



2019 Electrical Service Standards



Dear Member,

As we enter our 81st year of service to the Texas Hill Country, Bandera Electric Cooperative's mission is much the same as it was when BEC was chartered in 1938 – "Using the grid to empower our members."

BEC is seeing a strong upswing in the number of commercial and residential construction projects across our service territory, and we are prepared to welcome our new member-owners home. To do this successfully, BEC is balancing power needs using a diverse energy portfolio that includes wind and solar power and improving our infrastructure, all while keeping rates and our growing membership in mind.

No matter the size or scope of a project, BEC is here to help manage the process from beginning to end with tools like these Electrical Service Standards. Installing new electric service is a joint venture between the member and BEC, and this book was designed with our members, electricians, contractors and developers in mind to help facilitate a successful relationship with BEC.

Please feel free to call us for any questions and electrical service needs you may have. You can also find information, applications, electrical code references, regulations and requirements online at BanderaElectric.com/Services.

Sincerely,

A handwritten signature in black ink, appearing to read "William Hetherington". The signature is fluid and cursive, written over a light gray background.

William Hetherington
CEO
Bandera Electric Cooperative



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Foreword

This Electrical Service Standard is issued by the Bandera Electric Cooperative, herein after referred to as BEC, to acquaint Cooperative members, with the general character of electric services supplied by BEC. It will also serve as a guide to architects, builders, electrical contractors and engineers in the planning of electrical installations.

It should be used as a guide in planning the installation of electrical equipment and methods of receiving electrical power and energy from the electrical delivery system of BEC. If service methods other than the examples discussed in this booklet are required, the member is to obtain written approval from BEC Distribution Design Engineering Department prior to installing equipment.

In areas where local inspection authority is not involved, or a different local inspection authority other than BEC's is in enforcement, the meter installations should be wired in accordance with the latest edition of the National Electric Safety Code, National Electric Code or BEC specifications when BEC specifications exceed those of the NESC and NEC.

Specifications contained in this booklet supplement the applicable BEC tariff and shall be subordinate to tariff and the NESC.

These specifications supersede all specifications for electric service previously issued by BEC. Revisions to these specifications shall be made at the discretion of BEC. As it is impossible to anticipate all of the possible conditions and problems that may be encountered in obtaining or rendering electric service, BEC will welcome any opportunity to give individual consideration to any such special conditions or problems.

The information presented herein may be revised periodically to reflect changes which develop. It is the member's responsibility to obtain the latest revision. When a version is updated, the document will be accessible from the Bandera Electric website at BanderaElectric.com/Services. BEC sincerely desires to render prompt, satisfactory, reliable electric service to all members.



Contact Us

Important Numbers

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Bandera, TX 78003

Drive-in payment window and after hours payment box available.

Comfort

739 Front Street (Hwy. 27)

Comfort, TX 78013

Electronic Kiosk, drive-in payment window and after hours payment box available.

Leakey

485 West Ranch Road 337 West

Leakey, TX 78873

Electronic Kiosk, drive-in payment window and after hours payment box available.

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Suite 103

Boerne, TX 78006



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General Information

General

BEC provides electric delivery service at BEC standard voltages in accordance with the BEC facilities extension policy and electrical tariff. If the member requests a voltage which is non-standard, or is not available for a specific load or location, such voltage may be provided by BEC at its discretion and at the expense of the requesting party. BEC does not guarantee that facilities providing non-standard service (e.g. transformers) are readily available, and extended outages may result.

Special Types of Service

It is recognized that the standard types of service listed in these specifications may not conform to the service requirements of some members. In such cases, other types of service may be made available through negotiations between the member and BEC Distribution Design Engineering Department.

Application for Service

All inquiries or applications relating to the use of electric service should be made to BEC to facilitate the prompt rendering of electric service to new members or additional electric service to existing members. The following information must be supplied to BEC Distribution Design Engineering Department.

- Exact location of the addresses and meter number (if applicable) to be served
- Completed BEC Electric Load Analysis for Service Greater Than 200 Amps application identifying the size of the proposed load
- Any special requirements of the load
- Easement information: such as warranty deed, property plat (construction extensions only)

Service Available Statement

Before work starts on any installation, the member or the representative should secure, from BEC, a written Service Availability statement which designates the type of service that is available or that BEC proposes to make available at the premises to be served, the acceptable location of the member's service outlet, the

proper location of BEC meter and metering equipment and the estimated amount of load to be served.

Agreement for Electric Service

The agreement details electric service supplied to a member under each rate classification or through separate meters under the same rate classification. The member's wiring and service equipment shall be arranged so service can be delivered at one point and measured by one standard type meter.

Where a member requires more than one standard type of service, or where the member's wiring is arranged so BEC cannot measure the electric service with one standard type meter, the electric service will be measured by multiple meters and will be billed separately. When requested by the member, primary metering may be provided at the member's expense, if considered applicable by BEC.

Permit, Inspection and Approval of Member's Wiring

The member's wiring installation must conform to the requirements of the National Electrical Code. BEC is prohibited by city ordinances, or authority having jurisdiction from connecting its service wires to the member's service entrance conductors until the member's wiring has been approved, and a certificate of inspection and acceptance or a permit has been issued by that participating city entity.

This requirement shall not be applicable to the reconnection of a service which has been temporarily disconnected because of non-payment of a bill or because of the necessity of temporary disconnection for the performance of maintenance work by BEC.

BEC reserves the right to decline service to any new installation or to discontinue service to any existing installation that is unsafe or does not comply with these specifications.

Energizing of Member's Service

Only authorized employees of BEC are permitted to make the connection between BEC service wires and the member's service entrance conductors at the point of delivery. A member's service will be energized

between the working hours of 8 a.m. and 5 p.m., Monday through Friday.

Responsibility for Electrical Installation

BEC does no wiring on the member's premises other than the installation of service wires, meters and pole if applicable. The member shall be responsible for injury to persons or damage to property occasioned by, or in any way resulting from, electric service or the use thereof on the member's side of the point-of-delivery.

Continuity and Quality of Electric Service

BEC uses sound diligence to provide continuous electric service, but does not guarantee against occasional, inevitable irregularities and interruptions, it being understood that occasional irregularities and interruptions are inevitable. The member is responsible for installing and maintaining protective devices as recommended or required by the then current edition of the NEC and other such devices as are necessary to protect BEC's equipment or process during irregular or interrupted service, including but not limited to voltage and wave form irregularities or the failure of part or all of the electrical service.

BEC may, without notice and without liability to the member, interrupt electric service to the member when, in BEC's sole judgment, such interruption:

- Will prevent or alleviate an emergency threatening to disrupt the operation of BEC's system, or
- Will lessen or remove possible danger to life or property, or
- Will aid in the restoration of electric service, or is required to make necessary repairs to, tests of, or changes in BEC facilities, or
- When such interruption is authorized elsewhere in these Specifications for Electric Service, or
- When requested by Electric Reliability Council of Texas (ERCOT), or
- Other governing authority for emergency load shedding.

Should the member have special needs which render it especially important that they receive advance notice of any intentional interruption of service, the member shall give written notice to BEC specifically identifying such need. Said notice, and request from the member, shall in no way relieve the member of any obligations pursuant to these Electrical Service Standards, nor shall said request and notice impose any additional duty or liability upon BEC.

Liability and Responsibility for Damage, Injury and Disclaimer of Warranties

BEC is responsible for the design, installation, operation and maintenance of electric facilities, up to and including, the point-of-delivery except as provided elsewhere in these Electrical Service Standards. The member is responsible for the design, installation, operation and maintenance of electric facilities beyond the point-of-delivery except as provided elsewhere in these Electrical Service Standards. It is particularly understood that the member assumes full responsibility for electric energy furnished to the member at, and past, the point-of-delivery.



This will indemnify BEC against and hold BEC harmless from all claims for damages, including but not limited to, injuries to any persons, including death and damages to property, occurring upon BEC property, easements or equipment or arising from electric power and energy delivered by BEC whether or not caused by the negligence of BEC, except when the negligence of BEC or its agent or agents was the sole proximate cause of such injuries, death of persons or damages to property.

Without limiting the foregoing, BEC is not, and shall not be, liable to the member for damages occasioned by irregularities or interruptions of any duration or failure to commence electric service, caused in whole or in part by:

Governmental or municipal action or authority, litigation, public enemies, strike, acts of God including weather and its resulting consequences,

An order from a Court of Judgment granted in any bona fide adverse legal proceeding or action, or any

commission or tribunal having jurisdiction on the premises,

The absence, inadequacy or failure of protective devices which are the responsibility of the member.

Liability and Responsibility for Damage, Injury and Disclaimer of Warranties

Any interruption of service not occasioned by situations or conditions described above that has not existed continuously for beyond a reasonable period of time after notice to BEC, which reasonable period shall under no circumstances be less than twenty-four (24) hours, or any interruption of service of greater than a reasonable duration if BEC has used reasonable diligence in attempts to restore electric service after BEC is notified of such interruption.

BEC may perform voluntary or emergency acts to electric facilities which are the responsibility of the member, but shall not be liable for damages or injuries resulting from said acts except to the extent that said damages or injuries are proximately caused by acts or omissions of BEC which are found to be wanton or willful with the intent to cause injury.

In any claim or cause of action relating to the provision of electric service asserted by the member or any other person against BEC. BEC shall not be liable for any consequential, special or non-direct damages, including but not limited to, loss of use of equipment, extra expense due to the use of temporary or replacement equipment, loss of electronic data or program, loss of business revenue, costs of capital or any cost not part of necessary repair to or reasonable replacement of electric equipment whether the claim or cause of action is based upon contract, tort, negligence, products liability or any other theory of recovery.



Chapter 1: Introduction

Service Overview

The mission of Bandera Electric is to “*enhance the quality of life by providing highly reliable electric and other related services that are valued by our members at the lowest possible cost.*”

Installing new electric service is a joint project between the member and Bandera Electric Cooperative. BEC is responsible for bringing power to the site, for installing the meter in the socket provided by the member, and for energizing the service. The member is responsible for obtaining permits and inspections.

Available electric service includes 60-hertz, alternating current, single-phase or three-phase with acceptable voltage ranges according to ANSI C84.1-2011. Although optimal, service is not guaranteed at 100 percent around the clock. The nominal secondary voltages are given below:

Overhead Service

- Single-phase, 120/240-volt, three-wire grounded
- Three-phase, 120/208-volt, four-wire grounded, wye
- Three-phase, 120/240-volt, four-wire grounded delta
- Three-phase, 277/480-volt, four-wire grounded wye (An A7 terminal can should be used if it is self-contained. Additionally, a 600 volt surge arrester should be installed on either the high side or the low side of the meter depending on which has greater exposure).
- Three-phase, 240/480-volt, three-wire grounded, delta for existing locations only. Grounded is recommended. If ungrounded is requested, an approved and signed letter of request must accompany the application for service, and arrangements must be made to identify a location.

Underground Service

- Single-phase, 120/240-volt, three-wire grounded
- Three-phase, 120/208-volt, four-wire grounded, wye
- Three-phase, 277/480-volt, four-wire grounded, wye

If larger motor sizes, or other service voltages are required per the BEC Tariff 323.3, the member must request such. BEC must approve these voltages and across-the-line starting of motors before service can be provided.

Point-of-Delivery (POD)

The member’s electrical installation must be arranged so that the location of the point-of-delivery allows BEC to provide safe and reliable electric delivery service, taking into consideration the location of existing BEC facilities and construction needed to connect the member’s electric installation to BEC.

Any change from the original BEC designated point-of-delivery is subject to payment by the member based on any added costs to reach the newly designated point and provide properly executed easement documents supporting the service reroute.

Easements, Rights-of-Way and Space Requirements

The member must grant to, or secure for BEC, any rights-of-way or easements on property owned or controlled by the member necessary for BEC to install distribution facilities for the sole purpose of delivering electric power to member. Varying easement requirements may be used, but center line description easements are most common. The BEC easement standardization is defined as follows; the primary voltage and secondary easements for both overhead and underground services are 20 ft in width (10 ft on either side of BEC facilities).

The easement must be cleared from ground to sky of all vegetation and must remain clear as long as electrical facilities exist. BEC will be responsible for clearing once the route of service has been approved.

The easement document language cannot deviate from the language on the form. Documents received in a different language structure, cannot be accepted. All easement documentation must be received, approved and recorded prior to construction taking place. A copy of the easement document can be found in the Reference Appendix of this manual on pages VI-VIII, at BanderaElectric.com or the BEC Tariff.

Note: BEC must obtain a completed easement document for all parties involved prior to starting the construction phase of the service extension process.



If an easement is required, the Warranty Deed, Center Line Description and/or Subdivision Plat (property survey) if applicable, must be provided before the application can be completely processed.

Loads Exceeding 3000 Amps

Standard electric delivery service at 600 volts and less may be limited to 3000 amps of load through a single member-owned service entrance. BEC may require loads exceeding 3000 amps to be served with two or more adjacent services at one point-of-delivery.

Member's Electrical Load

The member must take reasonable actions to control the use of electric power and energy so that the member's electrical load at the point-of-delivery is in reasonable balance.

Sensitive Equipment Protection

Members planning the installation of electric equipment such as computers, communication equipment, electronic control devices, motors, etc., the performance of which may be adversely affected by voltage fluctuations, distorted 60 hertz wave forms, or single-phase events, are responsible for providing and installing the necessary equipment including protective equipment to limit possible adverse effects on local members.

Transformer Installations on Member's Premises

Where large loads are encountered, it is sometimes necessary to install distribution transformers on the member's premises. In such cases, the member shall provide, at no expense to BEC, suitable space and location for access by BEC equipment meeting the BEC clearance requirements.

Residential Service

Residential service is defined as service to a single-family residence. Service to a multi-family residence, such as an apartment or condominium, is a business service.

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.

The member’s installation in such cases shall provide a clearance of conductors above ground in conformance with NESC. In no case will the conductors be less than 12 ft above ground. A minimum switch capacity of 60 amperes is required. The service disconnect (SD) may have a total of six (6) individual circuit breakers. If the SD has more than six (6) breakers, then a main circuit breaker is required (NEC 230.71).

Business Service

Business service is defined as electric service to a commercial or industrial site or to a multi-family residence such as an apartment or condominium. Advanced planning will be required for these services. Please contact BEC’s Distribution Design Engineering Department to schedule a time to visit and discuss service needs. A full set of construction plans will be required for planning purposes.

Table 1: Typical Residential Services

Current Rating	Typical Use	Comment
200 amps*	Small to Medium Homes	1200-3200 Square Feet
400 amps**	Large Homes	Above 3300 Square Feet
Above 400 amps	Larger Homes	CT Services Required

*Note: 200 amps is the minimum service installed by BEC. If the load is less than 200 amps and the service is overhead, the meter socket and service panel may be rated at less than 200 amps.

**Note: Services over 400 amps that are single-phase or three-phase will be addressed as a current transformer (CT) meter service.

Chapter 2: Member Aid to Construction



Outdoor Lighting Services

Single-phase outdoor light services are available to members in accordance with the cooperative's Electrical Service Standards for pole-mounted area outdoor lighting near the cooperative's electric distribution lines. Please contact BEC's Distribution Design Engineering Department to make the request. You can find more information and outdoor lighting fees at BanderaElectric.com/OutdoorLights.

There is a non-refundable fee for the installation, relocation and/or upgrade of each outdoor light. In the event the installation of poles or other facilities is required, the member must pay an engineering fee to the cooperative to begin engineering services for the installation.

Before start of construction, an advanced payment equal to the total estimated cost of the construction calculated on the basis of the cooperative's standard unit price schedule will be required.

Please Note: *Mercury vapor lights and 35-Watt high-pressure sodium yellow lights are no longer available for new service installations. LED lighting will be offered as a replacement or when requested.*

All outdated lights will be removed when the service is called to be terminated by the property account holder. If a new account is required at a later date, BEC will install a new lighting fixture and charge for all applicable cost to install the new fixture.

Note: *It is strongly recommended to all property owners who are leasing a property with an outdoor light, keep the account in their name so the light will not be removed. Anytime a lighting account is terminated, the light will be removed from the premises.*

Line Extensions, Service Upgrades and Relocations

Line Extension - General Policy

It is the stated policy of this cooperative that electric service be extended to all unserved persons or establishments within its designated service area provided. In an effort to maintain a balance of financial contributions from new and existing members we require a member to paid and aid to construction.

New Construction

The cooperative extends its distribution facilities to members in accordance with the line extension provisions outlined in this section. Each provision classifies the predominate type of electric service or use anticipated on member's premises and specifies conditions under which a line extension may be made.

For each location where electric service is desired, member's classification involves an evaluation of the type of installation, its use, as well as the frequency and duration of type of installation and of energy consumption which may be expected.

Member's classification shall be determined by the cooperative at its sole discretion. In the event that the classification assigned by the cooperative is incorrect, based on member's subsequent actual use of the installation and/or usage of energy, then the Cooperative may alter the member's classification and apply the correct line extension classification, making appropriate adjustment to the member's account or billing, including requiring a payment of non-refundable contribution aid-to-construction.

Obtaining Electric Service

All wiring, poles, lines and other equipment beyond the metering point shall be considered the distribution system of the member and shall be furnished and maintained by the member. All power and energy delivered beyond the point of delivery shall be the responsibility of the member. The cooperative will not be liable for claims, injuries or damages to persons or property occurring on the member's side of the point of delivery. A minimum contract term for service availability of one (1) year per BEC Tariff shall be required.

The term shall begin 30 days after service is made available, or the date on which the service is connected, whichever is sooner. Members are required to sign a separate application and agreement for electric service for each of the member's delivery points.

Application Fees

Members and persons requesting a relocation of Cooperative facilities shall be charged a non-refundable engineering fee for field or in-office engineering and clerical work to prepare cost estimates, staking sheets, permits, easements, or any other documentation necessary for construction and record keeping. A separate engineering fee shall be paid for each application and said fee must be paid at the time of application.

Any application that is ready for construction but is on hold waiting for the member to pay contribution in aid to construction fees, or is otherwise placed on hold by the member, may be canceled three (3) months after the engineering is complete, or upon three (3) months of inactivity on the part of the member.

If the line extension has been designed to the member's designated point of delivery and the member subsequently requests a redesign of the line extension the member shall be required to provide an additional engineering fee to cover all associated costs at the time of this request.

1. Applications for Single-Phase Service or Service Upgrade: \$200
2. Applications for Three-Phase Service or Service Upgrade: \$200
3. Applications for Apartments, Trailer Parks, Hotels/Motels or Other Multi-Use Installations: \$20 per unit or space
4. Requests for Relocation of Cooperative Facilities: \$200
5. Special or Unique Requests: To be determined by The Cooperative

Cancellation of Application

If at any time, the member requests the cancellation of their application, the engineering application fee will be applied towards those services rendered.

Line Extension Fees

Single-Phase Permanently Occupied Installations

The cooperative will construct a single-phase extension of its overhead or underground distribution system to member's point of delivery. The minimum charge established in the applicable rate schedule will apply as long as service is used at the location.

There will be no charge to the member for the lesser of the following construction allowance:

- The cooperative's estimated cost to extend its three-phase overhead or underground service to the Member's point of delivery; or
- The first \$1,700 of estimated cost of constructing the extension.

Extensions will be staked from the cooperative's existing facilities over the shortest feasible route. Construction costs shall be based on the cooperative's latest available standard unit cost schedule. The cooperative will have sole discretion in determining if a location will be a permanently occupied installation or if the location shall be a non-permanently occupied installation. The Cooperative will use reasonable judgment and may require the member to provide information necessary to make this decision.

A manufactured home or prefabricated structure shall qualify as a permanently occupied installation only if it is impractical to move and has the wheels, axles and hitch or towing device removed.

Member shall be required to sign an Application and Agreement for Electric Service and the minimum charge will apply thereafter as long as electric service is used at the location. The Member shall be required to pay to the Cooperative a non-refundable contribution aid-to-construction charge for any estimated construction costs in excess of the construction allowance, prior to construction.

Single-Phase Non-Permanently Occupied Installations

BEC will construct an extension of overhead service or underground distribution system to member's point of delivery for non-permanently occupied full-time installations including, but not limited to, movable installations or installations occupied on a seasonal or intermittent-use basis such as hunting camps, weekend or seasonal homes, ranch tenant houses, barns, workshops, livestock pens, stock water wells, electric gate openers, RV parks, fireworks stands, subdivision water wells, speculatively built homes and property developed for rental or lease purposes where a reasonable possibility exists that it will not be occupied on a permanent full-time basis. Contact the BEC Distribution Design Engineering Department for service requirement and associated fees.

There will be no charge to the member for the lesser of the following construction allowance:

- The cooperative's estimated cost to extend its overhead or underground service to the member's point of delivery; or
- The first \$500 of estimated cost of constructing the extension.

Extensions will be staked from the cooperative's existing facilities over the shortest feasible route. Construction costs shall be based on the cooperative's latest available standard unit cost schedule. The member shall be required to pay to the Cooperative a non-refundable contribution in aid-to-construction charge for any estimated construction costs in excess of the construction allowance, prior to construction.

Temporary Service

The Cooperative will construct an extension of its overhead distribution system for the purpose of providing temporary service, i.e., interim construction power for construction of a residence. The contractor or other person desiring temporary service shall be required to pay in advance an aid-to-construction charge equal to the total estimated cost of all construction and removal, less estimated salvage value; such amount to be calculated on the basis of the cooperative's adjusted standard unit price schedule.

Temporary service is limited to a period of 365 days.

General Three-Phase Service

The cooperative will construct a three-phase extension of its overhead service or underground distribution system to member's point of delivery. The minimum charge established in the applicable rate schedule will apply as long as service is used at the location.

There will be no charge to the member for the lesser of the following construction allowance:

- The cooperative's estimated cost to extend its three-phase overhead or underground service to the Member's point of delivery; or
- The first \$500 of estimated cost of constructing the extension.

Extensions will be staked from the cooperative's existing facilities over the shortest feasible route. Construction costs shall be based on the cooperative's latest available standard unit cost schedule.

Service Upgrades and Relocations

The cooperative will construct service upgrades and relocations. All costs associated with upgrades and relocations will be paid by the member.

Tree Trimming Policy

Tree branches too close to overhead lines can create hazardous conditions and cause power interruptions, especially during severe weather. Tree sap is also an excellent conductor of electricity. This makes even the slightest contact between trees and power lines a fire hazard.

The construction and right-of-way clearing costs will be invoiced as one cost for new members. Request tree trimming service by calling 866.226.3372 or online at BanderaElectric.com/TreeTrimming.



Chapter 3: Overhead Service

Overhead Details and Service Options

The cost for overhead service depends on the extent of engineering and equipment required. The member is responsible for providing, installing and maintaining all equipment from the point-of-delivery with the exception of the meter and pole where applicable. Please see table below for overhead service responsibilities. Contact the BEC Distribution Design Engineering Department for coordinating your service needs.

Table 2: Overhead Table of Responsibilities

Item or Material	Party to Furnish/Own	Party to Install
Permits/Application	Member	N/A
Install the Service Drop	BEC	BEC
Inspect Connections	BEC	BEC
Wiring of the Load Side Meterbase	Member	Member
Meter Socket	Member	Member
Billing Meter	BEC	BEC
Load Side Conduit and Conductor	Member	Member
Ground Rod(s) for Meter	Member	Member
Easements	Member	BEC
Primary Meter	BEC	BEC
Meter Rack	Member	Member

BEC is responsible for providing and installing the meter, meter pole, completing the connections between the meter and the service conductors. BEC provides, installs and maintains the service drop to the point-of-delivery approved by BEC. Member provides point of attachment determined acceptable by BEC, to ensure the service drop meets the requirements of all applicable codes.

The point of attachment must be high enough above finished grade and in proper position to provide minimum clearance of 12 ft from final grade. Proper guying and anchoring is required when mast is greater than 26 in. above the roof line (NEC 230.28, A and B).

The normal service drop for residential service is 75 ft, anything more may require BEC to set an intermediate support pole to meet proper clearances and to relieve tension on the service mast. Additionally, 2 in. rigid, metallic conduit is required on all overhead services if the service mast is supporting the wire with no couplings above the roof line. Contact the BEC Distribution Design Engineering Department for any special requirements.

There are several service options available to meet the needs of our members when requesting a secondary service extension. Three secondary types are available: overhead (O/H), underground (URD) and combination of both overhead and underground (OH/URD). The following specifications in the upcoming pages are BEC requirements for these service arrangements.

Note: *If requesting overhead secondary service to a meter pole, the only available option to attaching a meter-base to a meter pole is the example provided on page 16, Figure 3-1. BEC will install the pole and the member will attach their equipment.*

A service rack utilizing the BEC pole for one-sided support for a rack will no longer be an acceptable practice. Should the member choose to install a rack service from an overhead secondary line extension, BEC will run the service to the rack structure and terminate inside the member's meter socket. The rack location and delivery

plan must be agreed upon by the BEC Staking Technician. If member requires a rack and it is serviced from a BEC overhead line, then the member is required to provide rack, service, mast and all other equipment required for installation and must have it approved by the BEC Distribution Design Engineering Department. Racks will not be permitted for use on BEC poles as a leg for rack.

Under no circumstances will a residential or commercial meter-base be permitted to attach to a BEC distribution transformer pole. Only BEC CT metering equipment will be permitted to attach to a distribution pole.

BEC's Tree Trimming Policy

For Primary Voltages 7.2 kV and Above

BEC has a tree trimming policy for all circuits that requires trimming 10 ft from the centerline on all primary service conductors. An electrical utility easement will require a clearing of a minimum of 20 ft ground to sky prior to service installation. Facilities will not be installed until BEC has received the proper easement documentation and all clearing of the easement has been completed. All right-of-way clearing will be done by BEC or its vegetation management contractor. Clearing costs will be included if required for a new service.

Figure 3-1 (page 16) shows an installation of overhead service using a service mast. The member provides everything shown here, except the meter, the overhead service line and the service pole. Upon completion of the service pole installation, the member will install the meter-base, riser, breaker panel and conductors associated with this equipment. After the member installs the required equipment, BEC installs the meter and strings the service line, attaches the service line supporting wire (neutral) to the member's point-of-attachment. BEC crews make the final connections.

Figure 3-1 Residential and Commercial Pole Mounted 200 Amp Meter-Base Specification

Residential and Commercial Pole Mounted 200 Amp Meter-Base Specification

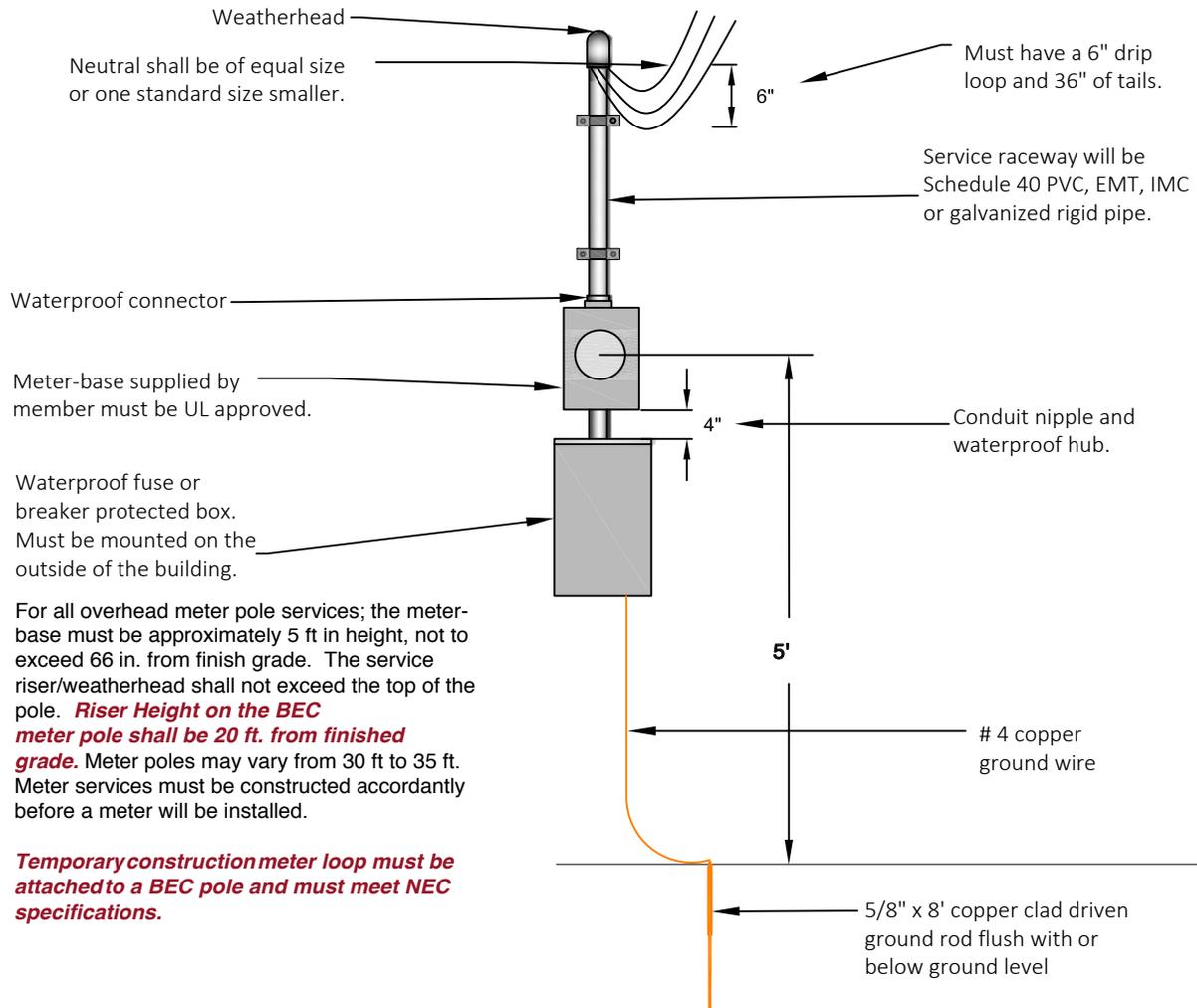
Residential and commercial meter loops are typically used when constructing facilities for permanent service. It is important that all guidelines outlined in this document be followed by your contractor or electrician. The member shall be in compliance with the National Electric Code (NEC). BEC is in compliance with the National Electric Safety Code (NESC). For your protection, BEC urges you or your electrician to use only NEC approved procedures and materials. All meter loops must be sized according to the load to be served and NEC guidelines.

BEC will refuse service where a known hazardous condition exists, and/or if connections do not meet the specifications outlined in this document. We recommend you use a qualified electrician to prevent safety hazards, additional costs and delays. BEC requires that all construction meet or exceed these specifications prior to service connection.

Member will be responsible for any replacement and repair of the meter loop, including the meter socket.

Electric Service Disconnects, regardless of the number of circuit breakers, must have a weatherproof main disconnect on the exterior of the service area. There will be no more than two loops on any one pole. For more information on higher amperage, contact BEC at (866) 226-3372.

OVERHEAD SPECIFICATION



Pole Mounted
Meter Loop Construction

Pole Mounted 200 Amp Meter-base Specification

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Revised 5/2017

Overhead Clearances Specifications for BEC Service Conductors

Figure 3-2 shows clearances under overhead lines, for the conditions most commonly encountered. For other situations and for details, see the NEC, NESC, or contact the electrical inspector for your area.

The member 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. If the span of the service line exceeds 75 ft, an intermediate support pole may be required to relieve the tension on the service mast.

Overhead Line Clearances

Occupational Safety and Health Administration (OSHA) regulations restrict unauthorized persons from approaching or operating any equipment or machines within 10 ft of live overhead high voltage lines. For lines to be de-energized, relocated or placed underground at the member's expense, call BEC at 1.866.226.3372 select option 2.

Local Codes

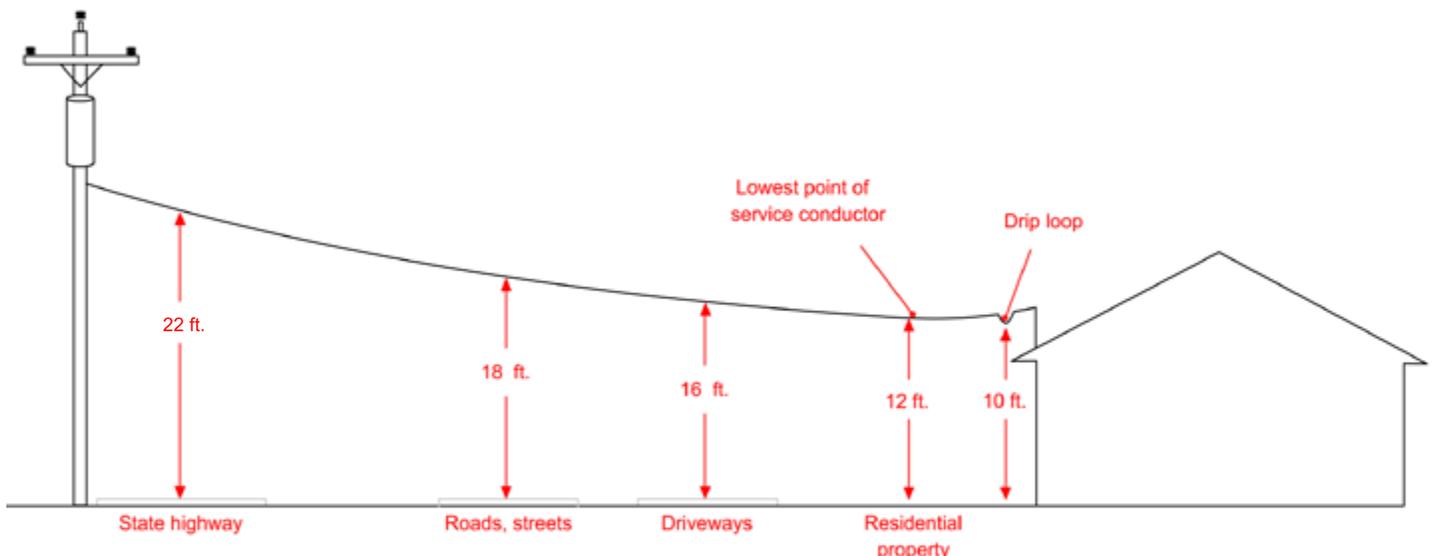
Some local electrical codes require structures to be located a safe distance away from live overhead high voltage lines as defined by the NESC.

Minimum Clearances for Service Drops 0 to 750V per NESC 232-1C

Minimum service drop clearances (see figure 3-2):

- Over roads, streets and other areas subject to truck traffic – 22 ft
- Over or along alleys, parking lots and nonresidential driveways – 18 ft
- Over land traveled by vehicles – 16 ft
- Over state highways (TxDOT may require greater clearances) – 22 ft
- Over or along residential driveways – 16 ft

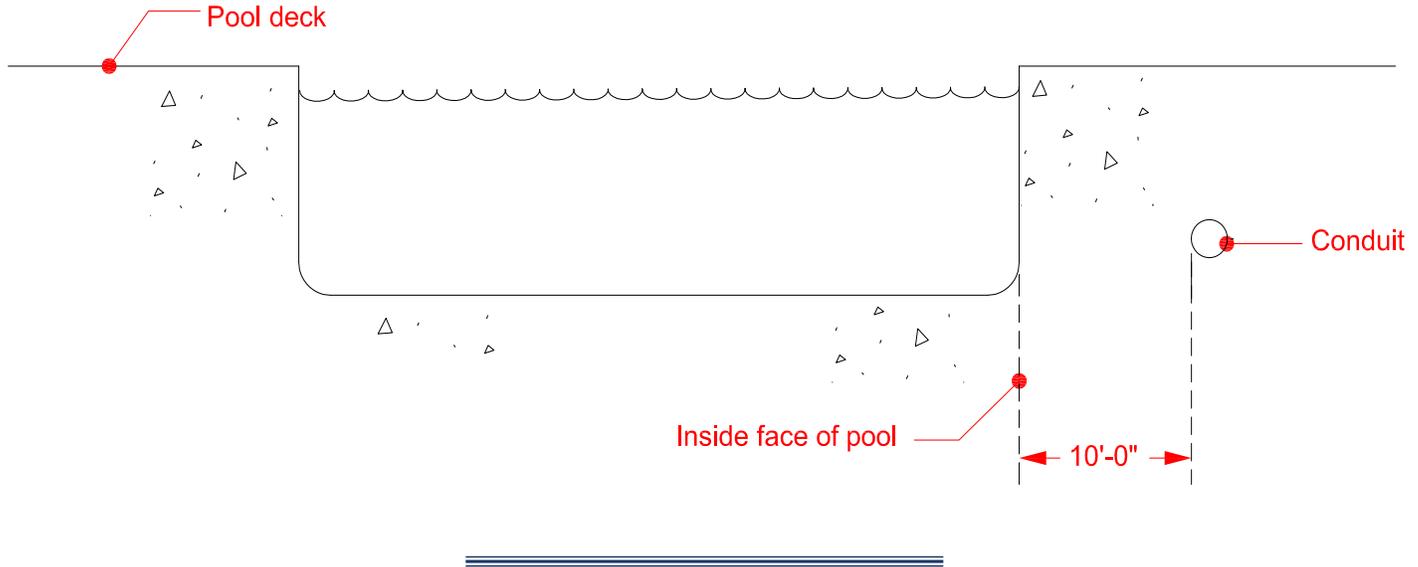
Figure 3-2 Minimum Service Drop Clearances



Clearances to Pools and Diving Structures

Pools and diving structures shall not be located beneath or within 25 ft from any overhead utility multiplex service drop or secondary (0-600 volts). All energized underground conductors must remain 10 ft from the face of the pool. Aerial power lines routed over pools will not be acceptable. If a BEC service is found routed over a pool, that service will be removed until the safety hazard has been rerouted or resolved.

Figure 3-3 Required Pool and Diving Structure Clearances



Check List for Installing Overhead/Underground Service

The member is responsible for providing, installing and maintaining all equipment from the point-of-delivery, except for equipment related to the meter. BEC is responsible for providing and installing the meter and completing the connections to the service conductors. Contact the BEC Distribution Design Engineering Department for details.

To obtain new overhead/underground service, the member completes the application for service, pays the engineering fee and will verify if local regulations permit the installation of electrical service.

BEC will require the following for all new services:

- Site drawings
- Load information defining total connected load and service voltage.
Services over 400 amps will require a set of approved and stamped engineered drawings. The BEC Distribution Design Engineering Department will evaluate each service request for proper service delivery. BEC will build the electrical system to the load demand currently requiring service. For those loads expected at a later date, BEC will evaluate and deliver additional electrical facilities when the project expansion takes place. BEC will only deliver load service at the time of application.
- An easement for permanent equipment installed on private property. For all projects requiring construction by BEC, the cooperative will require the property plat and warranty deed prior to the application being processed.

BEC Construction:

BEC construction crews, or its contractor, will build the service once all fees have been paid and easements have been acquired (if applicable). BEC crew responsibilities are to inspect and approve service drop installation and confirm adherence to NEC grounding requirements, wire sizes and proper installation standards.

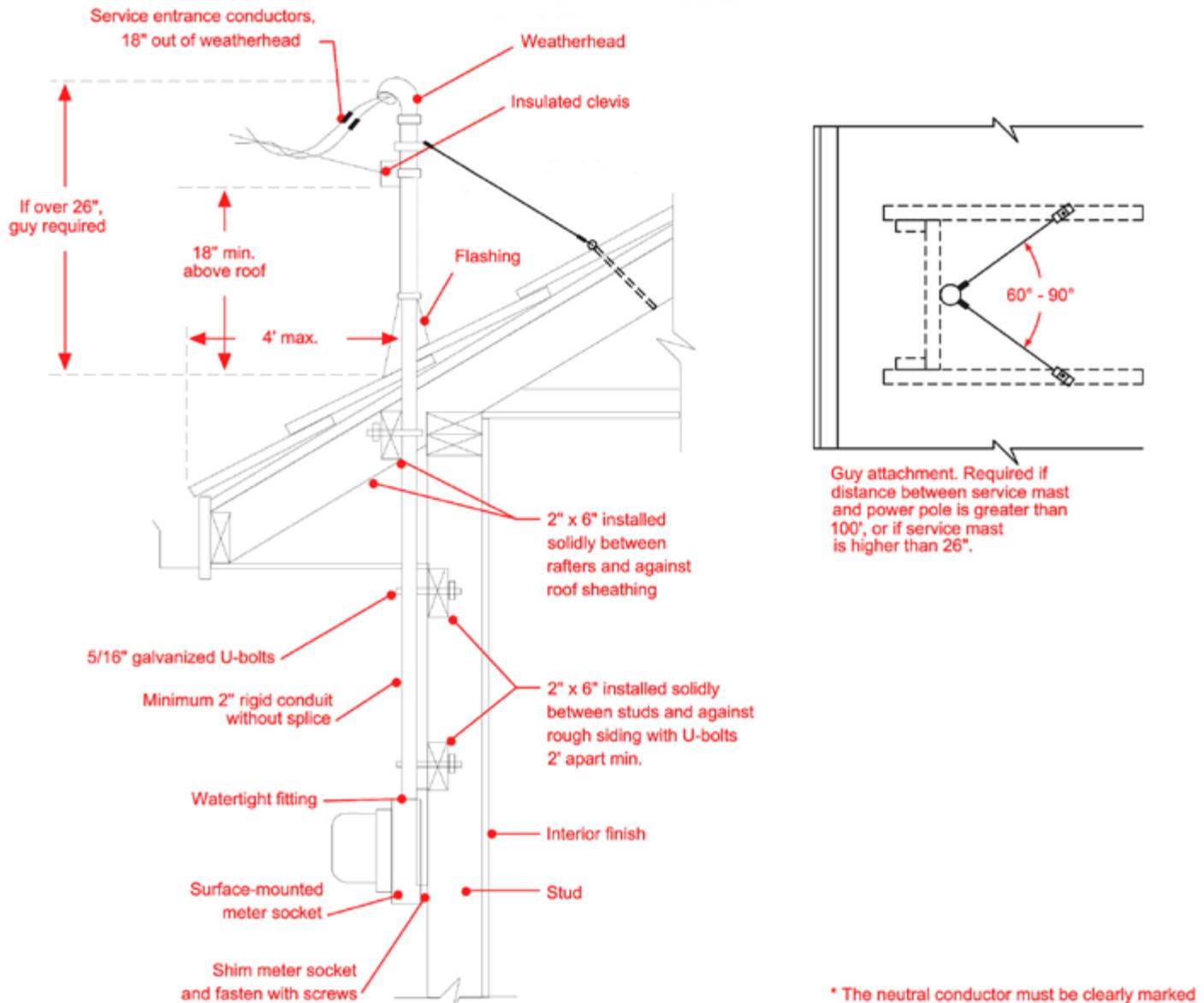
Load Analysis document can be found in the Reference Appendix of this manual on pages IV-V.

Please note that BEC must obtain a completed load analysis for loads greater than 200 amps with the application for service.

Service Mast and Surface-Mount Meter

Figure 3-4 Surface Mounted Meter Installation

Figure 3-4 shows details of a service mast with the meter on the surface of the building. The service shall be wired to an exterior meter as shown here. The member installs everything in the picture, except the meter. After the member installs the service equipment, BEC inspects service drop, grounds, wiring size and installation standards, then installs the meter in the meter-base and terminates the connections.



Overhead Service to Mobile or Manufactured Homes

Overhead service to a mobile or manufactured home shall be made with a permanent meter pole. The meter socket shall not be mounted directly to the mobile home. Manufactured homes, if equipped with factory installed service equipment, may be connected directly if all five of the following requirements are met:

- The manufactured home is secured to a permanent foundation by an approved anchoring system.
- The manufactured home structure is included in the real property deed.
- The foundation and anchoring system is designed by a Texas licensed engineer or Texas licensed architect, or an affidavit from a licensed home inspector is provided verifying that the foundation and anchoring system meets the Texas Administrative Code foundation and anchoring requirements for Manufactured Housing (T.A.C. title 10, part 1, Chapter 80).
- The service equipment complies with Article 230 of the NEC.
- Bonding and grounding comply with Article 250 of the NEC.

Contact the BEC Distribution Design Engineering Department prior to installation of mobile or manufactured homes to best determine service method.

All overhead services to a mobile home will be constructed from an overhead service pole and install underground to a meter rack constructed by the member. BEC will no longer provide meter pedestals with the meter breaker combinations. The member will be responsible for installing the meter rack and equipment (see **Figure 4-1: 200 amp Underground Meter Rack** specification on page 23 manual). Breaker panels and breakers will be supplied by the member. All conductors and conduits to the meter-base from the pole will be supplied by BEC. The member will be responsible for the installation of conduit and conductor from the load- side of the meter-base to the main breaker panel onto the trailer. BEC will confirm that the mobile home structure

is bonded and grounded at service disconnect through ground rod installation.

Primary Voltage Metering Requirements

Business services are typically below 600 volts and delivered from the secondary side of BEC's distribution transformers. BEC can provide primary voltage service (over 600 volts) to qualified members directly at the high voltage or "primary" distribution system standard for the location at which service is requested. Primary service is available provided the service will not, in BEC's opinion, adversely affect service to other members or BEC's distribution system, and will be distributed by the member in a safe and reliable manner.

Members receiving service at primary voltage may own poles, conductors, cables, transformers and protective devices. This equipment is subject to approval by BEC to assure timely restoration of service in case of failure. This member-owned equipment should be of the same type or specifications as equipment used by BEC.

Primary voltage service is metered using current transformers, voltage transformers and transformer-rated meters.

Trenches for primary systems must have a minimum of 30 in. cover from the top of the conduit or conductor to the finished grade.

Any member considering primary voltage service must consult with BEC before construction begins to determine mutually satisfactory solutions for these topics: the location of the point-of-delivery, primary metering equipment, disconnect devices to separate BEC and member distribution systems, ferroresonance, system protection, and grounding.

If the member installs their own primary metered service, the member will maintain that system from the service primary switch to the member's delivery point. All installations must be inspected by BEC's Distribution Design Engineering Department and meet the cooperative's Electrical Service Standards. Consult BEC's Distribution Engineering Department for details and specifications.

Chapter 4: Underground Service

Underground Service Requirements

The cost for underground service depends on the extent of special equipment required. The member is responsible for providing, installing and maintaining all

equipment from the point-of-delivery except for the meter. BEC is responsible for providing and installing all materials up to the metering point.

Table 3: Underground Service Table of Responsibility

Item Material or Work Description	Party to Furnish, Own and Maintain	Party to Install
Right-of-Way clearance at the cost of the member	BEC	N/A
Underground service lateral (residential and commercial) after the meter	BEC	BEC
Service conduit and conductor from BEC equipment to the meter rack	Member	Member
Service entrance conduit	BEC	BEC
Service entrance conduit under hard surface	Member	Member
Meter socket	Member	Member
Billing meter	BEC	BEC
Load-side conduit and conductor	Member	Member
Ground rod(s) for Meter	Member	Member

For transformer installations, the member must provide space for the transformer and other utility equipment. The easement is defined as 20 ft easement in width for the length of the service extension, encompassing 5 ft. past the equipment pad site. BEC will have the right of free access to the easement at all reasonable hours to perform necessary work on their facilities and anytime in an emergency to restore power during an outage event.

Where exposed to motorized vehicles, the member must install and maintain BEC approved barriers to protect pad-mount transformers and other equipment. In most cases, BEC will install, maintain and own the underground service lateral from a BEC distribution line or transformer to the point-of-delivery at the meter.

A voltage drop of +/- 3 percent will be maintained. Should the member or developer require a longer run of service and the voltage standard cannot be maintained, the member or developer must pay to have

the service designed so that the voltage drop will not exceed +/- 3 percent.

Point-of-Delivery

The BEC service responsibility terminates at the line-side terminals of the meter socket. The BEC voltage delivery requirement is +/- 3 percent at the meter location. For services extending beyond the point of delivery, it is recommend that the member consult with a qualified electrician to ensure proper voltage is maintained. BEC is not responsible for voltage drop greater than 3 percent beyond the meter.

Locating Underground Utilities

Please Call 811 Before You Dig; it's the Law.

State laws require the member/excavator to call for underground utility cable locations at least two full working days (48 hours) prior to excavation. The excavation must not be started until locations have been marked or the utilities have informed the excavator that they have no facilities in the area.

Please Call 811 Before You Dig; it's the Law.

Table 4: Color Code Marking for Underground Utilities

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

Specifications for the 200 Amp Free Standing URD Meter Rack*

The member will be responsible for the installation of the underground cable from the meter-base to the load. BEC will provide service to the member by way of an underground transformer or pedestal or overhead service. If the project is served overhead, BEC will install a pole and run the secondary conductor from the pole to the underground rack constructed by the member.

BEC will also install the conduit system from the top of the pole to the member's meter rack. The member will be responsible for the wiring to the load-side of the meter-base and to the main service panel. The line side conductor which is installed by BEC will be sized based upon member's load and location of the meter-base.

Conductor must be equivalent top (line-side) to bottom (load-side). BEC will install service conductor to the top of the meter sockets. The member will be responsible for installing service conductor from the bottom meter socket to the main breaker panel. For 200 amp service, BEC will deliver 1/0 secondary AL for overhead, and 4/0 service conductor for underground.

The member can utilize any loop configuration detail. Two sub panels consisting of the total amperage served up to 320 amps or one panel up to a 320 amp service.

Conductor must be equivalent top to bottom. For 320 amps services, BEC requires a minimum of 350 CU or 500 AL.

Specifications for the 320 Amp Free Standing URD Meter Rack*

The member will be responsible for the installation of the underground cable from the meter-base to the load. BEC will provide service to the member by way of an underground transformer or pedestal or overhead service. If the project site is served overhead, BEC will install a pole and run the secondary conductor from the pole to the underground rack constructed by the member.

BEC will also install the conduit system from the top of the pole to the member's meter rack. The member will be responsible for the wiring to the load-side of the meter-base and to the main service panel. The line-side conductor which is installed by BEC will be sized based upon member's load and location of the meter-base.

Specifications for the 400 Amp Free Standing URD Meter Rack*

The member can utilize any loop configuration detail. Two sub panels consisting of the total amperage served up to 200 amps or one panel up to a 400 amp service. Conductor must be equivalent top to bottom. BEC requires a minimum of 500 CU or 750 AL for services greater than 320 amps not to exceed 400 amps. Please see the NEC code requirements for service guidelines based on actual amperage to wire size requirements.

The member will be responsible for the installation of the underground cable from the meter-base to the load. BEC will provide service to the member by way of

an underground transformer or pedestal or overhead service. If the project site is served overhead, BEC will install a pole and run the secondary conductor from the pole to the underground rack constructed by the member.

BEC will also install the conduit system from the top of the pole to the member's meter rack. The member will be responsible for the wiring to the load side of the meter-base and to the main service panel. The line side conductor which is installed by BEC will be sized based upon member's load and location of the meter-base.

***NOTE: BEC will no longer accept racks connected to the meter pole. It is the responsibility of the member to install the URD free standing meter rack.**

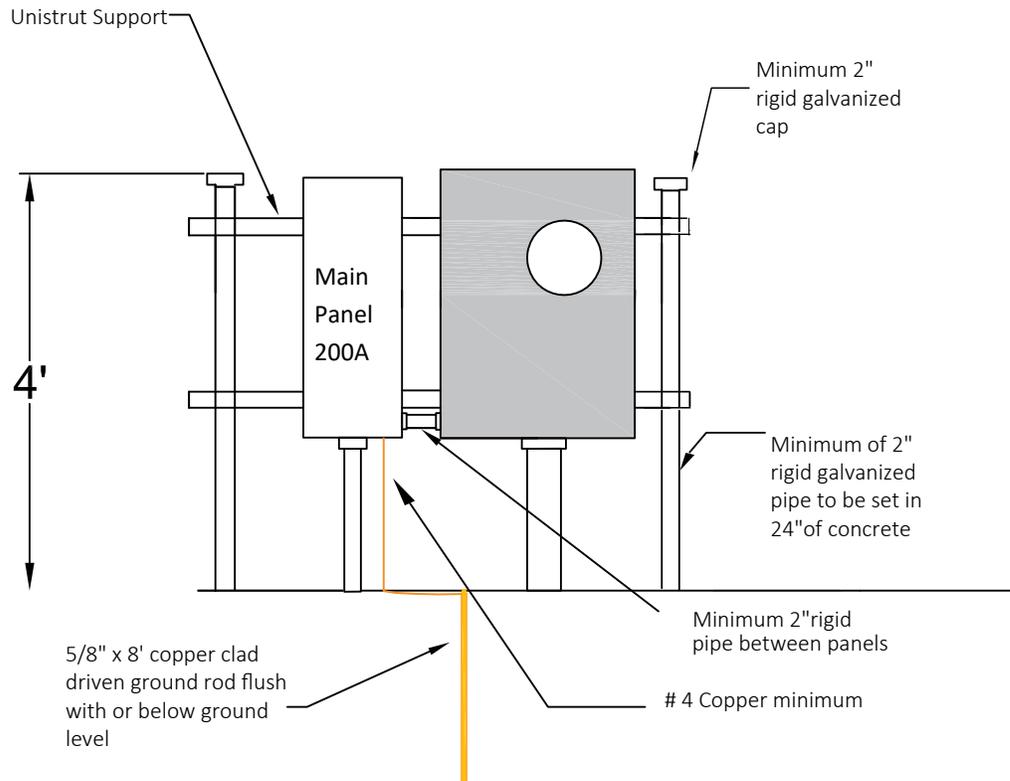
Figure 4-1 Specifications for the 200 Amp Free Standing URD Meter Rack

Specifications for the 200 Amp Free Standing URD Meter Rack

The meter rack, meter-base and breaker panel will be installed by the member. The run of conduit and conductor (line-side) will be installed by BEC. Conductor must be ampacity equivalent top to bottom of the meter-base. For 200 amps services, BEC will run 1/0 AL secondary (aluminum) line-side conductor from their facilities to the meter rack. BEC's service responsibility will stop at the line connections of the meter-base.

The member will be responsible for the installation of the underground cable from the meter-base to the load. BEC will provide service to the member by way of an underground transformer, underground pedestal or overhead service pole. If the project site is served overhead, BEC will install a service pole and run the secondary conductor from the service pole to the underground rack constructed by the member. BEC will install the conduit system from the top of the pole to the member's meter rack. The member will be responsible for the wiring to the load-side of the meter-base and to their main service panel. The line-side conductor which is installed by BEC will be sized based upon member's load and location of the meter-base.

NOTE: BEC will no longer accept racks connected to the meter pole. It is the responsibility of the member to install the URD free standing meter rack.



Meter Loop Construction

200 Amp URD Rack Structured Meter-base

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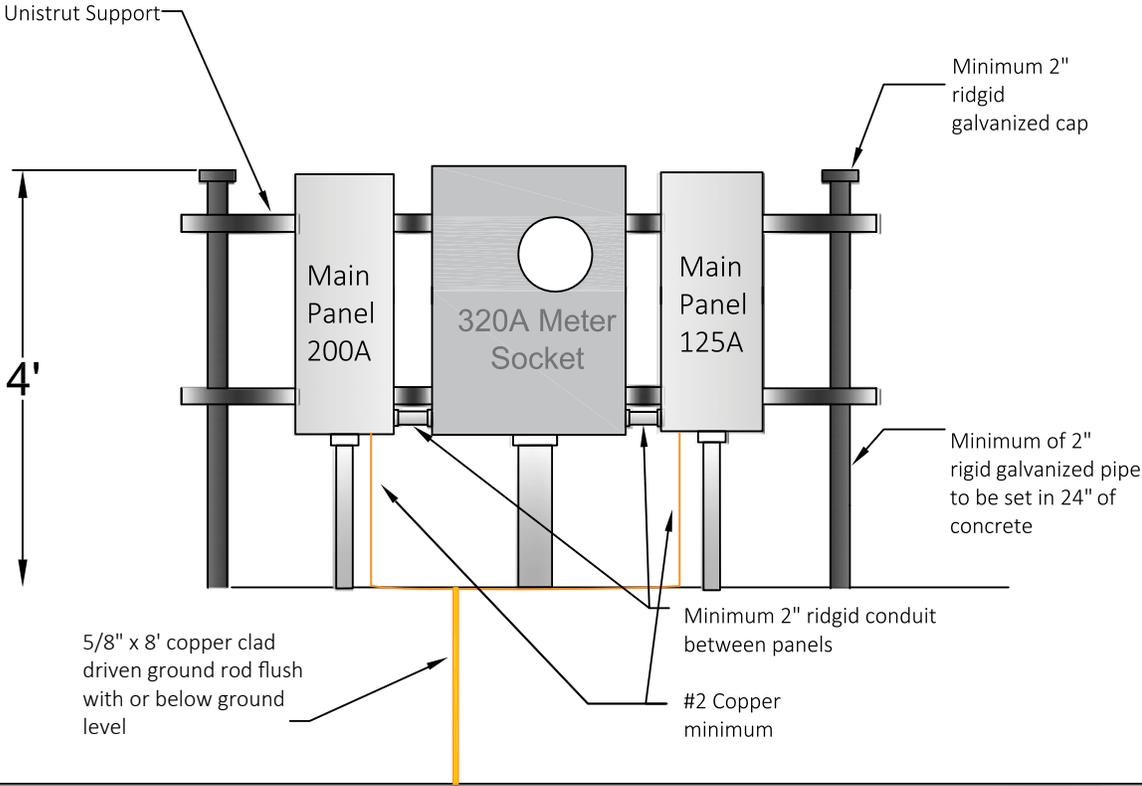
Figure 4-2 Specifications for the 320 Amp Free Standing URD Meter Rack

Specifications for the 320 Amp Free Standing URD Meter Rack

The member can utilize any loop configuration detail. Two sub panels consisting of the total amperage served up to 320 amps or one panel up to a 320 amp service. Conductor must be equivalent top to bottom.

The member will be responsible for the installation of the underground cable from the meter-base to the load. BEC will provide service to the member by way of an underground transformer or pedestal or overhead service. If the project site is served overhead, BEC will install a pole and run the secondary conductor from the pole to the underground rack constructed by the member. BEC will also install the conduit system from the top of the pole to the member's meter rack. The member will be responsible for the wiring to the load-side of the meter-base and to the main service panel. The line-side conductor, which is installed by BEC, will be sized based upon member's load and location of the meter-base.

NOTE: BEC will no longer accept racks connected to the meter pole. It is the responsibility of the member to install the URD free standing meter rack.



Meter Loop Construction

320 Amp URD Rack Structured Meter-base

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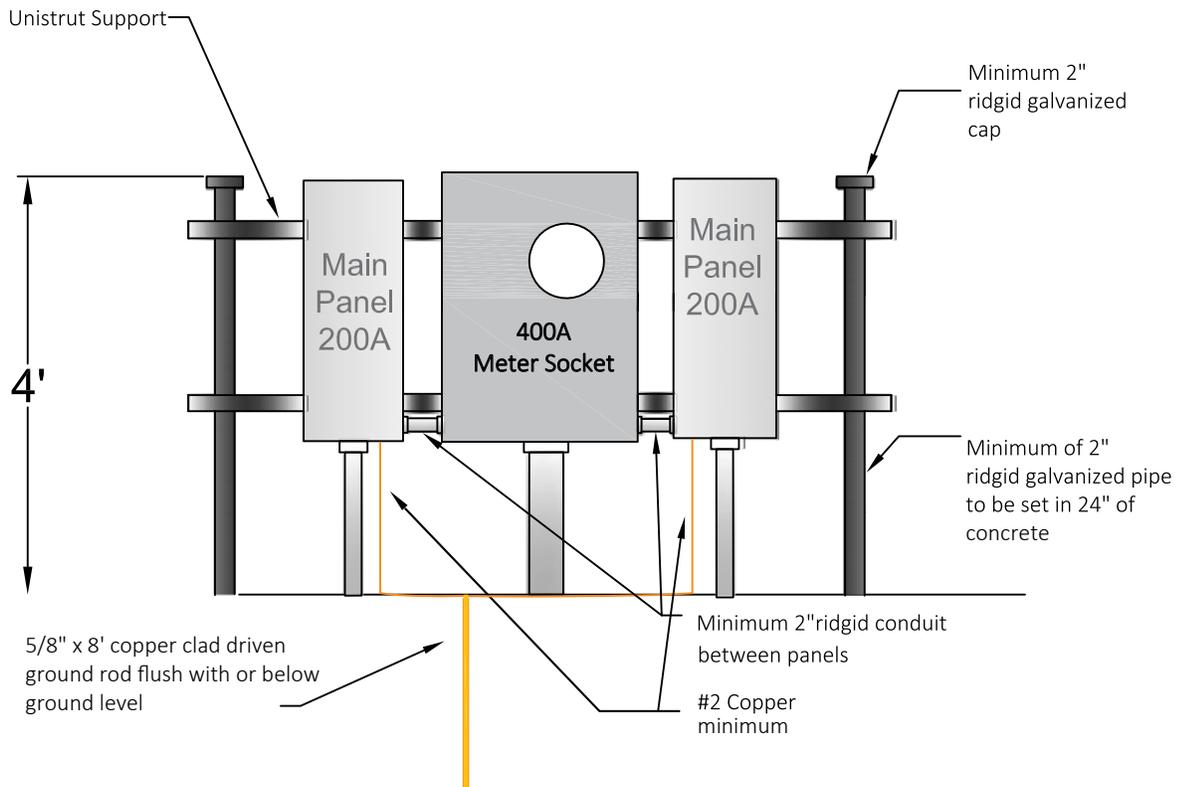
Figure 4-3 Specifications for the 400 Amp Free Standing URD Meter Rack

Specifications for the 400 Amp Free Standing URD Meter Rack

The member can utilize any loop configuration detail. Two sub panels consisting of the total amperage served up to 200 amps or one panel up to a 400 amp service. Conductor must be equivalent top to bottom.

The member will be responsible for the installation of the underground cable from the meter-base to the load. BEC will provide service to the member by way of an underground transformer, pedestal or overhead service. If the project site is served overhead, BEC will install a pole and run the secondary conductor from the pole to the underground rack constructed by the member. BEC will also install the conduit system from the top of the pole to the member's meter rack. The member will be responsible for the wiring to the load side of the meter-base and to the the main service panel. The line side conductor which is installed by BEC will be sized based upon member's load and location of the meter-base.

NOTE: BEC will no longer accept racks connected to the meter pole. It is the responsibility of the member to install the URD free standing meter rack.



Meter Loop Construction

400 Amp URD Rack Structured Meter-base

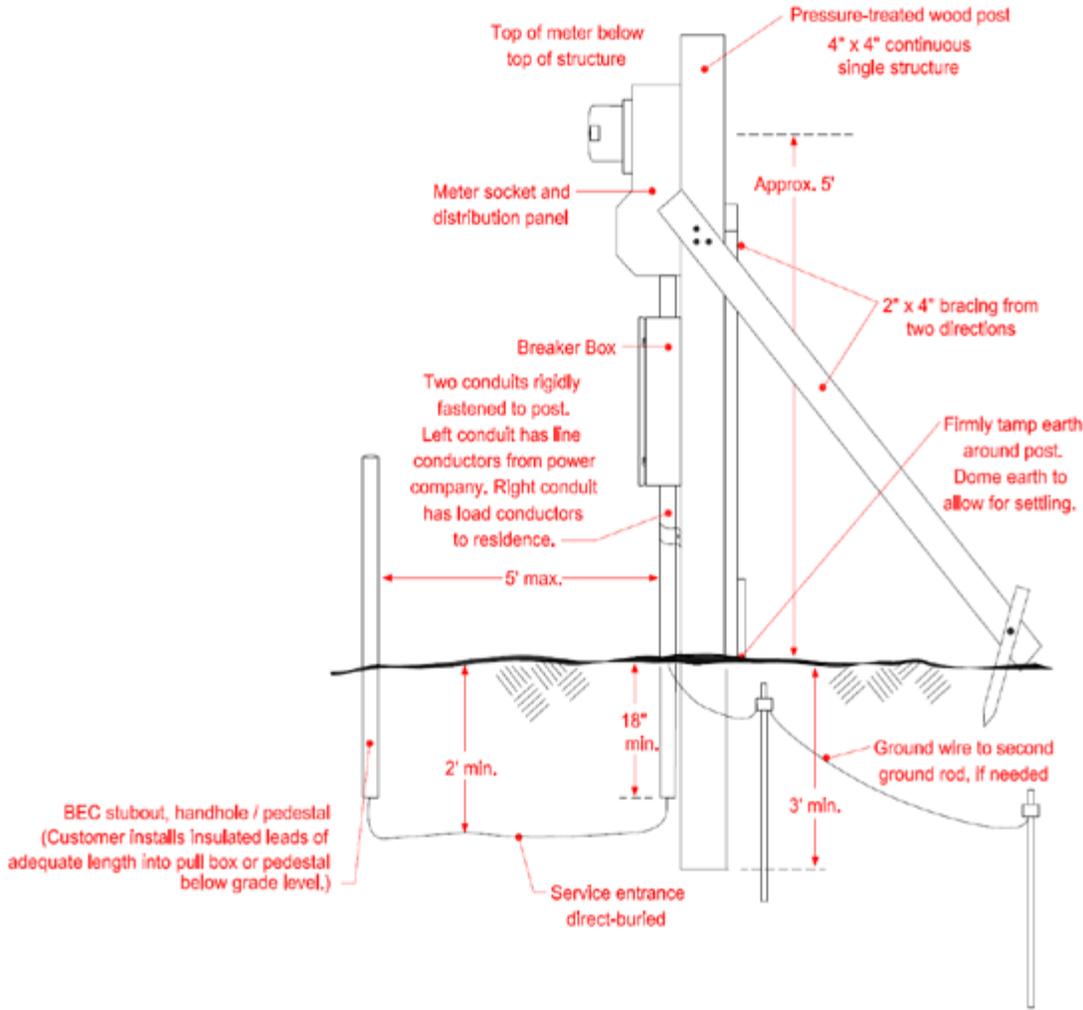
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Figure 4-4 Residential and Commercial 200 Amp Temporary URD Meter-Base Service

Residential and Commercial 200 Amp Temporary URD Meter-Base Specification

Shown below is a finished installation for service, using a meter post. The service is underground from BEC to a stub out or pad-mount transformer. Conductors placed in the trench bring the power to the base of the post. The member provides everything shown except the meter and the service line to the stubout or pad-mount transformer. Typically, these are utilized for services within underground developments for members and homebuilders while constructing a dwelling. This example will not be acceptable for a permanent service.



Meter Loop Construction

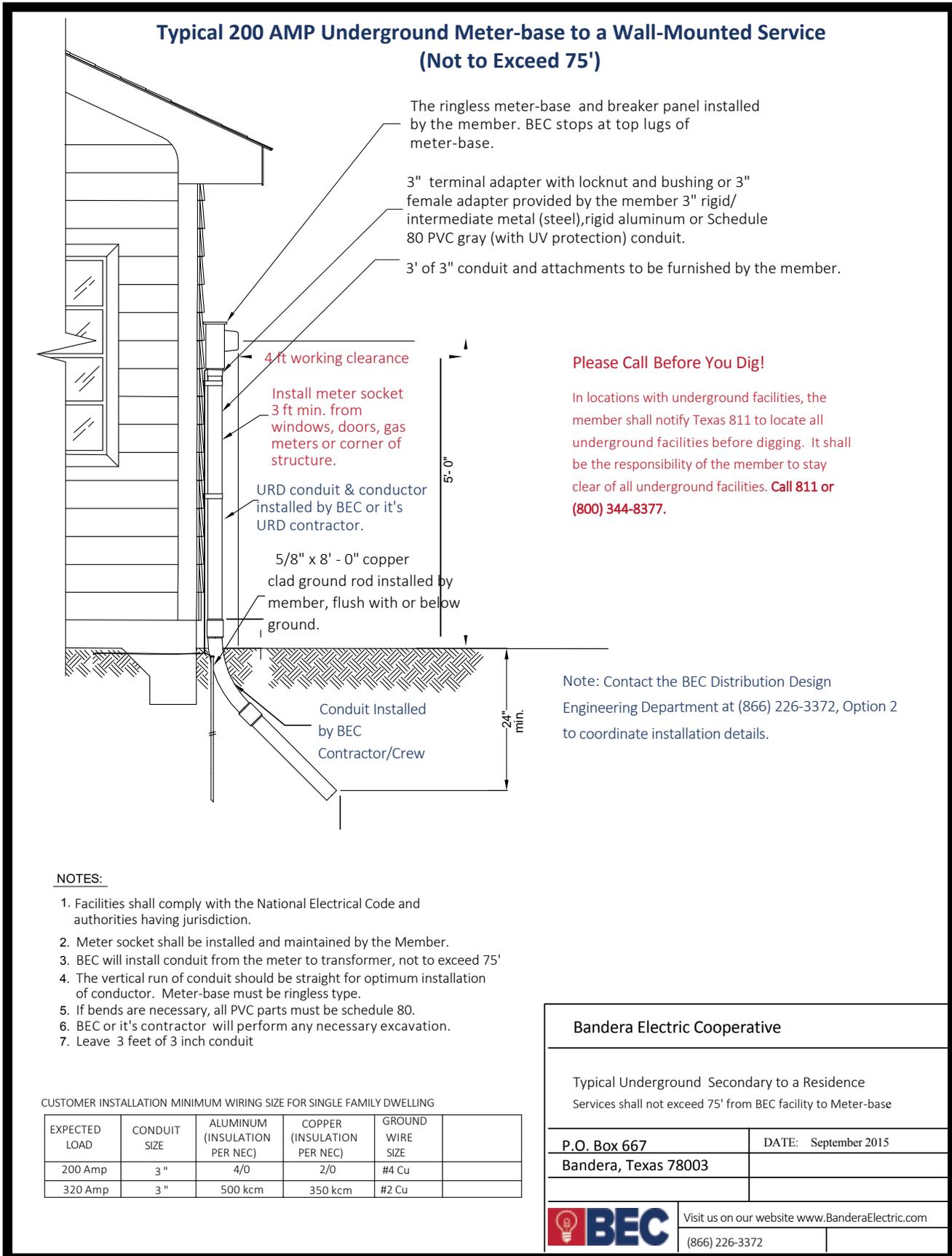
200 Amp Temporary Underground Meter Service

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Figure 4-5 Typical 200 Amp Underground Meter-Base to a Wall-Mounted Service

Services utilizing this specification are not greater than 200 amps and less than 75 ft from BEC's equipment to the member's meter-base located on the dwelling.

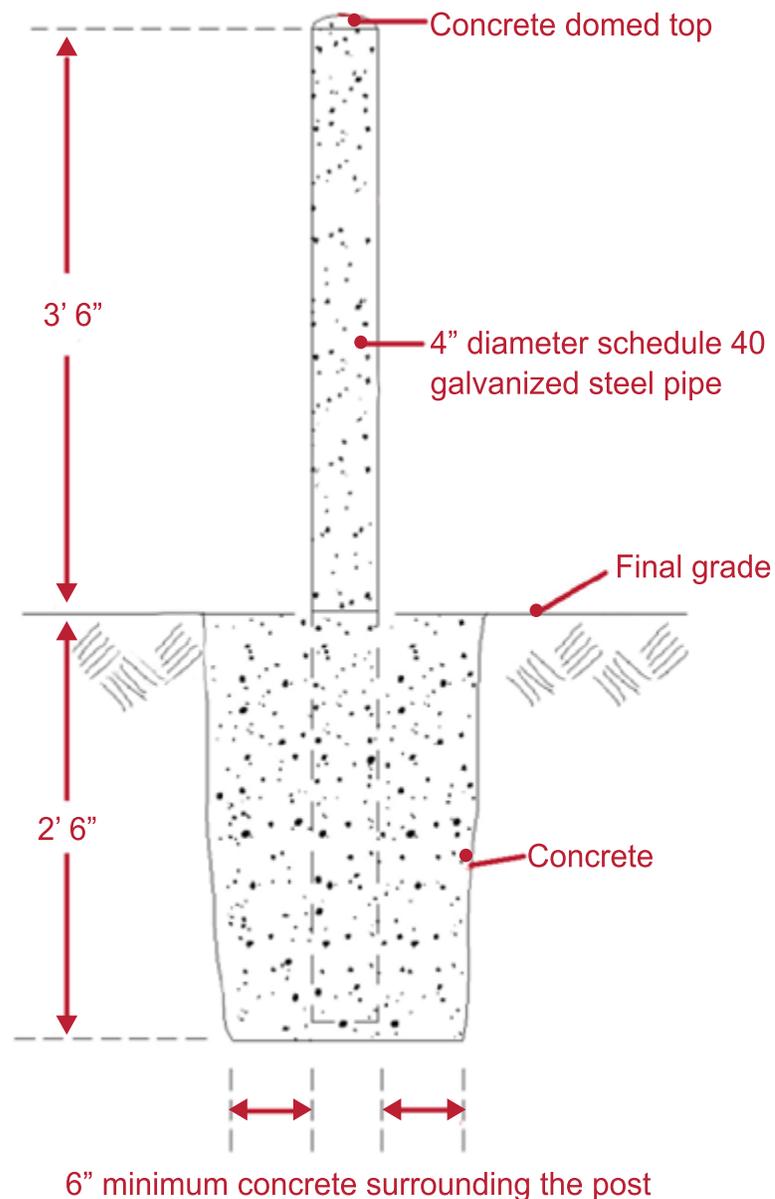


Guard Posts and Pole Bollards Requirements

It is the member's responsibility to install and maintain guard posts, bollards, where BEC equipment is exposed to vehicular traffic.

- Guard posts are also required where minimum clearances around equipment cannot be met. For example: Guard posts are required where pad-mounted devices cannot be given 4 ft clearance from the back and sides of the device and 10 ft from the front.
- If the post is placed in stable soil, surround it with 6 in. of concrete. If the soil is unstable or sand, surround the post with 12 in. of concrete.
- If several guard posts are required, locate them no more than 5 ft apart. For extra visibility, posts should be painted traffic yellow. In some situations where high traffic volume exists, a 6 in. diameter post may be required.

Figure 4-6 Equipment Guard Post/Bollard



Underground Transformer Installations

Safety Clearances Around Transformers

Clearances from pad-mount transformers to structures are measured from the nearest metal portion of the transformer to the structure or any overhang.

The clearance from a building is 3 ft if the building has non-combustible walls (brick, concrete, steel or stone), 10 ft if the building has combustible walls (including stucco). See **Figure 4-6** Safety Clearances around a Pad-mount Transformer.

Clearances From Pad-Mounted Transformers

Pad-mounted transformers shall be installed to meet the spatial separations to buildings. No transformers shall be installed within the drip-line of a building. See **Figure 4-6**.

Pad-mounted transformers shall not be within 25 ft of any pools or hot tubs.

Screening Clearances Around Pad-Mounted

Equipment

A minimum clearance of 3 ft on three sides and 10 ft on the front must be maintained around pad-mounted equipment. This allows air flow in to keep equipment cool. See **Figure 4-7**.

Underground Clearances

Underground conductors shall not be under or horizontally within 10 ft of the inside wall of a pool or spa. For the safety of BEC workers, all planted vegetation must maintain a clearance of 3 ft from the back and sides and 10 ft from the front (door) of all underground facilities. Any landscaping that may encroach this requirement will be removed by BEC.

Clearances From Underground Fuel Storage Tanks

Underground service conduits shall have a minimum of 10 ft of separation between the conduit run and the nearest point to buried fuel storage of any construction (metal, fiberglass, etc.).



Figure 4-7 Safety Clearances Around a Pad-Mount Transformer

NEC 110.32

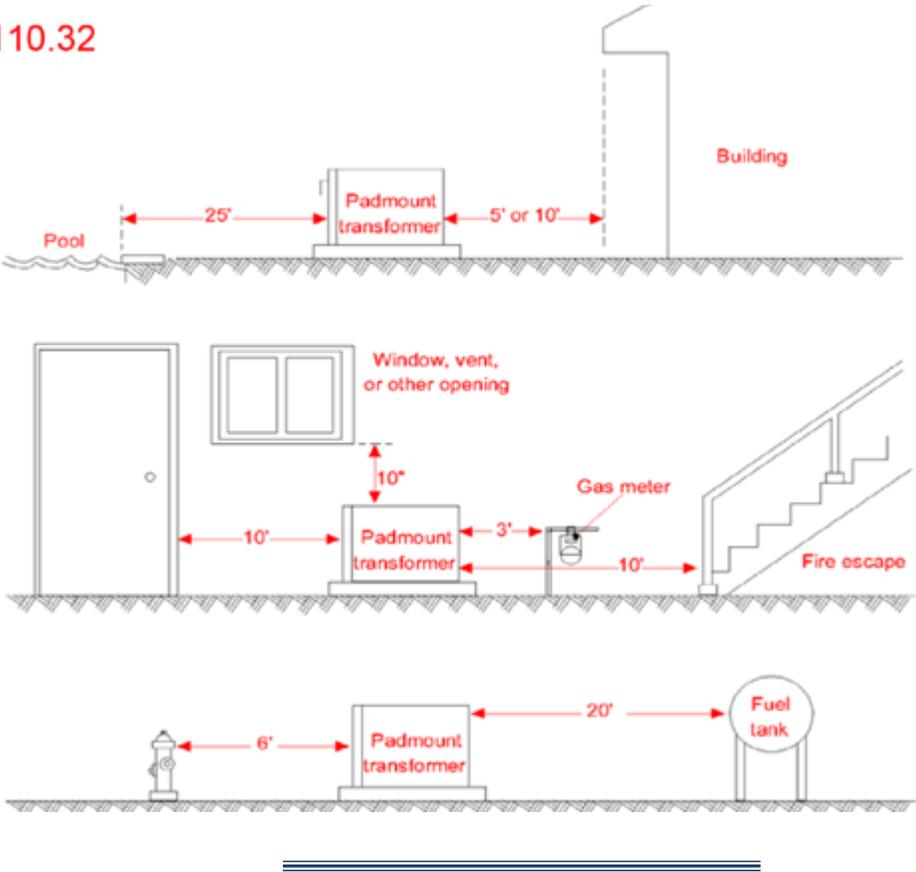
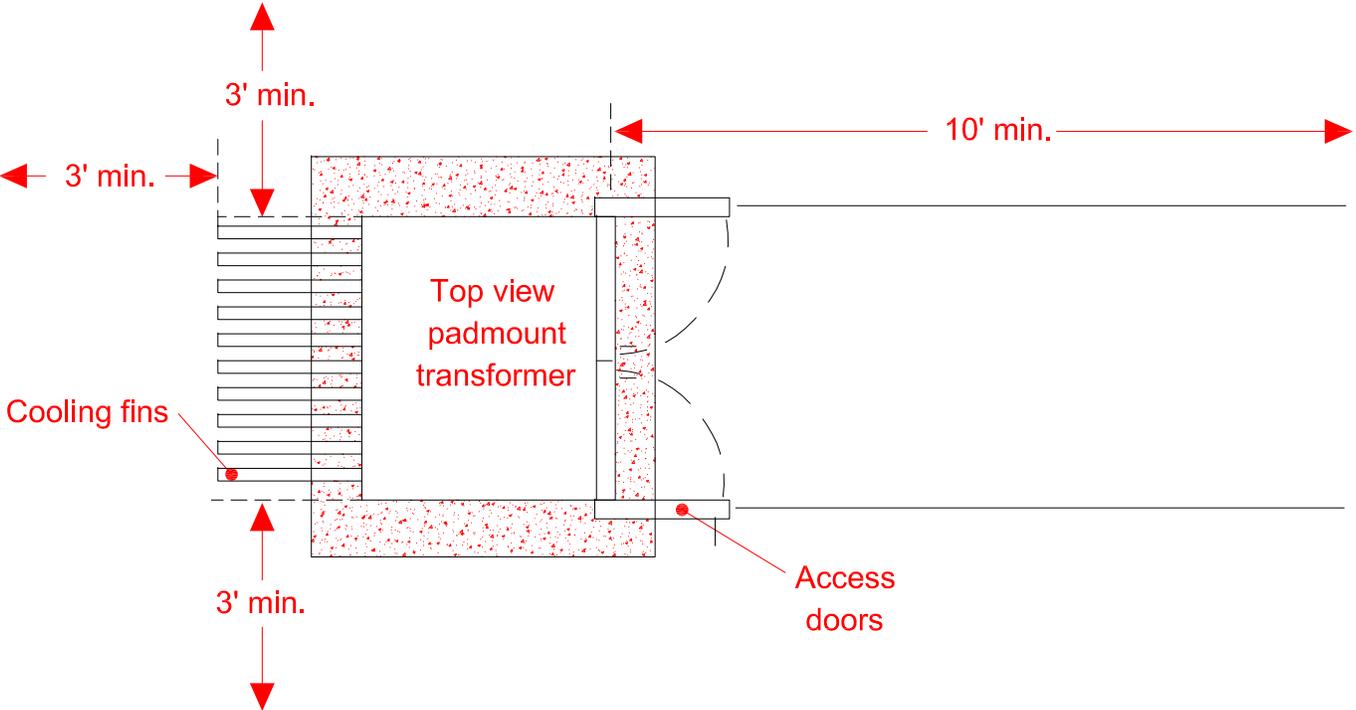


Figure 4-8 Work Clearances Around a Pad-Mount Transformer

A minimum clearance of 10 ft of clear, level working space is required in front of a pad-mount transformer to allow use of hot sticks. The clearances shown here apply to BEC electrical equipment. Landscaping, vegetation and other obstructions, including mailboxes, must not encroach on these clearances.



Chapter 5: Meter Installations

Defining Residential and Business Meter Locations

BEC provides and installs the meter, current transformers and local wiring.

Locating the Meter

It is in the mutual interest of the member and BEC to install the meter in a location suitable for meter reading, testing, repair and removal. The meter location is subject to approval by BEC.

Consistent with good utility practice, a meter and its associated equipment shall be installed in a location that facilitates the provision of safe and reliable electric delivery service and accurate measurement and that provides clear working space on all sides. The center of the socket opening shall be 5 ft above the finished grade. All meter locations should be as near as possible to the point-of-delivery. BEC shall have direct, unobstructed access to all meter locations. Meter locations likely to become obstructed in the future shall be avoided.

Sufficient space in front of, above, below and on each side of meter sockets, service enclosures and meter packs is necessary for work space for connecting and the reading of meters. No obstruction shall be within

4 ft in front of the meter.

Meter Location for Business and Residence

The meter must be located outside or on the first floor at ground level. BEC will provide final approval of the meter location point of delivery.

Do not locate meters:

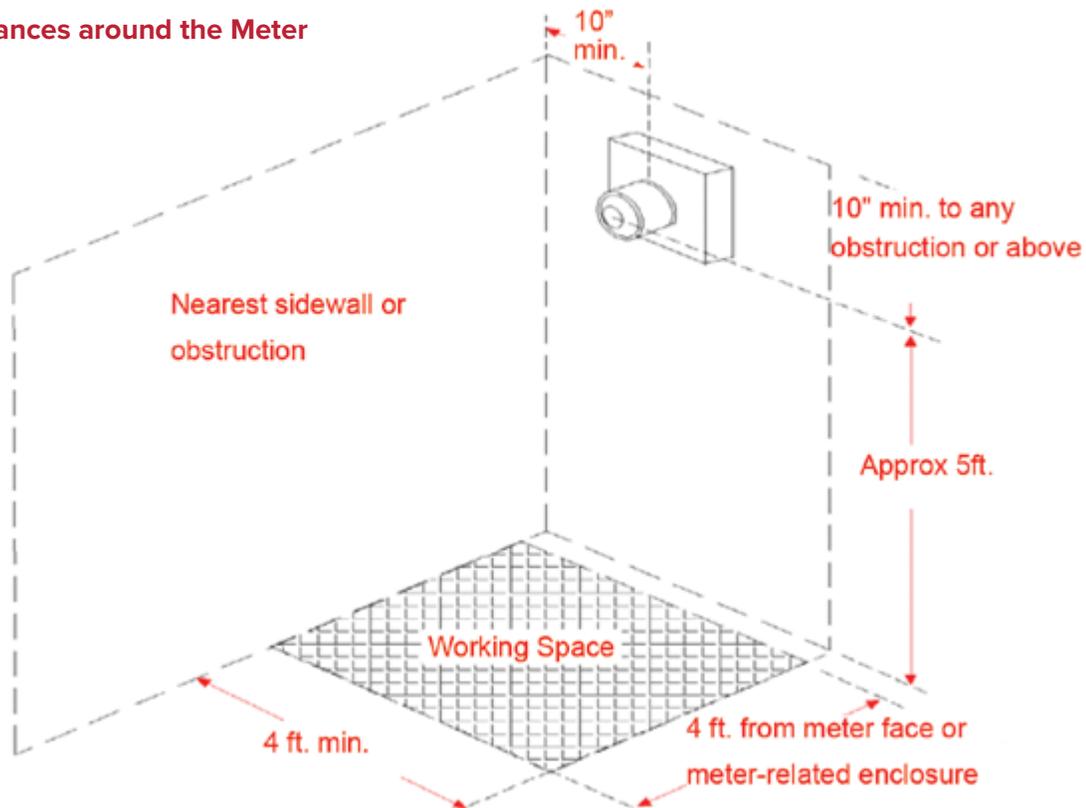
- Behind a fence or enclosure.
- In areas subject to being fenced or enclosed such as patios, pool areas, decks and porches.
- Where shrubs or landscaping could obstruct access to the meter.
- In an unsafe or inconvenient location such as above or below a stairway or window well.
- On a mobile structure such as a mobile home.
- Outside bedrooms or bathrooms or near doors and windows to respect member privacy.
- On BEC primary poles.
- In a place where safety could be compromised.
- In a location with abnormal temperature, vibration or corrosive air.

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



Clearances around the Meter

Figure 5-1 Clearances around the Meter



- Meter clearances, see **figure 5-1**, are measured from the center of the meter socket or from the center of the face of the meter. The 10 in. clearance at the top and left side of the meter allows meter technician to see and align the meter blades to the meter socket jaws when installing the meter
- Install the meter socket between 4 ft and 6 ft above finished grade (except meter pedestals). A height of 5 ft is preferred.
- Keep a clear working space 4 ft square, in front of each meter. This space must be permanently free of all obstructions, including landscaping.
- Maintain a minimum clearance of 10 in. radially around the meter. Allow 3 ft of clearance from a gas meter and 3 ft from windows or doors for member's privacy.

General Requirements for Meter Sockets

Meter socket assemblies for residential installations are 120/240 volt, 3-wire and single-phase. Each of the meter socket assemblies must be clearly and permanently marked to indicate each location to be served prior to the connection of service. It is required that permanent placards with address or apartment number must be riveted to the meter-base.

Ganged Meter Socket Assemblies

Ganged meter socket assemblies are for multi-family residential installations, and are 120/240 volt, 4-terminal sockets or 120/208 volt, 5-terminal sockets, 3-wire,

single-phase. Ganged meter socket assemblies must be clearly and permanently marked to indicate each location to be served prior to the connection of service.

It is required that permanent placards with address or apartment number must be riveted to the meter-base. Meter sockets come in five configurations. Residential services use the first socket shown in **Figure 5-2**.

General Requirements for Residential Meter Sockets:

- Be ringless
- Be rated NEMA 3R for exterior use and rain tight
- Be installed level, plumb and fastened securely to a rigid structure

- Have all unused openings in the enclosure closed with plugs and secured tightly from the inside
- Be covered and sealed with a transparent cover if live lines are installed
- Not be jumpered to provide power
- Most residential services, and all temporary services, use a socket with four jaws and a ground terminal

and neutral conductors.

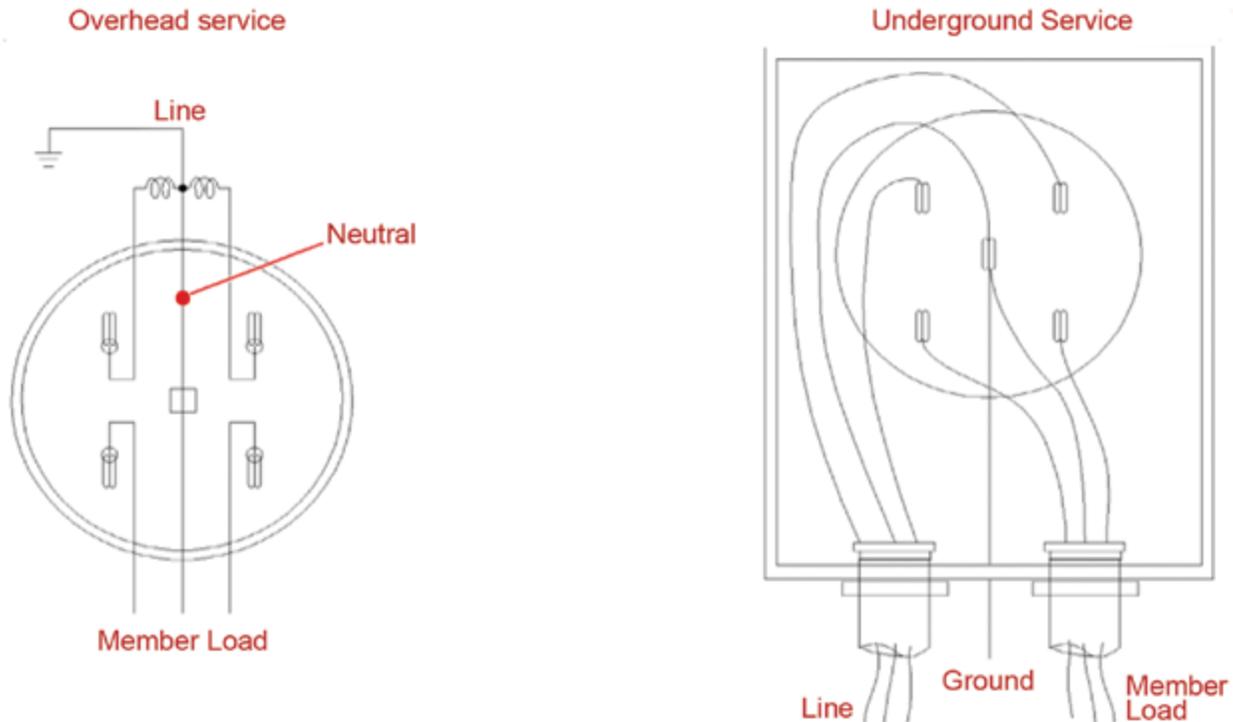
Attach a ground wire to the neutral terminal at the meter socket. Use a minimum no. 4 copper wire to connect the terminal to a rod. Install the ground rod a few feet away from a pole to reduce the portion of the grounding cylinder blocked by the pole and to avoid disturbed earth which has a relatively higher resistance. The ground rod of a meter socket may be the same as the service panel when within 5 ft and a continuous ground wire is utilized.

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

Figure 5-2 Residential Meter Socket Connections

The service main location shall not be installed more than 5 ft from the meter socket.



Ground Rod Installation

After installation, leave the connection to the ground rod visible for electrical inspection. For safety, the top of the ground rod should be below ground level. Factors which affect the ability of the ground rod to dissipate power surges include:

- The type of soil at the site. For example, clay soil has high conductivity, which is good, and 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 and frozen soil is bad.
- The minimum size of the ground rod is required to be 5/8 in. diameter and 8 ft long.
- Copper or copper-clad is the only approved ground rod.

Cable Runs

Metered circuits and unmetered circuits must not be intermixed in raceways or enclosures. Member's equipment is not allowed inside a meter enclosure. Member 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 and load-side conductors are connected to the bottom terminals of the meter socket.

After 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.

Protection

The ampacity rating of the main circuit breaker must not exceed the maximum rating of the meter socket. For both single-phase and three-phase services, if the marked continuous ampacity exceeds 400 amps, it is the member's responsibility to provide a load analysis to BEC in order to install proper current transformer (CT) metering. All service equipment must be metered ahead of the disconnect switch except in special situations approved by BEC.

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 member must install and maintain a guard post/bollard.

Services Metered Using Direct-Connect Meters

Figure 5-3 Connection for Single-phase Services Using Self-Contained Meter

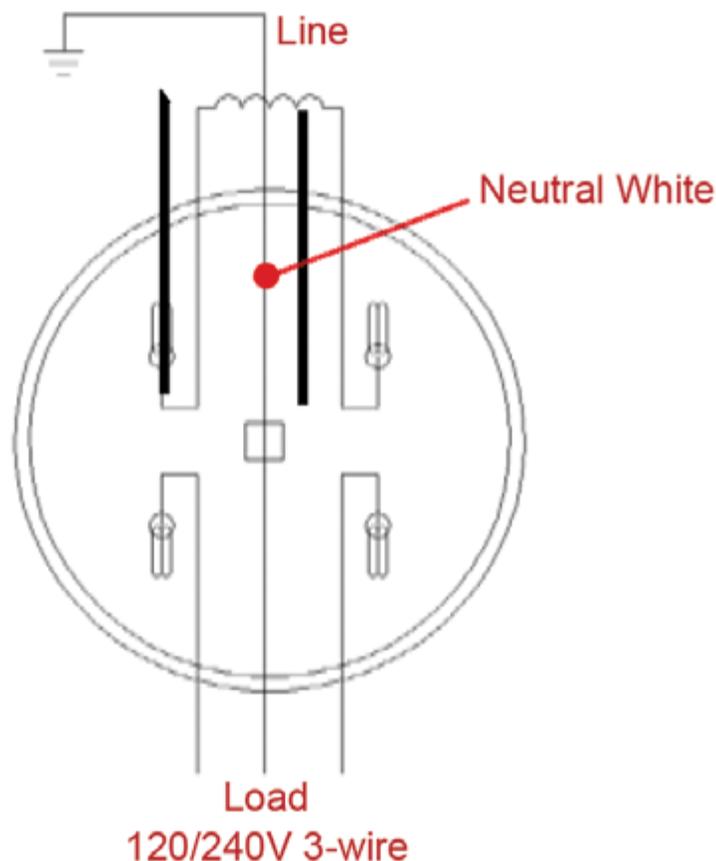
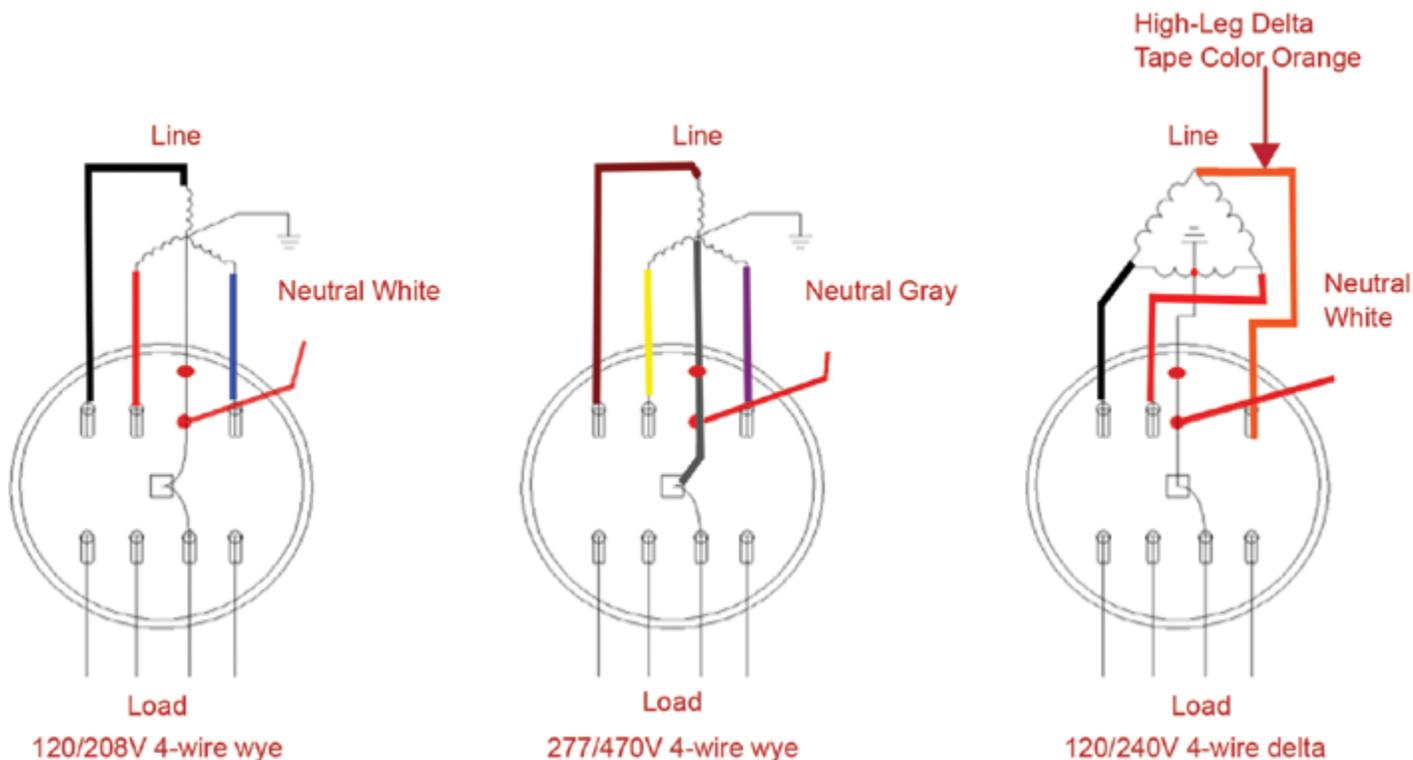


Figure 5-4 Connections for Three-phase Services Using Self-contained Meters



CURRENT TRANSFORMER (CT) METERING

CT Metering, Secondary Voltage

The maximum metered load shall not be greater than 4000 amps. The CT and meter-socket will be supplied, owned and maintained by BEC. The secondary metering conductors will be supplied, owned, installed and maintained by BEC. All CTs shall be installed at the pole location with overhead services and in the pad-mount transformers for underground services.

CT Metering Overhead

The location of the CT Equipment is subject to the approval of BEC. Most all overhead CT services are pole mounted at the transformer bank and are over 400 amps. Contact BEC's Distribution Design Engineering Department to discuss CT service outlet locations and specifications. BEC will own, provide and install the CTs. The CT meter and test switch are located on the transformer bank pole with most all overhead services.

CT Metering Underground

For underground pad-mounted applications, the CTs will be installed inside the transformer cabinet on the secondary side and the meter base will be installed on the outside of the transformer cabinet by BEC. BEC is responsible for all the wiring between the CTs and the meter.

Meter packs

Meter packs for multi-family residential and secondary service installations will be subject to approval by BEC. Each meter socket must be clearly and permanently marked to indicate each location address, apartment number, etc. to be served prior to connection of service. Contact BEC for approval of meter packs prior to letting bids and installing equipment. It is the member's responsibility to determine local code requirements concerning meter packs with main switches or main circuit breakers per NEC requirements prior to installing equipment.

Line-Side (Source) Connections

All meter sockets, whether served overhead or underground, require the line-side conductors to be connected to the top meter socket terminals.

Power Leg for 240 Volt Delta Service

The phase that is commonly called the “power leg” or “high leg” shall always be connected to the right hand meter socket terminals and shall be effectively identified with orange tape in accordance with NEC 230.56.

Meter Socket Identification at Multi-Metered Locations

Meter sockets to multi-metered locations shall be clearly and permanently marked on the exterior and interior of the meter socket to indicate each apartment or location served.

Multi-Meter Installations

Figures 5-5 through 5-8 show a typical multiple-meter installation for services of 200 amps or less. If the installation has more than six meters, a main disconnect will be required. Contact BEC's Distribution Design Engineering Department for additional details, reviews and approvals on all multi-metering installations.

Figure 5-5 Meter Installations for an Office

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

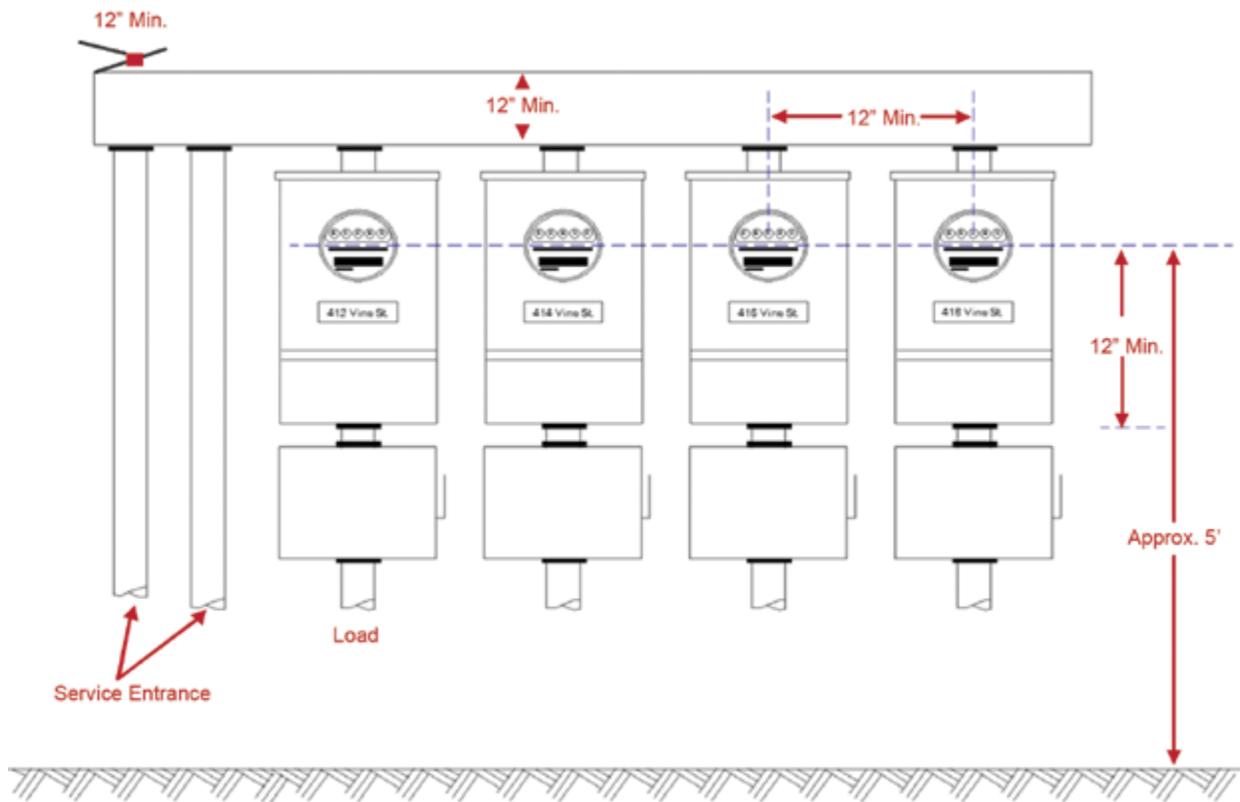
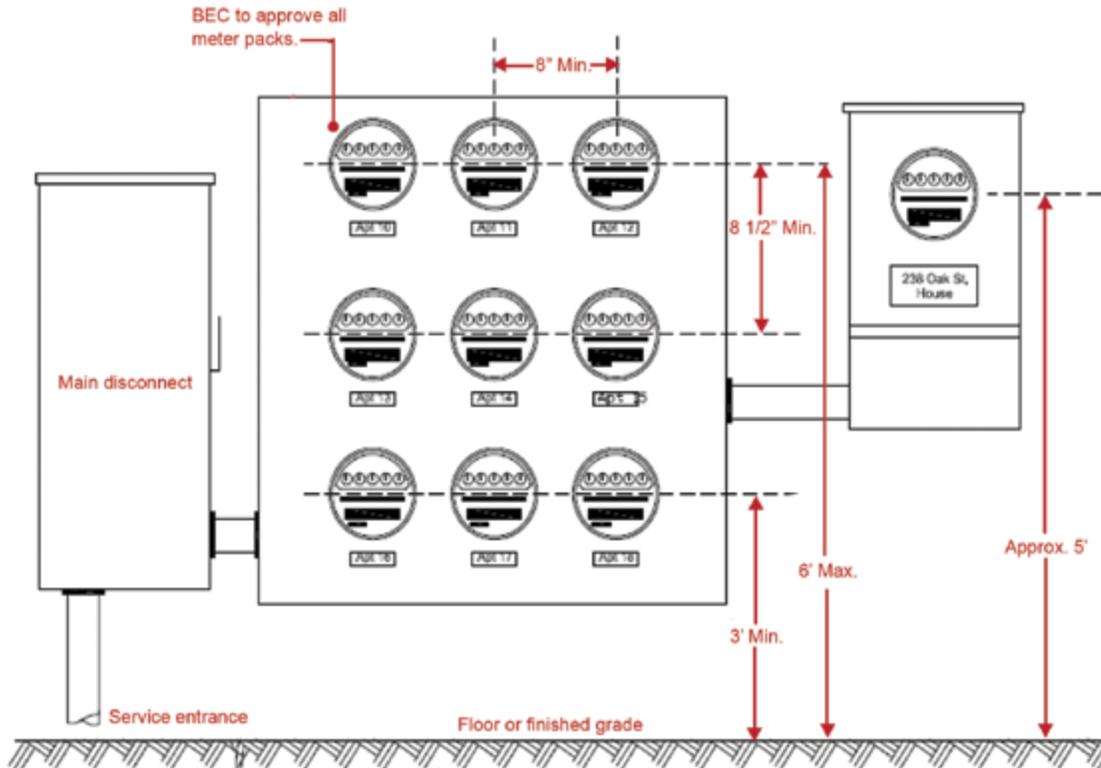


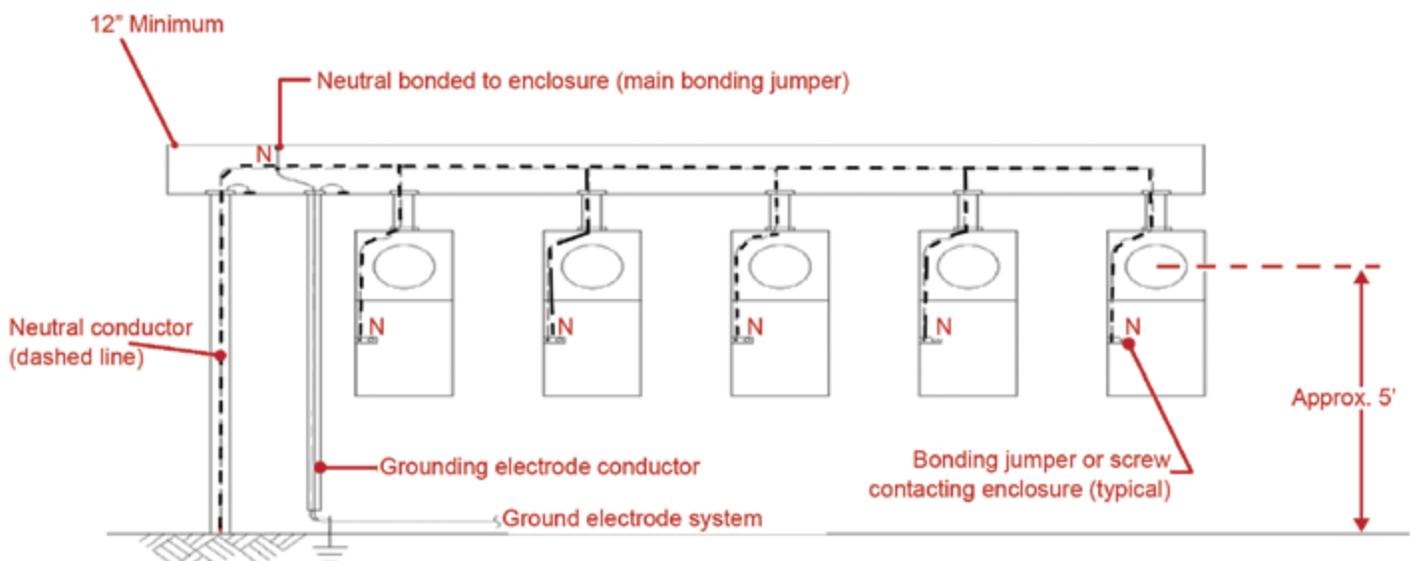
Figure 5-6 Meter Installations for an Apartment Building

Contact BEC Distribution Design Engineering Department prior to purchasing this equipment. A review and approval of a multi-tenant meter-base will be required by the BEC.



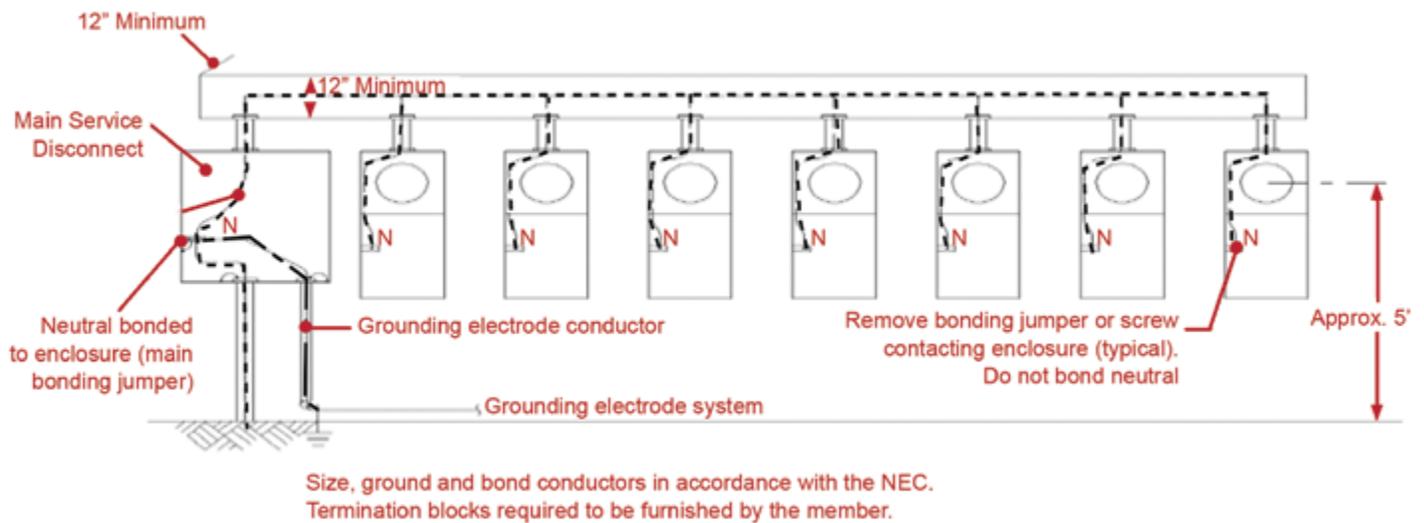
Grounding Multi-Meter Installations

Figure 5-7 Service Entrance Grounding and Bonding, Multi-Meter Installation with Metallic Conduits



Size, ground and bond conductors in accordance with the NEC.
Termination blocks required to be furnished by the member.

Figure 5-8 Service Entrance Grounding and Bonding, Multi-Meter Installation with Non-Metallic Conduits



Self-Contained Meter-Base Installations

Self-Contained Metering

- Single-phase and three-phase services with a total connected load of 200 amps or less shall be metered by self-contained meters.
- Single-phase and three-phase services with a total connected load of 201-400 amps will be metered by 320 amp self-contained meter.
- Single-phase and three-phase services where the total connected load is in excess of, or anticipated to be in excess of 400 amps shall use (CT) metering.
- The total amp rating of the main disconnect(s) shall not exceed 250 amps for a 200 amp continuous duty rated meter socket or 400 amps for a 320 amp continuous duty rated meter socket.
- All self-contained, single position and/or modular (multi-position) meter sockets that are of either single-phase or three-phase design shall be furnished, owned, installed and maintained by the member and fall under compliance to the NEC and any other applicable codes. The construction of the meter sockets shall also conform to BEC's Electrical Service Standards.

Typical Self-Contained Meter Service Specifications

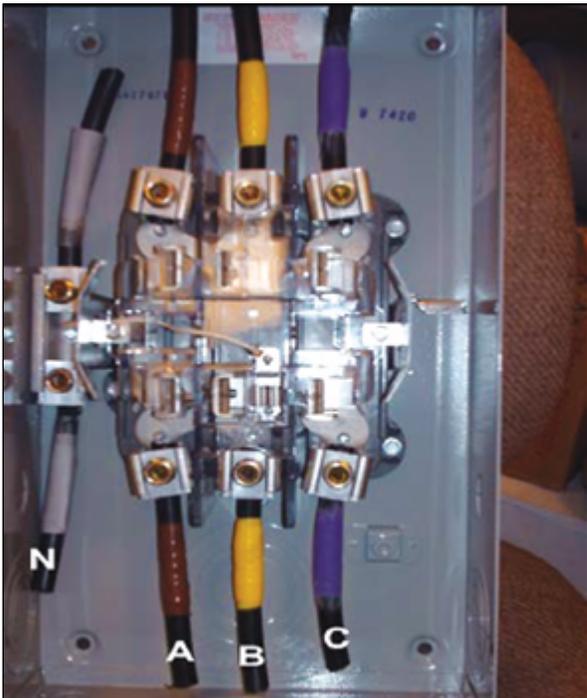
Closed-Delta Transformer Configuration



Self-Contained 120/208 Volt 4-Wire
Y Color Code

A phase = Black
B phase = Red
C phase = Blue
Neutral = White

Wye-Wye Transformer Configuration



Self-Contained 277/480 Volt 4-Wire
Y Color Code

A phase = Brown
B phase = Yellow
C phase = Purple
Neutral = Gray

Typical Self-Contained Meter Service Specifications Continued

**Wye-Delta Transformer Configuration Open-Delta (Two Transformer Bank)
High-Leg Service (position to the right inside the meterbase)**

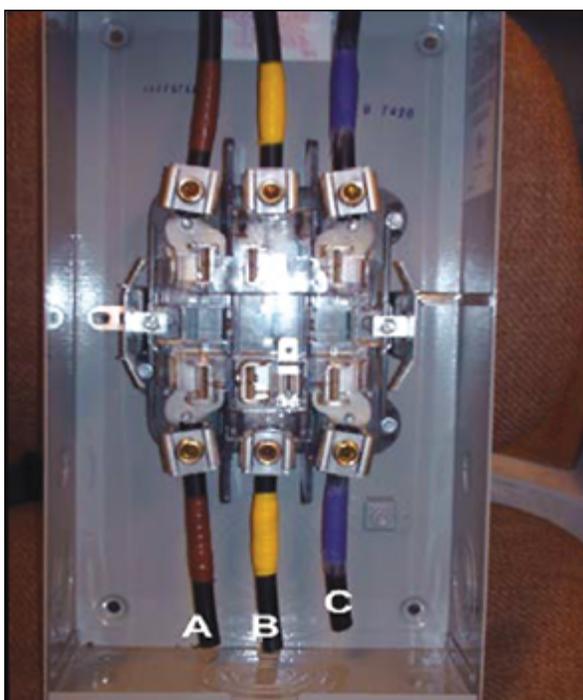


Self-Contained 120/240/208 Volt
4-Wire Delta Color Code*

A phase = 120V Black
B phase = 120V Red
C phase = 208 V Orange
Neutral = White

*Not a 120/208 Meter Service

Wye-Delta Straight 480 Three-Wire



Self-Contained 480 Volt 3-Wire
Delta Color Code

A phase = Brown
B phase = Yellow
C phase = Purple
No Neutral

Chapter 6: Security and Safety

Grounding

To assure maximum safety to users of electric service, and compliance with the NEC code, it is necessary that the member provide an adequate and permanent ground connection to the neutral terminal in the main service disconnect switch.

Change in Member's Wiring Installation

Before significant additions or alterations are made to the member's electrical installation or structure electric load, BEC should be notified. Where building alterations or rewiring require any changes to BEC facilities, the new wiring must be completed and approved by the BEC crewman before connecting to the newly wired service.

Contractors must maintain metering service during the period of rewiring when continuity of service is required. Jumpered meter loops will not be permitted, and the unauthorized removal of metering equipment will make the contractor liable for the value of the equipment. Only authorized employees of BEC are permitted to make the connection between BEC service wires and the member's service entrance conductors.

Relocation of Service Facilities

All requests for changes in the point-of-delivery of service wires should be directed to the BEC Distribution Design Engineering Department.

Radio and Television Antennae

Antennae for radio, radio transmitters, including citizen band or amateur, or televisions shall not be erected over or under BEC overhead electric lines, nor shall they be attached to BEC poles or other equipment. Antennae and dish equipment should be located as far as practical from BEC power lines and in a place where they may not accidentally fall into energized wires. To do otherwise, may result in serious accidents, damage to property or poor radio or television reception. The attachment of antenna guying systems to poles carrying BEC conductors is prohibited. Such attachments will be removed immediately upon discovery by BEC.

Attachments to BEC Facilities

BEC does not permit any attachments such as wires, ropes, signs, banners or radio equipment to BEC facilities by others except when authorized in writing

by BEC. BEC may, without notice and without liability, remove unauthorized attachments to BEC facilities.

BEC Locks or Seals

It is standard practice by BEC to install locks or seals on all meters, service enclosures, pad-mount transformers, pad-mount switchgear, unmetered service wire ways or other equipment. Only BEC agents and authorized persons shall remove a seal or lock.

Extension Lines

It shall be unlawful for any person to use an extension line from any temporary service facility when such extension line extends across any street, alley or other public right-of-way.

Tampering

Tampering with a meter or metering equipment or using any method which permits the flow of unmetered energy to a premise violates the laws of the State of Texas and may lead to disconnection of service, prosecution or both.

Connection and Disconnection

It is unlawful for any person other than authorized employees of BEC to connect temporary service facilities to BEC electric utility lines or to disconnect such facilities from BEC electric utility lines.

Chapter 7: Member Equipment and Special Requirements

Motor Protection Devices

All motors shall be equipped with effective thermal overload devices for protection of the motors and associated wiring according to NEC Article 430. Automatically operated small motors such as those used on refrigerators, oil burners, air conditioners, etc. should be equipped with individual time-delay thermal overload protection.

On central air-conditioning systems, heat pumps, and other motor-driven devices whose rating is 7.5 horsepower (hp) or less, use of single-phase motors are generally recommended since three-phase motors without complete thermal-overload protection may be damaged by single-phase operation following a partial interruption of service. Although every effort is made by BEC to render continuous service, BEC cannot guarantee that complete or partial interruptions of service will not occur.

Three-phase motors may be damaged by single-phase operation unless they are protected by thermal-overload devices whose thermal characteristics conform to the requirements of the particular motor for which they are designed to protect. Motors that cannot be subjected to full voltage at starting should be protected with a low voltage release; i.e., a protective device to disconnect the motor automatically from the line and return the starting device to the "off" position upon failure of the supply voltage. Where a low voltage release is applied, it is recommended that the device be of the adjustable time-delay type so as to prevent unnecessary disconnection of the motor on momentary loss of voltage.

Three-phase motors for application, where reversal of rotation may cause damage to equipment or constitute a hazard to personnel, should be protected by reverse-phase relays and automatic circuit breakers to protect the installation in case of phase reversal.

Motor Starting Currents

Most motors require a starting current substantially in excess of their normal running current. An abnormal drop in the supply voltage may occur in those cases where starting currents are excessive. It is therefore essential that member's motors have good starting

characteristics if abnormal drops in voltage are to be avoided and the effect of such voltage drops on lighting installations are to be minimized.

BEC reserves the right to accept motors for connection to its lines only after a test has been made to determine that the starting current is not excessive or after acceptable control equipment has been installed by the member.

Members contemplating the installation of motors 39 hp or larger, should consult with BEC, whereby a motor starting analysis will be run on the electric distribution system model to calculate voltage drops. If the voltage drop is calculated to be unacceptable, the member will be required to install reduced-voltage starting equipment on the motor in order to reduce voltage drop.

Welders, Furnaces and X-Rays

Electric welders, furnaces and similar equipment have inherent operating characteristics which usually cause serious fluctuations in the service voltage. The fluctuations affect not only service to the member using such equipment but also the service of other members.

In addition, such devices may require changes in BEC's installation if satisfactory service is to be provided. It is therefore necessary for the member to consult with BEC before purchasing equipment of this type. In some cases, it may be found that the proposed load cannot be served at the specific location without adversely affecting the quality of the service supplied to others unless suitable equipment is provided. BEC may be therefore compelled to decline service to the proposed load unless the member agrees to provide, at their expense, suitable equipment.

The operation of x-ray machines is adversely affected by very minor variations in voltage. For satisfactory operation, they may require a separate service entrance. The service entrance conduit for separate 240 volt, two-wire welder or x-ray services shall contain a ground wire, no. 8 AWG minimum, from the service outlet to the meter socket.



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Appendix: Planning Reference Guide

Meter-Base Types and Secondary Spanning	II
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Meter-Base Types and Service Secondary Spanning

Self-Contained Ringless Meter Sockets for Services Less Than 600 Volts and Up to 400 Amps	
Single-Phase Service	Proper Meter Socket
120/240 Volts 3-Wire	5-Terminal
Three-Phase Service	Proper Meter Socket
120/208 Volts 4-Wire	7-Terminal
120/240 Volts 4-Wire	7-Terminal
277/480 Volts 4-Wire	7-Terminal



Maximum Distance for Secondary Service Drop Spanning

Conductor (Duplex, Triplex or Quadraplex)	Maximum Service Span* (Utility pole to house knob)
1/0	75 ft
For all services greater than 200 amps, drops shall not exceed 40 ft	
4/0	40 ft
350	40 ft
500	40 ft

* Distances may be modified by the Staking Technician per project design.

Meter-Base Ampacity Chart

Amperage is a measure of the electrical current flowing through a circuit. Current is measured in amperes or amps. To prevent the wire from overheating, you must use the correct size required for the amperage. In cases where BEC will install the conductor to the top-side (source) of the meter-base, the member's bottom-side (load) of the meter-base must closely match in ampacity with the installed conductor. BEC Conductor size installed is based on the load analysis submitted by the member. **Please consult the latest addition of the NEC code for most current requirements.**

Wire Size	Copper (CU)		Aluminum (AL)	
	75° C 167° F	90° C 194° F	75° C 167° F	90° C 194° F
	THW	THWN-2	THW	THWN-2
	THWN	THHN	THWN	THHN
	SE	XHHW-2	SE	TWHW-2
	USE	—	USE	—
	XHHW	—	XHHW	—
1	130	150	100	115
1/0	150	170	120	135
2/0	175	195	135	150
3/0	200	225	155	175
4/0	230	260	180	205
250	255	290	205	230
300	285	320	230	255
350	310	350	250	280
500	380	430	310	350
600	420	475	340	385
750	475	535	385	435
1000	545	615	445	500



BEC Electrical Load Analysis

Required for all electrical service requests. For services greater than 200 amps a site plan, one-line diagram and load analysis will be required.

Date: _____

General Information

Project Name: _____
Project Street Address: _____

Property Owner: _____
Owner Address: _____
City, State, Zip Code: _____
Phone Number: _____ Mobile: _____ Fax: _____
E-mail Address: _____

Agent: _____
Agent Address: _____
City, State, Zip Code: _____
Phone Number: _____ Mobile: _____ Fax: _____
E-mail Address: _____

Construction Site Contact Name: _____
Construction Site Phone Number: _____

Required Information and Submittals

Site Plan and Electrical One Line _____
(Plans including all Easements and Existing Utilities)
Electrical Load Analysis (see attached sheet 2 of 2) _____
Requested Point of Service & BEC Transformer _____
Location (Approval by BEC's Engineering Department)
Type of Service Overhead or Underground _____
Square Footage of Building _____
Electric or Gas Heat _____
New Construction or Remodeling _____
Construction Start Date _____

Billing Information

Name and Company: _____
Billing Address: _____
City, State, Zip Code: _____

Note: All information must be provided prior to the project engineering taking place.

BEC Electrical Load Analysis

Electric Load Analysis

Main Disconnect Size:

_____ Amps _____ Volts _____ Phase

Lighting Load: _____ kW

Receptacle Load: _____ kW

Equipment Load:

1. A/C _____ kW

2. Heat _____ kW

largest load of heating or cooling = _____

3. Water Heater(s) = _____

4. Office Equipment = _____

5. Fire Pumps = _____

6. Miscellaneous = _____

7. Miscellaneous = _____

Kitchen Load: _____ kW x _____

Largest Motor Load: _____ HP

(Motor's 41 hp and larger will require assisted start)

kW x 1.25 = First 10 kW at 100% remainder over 10 kW at 50% = _____

Total Connected Load: _____ = _____

Total Connected _____ kW

Load: Future Load: _____ kW + Total Connected _____ kW

Total Amp Load of : _____ Load Amps at _____ Volt _____ Phase _____ Wire

Comments:

Application Completed By: _____ Signature _____ Print Name _____ Date: _____ MM-DD-YY

BEC Representative: _____ Name _____ Date: _____ Received _____ Phone No. _____

Note: All information must be provided prior to the project engineering taking place.



Easement Instructions

Please complete the instrument according to the following instructions. DESCRIBE and EXECUTE the easement and return a recorded copy to your Project Designer. **This easement needs to be returned to BEC prior to installing and energizing your proposed facility. Failure to do so could delay the timely installation of your electric facilities.**

Parcel ID No.: Enter Parcel ID number in the upper left portion of the easement form.

Easement Types:

Metes and bounds may be used, but a center line description is most common. A pictorial view of the actual project design which has the GPS points of poles, j-boxes, transformers and guy-anchors will also suffice in identifying the easement. The easement may also be attached as an "Exhibit A."

The BEC easement standardization is defined as follows: the primary voltage easements for both overhead and underground services are 20 ft in width (10 ft on either side of BEC facilities). Secondary voltage easements shall be treated the same. The easement must be cleared from ground to sky of all vegetation and must remain clear as long as electrical facilities exist.

Signing and Witnessing:

All persons shown on the deed must sign the easement. Enter date in space provided. Sign on the indicated lines on the right side in the presence of the witness who signs on the line to the left, and a notary public who completes the acknowledgement forms as described below. The notary public may be the witness and if so, must sign at the left in the space provided.

Acknowledgments:

The notary public should legibly fill in all blanks, including state and county of execution, names of individuals or officers signing and their titles, state or county where empowered to act, expiration date of commission, fill in the date, sign on line provided, and affix seal adjacent to the signature of the notary public.

Record the Easement:

If there are any questions with regards to the easement, please call the BEC Engineering Department at (866) 226-3372, select Option 2. Return the original signed document to BEC for recording. Only this **unaltered** BEC standard easement form will be accepted by Bandera Electric Cooperative.



Easement for Individuals

(Maintained by County Appraiser)

Work Order _____

Address _____

City, TX, Zip _____

Parcel ID No. _____

County _____

Space Reserved for Circuit Court

The undersigned, in recognition of other good and valuable consideration, the adequacy and receipt of which is hereby acknowledged, grant and give to Bandera Electric Cooperative, Inc. its licensees, agents, successors, and assigns, an easement forever for the construction, operation and maintenance of overhead and underground electric utility facilities (including wires, poles, guys, cables, conduits and appurtenant equipment) to be installed at times; with the right to reconstruct, improve, add to, enlarge, change the voltage, as well as, remove any of them within an easement.

Grantor initial here. _____

Check the one that applies:

A twenty (20) foot wide, primary voltage easement, located ten (10) feet on both sides of the center conductor of the electric distribution line as built by BEC with an additional ten (10) foot radius around each guy location.

A defined easement with dimensions and location acceptable to BEC, provided by Grantor and prepared by a Registered Land Surveyor, and attached as Exhibit A. The easement shall be not less than twenty (20) feet wide with and additional ten (10) foot radius around each guy location required by BEC. If Grantor selects this easement type, Grantor shall clear or cause to be cleared the defined easement prior to the construction of the distribution line by BEC, or Grantor shall ensure that the Registered Land Surveyor is available to mark or remark the survey boundaries at the time BEC initiates easement clearing.

Together with the right to permit any other person, firm or corporation to attach wires to any facilities hereunder and lay cable and conduit within the easement and to operate the same for communications purposes; the right of ingress and egress to said premises at all times; the right to clear the land and keep it cleared of all trees, undergrowth and other obstructions within the easement area; to trim and cut and keep trimmed and cut all dead, weak, leaning or dangerous trees or limbs outside of the easement area which might interfere with or fall upon the lines or systems of communications or power transmission or distribution; and further grants, to the fullest extent the undersigned has the power to grant, if at all, the rights herein above granted on the land heretofore described, over, along, under and across the roads, streets or highways adjoining or through said property.

IN WITNESS WHEREOF, the undersigned has signed and sealed this instrument on: _____ 20 ____

Signed, sealed and delivered in the presence of:

By: _____
(Grantor's Signature)

Printed Name: _____

Address: _____

By: _____
(Grantor's Signature)

Printed Name: _____

Address: _____

(Witness's Signature)

Printed Name: _____

STATE OF _____ AND COUNTY OF _____

The foregoing instrument was acknowledge before me on this ____ day of _____ 20 _____, by _____,

and _____, who are personally known to me or has (have) produced (Type of identification) _____ as identification, and who did (did not) take an oath.

My Commission Expires: _____/_____/_____

Notary Public Signature
Print Name _____

Glossary

ANSI – American National Standards Institute. An independent administrator and coordinator of voluntary industry standards.

Clearance – A specified minimum distance between two objects to assure adequate space for safety, security, or access. Or, 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 non-metallic.

Connected Load – The combined electrical requirements nominal rated capacity (i.e., the sum of the capacities and/or ratings) of all motors or other electricity-consuming devices installed on the member’s premises which, at the will of the member, may be operated with electricity supplied by BEC.

Corrosion Inhibitor – 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.

Demand Interval – The specified interval of time on which a demand measurement is based; BEC demand interval is normally 15 minutes.

Development Agreement – The service agreement executed between developer and BEC that supersedes

some of the procedures for electric service delivery and dictates certain construction services required of both the owner and BEC before BEC can provide such construction services to member.

Direct-Connect Meter – A meter which carries full load current and connects across full line voltage. Also called a self-contained meter.

Distribution Main – BEC distribution lines located along streets, alleys, highways, or on private property when used or intended for use for common distribution to members.

Drip Loop – A downward loop in the member’s conductors near where the member’s conductors attach to BEC’s overhead conductors, to prevent water from entering the service mast at the weatherhead.

Electric Delivery Service – Electric power and energy transmitted, distributed and provided or made available by BEC at the point-of-delivery; service by BEC consists of supplying approximately the agreed voltage and frequency at the point-of-delivery.

Energy – The measure of how much electric power is provided over time for doing work. The electrical unit is the watt-hour or kilowatt-hour.

EMT – Electric Metallic Tubing

ERCOT – Electric Reliability Council of Texas; operates the electric grid and manages the deregulated market for approximately 75 percent of Texas.

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.

Good Utility Practice – The term will have the meaning ascribed thereto in the applicable city or BEC ordinances, extension policies and service guidelines.

Grounding – Grounding of member equipment must be in accordance with the latest issue of NEC (Article 250 Grounding); code enforcement agencies may require ground connection to be visible when inspection is made.

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. Identified with orange tape. Also referred to as a delta leg or high-leg service conductor.

Inspection Authority – Generally the BEC field crew, but may be an agency of a local city entity.

Line Conductor – A service conductor installed by the electric utility to the meter.

Load Conductor – A service conductor to the member's load after the meter.

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 or mobile home. New electric service to a manufactured home has the same requirements as installing new service to a permanent single-family residence. Overhead service to a mobile home is provided by a meter pole. Underground service to a mobile home is provided by a meter pedestal.

Maximum Available Fault Current – The amount of current that will flow due to a direct short circuit from one conductor to ground or from one conductor to another.

Member – Any individual, partnership, association, firm, joint venture, public or private corporation or governmental agency being served or using electricity at any specified location. For purposes of this booklet,

the term “member” is broadened to include a present member, a prospective member, or an member for BEC electric service.

Member's Installation – All wires, fuses, switches, appliances and apparatus of every kind and nature used in connection with or forming a part of any installation for utilizing electricity for any purpose except a BEC meter or metering equipment ordinarily located on the member's side of point-of-delivery whether such installation is owned outright by the member or used by the member under lease or otherwise.

Meter – A device or devices, together with any required auxiliary equipment, for measuring the amount of electric power and energy delivered.

Meter Enclosure – A cabinet of metal construction, fourteen gauge steel or equivalent, and of specified dimensions used to enclose BEC's meter and metering equipment.

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.

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 member'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.

OSHA – Occupational Safety and Health Administration

Overhead Distribution – Facilities utilized by BEC in the rendering of electric service that is located above grade level, such as on utility poles.

Plumb – To have the sides and front of member installed equipment and conduit perfectly vertical from both the front and side views.

Point of Attachment – The point at which the utility’s service conductors are mechanically attached to the member’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 member’s wires. For overhead services, the point-of-delivery is the splice between the utility’s and the member’s conductors. For underground services, the point-of-delivery is the secondary lugs of the distribution transformer, or the service stub-out or the secondary hand hole if the utility’s existing service is on the member’s property. If the utility’s existing service is not on the member’s property, the point-of-delivery is the member’s property line. The utility determines the point-of-delivery based, in part, on convenient access to existing service.

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 percent.

Primary Voltage – The voltage at which electricity is delivered from substations to distribution transformers. Primary voltage is greater than 600 volts.

PVC Conduit – Commonly referred to as plastic conduit; a gray colored schedule 40 or 80 PVC conduit approved for use in electrical installations.

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.

Rate Classification – The classification into which the member’s load falls for rate purposes as determined by its characteristics, size, and usage.

Readily Accessible – A roof is considered as readily accessible if it can be casually accessed through a doorway, window, stairway or permanently mounted ladder.

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 members. 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 Agreement – Agreement between BEC and member which sets forth certain information, terms, obligations and/or conditions of electric delivery service pursuant to the provisions of the BEC Tariff.

Service Availability Statement – A statement or drawing from BEC designating the acceptable location of the member's service entrance conductors, the proper location of meters and metering equipment, the type of service available or which will be made available to the specific location under consideration and the capacity of the service to be provided.

Service Drop – For overhead service, BEC's service line between the distribution transformer and the point-of-delivery.

Service Enclosure - A connection enclosure used for the purpose of connecting the service lateral to the member's electrical installation.

Service Entrance Equipment – The service equipment which is supplied by the member: conduit, conductors, mast, weather head, meter base, enclosures, disconnects and panels.

Service Equipment – The necessary equipment, usually consisting of (a) circuit breaker(s) or switch(es) and fuse(s) and their accessories, connected to the load end of service conductors to a building or other structure, or an otherwise designated area, and intended to constitute the main control and cutoff of the supply.

Service Lateral – For underground service, the service line between the distribution transformer and the point-of-delivery.

Service Line – Conductors from the distribution transformer to the member's point-of-delivery. See service drop, service lateral.

Service Mast – For overhead service, the conduit rising above the meter to provide mechanical protection to the member's conductors and to support the service drop from BEC.

Service Outlet – The outside terminal portion of the member's wiring installation to which BEC service wires are connected.

Service Wires – That portion of BEC wires or conductors which extend pad-mounted from BEC distribution mains and to which the member's service entrance conductors are connected.

Socket – The mounting device for socket meters. Includes spring-loaded meter jaws, connectors for line and load conductors, and an enclosure.

Standard Type Meter – A commercially available meter which can measure one of the standard types of service.

Suitable Space – The required amount of cleared space after vegetation and other obstructions have been removed in order to access, install, operate, maintain and replace BEC facilities. Contact BEC for details.

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.

Type of Service – The characteristics of electric service described in terms of voltages, phase, number of wires and frequency.

UL – Underwriters Laboratories. An independent product-testing and certification organization.

Underground Distribution – Facilities utilized by BEC in the rendering of service that are located at or below grade level, such as pad-mounted or sub-surface equipment supplied by underground lines.

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