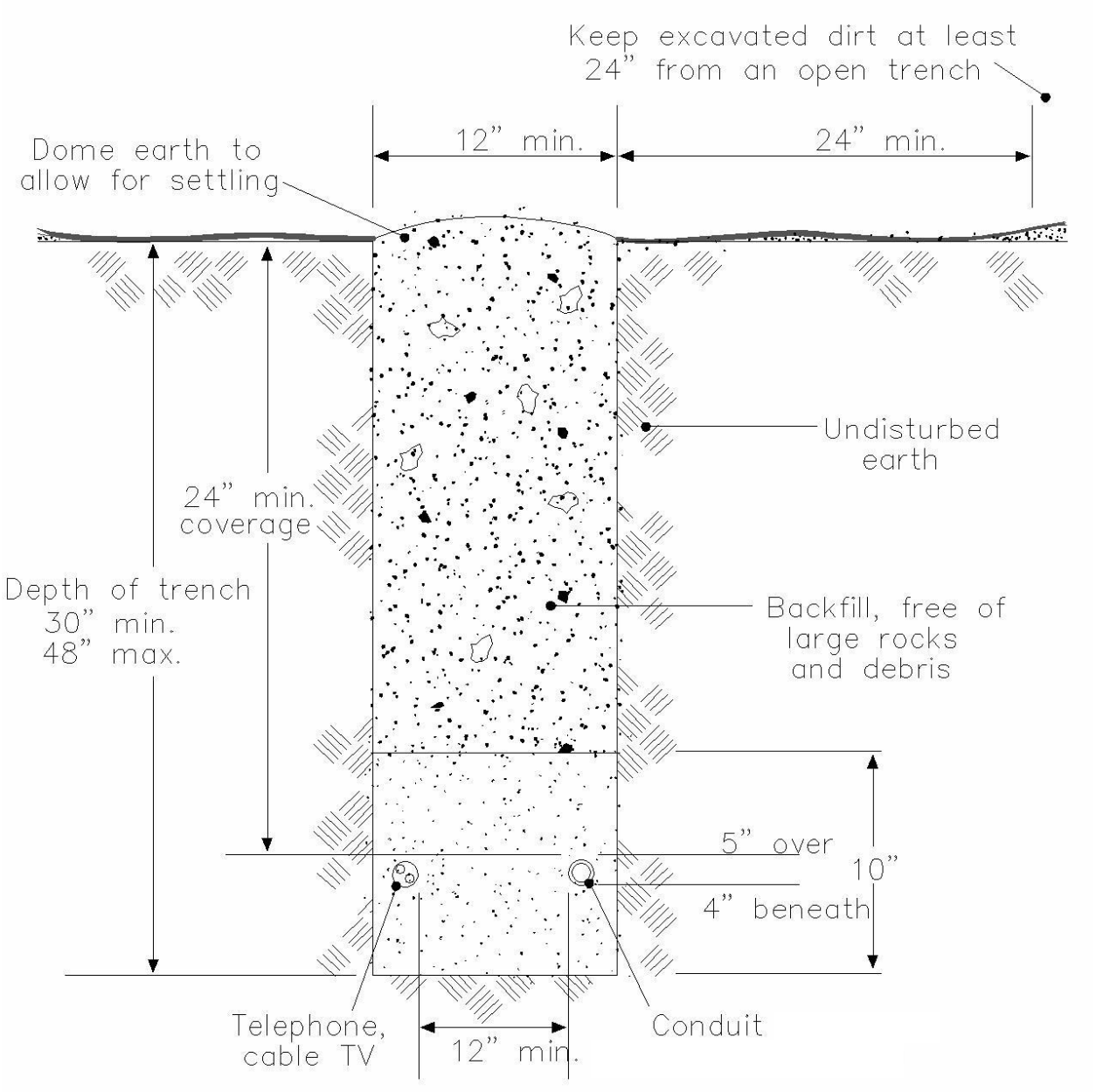
3.6 JOINT-USE TRENCH

The customer may place telephone, cable TV, or other electronic signal conductors in a trench with electric utility conduit, providing the installation meets the requirements and approval of the electric utility, and all other parties.

In certain cases, gas pipes may be installed in a common trench.

In special situations, water and sewer lines may be installed in a common trench. Installation of a "wet" service in a trench with electric utility wires requires prior approval by the electric utility.

Figure 3.6 – Joint-Use Trench



3.7 INSTALLING CONDUCTORS IN A CONDUIT

When installing conductors in a trench, the customer shall install all conductors in a conduit.

3.7.1 UNDERGROUND CONDUIT

Install conduit from below the meter socket, to the power company's pole, pad-mount transformer, or junction box.

Minimize the number of bends in the conduit. Bends must be a minimum of 36" radius. All bends must be factory-made. All 90 degree bends must be rigid metal or Schedule 80 PVC. Runs longer than 200 feet or containing more than 270 degrees of bends must be approved by the power company before installation.

For all conduit installations, install a pull line capable of 500 pounds of tension in the conduit, with 6 feet of line extending from each end of the conduit. Install the pull line after the conduit is jointed and the glue is dry. Cap the conduit at both ends to keep it free of dirt and debris.

After the electrical inspection is complete, backfill the trench, leaving open splice pits at both ends of the conduit. The power company will pull their conductors through the conduit, attach their wires to the line lugs at the top of the meter socket, and splice the conductors at the point of delivery. The customer is responsible for backfilling the trench and site remediation.

The power company will energize power after the customer completes backfilling the trench to the power company's satisfaction.

3.7.2 CONDUIT SIZE

Conduit size is determined by the current rating of the service. If the load information is not available, install a 3-inch conduit.

Current Rating	Single-Phase, 3-Wire	Three-Phase, 4-Wire
0 to 200 Amps	One 2-inch	One 3-inch
201 to 400 Amps	One 3-inch	One 4-inch
401 to 800 Amps	Two 4-inch	Three 4-inch
Over 800 Amps	Utility determines conduit quantity and size	

If the conduit run is long or has many bends, larger conduit than listed here, may be required.

For underground conduit, install either rigid steel, electrical-grade Schedule 40 gray PVC, or electrical-grade Schedule 80, depending on application.

The customer is responsible for sealing around conduit where it enters service panels, and grouting where it enters power company vaults, to prevent water and other substances from entering.

If the conduit will enter the power company's vault, the customer contacts the power company to discuss the entry location and procedures.

3.7.3 CONDUIT AT SERVICE ENTRANCE

Conduit is required between the meter enclosure and the trench. The size of the conduit is determined by the current rating of the service.

No bends are allowed in this riser, other than the 90 degree elbow bend at the bottom of the riser. This bend must have a radius of 24 inches or larger.

Attach the conduit to the meter enclosure through the bottom panel, at the left side of this panel. The preferred convention for bringing wires into the meter enclosure is:

- Power company wires enter through the bottom panel, at the left.
- Customer wires enter through the bottom panel, at the right. Optionally, customer wires may enter through the right side panel, near the bottom.

If the conduit passes through pavement, a sleeve is required. Locate the sleeve and conduit slightly away from the edge of the pavement, leaving some pavement intact next to the building.

If local codes do not allow conduit through foundations or footings, a surface-mount meter must be installed.

Make sure the conduit is plum, and attached securely to the structure. Underground conduit has to be Schedule 80. Overhead conduit has to be 2” minimum rigid steel.

3.7.4 SPLICE PITS

Splice pits provide the space needed to complete wiring connections. Figures 3.7.4A and 3.7.4B show splice pits at padmounted transformer and wall-mounted meter installations, respectively.

Figure 3.7.4A – Splice Pit at a Padmounted Transformer

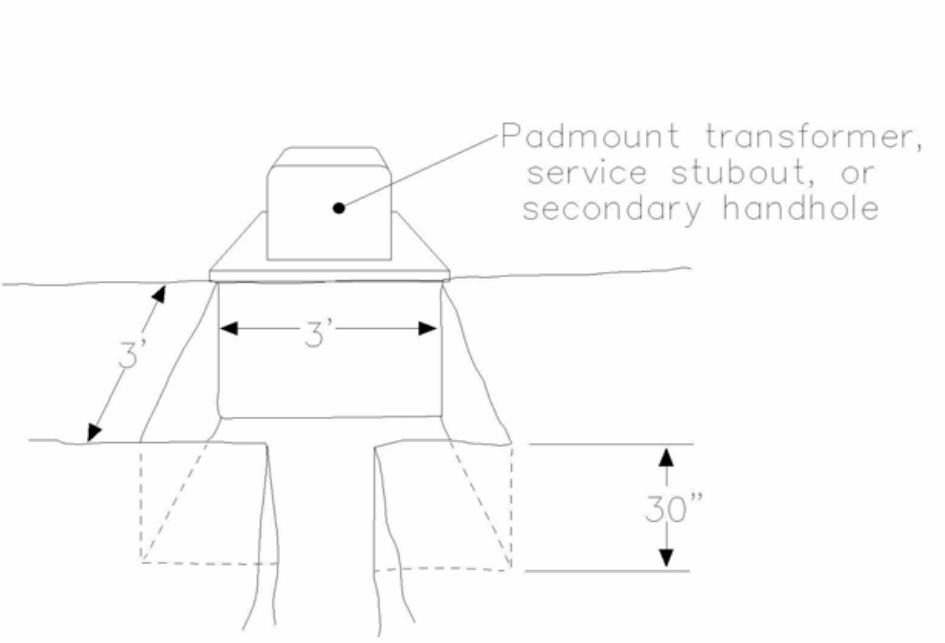
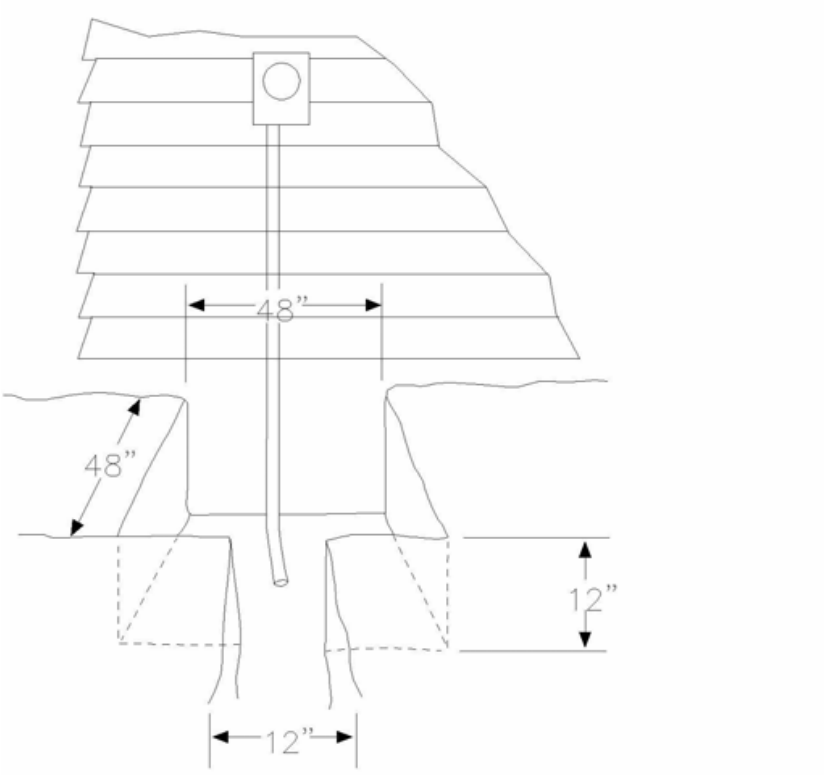


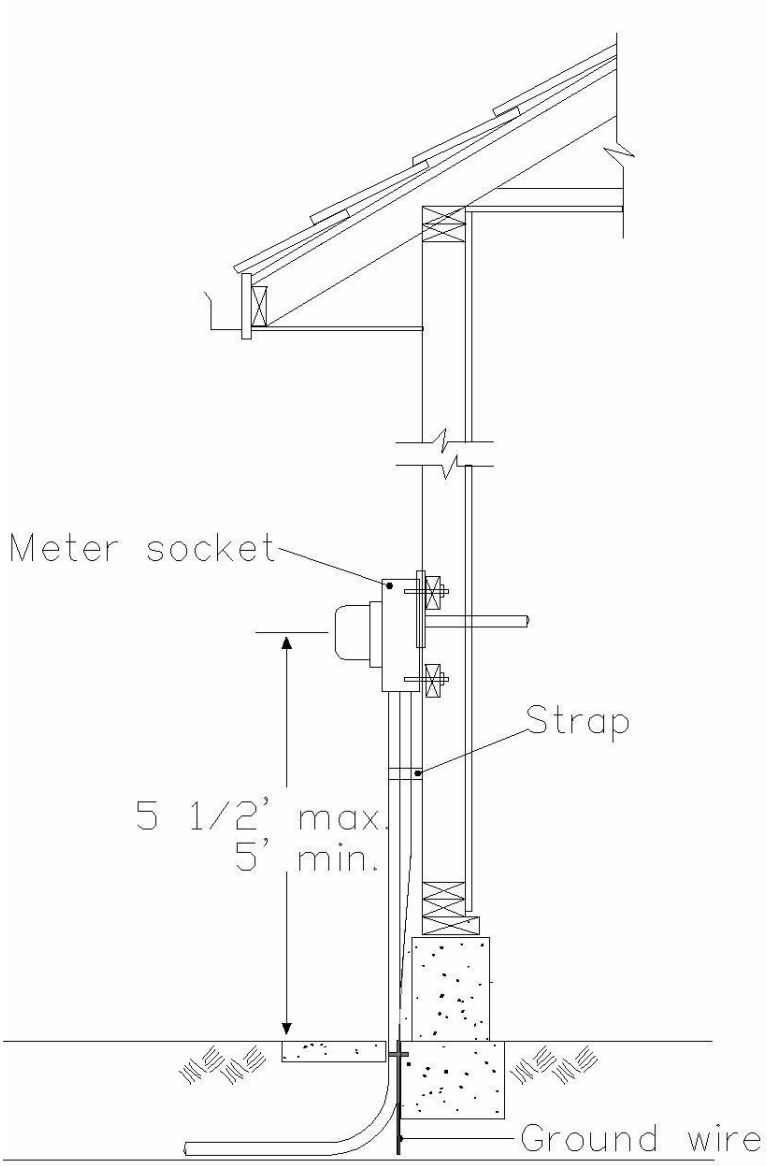
Figure 3.7.4B – Splice Pit at a Wall-mounted Meter



3.7.5 UNDERGROUND SERVICE, SURFACE-MOUNT METER

Figure 3.7.5 shows a finished underground installation with the meter on the surface of a house. The customer is responsible for everything shown here, except the meter.

Figure 3.7.5 – Underground Service, Surface-mounted Meter



The service is underground from the power company to a stub-out, handhole, or padmount transformer (off to the left and not shown here). Conduits placed in the trench bring the power conductors to the conduit at the base of the service entrance.

After the customer installs the service equipment, the power company installs the meter in the meter socket. The power company also completes the connections of the wires.

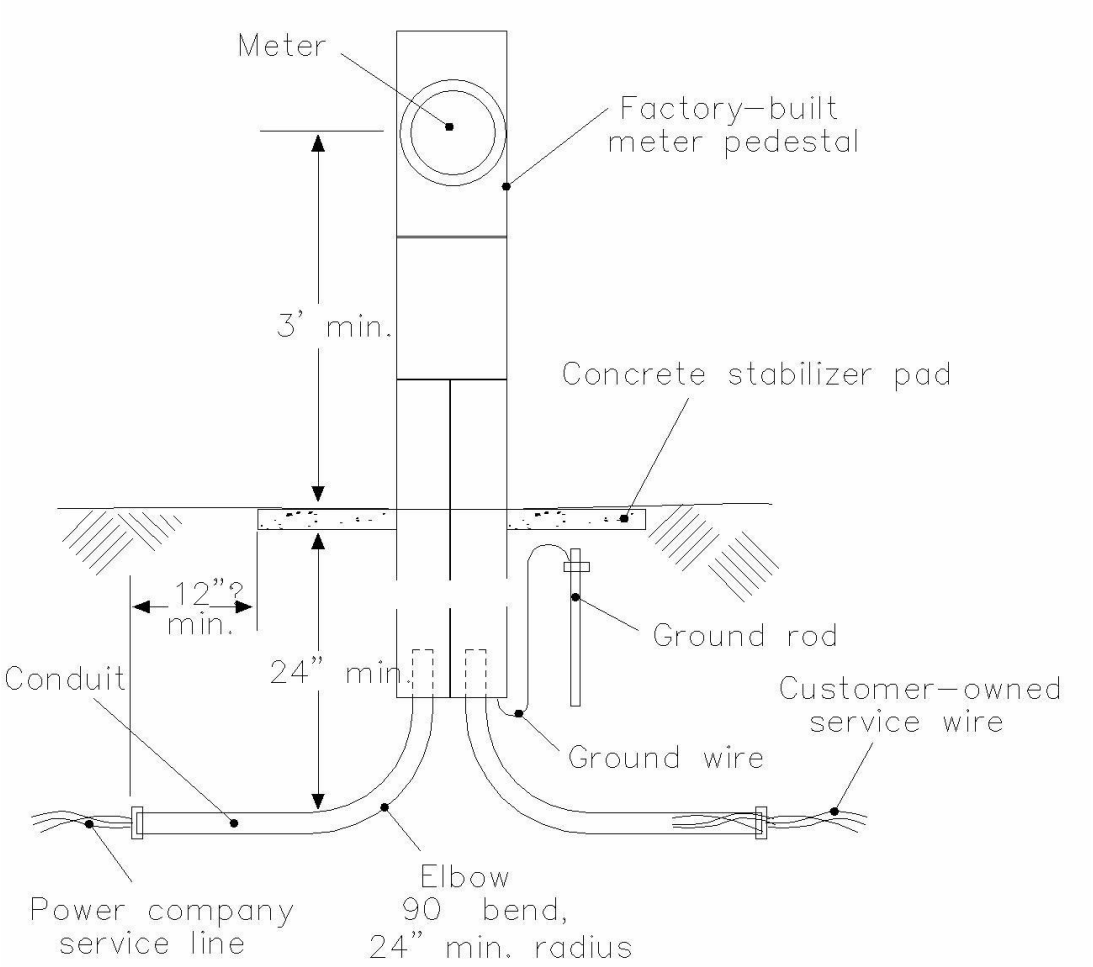
Must be at final grade before excavation for service wire is done.

3.7.6 UNDERGROUND SERVICE, PEDESTAL METER

A meter pedestal is a free-standing structure that supports service equipment for underground service. If a meter pedestal is called for, it is the customer's responsibility to purchase and install it, and it is required to meet Lebanon Utilities Specifications.

Figure 3.7.6 shows a typical underground service with a pedestal meter.

Figure 3.7.6 – Underground Service, Pedestal Meter

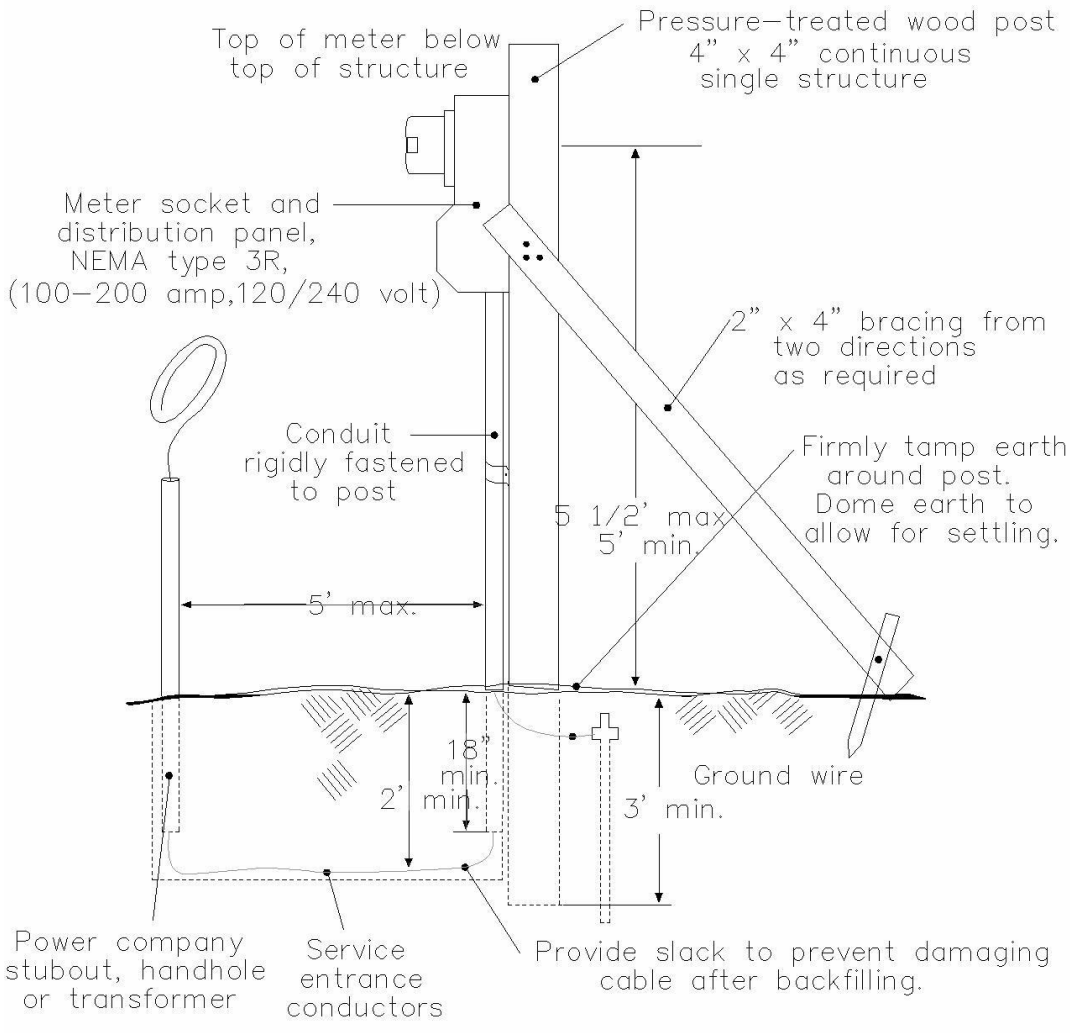


Install the meter pedestal between the home and normal public access, and within 30 feet of the home. The pedestal must contain the disconnect switch required by the NEC.

3.7.7 UNDERGROUND SERVICE, METER POST

Figure 3.7.7 shows a finished installation for temporary service, using a meter post. The service is underground from the power company to a stub-out, handhole, or padmount transformer. Conduits placed in the trench bring the power conductors to the base of the post. From the post, the service to the building is usually underground, but could be overhead. The customer provides everything shown, except the meter and the service line to the stub-out, handhole, or padmount transformer.

Figure 3.7.7 – Underground Service, Meter Post



3.8 PADMOUNT TRANSFORMER INSTALLATIONS

The power company is responsible for installing a padmount transformer at the customer's site. Subsurface or submersible transformers (totally underground) are prohibited. Conductors to the primary side of the transformer enter at the left side of the transformer; conductors to the secondary side enter at the right. The trench runs from the right side of the transformer to the customer's building.

The customer is responsible for installing the service conduit in the trench, from the transformer to the building.

3.8.1 SAFETY CLEARANCES AROUND TRANSFORMERS

Clearances from padmount transformers to structures are measured from the nearest metal portion of the transformer, to the structure or any overhang.

The clearance from any building to any part of the transformer is 10 feet.

Other clearances are shown in Figures 3.8.1A, B, and C. These clearances also apply to any oil-filled electrical equipment.

Figure 3.8.1A – Padmount Transformer Clearance from Buildings and Pools

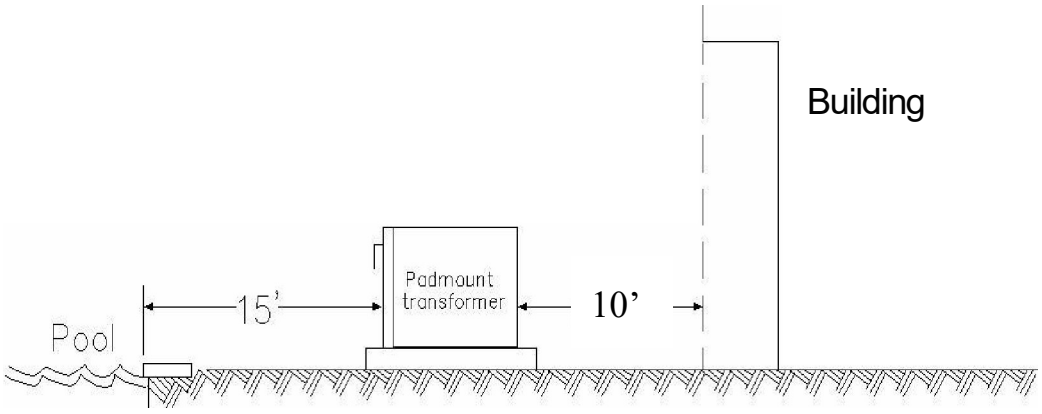


Figure 3.8.1B – Padmount Transformer Clearance from Fire Escape, Gas Meter, and Openings

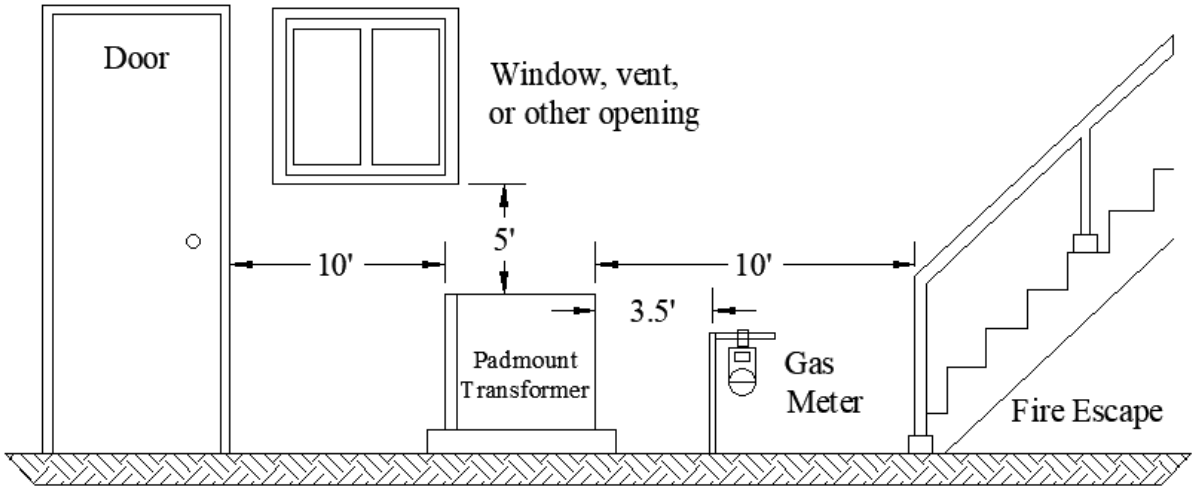
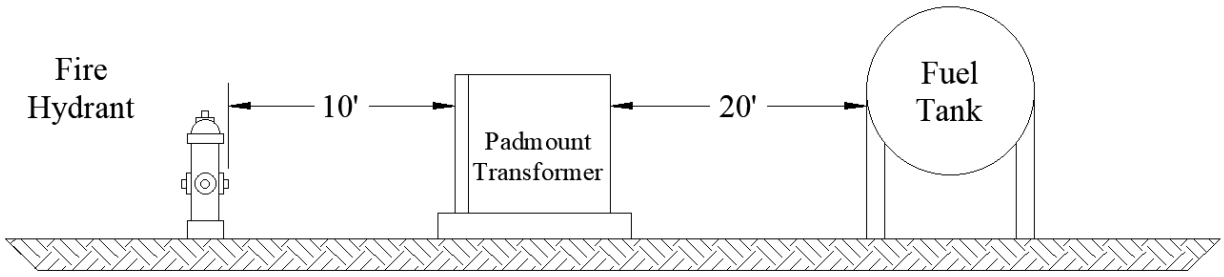


Figure 3.8.1C – Padmount Transformer Clearance from Fuel Tanks and Fire Hydrants



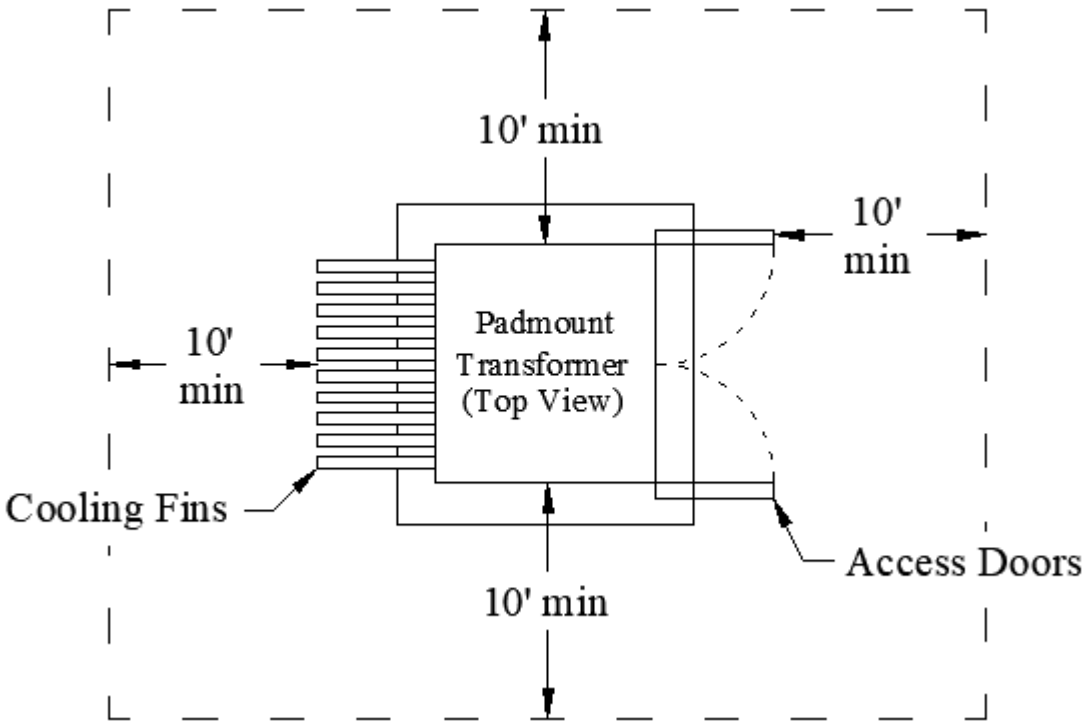
3.8.2 WORK CLEARANCES AROUND TRANSFROMERS

A minimum clearance of 10 feet of clear, level working space is required in front of a padmount transformer, to allow use of hot sticks.

Other clearances are shown in Figure 3.8.2, and all apply to any oil-filled electrical equipment.

Landscaping and other obstructions must not encroach on these clearances.

Figure 3.8.2 – Padmount Transformer Work Clearance



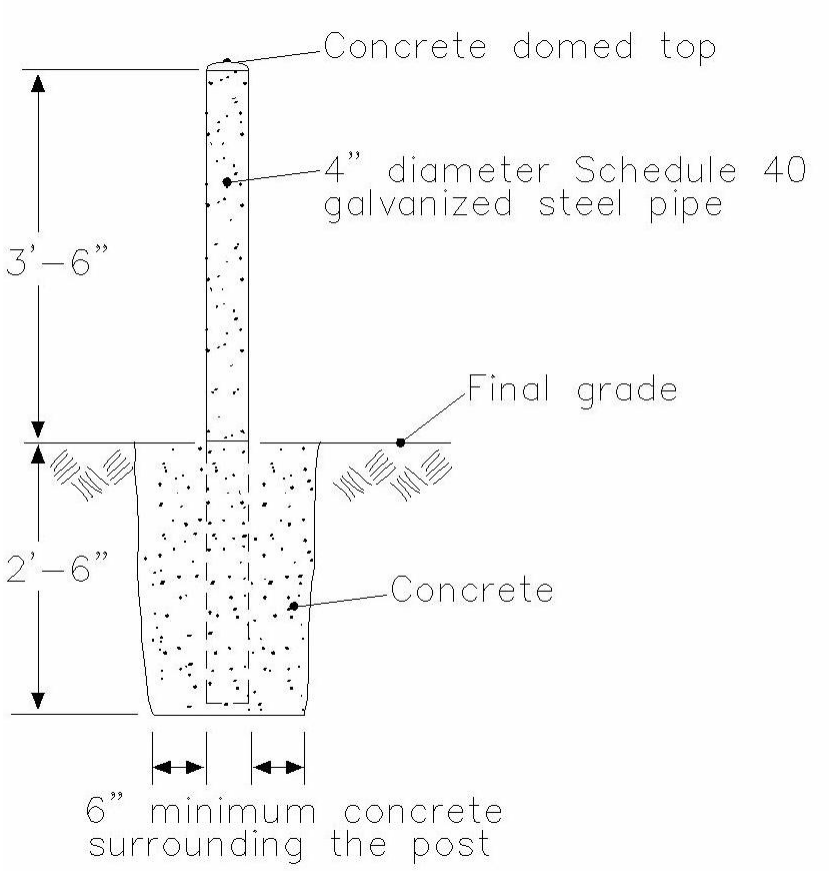
3.8.3 GUARD POSTS

It is the customer's responsibility to install and maintain guard posts where power company equipment is exposed to vehicular traffic.

If the post is placed in stable soil, surround it with 6 inches of concrete. If the soil is unstable or sand, surround the post with 12 inches of concrete. If several guard posts are used, locate them no more than 5 feet apart. For extra visibility, paint the posts traffic yellow.

In some situations, a 6-inch diameter post is required, not the 4-inch post illustrated in Figure 3.8.3.

Figure 3.8.3 – Guard Posts for Padmount Transformers



CHAPTER 4: METER INSTALLATIONS

4.1 GENERAL

There are three basic ways to measure electricity consumption:

- Small and medium services are metered directly using direct-connect meters
- Large services are metered using current transformers (CTs) and instrument-rated meters
- Very large services can be primary metered. The meter CTs and PTs will be installed at the primary delivery point.

The customer provides and installs all equipment beyond the point of delivery: meter bases, cabinets and enclosures, connection lugs, conduit, grounding, protection devices, and wiring from the socket to the load.

The power company provides and installs the meter, current transformers, and local wiring associated with the meters and CTs.

4.2 LOCATING THE METER

It is in the mutual interest of the customer and the power company to install the meter in a location suitable for meter reading, testing, repair, and removal. Meter locations are subject to approval by the power company.

4.2.1 LOCATING THE METER FOR A SINGLE-FAMILY RESIDENCE

The meter for single-family residences must be located:

- Outside
- On the first floor
- On a side wall within 10 feet of the street side of the house
- If the meter is not located on the building, it must be on a meter pedestal, or on an overhead pole accessible by a power company bucket truck

Do not locate meters here:

- Behind a fence or enclosure
- In areas subject to being fenced or enclosed such as patios, pool areas, decks, porches, and backyards
- Where shrubs or landscaping could obstruct access to the meter

- In an unsafe or inconvenient location, such as above a stairway or window well
- On a mobile structure such as a houseboat or mobile home Outside bedrooms or bathrooms, and near doors and windows, to respect customer privacy.

The requirements listed above for residences also apply to meters for outbuildings such as detached garages, barns, shops, storage buildings, pump houses, and other structures that do not provide living spaces.

4.2.2 LOCATING THE METER FOR A BUSINESS

The location of a meter for a business must be:

- Convenient to the power company's distribution system
- On the first floor or the ground floor
- Readily accessible by power company personnel
- Outside

Meters must not be located:

- Behind a fence or enclosure
- In a place where safety could be compromised
- In a location with abnormal temperature, vibration, or corrosive air
- On a pole owned by the power company or another utility
- On a mobile structure such as a trailer

Avoid locating meters here:

- Areas subject to being fenced or enclosed
- Areas where shrubs or landscaping could obstruct access to the meter
- Outside bathrooms, and within three feet of doors and windows, to respect the customer's privacy.

4.3 CLEARANCES AROUND THE METER

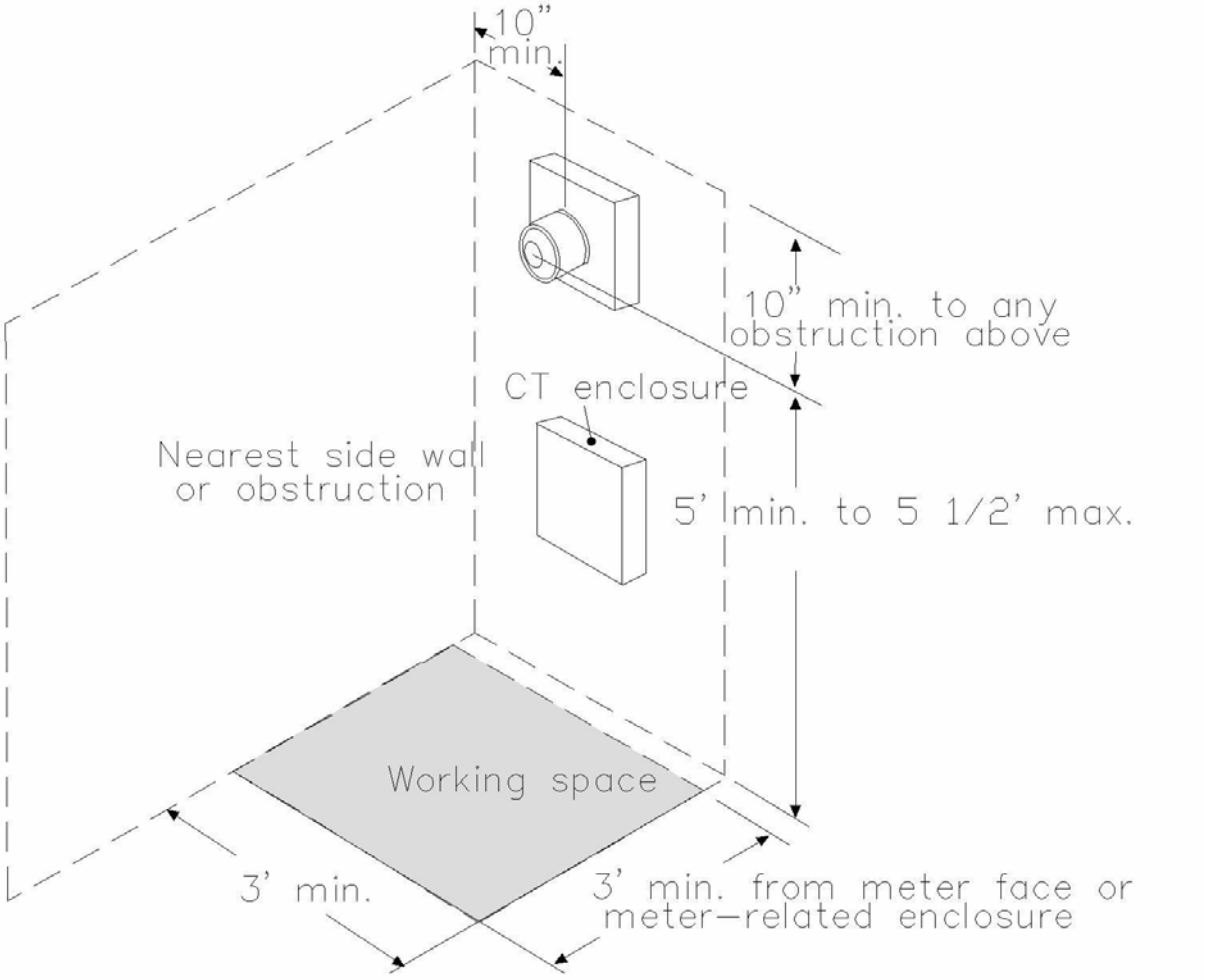
Meter clearances are measured from the center of the meter socket, or from the center of the face of the meter.

Install the meter socket between 5 feet and 5 1/2 feet above finished grade (except meter pedestals). A height of 5 1/2 feet is preferred.

Keep a clear working space 3 feet square, in front of the meter. This space must be permanently free of all obstructions, including landscaping.

Allow 3 feet of clearance from a gas meter, and 3 feet from windows or doors for customer privacy. Figure 4.3 illustrates the recommended meter clearances.

Figure 4.3 – Clearances Around Meter

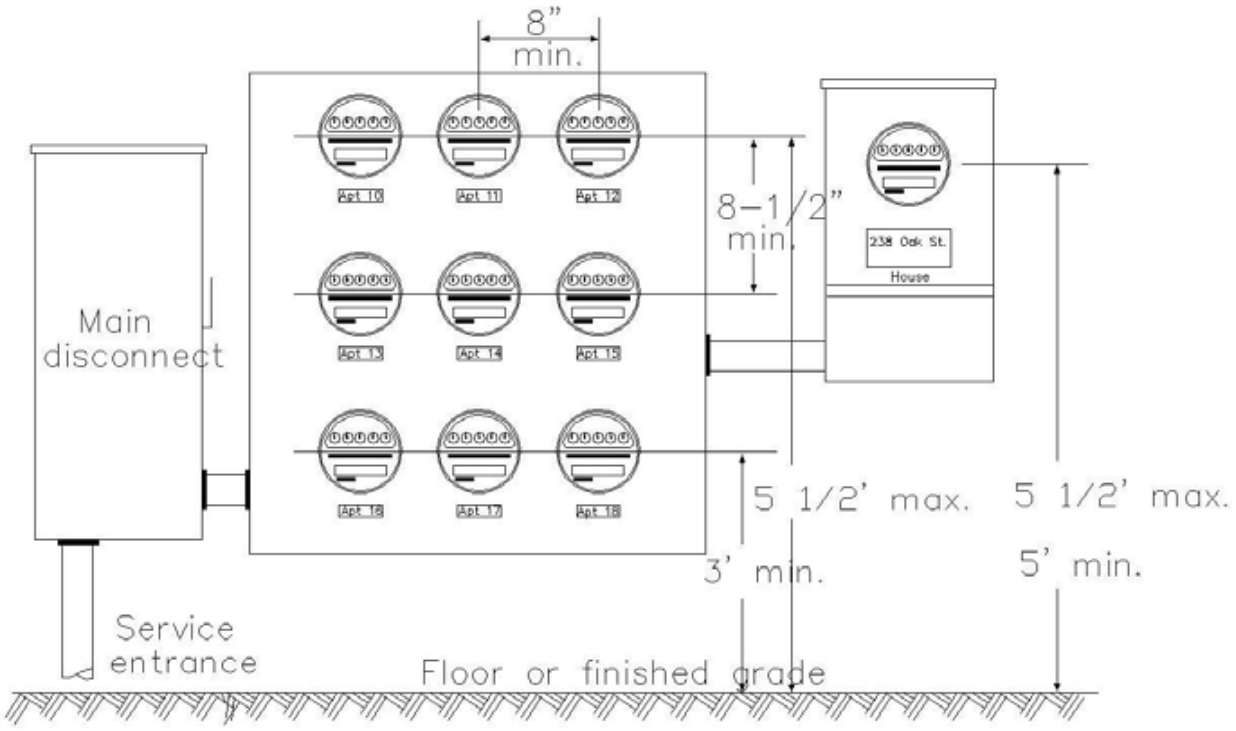


4.4 INSTALLATION FOR AN APARTMENT BUILDING

Figure 4.4 shows a typical multiple-meter installation for apartment services of 200 amps or less. If the installation has more than six meters, a main disconnect is required.

The clearances shown for this apartment also applies to factory-built multiple meter panels, except meters must be at least 3 feet above the floor.

Figure 4.4 – Meter Installation for an Apartment Building

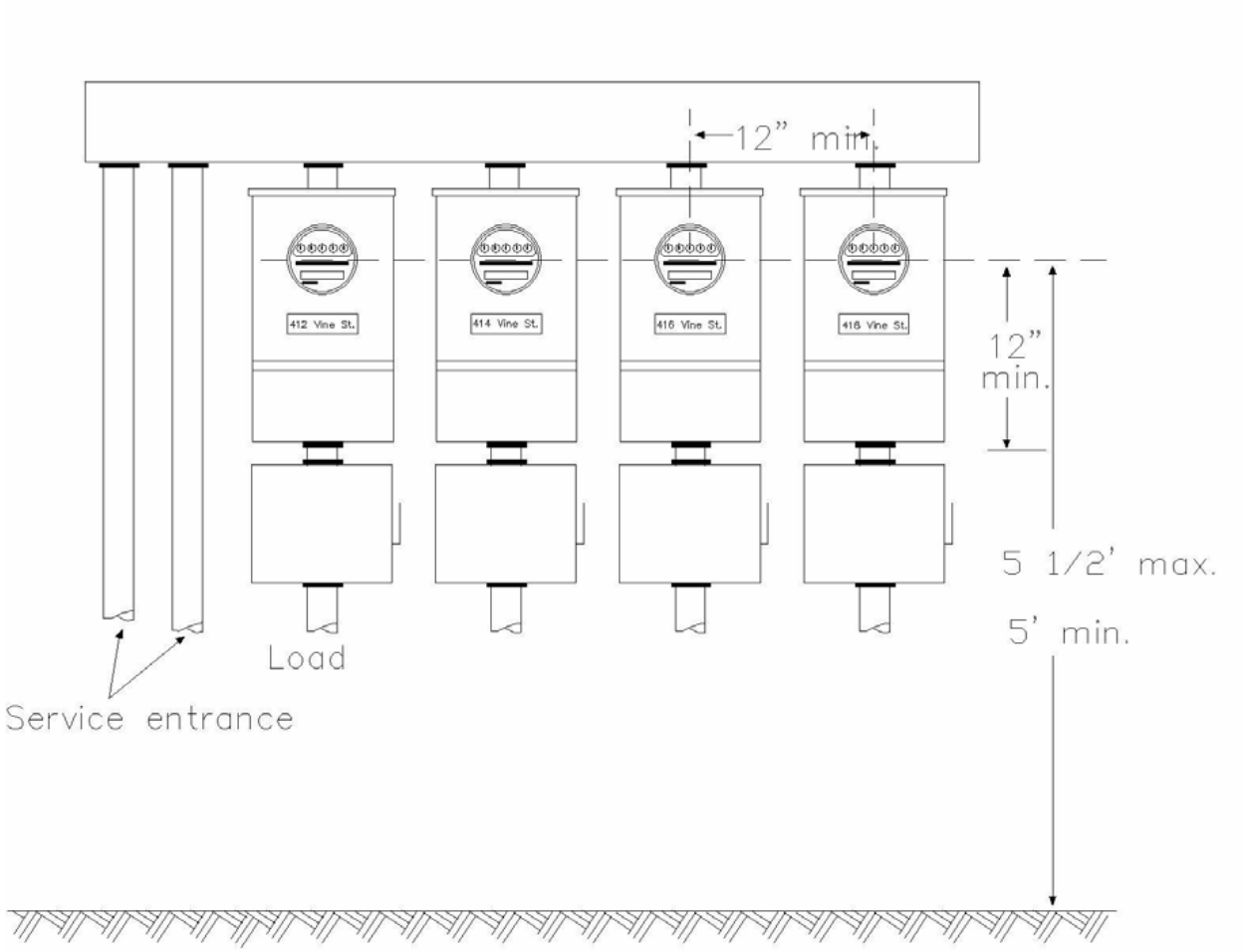


4.5 INSTALLATION FOR AN OFFICE BUILDING

Figure 4.5 shows a typical office building multiple-meter installation for services of 200 amps or less. If the installation has more than six meters, a main disconnect is required.

The clearances shown for this office installation also applies to factory-built multiple meter panels, except meters must be at least 3 feet above the floor.

Figure 4.5 – Meter Installation for an Office Building



4.6 METER SOCKETS

Meter sockets come in six configurations. The services used with each type are shown here.

For single-phase circuits:

Socket	Voltage	Current	Comment
	120/240V, 3-wire	Up to 200A	Direct-connect socket
	120/208V, 3-wire	Up to 200A	Direct-connect socket
	120/240V, 3-wire	201 to 320A	Direct-connect socket
	120/240V, 3-wire	Above 200A	With CTs

For three-phase circuits:

Socket	Voltage	Current	Comment
	120/208V, 4-wire 120/240V, 4-wire 277/480V, 4-wire	Up to 200A	Direct-connect socket
	120/208V, 4-wire 120/240V, 4-wire 277/480V, 4-wire	Above 200A	With CTs

4.6.1 GENERAL REQUIREMENTS FOR METER SOCKETS

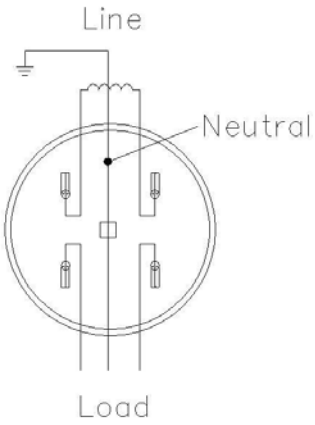
Meter sockets must meet be:

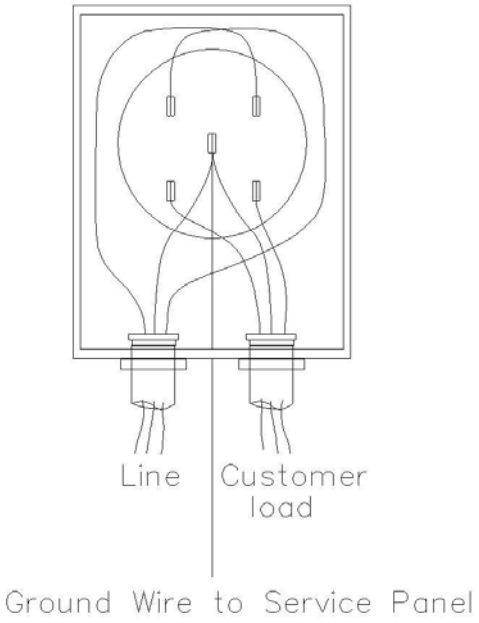
- Rated NEMA 3R - for exterior use and rain tight
- Installed level, plumb, and fastened securely to a rigid structure
- All unused openings in the enclosure, closed with plugs and secured tightly from the inside
- If live lines are installed, covered and sealed with a transparent cover
- Not jumpered to provide power
- Acceptable to the power company and Underwriters Laboratories (UL)

4.6.2 SOCKETS FOR RESIDENTIAL AND TEMPORARY SERVICES

Most residential services, and all temporary services, use a socket with four jaws and a ground terminal. Figure 4.6.2A shows a typical meter socket for overhead service. Figure 4.6.2B shows a typical meter socket for underground service.

Figure 4.6.2A & 2B – Overhead and Underground Residential Services





2A – Overhead Service 2B – Underground Service

4.6.3 GROUNDING A METER SOCKET

Grounding the meter socket protects personnel and equipment in the event of an external line surge, lightning strike, or accidental contact between phase and neutral conductors.

Attach a ground wire to the neutral terminal at the meter socket. Use a minimum No. 4 copper wire to connect the terminal to a rod driven into the ground. Install the ground rod a few feet away from a pole to reduce the portion of the grounding cylinder blocked by the pole, and to avoid disturbed earth which has a relatively higher resistance. After connecting the ground wire and rod, if the resistance to earth is more than 25 ohms, install a second ground rod at least 6' away from the first. Above all, follow the requirements of the NEC. See Section 250.

After installation, leave the connection to the ground rod visible for electrical inspection.

For safety, the top of the ground rod should be flush with or below ground level.

Factors which affect the ability of the ground rod to dissipate power surges include:

- The type soil at the site. Examples: Clay soil has high conductivity which is good, gravel has low conductivity which is bad.
- The condition of the soil. Damp is good, contact with the water table is very good, high salt content is good, frozen soil is bad.
- The size of the ground rod. The longer the rod and the larger the diameter, the better.
- The ground rod material. Copper is better than steel. Copper-clad steel is better than steel alone.
- The resistance across clamps and connections. Note: The integrity of these connections tends to deteriorate with time.

4.6.4 METER INSTALLATION TIPS

Cable runs:

- Metered circuits and un-metered circuits must not be intermixed in raceways or enclosures, except in special situations approved by the power company.

- Customer equipment is not allowed inside a meter enclosure or CT cabinet.
- Customer load monitoring equipment, if installed, must be on the load side of the meter.
- Line-side conductors are connected to the top terminals of the meter socket, load-side conductors are connected to the bottom terminals of the meter socket.
- After the installation is complete, make these mechanical checks: Conductors are not under undue strain on their terminals, connections are tight, terminals are rated for the size of conductor used, strands have not been removed to make conductors fit under- sized terminals.

Labeling:

- For multi-meter installations, each meter must have a permanently engraved metal or hard plastic label which identifies the billing address.
- For four-wire delta services, identify the high-leg conductor with orange marking and locate this conductor at the upper-right jaw of the meter socket, and on the right end of the test block.

Protection:

- Meter sockets must be equipped with a test bypass capability. A manual link bypass is required for all 120/240 volt, single-phase services.
- The ampacity rating of the main circuit breaker, or safety switch, must not exceed the maximum rating of the meter socket. For three-phase services, if the marked continuous ampacity exceeds 200 amperes, the customer must install CT metering.
- All service equipment must be metered ahead of the disconnect switch, except in special situations approved by the power company.
- Current limiting fuses, which protect the customer's electrical system from excessive current, must be located in the customer's service panel or in a separate enclosure between the socket and the panel.
- Ground and bond all meter sockets, enclosures, and conduit in accordance with Articles 230 and 250 of the NEC. Connect the neutral conductor to the neutral terminal in the socket.

- When metering equipment is installed in a location where it might be struck by a vehicle, the customer must install and maintain a guard post.

4.6.5 METER BASE SPEFICATIONS

<u>200 AMP Meter Socket Specifications – Single Phase:</u>

Meter Socket Specifications - 200A . General Requirements

All meter sockets shall have independent test laboratory listing agency label certifying to ANSI/UL414, ANSI C12.7, NEMA 250, NEMA Publication No. EL-17, and NFPA 70 NEC).

All meter sockets shall be ringless and individual covers must have a hasp provision for the meter seal.

All meter socket enclosures shall be outdoor NEMA 3R rated and withstand the ambient and environmental conditions where located. Meter facilities shall be protected from dust, moisture, corrosion, etc. (Some extreme conditions may require a minimum NEMA 4X rated enclosure.)

All meter base locations must be approved by the Lebanon Utilities Electrical Department prior to installation.

Overhead types shall have a 2inch hub opening at top for top entry in meter socket or central wiring space of ganged sockets.

Underground types shall have a 2inch hub opening at bottom for top in meter socket or central wiring space of ganged sockets.

All meter sockets shall have adequate continuous duty and short circuit withstand ratings applicable for the service connection.

All meter socket jaw assemblies shall be compatible with Class 100 or Class 200 rated watt-hour meters.

Neutral position shall be bonded to the meter socket enclosure.

Bolted or lay-in type terminals and terminal blocks shall have Allen or hex head terminal screws rated for 150 inch-pounds (17 Newton-meters) tightening torque minimum.

The meter socket meets the wire bending requirements within the enclosure and at terminations according to the NEC.

All single-phase meter sockets 4 terminal (Form 2S) and 5 Terminal (Form 12S) shall have horn bypass. For 5 terminal, Form 12S, service installations, the 5th terminal shall be installed in the 9:00 position.

Any apartment or condominium style meter bank installation must be preapproved prior to installation by the Lebanon Utility Electrical Department.

Any meter base that has more than one meter (Gang Meter Base) must be permanently labeled with address and apartment identifier before connections can be completed.

Examples of approved meter bases

Manufacturer	**Catalog Number**
Square D	UHTRS213B
Milbanks	U7043-XL-TG-KK-ALT
Eaton	1003878ACH

400 AMP Meter Socket Specifications – Single Phase:

Meter Socket Specifications – 400 amp . General Requirements

All meter sockets shall have independent test laboratory listing agency label certifying to ANSI/UL414, ANSI C12.7, NEMA 250, NEMA Publication No. EL-17, and NFPA 70 NEC).

All meter sockets shall be ringless and individual covers must have a hasp provision for the meter seal.

All meter socket enclosures shall be outdoor NEMA 3R rated and withstand the ambient and environmental conditions where located. Meter facilities shall be protected from dust, moisture, corrosion, etc. (Some extreme conditions may require a minimum NEMA 4X rated enclosure.)

All meter base locations must be approved by the Lebanon Utilities Electrical Department prior to installation.

Any meter base rated more than 200A must have a manual bypass lever. Bypass lever must be arranged that the meter socket cannot be sealed with the bypass in the on position.

Overhead types shall have a minimum 5inch hub opening at top for top entry in meter socket or central wiring space of ganged sockets.

Underground types shall have a minimum 5inch hub opening at bottom for top entry in meter socket or central wiring space of ganged sockets.

Neutral position shall be bonded to the meter socket enclosure.

Bolted or lay-in type terminals and terminal blocks shall have Allen or hex head terminal screws rated for 150 inch-pounds (17 Newton-meters) tightening torque minimum.

The meter socket meets the wire bending requirements within the enclosure and at terminations according to the NEC.

Meter sockets shall be supplied with a label designating "Use 320 Amp Meter Only"

Examples of approved meter bases

Manufacturer	**Catalog Number**
Square D	UTH4330T
Milbanks	U2448-X-RGE
Eaton	UTH5330UFLCH

200 AMPS or less Self Contained 16S Meter - Three Phase:

Three phase, 4 wire, CL200, 7 terminals, ring-less type and equipped with lever by-pass. 200-amp Self-Contained Meter Socket

For services with a maximum manufacture nameplate handle(s) rating or breaker(s) less than or equal to 200 amps.

All meter socket enclosures shall be outdoor NEMA 3R rated and withstand the ambient and environmental conditions where located. Meter facilities shall be protected from dust, moisture, corrosion, etc. (Some extreme conditions may require a minimum NEMA 4X rated enclosure.)

All meter base locations must be approved by the Lebanon Utilities Electrical Department prior to installation.

Overhead types shall have a minimum 2inch hub opening at top for top entry in meter socket or central wiring space of ganged sockets.

Underground types shall have a minimum 2inch hub opening at bottom for top entry in meter socket or central wiring space of ganged sockets.

All meter sockets shall have adequate continuous duty and short circuit withstand ratings applicable for the service connection.

All meter socket jaw assemblies shall be compatible with Class 200 rated watt-hour meters.

Any meter base that has more than one meter (Gang Meter Base) must be permanently labeled with address and apartment identifier before connections can be completed.

Examples: This list is not exhaustive and is just examples of sizes. If you have questions about a specific make and or model please call to verify.

Examples of approved meter bases

Manufacturer	**Catalog Number**
Eaton/Durham	1006353C 1006353C-CH
Milbank	U4788-XL
Siemens	42507-025 40407-025

400 AMPS Self Contained 16S Meter – Three Phase:

Three phase, 4 wire, CL320, 7 terminals, ring-less type and equipped with lever by-pass.

400-amp Self Contained Meter Socket.

For services with a maximum manufacture nameplate handle(s) rating or breaker(s) less than or equal to 400 amps.

All meter sockets shall be ringless and individual covers must have a hasp provision for the meter seal.

All meter socket enclosures shall be outdoor NEMA 3R rated and withstand the ambient and environmental conditions where located. Meter facilities shall be protected from dust, moisture, corrosion, etc. (Some extreme conditions may require a minimum NEMA 4X rated enclosure.)

All meter base locations must be approved by the Lebanon Utilities Electrical Department prior to installation.

Any meter base rated more than 400A must have a manual bypass lever. The bypass lever must be arranged that the meter socket cannot be sealed with the bypass in the on position.

Overhead types shall have a minimum 5inch hub opening at top for top entry in meter socket or central wiring space of ganged sockets.

Underground types shall have a minimum 5inch hub opening at bottom for top entry in meter socket or central wiring space of ganged sockets.

Meter sockets shall be supplied with a label designating "Use 320 Amp Meter Only."

Examples of approved meter bases

Manufacturer	**Catalog Number**
Milbanks	U2120-X-2/K7

4.7 DIRECT-CONNECT METERS

Direct-connect meters carry full load current and connect directly across full line voltage. Direct-connect meters are also called self-contained meters.

Direct-connect, socket-type meters are installed on these services:

- Single-phase, up to 400 amps
- Three-phase, up to 200 amps, and with motors up to 60 hp for 120/208 or 120/240 volt service

Services larger than these are metered using instrument-rated meters with current transformers. If the voltage is over 240 volts, voltage transformers are used.

4.7.1 SERVICES METERED USING DIRECT-CONNECT METERS

Services metered by direct-connect meters, are listed here.

For single-phase services:

- 120/240V, 3-Wire

For three-phase services:

- 120/208V, 4-Wire, Wye
- 120/240V, 4-Wire, Delta

4.8 CURRENT TRANSFORMER METERING

Current transformers are used with instrument-rated meters, to meter single- phase services greater than 400 amps (320 amps continuous), and three- phase services greater than 200 amps. Smaller services use direct-connect metering.

The customer provides and installs all equipment beyond the point of delivery: meter sockets, cabinets and enclosures for the meter and CTs, connection lugs, conduit, grounding, protection equipment, and wiring from the load to the CT mounting base.

The power company provides and installs the meter, current transformers, test switch, and local wiring associated with the meter, test switch, and CTs.

4.8.1 SERVICES METERED USING CURRENT TRANSFORMERS

Services metered using instrument-rated meters and current transformers are listed here.

For single-phase services:

- 120/240V, 3-wire

For three-phase services:

- 120/208V, 4-wire, Wye
- 120/240V, 3-wire, Delta
- 277/480V, 4-wire, Wye

4.8.2 CURRENT TRANSFORMER CABINET

The customer provides and installs a cabinet for the current transformers, and the conduit between the CT cabinet and the meter enclosure. The CT cabinet is metal, weather tight, NEMA 3R rated, and securely mounted on a rigid surface plumb in both directions. The cabinet is to have a side-hinged, sealable door. When open, the door must not block a safe exit.

The top of the cabinet must be no higher than 7 feet above the floor, and the bottom of the cabinet must be at least 6 inches above the floor. The dimensions of the CT cabinet are:

Service	Number of CTs	Cabinet		
		Width	Height	Depth
Single-phase, 400-800A	2	30”	48”	11”
Three-phase, 200-800A	3	36”	48”	11”
Over 800A	Contact Utility for approved cabinet			

The location of the CT cabinet is subject to the approval of the power company.

Inside the cabinet, the customer installs a mounting base for the CTs. A single-phase mounting base is used if the service is single-phase, a three-phase mounting base is used if the service is three-phase. The base has two

cable termination bolts on the line and the load side of each phase, and two bolts on the neutral bus.

The CT cabinet contains only the main service conductors. A maximum of four main service conductors may be served from the load side of each termination bolt, as long as the lugs are not stacked and do not restrict mounting the CTs. Use "stair step" lugs if more than two conductors are terminated at a CT.

If the CT cabinet is installed in a vehicle traffic area, install a guard post.

4.8.3 METER SOCKET, ENCLOSURE, AND CONDUIT

The distance between the meter socket enclosure and the CT cabinet is not more than 50 feet. Mount the two enclosures as close together as feasible.

4.8.3.1 METER SOCKET ENCLOSURE FOR SINGLE-PHASE

For single-phase circuits, the customer provides and installs a 6-terminal meter socket in an enclosure, with conduit between the meter enclosure and the CT cabinet.

4.8.3.2 METER SOCKET AND ENCLOSURE FOR THREE-PHASE

For three-phase circuits, the customer purchases from the utility and installs a 13-terminal meter socket in an enclosure, with conduit between the meter enclosure and the CT cabinet. If Applicable, the utility company installs the purchased meter base on the transformer.

4.8.3.3 CONDUIT

For conduit, use rigid steel, rigid PVC plastic (Schedules 40 or 80), or IMC/EMT conduit. Flex conduit is not permitted. When metallic conduit is used, provide grounding bushings at each end. When PVC conduit is used, install a green insulated bonding jumper in the conduit. 1-1/4-inch conduit or larger is required, with proper fittings and bushings to protect metering conductors.

The conduit enters the meter enclosure adjacent to the test switch.

A pull cord is required if the conduit is over 25 feet. Conduit bends must not exceed 360 degrees total.

4.8.3.4 MOUNTING BASE FOR CURRENT TRANSFORMERS, SINGLE-PHASE SERVICES

The customer installs this CT mounting base in the CT cabinet for single- phase services. This mounting base accepts bar-type current transformers, only.

For overhead services, the customer connects the line and load conductors to the terminals on the mounting base. For underground services, the customer connects the load side conductors and the power company connects the line side conductors.

The mounting base must be rated for fault current of 50,000 amperes, minimum. Based on EUSERC 328B, Mounting Base for Current Transformers, Three-Phase Services.

The customer installs this CT mounting base in the CT cabinet for three- phase services. This mounting base accepts bar-type current transformers, only.

For overhead services, the customer connects the line and load conductors to the terminals on the mounting base. For underground services, the customer connects the load side conductors and the power company connects the line side conductors.

The mounting base must be rated for fault current of 50,000 amperes, minimum.

For 4-wire delta services, identify the high leg with orange marking. Based on EUSERC 329B.

CHAPTER 5: CUSTOMER LOAD DATA SHEETS

On the following pages, there are customer load data sheets for:

- Residential Service
- Non-residential/Commercial Service
- Electrical Vehicle (EV) Charging Station

Lebanon UTILITIES

One Municipal Plaza
401 S. Meridian Street
Lebanon, IN 46052
765-482-5100
www.lebanon-utilities.com

ELECTRIC LOAD DATA CALCULATION SHEET
RESIDENTIAL SERVICE

The following information is used for the purposes of calculating Project load data and service type.

Project Information

Project Name: _____

Type of Project: ☐Permanent ☐Temporary AND ☐New ☐Existing

Site Address: _____

Type of Service: ☐Overhead ☐Underground Voltage: _____ Wire: _____

Service Ent. Equip. Rating: Amps: _____ Electrician: _____

Building Sq. Ft.:_____ Demand: _____ Connect Date: _____

Contact Information

Owner(s): _____

Developer (if applicable): _____

Primary Contact: _____

Primary Contact Telephone & Email: _____

Major Load Items

Item	QTY	Loading	Item	QTY	Loading	Misc. Item	QTY	Loading
EV Chg. Station		KW	Water Heater		KW			KW
Heat Pump		Tons	Demand Wtr Htr		KW			KW
Backup Heat Strips		KW	Inside Lighting		KW			KW
Electric Heating (other)		KW	Outside Lighting		KW			KW
Air Conditioner		Tons	Data Processing		KW			KW
Kitchen Range		KW	Welding		KW			KW
Kitchen Equipment		Kw	Hot Tub		KW			

Motor Loads

Largest Motor: HP: _____ Voltage: _____ LRA: _____ FLA: _____

Notes: _____

_____

_____

Plans attached: ☐ Yes ☐ No Plan Date: _____ Version # _____

_____ _____

Owner Signature Date

Return Form to: Josh McKay, jmckay@lebanon-utilities.com
Copy to: Jeff Greeno, jgreeno@lebanon-utlities.com

January 2023

One Municipal Plaza
401 S. Meridian Street
Lebanon, IN 46052
765-482-5100
www.lebanon-utilities.com

ELECTRIC LOAD DATA CALCULATION SHEET
NON-RESIDENTIAL/COMMERCIAL SERVICE

Please provide the following information for the purpose of calculating project load data.

Project Information

Project Name: _____

Type of Project: ☐Permanent ☐Temporary AND ☐New ☐Existing

Site Address: _____

Type of Facility: _____ Building Sq. Ft.: _____

Metering: ☐Primary ☐Secondary Service Approach: ☐Overhead ☐Underground

Type of Service: Phase: _____ Voltage: _____ Wire: _____

Service Ent. Equip. Rating: Amps: _____ Electrician: _____

Other: _____ Connect Date: _____

Contact Information

Owner(s): _____

Developer (if applicable): _____

Primary Contact: _____

Primary Contact Telephone & Email: _____

3-Phase Motor Load List				1-Phase Motor Load List			
QTY	HP (Each)	HP (Total)	USE	QTY	HP (Each)	HP (Total)	USE
Subtotal:				Subtotal:			

ADDITIONAL MISC. LOAD LIST (Lighting/Heating/etc.)		Notes:
DESCRIPTION (Use)	KW	
Subtotal:		

TOTALS:					
3-Phase Motor Load:		HP		KVA	
1-Phase Motor Load:		HP		KVA	
Total Misc. Load:		KW		KVA	
Total Est. Demand:				KVA	
Demand Load Factor:		Power Factor:			

Notes: _____

_____

January 2023

Plans attached: ☐ Yes ☐ No
Plan Date: _____ Version # _____

Updated information should be noted as "Amended".

_____ _____
Representative Signature Date

Return Form to: Josh McKay, jmckay@lebanon-utilities.com
Copy to: Jeff Greeno, jgreeno@lebanon-utlities.com

Lebanon UTILITIES

One Municipal Plaza
401 S. Meridian Street
Lebanon, IN 46052
765-482-5100
www.lebanon-utilities.com

ELECTRIC LOAD DATA CALCULATION SHEET
EV Charging Station

The following information is used for the purposes of calculating Project load data and service type.

Project Information

Project Name: _____

Type of Project: ☐New ☐Existing ☐Slow Charging ☐Fast charging

Site Address: _____

Type of Service: ☐Overhead ☐Underground Voltage: _____ Wire: _____

Service Ent. Equip. (Panel) Rating: Amps: _____ Electrician: _____

Peak Demand: _____ Power Factor _____ Connect Date: _____

Contact Information

Owner(s): _____

Developer (if applicable): _____

Primary Contact: _____

Primary Contact Telephone & Email: _____

Charging Station Item Breakdown

Charging Cabinets QTY	Loading (KW)	Charging Stalls Per Cabinet QTY	Loading (KW)

Notes: _____

_____

_____

Plans attached: ☐ Yes ☐ No Plan Date: _____ Version # _____

_____ _____

Owner Signature Date

Return Form to: Josh McKay, jmckay@lebanon-utilities.com
Copy to: Jeff Greeno, jgreeno@lebanon-utlities.com

CHAPTER 6: GLOSSARY

- ANSI - American National Standards Institute. An independent administrator and coordinator of voluntary industry standards.
- bypass - A device which shunts current around the socket, so the meter can be removed without interrupting service.
- clearance - There are two, quite different meanings for "clearance." One meaning is: A specified minimum distance between two objects to assure adequate space for safety, security, or access. The other meaning is: An agreement between a foreman and the system operator, for permission. When describing new electric services, "clearance" has the first meaning - the distance between two objects.
- common ground point - The point where the grounding electrode connects to the equipment- grounding conductor and/or the circuit-grounding conductor.
- conduit - A pipe with a smooth interior surface for easy drawing-in of electrical conductors. Conduit may be metallic or nonmetallic.
- connection point - For underground services, the connection point is the secondary side of the padmount transmformer or the junction box or pedestal fed from the secondary side of a padmount transformer.
- corrosion inhibiter - An electrical joint compound used to retard oxidation at electrical connections.
- current transformer - A transformer whose secondary current is a precise fraction of its primary current. Using current transformers, high-current circuits can be measured with conventional meters. Abbreviation: CT.
- demand - The average rate at which energy (kilowatt hours) is consumed during a specified interval of time.
- direct-burial cable - Cable which may be installed in the ground without the protection of a conduit.
- direct-connect meter - A meter which carries full load current and connects across full line voltage. Also called a self-contained meter.
- drip loop - A downward loop in the customer's conductors, near where the customer's conductors attach to the power company's overhead conductors, to prevent water from entering the service mast at the weatherhead.
- fault - A partial or total failure of insulation which causes a short circuit between conductors, or between a conductor and ground, causing an abnormal

current to flow. Also, a failure (break) in a conductor which causes an open circuit.

- fault current - A current which flows between conductors, or between a conductor and ground, due to an abnormal connection between the two. A fault current flowing to ground may be called a ground fault current.
- guy - A cable or brace that supports a mast or pole.
- high leg - In a four-wire delta service, the phase with a voltage higher than the other two phases. Also called wild leg, delta leg.
- instrument transformer - A transformer which delivers as its output, a precise fraction of the input line current or line voltage. Instrument transformers allow standard meters to measure high currents and voltages.
- instrument-rated meter - A meter used in conjunction with instrument transformers, to measure high-voltage or high-current services. Also called a transformer-rated meter.
- line conductor - A service conductor installed by the electric utility, to the meter.
- load conductor - A service conductor to the customer's load, after the meter.
- manual link bypass - Provision for manually installing conductive links between the line and load terminals in the meter socket. These links maintain electrical service to the customer when the meter is removed. Also called manual circuit-closing block.
- manufactured home - A factory-assembled structure built on a permanent chassis, transportable in one or more sections, and designed to be used as a dwelling with a permanent foundation. Also called a modular home. New electric service to a manufactured home has the same requirements as installing new service to a permanent single-family residence.
- meter jaw - A spring-loaded receptacle inside a meter socket which captures the terminals (blades) of a meter, and connects the meter terminals to the service conductors.
- meter pedestal - A factory-built assembly containing a meter socket and disconnect switches.
- meter ring - A metal ring which secures the meter to the meter socket, which can be sealed by the electric utility to prevent tampering with the meter.

- meter socket - The mounting device consisting of meter jaws, connectors, and enclosure for receiving a socket-type meter.
- mobile home - A factory-assembled structure built on a permanent chassis, transportable in one or more sections, and designed to be used as a dwelling without a permanent foundation.
- Overhead service to a mobile home is provided by a meter pole. Underground service to a mobile home is provided by a meter pedestal.
- NEC - National Electrical Code. National regulations for the installation of electrical equipment inside buildings. Published by the National Fire Protection Association. NEC rules apply to equipment on the customer's side of the point of delivery.
- NEMA - National Electrical Manufacturers Association. A trade association which publishes standards for manufacturers of electrical equipment, including enclosures and racks.
- NESC - National Electrical Safety Code. National regulations for the installation, operation, and maintenance of electric supply and communication lines. Published by Institute of Electrical and Electronics Engineers. NESC rules apply to equipment on the electric utility's side of the point of delivery.
- neutral - The grounded conductor in a single-phase three-wire, or three-phase four-wire system.
- point of attachment - The point at which the utility's service conductors are mechanically attached to the customer's premises. For overhead services, the point of attachment is usually an insulated clevis.
- point of delivery - The point where the utility's service line makes the electrical connection to the customer's wires.
    - For residential and business overhead services, the point of delivery is the splice between the utility's and the customer's conductors.
    - For residential underground services, the point of delivery is the utility side lugs of the customer meter socket
    - For business underground services, the point of delivery is secondary side of the distribution padmount transformer
- potential transformer - *see voltage transformer*
- power factor - Technically, the cosine of the phase angle between the circuit voltage and current waveforms. Since phase angles are difficult to measure,

power factor is usually derived by measuring power or impedance. Power factor is the ratio of active power to apparent power (watts divided by volt-amperes). Power factor has no units, but is commonly expressed as a percentage. For example, if active power is 96 kW and apparent power is 100 kW, the power factor is 96%.

- primary voltage - The voltage at which electricity is delivered from substations to distribution transformers. Primary voltage is greater than 600 volts.
- raceway - An enclosed channel for holding wires or cables. If designated for line conductors, the raceway must be sealable. The intermixing of line and load conductors in the same raceway is not permitted.
- seal - A locking device to secure a meter or other service equipment.
- secondary voltage - The voltage at which electricity is delivered from distribution transformers to customers. Secondary voltage is less than 600 volts.
- select backfill - Soil or sand free from sharp objects, rocks, scrap building material, and corrosive material.
- self-contained meter - A meter which carries full load current and connects directly across full line voltage. Also called a direct-connect meter.
- service drop - For overhead service, the power company's service line between the distribution transformer and the point of delivery.
- service line - Conductors from the distribution transformer to the customer's point of delivery. See service drop, service lateral.
- service entrance equipment - The service equipment which is supplied by the customer: conduit, conductors, mast, weatherhead, meter base, enclosures, disconnects, and panels.
- service lateral - For underground service, the service line between the distribution transformer and the point of delivery.
- service mast - For overhead service, the conduit rising above the meter to provide mechanical protection to the customer's conductors and to support the service drop from the power company.
- socket - The mounting device for socket meters. Includes spring-loaded meter jaws, connectors for line and load conductors, and an enclosure.
- temporary service - Electric service during the construction phase of a project.

- test switch - A device used to isolate connections to a meter from its instrument transformers.
- transformer-rated meter - A meter used in conjunction with instrument transformers, to measure high-voltage or high-current services. Also called an instrument-rated meter.
- UL - Underwriters Laboratories. An independent product-testing and certification organization.
- voltage transformer - A transformer whose secondary voltage is a precise fraction of its primary voltage. Using voltage transformers, high-voltage circuits can be measured with conventional meters. Abbreviation: VT, or PT (potential transformer).