

**WIRING, SPECIFICATIONS, INSPECTION,
AND METER INSTALLATION PROCEDURES
FOR
RESIDENTIAL CUSTOMERS
SERVED BY
SOUTHWEST ARKANSAS ELECTRIC COOPERATIVE CORPORATION
Effective April 1, 1974
Revised February 3, 2014**

(Condensed from National Electric Code)

This condensed version of residential wiring specifications has been prepared and adopted by the Cooperative for the following purposes:

To assist customers of the Cooperative in securing electrical service wiring to their homes and elsewhere on their premises which will meet recognized safety standards, and which will provide adequate capacity for their present and future load requirements.

To assure customers of the Cooperative of reliable and economical service from the electrical wiring system installed on source side of the meter.

To establish standard residential meter wiring specifications for use by customers of the Cooperative, electricians and wiring inspectors.

In general, inspection and testing of the electric wiring installation by the Cooperative will include and will be limited to the following:

Service and construction personnel will inspect meter loops (and associated wiring) mounted on residences up to the first secondary thermal disconnect or main breaker (whether located inside or outside the residence). Pole mounted meter loops and associated wiring will continue to be inspected down to ground level.

Test for proper voltage delivered to the main disconnect circuit-breaker at the service entrance. The customer and the electrician are responsible for making necessary voltage tests to assure that adequate capacity is provided and that proper voltages are delivered to lighting fixtures, appliances, and equipment installed in the residence and elsewhere on the premises of the customer.

The wiring inspection will assure that recognized safety standards have been met and that the electrical wiring system has adequate capacity. Voltage and capacity characteristics within the wiring system on the customer's side of the main disconnect circuit-breaker at the service entrance are the responsibility of the customer and the electrician.

The minimum standards of the NEC shall apply where wiring material and installation requirements are not specifically covered by these specifications.

Wiring specifications, inspection, and meter installation procedures for residential customers served by the Cooperative are as follows:

Section A. - Meter Installation Specifications:

1. The meter shall, in all cases, be installed by the Cooperative and ownership of the meter shall be retained by the Cooperative.
2. The meter shall be installed on the exterior surface of the building wall or on a pole. Cooperative personnel shall have unimpeded access to the meter at all times.
3. The meter shall be installed so that the center of the meter is at least 5 feet but not more than 6 feet above ground level.
4. A meter socket intended for installation on the wall of a building or on a pole shall be furnished by the customer. Ownership of the meter socket shall be retained by the customer. It shall be the responsibility of the customer to maintain said meter socket in good working order. The meter socket shall be of a type and design which meets Cooperative approval.

Section B. - Service Entrance Specifications:

1. The service entrance shall be furnished, owned, and maintained by the customer. The service entrance on a house or other building shall be constructed as a meter loop where no separate meter loop is provided. A typical house meter loop for overhead service is shown in Exhibit A.
2. The service entrance shall have a minimum capacity of 60 amperes, 120/240 volts. The service entrance should be of adequate capacity to carry the total residential load as determined for load calculation recommendations in the NEC, including capacity for anticipated future loads.
3. Conduit used to construct the service entrance for overhead service shall be of rigid design; and may be galvanized steel or aluminum. **EMT or IMC is NOT permitted.** Conduit which extends through the roof as a service mast shall be at least 2 1/2 " rigid galvanized steel, and shall extend to a height of between 2'-6" and 3'-0" above the roof at the point of emergence. For underground service, conduit shall extend from the meter socket to a point 18 inches below ground level with an insulating bushing installed on the top end. Said conduit shall be 2" pipe size or larger and shall be constructed of either galvanized rigid steel or PVC, "schedule 80".
4. Conductors installed in service entrance conduit shall not exceed the maximum number for conduit sizes shown in Table I.
5. Service entrance conductors for overhead service shall be installed in conduit. At least 18 inches of the conductors shall extend through the weatherhead for the service connection. The weatherhead shall be installed near the eave of the building with the bottom of the drip loop at least 12 feet above ground level. For underground service, a continuous and unbroken underground service cable shall be installed by the Cooperative from the meter socket lugs or from an outside junction box as specified in Table III to the service pedestal or transformer; and in the event the meter loop is located on a pole, the underground service cable to the service entrance shall be furnished and installed by the customer. Trenches for installing underground service

cables from the pole meter loop shall be furnished and backfilled by the customer in accordance with NEC codes.

6. Conductors in the service entrance, other than the underground service cable, shall be stranded wire; may be either copper or aluminum; shall be covered with type TW or THW or better insulation; and shall be properly sized as shown in Table II for the service entrance capacity required. For service entrance capacity in excess of 200 amps, follow ampere rating of conductors in the NEC.
7. Overcurrent protection shall be circuit-breaker type. Main-circuit panels or main circuit-breakers shall be located within 18 inches of the meter socket or outside junction box. The ampere rating of the main disconnect circuit breaker shall not exceed the amperage rating of the service entrance conductors installed to the main-circuit panel as shown in Table II.
8. Ground wire shall be at least #6 AWG solid copper, shall be bonded to the neutral wire at the weatherhead for overhead service, and shall extend continuously and unbroken outside the conduit to the ground rod with bonding to the meter base and any other electrical panels attached thereto; except when a service mast extends through the roof, the ground wire may be run through the meter socket and inside the conduit. For underground service, the ground wire shall be connected to the neutral lug of the meter socket and extend continuously and unbroken outside the conduit to the ground rod. For overhead or underground service, the ground wire shall be attached to the ground rod with a proper type clamp.
9. The ground rod shall be a minimum size 5/8" X 8' solid galvanized steel or copperweld ground rod.
10. Service entrance outlet receptacles for mobile homes shall be grounded and polarized in accordance with NEC standards.

Section C. - Pole Meter Loop Specifications:

1. The pole meter loop, except for the meter, shall be furnished, owned and maintained by the customer. The permanent meter loop shall be completely wired and assembled by the customer or electrician for installation by the Cooperative on a pole furnished and installed by the Cooperative. A typical pole meter loop for overhead service is shown in Exhibit B, and a typical meter loop for underground service is shown in Exhibit D. Poles and meter loops for temporary overhead and underground service shall be furnished and installed by the customer at locations approved by the Cooperative. Temporary poles and meter loops shall conform to the specifications set forth in Section I.
2. The pole meter loop shall have a minimum capacity of 60 amperes, 120/240 volts for the residential load to be served, with additional capacity for other loads to be connected to the pole meter loop. Use load calculation recommendations in the NEC to determine total meter loop capacity.
3. Conduit shall be used to construct the pole meter loop and shall be of rigid galvanized steel or aluminum design; **EMT, IMC or PVC is NOT permitted**. Conduit shall extend to a height of 15'-0" (minimum) above the meter socket hub to the weatherhead for overhead service. For underground service, either rigid galvanized steel or PVC

- schedule 80 conduit shall be installed from the meter socket to 18 inches below ground level with an insulating bushing installed on the top threaded connector.
4. Conductors installed in the pole meter loop conduit shall not exceed the maximum number for conduit sizes shown in Table I.
 5. Conductors shall extend at least 18 inches through the weatherhead for overhead service. For underground service, a continuous and unbroken underground service cable shall be installed by the Cooperative from the meter socket lugs to the service pedestal or transformer. Underground service cables from the pole meter loop to the service entrance shall be furnished and installed by the customer. Trenches for installing underground service cables shall be furnished and backfilled by the customer in accordance with NEC codes.
 6. Conductors in pole meter loops shall conform with size and type specified for service entrances, and shall be sized in accordance with Table II. **RETURN LOOPS ARE NOT PERMITTED.**
 7. A circuit-breaker type main disconnect shall be installed under the meter socket in a rain-type enclosure in accordance with NEC standards. The capacity of the main disconnect circuit-breaker shall be adequate for the total connected load; but shall not exceed the amperage rating of the pole meter loop conductors in accordance with Table II.
 8. Ground wire pigtailed (as shown in Exhibit B) shall be at least #6 AWG solid copper, shall connect at the grounding lug in the meter base and the grounding buss in any electrical disconnect enclosures, extending 2 feet for bonding to pole ground when attached to pole.
 9. The pole ground and ground rod shall be furnished and installed by the Cooperative.
 10. All 120V AC receptacles installed on pole meter loops shall be equipped with ground fault circuit interrupter (GFCI) protection.

Section D. - Specifications Which Exceed NEC Minimum Standards:

1. Conductor size in service entrances and meter loops shall comply with standard amperage rating of conductor sizes shown in Table II, and may not be reduced as permitted in the NEC.
2. Ground wire at house meter loop shall extend to weatherhead with appropriate bonding at meter base and electrical panels.
3. First overcurrent protection device shall be circuit-breaker type.

Section E. - Wiring Specifications Other than Residential:

1. Specifications for service entrances and meter loops on non-residential installations shall be essentially the same as for residential customers.
2. Other electrical wiring in non-residential installations shall conform to NEC minimum standards.
3. Service entrance and meter loops on non-residential installations shall be inspected by the Cooperative up to the point of the first thermal disconnect.

Section F. - Construction Meter Loop, Temporary:

4. Facilities which are constructed, owned and operated by the Cooperative will be permanently installed. The Cooperative does not build temporary facilities except at the request and expense of the customer.
5. Service will be extended to a customer's temporary construction meter loop and pole provided they are erected at a location accessible to permanently installed Cooperative facilities and provided they conform to the following specifications:
6. The provisions of Section C. - "Pole Meter Loop Specifications" shall apply except that where there is a conflict, the following provisions shall prevail.
7. The cross section dimension of the temporary pole shall be a minimum 4' X 4'. Bracing shall be 2' X 4' or larger.
8. The pole and all bracing shall be commercially treated with an acceptable preservative.
9. The pole shall be installed to a depth of at least 2'-0" below ground level and shall be braced as shown in Exhibit C. If the pole is not braced then it shall be installed to a depth, below ground level, equal to one-fourth its overall length.
10. The weatherhead shall be at least 12'-0" above ground level and the pole shall extend to a height of at least 1'-0" above the weatherhead.
11. Conductors for connection from the temporary loop to a pad mounted or underground transformer shall be furnished by the customer and shall be installed in accordance with provisions of the National Electrical Code.
12. The ground rod shall be a minimum size 5/8" X 8' solid, galvanized steel or copperweld rod, and shall be driven full length into the ground.
13. Ground wire shall be at least #6 AWG solid copper, shall connect at the neutral wire at the weatherhead and shall extend continuously and unbroken outside the conduit to the ground rod with bonding to the meter base and any other electrical panels attached thereto. The ground wire shall be attached to the ground rod with the proper type clamp.
14. All 120 volt AC receptacles installed on pole meter loops shall be equipped with ground fault circuit interrupter (GFCI) protection.

Table I
Number of Conductors per Conduit

Conductor Size (AWG) Copper or Aluminum, Type TW or TWH	Maximum Number of Conductors Allowed in Conduit of Trade Size Shown in Inches									
	½	¾	1	1 ¼	1 ½	2	2 ½	3	3 ½	4
12	7	12	19	—	—	—	—	—	—	—
10	5	9	15	26	—	—	—	—	—	—
8	—	4	6	11	15	—	—	—	—	—
6	—	—	4	7	10	—	—	—	—	—
4	—	—	3	5	7	12	—	—	—	—
3	—	—	—	4	6	10	—	—	—	—
2	—	—	—	4	5	9	—	—	—	—
1	—	—	—	3	4	6	9	—	—	—
00	—	—	—	—	3	5	7	10	—	—
000	—	—	—	—	—	4	6	9	—	—
0000	—	—	—	—	—	3	5	7	10	—
250 Mcm	—	—	—	—	—	—	4	6	8	10
350 Mcm	—	—	—	—	—	—	3	4	6	8

Table II
Amperage Capacity of Service Entrance Conductors

Copper Conductors			Aluminum Conductors		
Wire Size			Wire Size		
Capacity	TW	THW	Capacity	TW	THW
60 Amp	6	6	60 Amp	4	4
70 Amp	4	4	70 Amp	3	3
100 Amp	2	3	100 Amp	0	1
125 Amp	0	1	125 Amp	000	00
150 Amp	000	0	150 Amp	0000	000
200 Amp	250 Mcm	000	200 Amp	350 Mcm	0000

Table III
Ampere Rating of Conductors

Copper Conductors			Aluminum Conductors		
Wire Size		Maximum Rating of Circuit-Breaker Expressed in Amperes	Wire Size		Maximum Rating of Circuit-Breaker Expressed in Amperes
TW	THW		TW	THW	
14	14	15	12	12	15
12	12	20	10	10	20
10	10	30	8	8	30
8	8	40	6	—	40
6	—	50	4	6	50
—	6	60	3	4	60
4	—	70	2	3	70
3	4	70	1	—	70
2	—	90	—	2	90
—	3	100	0	1	100
1	2	100	00	0	100
0	1	125	000	00	125
00	—	125	0000	000	150
000	0	150	—	0000	150
0000	000	200	350 Mcm	250 Mcm	200

Overhead Service to Residence

See text for requirements when mast must extend through roof

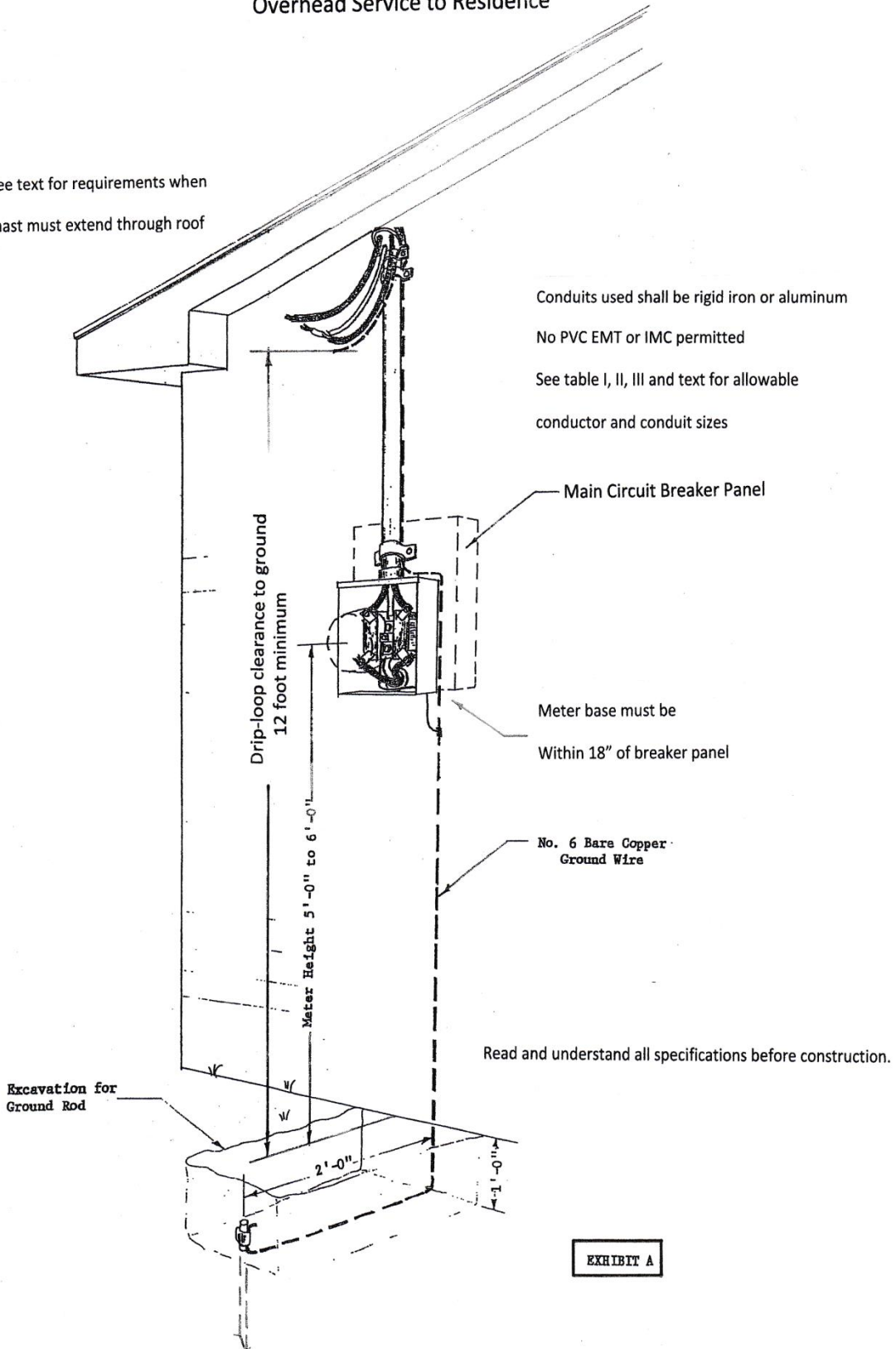


EXHIBIT A

ELECTRICIANS !!:

Always contact Engineering, Dispatch or the District Manager before building your service entrance. They will tell you specifications for length of your conduit. Also, leave 36 inches of wire hanging out of the weatherhead.

Conduit length between meter socket and weatherhead shall be 15' minimum.

Note: 1. Meter Loop shall comply with National Electrical Code and Authorities having jurisdiction.

2. Meter Loop shall be completely assembled.

Mark Neutral with white tape.

Conduit must be rigid iron or rigid aluminum. EMT, IMC or PVC conduits are not allowed.

OPTION 2

Meter socket combo 200 Amp weather-tight disconnect

OPTION 1

Mark Neutral with white tape

Bushings & Locknuts

must be metal nipple

Pole ground wire shall be #6 copper & 18 inches long.

2 inch hub

200 Amp rain-tight breaker type disconnect.

Pole ground wire shall be #6 copper & 18 inches long.

Volt Reading:
A-B 240 VOLT
B-N 120 VOLT
A-N 120 VOLT

Expected Load	Conduit Size	Aluminum (Insulation Per Nec)	Copper (Insulation Per Nec)	Neutral Wire Size	Ground Wire Size
200 Amp	2"	4/0	3/0	Same as phase	#6 Cu
100 Amp	1-1/2"	1/0	#2	Same as phase	#6 Cu
60 Amp	1-1/4"	#2	#4	Same as phase	#6 Cu

120/240 volt

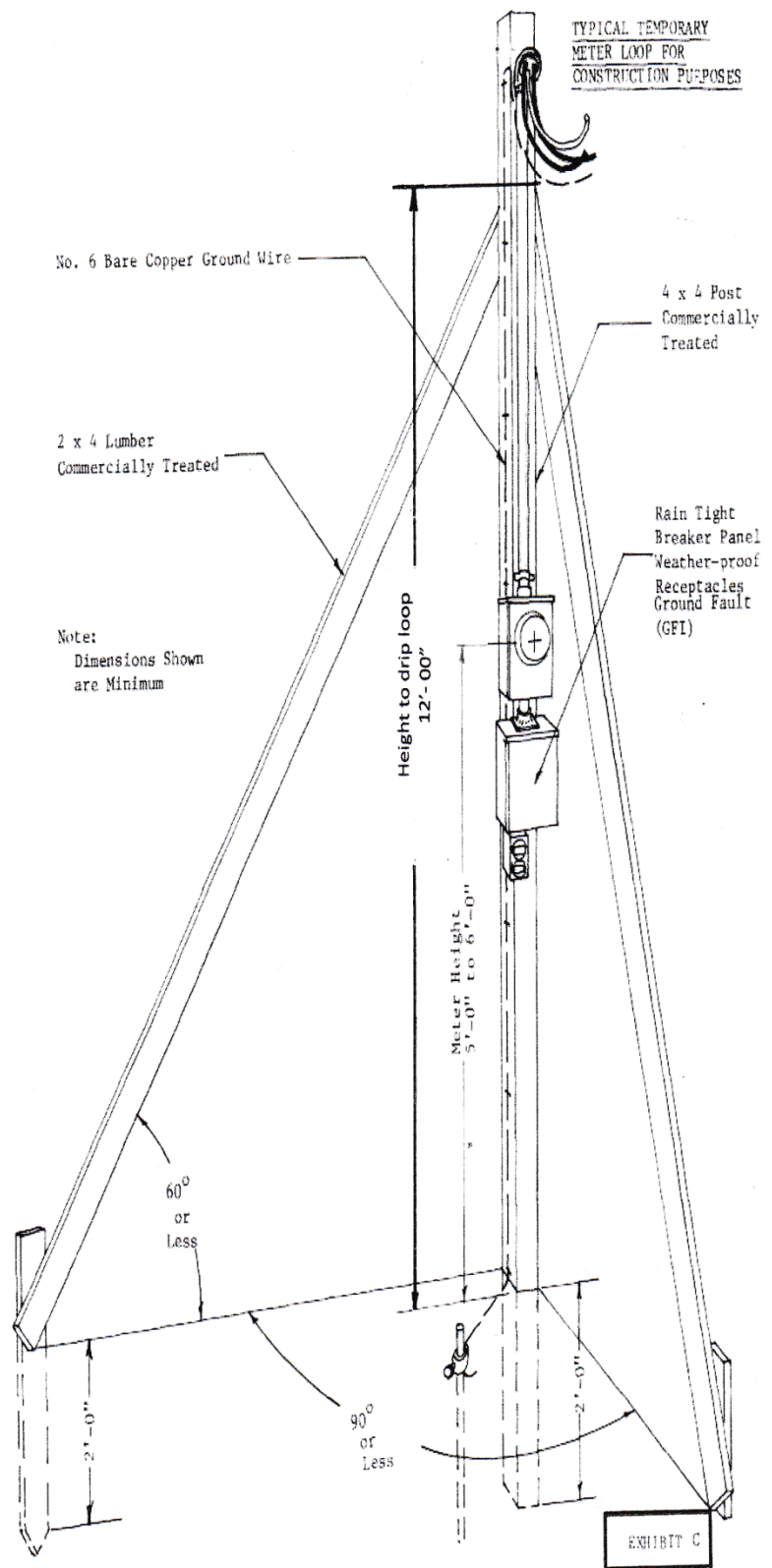
Single Phase-Bottom connected

pole meter loop.

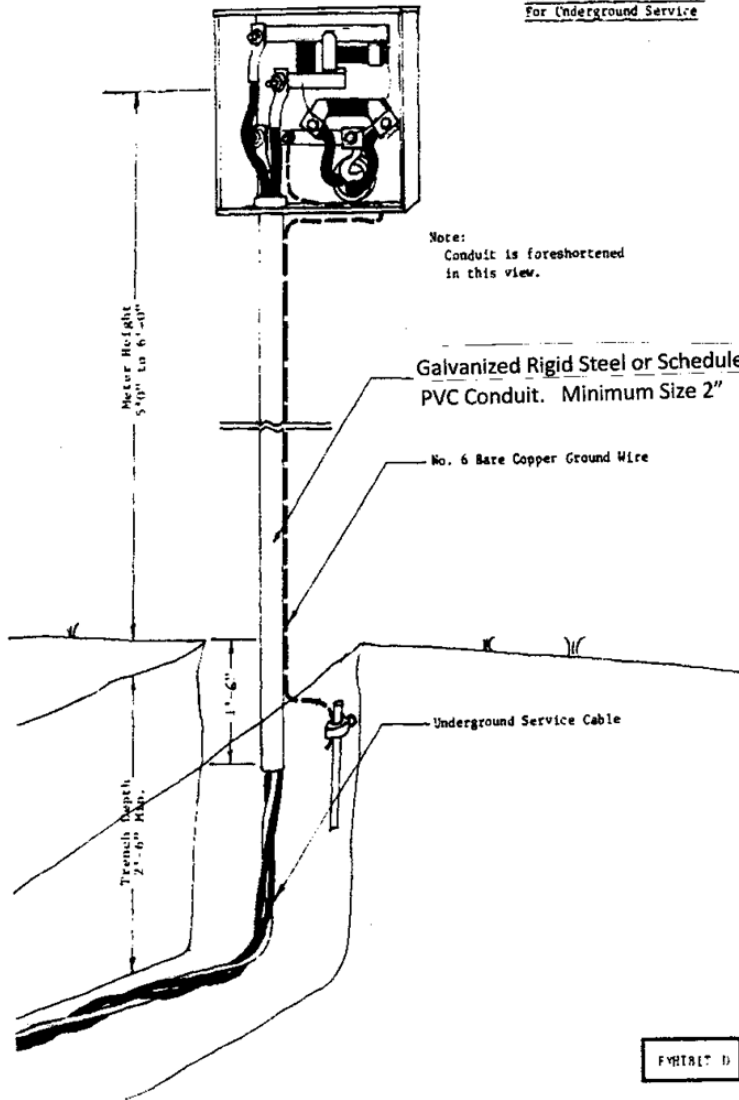
NEC = National Electric Code
Current Code Requirement

Exhibit B

TYPICAL TEMPORARY
METER LOOP FOR
CONSTRUCTION PURPOSES



TYPICAL HOUSE METER LOOP
For Underground Service



Typical 200 amp Meter Pedestal (underground source)

Electricians!!:

Always contact and discuss your installation plans with the engineer assigned to the job before installing your service entrance. They will be able to give you the required specifications and discuss site specific conditions and alternatives.

Notes:

1. It is the responsibility of the customer to obtain all necessary permits and inspections.
2. Conduits must be routed according to the engineer's instructions before concrete backfill is poured.
3. 24" sweeping elbows and 2" sch. 80 PVC electrical conduits as shown is to be provided by customer.
4. All construction shall be of workmanlike quality and durability and meet all applicable electrical codes.

This drawing and instructions are intended to present one possible alternative for a typical 200 amp meter pedestal installation. Other construction methods including prefabricated units are available. Dimensions will vary for customers requiring larger amperages.

Please call Arkansas-One-Call at 1-800-482-8998 or Texas 811 or for Oklahoma residents 1-800-522-6543 before digging to have other buried facilities located before digging.

