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7. Residential Single-Family and Duplex Buildings (Dwellings)

7.1 General

Section 7 covers the requirements for permanent service to residential single-family and duplex buildings, including manufactured and mobile homes. The *Residential Single Family and Duplex Building Connection Checklist* at the front of this manual can be used as a guide when preparing single-family and duplex buildings for electrical service.

Any deviations from the requirements in this section must be approved in writing by the Power Company prior to installation. Permanent power will not be connected if the requirements are not met.

7.2 Maximum Available Fault Current

The maximum available fault current depends on the type of service being provided. The customer shall furnish equipment to withstand maximum available fault currents. Upon request, the Power Company will supply information on the maximum available fault current at the customer's service entrance.

7.2.1 Services 200 A or Less

For single-family and duplex buildings with services of 200 amperes (A) or less, the customer shall furnish equipment with an interrupting rating capable of accommodating the maximum available fault current. The equipment interrupting rating is typically 10,000 A.

Where large transformers are necessary and buildings are in close proximity, the maximum available fault current may exceed 10,000 A.



7.2.2 Services Larger than 200 A

For buildings with services larger than 200 A, the customer shall install equipment that will withstand the maximum available fault current.

7.3 Residential Meter Sockets

All residential meter sockets shall meet the following criteria.

Requirements:

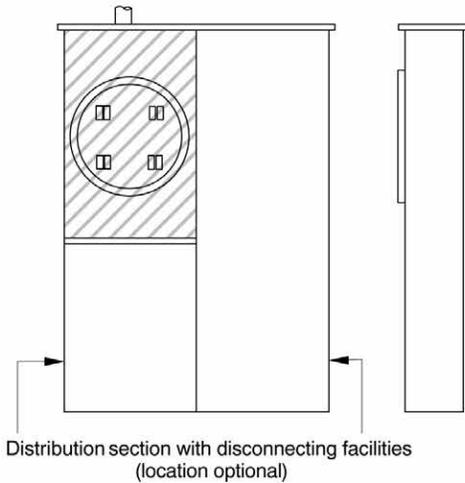
1. Meter sockets shall be rated at a minimum of 100 A.
2. Acceptable meter sockets are those manufactured in accordance with current EUSERC, ANSI-C12, and UL/ANSI-414 requirements.
3. Meter sockets shall be ring-type.
4. Meter sockets shall not be used as junction boxes.
5. Holes intended for drainage or cooling shall be kept clear. Unused mounting holes shall be covered. Mounting shall be per the manufacturer's provisions.
6. The grounding conductor shall not be connected to the Power Company's neutral in the meter socket.
7. Panel covers shall be properly secured.
8. The meter socket and service equipment shall be NEMA type 3R (rainproof), in good condition with no holes, dents or damage, and plumb in all directions. The installation shall be made with sufficient materials and installed such that it remains plumb for the duration of the service.

Safety meter sockets are approved for residential services of 200 A or less, but not required. A safety socket should be considered if the customer wants to avoid interruption of power during routine meter service.

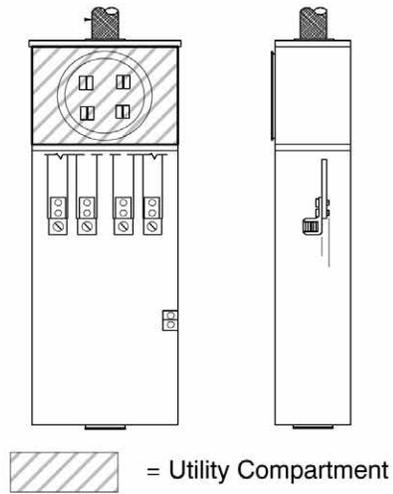
Approved residential meter sockets are shown in Figure 16 and Figure 17.

Figure 16—Residential Overhead Approved Meter Sockets
(Overhead Only)

(A) 100 and 200-A maximum
single-phase service meter socket
(EUSERC 301)



(B) 400-A maximum
single-phase service meter socket
with manual-link bypass
(EUSERC 302B)



(C) 100 and 200-A maximum
single-phase service meter socket only
(ANSI socket)

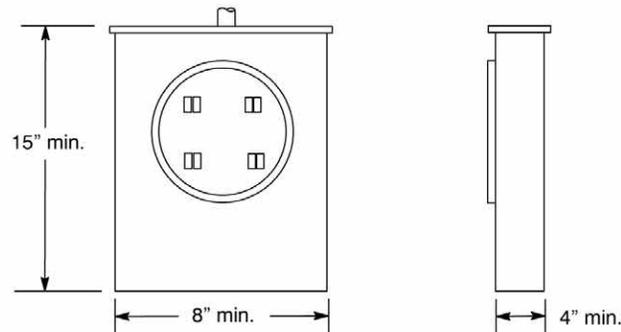
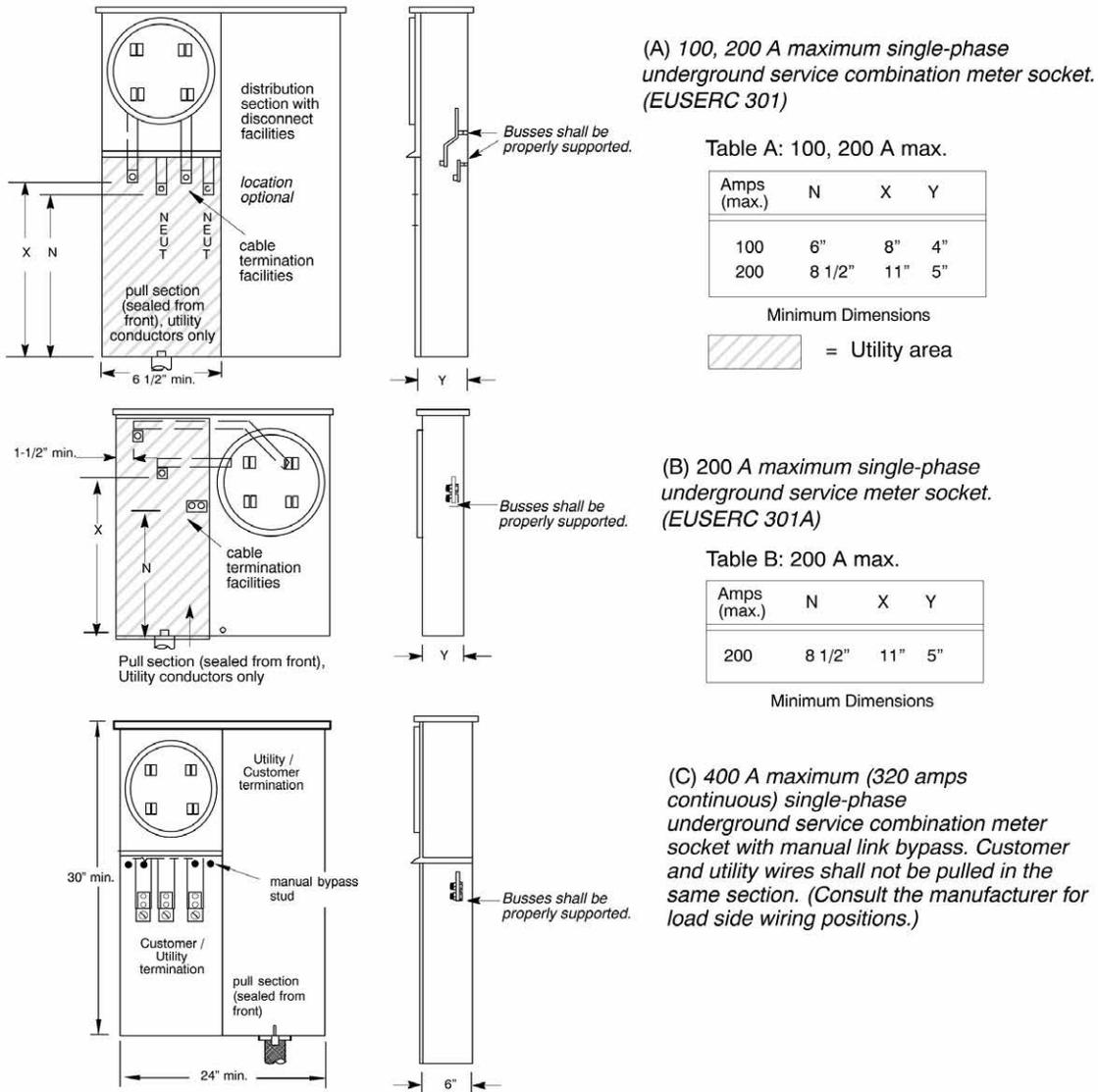


Figure 17—Residential Underground Approved Meter Sockets



Lists of acceptable meter sockets are available online at <https://www.pacificpower.net/working-with-us/builders-contractors/electric-service-requirements.html> and <https://www.rockymountainpower.net/working-with-us/builders-contractors/electric-service-requirements.html>

7.4 Power Company Energization

Before the meter is energized by the Power Company, the meter socket shall be properly grounded and all necessary permits and identification labels shall be in place.

Where two or more services are in close proximity, each metered service shall have a permanently-engraved metal or hard plastic label to identify the customer's address. The label must be permanently attached to the meter enclosure. The Power Company will decline to energize the service until the label is permanently attached.

7.5 Manufactured and Mobile Homes

Meters shall be installed on free-standing meter sockets for services to manufactured and mobile homes without permanent foundations. Dwellings of this type shall follow the requirements listed in Section 7.7.3, *Underground Service to Free-Standing Installations*, or Section 7.8.3, *Overhead Service to Meters Mounted on Poles*.

Manufactured and mobile homes on permanent foundations, as defined by the *Permanent Foundations Guide for Manufactured Housing* (HUD-4930.3G), shall be considered stand-alone buildings and may have meters installed on any qualified meter socket detailed in the following sections.

Unmetered service conductors that pass through a service disconnect compartment for a mobile home service pedestal must be run in conduit. See Section 5 for conduit requirements. The unmetered side of the socket must be sealable.

7.6 Residential Meter Socket Location

The following requirements apply to all single-family and duplex building meter sockets. Additional requirements are given in Section 7.7, *Underground Service*, and Section 7.8, *Overhead Service*. Meter socket installations not meeting the Power Company requirements outlined below may require relocation.

Requirement:

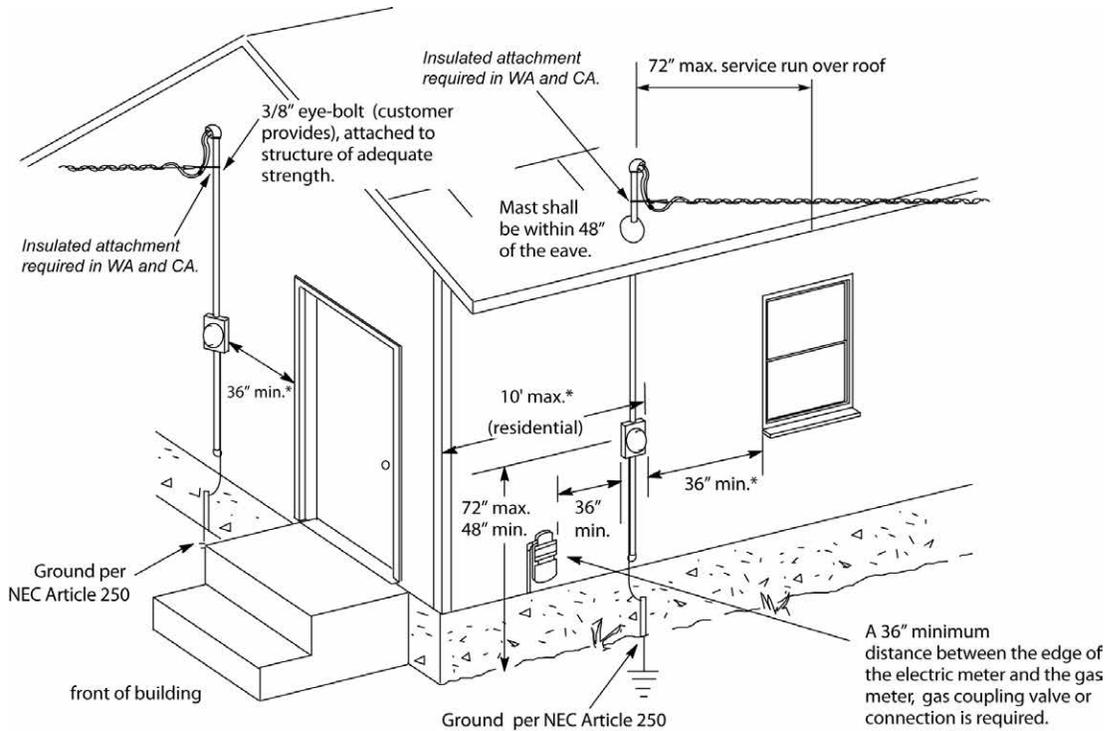
1. All installations shall be in accordance with Section 4, *Clearances*. Consult the Power Company to determine the point of attachment for overhead service drops and underground service laterals.

Written approval from the Power Company is required, prior to installation, for alternative meter socket locations.

Figure 18 illustrates the proper location for a wall-mounted meter with overhead service. Figure 19 shows the proper location for a wall-mounted meter with underground service.

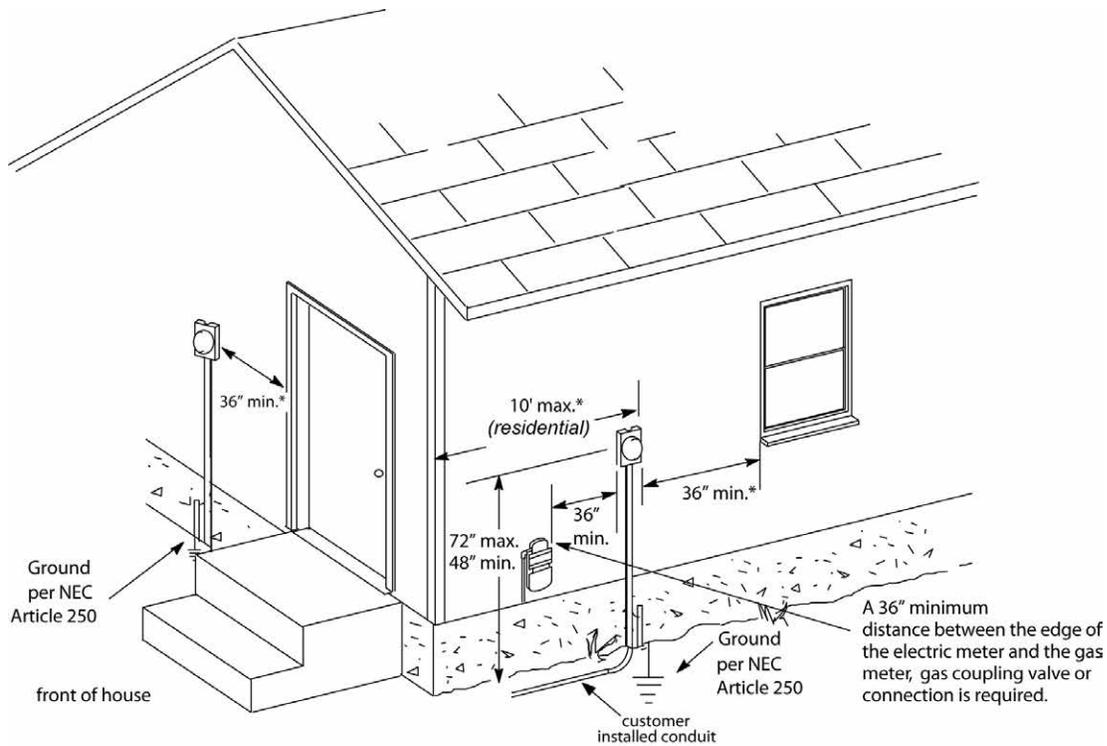


Figure 18—Wall-Mounted Meter Socket Location for Overhead Service



* This distance is for new construction.

Figure 19—Wall-Mounted Meter Socket Location for Underground Service



* This distance is for new construction.



7.7 Underground Service

7.7.1 General

Call 8-1-1 before you dig.

Underground service can be provided to the customer from either an overhead distribution system or an underground distribution system.

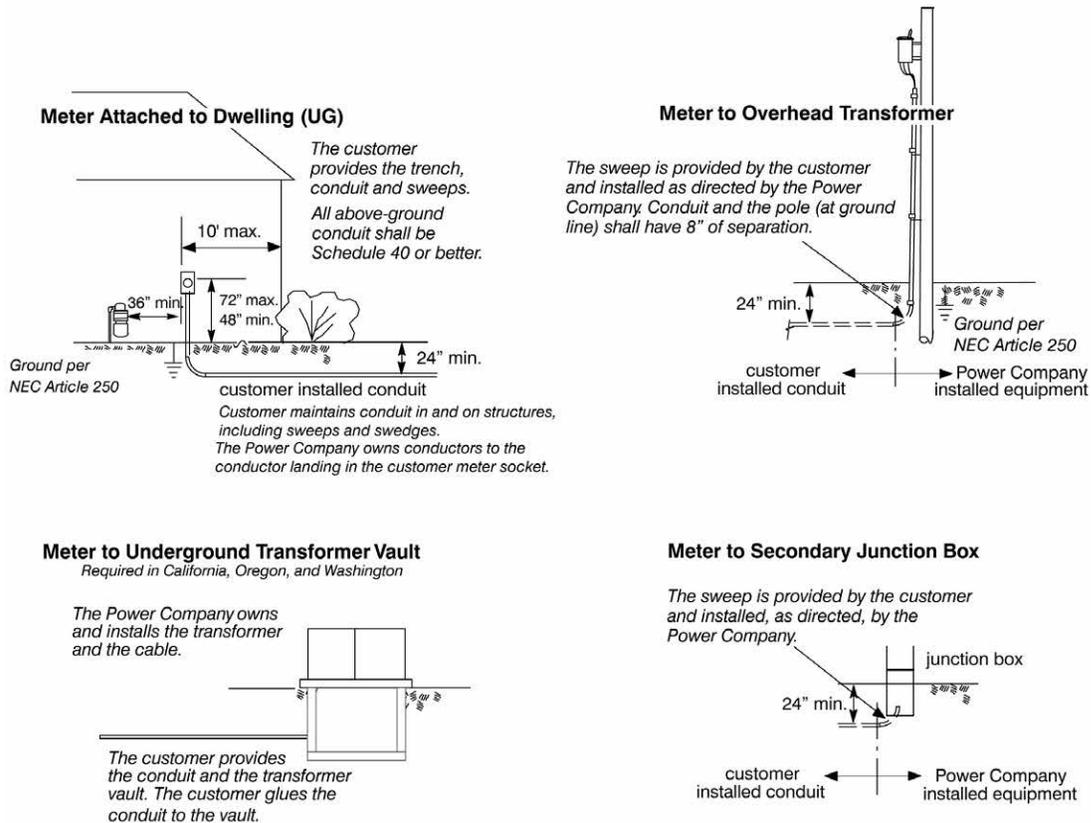
The Power Company owns and maintains the underground service from its distribution source to the customer's service point. The Power Company owns and maintains the cable up to the service point and the conduit up to the riser sweep and also owns and maintains the meter. The customer owns the meter socket and all wiring beyond the meter socket.

Installation requirements for underground service are listed below. These requirements are in addition to the general requirements in Section 7.6.

Requirements:

1. Conduit, trench, backfill, compaction shall be provided as defined in Section 5.
2. Consult the Power Company to determine the appropriate underground facility location before trenching.
3. The customer shall provide and install all conduit from the meter socket to the Power Company's source. The Power Company will identify the distribution source (pole, transformer, pedestal, or secondary junction box) and the recommended route to the meter socket. The Power Company will install the service conductor from its distribution source to the meter socket.
4. Approved bushings or other conductor protectors are required for underground meter socket enclosures.
5. Customer wires shall allow clear space in the meter socket for the installation of Power Company wires.

Figure 20 shows the installation of an underground service extension from the Power Company source to the house.

Figure 20—Underground Service to Dwellings with Permanent Foundations

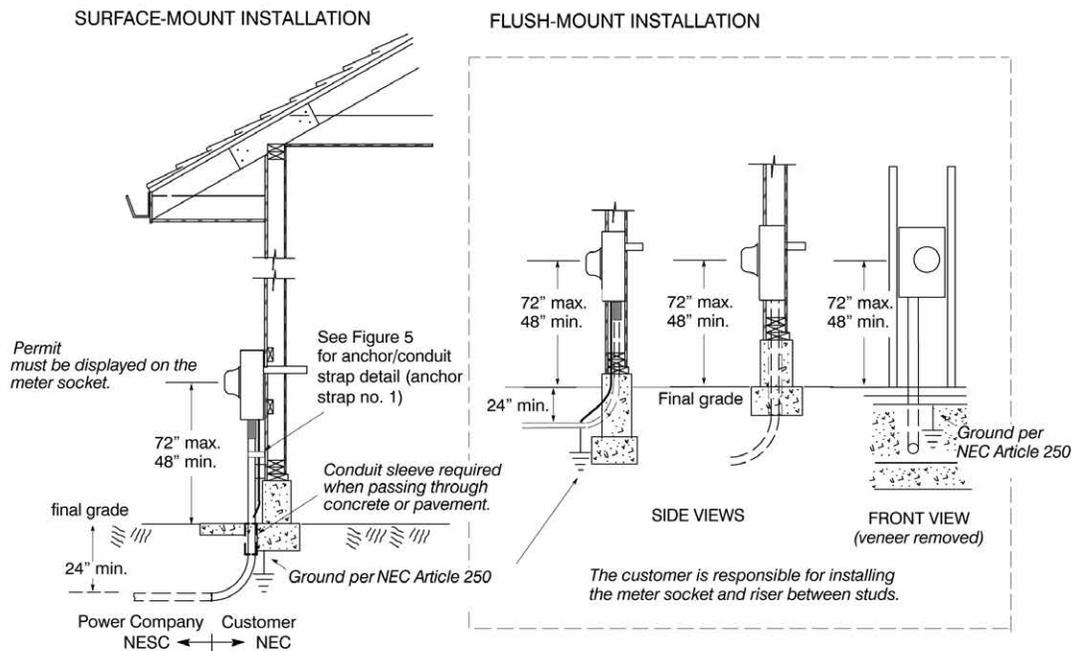
7.7.2 Underground Service to Wall-Mounted Meters

Installation requirements for underground service to wall-mounted meters are listed below. These requirements are in addition to the requirements given in Section 5, Section 7.6, and Section 7.7.1.

Requirements:

1. The meter socket and conduit shall be securely attached to the structure. Refer to Figure 5 for anchor/conduit strap detail, *Anchor strap no. 1 (or equal)*.
2. The meter socket shall be plumb.
3. When a three-inch (3") meter socket knockout is not available, a swedge may be used on the vertical riser or ahead of the elbow to transition to a smaller conduit size, no less than two inches (2").

Figure 21 shows typical installations of a meter socket and associated hardware for surface and flush wall-mounted meter sockets.

Figure 21—Underground Service to Wall-Mounted Meters

7.7.3 Underground Service to Free-Standing Installations

When underground service meter sockets cannot be mounted on the home using the criteria established in the rest of this book, the Power Company allows free-standing meter sockets such as pedestals and posts. Decorative meter pedestals are allowed.

Free-standing meter sockets are owned by the customer.

Installation requirements for underground service to free-standing meter sockets are listed below. These requirements are in addition to the requirements given in Section 5, Section 7.6, and Section 7.7.1.

Requirements:

1. The customer shall consult the Power Company to determine the location of the free-standing meter socket.
2. The free-standing meter socket shall meet all local ordinance requirements.
3. The meter socket shall be protected from damage by use of suitable protection approved before installation by the Power Company.
4. The customer shall furnish, install and maintain an approved pedestal, pole, or wood post. If a wood post is used, it shall be no less than 6" × 6" (nominal) and pressure-treated with an American Wood Preservative Association-approved preservative.
5. The access door to Power Company connections shall be sealable, and shall be kept free of obstructions a minimum of six inches (6") above the final grade.

6. Unmetered service conductor and metered service conductor shall not be run in the same conduit, raceway, or gutter.
7. The meter socket and service equipment shall be NEMA type 3R (rainproof), in good condition with no holes, dents or damage, and plumb in all directions. The installation shall be made with sufficient materials and installed such that it remains plumb for the duration of the service.
8. Conduit and conductor trenches shall be located away from (and never underneath) the building pad and foundation. For mobile homes, trenches shall be located clear of the area provided for the building.
9. Where two or more meters are located side-by-side (such as with duplexes or in mobile home parks), each meter socket shall be permanently labeled with the address, space, or berth number.

Figure 22, Figure 23, and Figure 24 illustrate typical meter installations for steel posts, wood posts, and manufactured meter pedestal packages.

Figure 22—Underground Service to a Free-Standing Meter Socket, Steel Post

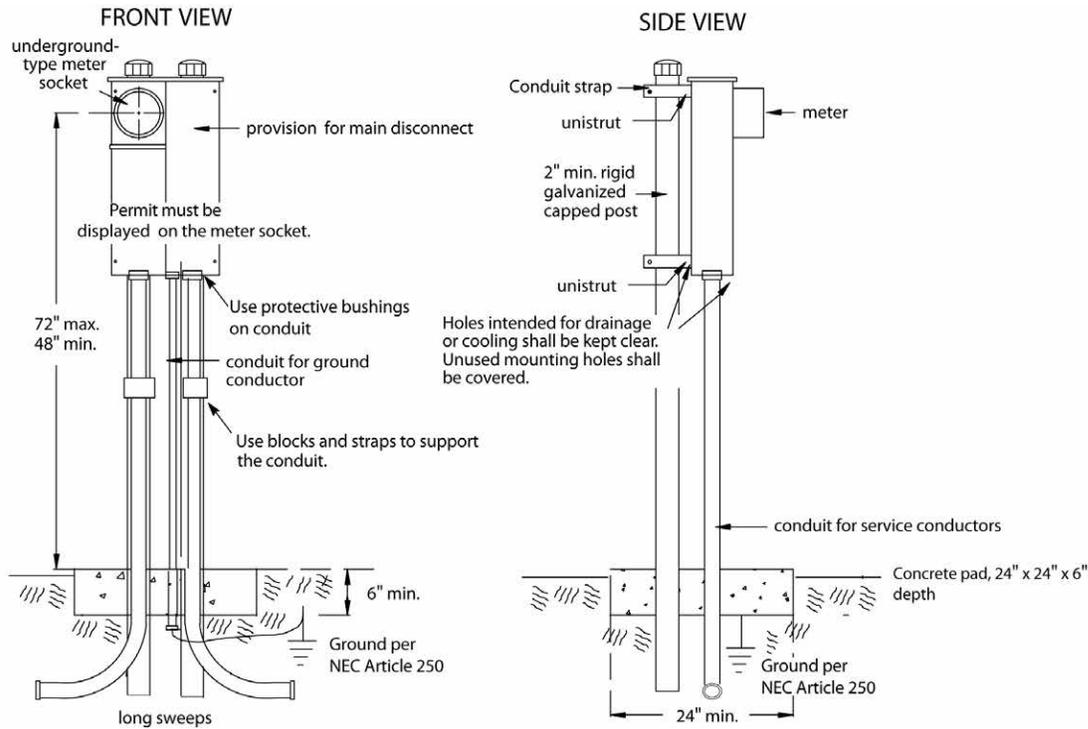


Figure 23—Underground Service to a Free-Standing Meter Socket, Wood Post

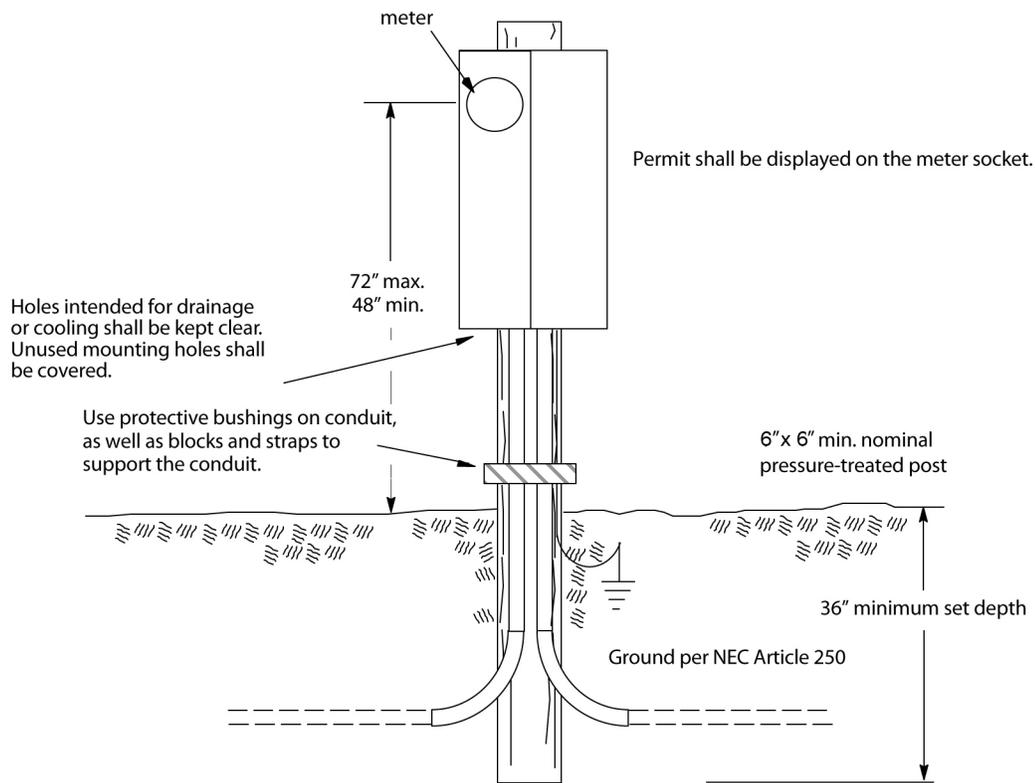
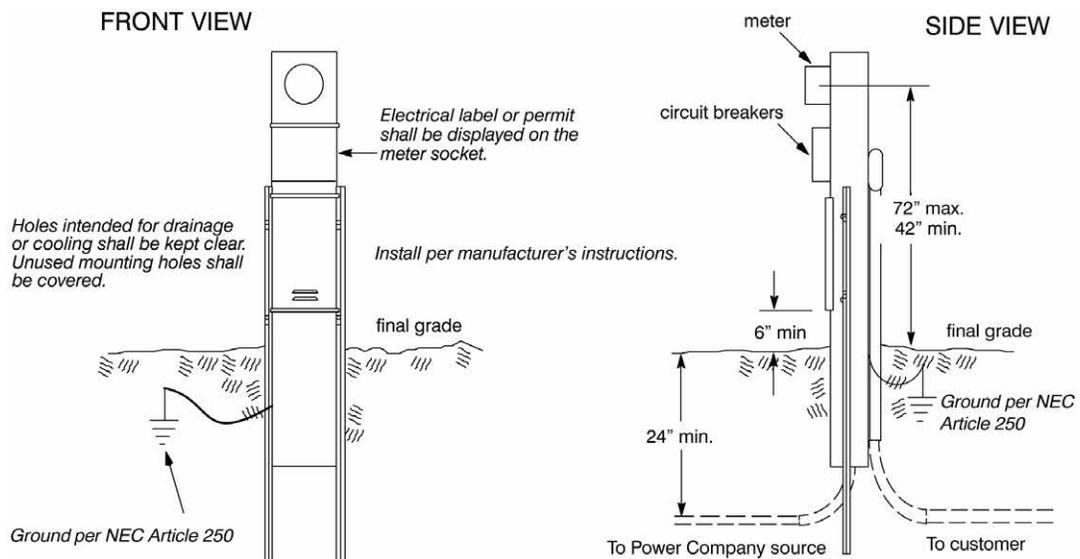


Figure 24—Underground Service to a Free-Standing Meter Socket, Manufactured Package



7.8 Overhead Service



7.8.1 General

The Power Company owns and maintains the overhead service from its source to the connection point at the weatherhead. The Power Company also owns and maintains the meter. The customer owns the meter socket, all wiring from the meter socket to the service point, and all wiring beyond the meter socket.

The customer shall obtain an easement for Power Company-installed facilities that cross any property not owned by customer, and will record the executed easement.

The following is a partial list of conditions that require consultation with the Power Company prior to installation:

1. The service crosses over a road or street.
2. The service runs along an alley, or crosses an alley, parking lot, or non-residential driveway.
3. The service crosses an area traveled by agricultural equipment.
4. The service crosses or runs along other features that may infringe on clearances.
5. A service of 277 V/480 Y.

Installation requirements for overhead service are listed below. These requirements are in addition to the requirements given in Section 7.6.

Requirements:

1. At least 24-inch conductor lead shall be provided for attachment to the service conductor at the weatherhead.
2. If the service length is greater than the values in Table 8 (for wall-mounted meters) or Table 15 (for meters mounted on poles), the Power Company shall be consulted before the mast is installed.
3. Where the mast has service cable attached to it, the mast shall be Rigid Metallic Conduit (RMC) or Intermediate Metallic Conduit (IMC). IMC may not be allowed by the authority having jurisdiction.
4. The conduit and weatherhead should be directly above the meter socket, and conduit material shall be continuous from the weatherhead to the meter socket.
5. For minimum service clearances see the NESC clearances listed in Table 6 and GO 95 clearances listed in Table 7.

7.8.2 Overhead Service to Wall-Mounted Meters

Installation requirements for overhead service to wall-mounted meters are listed below. These requirements are in addition to the requirements given in Section 7.6 and Section 7.8.1.

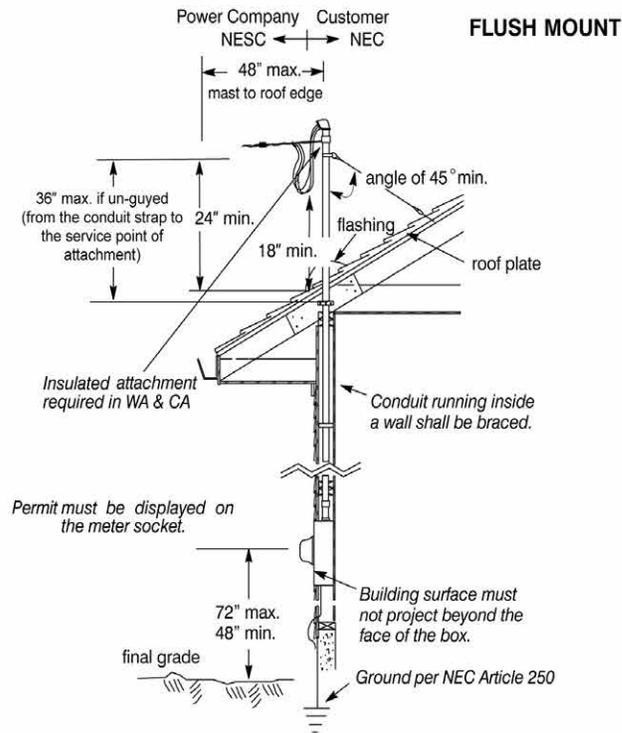
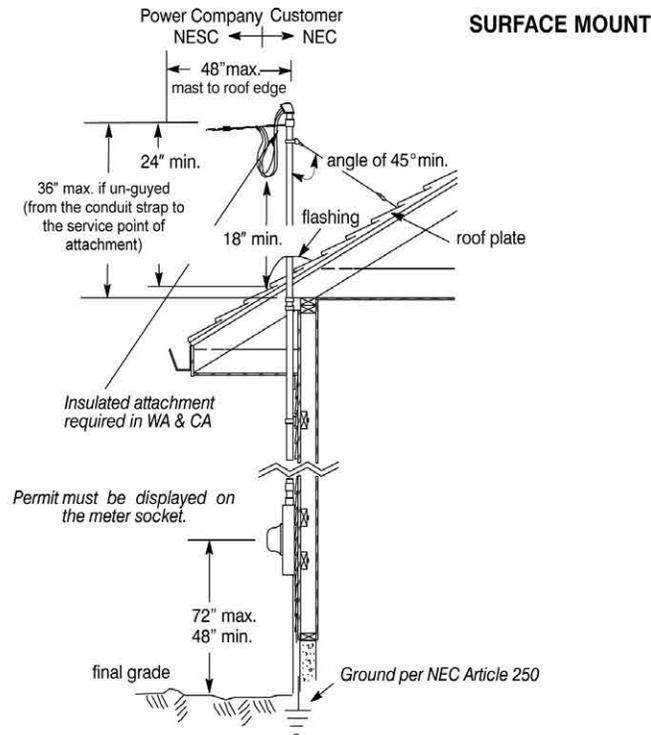


Requirements:

1. The service mast shall be mounted such that it is within 10 feet (10') of the front of the building, on the side nearest the utility source. Consult the Power Company regarding cases where the service mast cannot be mounted to meet this requirement. Refer to Section 4, *Clearances*, to provide the required clearance over the roof.
2. The service mast shall extend through the roof line except when the mast is on the gable end. The service mast shall extend through the roof line except when sufficient height can be obtained to meet the clearances given in Table 6 or Table 7.
(See Figure 18.)
3. On surface mount installations, the mast shall be securely attached to the building with lag screws and anchor straps. For brick veneer or concrete block walls, $\frac{1}{4}'' \times 3 \frac{1}{4}''$ lead sleeve expansion bolts and anchor straps or an equivalent strength anchoring system shall be used.
4. On flush mount installations, the mast inside a wall shall be braced.
5. Conduit coupling shall not be installed between the roof line and the point of attachment.
6. Guying is required if a coupling is within eight feet (8') of the weatherhead.
7. The mast shall be guyed if the point of attachment is more than 36 inches (36") above the roof line.
8. Guying shall be $\frac{1}{4}''$ common galvanized steel strand or equivalent, rated at 1,800 lbs. Two guys are required.
9. Building-mounted masts shall use a rigid steel pipe clamp as the point of attachment between the guy wire and the service mast (except in contaminated and coastal areas, stainless steel pipe clamp is required). The point of attachment on a building shall be securely fastened to a significant structural member.

Figure 25 shows a typical installation of overhead service to surface and flush wall-mounted meters.

Figure 25—Overhead Service to Wall-Mounted Meters
Surface or Flush-Mount Metering (New and Rewire)



7.8.3 Overhead Service to Meters Mounted on Poles

When overhead service meter sockets are not mounted on the dwelling unit, the meters may be installed on customer-owned poles.

Installation requirements for overhead service to meters mounted on poles are listed below. These requirements are in addition to the requirements given in Section 7.6 and Section 7.8.1.

Requirements:

1. Wood poles shall be of sound timber. To ensure strength, the pole or timber must be free of any defects that may weaken the wood, such as sucker knots and spike knots larger than $\frac{1}{3}$ of any face. Cracks greater than $\frac{1}{2}$ -inch ($\frac{1}{2}$ ") wide are not permitted. No visible wood decay is allowed.
 2. The pole height must provide required clearance for the Power Company's service drop and any telephone, cable TV, or other attachments. The customer shall install the meter socket and service equipment on a wood pole no less than 25 feet (25') long and 5 $\frac{1}{2}$ inches (5 $\frac{1}{2}$ ") in diameter at the top, or a (nominal) 6" \times 6" \times 25' timber, set no less than 60 inches (60") below ground level, with suitable backfill. The pole or timber shall be pressure- or thermally-treated with an approved preservative.
 3. The pole or timber shall be easily accessible by Power Company power-lift aerial equipment.
 4. In unstable soil, conductor lengths in Table 15 may be reduced; guying or bracing shall be required.
 5. The conductor must be at least 24 inches (24") in length outside the weatherhead.
- Figure 26 shows a typical installation of overhead service to a meter mounted on a pole.

Figure 26—Overhead Service to Meters Mounted on Poles

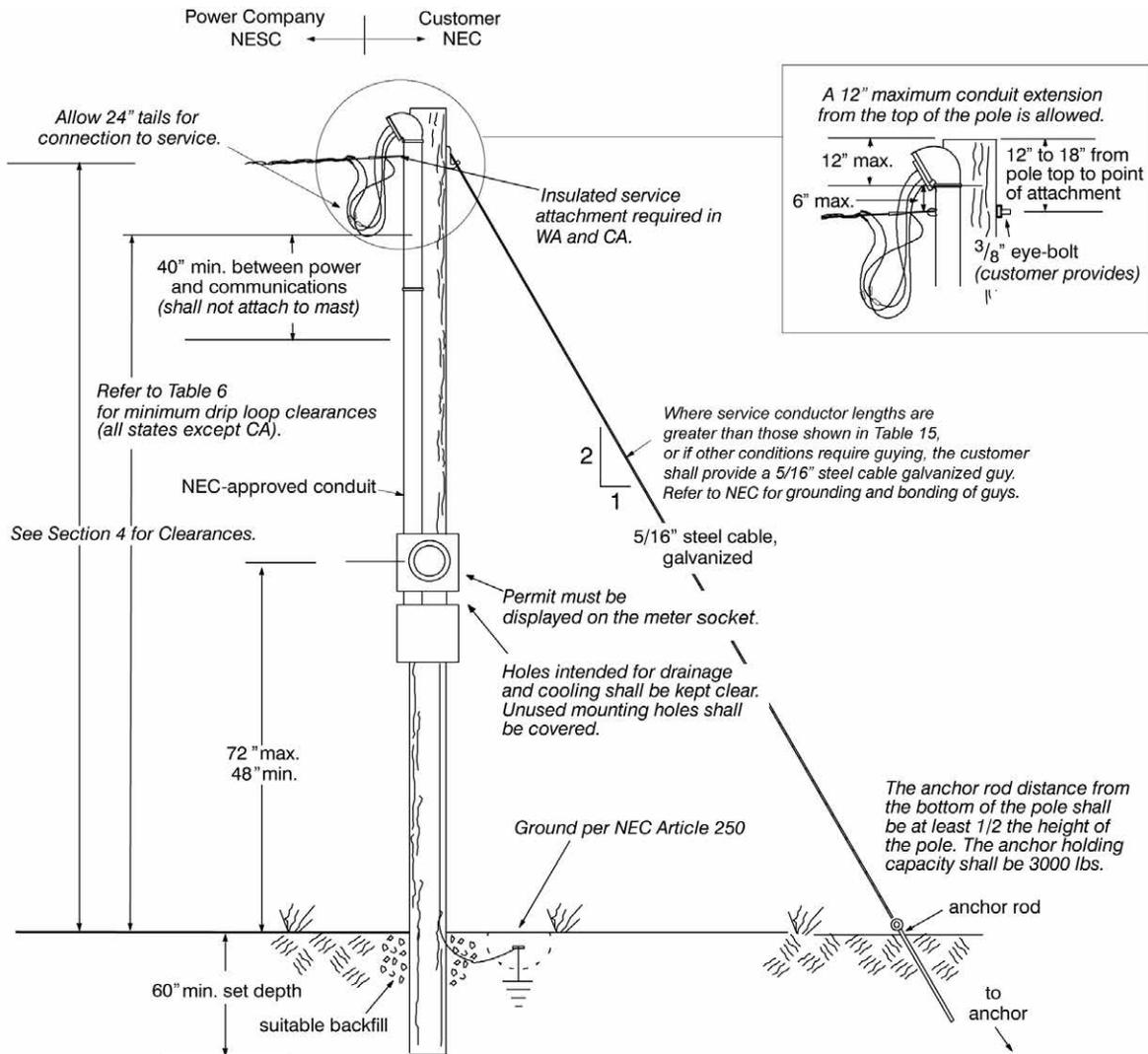


Table 15—Acceptable Service Conductor Lengths for Meters Mounted on Poles

Service Size 200 A or Less	Utility Service Length without Guying	Utility Service Length with Guying
201 - 400 A Service	60' Maximum	90' Maximum
401 A and Above	Consult the Power Company	

Note: Consult the Power Company regarding longer service lengths or other conditions not reflected in the table above. Guying for any service length may be required in unstable soil conditions.

