Dear Ameren Electric Service Manual User:


A list of changes as the follow:
Changes made to Section 200
1. Page 200-4, 200.02.B.2c), removed with 80% rating

Changes made to Section 700
1. Page 700-2, 700.02.b.10, revised to customer shall Install and secure at each end a polyester pulling tape of 2500 lb. capacity for pulling in service conductor.
2. Page 700-10, note 1, 700-12, note 1, and 700-15, note 1: revised to customer installed conduit...
   Minimum burial depth in trench-able earth is 24”. In rock or untrenchable soil, depth may be reduced to 12”. Depths less than 12” are not permitted.

Ameren will not be sending out the latest update of Ameren Service Manual in hard copy. The latest update in electronic format is available on the Ameren website.

http://www.ameren.com/servicemanual

At this site, you will also be able to get the latest catalog number information for the Ameren approved devices list as well as register your company to receive immediate notice of any updates.

If you have any questions, please email them to ElectricServiceManual@ameren.com or fax to Service Manual 314-206-0233.
You can access this manual on the

www.ameren.com/servicemanual

Note:  Updates to this manual will be made on a regular basis and posted at the website mentioned above. It will be the responsibility of the holder of this manual to update the manual from information at the website.
Disclaimer

The information in this manual provides guidelines necessary to expedite the connection of electric service. Where details are shown, they are provided to assure the safety of individuals in the immediate vicinity of the electric service entrance. It is the responsibility of the customer, his engineers, and his contractors to assure that the installation meets all applicable codes. Ameren does not assume this responsibility.
Foreword: Ameren is committed to providing a quality reference guide that facilitates the planning and installation of electrical equipment in a safe and professional manner. The Electric Service Manual incorporates Company Metering Requirements, Standards, and language in Company filed Schedule of Rates for Electric Services. This manual serves as a supplement not a replacement for the National Electrical Code, National Electrical Safety Code and any local authority guidelines. Qualified users of this manual should contact Ameren representatives for clarification of requirements and specifications. All electrical service wiring and equipment where Ameren owned conductors will be terminated, or that will contain Ameren owned metering equipment, shall be listed and used for the intended purpose as defined in the NEC, and shall be approved by Ameren.

Ameren Contact Centers

- Ameren Missouri: 866–992–6619

Call Before You Dig!

- Nationwide: 811
- Illinois: 800–755–5000
- JULIE (Joint Utility Locating Information for Excavators)
- Missouri: 800–DIG–RITE (344–7483)

Customer Owned Underground Facilities

Underground facilities on a customer’s premises that are owned by the customer, are not located by JULIE or DIG–RITE. These facilities may include but are not limited to septic systems, irrigation systems, underground wiring, and drainage systems. The customer is responsible for locating these facilities. Ameren will not be responsible for damage to facilities that are not properly located.
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Section 100
General Information

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Customer shall permit, at all reasonable hours, authorized agents of the Company, free and safe access to customer premises for the purpose of installing, inspecting, reading, removing, repairing, testing Company metering equipment, or any other purpose deemed necessary by the Company. Customer must provide suitable working space on customer property, utility easement, and/or Public right of way, which is free of obstructions and is not used for storage.

Permanent ladders or stairways shall be provided by the customer, at no cost to Ameren, when Ameren’s equipment is located on platforms, balconies, mezzanine floors, roofs, or other hard to reach areas as specified by Ameren. Proper access will ensure safety for Ameren’s employees and safe, reliable service for the customer.

101. APPLICATION FOR SERVICE

Any person, developer, firm, organization, association, corporation or entity whose premises is located within the territory served by Company can request service by making application through the Company’s Customer Contact Centers listed in the Foreword of this manual or through www.ameren.com via the internet.

102. AVAILABILITY OF SERVICE

Electric service is available to any Customer located in Company’s Service Area. Customer will agree to abide by Company’s Terms and Conditions, Standards and Qualifications for Electric Service and any other requirements of the Schedule of Rates for Electric Services. The standard electric service furnished by Company is 60 Hertz alternating current.

103. COMPANY OBLIGATIONS

Company shall furnish service within a reasonable length of time dependent upon the availability of labor and material and after all necessary permits and approvals are obtained from the customer and other governmental and regulatory authorities having jurisdiction. Fees for service may apply.

104. CUSTOMER OBLIGATIONS

Inform Company as to the size and characteristics of the load that is to be initially and thereafter served, the location of the Premises, the need date, and any special circumstances or conditions affecting the supply of electric service by Company. Customer is responsible for securing information from Company regarding available facilities at a particular location. Equipment is to be installed in a condition acceptable to and approved by the governmental inspection authority having jurisdiction in the territory in which the Customer’s Premises is located or, where no authority exists, in accordance with Company’s standards and the requirements of the latest edition of the National Electrical Code. Be responsible for any damage, alteration or interference with company metering or other electrical equipment on Premises. Refer to Standards and Qualifications for Electric Service for additional information.

105. DELIVERY POINT OF SERVICE

“Point of Delivery” means the point at which the entity providing distribution facilities connects its lines or equipment to the lines or facilities owned or rented by the Customer, without regard to the location or ownership of transformers, substations or meters, unless otherwise provided for by written contract or tariffs.

106. DISCONNECTION AND RECONNECTION OF SERVICE

The Company has the right to discontinue service to any Customer and remove its property from Customer’s Premises, after due notice. If Customer wiring and equipment is found to be unsafe or unsuitable to receiving electric service and a harmful condition exists, Company reserves the right to terminate service immediately. A Customer’s service that has been disconnected shall be reconnected after customer has furnished satisfactory evidence of compliance with the Company’s Terms and Conditions and paid all applicable fees and charges. For additional information, go to:

Ameren Illinois: Standards and Qualifications for Electric Service
Ameren Missouri: Disconnection and Reconnection of Service
107. **INSPECTIONS AND PERMITS**

The Customer shall secure and pay for all permits required by constituted authorities, for the installation and operation of the electrical wiring and other electrical equipment on the Premises. Company must receive notice of approval from said authorities prior to connection. In service areas void of inspection authority, Customer service entrance must conform to Company metering standards and current National Electrical Code. Company will not inspect nor be held liable for the condition or safe operation of Customer wiring beyond service disconnecting means. Company retains the right to refuse or terminate service. A wiring approval is required on all private and public property unless the authority having jurisdiction has in writing waved this requirement, or in areas there is no inspection authority.

108. **LIMITATION OF LIABILITY**

The Company will use reasonable diligence in furnishing uninterrupted and regular Electric Service, but will in no case be liable for interruptions, deficiencies or imperfections of service, except to the extent of a pro rata reduction of the monthly charges. Refer to Customer Terms and Conditions for additional information.

109. **METER TAMPERING**

The Company shall have the right to discontinue electric service to any Customer and remove its property from Customer premises, if there is evidence found of tampering with any meter or service wiring leading thereto, and where such tampering is for the purpose of reducing the registration of the Customer’s electric consumption. See Customer Terms and Conditions pertaining to your service provider for additional information.

110. **NUMBER OF SERVICES**

The Company will normally provide service to Customer at only one Point of Delivery on each premises. The point on the Company’s system where the Service Extension will terminate will be as designated by the Company. The Company may agree to provide service through multiple delivery points as described in the Excess Facilities section of the Standards and Qualifications For Electric Service.

111. **SERVICE RELOCATION**

Customers who request Company to relocate, convert or in some manner modify these facilities will reimburse the Company if the Company agrees to make the changes. Refer to Standards and Qualifications For Electric Service.

112. **RESIDENTIAL SERVICE UPGRADE OR CHANGE (AMEREN MISSOURI – ST. LOUIS CITY & COUNTY) DISCONNECT/RECONNECT CUSTOMER’S SERVICE TO PERFORM WIRING OR REPLACE CUSTOMER-OWNED ELECTRICAL EQUIPMENT**

For services to be disconnected to replace/repair customer wiring or equipment, the following process applies:

**In St. Louis City and St. Louis County:**
Contractors may disconnect and reconnect customer’s service ONLY when ALL of the following conditions apply:

- The electrical contractor is licensed in the county or municipality where the work is to be completed
- The service is a single residential Ameren Missouri customer
- The meter is a typical residential type electric meter (120/240V, single phase, self contained)
- The service size will remain the same after the work is completed
- The same meter will be removed and reinstalled during the same day
- The billing account is active at this service location
If **ALL** of the above conditions apply, the contractor must complete the following requirements before proceeding with the work:

- Call Ameren Missouri Construction Hotline at 866–992–6619 (M–F, 7AM to 5:30PM) to obtain approval; notification to be made within 24 hours of performing the intended work
- Provide inspection permit number to Ameren Missouri

If **ALL** of the above conditions **DO NOT APPLY**, call 866–992–6619 to schedule Ameren Missouri personnel to perform the work.

**Outside St. Louis City and St. Louis County:**
If the customer’s service is located outside of St. Louis City or St. Louis County, the contractor must **NOT** disconnect or reconnect the service. Call one of the following numbers to schedule Ameren personnel to perform the work:

- Ameren Illinois 800–755–5000
- Ameren Missouri 866–992–6619
Ampacity: The current in amperes a conductor can carry continuously under the conditions of use without exceeding its temperature rating.

Applicant: Applicant means a Person who applies for Residential or Non-Residential service and/or who requests an Extension.

Approved: Acceptable to the authority having jurisdiction. See: Local Inspection Authority

Bonding Conductor: The conductor that provides the required electrical conductivity between metal parts that are required to be electrically connected.

Bypass, Clamp Jaw Lever Type: A mechanical lever bypass is an integral component designed into the meter socket block assembly of a ring-less type meter socket. The lever action has two primary functions:

1. When engaged downward, the mechanism provides jaw clamping forces to help secure the meter and make continuity to the meter spades while in normal operation.

2. When engaged upward into "bypass" mode, the mechanism releases the clamping pressure on the meter spades and diverts the current flow from the meter to the internal bypass. This allows for the exchange, inspection or repair of a meter without service interruption to the customer. Note: Meter cover cannot be reinstalled or sealed with lever handle in upward "bypass" position.

Commission: The agency responsible for regulating the regulated portions of investor owned public utilities.

- In Illinois, the Illinois Commerce Commission (ICC) or any duly constituted successor
- In Missouri, the Missouri Public Service Commission (PSC) or any duly constituted successor

Company: Company means the legal entity noted in the header for which this Schedule is applicable.

Customer or Retail Customer: Customer means a Person legally receiving service at a Premises or whose facilities are connected for utilizing service at the Premises.

Delivery Voltage: The voltage of Company’s lines at the Point of Delivery.

Demand or Billing Demand: The highest average load in kilowatts (kW) during any fifteen minute interval during the time between regular meter readings. There shall be four fixed 15 minute intervals per hour with the first interval beginning at the top of the hour as registered on the meter.

Distribution System: Distribution System, for purposes of determining Line and/or Service Extension applicability, means those poles, wire, and other equipment used to distribute electricity either overhead or underground at 20kV or less for Illinois and at 69kV or less for Missouri.

Ground: A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth.

Illinois Commerce Commission (ICC): See Commission

Local Inspection Authority and Authority Having Jurisdiction (AHJ): As it pertains to this document, the agency responsible for the inspection of a customer’s electrical installations. This authority can be an agency of an incorporated City or Town or of the County, State, or Federal Government. The Ameren Companies are not inspection authorities.

Meter Voltage: Meter Voltage means the voltage of the Company’s or Customer’s electric system at the point at which the metering is connected for the purpose of measuring power and energy for utility billing purposes.

Meter Socket, Multi-Meter: The mounting device consisting of jaws, connectors, and enclosure for multiple socket type meters where no CT’s or PT’s are used.
**Section 150**

**Glossary**

**Meter Socket, Self Contained:** The mounting device consisting of jaws, connectors, and enclosure for socket type meters where no CT’s or PT’s are used.

**Meter Socket, Transformer Rated:** The mounting device consisting of jaws, connectors, and enclosure for socket type meters where CT’s and/or PT’s are used.

**Metering Instrument Transformer, Current (CT):** A device that precisely steps down the current from its primary current to a workable current that can be measured with conventional meters.

**Metering Instrument Transformer, Potential (PT):** A device that precisely steps down the voltage from its primary voltage to a workable voltage that can be measured with conventional meters.

**Missouri Public Service Commission (PSC):** See Commission

**Multi-Tenant:** (Illinois applications) A multiple occupancy building with three or more Customers who each qualify for the Residential rate or two or more Customers who each qualify for a Non-Residential rate or buildings with one commercial and one residential service.

**Multiple-Occupancy Dwellings:** (Missouri applications) structures for permanent occupancy of 2 or more single-family residences.

**NEC:** National Electrical Code. Generally speaking, this is the code document that governs building and premise wiring.

**NESC:** National Electrical Safety Code. Generally speaking, this is the code document that governs electric and communication utilities.

**Premises:** A contiguous tract of land separated by nothing more than a highway, street, alley or railroad right-of-way, where all buildings and/or electric consuming devices located thereon are owned or occupied by a single Customer or applicant for electric service, or where all electricity delivered thereto is utilized to supply one or more buildings and/or electrical loads which the Company considers as components of a unified operation.

**Sequence, Cold Sequence:** An installation where a breaker, fused disconnect, or pull out type fused switch is located on the line side of the meter.

**Sequence, Hot Sequence:** An installation where a breaker, fused disconnect, or pull out type fused switch is located on the load side of the meter.

**Service:** As used in this document, service refers to the conductors connecting a point of delivery to the utilization voltage of the electric distribution system serving the customer.

This definition should not be confused with the Illinois tariffs, which define Service Extension, for the purpose of calculating Extension charges, as the portion of the extension, dedicated to the Customer, on Customer’s Premises, regardless of voltage.

**Service Equipment:** The necessary equipment, usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors to a building or other structure, or an otherwise defined area, and intended to constitute the main control and means of cutoff of the supply.

**Underwriters Laboratories Inc (UL) and Intertek Testing Services (ET):** Ameren approved equipment testing laboratories for the equipment used and installed in accordance with the listing and labeling instructions.
200.01 LOCATION

A. General

1. The customer shall provide a suitable place for the installation of metering equipment.
   a) The equipment shall be installed on the outside wall of the customer’s building or approved metering structure and be so located that adequate space and unobstructed access is provided to the Company’s representatives for reading, testing, maintaining and exchanging of such equipment.
   b) In flood areas, the bottom of the meter device shall normally be raised above the highest water line on record. Non-residential meters if necessary to raise above 5'6" to grade, shall have a permanent platform and ladder installed and maintained at the meter by customer for access purposes, see Section 100.
   c) The customer shall consult the Company regarding the proper location of the equipment.

2. Metering equipment shall not be located on Company owned poles or on buildings adjacent to driveways, alleys, streets or other similar exposed places where it can be damaged by moving vehicles unless the equipment is protected by a substantial guard rail or posts. The customer shall consult the Company representative regarding providing adequate protected barrier.

Nor shall any portion of the metering equipment be located below, above, or within:

   a) 3 feet horizontally of a gas meter and regulator installation, and
   b) 6 feet to any electric motor, generator, belt, or other moving machinery, or
   c) Other hazards which would endanger the safety of those reading or working on metering devices.

3. Clear working spaces shall not be used for storage.
   a) A minimum of 3 1/2 feet of clear working space shall be provided in front of all meter and instrument transformer enclosures.
   b) There shall be a minimum working clearance of 6 inches above, below, and to each side of the metering equipment.

4. Metering equipment shall not be mounted on portable trailers, buildings, mobile home or manufactured (modular) home, recreational trailers, or truck trailers; unless the manufactured (modular) home meets the conditions stated in the latest NEC.

5. Metering equipment must be installed in a workman like manner and firmly attached to the surface on which it is mounted.

6. All locations where metering equipment is installed shall have a minimum standing headroom of 6 feet, 6 inches.

7. On locations where more than one meter is installed on any one premises, the customer shall permanently mark all meter sockets and associated service equipment to identify the area or street address for which each is installed, the location of the tenant and is to match the identification of the premises or panel. Such marking shall be made with paint, metal letters or other permanent methods.

8. Rules Defining Rewire Work and Meter Location on Existing Buildings

8.1 Definitions:

Rewire work is defined as electrical work that involves (1) relocation, (2) replacement or (3) ampacity changes of customer owned service cables, service entrance conductors, meter socket or service equipment. Rewiring work shall include the updating of metering equipment and requires that all meters be installed and located in accordance with the requirements of the latest Ameren Electric Service Manual.

Service entrance conductors are defined as the conductors between the terminals of the service equipment and the tap or splice to the service drop, service lateral or secondary distribution.
Section 200
Metering Requirements

Service equipment is defined as consisting of the circuit breaker(s) or switch(s) and fuse(s) and their accessories located near the point of entrance of the supply conductors to a building and intended to constitute the main control and means of cutoff of the supply.

8.2 Additional Meters
New meters may be added to the existing service subject to the ampacity limitations of the service entrance conductors or service equipment. If existing meters are indoors, the added meters may be located indoors. If the added loads served from the new meters require rewiring, then all (new and existing) meters shall be located in accordance with the meter location policy. New meter usage will not be cumulative with existing meters.

8.3 Additional Service Entrances
   A. On residential buildings of 15 meters or less (on three occupied floors or less), additional service entrance conductors and/or ampacity requires all meters to be relocated outdoors per the meter location policy.
   B. On residential buildings exceeding 15 meters (on three occupied floors or less), if additional service entrances are wired to the building, meters associated with the new services shall be located outdoors if there are 15 or less meters per additional service entrance. Exception: If all meters and services are in one approved location, meters may remain indoors.

8.4 Rewiring Exceptions:
   A. In multi-tenant buildings of six units or less, with indoor meters, where all units are served from common service and each unit has its own means of disconnect, the ampacity or the disconnect may be increased without relocating the meter(s) outdoors subject to the limitation of the service entrance conductor ampacity. Work to increase the service entrance conductor ampacity; however, is rewire work and requires all indoor meters on the service to be relocated outdoors.
   B. The C.T.s for rewired 800A services may be left indoors if the rewiring can reuse the existing C.T. Enclosure as is. Appropriate C.T. Shall be installed. The meter will be located outdoors.

B. Indoor Location
All requests for inside metering locations shall be evaluated by Ameren on a case by case basis.
   1. In exceptional cases where it is physically impractical to make outdoor installations, as in the case of large apartment houses or where there is no suitable outdoor location, meters may be installed indoors, with Company approval.
      a) Meters shall be mounted on a rigid wall or panel which is free from vibration.
      b) Meters shall be located in a clean, dry and safe place as near as practical to the point where the service entrance enters the building.
      c) Meters shall not be located in sheds, attics, bedrooms, living rooms, bathrooms, restaurant kitchens, stairways, ventilating shafts, closets, coal bins, coal furnace rooms, or in any location where the visits of Company employees will inconvenience either the customer or the employee.
      d) Meters shall not be located in basements or in other locations which are not accessible by permanent stairs. A ladder cannot be accepted as a substitute for stairs.
      e) Meters and service equipment installed indoors for a multiple-occupancy building, shall be grouped in an accessible public space where the Building Management and Company representatives have access at all times.
      f) In cases where there are several floors and several customers on each floor, thus making it impractical to locate the meters in one location, the meters may, with Company approval, be grouped in an accessible public space on designated floors.
2. If a customer makes additions or rearrangements to his building which result in a meter being located or enclosed in a location unacceptable to the Company, the customer shall relocate meter and service entrance at his expense within 30 days of written notification.

3. Indoor Meter Locations (For Missouri only)

**Indoor metering will be allowed only in certain limited situations.** These situations are:

a) In designated underground areas, such as Downtown St. Louis and Clayton, if supplied from indoor transformer rooms or network manholes or vaults.

b) General Service Rate (commercial) current transformer cabinets for underground services and C.T. Enclosures for overhead services greater than 800 amps may be located indoors. C.T. Enclosures for overhead services 800 A or less and all Residential services shall be located outdoors. The associated meter socket for all C.T. Meters shall usually be mounted outdoors unless approved indoors by the District Supervising Engineer.

c) Multiple Occupancy Buildings:
   1. Residential Service Rate buildings, three (3) occupancy floors or less with sixteen (16) or more meters per service. Fifteen (15) or less meters per service must be located outdoors.
   2. General Service Rate buildings, three (3) occupancy floors or less with more than six (6) meters per service. Six (6) meters or less per service must be located outdoors.
   3. Buildings with four (4) or more floors constructed for multiple occupancy.

d) Primary meters

e) Outdoor locations that may subject the meter to physical harm.

If Customer/Contractor plans to install meters indoors as permitted in the above situations, Company must be finished with information detailing location, access, unmetered wiring methods and security provisions to meet the requirements of the Service Manual. This information must be submitted to the Customer Service Metropolitan or Regional District Office and must be approved by the appropriate District Supervising Engineer before wiring work is started.

A. On residential buildings of 15 meters or less (on three occupied floors or less), additional service entrance conductors and/or ampacity requires all meters to be relocated outdoors per the meter location policy.

B. The C.T.s for rewired 800A services may be left indoors if the rewiring can reuse the existing C.T. Enclosure as is. Appropriate C.T. Shall be installed. The meter will be located outdoors.

200.02 INSTALLATION

A. General

1. The customer shall furnish and install, at his expense, all necessary service entrance facilities.

2. All meter sockets or meter enclosures shall be fastened in place with non-ferrous or galvanized screws.

3. Anchoring to supply adequate support shall be used on brick, tile or other types of masonry buildings.

4. Where necessary on hollow tile walls, non-ferrous or galvanized toggle bolts may be used.

5. Meter boards no less than 3/4” thick shall be installed by the customer on indoor locations where plastered walls and other direct mounting surfaces are of insufficient strength.

6. Where a meter board is installed outdoors, it shall be constructed of at least 1.5” pressure treated lumber.

7. Use of sheet rock style screws will not be accepted as fasteners for service entrance equipment on any installation.

8. All fasteners must be of adequate size to rigidly secure the equipment to the structure.

9. All metered and un-metered conductors shall be separated by barriers or in separate raceways.

10. Line or service entrance cable, conduit or bus duct shall enter the hubs of meter socket and transformer enclosures on all overhead service installations, except where a customer’s main line switch or a junction box is installed on the line or source side of the metering equipment.
Section 200
Metering Requirements

11. All unused openings of service equipment and metering sockets shall be closed with internally secured hub plugs or plates to afford protection nearly the same as the solid wall of the cabinet or enclosure.

12. Where service entrance cable is allowed, aluminum waterproof connectors shall be used.

13. Lock nuts and bushings shall be used where conduits enter the back, bottom or side knockouts of sockets or enclosures.

14. Inhibitor is required on service conductors at meter socket terminators if unlike materials are used.

B. Self Contained Meters Services (Refer to Section 1000 for Additional Information)

1. 1Ph 480V, 3Ph 480V, 3Ph 480/277V 200 Amp and below services
   a) A breaker or fused disconnect located on the line side of the meter (cold sequence metering) is required for 277/480V and 480V services 200 amp.
   b) If local ordinances do not allow a breaker ahead of the meter socket, then a CT/PT enclosure must be used as described in Section 1001.02. For this application 100/5 bar type CT’s will be used. (Such as fire codes don’t allow a breaker ahead of a self contained 480V meter for fire pump services. Thus for fire pump services CT/PT enclosure is required using 100/5 bar type CTs for this situation.)
   c) It shall be the customer’s responsibility to provide the proper interrupting rating device on the line side.
   d) Ameren should be contacted to determine available short circuit current.
   e) Use of separate enclosures for the line side protective device and the meter socket is acceptable. However they must be mounted directly above, or on a horizontal plane, within 4 feet of one another.
   f) Continuous conduit is required with no LB’s or any other connector that could allow access to un-metered wiring between the protective device enclosure and meter socket.
   g) Sealing provisions for the line side protective device must be provided to prevent access to un-metered conductors within this enclosure.
   h) A pad lockable door for access by the customer to operate the protective device should be provided.

2. 1Ph 120/240, 3Ph 240V, 3Ph 4W 120/208, 201–400 amp Services.
   a) The use of K-base meters will not be allowed on new service installations.
   b) Sockets for Class 320 type meters are required in this application. Class 320 meters are designed to accurately meter a continuous load of 320 amps.
   c) The customer installed load side protection must be chosen to limit total current draw to 320 amps. This is normally accomplished by installing one of the following:
      • One 400 amp breaker
      • Two 200 amp breakers
      • One 400 amp fuse.
   d) All sockets utilizing Class 320 meters will:
      • Have a clamp jaw lever bypass

C. Instrument Transformer (CT, PT) Rated Meter Installations

For voltage and current combinations not covered in this section, refer to Section 1001.

200.03 DRAWINGS

1. Figure 200–1A Meter Mounting Heights
2. Figure 200–1B Meter Equipment Protective Barrier
3. Figure 200–1C Location for Point of Delivery on Buildings
Section 200
Metering Requirements

METER MOUNTING HEIGHTS

Figure 200-1A

1. If meter is subject to mechanical damage, vehicular traffic, or presents hazard to the public, the customer or contractor shall install protective barrier.

2. Ground slope at wall shall not exceed 4 inches in 12 inches in any direction.

3. Meters shall be mounted outdoors unless special permission has been granted for indoor mounting by Ameren.

4. Residential service rate C.T. cabinets shall be located outdoors.

5. Residential service rate C.T. cabinets shall be located outdoors.

6. This dimension shall be 6'6" if meter socket is located over abutting walkways 36" or less in width and driveways (OH/UG).
METER EQUIPMENT PROTECTIVE BARRIER
(METER ENCLOSURES SHOWN—
OTHER DEVICES SHALL BE SIMILAR)
CUSTOMER INSTALLED
Figure 200–1B

ALTERNATIVE BARRIERS INCLUDE:
A. WALL SUPPORTED BRACKETS FOR PUBLIC SAFETY.
B. CONCRETE CURBS FOR VEHICULAR BARRIER.
AN APPROVED LOCATION FOR THE POINT OF DELIVERY TO A CUSTOMER’S PREMISES WILL NORMALLY BE BETWEEN THE MIDPOINTS OF THE BUILDING FROM THE CORNER NEAREST THE COMPANY’S DISTRIBUTION SYSTEM.

NOTES:

1. These guidelines apply to the Ameren Illinois only. In Missouri, contact your local Ameren representative for the guidelines that apply in the area where service is being requested.

2. A and C are the midpoints of the building. The service may be located anywhere between A and B or B and C observing clearance requirements from windows, chimneys, driveways, trees, etc. outlined in Figure 600–6A and Section 200.01 Location.

3. Distribution point from Ameren System may be overhead or underground. Refer questions to an Ameren representative if recommended location is not feasible.

4. Applicable charges are governed by State tariffs. Contact your local Ameren representative for an explanation of charges that may apply.
300.01 CUSTOMER’S SERVICE EQUIPMENT

1. The location of the main disconnect shall be located next to the meter installation or at the nearest point of entry. If the nearest point of entry is not readily accessible, the service equipment is to be located outdoors and shall be of NEMA type 3R, weatherproof construction.
2. Service equipment shall consist of either externally–operable fused switches, dead–front panels with pullout fused disconnects, or manually–operable automatic circuit breakers.
3. Each service disconnecting means shall be permanently marked to identify it and the load served.
4. Equipment must be certified by an approved independent testing laboratory using the appropriate UL standard for the certification. At present Ameren recognizes UL and ETL as approved testing laboratories for equipment installed on the Ameren system.
5. Disconnects designed for vertical mounting will indicate “ON” when in the “UP” position and “OFF” when in the "down" position.
6. A gang operated disconnecting means shall be located on the supply side of ALL fused service entrance equipment installations
7. The grounded circuit conductor shall not normally contain disconnecting devices. Exceptions are required for separately derived systems. All exceptions must be approved by Ameren.
8. More than one disconnect or circuit breaker for the service equipment:
   A. The Company recommends that a suitable bussed multiple switch or breaker, service–entrance panel be installed.
   B. The service equipment shall contain no more than six operative switch positions.
   C. No more than two Service Entrance masts per meter point location, without prior company approval.
9. Fire pumps and emergency lighting will be allowed to be connected per latest edition of the NEC, and the connections will be reviewed by the Company.

300.02 UNAUTHORIZED USE OF DEDICATED SPACE FOR AMEREN EQUIPMENT

Meter sockets and metering equipment enclosures are not to be used as junction boxes or raceways for customer distribution circuit wiring. Only service entrance wires are permitted in those enclosures. Unauthorized wiring shall be removed by the customer at no cost to AMEREN.
Company standard service is 60 Hertz alternating current.

400.01 THREE PHASE AVAILABILITY

Customers should contact the Company regarding the need for three phase service prior to the purchase of equipment or construction of facilities. In outlying and residential areas where three-phase energy is not readily available, 7.5 horsepower and larger single-phase motors may be permitted, but only with the prior approval of Company.

Three-phase service is not normally available for residential customers.

400.02 STANDARD SERVICE VOLTAGES

1. Single Phase
   - 120/240 volt, 3 wire, grounded neutral, limited to 800 amperes maximum
   - 240/480 volt, 3 wire, grounded neutral, limited to 400 amperes maximum and to specialized applications such as area lighting and irrigation systems
   - 120/208Y volt, 3 wire, grounded neutral, limited to 200 amperes maximum. This voltage is derived from a 3Ø 208Y/120 volt, 4 wire system, typically used to serve large multi-tenant residential locations.

2. Three Phase
   - 208Y/120 volt, 4 wire, grounded wye, conductor ampacity limited to 3000 amperes due to transformation limits (1000 kVA)
   - 480Y/277 volt, 4 wire, grounded wye, conductor ampacity limited to 3000 amperes due to transformation limits (2500 kVA)

400.03 NON–STANDARD SERVICE VOLTAGES

Company is presently supplying service at other voltages and configurations throughout service territory in Illinois and Missouri. Existence of service in a voltage type listed is not a guarantee of future availability for new connections or expansion of existing services. Customers are strongly encouraged to discuss changes in their equipment with the Company prior to the purchase of said equipment, or changes in premise wiring. Non–Standard services by their nature do not provide the well balanced voltages required by modern electrical devices. Therefore, the Company discourages their use.

In areas of limited three phase primary circuitry, or for other engineering reasons, the following delta voltages may only be available at the Company’s discretion.

- 240 volt, 3 wire, grounded corner delta, limited to 600 amperes maximum
- 480 volt, 3 wire, grounded corner delta, limited to 600 amperes maximum
- 240 volt, 3 wire, un-grounded delta, limited to 600 amperes maximum (see requirement in 500.01)
- 480 volt, 3 wire, un-grounded delta, limited to 600 amperes maximum (see requirements in 500.01)
- 240/120 volt, 4 wire delta, grounded center tap, limited to 600 amperes maximum. See discussion regarding this on the following page.

240/120 VOLT, 4–WIRE DELTA, GROUNDED CENTER TAP, NON–STANDARD

It is the Company’s intent to limit the availability of this service voltage for the following reasons:

- Unequal loading of transformer coils which naturally occurs with this connection and requires the de-rating of the transformers.
- The Company’s cost associated with owning and stocking 3Ø padmount transformers at this voltage.
- Power quality issues that may occur depending on the combination of the customer’s equipment, customer loads, and distribution system loading.
- Imbalance that can occur on the Company’s distribution system as a result of this connection
For the reasons stated above, the following limitations are being placed on this non–standard service voltage which will be offered at the Company’s discretion.

- Limited to 600 amperes
- In areas where 3Ø aerial primary is available, full delta and open delta service from overhead transformers may be provided. However, the customer may be required to take a wye service.
- In areas where 2Ø primary is available, open delta service from overhead transformers may be provided.
- Open –delta service may be provided from 1Ø pad mounted transformers. When this may be the case and 3Ø primary becomes available in the future, the customer will be required to upgrade to a wye secondary voltage if they require additional capacity. For this reason, the customer and their electrician should choose and configure their equipment so that future impact to the customer is minimized.
- No additional 3Ø pad mount transformers at this voltage will be installed. If a transformer at an existing installation fails, service at this voltage will be maintained by the Company. The customer may be required to upgrade to a wye secondary voltage if they require additional capacity. For this reason, the customer and their electrician should choose and configure their equipment so that future impact to the customer is minimized.

The Company reserves the right to provide 3Ø services from an open delta installation to serve small 3Ø loads. One example would be a small lift station in a residential area.

Again, all non–standard voltages were not, and are not available in all areas served by the Ameren Companies. Check with local contacts to verify the service voltage and configurations available.

400.04 NON–STANDARD SERVICE

Request for amperages and/or configurations not specified above will be evaluated on a case by case basis. Company at its sole discretion may elect to provide non–standard service provided customer pays any and all excess cost relating to providing the non–standard service.

Refer to Section 500 regarding un–grounded services.

400.05 PRIMARY DISTRIBUTION SERVICE

Primary service is offered at voltages designated by the Company. Primary voltages are defined in the rate manual. Such service is normally supplied by extending primary distribution lines to a substation or customer switchgear located on the customer’s premises. The substation transformers may be Company or Customer owned. For engineering, economic, or other reasons, the Company may, in some cases, elect to supply primary service from a substation located on Customer Property. The Customer is requested to discuss power requirements with Company before customer engineering begins, before customer engineering begins purchasing equipment, or before the start of Customer wiring.

The customer shall contact the appropriate Company Division Operating Center a minimum of six months prior to the desired in–service date. A minimum of six months is required to allow for Company/Customer engineering, equipment purchase, and construction.

For Ameren Missouri, the Company will provide primary metered service specifications, which provide connection, protection, metering, and location requirements, see section 1001.06.

For Ameren Illinois, the Company will provide primary metered service specifications, which provide connection, protection, metering structure, metering and location requirements.
500.01 GENERAL

All standard service systems that operate below 1000 volts contain a grounded neutral. A non-standard service may have a grounded phase conductor used as a circuit conductor in the system.

The grounded neutral or grounded phase conductor is grounded at the supply transformer and will be run from the transformer bank to the meter socket and to each service disconnection means in accordance with the latest edition of the NEC.

Where an underground service will be owned by Ameren, the service riser conduit is for Ameren use only. The grounding electrode conductor shall not be placed in this conduit.

Customers requiring an ungrounded service for operations as permitted by the NEC, shall submit an exception request detailing the special circumstances necessitating the request. In addition, the customer shall state in the exception request that they are aware of and accept the increased risks to personal safety associated with an ungrounded service. Customers that the Company agrees to provide with an ungrounded service, MUST INSTALL GROUND DETECTION SENSING EQUIPMENT. When supplying an ungrounded service results in an additional cost to the Company, the additional cost may be passed on to the customer.

500.02 DRAWINGS

1. Figure 500–1A: Grounding Methods, 1Ø and 3Ø Self Contained Metering less than 480 volts
2. Figure 500–2A: Grounding Methods, 1Ø and 3Ø Cold Sequence Metering where 480 Volts is present in the meter socket, Option 1
3. Figure 500–3A: Grounding Methods 1Ø and 3Ø Cold Sequence Metering where 480 Volts is present in the meter socket, Option 2
4. Figure 500–4A: Grounding Methods, 1Ø and 3Ø Cold Sequence Metering where 480 Volts is present in the meter socket, Option 3
5. Figure 500–5A: Grounding Methods, 1Ø and 3Ø, Instrument Transformer Metering

500.03 INTER–SYSTEM GROUNDING/BONDING (FIGURE 500–1B)

Grounding of communication systems should not be made at the meter socket or the meter socket cover. If it is desired to ground the communication system to the premise grounding system the ground should be made with a NEC/UL approved grounding connector that bonds the communication system ground to the premise ground. This connector should be solidly affixed to the premise wall or other substantial premise structure.
INTER-SYSTEM GROUNDING/BONDING

Figure 500–1B
These notes relate to the drawings in the Grounding Section of this manual. All notes do not apply to all drawings. Applicable notes are noted in each drawing.

1. The grounding method drawings are schematic in nature. Actual wiring details will vary between equipment and manufacturer.

2. The details shown in these drawings are not a substitute for an understanding of the grounding and bonding requirements of the National Electrical Code (NEC) and the requirements of the Authority Having Jurisdiction in the area the work is taking place.

3.A. Figure 500−1A
   For meters mounted outdoors, Ameren requires an external ground rod at the meter socket location that is connected to the meter socket. It is essential that Ameren can verify that there is a grounded meter socket for safety of Ameren personnel; installation of an external ground rod will provide this assurance. Installation and material used for this Ameren required external ground rod must meet all NEC requirements for size, material and installation requirements. If an external ground rod connected to the meter socket is provided by the customer to meet NEC grounding requirements this ground rod will also meet Ameren’s requirement for an external ground rod.

Where the customer has a main service disconnect mounted within 10’ and in sight of the Ameren meter socket, connection of an external ground rod to the disconnect is acceptable in lieu of landing in the meter socket.

In cases where Ameren has approved meter mounted indoor, an external ground requirement rod is not required. Grounding should be provided to meet requirements of the NEC or the Authority Having Jurisdiction.

3.B. Figure 500−2A, 3A, 4A, and 5A
   The grounding electrode system is defined in the NEC. Refer to the NEC or the Authority Having Jurisdiction for details regarding the make-up of the grounding electrode system.

4. This method allowed by the NEC where certain conditions are met. (Reference 2008 NEC 250.142(B), Exception 2). Also see Notes 12 and 13.

5. Some local inspectors require neutral to be isolated from the grounding electrode conductor in meter socket. In this situation refer to drawing Figure 500−3A. Installer must purchase a meter socket neutral isolation kit or similar insulated connector if it is not included as part of the socket.

6. The cold sequence main/meter cabinet shown is acceptable in all Ameren areas. Where there is a local Authority Having Jurisdiction, verify that it is acceptable to them before purchasing.

7. The bond between the customer’s grounded conductor and the equipment grounding conductor can only take place at this location. This avoids placing the customer’s grounding electrode conductor and customer’s grounded conductor in parallel.

8. Some installations have a neutral lead connected between the service neutral in the meter socket
to the neutral position on the meter socket. Connection of this wire must be maintained regardless of whether the neutral is isolated as described in Note 5 or not.

9. The neutral terminal bar must be isolated from ground in this application.

10. The grounding electrode system may be connected to the meter socket (or CT/PT enclosure) neutral, or the service equipment neutral, but not both when it would create a parallel path for neutral current.

11. The equipment cabinet must be bonded to neutral and ground in this application.

12. This method will not be approved by Ameren Illinois unless approved by a local Authority Having Jurisdiction. For the Ameren Illinois approved method, see Figure 500–3A.

13. This method is required in Illinois where a separate main enclosure and meter socket are used unless another method is approved by a local Authority Having Jurisdiction.

14. Bonding of metallic conduit systems is not shown in any of the drawings.
GROUNDING METHODS
1Ø AND 3Ø SELF CONTAINED METERING LESS THAN 480 VOLTS
Figure 500–1A

See notes 1, 2, 14, and notes shown above as part of the drawing (See Pages 500–3 and 500–4).
GROUNDING METHODS
1Ø AND 3Ø COLD SEQUENCE METERING WHERE 480 VOLTS IS PRESENT IN THE METER SOCKET
OPTION 1
Figure 500-2A

See notes 1, 2, 14, and notes shown above as part of the drawing (See pages 500–3 and 500–4).

This method will not be approved by Ameren Illinois unless approved by a local Authority Having Jurisdiction. For the Ameren Illinois approved method, see Figure 500–3A. (Note 12)
GROUNDING METHODS
1Ø AND 3Ø COLD SEQUENCE METERING WHERE 480 VOLTS IS PRESENT IN THE METER SOCKET
OPTION 2
Figure 500–3A

See notes 1, 2, 13, and 14, and notes shown above as part of the drawing (See pages 500–3 and 500–4).

This method is required in Ameren Illinois where a separate main enclosure and meter socket are used unless another method is approved by local Authority Having Jurisdiction. (Note 13)
GROUNDING METHODS
1Ø AND 3Ø COLD SEQUENCE METERING WHERE 480 VOLTS IS PRESENT IN THE METER SOCKET
OPTION 3: MAIN / METER COMBINATION
Figure 500–4A

See notes 1, 2, 6, 14, and notes shown above as part of the drawing (See pages 500–3 and 500–4).
GROUNDING METHODS
1Ø AND 3Ø INSTRUMENT TRANSFORMER METERING
Figure 500–5A

CT, PT/CT ENCLOSURE

SERVICE EQUIPMENT

NEUTRAL

GROUNDING ELECTRODE

UTILITY NEUTRAL

NOTE 10

(OVER
(PAGE 500–4)

OR

GROUNDING ELECTRODE

SYSTEM

NOTE 3.B. (PAGE 500–3)

NOTE

NEUTRALS

N0TE 11 (PAGE 500–4)

See notes 1, 2, 14, and notes shown above as part of the drawing (See pages 500–3 and 500–4).
Section 600
Overhead Services

600.01 SERVICE AVAILABILITY
It is the customer’s responsibility to contact the Company to obtain service availability information, approved point of delivery and meter location, and to sign construction agreements when required. Some service characteristics, such as certain voltages or number of phases may not be available at or near the customer's location. Customers or their representatives should contact the Company to confirm service availability prior to purchasing and installing equipment. Requests for assistance should be made early in the customer’s planning process. Sufficient time must be allowed for the Company to plan and make changes that may be necessary to its distribution system.

600.02 SERVICE DROP ATTACHMENT
The Company has the right to designate the "spot" or "point of attachment" of its service drop to the customer's structure. The point of attachment is designated as the location where the Company's facilities attach to the customers facilities. This point of attachment of the overhead service to the customer’s building should be designated such as to reasonably minimize the length of the service drop.

The company may be contacted for approval of the feasibility of service route and attachment location. If, after so designating the attachment point, the length of the service would be excessively long and would create undue stress on the customer's attachment device and/or structure, a service support pole, including necessary guying, additional service cable, and other items will be installed and may be billable.

This section of the Service Manual communicates to customers guidance for acceptable placement of points of attachment. If the customer is not certain about the proper location of an attachment point, the Company should be contacted to obtain specific direction. If a customer ignores the guidance given, making a service drop pole or other additional facilities necessary, the excess facilities of all additional items shall be borne by the customer. If the customer opts for a particular attachment point that requires additional facilities for the Company to reach (instead of one that would be preferable to the Company) as the economic choice for his customer's special needs, the customer shall pay the installed cost of such facilities.

The customer shall provide safe, substantial support for the Company's service wires. The Company will not be responsible for the condition of, or damage to, a customer's building or structure to which the service drop is attached. Cinder block, stucco, veneer, and other similar type walls generally require galvanized bolts with metal backing plates to provide adequate support. Parapet walls, fire walls, and rooftop or fireplace chimneys are not acceptable supports for the point of attachment. Ranch style homes or buildings with flat roofs may require service masts to provide proper clearances. Where through the roof service masts are installed, the customer assumes all responsibility for roof leaks. Service masts must be of adequate strength or be supported by braces or guy wires to safely withstand the strain imposed by the service drop. The Attachment point must have sufficient height to meet clearance requirements.

600.03 METER POLES
Meter service poles shall be supplied and installed by the customer at no cost to the Company for temporary services, portable buildings, mobile homes, trailers, recreational vehicles, and where several buildings are served from a single point. Poles will be required to be of adequate strength and be sufficiently supported. A weatherproof disconnecting means with over current protection shall be provided by the customer where a service drop terminates on a privately owned meter pole structure. GFCI protection shall be provided as required by applicable codes.

600.04 TEMPORARY ELECTRIC SERVICE
When a temporary electric service is supplied for construction jobs, traveling shows, and mobile homes not deemed to be permanent, the Company will provide temporary service provided it has service in the area and has sufficient capacity available. The customer shall pay the cost of installing and removing the temporary line extensions or service connections and any other facilities of a temporary nature.
Section 600
Overhead Services

The customer shall provide a service entrance which meets the requirements of a permanent installation with respect to service drop clearances, metering, safety and adequate structure, guying or bracing as required by the Company.

The customer furnishes and installs conductors from the meter socket on his structure to be connected to source and leaves sufficient length for Company to connect into the Company’s transformer or pedestal in underground installations. Company connects customer’s wires to the source and installs meter. The Company shall provide a suitable meter.

Customer using temporary service is expected to give prompt notice to the Company when such service is to be disconnected. Notice shall include account number, location and meter number to insure proper identification.

Underground (pad mount or pedestal)

1. Customer furnishes and installs his meter structure in close proximity to the Company’s transformer or pedestal.
2. Some local municipalities require customer to obtain a variance for overhead temporary service in an underground subdivision. A municipal inspection may also be required for any underground or overhead temporary installation.

Overhead

1. The customer furnishes and installs the meter pole near the Company’s power pole, but at least 10 feet away. It is recommended that the customer install the meter pole within 75 feet of power source.

600.05 DRAWINGS

1. Figure 600–1A TYPICAL PERMANENT SERVICE DROP
2. Figure 600–2A MAX ATTACHMENT HT FOR STL CONDUIT MAST DE FOR SERVICE DROP
3. Figure 600–3A OVERHEAD SERVICE TO MULTIPLE WEATHERHEADS
4. Figure 600–4A OVERHEAD TEMPORARY SERVICE POLE CLEARANCE AND METER
5. Figure 600–5A CUSTOMER-OWNED SEC METERING UG DISTRIBUTION 100 OR 200A 1PH
6. Figure 600–6A OVERHEAD SERVICE SPECIFICATIONS ATTACHMENT TO BUILDINGS
7. Figure 600–7A SERVICE SPECIFICATIONS – OVERHEAD SERVICES ATTACHED TO BUILDINGS
NOTES:
1. Overhead service drops and the connections at each end of the service drop will be owned, installed, and maintained by Ameren.
2. Customer shall install a service drop attachment of adequate strength for the installation of Ameren service. See Figure 600–2A.
3. The weatherhead, service raceway or conduit, service entrance conductors, grounding electrode system, meter socket, and service entrance equipment will be installed, owned and maintained by the customer. This installation shall meet the requirements of the Authority having Jurisdiction.
4. Grounding shall meet the requirements of the latest edition of the National Electrical Code (NEC) or the requirements of the Authority having Jurisdiction.
5. Refer to Section 200 and Figures 200–1A, 200–1C, and 600–6A within this manual for details regarding the location, installation, and placement of customer owned facilities.
6. For maximum residential service drop length, see Figure 600–2A, Note 4. For the maximum lengths of commercial overhead services, contact your local Ameren representative. Large service sizes, uneven grades, or a combination of these may require reduced service lengths or additional poles to maintain the required ground clearances. Additional charges may apply. Clearance requirements are outlined in Section 800 of this manual.
7. Service entrance conductors will extend approximately 3 feet from the weatherhead.
8. If the installation is a Current Transformer installation, refer to Section 1001 for additional information.
MAXIMUM ATTACHMENT HEIGHT FOR STEEL CONDUIT MAST DEADEND FOR STANDARD SERVICE DROP (SUPPLIED & INSTALLED BY CUSTOMER)

FIGURE 600–2A

NOTES:
1. Before installing electrical facilities, check for compliance with local codes as well as NEC.
2. The screw of the knob shall be imbedded at least 2" into a vertical stud or masonry of the house. Another acceptable attachment such as clevis, bolt and backing plate may be substituted.
3. Approximately 36" or longer of conductor will extend from weatherhead.
4. #2 triplex cable shall not be used where the span length exceeds 140' and 1/0 and 4/0 triplex and quadruplex shall not exceed 100 ft.
5. 18" minimum permitted within 6 feet of service mast, providing voltage between conductors does not exceed 600V, the service mast is no more than 4' from the edge of the roof, and the service is terminated at the service mast.
6. Refer to Section 800 for required clearances.
7. Heights greater than shown in Table 1 are possible provided that adequate guying and support are provided and approved by Ameren.
8. The conduit size specified are the minimum required for either conduit fill or strength required to support the overhead service, whichever is greater.
9. Ranch Style homes or buildings with flat roofs may require service masts to provide proper clearance. When through the roof service masts are installed, the customer assumes all responsibility for roof leaks. Service masts must be of adequate strength or be supported by brackets or guy wires to safely withstand the strain imposed by the service drop. The attachment point must have sufficient height to meet clearance requirements.
10. The roof support plate provides the main means of support for the mast. It shall be securely lagged to roof rafters. The following manufacturers roof support plates are acceptable for use on the Ameren system.

<table>
<thead>
<tr>
<th>Manufacturers</th>
<th>2&quot; Conduit</th>
<th>2 1/2&quot; Conduit</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC Insulators</td>
<td>7510</td>
<td>7511</td>
</tr>
</tbody>
</table>

11. Alternate attachment is to use roof bracket furnished by Company; installed by the customer or contractor. Bracket bolts to be furnished by the customer. Bolts to be minimum 3/8 inches lag bolts or 3/8 inch bolts through the rafter.

<table>
<thead>
<tr>
<th>Amperes</th>
<th>Phase</th>
<th>Service Drop Conductor</th>
<th>2&quot; Rigid Steel Conduit</th>
<th>2 1/2&quot; Rigid Steel Conduit</th>
<th>3&quot; Rigid Steel Conduit</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 A</td>
<td>1</td>
<td>#2 Al, Triplex</td>
<td>2' 2&quot;</td>
<td>4' 1&quot;</td>
<td>–</td>
</tr>
<tr>
<td>200 A</td>
<td>1</td>
<td>#2 Al, Triplex</td>
<td>2' 2&quot;</td>
<td>4' 1&quot;</td>
<td>–</td>
</tr>
<tr>
<td>200 A</td>
<td>1</td>
<td>1/0 Al Triplex</td>
<td>–</td>
<td>4' 0&quot;</td>
<td>–</td>
</tr>
<tr>
<td>200 A</td>
<td>3</td>
<td>1/0 Al, Quadruplex</td>
<td>–</td>
<td>4' 0&quot;</td>
<td>–</td>
</tr>
<tr>
<td>320 A</td>
<td>1</td>
<td>4/0 Al, Triplex</td>
<td>–</td>
<td>3' 2&quot;</td>
<td>4' 0&quot;</td>
</tr>
<tr>
<td>320 A</td>
<td>3</td>
<td>4/0 Al, Quadruplex</td>
<td>–</td>
<td>–</td>
<td>4' 0&quot;</td>
</tr>
</tbody>
</table>
NOTES:

1. Ameren will connect up to two (2) sets of service entrance conductors at a service point. If more than two (2) sets will be required, contact your local Ameren Representative.

2. Service entrance conductors shall extend a minimum of 3 feet from the weatherhead or to the service landing point, whichever is greater. In addition, all service entrance conductors must be adequate length to allow the parallel connection of conductors at a single point.

3. Overhead service drops and the connections at each end of the service drop will be owned, installed, and maintained by Ameren.

4. Customer shall install a service drop attachment of adequate strength for the installation of Ameren service. See Figure 600−2A.

5. Contact your local Ameren Representative to discuss whether a parallel service will be required. If so, additional service drop attachments will be required.

6. The weatherhead, service raceway or conduit, service entrance conductors, grounding electrode system, meter socket, and service entrance equipment will be installed, owned, and maintained by the customer. This installation shall meet the requirements of the latest edition of the National Electrical Code (NEC) or the requirements of the Authority having Jurisdiction.

7. Refer to Section 200 and Figures 200−1A, 200−1C, and 600−6A within this Manual for details regarding the location, installation, and placement of customer owned facilities.

8. For maximum residential service drop length, see Figure 600−2A. For the maximum lengths of commercial overhead services, contact your local Ameren Representative. Large service sizes, uneven grades, or a combination of these may require reduced service lengths or additional poles to maintain the required ground clearances. Additional charges may apply. Clearance requirements are outlined in Section 800 of this Manual.

9. If the installation is a Current Transformer installation, refer to Section 1001 for additional information.
SERVICES
OVERHEAD TEMPORARY SERVICE POLE
CLEARANCE AND METER POLE
PROVIDED BY CUSTOMER FOR ANCHORAGE OF COMPANY’S
SERVICE DROP AND INSTALLATION OF COMPANY’S METER
Figure 600–4A

NOTE:
Direction of service pull must run in angle
between wood braces. Ameren Service
drop—#2 triplex cable installed per sag table,
Dist. Std. 09.

NOTES:
1. See Section 800 for minimum height of wire above ground at point of greatest sag.
2. Where practical, the service to the temporary connection should be installed in a manner suitable for
transfer to the permanent location.
3. Temporary pole shall be located between 10 ft. and 75 ft. away from an Ameren pole.
4. GFCI protection required on all temporary wiring per NEC.
5. Refer to Section 1000 for meter socket requirement.
6. Refer to Section 800 for required clearances.
See notes and material list on the next page.
Section 600
Overhead Services

NOTES:

1. Service drop conductors, grips and connectors are provided, installed, and owned by Ameren.
2. See Figure 600–2A for maximum length of residential service drop. For all other services contact Ameren for maximum service lengths. Reduced distance or higher attachment point may be required for large service or to maintain minimum clearances.
3. Customer installs service drop attachment of adequate strength for attachment of Ameren’s service drop conductors. See Section 800 for clearance information.
4. Service entrance conductors to be connected to meter socket terminals by Customer. Service entrance conductors to extend a minimum of 36”, or longer if required by local Authority Having Jurisdiction, outside the service head for connection to service drop.
5. Service raceway and service entrance conductors to be owned, maintained, and installed by Customer.
6. Customer’s installation to meet the requirements of all applicable local codes as well as the NEC.
7. Grounding shall meet the requirements of the latest edition of the National Electrical Code (NEC) or the requirements of the Authority Having Jurisdiction.
8. Insulated conduit bushings are required for raceways terminating in the meter socket.
9. The use of flexible metallic conduit, liquid tight flexible metallic conduit, and liquid tight flexible non-metallic conduit for service entrance raceway is prohibited, unless approved by the local Authority Having Jurisdiction.
10. Clearance required between low point of service cable and finished ground grade; refer to Section 800.
11. The use of electrical grade schedule 40 or 80 PVC for service mast not supporting service drop is allowed unless prohibited by the local Authority Having Jurisdiction.
12. Customer to provide and install support for service attachment and meter socket.
13. Refer to Section 800 for required clearances.
14. Guy and anchor installed by customer to be used when required holding any unbalanced conductor load which pole cannot sustain.
15. If customer install as a yard light on this pole, such yard light shall maintain a clearance to Ameren Service wires by not less than 24”.
<table>
<thead>
<tr>
<th>Description</th>
<th>Req'd</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MATERIAL INSTALLED AND OWNED BY AMEREN</strong></td>
<td></td>
</tr>
<tr>
<td>B Meter</td>
<td>1</td>
</tr>
<tr>
<td><strong>MATERIAL INSTALLED AND OWNED BY CUSTOMER</strong></td>
<td></td>
</tr>
<tr>
<td>A Clevis – Secondary</td>
<td>1</td>
</tr>
<tr>
<td>C Lock nuts</td>
<td>1</td>
</tr>
<tr>
<td>D Insulated Bushings</td>
<td>1</td>
</tr>
<tr>
<td>F Rod – Ground 1/2” x 8’</td>
<td>1</td>
</tr>
<tr>
<td>G Clamp – Ground 1/2”</td>
<td>1</td>
</tr>
<tr>
<td>H Meter Socket, Clamp Jaw Lever Bypass</td>
<td>1</td>
</tr>
<tr>
<td>J Pole, 25' Class 5 (Minimum) – New</td>
<td>1</td>
</tr>
<tr>
<td>K Staple</td>
<td>As Req’d</td>
</tr>
<tr>
<td>L Disconnect Device Weatherproof</td>
<td>1</td>
</tr>
<tr>
<td>M Nipple</td>
<td>1</td>
</tr>
<tr>
<td>N Ground Wire</td>
<td>As Req’d</td>
</tr>
<tr>
<td>P Entrance Cap</td>
<td>1</td>
</tr>
<tr>
<td>Q Conduit or Cable</td>
<td>As Req’d</td>
</tr>
<tr>
<td>R Strap – Conductor</td>
<td>As Req’d</td>
</tr>
<tr>
<td>(14) Guy and Anchor</td>
<td>1</td>
</tr>
</tbody>
</table>
NEW ELECTRIC SERVICE ENTRANCE SHALL BE IN SHADED SPACES NOT LESS THAN 12' NO MORE THAN 18' ABOVE GROUND AND MEET MINIMUM GROUND CLEARANCE.

NOTES:

1. The first point of attachment for service wires shall be in the shaded spaces or higher. The minimum height of attachment shall be adjusted so that the lowest point of the service conductor meets the clearances. A service mast may be used if necessary to obtain the minimum clearances. The point of attachment should be approved by Ameren and should not be located as to limit ladder access, i.e. above a deck, hot tub, spa, stairwell, or swimming pool.

2. The customer’s service weatherhead shall not be located above 18’, but it may be necessary to attach services higher than 18’ to meet the minimum ground clearances.

3. Triplex cable or separate open wire service busses on buildings shall be placed in the shaded spaces shown.

4. Service conductors passing by doors, porches, fire escapes or similar locations, shall have a clearance of not less than 36 inches. Service conductors passing by windows shall have a clearance of not less than 36 inches.

5. Service conductors shall not be installed beneath openings through which materials may be moved, such as openings in farm and commercial buildings. Overhead wires shall not be run such that they obstruct entrance to these building openings.
Section 600
Overhead Services

SERVICE SPECIFICATIONS
OVERHEAD SERVICES ATTACHED TO BUILDINGS
For Services Under 600 VOLTS
Figure 600–7A

ACCEPTABLE POINTS OF ATTACHMENT
A. BUILDING STUDS
B. MORTAR JOINTS

UNACCEPTABLE POINTS OF ATTACHMENT
* 1. OUTSIDE TRIM BOARD
* 2. INSIDE TRIM BOARD (BRICK BUILDINGS)
* 3. SOFFIT BOARD
4. FASCIA BOARD
5. FIRE WALLS, PARAPET WALLS FOR CHIMNEYS

* MAY BE ATTACHED TO IF ADEQUATELY REINFORCED.

FIGURE 1
FRAME–COMPOSITION SHINGLE
OR BRICK VENEER CONSTRUCTION

FIGURE 2
BRICK OR SOLID MASONRY CONSTRUCTION
700.01 GENERAL

1. Customers contemplating underground services should contact the Company as soon as possible so that the necessary arrangements, cost determinations, engineering, estimating, customer requirements and installation of facilities can be completed by the desired date.

2. Customer conduit options and requirements vary, based upon class of customer, (residential vs. non-residential) location of the installation (MO. vs. Ill.) and finished surface area above cables. (dirt vs. pavement) Contact Company for specifics.

3. Where the Company installs or has an underground system, only underground services will be available.

4. In an area with an overhead distribution system, customers may request an underground service. Each request for such service will be evaluated on an individual basis. The Company reserves the right to refuse underground service where it does not conform to good engineering practices.

5. Any removal of obstructions or restoration of sod or other landscaping features which become necessary as a result of the installation, maintenance or replacement of service connection cable shall be the customers’ responsibility.

6. Developer shall furnish:
   (1) All easements required for installation, operation and maintenance of Company facilities and clearly staked property corners.
   (2) Cable routes shall be clear of all obstructions and within 6” of final grade.

7. DRAWINGS
   7.1 Figure 700–1A SERVICE CABLE AND METER CONNECTIONS SINGLE FAMILY DWELLING RESIDENTIAL
   7.2 Figure 700–2A EQUIPMENT – CONNECTIONS SERVICE CABLE AND METER CONNECTIONS MULTIPLE FAMILY DWELLING FOR 2 TO 6 METERS
   7.3 Figure 700–3A TYPICAL VERTICAL GANGED METER STACK UNDERGROUND SERVICE BY AMEREN
   7.4 Figure 700–9A SELF–CONTAINED METER SUPPORT FOR UG METER SERVICE
   7.5 Figure 700–10A METER SUPPORT FOR CUSTOMER PROVIDED TRANSFORMER RATED METER MOUNTING ENCLOSURE
   7.6 Figure 700–11A MINIMUM BENDING AND TERMINATING SPACE LOW VOLTAGE SWITCHBOARD, PANELBOARDS, AND PREBUSSED TERMINAL BOXES

700.02 COMPANY OWNED RESIDENTIAL SERVICE INSTALLATIONS

A. Direct Buried (Illinois ONLY)
   1. The customer will provide and install the meter socket(s) or enclosures and the line–side riser conduit of Schedule 40 or greater, electrical grade PVC. This line conduit shall extend from the metering socket to a minimum of 18” below the ground line.
   2. The customer provided conduit described in the previous item shall include a PVC male adapter, lock nut, and insulated bushing at the metering socket. If the required expansion coupling includes a male terminal adapter end, only the lock nut and insulated bushing are required. At the below grade end of the conduit, a PVC male adapter and insulated bushing, or PVC coupling, or PVC end bell shall be installed to protect the direct buried cable.
   3. Protection from mechanical damage and future access shall be provided and installed by customer for cable under paved surfaces such as public or private driveways, roadways, streets, alleys, sidewalks, patios, etc. by installation of conduit at a depth of 24”.
   4. Direct buried underground service cables are not permitted under a pool, spa, or hot tub or under the area extending 5 feet horizontally from the inside wall of a pool.
   5. The cable route must be cleared of all obstructions, both above and below grade, and within 6” of final grade for Company installations.
Section 700
Underground Services

6. Customer must mark all property lines that Company requires for service installations.
7. Cable shall have a minimal burial depth of 24”.
8. The maximum service length shall be determined by the Company. It is the customers’ responsibility to secure information from the Company pertaining to allowable lengths for service installations.
9. Company will install, own and maintain the residential service cable.

B. Continuous Conduit (Missouri – REQUIRED, Illinois – OPTIONAL)
1. The customer will provide and install the meter socket(s) or enclosures and line-side riser conduit of Schedule 40 or greater, electrical grade PVC. This conduit shall include a PVC male adapter, lock nut, and insulated bushing at the metering socket. If the required expansion coupling includes a male terminal adapter end, only the lock nut and insulated bushing are required.
2. The service riser to the meter socket shall include an expansion coupling that allows for a 8” fall.
3. Customer installed conduit shall be installed along the shortest route, and the number of bends shall be kept to a minimum. There shall be a maximum of 3–90 degree, 24” radius bends for 2–1/2” conduit or 36” radius for 3” conduit installation. Minimum bending radius is 24”.
4. All sections shall be securely fastened together using standard grade cement.
5. Minimum burial depth in trench-able earth is 24”. In rock or un trenchable soil the depth may be reduced to 12”. Depths of less than 12” are not permitted.
6. If it is not possible to achieve uniformity in the trench bottom it must be over-excavated 4” to 6” and the bottom refilled with good quality properly compacted bedding material. Approved materials: Sand, limestone screenings, concrete slurry or concrete.
7. Conduit seals (weather-head for secondary voltages or foam sealant for primary voltages) on customer service conduit are the customers’ responsibility.
8. Service conduits extension to an energized pedestal or padmounted transformer shall be terminated as follows:
   8.1 In Illinois, terminate 18” from the face of the equipment. Coordination with the Company is required to arrange for Company to complete the trenching and installation of customer provided conduit and bend.
   8.2 In Missouri, attach conduit to the previously installed flexible conduit marked by the red marker. After removing the cover, plug and conduit marker, join the flexible conduit to the rigid conduit using standard grade cement.
9. For customer conduit extensions to overhead poles, Company will designate the quadrant of the pole for the customer to stub up the conduit bend. In Illinois, customer will provide a 10 ft section of Schedule 80 electrical grade PVC conduit and the length of Schedule 40 electrical grade PVC conduit required to reach the secondary level of the pole. In Missouri, this material will be provided by Company. Actual installation of the conduit varies by Ameren area. Contact your local Ameren representative for direction.
10. Customer shall install and secure at each end a polyester pulling tape of 2500 lb capacity for pulling in service conductor.
11. The Company will install, own and maintain the residential service cable.

12. DRAWINGS
12.1 Figure 700–4A CONTINOUS SERVICE CONDUIT INSTALLATION CONNECTION TO PEDESTAL, TRANSFORMER, OR POLE AMEREN SERVICE CABLE (Illinois ONLY)
12.2 Figure 700–5A CUSTOMER OWNED AND INSTALLED SEV CONDUIT CONNECTION TO PEDESTAL OR TRANSFORMER (MO RESIDENTIAL SUBDIVISIONS)
12.3 Figure 700–5B CUSTOMER OWNED AND INSTALLED SEV CONDUIT – CUSTOMER DRAINAGE AT METER/POLE IF REQUIRED(MO RESIDENTIAL SUBDIVISIONS)
700.03 NON–RESIDENTIAL SERVICE INSTALLATIONS

A. General
The developer of non–residential property is required to install the total conduit system within the boundaries of the development project. Construction requirements are stated in “Specification for Developer Installed Commercial Underground Distribution Facilities” which should be secured from appropriate Company Division Operating Center when first considering such development plans.

All proposed customer installed underground facilities and configuration (conduit, manholes, and equipment pads) that contain Company facilities shall be designed by the company prior to installation.

1. Ameren will no longer install non–residential underground services.
2. Customer conduit shall be a minimum of schedule 40, electrical grade PVC, excepting the lowest (minimum of 5 feet of ) exposed conduit near the pole, which shall be a minimum of schedule 80 (Exposed sweep must be schedule 80).
3. Secondary voltages, 24” minimum burial depth, 24” minimum radius bends.
4. Primary voltages, 36” minimum burial depth, 36” minimum radius bends.

B. Service from a pole
Installation of company Transformers on Customer Property, Customer shall provide sufficient space for transformers, switches, and related equipment adjacent to paved surfaces intended for normal vehicular traffic or parking, for the purpose of installing or changing Company equipment

1. Customer shall furnish, own and maintain all of the materials for the service to the Company’s conductors.
2. For a direct buried cable installation, the customer shall install their facilities to the quadrant of the pole designated by the Company.
3. For a continuous conduit, the customer shall extend the facilities to the pole and include a 90 degree conduit bend for the base of the pole at a Company designated location.
4. Customer shall supply sufficient cable to reach the Company’s conductor, and in Illinois also furnish all conduits, couplings, adaptors and brackets for attachment to pole.
5. Multiple conduits on a pole will require standoff brackets, supplied by Ameren.
6. Installation of facilities on the Company pole must be coordinated with local Company personnel. Company will make final connections.

C. Service from a Padmounted Transformer

1. Customer shall furnish, own and maintain all of the materials for the service to the Company’s padmounted transformer and provide sufficient space for transformers, switches, and related equipment adjacent to paved surfaces intended for normal vehicular traffic or parking, for the purpose of installing or changing Company equipment.
2. The customer must provide adequate conductor for connection to the transformer terminals, typically 6’ above the transformer pad.
3. Coordination with Company on conduit and cable installation shall be done prior to any installations.
4. Company personnel shall complete the service connection.

D. Service from a pedestal

1. Customer shall furnish, own and maintain all of the materials for the service to the Company’s pedestal.
2. Customer’s direct buried installations shall stop 18” from the pedestal and an additional 6’ of cable shall be left for connection to the pedestal terminations. The Company will complete trenching for direct buried installations.
3. For continuous conduit installations, the conduit shall, with the cooperation of the Company, be extended with a 90 degree conduit bend and protective bushing into the base of the pedestal with adequate additional cable left for connection to the terminals.
4. Company will complete the service connection in all cases.

E. **DRAWING**
   
   Figure 700–6A CUSTOMER OWNED AND INSTALLED SERVICE CABLE CONNECTION TO PED-ESTAL OR TRANSFORMER, OR POLE NON RESIDENTIAL

700.04 **TEMPORARY SERVICES**

1. When a temporary service is supplied for construction jobs or other approved uses, customer shall pay the cost for installing and removing the temporary lines extension or service connection and any other facilities of a temporary nature.

2. Temporary underground service for construction in underground distributions system areas will be provided to the customer only when the permanent underground distribution system has been installed. Customer requests for temporary service prior to the completion of the permanent underground distribution system shall be negotiated and furnished at the customer’s expense.

3. The customer shall provide and install the meter socket or enclosure and service conductors from the supply side of the meter socket to the transformer or power pedestal. Company shall make the connection between the customer’s cables and the Company’s distribution equipment.

4. The structure supporting the meter installation shall be located within 15’ of, but no closer than 5’ to the Company’s designated point of service.

5. **DRAWING**
   
   Figure 700–7A UG TEMPORARY SERVICE

700.05 **METER PEDESTAL INSTALLATION**

1. **DRAWING**
   
   FIGURE 700–8A METER PEDESTAL INSTALLATION, SINGLE OR DUAL METER
SERVICE CABLE AND METER CONNECTIONS
SINGLE FAMILY DWELLING
RESIDENTIAL
Figure 700–1A

Meter socket — See
http://www.ameren.com/servicemanual
Attach meter socket to stud or other structural member.

Customer Cable to panel

Expansion Coupling — installed so that the outer sleeve is connected to the meter socket and on top of the inner sleeve. The inner sleeve should be positioned at the manufacturer’s midway mark

See notes and material list on next page.
NOTES:
1. See Section 200 of the Service Manual for mounting height, approved locations and requirements for mechanical protection.
2. All materials except the supply cables shall be furnished, installed and connected by customer.
3. The meter socket shall be secured to solid wood, use #14 x 3” wood screws or stainless steel screws. In brick, use expansion shields and lag screws. No drywall screws accepted.
4. The conduit hanger shall be securely fastened, preferably by a lag screw into the floor joist. If attached to the foundation, a lead expansion shield shall be used. An alternative to the expansion shield is a stud shot into the foundation.
5. When back filled, expansion coupling “C” shall be installed. The expansion coupling should be installed so the outer sleeve into the meter socket with the inner sleeve positioned at the manufacturer’s midway mark. The expansion coupling is only required for continuous conduit.
6. The area underneath the bend shall consist of good quality fill material and dirt free of debris. The area shall be compacted around the foundation wall. Acceptable fill materials: Sand, limestone screenings, concrete slurry, concrete.
7. Approved NEC ground required.
8. For services 200 amps or less, 2−1/2” electrical grade Schedule 40 PVC conduit, expansion coupling, bends, and connectors shall be used. For services 201 amps to 400 amps., 3 inch Schedule 40 PVC conduit, expansion coupling, bends, and connectors shall be used.
9. Customer riser shall enter left knock−out of meter socket.

SERVICE CABLE AND METER CONNECTIONS
SINGLE FAMILY DWELLING
RESIDENTIAL

Material List for Figure 700–1A

<table>
<thead>
<tr>
<th>Note</th>
<th>MATERIAL FURNISHED AND INSTALLED BY CUSTOMER FOR SERVICE INSTALLED IN CONDUIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A Meter Socket, Clamp Jaw Lever Bypass</td>
</tr>
<tr>
<td></td>
<td>B Conduit, electrical grade Sch 40 PVC or greater, 2−1/2” or 3”</td>
</tr>
<tr>
<td>5</td>
<td>C Coupling, Expansion, Sch 40, PVC, 2−1/2” or 3”, 8” fall</td>
</tr>
<tr>
<td></td>
<td>D Hanger, Conduit</td>
</tr>
<tr>
<td></td>
<td>E Screw, Lag</td>
</tr>
<tr>
<td></td>
<td>F Shield, Expansion</td>
</tr>
<tr>
<td></td>
<td>G Nut, Lock, 2−1/2” or 3”</td>
</tr>
<tr>
<td></td>
<td>H Insulated Bushing, Conduit 2−1/2” or 3”</td>
</tr>
<tr>
<td>8</td>
<td>I Bend, Conduit, 90 Deg., 24” Radius, electrical grade Sch 40, PVC or greater, 2−1/2” or 36” Radius for 3”, when required.</td>
</tr>
</tbody>
</table>
Section 700
Underground Services

EQUIPMENT – CONNECTIONS
SERVICE CABLE AND METER CONNECTIONS
MULTIPLE FAMILY DWELLING
FOR 2 TO 6 METERS SINGLE PHASE ONLY
Figure 700–2A

MATERIAL FURNISHED, INSTALLED,
AND OWNED BY CUSTOMER

1. Meter Socket, Clamp Jaw Lever Bypass
2. Conduit, Sch. 40 or greater, Electrical Grade PVC
3. Nut, Lock, Cad. Plated, Grd. type
4. Bushing, Conduit, Insulating
5. Conduit, Hangar, Galv.
6. Screw, Lag
7. Shield, Expansion
8. Bend, Conduit
9. Coupling, expansion, Sch. 40, PVC, 8” fall

NOTES:

1. See section 200 of Service Manual for mounting height, approved locations, Premise Labels, and requirement to mechanical protection.
2. All materials except supply cables shall be furnished by the customer in Missouri where there are two to six meters, and in Illinois where there are one or two meters. In Illinois where there are three to six meters, the customer shall furnish all materials including service cable meeting the requirements of the latest version of the NEC or the authority having jurisdiction.
3. When concrete sidewalks, driveways, patios, etc. are located within 3’ of meter location, extend conduit to edge of pavement. In this situation, and with total conduit systems, use expansion coupling.
4. Where authorized by local inspection authorities, rigid conduit may be used, with necessary junction box adapter and bell end substituted for bushings and lock nut.
5. To be installed where the footing provides an obstruction to or possible mechanical damage to service cable entrance in the meter riser. No triple 90°.
6. NEC approved grounding required.

3 inch Schedule 40 PVC conduit, expansion coupling, bends, and connectors shall be used. When an expansion coupling is required per Note 3, to install the outer sleeve into the meter socket with the inner sleeve positioned at the manufacturer’s midway mark.
Section 700
Underground Services

TYPICAL VERTICAL GANGED METER STACK
UNDERGROUND SERVICE
4, 5 OR 7 TERMINAL METER SOCKET
ONE OR TWO MAIN SERVICE DISCONNECT
Figure 700–3A

CABLE CONNECTION FROM
LANDING LUGS TO SERVICE
DISCONNECT(S) BY CUSTOMER

PERMANENTLY MARKED "PREMISES LABELS"
REQUIRED ON EACH METER SOCKET
SEE SECTION 200.01.A NOTE 7

SERVICE DISCONNECT

REQUIRED–U.G. PULL BOX
WITH LANDING LUGS

SERVICE CABLES

CONDUITS SHALL NOT ENTER
FROM SIDE OR BACK

NOTES:
1. See Section 200 of Service Manual for mounting height, approved location, Premise Labels, and requirement for mechanical
   protection.
2. For Missouri, Residential – Ameren provides service cable, and must review and approve installation for cable pulling and landing;
   Non–residential – customer provides, install and maintains service cables.
   For Illinois, Customer provides, installs and maintains service cables for both residential and Non–residential.
3. When concrete sidewalks, driveways, patios, etc. are located within 3’ of meter location, extend conduit to edge of pavement. In this
   situation, and with total conduit systems, use expansion coupling.
4. Where authorized by local inspection authorities, rigid conduit may be used, with necessary junction box adapter and bell end
   substituted for bushings and lock nut.
5. Sweep elbows may be installed where the footing provides an obstruction to or possible mechanical damage to service cable entrance
   in the meter riser. No triple 90°.
6. NEC approved ground required.
7. Incoming and outgoing service cables not being in conflict.
8. When an expansion coupling is required, to install the outer sleeve into the meter socket with the inner positioned at the manufacturer’s
   midway mark.

ELECTRIC SERVICE
MANUAL
700–8
05/2015
## Section 700
### Underground Services

### CONTINUOUS SERVICE CONDUIT INSTALLATION
**CONNECTION TO PEDESTAL, TRANSFORMER, OR POLE**
**AMEREN SERVICE CABLE**
*Figure 700–4A*
*(Illinois Only)*

<table>
<thead>
<tr>
<th>Note</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Conduit – Electrical Grade Sch. 40 PVC, 2–1/2” or 3”</td>
</tr>
<tr>
<td>B</td>
<td>Bend – Conduit 2–1/2” for 24” or 3” for 36” 90° Radius, Electrical Grade Sch. 40, PVC</td>
</tr>
<tr>
<td>C</td>
<td>Expansion Coupling–2–1/2” or 3” (allow 8” fall) Electrical Grade Sch. 40, PVC</td>
</tr>
<tr>
<td>D</td>
<td>Coupling – Conduit, 2–1/2” or 3”, Electrical Grade Sch. 40, PVC</td>
</tr>
<tr>
<td>E</td>
<td>Hanger – Conduit</td>
</tr>
<tr>
<td>F</td>
<td>Meter Socket, Clamp Jaw Lever Bypass</td>
</tr>
</tbody>
</table>

See notes on next page
CONTINIOUS SERVICE CONDUIT INSTALLATION
CONNECTION TO PEDESTAL, TRANSFORMER, OR POLE
AMEREN SERVICE CABLE (Illinois Only)

NOTES for Figure 700–4A:

1. Customer installed conduit shall be installed along the shortest route, and the number of bends shall be kept to a minimum. There shall be a maximum of 3–90 degree, 24” radius bends for 2–1/2” conduit or 36” radius bends for 3” conduit installations. All sections shall be securely fastened together using standard grade cement. Minimum burial depth in trench-able earth is 24”. In rock or untrenchable soil, depth may be reduced to 12”. Depths less than 12” are not permitted.

2. The trench bottom shall be undisturbed, firm and uniform for its entire length. If it is impossible to achieve uniformity in the trench bottom it must be over-excavated 4” to 6” and the bottom refilled with good quality properly compacted bedding material. Approved materials: Sand, limestone screening, concrete slurry or concrete.

3. Minimum bend radius is 24” for 2–1/2” conduit or 36” for 3” conduit.

4. Conduit seals on customer service conduit are the customer’s responsibility and should be accomplished at the building wall.

5. See Figure 700–1A for required meter socket and riser attachment.

6. See Section 200 for meter socket mounting height.

7. Approved ground as required by local inspection authority or latest version of NEC.

8. If equipment is not in place, the location where it will be installed shall be obtained from company representative before conduit installation. The customer shall seal and mark the conduit end.

9. When an expansion coupling is required, to install the outer sleeve into the meter socket with the inner sleeve positioned at the manufacturer’s midway mark.
CUSTOMER OWNED AND INSTALLED SERVICE CONDUIT CONNECTION TO POLE, PEDESTAL OR TRANSFORMER (MISSOURI RESIDENTIAL SUBDIVISIONS)

Figure 700-5A

<table>
<thead>
<tr>
<th>Note</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Conduit – Electrical Grade Sch. 40 PVC, 2–1/2” or 3”</td>
</tr>
<tr>
<td>B</td>
<td>Bend–Conduit 2–1/2”, 90° 24” or 3” 90° 36” Radius, Electrical Grade Sch. 40, PVC</td>
</tr>
<tr>
<td>C</td>
<td>Expansion Coupling, 2–1/2” or 3” (allow 8” fall) Electrical Grade Sch 40 PVC</td>
</tr>
<tr>
<td>D</td>
<td>Coupling–Conduit, 2–1/2” or 3”, Electrical Grade Sch 40, PVC</td>
</tr>
<tr>
<td>E</td>
<td>Meter Socket, Clamp Jaw Lever Bypass</td>
</tr>
<tr>
<td>F</td>
<td>Hanger–Conduit</td>
</tr>
<tr>
<td>G</td>
<td>Market–Buried Conduit, Red, 1” w x 7’4” L</td>
</tr>
<tr>
<td>H</td>
<td>Conduit–2 ½” Plastic Flexible or 3” and Corrugated</td>
</tr>
<tr>
<td>I</td>
<td>Plug–Conduit, 2–1/2” or 3”</td>
</tr>
</tbody>
</table>

See notes on next page
CUSTOMER OWNED AND INSTALLED SERVICE CONDUIT
CONNECTION TO PEDESTAL OR TRANSFORMER
( MISSOURI RESIDENTIAL SUBDIVISIONS )

NOTES for Figure 700–5A:

1. Customer installed conduit shall be installed along the shortest route and the number of bends shall be kept to a minimum. There shall be a maximum of 3–90 degree, 24 inch radius bends for any installation. All sections shall be securely fastened together using standard grade cement. Minimum burial depth is 24”. In rock or untrenchable soil, depth may be reduced to 12”. Depths less than 12” are not permitted.

2. The trench bottom shall be undisturbed, firm and uniform for its entire length. If it is impossible to achieve uniformity in the trench bottom it must be over-excavated 4 to 6 inches and the bottom refilled with good quality properly compacted bedding material. Approved materials: sand, limestone screenings, concrete slurry, concrete.

3. Minimum bend radius is 24” for 2–1/2” conduit or 36” for 3” conduit.

4. Conduit seals on customer service conduit are the customer’s responsibility and should be accomplished at the building wall.

5. See Figure 700–1A for required meter socket and riser attachment.

6. See Section 200 for meter socket mounting height.

7. NEC approved ground required.

8. If equipment is not in place, the location where it will be installed shall be obtained from company representative before conduit installation. The customer shall seal and mark the conduit end.

9. Contractor installed flexible conduit shall point in the direction of the service. The conduit will extend 48” beyond the edge of the pedestal or transformer pad. *End is marked with red tape or similar manner.

10. To attach the conduit to the previously installed flexible conduit, first locate the end of the conduit by digging down by the red marker until the protective PVC cover is located. After removing the cover, plug and conduit marker, join the flexible conduit to the rigid conduit using standard grade cement. In cases where the service conduit and conduit stubbed out of a pedestal or transformer differ in size, the customer will be responsible for making the conduit connection.

11. When an expansion coupling is required, to install the outer sleeve into the meter socket with the inner sleeve positioned at the manufacturer’s midway mark.
CUSTOMER OWNED AND INSTALLED SERVICE CONDUIT
CUSTOMER DRAINAGE INSTALLATION AT METER/POLE IF REQUIRED
(MISSOURI RESIDENTIAL SUBDIVISIONS)

Figure 700–5B

Drill ¼" holes through conduit on house side and below the expansion coupling to allow water to relief

Note:
1. Customer Conduit Installation for 2–1/2" PVC.
2. If 3" conduit is required, use 36" radius conduit bends.
CUSTOMER OWNED AND INSTALLED SERVICE CABLE CONNECTION TO PEDESTAL, TRANSFORMER, OR POLE UNDERGROUND DIRECT BURIAL

Figure 700–6A
NON–RESIDENTIAL

<table>
<thead>
<tr>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Conduit – Electrical Grade Sch. 40 PVC, 2–1/2” or 3”</td>
<td></td>
</tr>
<tr>
<td>B Meter Socket – Clamp Jaw Lever Bypass</td>
<td></td>
</tr>
<tr>
<td>L Conduit – Electrical Grade Sch. 40 PVC, 2–1/2” or 3”</td>
<td></td>
</tr>
<tr>
<td>M Bracket – Standoff, 1/2</td>
<td></td>
</tr>
<tr>
<td>N Strap – Conduit, 2 1/2” or 3”</td>
<td></td>
</tr>
<tr>
<td>O Bolt – Arming Double, 5/8” x 18”</td>
<td></td>
</tr>
<tr>
<td>P Jam Nut – 5/8”</td>
<td></td>
</tr>
<tr>
<td>Q Washer – Curved, 3/4”</td>
<td></td>
</tr>
<tr>
<td>R Conduit – Electrical Grade Sch. 80 PVC, 2 1/2” or 3”</td>
<td></td>
</tr>
</tbody>
</table>

CUSTOMER TO LEAVE ENOUGH CONDUCTOR FOR COMPANY TO MAKE CONNECTIONS INSIDE PEDESTAL OR TRANSFORMER (See Section 700.03)

See notes on next page.
NOTES for Figure 700–6A:

1. Customer installed conduit shall be installed along the shortest route, and the number of bends shall be kept to a minimum. There shall be a maximum of 3–90 degree, 24" radius bends for 2–1/2" conduit or 36" radius bends for 3" conduit installation. All sections shall be securely fastened together using standard grade cement. Minimum burial depth 24". In rock or untrenchable soil, depth may be reduced to 12". Depths less than 12" are not permitted.

2. The trench bottom shall be undisturbed, firm and uniform for its entire length. If it is impossible to achieve uniformity in the trench bottom it must be over-excavated 4" to 6" and the bottom refilled with good quality properly compacted bedding material. Approved materials: Sand, limestone screening, concrete slurry or concrete.

3. Minimum bend radius is 24" for 2–1/2" conduit or 36" for 3" conduit.

4. Conduit seals on customer service conduit are the customers responsibility and should be accomplished at the building wall.

5. See Figure 700–1A for required meter socket and riser attachment.

6. See Section 200 for meter socket mounting height.

7. Approved ground as required by local inspection authority or latest version of NEC.

8. If equipment is not in place, the location where it will be installed shall be obtained from company representative before conduit installation.

9. Riser conduit at side of home/pole should be buried 18" minimum depth.
Section 700
Underground Services

UNDERGROUND LINE INSTALLATION
TEMPORARY UNDERGROUND SERVICE
Figure 700–7A

NOTES:
1. Customer’s service equipment may be mounted below meter socket but meter socket must be mounted at 3’ min. to 5’ 6” max. above grade. See N.E.C. for G.F.C.I. Protection.
2. Customer to install 3 wire direct burial cable from meter base to this point & leave sufficient (8ft.) length for Ameren to install pedestal or transformer.
3. Meter, pedestal or padmounted transformer are provided by Ameren. All other material to be furnished and installed by customer.
4. Refer to Section 1000 for meter socket requirement.
METER PEDESTAL INSTALLATION
SINGLE OR DUAL METER
Figure 700–8A

EQUIPMENT NOTES:
(a) All materials shall be furnished and installed by customer.
(b) Pedestals shall be labeled for service equipment by U.L. and approved by Ameren.
(c) Install ground rod for each service per NEC requirements.
(d) Install weather proof disconnect on each service.
(e) Permanently marked “Premises Labels” required, see Section 200.01.A note 7.

INSTALLATION NOTES:
1. Backfill with tamped crushed rock screening including entire conduit elbow.
2. Place concrete collar 6” thick, min., 6” below grade to firm earth as shown.
3. 32” to 36” pedestal embedment required. Order post extension and footing base with meter post as shown.
4. Owner shall be responsible to see that pedestal is firmly embedded in ground, and plumb to within 1” in 12” vertical.
5. Conduit shown shall be installed with a minimum of 30” of cover to the 24” radius bend into channel. Direct buried cable can be installed with 24” of cover.
6. Service conduit should not block supply cable access door.
Section 700
Underground Services

METER MOUNTING SUPPORT FOR UG METER SERVICE – Meter Socket, Meter/Breaker Combo or Instrument Rated Meter Socket
Figure 700–9A

Notes

<table>
<thead>
<tr>
<th>Notes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5, 6, A</td>
<td>Meter Socket, Clamp Jaw Lever Bypass</td>
</tr>
<tr>
<td>B</td>
<td>Galv. Conduit Bushing and Galv. Conduit Locknut</td>
</tr>
<tr>
<td>C</td>
<td>½” PVC Conduit</td>
</tr>
<tr>
<td>D</td>
<td>Conduit–Electrical Grade Sch 40 PVC or Sch 80 PVC if subject to physical damage</td>
</tr>
<tr>
<td>8, E</td>
<td>Expansion Coupling, Sch 40 PVC, 8” fall</td>
</tr>
</tbody>
</table>

NOTES:
1. The installation of all entrance equipment, conductors and conduit shall conform to local codes or the latest NEC. Requirements.
2. All material shall be furnished and installed by customer.
3. NEC approved ground required.
4. Different arrangements of the service equipment (fuse/breaker box) may be used side–by–side or below meter.
5. Refer to Section 1100 for meter sockets or combo units requirement.
6. Instrument rated meter sockets in MO: stock #40 04 246—8 Terminal and stock #40 04 245—13 Terminal; in IL: stock #40 54 378—8 Terminal and stock #40 54 353—13 Terminal
7. Refer to Section 200 for meter mounting height.
8. When an expansion coupling is required, it should be installed so that the outer sleeve into the meter socket with the inner sleeve positioned at the manufacturer’s midway mark.

Ameren
ELECTRIC SERVICE MANUAL
700–18
05/2015
METER SUPPORT FOR CUSTOMER PROVIDED TRANSFORMER
RATED METER MOUNTING SOCKETS – STEEL POST
Figure 700–10A

<table>
<thead>
<tr>
<th>1P/3P 3W Services</th>
<th>3P/4W Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>24&quot;</td>
<td>24&quot;</td>
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<tr>
<td>40&quot;</td>
<td>40&quot;</td>
</tr>
<tr>
<td>54&quot;</td>
<td>54&quot;</td>
</tr>
<tr>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>12&quot;</td>
<td>20&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
<td>32&quot;</td>
</tr>
<tr>
<td>32&quot;</td>
<td>40&quot;</td>
</tr>
<tr>
<td>Services</td>
<td></td>
</tr>
<tr>
<td>400–800A</td>
<td>1200–2000A</td>
</tr>
<tr>
<td>2500–3000A</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:
1. Provide protective barrier as needed, see Figure 200–1B.
2. Support is customer owned and maintained and furnished and installed by the customer or contractor.
3. Locate only on customer property.
4. Grounding electrode system is per NEC.
5. Refer to Section 1100 for meter mounting sockets requirement.
6. Refer to Section 1100 for using pad mounted CT enclosure as alternative option.
7. As an alternative to building this CT/PT support structure, a pad mount CT/PT meter socket could be used. See 1100 for approved enclosures.
MINIMUM WIRE BENDING AND TERMINATING SPACE
LOW VOLTAGE SWITCHBOARD, PANELBOARDS
AND PREBUSSED TERMINAL BOXES
Figure 700−11A

WHERE AMEREN INSTALLS AND/OR MAINTAINS THE SUPPLY CABLE

Notes:
1. When the conduits enter a surface that is cut by a flat plane containing the lugs, then the conduits must be centered on the lugs. If they are not additional, wire bending space may be required. In addition, the area directly above or below the ducts must be free of all obstructions. All conduit shall terminate with an approved bushing or adapter to protect the cable from abrasion.
2. The dimensions for bending radii see DCS 59 40 00 11.
3. In the network area, the Underground Department shall be consulted for cable limiter lug space requirements
4. The maximum length of conduit between transformer and panelboard shall not exceed 250 feet and contain no more than 2−36" radius, 90° bends. Additional bends and/lengths require the written approval of the Supervising Engineer before construction is started. A maximum of four (4) 90° bends (equivalent of 360°) may be permitted but may require restrained bends or pull box to keep pulling tensions within acceptable limits. Connection of underground service laterals to the line side lugs of a main service disconnect is not permitted under any circumstances.
5. If the incoming cables must traverse the height of the switchboard or panel−board and a separate sealed wireway or trough is not provided, then the'A' dimension must be doubled to allow proper bending radius to the nearest connection, and the contractor must provide an internal sealable wire−way.
6. For service ampacity up to and including 1200 amps maximum, the pre−bussed terminal box shall have an inside surface area of at least 16 sq. Ft. with a 12" minimum depth and provide wire bending radii see DCS 59 40 00 11.
7. Main lugs should be sized to accommodate number and size of cable specified by Ameren. (incoming lugs shall accommodate 500 KCMIL, outgoing lugs shall accommodate 4/0).
CUSTOMER OWNED LIGHTING (6M)
UNMETERED INSTALLATION

Figure 700–1B

CUSTOMER TO INSTALL UG CABLE OR CONDUIT AND CABLE

CUSTOMER OWNED LIGHT STANDARD

CUSTOMER OWNED NEMA WEATHERTIGHT ENCLOSURE
W/ OVERCURRENT PROTECTION
AND DISCONNECTING MEANS
BREAKER OR FUSED DISCONNECT
LOCATION APPROVED BY AMEREN

AMEREN PADMOUNT TRANSFORMER OR PEDESTAL

CUSTOMER CABLES & CONDUIT
CLEARANCES – POINTS OF ATTACHMENTS & METERS ABOVE GROUND SERVICES OVER GROUND AND ROOFS

(REFERENCE DISTRIBUTION CONSTRUCTION STANDARDS 09 00 03 01)

FIG. 1
USUAL INSTALLATION

FIG. 2
WALL CARRYING CUSTOMER’S SERVICE ENTRANCE IS OF INADEQUATE HEIGHT TO GIVE AMEREN NECESSARY GROUND CLEARANCES. CUSTOMER EXTENDS SERVICE ENTRANCE CABLE TO AMEREN’S POINT OF ATTACHMENT.

OPEN WIRE OR TRIPLEX

See notes on next page
MINIMUM REQUIRED CLEARANCES AND NOTES:

Over Ground (per 2007 NESC 232)
A.  12 ft. (triplex) or 12.5 ft. (open wire) over spaces and ways subject to pedestrian or restricted traffic only (no vehicles over 8 ft. high).

   EXCEPTION: Where height of a residential building does not allow these clearances, clearance may be reduced to 10 ft. at the drip loop or service drop for triplex cable limited to 150 volts to ground or 10.5 ft. for open wire limited to 300 volts to ground.

B.  16 ft. (triplex) or 16.5 ft. (open wire) over driveways, parking lots and alleys.

   EXCEPTION: Where height of a residential building does not allow these clearances, clearance may be reduced to 12 ft. for triplex service limited to 150 volts to ground or 12.5 ft. for open wire limited to 300 volts to ground.

C.  16 ft. (triplex) or 16.5 ft. (open wire) over roads, streets, alleys, non–residential driveways, parking lots and other areas subject to truck traffic.

   EXCEPTION: Services over state and federal commercial highways shall be no less than 18 ft. Services over Illinois limited access highways shall be no less than 20 ft.

Over Roofs (includes Parking Garages) (per 2007 NESC 234C)
D. Clearances from highest point in roof shall be not less than:
   1. 3.5 ft. (triplex) or 10.5 ft. (open wire) over roofs not accessible to pedestrians (see note J).
   2. 11 ft. (triplex) or 11.5 ft. (open wire) over roofs accessible to pedestrians.
   3. 11 ft. (triplex) or 11.5 ft. (open wire) over roofs accessible to vehicles but not truck traffic.
   4. 16 ft. (triplex) or 16.5 ft. (open wire) over roofs accessible to truck traffic.

   EXCEPTIONS:
   1. For services attached to a building (including drip loops) and where voltage between conductors does not exceed 300 volts on a non–accessible roof, a reduction in clearance over the roof is permitted as follows:
      a. 3 feet
      b. 18 inches within 6 feet of and terminated at a through the roof raceway or approved support located not more than 4 feet from the edge of roof.

NOTES:
E. Any equipment housing including air conditioning, platform or projection which a person might stand on.
F. Service mast or bracket attachment or upright of adequate size and height to support services required.
G. Normally triplex conductors, but may also be separate conductors as shown for commercial services.
H. Meter height is 3’–0” to 5’–6” except 6’–6” over walkways less than 3’ wide.
J. A roof is considered accessible to pedestrians if there is a means of access through a doorway, ramp, stairway, or permanently mounted ladder.

Clearances of Services over Swimming Areas
Although it is possible to have services over swimming areas, this practice is discouraged. It is necessary that the maximum conductor sag under various operating and environmental conditions be determined. Contact your local Ameren representative for assistance.
CUSTOMER INSTALLED PAD INSTALLATIONS REQUIRED
CLEARANCES FOR PADMOUNTED TRANSFORMERS AND SWITCHGEAR FOR 15 KV

(REFERENCE DISTRIBUTION CONSTRUCTION STANDARDS 59 81 51 11)

Dimensions for 1Ø pads pertain to all Ameren Companies.

For 3Ø installations, dimensions A and B pertain to dimensions of Ameren Missouri equipment pads. Pad specifications for Ameren Illinois vary.

The critical dimensions for all padmounted equipment are the distances from the left, right, rear, and front of pads, not the equipment installed on the pad. These dimensions shall be maintained in all installations.

Verify pad dimensions with your local contacts.

| Dimensions for 1Ø pads pertain to all Ameren Companies. |
| For 3Ø installations, dimensions A and B pertain to dimensions of Ameren Missouri equipment pads. Pad specifications for Ameren Illinois vary. |
| The critical dimensions for all padmounted equipment are the distances from the left, right, rear, and front of pads, not the equipment installed on the pad. These dimensions shall be maintained in all installations. Verify pad dimensions with your local contacts. |

| NOTE(S): |
| 1. If pad mount is enclosed on all 4 sides, 10' minimum clearance from the front of transformer to inside of wall must be maintained for hot stick operations. |
| 2. If a 4 sided enclosure is used, an opening or doorway shall be provided. If a lock is required provisions shall be made to provide Ameren personnel access. |
| 3. If a 4 sided enclosure is used, a minimum of 10 square feet of venting space in the form of 50% effective louvers or 5 square feet of opening shall be provided located along the bottom of each wall. If a 3 sided wall is used, wall venting space is desirable, but not required. |
| 4. Location must be accessible for installing or replacing transformer with crane. |
| 5. Developer to provide plastic conduit of size specified by Ameren to a point designated by Ameren outside the wall 36" to 42" below final grade. |
| 6. The 10' distance between the front of the pad and the wall may be reduced to 48" if an opening or gate is provided. The opening or gate should be centered on the front of the pad and should provide for a minimum opening of 3−1/2' for 1Ø and 9−1/2' for the 3Ø installation. A 10' clear area in front of the pad must still be available with the opening or when the gate is open for hot stick operations. |
7. To provide for transformer replacement, enclosed area is to be free of overhangs or overhead obstructions. Wall height not to exceed 8' unless the above mentioned gate or opening is provided or an easily removable wall is used.

8. Should upgrading be required, the dimensions as shown provide adequate ventilation and space for 1 size larger transformer.

9. Walls shown in drawing, but clearances are required for any obstruction, i.e. switchgear, dumpsters, etc.

10. The final grade area around the pad mounted transformer (and pad mounted switchgear) shall be level, except for a gradual slope, at 1/8 inch rise per one foot of run. The front and side clearance areas shall be graded so that water runs away from the equipment pad; water shall not be allowed to pool in the clearance areas around the equipment pad.

11. Where protective barriers are required, refer to Ameren Distribution Construction Standard 59 81 51 10*.
Section 900
Service Utilization

900.01 GENERAL

Electric service must be used in a way that does not interfere with Ameren’s service to other customers or damage the Company's service lines or equipment. Should such interference occur, the Company will consult with the customer to determine what corrective measures should be taken to eliminate the problem. It may become necessary for the customer to make wiring changes or install approved controlling devices at their expense.

Where practical, the Company upon request, will furnish in accordance with the provisions for furnishing "Excess Facilities", a separate transformer or other facilities to reduce or eliminate such interference. The Company, however, does not by installing such facilities waive its right, where detrimental conditions from such equipment still exist, to require the customer to install corrective equipment. Unless corrected, the Company will discontinue all service to the Customer.

900.02 CUSTOMER APPARATUS

Neither by review nor the rendering of emergency repairs or advisory service does the Company give any warranty, expressed or implied, as to the adequacy, safety or other characteristics of any equipment, wires, appliances or device owned or maintained by Customer.

900.03 FLUCTUATING LOADS

It is the customer’s responsibility to notify the Company before installing any equipment that may cause voltage or frequency fluctuations on the company’s Distribution System. Welders, x-ray equipment, motors connected to variable load machinery, and other equipment having fluctuating load characteristics may require special facilities for satisfactory service. The customer shall, prior to completing plans to use such equipment, furnish the Company complete information as to the manufacturer, type, size, voltage, amperage, power factor, harmonic content and other data regarding the equipment’s performance under conditions of maximum output, and shall also supply such other information pertaining to the equipment as the Company will require to enable it to determine if adequate service for the equipment is available at the desired location.

In cases of high motor starting current, customer loads resulting in harmonic distortions or significant loads with wide and/or frequent fluctuations, etc., customer shall install on customer side of Company meter, all corrective equipment necessary to enable Company to maintain the integrity of its electric distribution system. For Customers not voluntarily complying with this requirement, Company, where practical, may install corrective equipment on its side of the meter and charge Customer a lump sum amount for the current cost of such equipment and the cost of any subsequent additions to or replacement of such equipment, whenever said future installations occur.

Failure of Customer to install such corrective equipment or to pay for that installed by Company currently, or in the future, shall be grounds for the disconnection of electric service.

900.04 LOAD BALANCE

Customers should balance the load between the ungrounded conductors on single phase services as closely as possible. An unbalanced load may cause overheating of one conductor or flickering lights on the more heavily loaded circuit when appliance motors start.

Customers receiving three phase service are required to maintain a balanced load between the ungrounded service conductors. Load imbalance may cause the customer’s equipment to operate in an unsatisfactory manner, blow fuses or cause other protective devices to interrupt electric supply on the unbalanced circuit. Three phase load imbalance may also cause a disturbance to the Company’s supply of electric service to nearby customers.

When an imbalance occurs, the Company may assist customers to determine the cause of the problem and may recommend corrective measures.
Section 900
Service Utilization

900.05 POWER FACTOR

Power factor is defined by the appropriate Company rates. The Company’s Customer Service Representative will furnish customers with appropriate information upon request.

Customer may install corrective equipment necessary to meet this requirement on customer’s side of Company meter. Such equipment shall be controlled and maintained by Customer in order to avoid a leading power factor at any time, and to avoid high voltage conditions during periods of light load. To monitor this power factor requirement, the Company will install appropriate metering equipment for the monthly billing of a kilovar reactive charge as applicable.

For all customers receiving service under other rate schedules, not voluntarily complying with this power factor requirement, the Company may, where practical, install corrective equipment on its side of the meter and charge customer a lump sum amount for the current cost of such equipment and the cost of any subsequent additions to or replacement of such equipment whenever said future installations occur. Failure of Customer to install such corrective equipment or to pay for that installed by the Company currently, or in the future, may be grounds for the disconnection of electric service.

900.06 CAPACITORS

Use of capacitors may become necessary for a customer to achieve acceptable power factor correction. In every case where the customer elects to install capacitors, the Company must be consulted prior to purchase or installation. Improper size, type, installation, or operation of capacitors can have a serious adverse affect on the Company’s service to other customers. It may also pose a danger to personnel working on the Company’s distribution lines. When a customer installs capacitors on their electrical facilities to improve the power factor of their installation, the customer may provide, at the request of the Company, in order to avoid abnormal voltages or damage to the Company’s facilities, a means of automatically disconnecting any or all of the capacitors when the equipment causing the low power factor is not operating.

900.07 PROTECTIVE EQUIPMENT

Customers are advised to install protective equipment in accordance with the latest edition of the National Electrical Code or other pertinent sources of information for all types of equipment such as, but not limited to, motors, computers, or any other type of voltage sensitive electronic equipment. Adequate protection should be provided for the following conditions:

A. Overload;
B. Loss of voltage;
C. High or low voltage;
D. Loss of phase (single phase on polyphase motors);
E. Re-establishment of normal service after any of the above;
F. Phase reversal;
G. Motors that cannot be subject to full voltage on starting;
H. Harmonics or wave form irregularities.

The lack of adequate protection may result in needless damage to equipment and the expense of delay and repair. The Company will not be responsible for loss or damage to customer-owned equipment where such loss or damage is caused by the absence or failure of recommended protective devices.

900.08 MOTORS AND APPARATUS

General

Customer is invited to consult Company before purchase, installation, or wiring of motors or other apparatus to determine the kind of service that will be supplied and the manner in which such equipment should be connected and operated.

All motors, apparatus and appliances shall have such characteristics which enable the Company to maintain a satisfactory standard of service to Customer being served and all other customers in the immediate area.
The Company reserves the right to define the type of standard service to be supplied and should be consulted before equipment is purchased or ordered. The electrical characteristics of motors 7 1/2 H.P. and larger or where the aggregate load of smaller motors is more than 20 H.P. require consideration and evaluation.

900.09 PROTECTION AGAINST ABNORMAL CONDITIONS

All motors and special apparatus should be equipped with suitable undervoltage time delay tripping devices to protect against sustained undervoltage or service interruption and to prevent automatic disconnection of equipment upon momentary voltage disturbance.

Three phase motors should be equipped with suitable protective devices to prevent single phase operation, improper direction of rotation and excessive heating due to overcurrents or voltage unbalance.

Company will not be responsible in any way for damage to Customer equipment due to failure of Customer to provide adequate protection.

Customer should install an uninterruptible power source (UPS) or voltage suppressor where momentary or extended outages or voltage fluctuations will cause inconvenience, loss of electronic memory or trip alarms, etc.
Customer Furnished Self−Contained
Meter Mounting Sockets Requirements

1000.01 INTRODUCTION

Customer shall furnish, install and maintain meter mounting equipment which meets Ameren requirements stated herein. This applies to self−contained electric watt−hour meter mounting equipment for both individual and multi−meter installations. The watt−hour meters will be furnished, installed and maintained by Ameren.

Ameren will maintain a list of approved manufacturer’s meter devices catalog numbers. Ameren will assist the manufacturer in meeting these requirements by reviewing and commenting on designs and/or manufactured samples of meter devices. Only meter devices included in this list will be acceptable without prior approval from Ameren.

The current list is included in Section 1100, separately from the manual. To get the latest catalog number information for the devices, please use the website at:

Http://www.ameren.com/servicemanual

Failure by Customer/Contractor to comply with the requirements stated herein may lead to a delay of service until requirements are met. Other sections of the Electric Service Manual pertain to mounting location, mounting heights, and other service requirements and give specific installation instructions.

1000.02 GENERAL REQUIREMENTS

1. Equipment must be certified by an approved independent testing laboratory using the appropriate UL standard for the certification. At present Ameren recognizes UL and ETL as approved testing laboratories for equipment installed on the Ameren system. meter sockets shall meet standards contained in the latest revision of UL414, ANSI C12, and ANSI C12.7.

2. Devices shall be labeled as to ampacity services, maximum voltage, manufacturer’s name, and manufacturer’s catalog number. All meter sockets and applicable bypasses shall be rated to carry 100% of ampacity continuously.

3. The meter socket shall be of a power coated finish over galvanized steel or aluminum construction, rated NEMA type 3R or better. Fabrication with fiberglass or non−metallic material is prohibited.

4. All meter sockets shall be ringless.

5. All covers shall be equipped with no more than one securely fastened hasp for padlocking by Ameren. Covers that secure more than one meter, (trough), shall be individually sealable.

6. Meter sockets must have lugs to accommodate the No. 6 grounding electrode conductor and bonding jumper size per NEC. This may be two individual lugs, or one NEC/approved lug rated for two conductors. Lugs shall be rated for both aluminum and copper conductors.

7. The lugs for meter sockets 320 amp services and below will be sized to accommodate conductors as outlined below. Stud type connectors shall be tinned and suitable for either aluminum or copper conductors.

8. Meter sockets for up to and including 200 amp service shall be equipped with lay−in lugs. The lugs shall be suitable for a range of conductors from No.6 to 350 kcmil. Not more than one conductor shall be installed per lay−in lug.

9. Meter sockets for 320 amp services shall be equipped with the mechanical pressure stud connectors. Customer will supply the appropriate size of lugs for the job specific conductors.

10. Trough type meter sockets with direct upward connection of UG cables can be submitted to Ameren for approval provided they allow for the cables to be trained in a manner that would prevent ground settling and frost heaving from placing undo stresses on meter socket connections. The left hand bottom knockout shall be reserved for the incoming service cables. A minimum knockout on the bottom of meter sockets shall be 2 1/2” on UG 200 amp services and 3” on 320 amp services.

11. The 5th terminal on clamp jaw lever bypass sockets shall be located as shown in Figure 1000−1C and Figure 1000−1F.
12. The meter socket must be grounded.

13. Locking clamp jaw lever type bypass meter sockets shall be provided with a clear polycarbonate safety shield over the socket interior.

14. All Meter mounting equipment shall be surface mounted.

15. Ameren, by testing or approving equipment, gives no warranty, expressed or implied, as to the adequacy, safety or other characteristics of any equipment, wiring or device and assumes no responsibility with respect thereto.

16. All unused openings in the socket shall be closed with plugs and secured tightly from the inside.


<table>
<thead>
<tr>
<th>UG Service Self Contained Meter Socket without Load–Side Breaker</th>
<th>Panel</th>
<th>Maximum Service Ampacity</th>
<th>120/208/240/480V 1PH, 3PH, 3W &amp; 120/208/277/480V, 3PH, 4W (200 Amp Max)</th>
<th>Min Dimension (WxHxD)</th>
<th>Min Spacing From Center Meter Block to Top of Socket</th>
<th>Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>200 AMP</td>
<td>200</td>
<td>13”x19”x4.875”</td>
<td>9”</td>
<td>Lever</td>
<td></td>
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<tr>
<td>120/240V 1PH 3W &amp; 240V 3PH 3W (320 AMP Max)</td>
<td>320 AMP</td>
<td>400</td>
<td>15”x31.69”x4.85”</td>
<td>17.56”</td>
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<tr>
<td>120/208V 3PH 4W (320 AMP Max)</td>
<td>320 AMP</td>
<td>400</td>
<td>17.75”x38.75”x6.5”</td>
<td>19.375”</td>
<td>Lever</td>
<td></td>
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<table>
<thead>
<tr>
<th>UG Service Self Contained Meter Sockets with Load–Side Breaker Combinations</th>
<th>Panel</th>
<th>120/208/240V 1PH 3W &amp; 240V 3PH 3W (320 AMP Max)</th>
<th>200 AMP</th>
<th>200</th>
<th>14.13”x34.5”x4.5”</th>
<th>10”</th>
<th>Lever</th>
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<tbody>
<tr>
<td></td>
<td>320 AMP</td>
<td>400</td>
<td>15”x42.44”x4.875” (Vertical)</td>
<td>17.53”</td>
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<td></td>
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<tr>
<td></td>
<td>320 AMP</td>
<td>400</td>
<td>29.5”x35”x6” (Horizontal)</td>
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<td>Lever</td>
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<td></td>
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<tr>
<td>120/208/240V 3PH 4W (200 AMP Max)</td>
<td>200 AMP</td>
<td>200</td>
<td>17.37”X34”X5.75”</td>
<td>10.75”</td>
<td>Lever</td>
<td></td>
<td></td>
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1000.03 METER BYPASS REQUIREMENTS

1. Clamp jaw lever bypass type meter Sockets are required in the following individual meter situations:
   A. Residential single phase (320 amp max)
   B. Non–residential single phase (320 amp max)
   C. All three phase services (320 amp max except only 200 amp for 480V and 277/480V)
   D. All single phase 480V services (200 amp max)
   E. All temporary services except as noted in 1000.03.3 below.

2. Clamp jaw lever bypass meter Socket is required for all multi–meter sockets for residential and non–residential services with or without a main disconnect. A slide type bypass is not permitted.

3. For a single phase 100 or 200 amp construction temporary service, a clamp jaw or horn bypass is not required in the meter socket unless that meter socket is to be re–used for the permanent service.

   The clamp jaw bypass meter socket shall be heavy duty, lever operated, clamp jaw with jaw tension release design with plastic protective shield similar to the Milbank (HD–5 or HD–7) or Siemens/Talon (HQ–5 or HQ–7) bypass mechanisms. The bypass action of all lever type bypass mechanisms shall be visible.
This includes the ability to visibly see the opening and closing of the bypass mechanism contacts, as well as the clamping action of the meter socket jaws. Bypass mechanisms not meeting this requirement shall be rejected. Clamp jaw lever bypass mechanisms not previously used on the Ameren system shall be presented to the Standards Engineering Department for review.

1000.04 MULTI—METER REQUIREMENTS

1. Multi—meter socket situation shall conform to the same bypass criteria in 1000.03 above.
2. Customer designed, combination multi—meter equipment with fused or circuit breaker type disconnects may be acceptable subject to Company approval of meter sockets, location, electrical one line, cable landing space, security provisions, etc., before fabrication is started. All unapproved equipment must be approved before ordering of said equipment to avoid costly delays.
3. Multi—meter equipment requires the line side terminal compartment to have a sealable and lockable cover separate from meter covers.
4. Up to and including six meters may be supplied at a single point of delivery without a main means of disconnect ahead of metering.

1000.05 LOAD CENTERS

Where customer disconnects and/or fuses are combined with meter equipment, the cover for the meter and the cover for customer access to the switch/fuse and load side wiring shall be separated such that Company’s meter and line side service compartments may be secured and sealed separately from customer side. On such combination units, internal barriers shall be permanently installed to prevent access to meters, equipment, and un—metered wiring via the customer compartments. Labels should be adhered to the outside of lids (covers) on meter/main combos stating “Main Service Disconnect”.

1000.06 METER SOCKET MAINTENANCE

It is the responsibility of Customer/Building Owner to maintain, repair and replace the meter mounting (socket) equipment in order to keep such equipment in a safe, secure and useable condition. When such equipment is subject to vandalism or damage, it is the responsibility of Customer/Building Owner to remedy the situation by protective measures or by changing location.

Ameren will perform emergency repair in an attempt to maintain or restore service and to protect the public safety. In the event that the hazard posed by the equipment is critical to safe operation, immediate disconnection of service may be necessary until corrections are made by the Customer/Building Owner. Ameren will notify Customer/Building Owner and the inspection Authority when an unsafe meter socket and/or service equipment problem is found.

Ameren will allow a reasonable time, normally not to exceed 30 days, for the repair or replacement of meter socket equipment, subject to the hazard involved.

Ameren emphasizes the need for the responsible Building Owner to minimize safety hazards to all concerned by maintaining meter socket equipment and service compartments in a safe and good working order.

1000.07 DRAWINGS

1. Figure 1000–1A meter socket Connections — 3W, 120V/240V, Single — phase
2. Figure 1000–1B meter socket Connections — 3W, 240/480V, Single — phase
3. Figure 1000–1C meter socket Connections — 3W, 120/208V, Single — phase
4. Figure 1000–1D meter socket Connections — 4W, 120/208V, 3—phase
5. Figure 1000–1E meter socket Connections — 4W, 277/480V, 3—phase
6. Figure 1000–1F meter socket Connections — 3W, 480 volt, 3—phase
7. Figure 1000–1G meter socket Connections — 3W, 240 volt, 3—phase
8. Figure 1000–1H meter socket Connections — 4W, 240 Volt, 3—phase
9. Figure 1000–1I meter socket Connections — 3W, 120/240V, Single—phase
10. Figure 1000–2A Metering Requirements
APPLICATION:

3–WIRE, 120/240 VOLT, 1–PHASE SELF–CONTAINED (LIMITED TO 320 AMPS)
APPLICATION:
3–WIRE, 240/480 VOLT, 1–PHASE SELF–CONTAINED (LIMITED TO 200 AMPS)
APPLICATION:
3–WIRE, 120/208 VOLT, 1–PHASE SELF–CONTAINED (LIMITED TO 200 AMPS)

Note:
■ 1. 5th lug located in 9 o'clock position.
APPLICATION:
208Y/120 VOLT, 4 WIRE, GROUNDED WYE, 3-PHASE SELF-CONTAINED (LIMITED TO 320 AMPS)
APPLICATION:
480Y/277 VOLT, 4 WIRE, GROUNDED WYE, 3-PHASE SELF-CONTAINED
(LIMITED TO 200 AMPS)

NOTE:
1. Breaker or fused switch required on source side of meter socket, list of approved devices listed in section 1100.
APPLICATION:
3–WIRE, 480 VOLT, 3–PHASE SELF–CONTAINED (LIMITED TO 200 AMPS)

NOTE:
1. Breaker or fused switch required on source side of meter socket, list of approved devices listed in section 1100.
2. 5th lug located in 6 o'clock position.
APPLICATION:
3-WIRE, 240 VOLT, 3-PHASE SELF-CONTAINED (LIMITED TO 320 AMPS)
APPLICATION:

4 WIRE, GROUNDED DELTA, 3-PHASE SELF-CONTAINED (LIMITED TO 320 AMPS)
APPLICATION:
3–WIRE, 120/240 VOLT, 1–PHASE SELF–CONTAINED FOR TEMPORARY SERVICES ONLY
(LIMITED TO 320 AMPS)
<table>
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<tr>
<th>PANEL SIZE</th>
<th>100–200 AMPS</th>
<th>201–400 AMPS</th>
<th>401–1200 AMPS</th>
<th>1201–3000 AMPS</th>
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<tr>
<td>VOLTAGE</td>
<td>120/208V 1PH 3W (200 AMP. Max.)</td>
<td>120/240V 1PH 3W (800 AMP. Max.)</td>
<td>120/208V 3PH 4W (3000 AMP. Max.)</td>
<td>240V 3PH 4W (600 AMP. Max.)</td>
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<td>240V 3PH 4W (201–3000 AMP.)</td>
<td>277/480V 3PH 4W (400 AMP. Max.)</td>
<td>480V 3PH 4W</td>
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<td>METERING REQUIREMENTS</td>
<td>SELF CONTAINED CLAMP JAW LEVER BYPAS METER SOCKET (Exception in Section 1000.03.3)</td>
<td>SELF CONTAINED CLAMP JAW LEVER BYPAS METER SOCKET</td>
<td>SELF CONTAINED CLAMP JAW LEVER BYPAS METER SOCKET &amp; LINE SIDE BREAKER OR FUSED DISCONNECT</td>
<td>CT/ PT METERING LARGE WINDOW TYPE</td>
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<td>CEL CONTAINED CLAMP JAW LEVER BYPAS METER SOCKET</td>
<td>CT METERING BAR TYPE</td>
<td>CT METERING LARGE WINDOW TYPE</td>
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<tr>
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<td>N/A</td>
<td>CT METERING BAR TYPE</td>
<td>CT METERING LARGE WINDOW TYPE</td>
<td></td>
</tr>
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</table>
Section 1001
Current Transformer Installations
For Services Under 600V

1001.01 SERVICES
General Requirements

a) All service equipment must be installed and grounded per latest edition of the NEC or local inspection authority. See Section 500.

b) For 277/480V and 480V services above 200 amps, metering current transformers (CTs) and potential transformers (PTs) will be required.

c) Customer shall provide the proper CT/PT enclosure as specified below.

d) Ameren will provide the wire harness, meter socket, the CTs and PTs for Missouri.

e) Single phase greater than 400 amp (Class 320 amp meter) will require CTs.

1001.02 REQUIREMENTS FOR CT/PT ENCLOSURES (UP TO 3000 AMPS)
General Requirements

a) Ameren will provide an approved list of enclosures.

b) Metering transformers will not be allowed in pad mounted transformer enclosures on any new or upgraded service.

c) CT/PT enclosures must be mounted outside. Only Ameren approved bussed enclosures will be allowed.

d) Provisions for terminating line and load conductors must be provided.

e) Customer is responsible for installing Ameren provided CTs and PTs.

f) Equipment must be certified by an approved independent testing laboratory using the appropriate UL standard for the certification. At present Ameren recognizes UL and ETL as approved testing laboratories for equipment installed on the Ameren system.

g) Enclosure must be hinged, sealable, pad lockable.

h) CT/PT enclosures shall normally be installed to the side or sides of meter sockets.
   • Enclosures shall be installed so that any work to be performed by Ameren personnel can be done from final grade level without the aid of a ladder.
   • Where this is impractical, contact the Electric Meter Department for direction.

i) CT’s and PT’s are required on all 277/480 and 480V service larger than 200 amps.

j) All 120 and 240V services larger than 400 amps will require CTs.

k) Bar type CT’s will be used for 277/480V and 480V services from 201 to 1200 amp and for 120/240V, 120/208V and 240V from 401 to 1200 . Large window CT’s will be used for 1201 to 3000 amp services. See Section 400.03 for maximum service sizes for non–standard service voltages such as 240 and 480 volt 3 wires.

l) 480V installations shall contain an Ameren approved side mounted potential transformer enclosure, with 1” close nipple.

m) Potential transformer enclosure must be at least 8”W x 27.5”H x 8”D, with 3/4” treated plywood back panel, or metal (moveable) mounting brackets for installing PT’s.

n) Potential tap holes (#10–32 or 1/4” – 20) shall be located on the bus closest to the front on the line side of the CT’s. Each hole shall be drilled and tapped through the entire bus, with lugs sized to accommodate a #10 wire, for each phase and neutral bus. Potential tap holes are not required for the individual phase for services from 201 thru 1200 amp: Potential tap holes are required for the neutral in all cases.

o) Conduit between the CT enclosure and meter socket shall be 1–1/2” metallic rigid with bonding bushing, or schedule 40 (or greater) PVC. If PVC pipe is used, a bonding jumper no smaller than #10 should be provided between the meter socket and enclosure. For Missouri installations the bonding jumper is provided in the 11 conductor cable.

p) CT wire must not route through PT compartment.
q) See Section 500 for CT enclosure grounding requirements.

r) All service equipment, including CT enclosure must be grounded and bonded per latest edition of the NEC or local inspection authority. See Section 500.

s) CT enclosure to be mounted such that the bottom of CT enclosure is no lower than 12” above finished grade and the top of the CT enclosure is no more than 78” above finished grade.

t) CT enclosure to be mounted on a flat even surface such that the enclosure door should open and close properly. When mounted on an uneven surface, such as brick or architectural stone, uni-strut mounting of the enclosure is required. In any case, if CT enclosure doors do not open or close properly, Ameren may require installation of uni-strut or some other equivalent mounting structure to correct the problem.

1001.03 SWITCHBOARDS (SECONDARY, BELOW 600V)

General requirements for CT/PT compartments in switchboards (Up to 3000A)

a) Metering transformers will not be allowed in pad mounted transformer enclosures on any new or upgraded service.

b) Customer owned switchboards will contain dedicated compartment(s) for the purpose of housing Ameren provided current and voltage transformers. PT compartments are only required for 277/480v and 480v services. (See below for minimum dimensions)

c) These compartments must be dedicated to Company equipment. Front hinged doors shall be provided with padlocking and sealing provisions for securing by Company.

d) CT’s and PT’s must be readily accessible from the front of the switchboards for ease of installation and removal.

e) Bussing for all phases, neutral and ground should be included in this section

f) CT and PT compartments must be hinged and padlockable. Separate doors must be provided for the CT and PT compartments.

gh) No obstructions or bus that might restrict free and easy access to the CTs and PT’s is allowed in front (hinged door side) of the CT or PT’s.

h) Customer equipment shall not be located within or accessible through this dedicated compartment.

i) CT and PT compartment must be separated and have barrier from other customer compartments to restrict access.

j) Metered and un-metered conductors shall be separated by insulated barriers.

k) Ameren meter – main switch sequence requirements must be followed.

l) Potential tap holes (#10–32 or 1/4” – 20) shall be located on the line side of the bus closest to the front, drilled and tapped through the entire bus, with lugs sized to accommodate a #10 wire, for each phase and neutral bus.

m) Outdoor located CT/PT switchboards sections shall be weather and rain resistant (NEMA Type 3R).

n) All switchboards must be UL listed, and meet minimum UL requirements for steel and aluminum structures.

o) Bottom of CT/PT section shall be no lower than 24” for U/G fed switchboards or 18” for O/H fed switchboards. May be reduced to 12” for overhead fed switchboards with a PT section.

p) Top of CT/PT section shall be no higher than 78”.

q) CT enclosure must be grounded with a properly sized bonding conductor connected to the customer’s grounding electrode. See Section 500.

r) All service equipment must be grounded and bonded per latest edition of the NEC or local inspection authority.

s) See pages 1001–6 thru 1001–18 for Ameren approved switchboard manufacturer drawings for CT and PT sections for 600V and below switchboards. Switchboards built per one of these ap-
proved drawings do not require Ameren approval prior to manufacture or installation. Switchboards not meeting one of these drawings must be approved by the Ameren Metering Department prior to manufacture.

1. CT compartment dimensions and requirements (401 thru 3000A 120V, 240V and 201–3000A, 277V, 480V)
   a) Minimum dimensions 35” W x 22” H x 12” D
   b) Provision for mounting bar type current transformers for 277/480V or 480V services from 201–1200 amp, 120/240V, 120/208V and 240V services from 401–1200 amp using a main breaker or a main fuse must be provided.
   c) Provisions for mounting large window current instrument transformers (5 3/4” window diameter) using non conductive supports for services from 1201 to 3000 amp must be provided. An insulated shelf or insulated angle bracket must be provided for mounting window type CT’s.
   d) Removable bus section must be provided in order to route the bus through the window type CT. No cable is allowed through the CT, bus only is allowed.

1. PT compartment for 277/480 and 480V services
   a) Minimum dimensions 35” W x 8” H x 8” D.
   b) An 8” bracket, or shelf extending the full width of the PT compartment for mounting the PT’s, shall be provided.
   c) Bracket or shelf should be strong enough to safely support up to 3 PT’s.
   d) The PT compartment must be located directly above or below the CT compartment. An insulated barrier between the CT and PT sections must be provided. Provisions for routing wire between the 2 compartments must be provided.

See Section 400.03 for maximum service sizes for non–standard service voltages such as 240 and 480 volt 3 wires.

1001.04 METER SOCKETS

1. Only Ameren approved pre–wired meter sockets, including color coded test switches, will be utilized on new installations.
   a) Meter sockets will be provided by Ameren for installations in Missouri territories
   b) Meter sockets will be purchased by customer/contractor for installations in Illinois territories.

2. Customer will be responsible for the installation of CT/PT enclosure, CT/PT, meter socket, and conduit.
   a) Customer is responsible for installing the conduit between the meter socket and the CT enclosure. See Section 1001.05 regarding metering cable.
   b) No LBs allowed between meter socket and CT enclosure unless prior approval is received from Ameren metering department.

3. All indoor meter socket locations must be pre–approved by Ameren.

4. Meter sockets shall normally be mounted on on a wall or an appropriate structure to the side of the CT/PT enclosures as close as practical to the CT subject to Electric Meter Department policy.
   a) Enclosures shall be installed so that any work to be performed by Ameren can be done from final grade level without the aid of a ladder.
   b) Where this is impractical, contact the Electric Meter Department for direction.

5. Conduit between the CT/PT enclosure and meter socket shall be 1” metallic rigid with bonding bushing, or schedule 40 (or greater) PVC. If PVC pipe is used, a bonding jumper no smaller than #10 should be provided between the meter socket and enclosure. For Missouri installations this bonding jumper is provided in the 11/C cable.

6. Ameren will terminate the metering conductor on each end.
Section 1001
Current Transformer Installations
For Services Under 600V

1001.05 CURRENT TRANSFORMERS – BELOW 600V

CT/PT Secondary Wiring

1. Ameren Missouri
   a) Ameren provided customer installed 11/C #12 Cu wire – up to 55’.
   b) Customer/contractor provided and installed 11/C, #10 Cu wire – 55’ to 90’.

   **Note:** For distances greater than 55’ Ameren will provide location where approved cable can be purchased by the customer/contractor. Only Ameren approved cable with proper sheath, wire and wire color will be allowed. Other wire sizes, requests for greater CT and meter separations, and primary metering CT sizing should be reviewed by the Meter Engineering Group.

2. Ameren Illinois
   a) Ameren provided and installed 8/C #12, Cu wire – up to 55’.
   b) Customer/contractor provided and Ameren installed 8/C, #10 Cu wire – 55’ to 90’.

   **Note:** For distances greater than 55’ Ameren will provide location where approved cable can be purchased by the customer/contractor. Only Ameren approved cable with proper sheath, wire and wire color will be allowed. Other wire sizes, requests for greater CT and meter separations, and primary metering CT sizing should be reviewed by the Meter Engineering Group.

1001.06 PICKUP OF COMPANY FURNISHED METER ITEMS (AMEREN MISSOURI)

Company furnished meter sockets, CT’s, PT’s, and wire packs are to be picked up by the customer or contractor based on job location as follows:

In St. Louis City, St. Louis County, Jefferson County and St. Charles:

a) Dorsett System Meter Shop
   Phone: 314–702–5012
   Address: Ameren Missouri Dorsett Facility
   12121 Dorsett Road
   Maryland Heights, MO 63043

b) In regional MO areas contact the local district office.
c) Communication of the requirements for this metering equipment should be done well in advance of need of installation date.
d) Customer or contractor must provide an Ameren Missouri job number in order to pick up the equipment. Material will not be issued without a valid job number.

1001.07 SWITCHBOARD’S DRAWINGS

Contact the local Ameren office to determine if drawings are required, or if approval is needed.

   Figure 1001–2A 1201–3000 amp OH Feed w/o main
   Figure 1001–2B 200–1200 amp OH Feed w/o main
   Figure 1001–2C 1201–3000 amp UG Feed w/o main
   Figure 1001–2D 200–1200 amp UG Feed w/o main

2. Current Transformer Installations – Siemens 3000 amp max
   Figure 1001–3A

3. Current Transformer Installations – GE 3000 amp max
   Figure 1001–4A 201–1200 amp with Bar Type CT Compartment (switchboard)
   Figure 1001–4B 1201–3000 amp with Window Type CT Compartment (switchboard)
Figure 1001–4C 1201–3000 amp with Window Type CT Compartment (switchgear)

   Figure 1001–5A
   Figure 1001–5B
   Figure 1001–5C

5. Current Transformer Installations – Square D 1201–3000 amp
   Figure 1001–5D
   Figure 1001–5E
   Figure 1001–5F

1001.08 CT/PT ENCLOSURE INSTALLATION DRAWINGS
1. 120/240 volt, 1 phase, 3 wire, 401–800 amp and 240 volt, 3 phase, 3 wire, 401–1200 amp installations
   Figure 1001–6A
2. 480 volt, 3 phase, 3 wire, 201–600 amp installations
   Figure 1001–6B
3. 120/208 volt 3 phase, 4 wire 401–1200 amp installations
   Figure 1001–6C
4. 120/208 volt, 3 phase, 4 wire, 1201–3000 amp installations
   Figure 1001–6D
5. 277/480 volt, 3 phase, 4 wire, 201–1200 amp installations
   Figure 1001–6E
6. 277/480 volt, 3 phase, 4 wire, 1201–3000 amp installations
   Figure 1001–6F
Section 1001
Current Transformer Installations
For Services Under 600V

Ameren Approved Switchboard – Eaton/Cutler Hammer CT/PT Compartment
1201–3000 Amp OH Feed W/O Main
Figure 1001–2A
Ameren Approved Switchboard – Eaton/Cutler Hammer CT/PT Compartment
200–1200 Amp. UG Feed W/O Main

Figure 1001–2D
Ameren Approved Switchboard – Siemens CT/PT Compartment
3000 Amp. Max.
Figure 1001–3A

Drawing No. IS–8500–21
Ameren Approved Switchboard – GE CT/PT Compartment
201–1200 Amp. with Bar Type CT Compartment (Switchboard)
Figure 1001–4A

Drawing No. 75CI433991
Ameren Approved Switchboard – GE CT/PT Compartment
1201–3000 Amp. with Window Type CT Compartment (Switchboard)
Figure 1001–4B
Section 1001
Current Transformer Installations
For Services Under 600V

Ameren Approved Switchboard – GE CT/PT Compartment
1201–3000 Amp. with Window Type CT Compartment (Switchboard)
Figure 1001–4C

Figure 1001–4C

Drawing No. 0213D36454
Ameren Approved Switchgear – Square D CT/PT Compartment
201–1200 Amp.
Figure 1001–5A

NOTES:
1. FRONT OF CT AND PT COMPARTMENTS ARE FULLY BARRIRED.
2. CT AND PT COMPARTMENTS ARE FULLY BARRIRED.
3. TOP FEED CT AND PT COMPARTMENTS SHOWN.
4. THIS SERVICE SECTION IS FOR USE ON 1000 V, 3-PH, 4W, 480 V, AND 240 V, 3-PH, 4W, CT/PT COMPARTMENTS ONLY FOR 200 AMPS. PT COMPARTMENT REQUIRED ONLY FOR 277/480 V, 3-PH, 4W, PT COMPARTMENT REQUIRED ONLY FOR 240 AMP CT/PT COMPARTMENTS. 6. PROVIDE GROUND LUG IN CT/PT COMPARTMENT TO CONNECT CUSTOMER CABLE TO SOURCE. 7. PROVIDE GROUND LUG TO SOURCE.
8. PROVIDE GROUND LUG IN CT/PT COMPARTMENT TO CONNECT CUSTOMER CABLE TO SOURCE. 9. PROVIDE GROUND LUG IN CT/PT COMPARTMENT TO CONNECT CUSTOMER CABLE TO SOURCE.

Drawing No. 09EE2400POH00
### Ameren Approved Switchboard – Square D CT/PT Compartment

**201–1200 Amp.**

**Figure 1001–5B**

**Drawing No. 09EE2400POH00**

<table>
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<th>MAIN (P BRKR)</th>
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<th>PT COMPARTMENT</th>
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<td>24.00</td>
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09/2014
Ameren Approved Switchboard – Square D CT/PT Compartment
1201–3000 Amp.
Figure 1001–5C
Ameren Approved Switchboard – Square D CT/PT Compartment
1201–3000 Amp.
Figure 1001–5D
Ameren Approved Switchboard – Square D CT/PT Compartment
1201–3000 Amp.
Figure 1001–5E
Ameren Approved Switchboard – Square D CT/PT Compartment
1201–3000 Amp.
Figure 1001–5F
Section 1001
Current Transformer Installations
For Services Under 600V

120/240 Volt, 1 Phase, 3 Wire, 401 – 800 Amp &
240 Volt, 3 Phase, 3 Wire, 401 – 600 Amp
Figure 1001–6A

WARNING
Removing Meter does not De-Energize Service

NOTES:
Refer to Section 1001.04 for detail requirements. For more information, see Section 200.02.
NOTE:
Refer to Section 1001.04 for detail requirements. For more information, see Section 200.02.
Section 1001
Current Transformer Installations
For Services Under 600V

120/208 Volt, 3 Phase, 4 Wire,
401 – 1200 Amp.
Figure 1001–6C

WARNING
Removing Meter does not De-Energize Service

Min. 30” if duct run
Min. 24” if direct buried cable

78” Max.

1-1/2” Metallic Rigid or Sch 40 (or greater) PVC

12” Min.

NOTE:
Refer to Section 1001.04 for detail requirements. For more information, see Section 200.02.
Section 1001
Current Transformer Installations
For Services Under 600V

120/208 Volt, 3 Phase, 4 Wire,
1201 – 3000 Amp.
Figure 1001–6D

WARNING
Removing Meter does not De-Energize Service

NOTE:
Refer to Section 1001.04 for detail requirements. For more information, see Section 200.02.
Section 1001
Current Transformer Installations
For Services Under 600V

277/480 Volt, 3 Phase, 4 Wire
201 – 1200 Amp.
Figure 1001–6E

WARNING
Removing Meter does not De-Energize Service

NOTES:
Refer to Section 1001.04 for detail requirements. For more information, see Section 200.02.
Section 1001
Current Transformer Installations
For Services Under 600V

277/480 Volt, 3 Phase, 4 Wire
1201 – 3000 Amp.
Figure 1001–6F

WARNING
Removing Meter does not De-Energize Service

Grounding Electrode System
See Section 500

Min. 30” if duct run
Min. 24” if direct buried cable

1-1/2” Metallic Rigid or Sch 40 (or greater) PVC

NOTE:
Refer to Section 1001.04 for detail requirements. For more information, see Section 200.02.
A list of approved customer provided manufacturer’s meter sockets (or enclosures) catalog number in Section 1100 has been removed and posted separately from the Manual due to constant changes. To get the latest catalog number information for the meter sockets (or enclosures), please use the website as indicated below.

www.ameren.com/servicemanual

As updates are made available, we will advise you by email. You will then be able to access these updates through the Ameren website.
1200.01
Ameren is committed to both the safety of the public and its employees and to the reliable operation of its distribution system. Installations involving customer-owned and operated generating equipment create the potential for serious personal injury as well as damage to the Customer’s or Company’s equipment.

1200.02
Installation plans for ALL permanently installed customer-owned generating equipment or permanently installed transfer switches, whether for backup or continuous duty, shall be submitted to Ameren for review and approval.

The company reserves the right to inspect customer installed generation and associated equipment even though it is behind the service disconnecting means.

1200.03
Ameren’s installation requirements and application form(s) may be obtained from a local Ameren engineering representative, or at the link below, or by calling the Ameren Customer Contact Center (866–992–6619 in MO or 800–755–5000 in IL).


1200.04
The following information is only a summary of Ameren’s requirements for BACKUP GENERATION that operates with either an open transition or a closed transition of less than 100 milliseconds in duration. The complete requirements and application must be secured as noted above.

1200.05  GENERAL REQUIREMENTS
1. Main service disconnect that is padlockable in the open position if the Ameren service being backed up is less than 600V
2. Single “visible open” disconnect device per generating unit if the Ameren service being backed up is greater than 600V – refer to Ameren’s full requirements for details on satisfying this requirement
3. Transfer equipment (manual or automatic) to prevent inadvertent continuous interconnection of sources
4. Signage permanently installed at the revenue meter indicating (1) the presence of generation and (2) the availability of either a padlockable main service disconnect or a “visible open” disconnect for isolation
5. Signage permanently installed at the padlockable main disconnect or “visible open” disconnect for purposes of identification

1200.06  REQUIREMENTS FOR OPEN TRANSITION
1. Any of the following methods can be used:
   1.1 Integral transfer switch with mechanical interlocking provisions.
   1.2 Kirk key interlocked solid blade switches or circuit breakers.
   1.3 Electrically interlocked circuit breakers with backup protection via hard-wired breaker auxiliary contacts.
2. Automatic transfer schemes shall include the following:
   2.1 Voltage-sensing capability to detect the loss and recovery of the Ameren source
   2.2 Open transition manual “bypass” (i.e. auto disable) is highly recommended, though not required
1200.07 REQUIREMENTS FOR CLOSED TRANSITION

1. Any of the following methods can be used:
   1.1. Integral automatic transfer switch set
   1.2. Two or more solid blade disconnects or circuit breakers
2. Transfer times of less than 100 milliseconds in duration
3. Synchronizing capability to safely tie the sources together
4. Transfer failure scheme for opening one of the sources when closed transition exceeds a maximum two (2.0) second time delay
5. Undervoltage protection to prevent a closed transition transfer when the Ameren source is not present
6. Open transition manual “bypass” (i.e. auto disable) is highly recommended, though not required

1200.08 REQUIREMENTS FOR PROGRAMMABLE LOGIC CONTROLLERS (PLC)

1. Independent hard–wired backup control scheme to prevent extended paralleling
2. Enabled when transfer scheme is in “automatic” and disabled when transfer scheme is in “manual”
3. Automatic transfer disabled if any of the switches or circuit breakers being controlled is tripped manually
4. Shall not lose power as a direct result of automatic transfer switching operations
FOR AMEREN MISSOURI ONLY

1300.01 GENERAL

The Underground Operating Center service territory secondary distribution voltage is 208Y/120V, three-phase, four-wire. For engineering reasons, Company may offer 480Y/277V, three-phase, four-wire service where the loads warrants this voltage; however, 480Y/277V secondary metered service can only be provided by padmount transformation or customer indoor substation transformers, both located on customer property. Large loads, at Company option, may be supplied directly from 13.8 kV radial feeders.

Choice of voltage and type of system offered depends on location and size of load. Customer should consult Company to determine the voltage and method of supply that will be available, prior to beginning customer engineering or purchasing equipment.

1300.02 CUSTOMER INDOOR SUBSTATIONS

Where outdoor space is not available, when required by municipal ordinance, or other valid reasons when agreed to by the Company, secondary metered service will be provided from a customer indoor substation, or indoor sub. The Company will provide customer requirements and specifications for the indoor sub and will install, own, and maintain primary switches, primary fuses, primary equipment enclosures and cables, and transformers.

The customer shall provide the indoor sub space and building elements in accordance with company specifications and requirements. Customer responsible building elements include, but are not limited to, the physical two room space, all doors, oil retention system, grounding system, lighting and receptacles, equipment stands, access pits, grates and ladders.

The customer shall contact the appropriate Company Division operating center a minimum of nine months prior the desired in-service date. A minimum of nine months is required to allow for company/customer engineering, equipment purchase, and construction.

Although predominantly in downtown St. Louis, indoor subs can be built within any building that is within the Company’s service territory, if approved by the Company. Where space is available and meets Company requirements, pad mount equipment (switchgear and transformer) is the preferred delivery method.

1300.03 208/120V NETWORK SERVICE

Customers planning to take 208Y/120V network service from the downtown grid can take service by one of three service connection means: 1) Company network cables terminated at a customer provided network tap box (see tap box spec dwg 1300–1A); 2) Company network cables terminated at a customer owned commercial grade 600V (or less) switchboard (see service manual drawing1300–2A); or 3) Company network cables terminated at a self-contained meter enclosure. If the network service connection involves multiple commercial metered services at the same building, the Customer shall provide a network tap box, as specified in this manual. New customer connections to the NW distribution system, whether a completely new service or an additional service(s) to an existing NW tap box, shall be reviewed and approved by the Company’s Underground Department prior to the start of any construction.

Due to the possibility of customer 208V distribution being exposed to high fault currents available when connected to the Company’s downtown St. Louis 208Y/120V network (NW) distribution system, the Company and the City of St. Louis Authority Having Jurisdiction require a main switch and current limiting overcurrent
Section 1300
Network and Heavy Underground Systems

FOR AMEREN MISSOURI ONLY

protective device (OCPD) to be installed for all customer service entrance equipment, immediately following the supply side termination lugs. The City of St. Louis is enforcing NEC Article 110.10 in requiring an appropriate OCPD for customer equipment, for all customer service connections to the downtown NW distribution system. Service connections to the downtown NW distribution system, under NEC Article 230.71, Maximum Number of Disconnects, or the "6 Switch Rule," shall NOT be allowed.

1300.04 COMMERCIAL/RESIDENTIAL HIGH–RISE MULTI–METER INSTALLATIONS

Multi–story structure residential metering centers shall be located on every 3rd floor to allow metering of the meter center floor and the floor above and below. Should building geometry prevent metering from every 3rd floor, the Customer should contact the Company to receive a variance for alternate meter center locations.

Multi–story residential lofts, with Customer provided meter equipment on every third floor, the customer provided vertical riser shall be bus duct (vertical risers made with any cable system, armored or in conduit, shall NOT be allowed). If the customer wishes to install horizontal distribution 600V cable and conduit between the bus duct riser and the modular meter center, within the floor meter center room, this is acceptable if the cable termination boxes at the bus duct riser and the modular meter center are equipped by the original equipment manufacturer with provision for application of a minimum of two (2) Company metering seals to the front access panels. The side, top, and bottom panels, if not seamless construction, shall be equipped with tamper proof seals. The bus duct riser and the residential modular metering center shall be located in the same room or space, within close proximity to each other (see service manual drawing for guidelines on preferred high–rise loft service configuration).

All customer metering equipment (bus duct riser, modular meter center equipment, and mains) and the customer metering equipment configuration shall be approved by the company prior to the customer purchasing and installing such equipment.
GENERAL NOTES:

CONSULT Ameren’s ELECTRIC SERVICE MANUAL FOR METERING RULES AND EQUIPMENT SPECIFICATIONS.

RESIDENTIAL METERING SHALL BE LOCATED ON EVERY THIRD FLOOR, TO METER THE METER CENTER FLOOR, AND THE FLOOR ABOVE AND BELOW.

THE CUSTOMER EQUIPMENT RISER SHALL BE COPPER OR ALUMINUM BUS DUCT. BUS DUCT EQUIPMENT SHALL BE APPROVED BY THE COMPANY PRIOR TO PURCHASE OF CUSTOMER EQUIPMENT.

RESIDENTIAL HIGH-RISE SERVICES SHALL BE 208Y/120V 3Ø 3-WIRE; COMMERCIAL SERVICES CAN BE 208Y/120V 3Ø 4-WIRE.

AmerenMO 208Y/120V Radial System
Downtown High-Low Rise Lofts
Resi/Comm Service EQ Configuration

Date: 3-31-08  Highest Voltage: 600  Drawing By: None
1300.05 NETWORK AND HEAVY UNDERGROUND AREAS

In the downtown areas of Bloomington, Champaign, Decatur, Galesburg, Normal, Ottawa, and Peoria, there are designated areas were the only voltage available is 120/208 volts, or 277/480 volts. In the areas that are only 120/208 volts, the Company may offer 480Y/277V, three–phase, four–wire service where the loads warrants this voltage; however, 480Y/277V secondary metered service can only be provided by padmount transformation, located on customer property. Choice of voltage and type of system offered depends on location and size of load.

Customer should consult Company to determine the voltage and method of supply that will be available, prior to beginning customer engineering or purchasing equipment.

In certain areas of Peoria, only 277/480 volts is available, and the customer will be required to accept that voltage.

If Ameren Illinois expects there will be multiple services installed from a manhole or transformer vault, strong consideration should be given to installing a Three Phase Multiple Secondary Service Termination Cabinet as featured in Ameren's Distribution Construction Standards 52 10 01 00.

A. CUSTOMER INDOOR METERING

Where outdoor space is not available, or other valid reasons when agreed to by the Company, secondary indoor metered service will be allowed upon review by the Company’s Engineering and Metering Departments. The Company will provide customer requirements and specifications for the indoor metering and location, and must have unrestricted access to the metering location. All space must meet the NEC and NESC clearance requirements and Company specifications. The customer shall contact the appropriate Company Division operating center a minimum of nine months prior the desired in–service date. A minimum of nine months is required to allow for company/customer engineering, equipment purchase, and construction.

Although the heavy underground and network areas are identified above in Ameren Illinois, indoor metering and any requirements as set forth in this section of Ameren’s Service guide can be built within any building that is within the Company’s service territory, if approved by the Company. Where space is available and meets Company requirements, pad mount equipment (switchgear and transformer) is the preferred delivery method in these commercial and network underground areas.
B. 208/120V OR 277/480V NETWORK SERVICE (BLOOMINGTON, DECATUR AND PEORIA ONLY)

Customers planning to take 208Y/120V network service from the downtown grid can take service by one of three service connection means:

1) Company network cables terminated at a customer provided network tap box
2) Company network cables terminated at a customer owned commercial grade 600V (or less) switchboard (see service manual drawing 1300−2A); or
3) Company network cables terminated at a self−contained meter enclosure.

If the network service connection involves multiple commercial metered services at the same building, the Customer shall provide a network tap box, as specified in this manual. New customer connections to the network distribution system, whether a completely new service or an additional service(s) to an existing network tap box, shall be reviewed and approved by the Company’s Engineering Department prior to the start of any construction.

Due to the possibility of customer 208V distribution being exposed to high fault currents available when connected to the Company’s downtown network distribution system, the Company and the Authority Having Jurisdiction (AHJ) requires the main switch and current limiting overcurrent protective device (OCPD) to adequate for the available fault current in these installations. This main switch and over current protection will be required to meet NEC Article 110.10 for all customer service connections to the downtown network distribution systems. Only after review by Ameren’s local operating center engineering and meter departments will NEC Article 230.71, or the ‘6 handle rule’ will be accepted. In multiple meter locations for residential units in these network systems, the customer will be required to balance their total building load across all three phases.

C. COMMERCIAL/RESIDENTIAL HIGH-RISER MULTI-METER INSTALLATIONS

Multi−story structure (over 3 floors) residential metering centers shall be located on every 3rd floor to allow metering of the meter center floor and the floor above and below. Should building geometry prevent metering from every 3rd floor, the Customer should contact the Company to receive a variance for alternate meter center locations.

Multi−story residential lofts, with Customer provided meter equipment on every third floor, the customer provided vertical riser can be either buss duct or vertical risers made with any cable system. The installations will need to meet the NEC, and be acceptable to the Authority Having Jurisdiction. If the customer wishes to install horizontal distribution 600V cable and conduit between the bus duct riser and the modular meter center, within the floor meter center room, this is acceptable if the cable termination boxes at the bus duct riser and the modular meter center are equipped by the original equipment manufacturer with provision for application of a minimum
of two (2) Company metering seals to the front access panels. The side, top, and bottom panels, if not seamless construction, shall be equipped with tamper proof seals. The bus duct riser and the residential modular metering center shall be located in the same room or space, within close proximity to each other (see service manual drawing for guidelines on preferred high–rise loft service configuration).

All customer metering equipment (bus duct riser, modular meter center equipment, and mains) and the customer metering equipment configuration shall be approved by the company prior to the customer purchasing and installing such equipment.
NOTES:

An initial depth of 26" shall be excavated and all loose soil shall be removed or tamped. The length + width of the hole shall be sized to allow a minimum of 6" of clearance on all sides.

Add 2" of screening, compact, and set box pad.

Final depth should be adjusted to provide 6" of exposed ground pad at final grade.

Provide 12" of space between the top of the box pad and the end of the conduits.

Stabilize the box pad and conduits by placing 12" of crushed stone screening inside the box pad and tamp in place.

Backfill with loose material, DO NOT backfill next to the ground sleeve pad with chinks of material or rocks. Pack loose backfill by floor tamping and do not tamp excessively close to the ground sleeve pad sides. NOTE: Hydraulic tamping is not recommended.

Center positions of each bus are reserved for Ameren feed cables.

Bus has lay-in style connectors. Clean the contact surfaces of connectors and cables then coat them with inhibitor.

Secure the enclosure to the pad.

Be sure that the enclosure is grounded by attaching ground wires to the ground rod and to the neutral bus.
<table>
<thead>
<tr>
<th>Stnd. / Stk. No.</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 12 06 196</td>
<td>Pad – Fiberglass 49“ x 24” x 30”</td>
<td>1</td>
</tr>
<tr>
<td>B 18 52 025</td>
<td>Wire – Copper, #2 Solid, Soft Drawn</td>
<td>12</td>
</tr>
<tr>
<td>C 23 63 027</td>
<td>Rod – Ground, 5/8” x 8’</td>
<td>1</td>
</tr>
<tr>
<td>D 17 52 032</td>
<td>Clamp – Ground Rod, 5/8” #8 – 1/0</td>
<td>1</td>
</tr>
<tr>
<td>E 69 58 121</td>
<td>Connector – Ground</td>
<td>2</td>
</tr>
<tr>
<td>F 54 07 236</td>
<td>Enclosure – Padmount, 3 Ph Secondary</td>
<td>1</td>
</tr>
</tbody>
</table>
FOR AMEREN MISSOURI ONLY

For Ameren Illinois, Parallel generation connections to the Ameren Illinois electric system are governed by Illinois State Law. Specific requirements, forms, and references are documented in the Ameren Illinois web site at www.ameren.com/servicemanual

Requests for information may be directed by email to renewablesillinois@ameren.com or by mail to Ameren Illinois Net Metering Coordinator, 6-7 East Adams St., MC Springfield, 10th floor, Springfield, Illinois 62701.

1400.01 Ameren is committed to both the safety of the public and its employees and to the reliable operation of its distribution system. Installations involving customer-owned and operated generating equipment create the potential for serious personal injury as well as damage to the Customer’s or Company’s equipment.

1400.02 All Customer-Generator installations such as photovoltaic (PV), wind, or other system shall adhere to UL 1741, IEEE 1547, and any applicable requirements of the National Electrical Safety Code, the National Electric Code, Institute of Electrical and Electronics Engineers (IEEE), Underwriters Laboratories (UL), local electric codes, applicable NEMA codes, OSHA, and Company’s Electric Service Rules as set forth in published tariffs.

1400.03 Customer-Generator system must be capable of automatically disconnecting from the company system. During an outage on the utility system, an interconnected PV, wind, or other system can back-feed an Ameren utility line, creating a hazardous condition. To prevent this, Customer-Generator system must either automatically disconnect from or cease to energize the appropriate Ameren utility company electric lines when a loss of the utility company’s supply occurs. Customer-Generator system must be installed in accordance with current IEEE standards and be UL-listed.

1400.04 Non-island inverters are required.

1400.05 For Customer-Generator systems greater than 10kW output, Customer must submit operating and instruction manuals for the specific model of equipment being installed to Ameren for review prior to connection of the equipment.

1400.06 Customer’s system must include a manual visible break AC disconnect switch and this switch must be electrically located between the inverter and the customer's distribution equipment which is accessible to Ameren utility company staff and lockable with Ameren utility company locks. The manual disconnect switch should be marked by the customer with an Ameren provided label: “Alternative Generator AC Disconnect Switch”. This allows utility company crews to disconnect the customer-generator PV or wind generator system from the utility company system for maintenance, reliability and safety concerns. The disconnect switch should be mounted within sight of the meter but in no case greater than 10’ from the meter. If it is not practical to locate the disconnect switch within 10’, the customer should contact Ameren.
en for approval to mount the disconnect switch at a mutually agreeable location. In this case the customer is required to place a permanent sign (engraved on hard plastic and screwed in place, use of a label marker, or glued on strips is not acceptable). This sign should be mounted on the meter enclosure where easily visible.

**1400.07** Customer-Generator system must include appropriate wiring and meter mounting devices if the customer wants to sell or receive credit for excess electricity from the customer-generator system back to the appropriate Ameren utility company system. Also, sales of electricity are regulated by various state and federal agencies. It is strongly recommended that the customer discuss the details of the project with Ameren personnel at the earliest possible time and investigate all state and federal agency requirements before proceeding.

If the customer decides to proceed with a Customer-Generator project:
In Missouri, call **314.554.2649** or email lcosgrove@ameren.com

**1400.08 GENERAL REQUIREMENTS**

1. Customer-Generator system shall be installed according to the manufacturer's instructions.

2. Customer-Generator is responsible for protecting their generator's equipment in such a manner that faults or other disturbances on the Company’s system or on Customer-Generator's system do not cause damage to their equipment.

3. Customer-Generator shall furnish information to Company regarding their proposed generation equipment and protective devices prior to parallel operation. Company will check the adequacy of this proposed equipment and its compatibility with protective devices on the Company’s system and will either approve as submitted or specify additional equipment which will be required in order to begin parallel operation with the Company’s system.

4. A manual visible break AC disconnect switch must be provided which is under the exclusive jurisdictional control of the Company’s distribution control office. This manual switch must have the capability to be locked out of service by Company-authorized personnel.

5. For PV interconnections made between the customer's main disconnect and Ameren's meter a fused disconnect must be mounted within 4' of the connection but still within 10' and in sight of the meter. The connection cannot be made in the Ameren meter base for 200 amp services, the connection must be made external to the meter base. For 400 amp services connection in the meter base is allowed if the addition of PV system will not cause there to be more than 2 lugs per leg or phase, if that cannot be achieved then the connection must be made external to the meter base. Connections inside a CT ro CT/PT enclosure are allowed but must be reviewed and approved by Ameren prior to installation to verify that additional lugs for the PV system will not cause a safety or clearance problem in the enclosure.

**1400.09 METERING**

1. Parallel generating facilities connected to Company’s system are divided into two groups: 1) "Two-way power flow" and 2) "One-way power flow."
2. "Two-way Power Flow" would apply to customer's facilities whose load is sufficiently variable or smaller than its generating capacity so that excess Customer-Generated power could flow into the company's system.

For two-way power flow, the revenue metering for two-way power flow installations shall include a bi-directional meter (commonly referred to as the "net meter"). The meter will be capable of measuring kWh in both directions; one register indicating kWh to the customer from Ameren and a second register indicating kWh from the customer to Ameren.

3. "One-way Power Flow" would apply to Customer's facilities whose load is significantly larger than their generating capacity so that no Customer-generated power would flow into the Company's system except under fault conditions.

For one-way power flow, the inter-tie circuit breaker will be tripped by equipment capable of detecting the reverse power flow condition toward the Company's system. This type installation requires a single revenue meter installation with detente to prevent operation of the meter in the reverse direction.

4. The meter enclosure shall be an approved Ameren meter enclosure.

Sample of Placement of Customer Equipment

![Diagram of Customer-Generator Systems in Parallel with the Ameren Distribution System with Capacity of 10kW or Less]

- Interconnected PV, wind or other system connected in parallel with an Ameren utility line
- DC Disconnect
- Inverter
- Lockable AC Disconnect (locate an outside wall next to meter within 10")
- Utility Bi-directional Meter
- Main Panel
- Utility Incoming Service