

Basic Service

Introduction

This Section provides information regarding a new electric Basic Service for a single phase service less than or equal to 400 amps, and a three phase service less than 50kW. It also includes helpful information from the National Electrical Code (NEC). The Cooperative Specifications for Electric Service are included at the back of the handbook.

This Section answers common questions, such as:

- Where should the meter socket be installed?
- How tall does the service mast have to be?
- What are the size requirements for the meter socket?
- What does the member have to do to get underground service?
- How does the member install a meter socket?
- How are existing underground utilities located before digging starts?

Getting started

Installing new electrical service to a home is a joint project between you (the member) and the Cooperative.

The Cooperative is responsible for installing the service lines to bring power to the building, and for installing a meter in the meter socket.

The member is responsible for:

- Setting up the temporary service if one is required (See Temporary Service Section).
- Choosing between overhead or underground service.
- Obtaining the meter socket and service entrance.
- All electrical wiring in the building including service entrance facilities.
- Obtaining any required easements, permits and inspections.
- Payment to the Cooperative for all fees.
- Specifying the size and type of service.
- Submitting a Load Data sheet.
- Locating the meter socket in a mutually agreed upon location with the Cooperative.



Setting up a new service

To set up a new service, call the Cooperative at 1-800-698-2007. A representative will request general billing information, discuss fees, and the address for the new service. (New addresses are obtained from the United States Postal Service).

An on-site meeting with a Cooperative Field Representative can be scheduled once this information is obtained and the necessary fees are paid.

Please bear in mind that because the Cooperative has a limited workforce, and a demanding workload, meeting with a Field Representative to design your service can take two weeks or longer and then scheduling the construction could add additional time. **Please contact NHEC for electrical service as soon as your building plans are finalized and have been approved by the local authorities.**

Please contact the phone company covering your area for service at the same time you request electrical service.

Overhead or underground service

Two types of electrical service are available — overhead and underground. Underground service is available to everyone. Overhead service is available if the Cooperative's system is overhead, and if local ordinances allow it. It is the member's responsibility to be aware of any applicable local codes and ordinances.

To determine if the electrical system already installed in the area is overhead or underground, check the facilities along the road. If the power system is overhead, a series of poles similar to Figure 1, page 6 will be visible. If the power system is underground, there will be items like those in Figures 2 through 4, page 6.

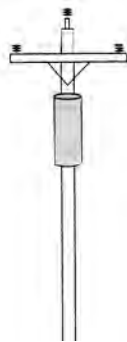


Figure 1 Pole with Transformer

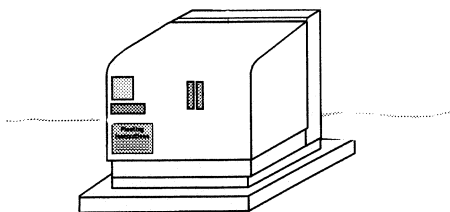


Figure 2 Padmount transformer

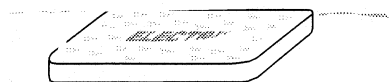


Figure 3 Secondary handhole

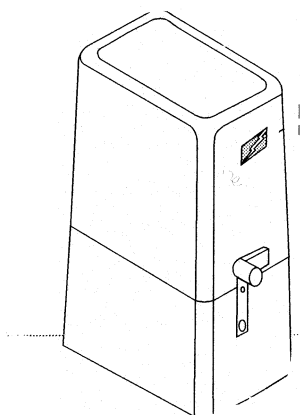


Figure 4 Secondary pedestal

If the system is overhead, and the new service will be overhead, the requirements for overhead services can be found in the Overhead Service Specification section.

If the system is overhead, but the new service will be underground, those requirements are in the Underground Service section.

If the system is underground, the only option is an underground service. Refer to the Underground Service portion of this Section for those specific requirements.

For help determining which type of system is installed in your area, call the Cooperative's Engineering Department.

Requesting Service

Before new service is installed, the member needs to contact the Cooperative to request that a service order be created. Service orders will link the Cooperative's field personnel with the information they need to install permanent service.

The Cooperative service representative may ask the following questions:

- Will a temporary service be needed?
- What is the service for (home, barn, shop, etc.)?
- Whose name will the service be under?
- What is the address of the new service?
- Is the property cleared?
- Is the foundation in and approved, and is there an approved septic plan for this site?
- What is the daytime phone number of the property owner?
- What is the name and daytime phone number of the electrician?
- What is the name and daytime phone number of the building contractor?
- Have you had service with the Cooperative before?
- The residence has how many square feet?
- Will the house heat be electric?
- Will the water heater be gas or electric?
- What size service panel will be installed?
- When will the site be ready for service?
- Will the electric service be overhead or underground?
- If overhead, is it allowed by local ordinances and covenants?
- Is the existing power system in the area overhead or underground?
- What is the pole number of pole nearest the house site?
- Is this service to be located on a scenic road or within a historic district?

- What is the nearest neighbor's name or meter number?
- If the existing system is overhead and the new service is to be overhead:
 - Is the new meter location less than 100 feet from the nearest power pole?
 - Does the pole have a transformer on it? (See Figure 1.)
 - Will the service line cross property owned by anyone else?
- If the existing power system is overhead and the new service is to be underground:
 - Is the new meter location less than 300 feet from the nearest power pole?
 - Does the pole have a transformer on it? (See Figure 1.)
- Is the existing system underground? (Only underground service is available in this case.)
- Is the new meter location less than 300 feet from the nearest Cooperative transformer? (See Figure 2.)

Inspections and codes

This handbook should be used only as a guide. It does not cover all federal, state, and local code requirements. It is the member's responsibility to ensure the project complies with the most recent issue of the National Electrical Code and any other federal, state, or local codes that apply.

Once the member's service equipment is installed, the state, or the town with jurisdiction, may require that the installation pass an electrical inspection before the Cooperative can complete the connection to the electrical system. The member is responsible for requesting and passing this inspection.

Easements, licenses and permits

It is the responsibility of the applicant to provide the Cooperative with the necessary permits, consents or easements needed to construct a line, without expense to the Cooperative. Any private property that the Cooperative crosses to provide service to an applicant will require an easement. The applicant must pay all recording fees.

Contacting other utilities

New construction typically involves the installation of telephone cables, cable television cables and natural gas lines, as well as power cables.

It is the member's responsibility to notify each utility that will provide service to the home. Check the local phone book for their numbers. For each utility, note the contact name and phone number, and let each utility know which other utilities will be providing new service.

Service ratings available

Several sizes of services are available for the Basic Service.

The size of service depends upon the size of the home or business and the power requirements of the appliances and equipment installed. The Cooperative does not determine the size of the member's service.

Voltage	Ampere Rating	Typical Use
120/240*	100 Amps**	Small Sized Homes
120/240	200 Amps	Medium Homes (most common size service)
120/240	400 Amps	Large Homes
120/208	<50kw	Small Businesses
277/480	<50kw	Small Businesses

*120/208 may be supplied at the discretion of the Cooperative.

**The member may not install a service panel or meter socket that is rated less than 100 amps; the service line and meter the Cooperative installs will be sized for a 200 amp service. If the new service is underground, it will be 200 amps; the meter socket must meet the dimensional requirements for a 200 amp underground meter socket.

Meter location

The member must install the meter socket where it will be accessible to Cooperative personnel. Meter socket locations require prior approval by a representative of the Cooperative.

The requirements for a properly located meter socket are:

- It must be outside.
- It must be located on the front one-third of the house closest to normal public access and Cooperative service point.
- It must be located in an area that is not subject to being fenced.
- It must be located on a structure that is owned by the member.
- If located under eaves with less than an 18 inch overhang, meter will require a shelter over it to prevent ice damage.

The reasons for these requirements are:

- So meter readers can read the meter in a safe, cost effective manner.
- So the Cooperative can efficiently maintain the meter.
- So Cooperative employees can stay out of the member's backyard.
- If there is a fire or other disaster, the Cooperative can disconnect service.

Removing and installing meters

Only personnel who are qualified and authorized by the Cooperative are permitted to remove and install meters. In special circumstances, exceptions may be granted to qualified electrical contractors by contacting the Cooperative's meter department, service center supervisor, or a designated representative. **Note: With some types of meter sockets, removal of the meter does not de-energize the member's service.**

Underground locates

Seventy-two (72) hours prior to any trenching or excavation work, the member is required to call for underground utility locates. Underground utility locates are available by calling the "Dig Safe" Location Center. The Center has established a system called the "One-Call" system. One call to the Dig Safe Location Center will notify the utilities, or a locating service, that locates are required. However in some areas, not all utilities belong to the One-Call system. In those areas the member must contact the utilities individually. This service is free.



To locate underground services, call the Utilities Underground Location Center One-Call number at **1-888-344-7233**. Be sure to have the nearest pole number to give to Dig Safe when you call.

The state has established a color code system to identify each utility so everyone can see what has been located. The color codes are:

Color	Utility
Red	Electric
Yellow	Gas/Oil
Orange	Telephone/Cable TV
Blue	Water
Green	Sewer
White	Area to be located

Any digging within 24 inches of either side of the location markings must be done by hand.

Grounding

All meter sockets, enclosures and conduit must be bonded and grounded in accordance with Articles 230 and 250 of the latest edition of the NEC. When self-contained meter sockets are used, the neutral conductor must be connected to the neutral terminal in the socket.

Basic Overhead Service

General requirements

The following checklist will assist in preparing for the installation of overhead service. After the member has completed these items, the Cooperative will install the service line and meter.

- Check if any local ordinances or covenants prevent the installation of an overhead service.
- Determine an acceptable location for the meter socket.
- Ask the Cooperative where the service line will originate from. Call the Engineering office, and arrange a field meeting to review the service installation and choose a mutually agreeable meter location.
- Provide a clear path from the Cooperative's pole to the member's service location.
- Install the service equipment.

- Install the service entrance conductors, with 36 inches left exposed at the weatherhead. See Figure 5 below.
- Verify that the service height requirements have been met. See Cooperative Service Specifications (Specs) on pages 30-57.
- Have the town or state inspect the service equipment.
- Make sure service location is at finished grade and readily accessible.
- Call the Cooperative's Engineering Dept. for arrangements to have service hooked up.



Getting started

The first step when installing new overhead service is to contact the Cooperative at 1-800-698-2007 to begin the service order process.

Next, determine the location of the meter socket. The meter socket should be located outside, on the front one-third of the structure closest to normal public access and Cooperative service point.

Another factor to consider when choosing the location for the meter socket is what types of terrain the line will be crossing.

Service requirements

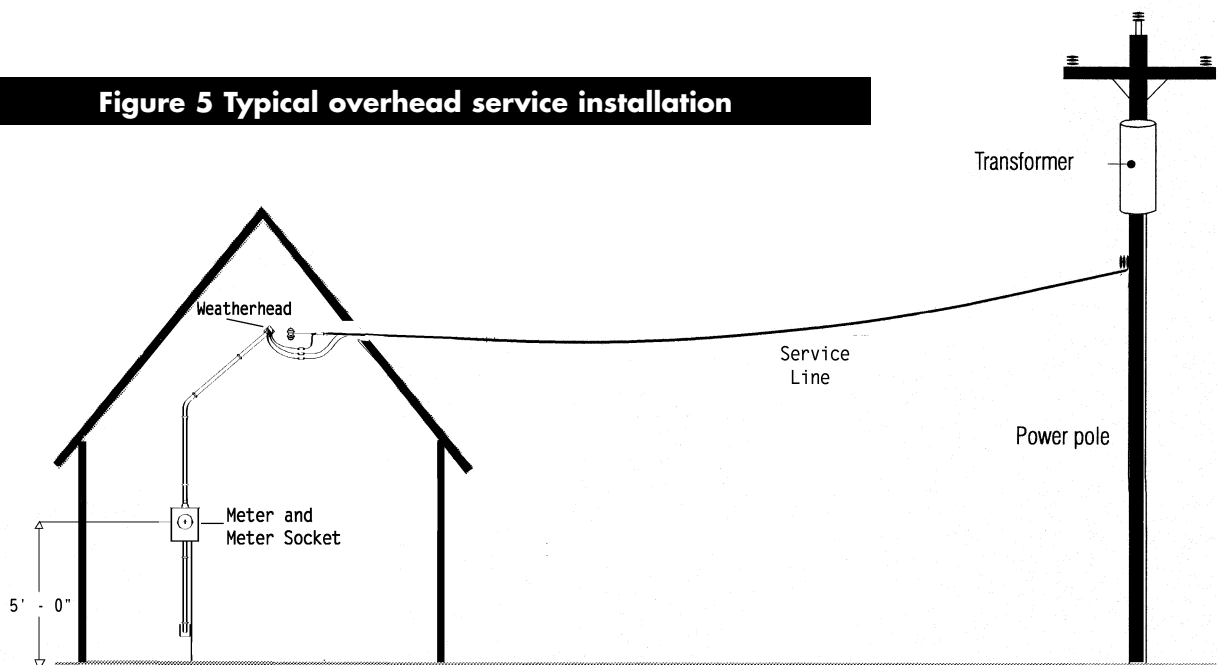
A service is defined by the National Electrical Code as "conductors and equipment for delivering energy from the electricity supply system to the wiring system of the premises served". The member is responsible for the installation of the service entrance up to and including the weatherhead. All of the service entrance specifications are shown in the Service Specifications section of this book. The most common form of service entrance installation in the NHEC service area is shown in specification SE-1, page 34. Also, see Figure 5 for typical installation.

Height requirements

The top of a service entrance must be at least 15 feet above final grade to maintain minimum clearances over the property. Additional height may be required depending upon the location and type of structure or terrain which the service line passes over. Figure 6, page 10, illustrates some of the minimum clearances that must be maintained.

Service lines passing over the roof of another structure, but not attached to that structure, must maintain the minimum clearances shown in Figure 7, page 10. Service lines passing over a deck must maintain a minimum clearance of 11 feet. See Figure 7, page 10.

Figure 5 Typical overhead service installation



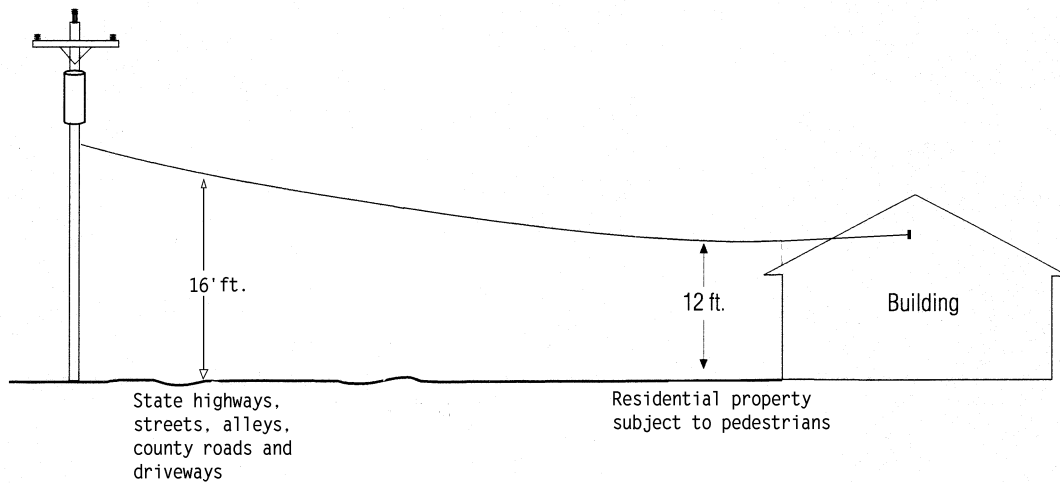


Figure 6 Minimum vertical clearances from ground

Members with questions about the proper height of a service entrance are advised to contact the Cooperative’s Engineering office for guidance.

Clearances from building openings and gas meters

A minimum clearance of 3 feet is required between service lines and windows, doors, porches, fire escapes, or similar openings.

A minimum horizontal clearance of 3 feet is required between electric service equipment and natural gas metering equipment. See Figure 12 on page 18.

Service mast requirements

A service mast consists of a steel conduit that runs vertically from the top of the meter socket through the roof. It contains service entrance conductors and typically supports one end of the service line. Service masts are necessary when

installing some overhead service, and are installed by the member or the electrical contractor.

The requirements for the installation of a service mast are covered in the NEC, and Cooperative Spec. SE-4, page 37. Some common specs or requirements are described next.

The NEC also requires that the service mast maintain minimum clearances above the roof. The clearance required depends upon the slope of the roof, and whether or not the service line is attached to the mast. Specification SE-4 in the rear of this booklet is one example of a service mast installation with the service line attached to the mast. For other options and details consult the NEC.

Additional mast supports, typically a guy or a brace, are required for any service line over 50 feet in length. Guys and braces are installed to prevent the weight of the service line from pulling the service mast away from the house. Further information regarding guying and bracing service masts is available in the NEC, or by contacting the Cooperative.

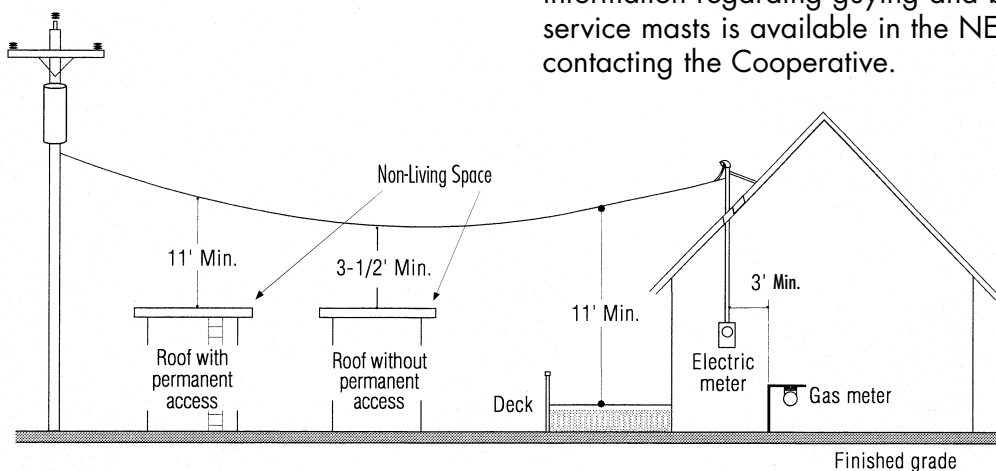


Figure 7 Minimum clearances over other structures

Additional mast supports are required when:

- The service line is over 50 feet long.
- The top of the service mast is more than 26 inches above the roof.

See Figure 8 for an example of a service mast guy.

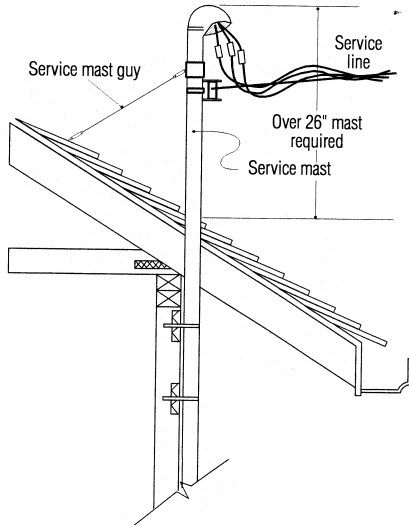


Figure 8 Service mast guying

Service equipment installation requirements

After determining the meter socket location, the service route, the height of the service mast, and the size of the service equipment (100 amps, 200 amps, or 400 amps, etc.), installation of the service equipment can begin.

The equipment will be installed per Figure 9. Deviations require prior approval by the Cooperative.

Once the member has installed the meter socket and mast, the next task is to install the service entrance conductor. The service entrance conductor is the wiring that connects to the top lugs in the meter socket and runs upward through the service mast. The service entrance conductors must be sized according to the NEC and to the rating of the meter socket. When installing the wire, leave at least 36 inches of it exposed at the end of the weatherhead to allow the Cooperative to connect the service line to it. When installing the meter socket, make sure the center of the meter will be between 5 and 5 1/2 feet, **above finished grade**.

For help with the installation of service equipment, consult the NEC, call the inspecting agency

for the area, or contact an electrical contractor.

Manufactured homes

When installing overhead service to a manufactured home (**not a mobile home**), service equipment can be installed one of two ways:

1. On a Cooperative-owned meter pole, see specification SE-2 on page 35, or
2. On the manufactured home, if both of the following conditions are met:
 - a. The manufacturer installed the service equipment at the time the home was built.
 - b. The service equipment meets the meter socket requirements (see Figure 9 below) for 100 and 200 amp sockets.

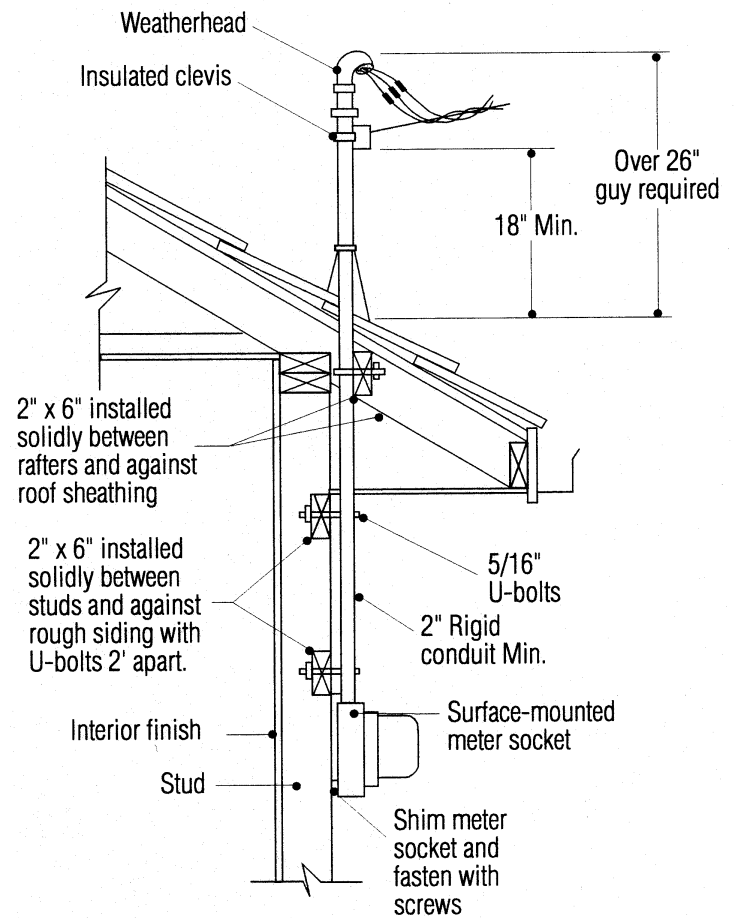


Figure 9 Surface-mounted meter socket

Meter sockets installed on manufactured homes must:

- Be located on an outside wall of the home.
- Be located on the front one-third of the home closest to normal public access, and Cooperative service point.
- Be between 5 and 5 1/2 feet above finished grade to the center of the meter.
- Be outside of a walkway.
- Be outside an area subject to being fenced.

And

- Meter location must be mutually agreed upon with the Cooperative prior to installation.
- The top of the service mast must be in compliance with the latest versions of the National Electrical Code. For typical height requirements see Figure 7 on page 10.

Basic Underground Service

General requirements

The following is a checklist for use as a guide when preparing for the installation of underground service. Once the member has completed these items, the Cooperative will install the service line and meter.

- Locate the origination point of the service line by meeting with a Cooperative Field Representative. Also determine an acceptable location for the meter socket.
- Dig a trench from the meter socket to the location where the service line will originate. See Page 38 in the back of this booklet.
- Provide conduit and pull ropes according to Cooperative specifications. See Installation Requirements for Underground Conduit Systems on Page 38.
- Install all member-owned service equipment.
- Have the Cooperative inspect the installation while the trench is still open and have the town or state inspect as required. The Cooperative requires a 24-hour notification.
- Call the Cooperative to have service connected when complete.

Getting started

The first step when installing new underground service is to contact the Cooperative at 1-800-698-2007 to arrange for a field visit to discuss the service requirements.

Next, determine the location of the meter socket. As stated previously, the meter socket should be located outside and on the front one-third of the building closest to normal public and Cooperative access. The location of the meter must be a mutually agreed upon location between the member and the Cooperative.

When choosing a meter socket location be sure to consider the types of terrain where the service line will be buried. The Cooperative is responsible for repairing the service line if it ever fails. The installation is subject to being dug up at some time in the future. Because of this, it is in the member's best interest to be sure the service line route can be easily reached and excavated.

The member must provide and install conduit. The conduit must be at least three-inch gray, electrical grade. Conduit in the trench should be at least Schedule 40, buried 36 inches deep. Any service conduit crossing under a road shall be Schedule 80. Any conduit for riser material will be Schedule 80 or galvanized steel. White water pipe or sewer pipe is not acceptable. Gray conduit signifies that electrical, or communications wires are inside. Consult the specifications in the back of this handbook.

All member-installed continuous conduit runs must not contain more than 180 degrees of installed factory sweeps. Conduit runs of more than 10 feet must have a pull rope installed in the conduit. Rope must be polypropylene, 1/4 inch in diameter.

Trenching requirements

The member must provide a trench from the meter socket to the pole or device where the service line will originate. The trench must be free of all rocks and construction debris. See the Installation Requirements for Underground Conduit Systems on Page 38. The trench must be a minimum of 5 feet from septic tanks and a minimum of 10 feet from a drain field.

Remember: Call Dig Safe before you dig. 1-888-344-7233

Service equipment installation requirements

After determining the meter socket location, the service line route, and the size of the service (100 amps, 200 amps, 400 amps), the next step is to install the service equipment.

This equipment will be installed per Figure 10A. When installing service equipment, make sure the meter socket is located so the center of the meter will be between 5 and 5 1/2 feet above finished grade, and the service entrance conduit has only one 90 degree sweep.

The size of service determines the size of the service entrance conduit. The options for the various sizes are:

Service Size	Conduit Replacement
0-200 Amps	3-inch Schedule 40 or 80 for use in trench below grade. 3-inch galvanized steel conduit Schedule 80 gray PVC for all riser conduit.
201-400 Amps	4-inch conduit required, gray Schedule 80 PVC, or 4-inch galvanized steel conduit is acceptable.
Over 400 Amps	The Engineering Department will determine the required number and conduit size.

If there are questions about any of the options, consult the NEC, contact an electrical contractor, the Cooperative, or the inspecting agency.

Manufactured homes

For underground service to a manufactured home, service equipment can be installed one of two ways:

1. On a member-owned pedestal, or
2. On the manufactured home, if both of the following conditions are met:
 - a. The manufacturer installed the service equipment at the time the home was built.
 - b. The service equipment meets the requirements listed below. Meter sockets installed on manufactured homes must:
 - Be located on an outside wall of the home.
 - Be located on the front one-third of the home closest to normal public access.
 - Be between 5 and 5 1/2 feet above finished grade.
 - Meet the Cooperative's size requirements.

- Be outside of a walkway.
- Not be installed under an eave without a shelter.
- Be outside an area subject to being fenced.

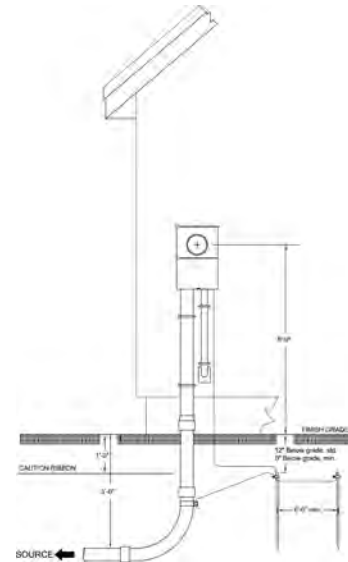


Figure 10A Underground Service

Meter pedestals

A meter pedestal is a structure that supports service equipment. If a meter pedestal is required for the project, it is the member's responsibility to purchase and install it. See Figure 10B.

The NEC requires that manufactured homes have a disconnect switch installed within 30 feet of the home on the side of the home facing normal public access. Normally, the meter socket is installed at this same location.

The specifications for underground meter locations are shown in specification USE-4 on page 46.

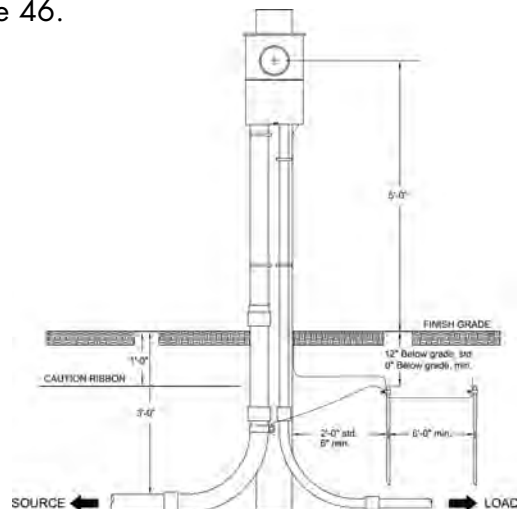


Figure 10B Meter Pedestal