

Electric Service Guide for Residential Construction

Table of contents

- Contacting KCP&L 2
- Existing Home Remodeling or Additions 2
 - Changing Your Electric Service 2
 - What You Need to Know Before You Call 3
- Building a New Home 4
 - Before You Call 5
- KCP&L Services at A Glance 6
 - Temporary Service 6
 - Anticipating and Controlling Costs 7
- Glossary of Terms 7
- Construction Process Overview 8
- Approved Meter Sockets 9
- Drawings 10

Energizing Life: A Commitment that Goes Beyond Reliability

At KCP&L, we know you expect electricity to always be there. And you should. So we've worked hard to build one of the best reliability records in the industry. We also want to make sure you have the service you need, when you need it. Whether you're remodeling your existing home or building a new one, this brochure is your guide to permitting, inspecting and energizing your project from start to finish.

Contacting KCP&L

Most construction or service upgrades can now be managed effortlessly online at **kcpl.com**. To order a new service meter, remove a temporary meter, upgrade existing service or for a complete copy of KCP&L's current service standards for all construction, click "Business" then "Builders/Contractors." If you would like to speak to a customer service representative, please call (816) 471-KCPL (5275) or 1-(888)471-KCPL (5275).

Existing Home Remodeling or Additions

Start by considering the extent of your project and the role your electric service will play. Then you can begin to organize the information you'll need and the actions you'll need to take to get the job done.

For example, new homes or many projects that involve new construction require city permits and inspections before permanent electric service can be connected. Smaller projects within the home may simply require an electric service upgrade. But even for these, you can save time by having the right information handy when you call KCP&L.

Changing your electric service

One of the most common service alterations is an upgrade to the electric service panel—from 60 amps to 100 amps, from 100 amps to 200 amps, and so on. Upgrades are generally needed when a family "outgrows" its existing service due to remodeling, room additions or installation of a new major electric appliance. KCP&L seldom charges for these alterations.

This type of service upgrade will require a new main disconnect panel or "breaker box" and a new entrance wire connection from the outside meter socket. A new "riser" from the meter may be needed to meet National Electric Code Standards. See *KCP&L's Electrical Service Standards* for your specific installation.

Another common change of electric service involves moving the overhead service drop underground. This is generally done as a safety precaution when families decide to add a backyard pool, deck or patio, or simply to improve aesthetics. A new meter socket and entrance wire may be required. Refer to *KCP&L's Electrical Service Standards*.

For a copy of *KCP&L's Electrical Service Standards*, visit **kcpl.com** and search "Electrical Service Standards."

Follow these simple steps to make the job efficient and hassle-free.

Step 1—The Permit. Whether you are doing the electrical work yourself or hiring an electrician, a wiring permit may be required. You can obtain one at your municipal or

county offices.

Step 2—Initiate Your Service Request. With permit in hand, call KCP&L, or enter your request online at **kcpl.com**. Be prepared with all the information in the chart titled *Service Alterations, Upgrades or Upgrades for Room Or Deck Additions*. Our representative will take your information and enter it into our system for scheduling.

Step 3—KCP&L Service Visit. A designer will visit your service address to inspect the project and determine the best location for the new meter socket. Within five days following the visit, a temporary construction "pigtail" will be installed, if requested. You'll also be advised of any charges for your project. These will need to be paid before KCP&L can remove the pigtail and connect your new service.

Step 4—Inspection. Once the electrical work is completed, inside and out, call your electrical inspector's office for a safety inspection. This must be completed before KCP&L can reconnect your service. The inspector will contact KCP&L to approve connection, generally the following working day. KCP&L will inspect the alteration outside your home when the work is finished.

Virtually every city and county in KCP&L's service territory requires routine inspections of electrical work performed by homeowners or licensed electricians. The agency conducting the inspection generally will be responsible for granting wiring permits. KCP&L cannot connect your electrical service until we've received inspection approval from the governing body that completed the inspection. For exact instructions and requirements where you live, contact your local city or county offices.

Step 5—Connect Service. KCP&L will schedule a construction crew to remove the temporary pigtail and connect your new service following receipt of approval from your city or county.

What you need to know before you call.

When you are ready to initiate a project request, call KCP&L or log on to **kcpl.com**. If you call our Customer Contact Center, a representative will take your information and direct your request to the service center nearest to you. To save time and inconvenience, make sure you have the following information before you call:

SERVICE ALTERATIONS OR UPGRADES FOR ROOM OR DECK ADDITIONS:		
Your KCP&L account number or service address	Acct No.:	
	Address:	
Whether a temporary disconnect or "pigtail" will be needed (See page 2, Step 3)	Check One:	<input type="radio"/> Yes
		<input type="radio"/> No
Your current service level	<input type="radio"/> 100 amp	
	<input type="radio"/> 200 amp	<input type="radio"/> Other:
Your new service level	<input type="radio"/> 100 amp	
	<input type="radio"/> 200 amp	<input type="radio"/> Other:
Whether your service will be overhead or underground	<input type="radio"/> Overhead	<input type="radio"/> Underground
Your wiring permit number		
Your targeted completion date		
Your phone numbers	Daytime: ()	
	Evening: ()	
Your electrician's name and phone number	Name:	
	Phone: ()	
<small>*KCP&L will install a hard-wired disconnect at no cost for service alterations from 60A to 100A and from 100A to 200A. A hard-wired disconnect will not be installed on service alterations 200A and above. 200A alterations and above will require a "show up." Note that only KCP&L employees are allowed to cut or remove a meter seal.</small>		

If you prefer, you can fax your information to KCP&L at **(816) 654-1125**. Please provide a complete description of your project including all the information listed above. Be sure to include your daytime and evening telephone numbers so that we can reach you if there are questions.

Building a New Home

New home construction is hectic enough without last minute surprises. Here are some tips to help you understand what you need to do for temporary and permanent electric service.

Step 1—Initiate Your Service Request. Call KCP&L or enter your request online at **kcpl.com** as soon as possible to get your service order started. Be prepared with all the information in the chart labeled *New Home Construction* on the following page. Our customer care representative will take your information and enter it into our system.

Step 2—Survey, Legal Description and Easements. Copies of your property's legal description, e.g. warranty deed, and plot plan are needed by KCP&L before electrical service planning for new construction can begin. Both should have been provided to you at closing. Together these documents help KCP&L identify utility easements, property corners, building setbacks, distances and more.

In addition, your property should have ground stakes or metal rods for locating the corners. Often they are just below the surface. If they cannot be located, you may need to have the property surveyed and a copy of the survey sent to KCP&L.

Step 3—Temporary Service During Construction. There are two types of temporary electric service: customer-provided or KCP&L-provided service.

Before you call

Once again, you can initiate your project request by calling KCP&L or online at **kcpl.com**. If you call, our representative will take your information and direct your request to the service center nearest to you. For new home construction, make sure you have the following information ready:

NEW HOME CONSTRUCTION		
The name for your new account		
Your service address and billing address (if different)		
Lot and block number (if any)		
Subdivision or development name (if any)		
Plat or phase of development (if more than one)		
Your phone numbers	Daytime: ()	
	Evening: ()	
Your electrician's name and phone number	Name:	
	Phone: ()	
Whether your home heating will be gas or electric	<input type="radio"/> Gas	<input type="radio"/> Electric
Your new service level	<input type="radio"/> 100 amp	
	<input type="radio"/> 200 amp	<input type="radio"/> Other:
Whether temporary service for construction is required	Temporary service needed: <input type="radio"/> Yes <input type="radio"/> No	
	If yes:	<input type="radio"/> Customer Provided
The date on which you'll be ready for permanent service		
Whether your service line will be overhead or underground	<input type="radio"/> Overhead	<input type="radio"/> Underground

KCP&L Services at a Glance

Most construction services surrounding temporary or permanent connection of electric service are performed by KCP&L. Others are the responsibility of the property owner and should be done by a licensed electrician. While most of KCP&L's services are free, some involve materials or labor and will result in a minimum charge. Call us if you have questions about a service not listed.

Current Transformers

Current transformers (C.T.'s) are required on all single-phase services over 400A. Installation of C.T.'s requires the customer to provide and install a C.T. cabinet and a splice box if needed. KCPL will provide the C.T.'s and meter socket. The customer is required to install the provided C.T. meter socket and C.T.'s. See DWG 900.1-28 for standard drawing of single phase residential C.T. installation. C.T.'s are installed with the polarity mark towards the transformer and are separate from other metering and control circuits

Temporary Service

Customer-Provided Temporary Service. This is generally 120/240 volt, 3-wire service although other voltages may be available. Inspections by the city or county governing agency and by KCP&L are required before KCP&L can connect this type of temporary service.

KCP&L-Provided Temporary Service. This is available in 120 volts, so only 120-volt equipment can be operated from this temporary service. No city or county inspection is required.

If your job calls for other voltages, these will be limited to the voltages available at your construction site. If no secondary voltage is available, you'll need to order a construction project to build the desired service. The construction project requires additional time beyond the normal 3-5 working days normal for temporary services. Construction time and material charges will be billed if temporary facilities are not used as part of the permanent service.

To avoid construction delays, contact KCP&L as soon as you know that temporary service will be needed. Otherwise you may need to use a generator to avoid delays or added construction costs.

Once the electrical work has been completed, inside and out, call your electrical inspector's office for a safety inspection. This must be completed before KCP&L can connect your service. The inspector will contact KCP&L to approve the connection, generally the following working day. Depending on complexity, we may need to inspect the outside of your home one last time before scheduling a construction crew to connect the service.

Remember to have the temporary service meter removed if it's no longer needed.

Anticipating and Controlling Costs

The decisions you make regarding service size and distribution can result in additional construction charges. Costs to provide service in rural settings can be higher than in cities where distribution lines are closer and more readily accessible. Start planning early and have your KCP&L representative help you identify potential costs so you can anticipate, and know how you can control them. Visit kcpl.com for the latest edition of our Electrical Service Standards.

Glossary of Terms

Alteration. Any change in the electric service. Although this is generally an upgrade in the service panel—from fuses to breakers, main switch size from 60A to 100A or 200A — it also can be a change from overhead to underground service. Relocating the service to accommodate a new room or deck is another example where a fee may be charged.

Ampere (amp, A). The standard unit for measuring strength or rate of flow of an electric current. Also the measure of residential electric service. (100A or 200A, etc.)

C.T.'s (current transformers). Current transformers convert the flow of electrical current at the input to a different level of flow at the output. This facilitates using the same meter in different installations.

Customer-Provided Temporary Service. A metered service, usually 120/240V, provided by the customer during construction. Voltages may vary as determined by availability and the customer. A fee will be charged, and an inspection is required prior to service connection.

Service Hook. A device anchored to a building, which supports the overhead service drop. The device must be able to support a 900-pound stress.

Inspection. An inspection of a completed electrical project is the responsibility of the governing body for that area. Once approved, the inspecting agency will notify KCP&L. We cannot connect permanent service without approval.

KCP&L- Provided Temporary Service. A 120V metered service provided and installed by KCP&L for a fee. No city or county inspection is required for this type of service.

Meter Socket. A metal box fitted with a sealed, removable lid into which the electric meter is placed.

National Electric Code (NEC). A procedural guide for wiring projects used by all governing bodies to ensure proper, safe and consistent wiring practices by homeowners and electricians. The governing bodies themselves, however, have final authority to approve or deny electric service.

Overhead Service. Also called a service drop, this system delivers electric service from the pole, through suspended wires, to a home or building.

Permit Number. The number issued when a permit is purchased prior to starting any electrical wiring project. These are required in most areas.

Pigtail (or temporary disconnect). Wiring installed by KCP&L at no charge that

enables the electric service to be disconnected for safety while working on the electric service panel (120/240V only.) KCP&L recommends using a qualified electrician.

Riser. A vertical PVC (plastic) or metal pipe mounted on top of the meter socket to protect and insulate the service entrance wires.

Underground Service. Power lines buried and encased in PVC (plastic) that delivers electric service from pole, transformer or secondary pedestal to a home or building.

Weatherhead. A PVC (plastic) or metal cap at the top of the riser that prevents water from entering the meter socket.

QUICK OVERVIEW TO CONSTRUCTION PROCESS

This is the sequence of activities that occurs for new construction projects.

STEP	ACTION OR INFORMATION REQUIRED
1	Customer calls KCP&L's Customer Service Center at (816) 471-5275 or 1-(888) 471-5275 or enters service request online at kcpl.com . KCP&L recommends you request both temporary and permanent service at the same time.
2	Service request is sent to your nearest KCP&L service center.
3	KCP&L makes a field visit to confirm that power is available to your site or to determine what will be needed to provide it.
4	KCP&L contacts you for your project requirements—including service size and construction schedule. Estimate charges may apply.
5	Customer provides survey information to KCP&L, if needed.
6	Customer locates and marks property corners.
7	KCP&L completes a construction drawing.
8	Customer signs easements before construction can begin.
9	KCP&L schedules project for construction after customer's work is completed and has passed KCP&L & city or county inspection.
10	KCP&L connects permanent service after city or county inspection and our own approval.

APPROVED METER SOCKETS

Former KCP&L Stock #	Socket Type	Milbank**	Durham***	Landis & Gyr
261-174*	1 gang, 100A single-phase 3- wire	U7043-XL-KK-IL- 5T9W	1010291	
261-174*	1 gang, 200A single-phase 3- wire	U7043-XL-KK-IL- 5T9W	1010291	
261-186	1 gang, 400A single-phase 3- wire	U4702-X-5T9-K3- K2-IL	UG-H4300U-KC (48104-02)	484101-02
261-175	2 gang, 100A single-phase 3- wire	U1232-X-K1539- 5T24	UG-2R5332C-KC	UA2311-XB
261-176	2 gang, 200A single-phase 3- wire	U1252-X-K1539- 5T24	UG-2R2332U-KC	UA2716-ZB
261-177	3 gang, 100A single-phase 3- wire	U1233-X-K1540- 5T24	UG-3R1131C-KC	UA3311-XB
261-166	4 gang, 100A single-phase 3- wire	U1234-X-K1540- 5T24	UG-4R5352U-KC	UA4311-XB
261-127	1 gang, 200A three-phase 4- wire	U8107-XL-IL	U-H7213C-KC (40607-025)	

* Sockets may also be used for 240V or 480V 3-phase 3-wire self-contained service.

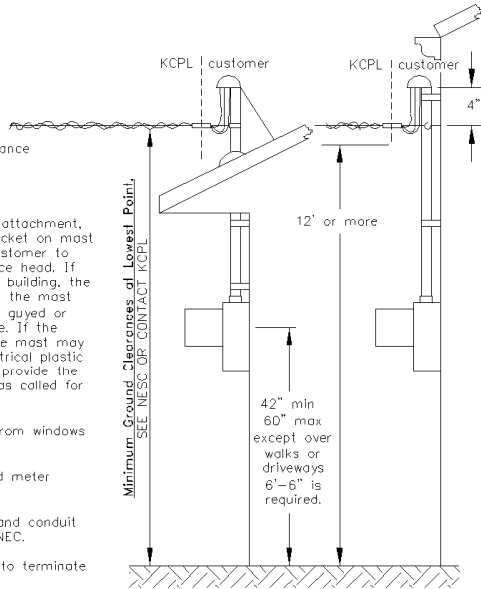
** Milbank publishes a catalog of KCP&L approved meter socket configurations not listed above.

Contact Milbank, phone (816)-843-5314, fax (816) 483-6357, or CBM, the Milbank representative, phone (816) 353-6011, fax (816)-353-7277, for a copy of this catalog

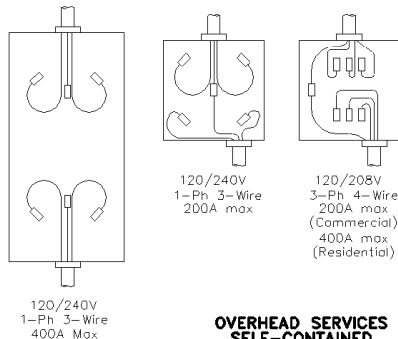
*** Durham also manufactures these meter sockets branded for Square D Company, Cutler Hammer, Inc., and Midwest Electric Products. For these brands add "SQD", "CH", or "MEP", respectively, as a suffix to the listed Durham catalog number.

NOTES

- A. Customer to own and install service entrance conductors with 24" beyond weatherhead.
- B. Service drop connections by KCP&L.
- C. Customer to own and install the service attachment, such as service hook, wire holder, or bracket on mast capable of supporting a 900lbs force. Customer to own and install service mast with entrance head. If the mast extends above the eave of the building, the service will be attached to the mast and the mast must be 2" (min) rigid galv. conduit and guyed or braced as required to support the service. If the service attachment is on the building, the mast may be rigid metal, EMT, or Schedule 40 electrical plastic conduit. The height of attachment must provide the clearance to ground or to the roof line as called for in the National Electrical Code.
- D. Install meter socket at least 36" away from windows and doors. (KCP&L required)
- E. Customer will furnish and install approved meter socket and hub.
- F. Customer's service entrance conductors and conduit are to be sized in accordance with the NEC.
- G. Customer shall not use meter enclosure to terminate or enclose his system ground.
- H. Provide some slack ahead of terminations in the meter socket to allow for future maintenance.
- I. Color code conductors according to NEC.



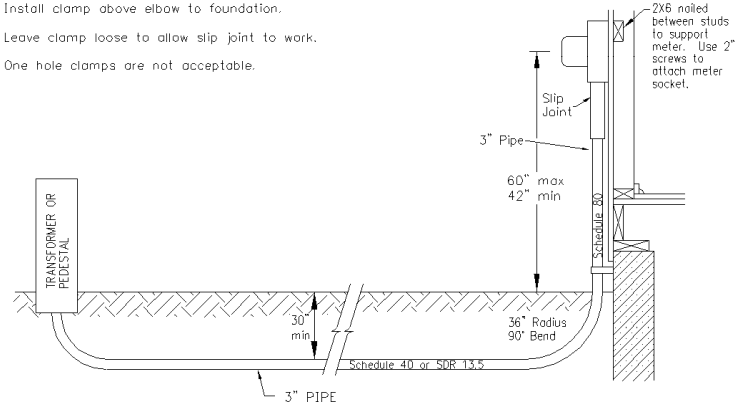
Typical Connections by Customer



DWG REV: 10/27/08 DWG: 520.1-3

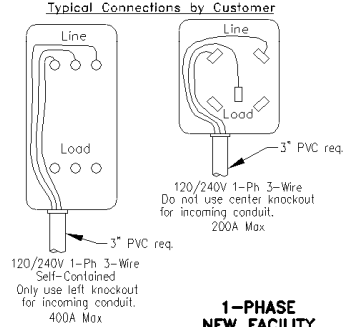
NOTES

- A. Approved meter socket furnished & installed by Customer. Customer shall not use meter socket to enclose or terminate his system ground.
- B. Insulated bushing furnished and installed by Customer.
- C. Conduit expansion joint to compensate for soil settling.
- D. All conduit - electrical plastic whole-inch size conduit furnished, properly installed, owned, and maintained by customer. KCP&L to inspect before backfilling.
- E. Customer shall provide a continuous heavy duty pull synthetic cord in the conduit with a minimum of 36" of cord extending from ends of conduit. Cord shall be free of knots and ties.
- F. Complete conduit run & elbow into energized source under KCP&L supervision after KCP&L covers energized parts. This requires a KCP&L meet.
- G. Install clamp above elbow to foundation.
- H. Leave clamp loose to allow slip joint to work.
- I. One hole clamps are not acceptable.



Typical Service Entrance

- Address must be on outside of building.
- Backfill shall consist of dirt or sand only. No frozen material, rocks, clods, or debris shall be used.
- Customer's service entrance conductors and conduit shall be sized in accordance with the NEC. Meter shall be located on end of house nearest service pedestal or transformer, not on the back.



SWITCH SIZE (A)	REQUIRED CONDUIT SIZE	MAXIMUM SERVICE LENGTH
100	3"	180
200	3"	180
400	3"	140

1-PHASE NEW FACILITY RESIDENTIAL UNDERGROUND SERVICES SINGLE FAMILY & DUPLEX

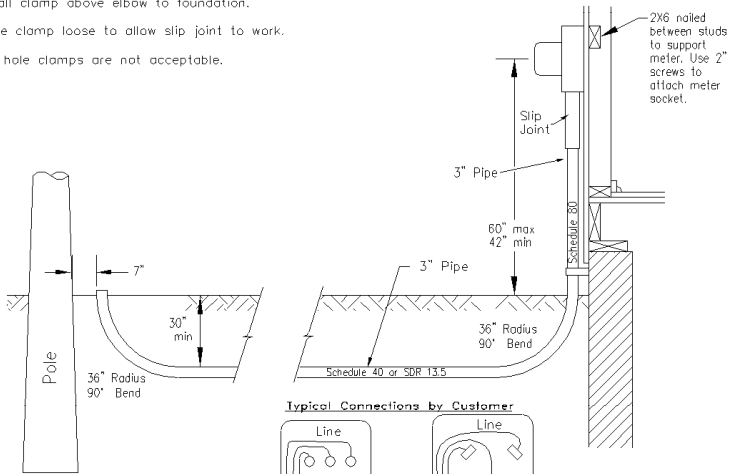
DWG REV: 06/19/09 DWG: 820.1-3

Customer furnished and owned material:

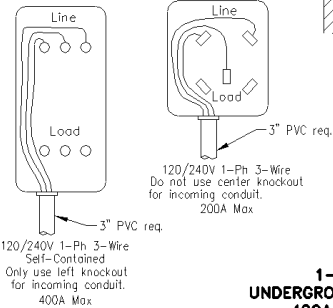
DESCRIPTION
hub
meter socket
entrance head
conduit straps
conductor
service mast
#6 Cu ground wire
1/2"x8" ground rod

NOTES

- A. Approved meter socket furnished and installed by Customer. Customer shall not use meter socket to enclose or terminate his system ground.
- B. Insulated bushing furnished and installed by Customer.
- C. Conduit expansion joint to compensate for soil settling. Leave sufficient slack in service conductors to allow joint to work.
- D. Do not use center knockout for incoming conduit.
- E. All conduit — electrical plastic whole-inch size conduit furnished, properly installed, owned, and maintained by customer. KCPL to inspect before backfilling.
- F. Commercial customers shall provide and install cable, leaving enough cable to go up the pole.
- G. KCPL will provide and install the cable for residential customers.
- H. Install clamp above elbow to foundation.
- I. Leave clamp loose to allow slip joint to work.
- J. One hole clamps are not acceptable.



Typical Connections by Customer

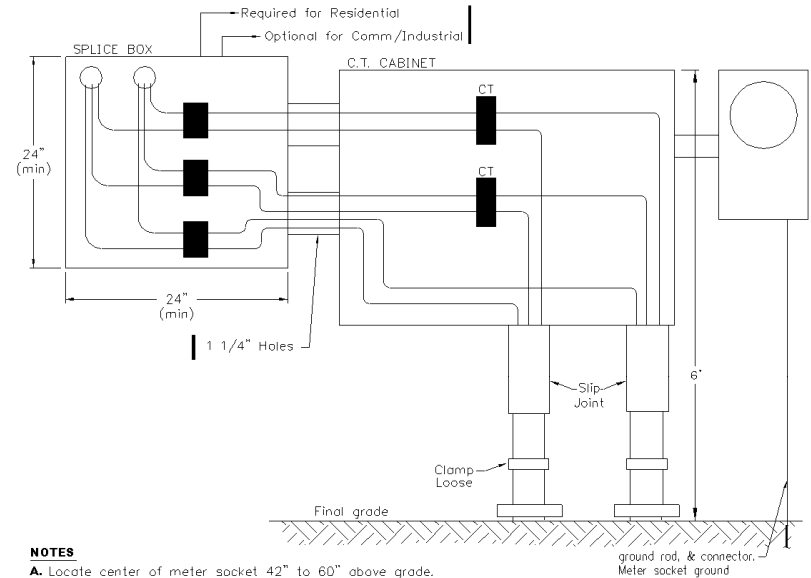


1-PHASE UNDERGROUND SERVICES 400A OR LESS OVERHEAD SECONDARIES

DWG REV: 06/22/09 DWG: **820.1-9**

SWITCH SIZE (A)	REQUIRED CONDUIT SIZE	MAXIMUM SERVICE LENGTH
100	3"	180'
200	3"	180'
400	3"	140'

- Backfill shall consist of dirt or sand only. No frozen material, rocks, clods, or debris shall be used.
- Customer's cable and conduit shall be sized to meet National Electrical Code and/or local requirements.



NOTES

- A. Locate center of meter socket 42" to 60" above grade.
- B. 1 1/2" rigid metallic conduit to ensure electrical bonding between CT cabinet, meter socket. Rigid metallic conduit is required between the CT cabinet and the splice box of sufficient size to accommodate service entrance cable.
- C. Ground shall not pass through CT cabinet.
- D. Splice block to provide for four 500kcmil conductors.
- E. Conduit expansion joints to compensate for soil settling.
- F. Non-corrodible 2-hole conduit strap or strut.
- G. Clamp system fastened to sill plate.
- H. 1-hole clamps are not acceptable.
- I. Splice box and C.T. cabinet furnished & installed by Customer on outside of building. The splice box and C.T. cabinet shall be of a reasonable size to allow for cable bending radius and workability, dimensions are minimums only.
- J. Meter can and C.T.'s furnished by KCPL & installed by Customer on outside of building.
- K. Customer shall furnish & install conductor from Customer disconnect to splice blocks in splice box & all conduit. KCPL will furnish & install service conductor to splice box.
- L. Customer shall furnish and install a hasp for C.T. cabinet and splice box.
- M. C.T.'s and termination blocks shall be mounted securely to back of cabinet by customer in such a manner as to allow proper installation of all conductors. (Ex: Wood, Aluminum, Galv. Steel)

1-PHASE METERING INSTALLATION FOR RESIDENTIAL SERVICE GREATER THAN 400A

DWG REV: 08/05/09 DWG: **900.1-28**