



Citizens Electric Corporation

A Touchstone Energy® Cooperative 

2018 Electric Service Guidelines



North-Ste. Genevieve
Central-Perryville
South-Fruitland/Jackson

Citizens Electric Corporation (CEC)

Instructions to landowner or developer when planning facilities on their property.

1. **Always Look Up!** When locating a site for a home, mobile home, cabin, garage, grain bin, or any type of structure, “always look up.” Safety to your life and property requires sufficient spacing from existing power lines to your new structure. This distance is provided for in the right-of-way easement agreement.

When there is a conflict or question pertaining to electric lines, contact Citizens Electric Corporation. An analysis of your specific circumstances should be performed prior to construction.

The following easement widths are dimensions that should be observed when planning your facilities. The electric pole line is located in the center of the easement. Buildings shall not be located within the easement corridor.

<u>Type of Electric Line</u>	<u>Easement Width</u>
Transmission (cross country long span)	100 feet
Transmission (urban short span)	50 feet
Distribution Overhead (single phase or three phase)	30 feet
Distribution Underground (single phase or three phase)	15 feet

2. Trees on and near the right of way – these trees endanger the electrical circuit and cause outages. They will be removed or trimmed on a cycle basis.
3. Service to a new facility: A **qualified electrician** should provide service equipment recommendations based on the maximum load to be served. Qualified individuals are responsible for supplying the appropriate service panel, conductor size and type, and also perform the installation of the service panel, meter socket, conduit and entrance head, wire, ground rods and clamps, etc.
 - A. Home, RV/Temp. Service:
 1. Meter on structure, mast type
 2. Meter on structure, attachment on structure
 3. Meter on structure, underground
 4. Meter on CEC pole, mobile home
 5. Meter on CEC pole, overhead
 6. Meter on CEC pole, underground
 - 7.a Meter on CEC pole, underground (2 panels)
 - 7.b Meter on CEC pole, underground (2 panels) - option
 8. Meter on CEC pole, structure & well
 9. Meter on CEC pole, recreational vehicles
 - 10a. Metering Pedestal, underground service
 - 10b. Metering Pedestal, underground service - option

11. Metering Pedestal 320 Amp Meter Breaker, U/G

- B. Construction Power, or any other temporary connection:
 - 1. Meter on CEC pole, overhead
 - 2. Meter on post, underground

4. Underground Lines:

- A. When digging or excavating, call Missouri One Call System to verify the location of any Citizens Electric owned underground electric lines. **1-800-Dig-Rite (1-800-344-7483) or 811. Citizens Electric Corporation does not locate and is not liable for privately owned underground facilities.**
- B. On new installations, if customer requests underground electric, there is an additional charge. Contact CEC at 877.876.3511 - Option 5 for prices and specifications.

Thank you for your cooperation and help in addressing safety precautions for your electric service and preventing electrical contact accidents.

Service to New Residential Facilities

For inquiries related to service to new facilities, contact CEC's Engineering Department at 877-876-3511 – Option 5.

See the attached guides for examples of:

- A. Home, RV/Temp. Service:
1. Meter on structure, mast type
 2. Meter on structure, attachment on structure
 3. Meter on structure, underground
 4. Meter on CEC pole, mobile home
 5. Meter on CEC pole, overhead
 6. Meter on CEC pole, underground
 - 7.a Meter on CEC pole, underground (2 panels)
 - 7.b Meter on CEC pole, underground (2 panels) - option
 8. Meter on CEC pole, structure & well
 9. Meter on CEC pole, recreational vehicles
 - 10a. Metering Pedestal, underground service
 - 10b. Metering Pedestal, underground service - option
 11. Metering Pedestal 320 Amp Meter Breaker, U/G

Construction Power, or any other temporary connection:

1. Meter on CEC pole, overhead
2. Meter on post, underground

1. Individual Overhead Service and Secondary Conductors

In the event that only overhead service and/or secondary facilities are required, the Corporation shall construct all overhead service and secondary facilities to a point on Customer's permanent facility as designated by the Corporation, utilizing generally accepted utility practices, at no charge to the Customer. When said Customer requests the service conductors to extend past a point on the permanent facility as designated by the Corporation, Customer shall pay in advance of construction an additional charge equal to the Corporation's then-current average standard construction cost of single phase overhead extension.

2. Individual Underground Service and Secondary Conductors

A. Residential structures located in areas served by an overhead primary distribution system:

Customer requesting underground service conductors shall pay the Corporation in advance of construction an amount equal to the Corporation's then-current

average standard construction cost of single phase underground extension less the average standard construction cost of single phase overhead extension, for installation of such service from the transformer or lift pole to a point on the Customer's permanent facility as designated by the Corporation.

Upon completion of construction, Customer shall pay the Corporation for any unforeseen costs not included in the Corporation's original cost for an individual service or secondary extension such as trenching through rock, special material used for backfilling, drilling under roads, driveways and sidewalks, right-of-way clearing, etc.

B. Residential structures located in a subdivision served by an underground distribution system:

At the request of Customer, the Corporation will install underground service conductors from a transformer or pedestal (located on or within the property line of said residential structure) to a point on the permanent facility as designated by the Corporation. When the length of such service conductors exceed 125 linear feet, or when said Customer requests the service conductors to extend past a point on the permanent facility as designated by the Corporation, Customer shall pay the Corporation in advance of construction an additional charge equal to the Corporation's then-current average standard construction cost of single phase underground service applicable to the additional length.

Customer shall pay the Corporation for any unforeseen costs not included in the Corporation's estimate for an individual underground service or secondary extension such as trenching through rock, special material used for backfilling, drilling under roads, driveways and sidewalks, right-of-way clearing, etc.

C. When Customer agrees to furnish such trench and/or conduit meeting the Corporation's specifications, the Corporation shall deduct from Customer's required advanced payment the Corporation's then-current average standard construction cost of trenching and/or installing conduit from the total cost of the line extension as outlined in Section 2.A and 2.B above.

Thank you for your cooperation and help in addressing safety precautions for your electric service and preventing electrical contact accidents.

Rural Missouri

10-Foot Rule – It's the Law!

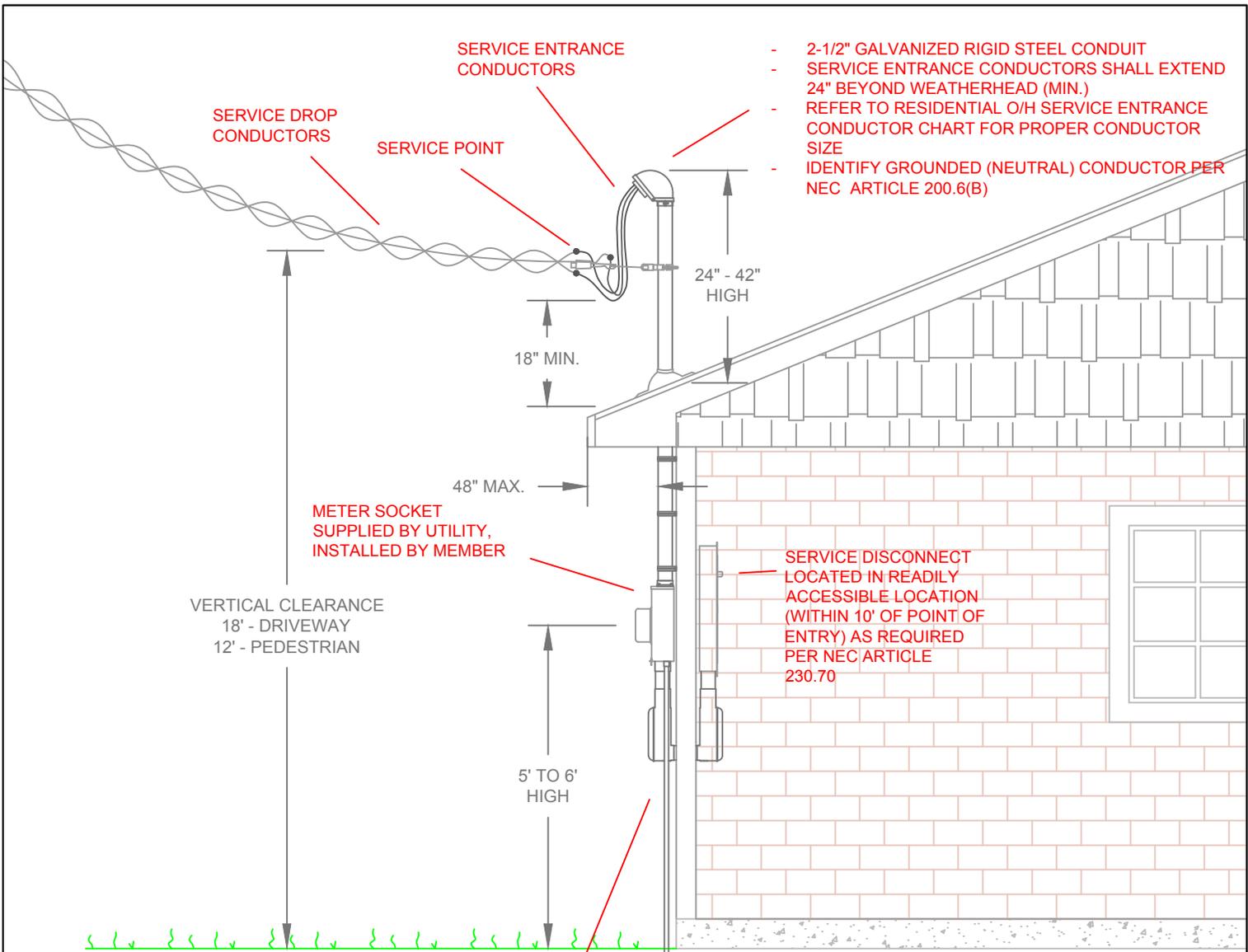
It's just common sense for anyone who must work near an energized electric transmission line to check with the utility that owns the line to make sure all safety precautions are taken. Well, it's also the law in the state of Missouri.

In 1991 the Missouri General Assembly passed the Overhead Power Line Safety Act, also called the 10-foot rule. The law requires that anyone who must work within 10 foot of a power line must first notify the utility that owns the line so safety precautions can be taken to help avoid tragedy.

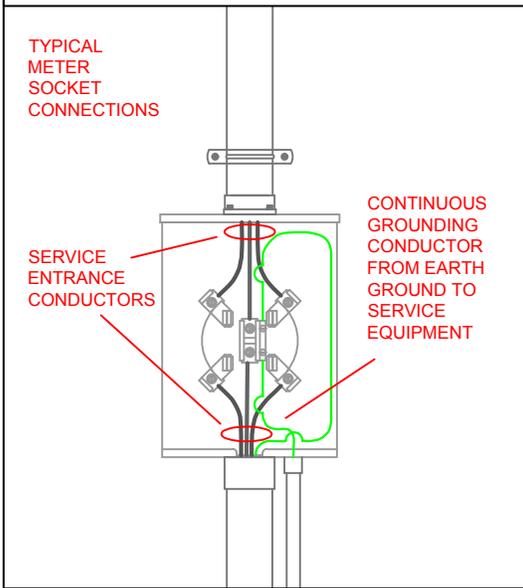
Precautions may mean simply having a utility employee check the work area for safe clearances or it may involve disconnecting the line to avoid possible electrocution.

Under the law any person who comes into contact with a power line and didn't contact the utility that owns the line will be presumed negligent. This means that if a contractor's employee comes into contact with a line and the contractor didn't notify the utility before work began, then the contractor bears the responsibility for the accident.

If work must be done within 10 foot of the power line, play it safe and call the utility first. It could save a life.



- 2-1/2" GALVANIZED RIGID STEEL CONDUIT
- SERVICE ENTRANCE CONDUCTORS SHALL EXTEND 24" BEYOND WEATHERHEAD (MIN.)
- REFER TO RESIDENTIAL O/H SERVICE ENTRANCE CONDUCTOR CHART FOR PROPER CONDUCTOR SIZE
- IDENTIFY GROUNDED (NEUTRAL) CONDUCTOR PER NEC ARTICLE 200.6(B)



GROUNDING AND BONDING AS REQUIRED PER NEC ARTICLE 250

1/2" x 8' COPPER BONDED STEEL GROUND ROD AND PROPERLY SIZED GROUNDING CONDUCTOR PER ARTICLE 250.66

WHEN SUPPLEMENTAL GROUND RODS ARE UTILIZED (NECESSARY WHEN GROUND RESISTANCE IS >25 OHMS), INSTALL IN ACCORDANCE WITH NEC ARTICLE 250

> 6 FT APART

NO.	DATE	DWN.	APPD.	REVISIONS

CITIZENS ELECTRIC CORPORATION
 PERRYVILLE - STE. GENEVIEVE - FRUITLAND
 877.876.3511 - Option 5

DATE: 6.20.18 DWN: SRH CHKD: APPD:

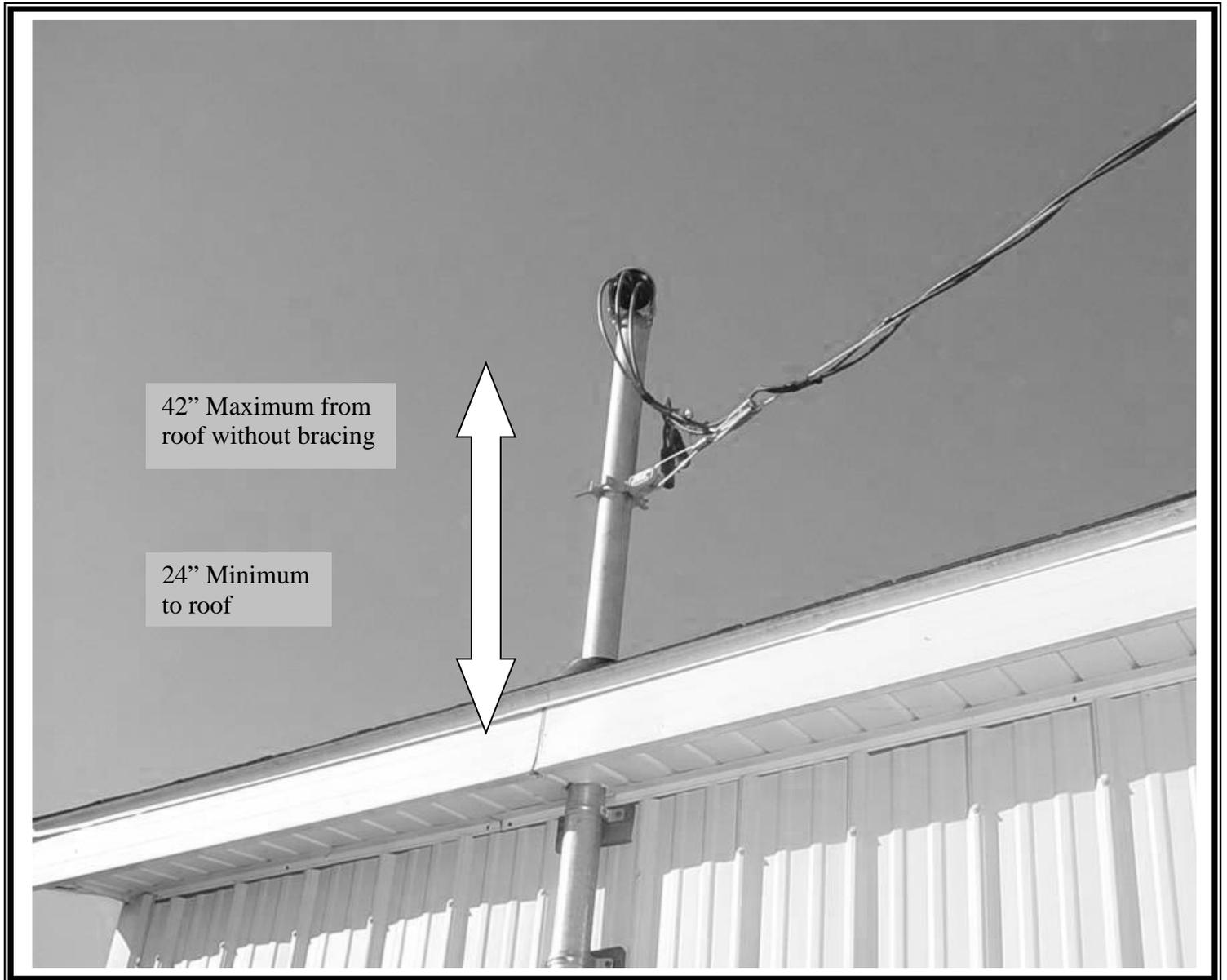
SERVICE GUIDELINES

SERVICE (METER ON STRUCTURE-MAST)
 200 AMPERE
 STANDARD METER SOCKET

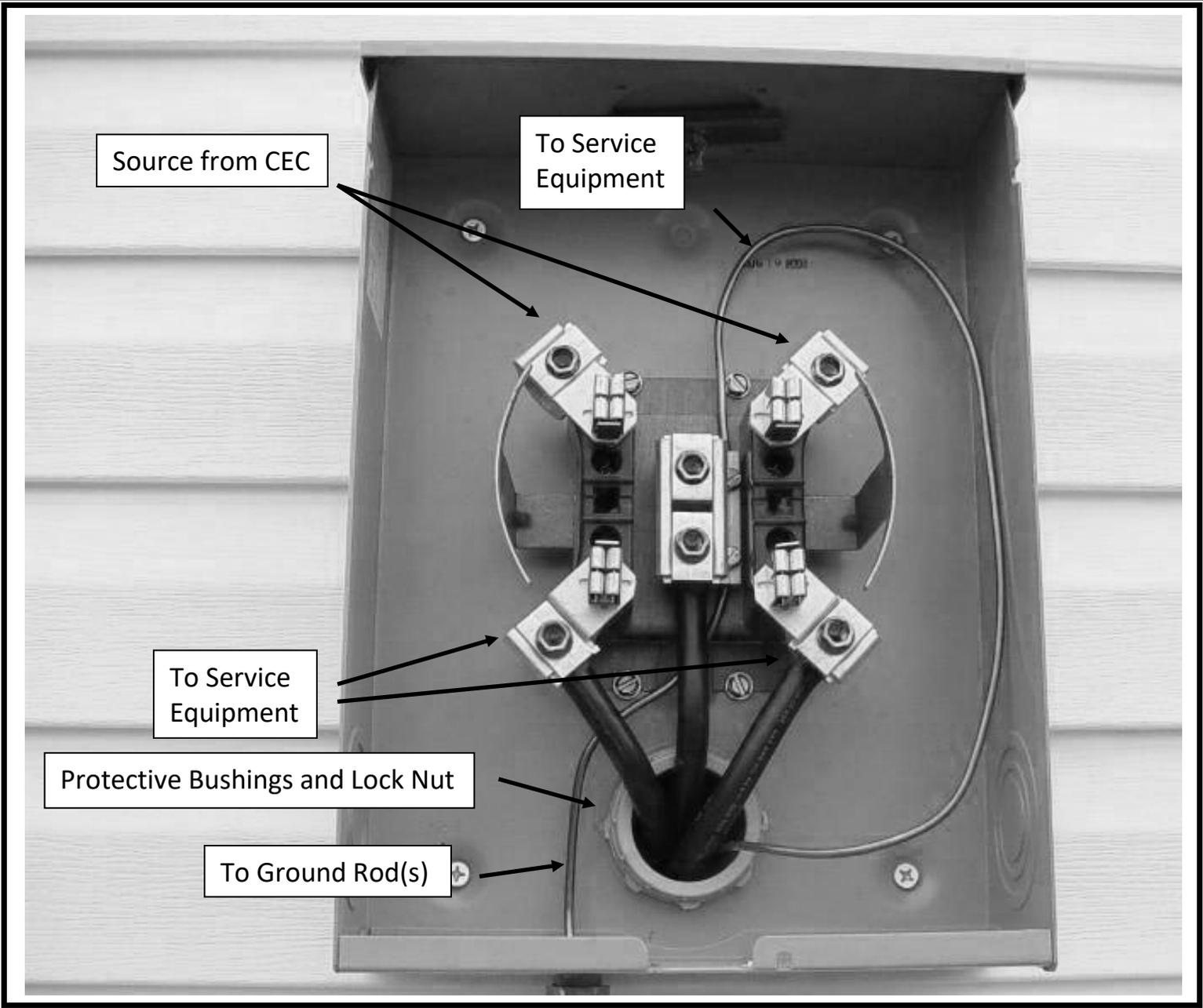
6

Drawing No.
3.A.1

Meter on Structure, Mast Type 2 ½ inch Rigid Galvanized Conduit



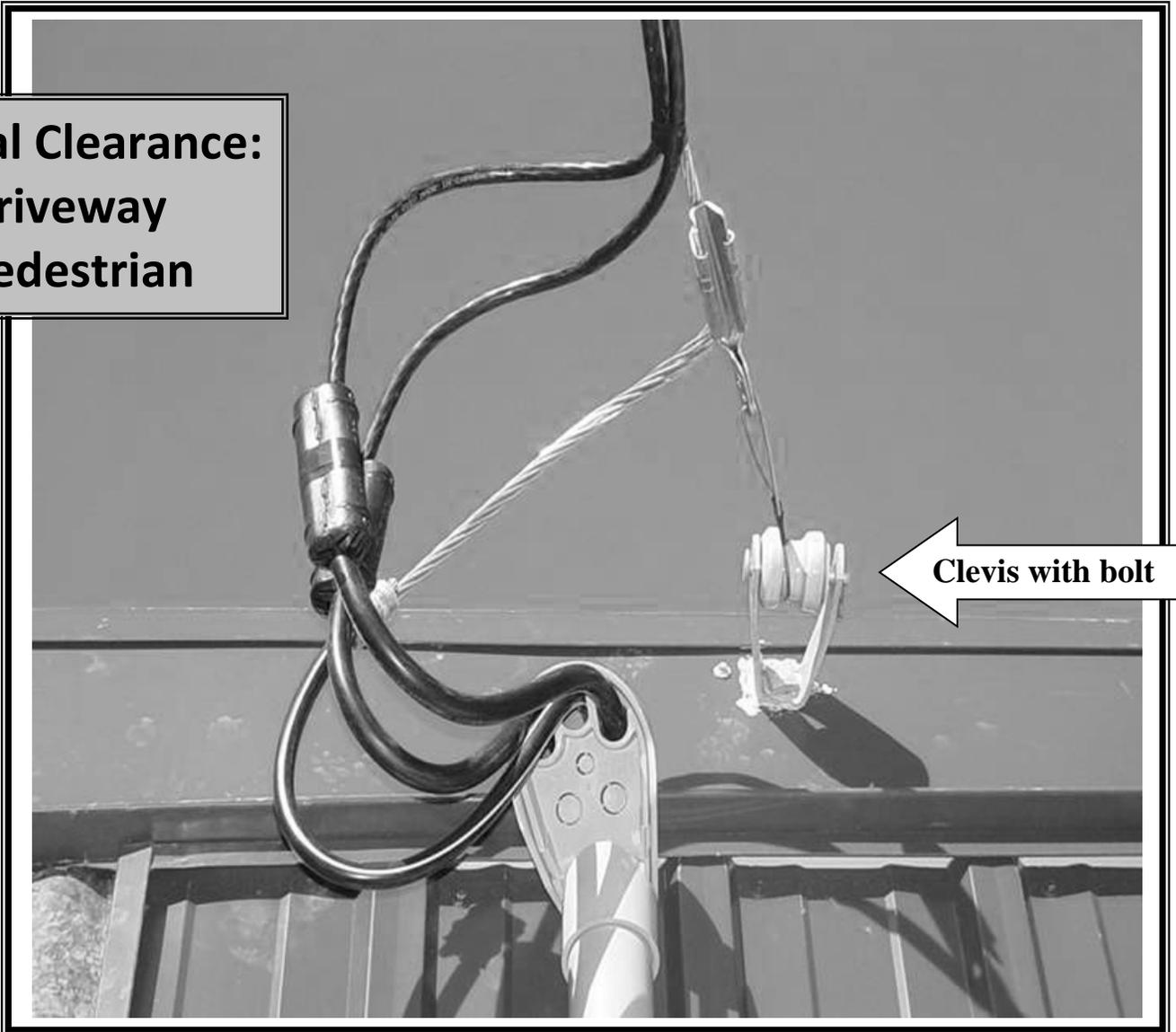
Required Grounding Methods



Attachment on Structure

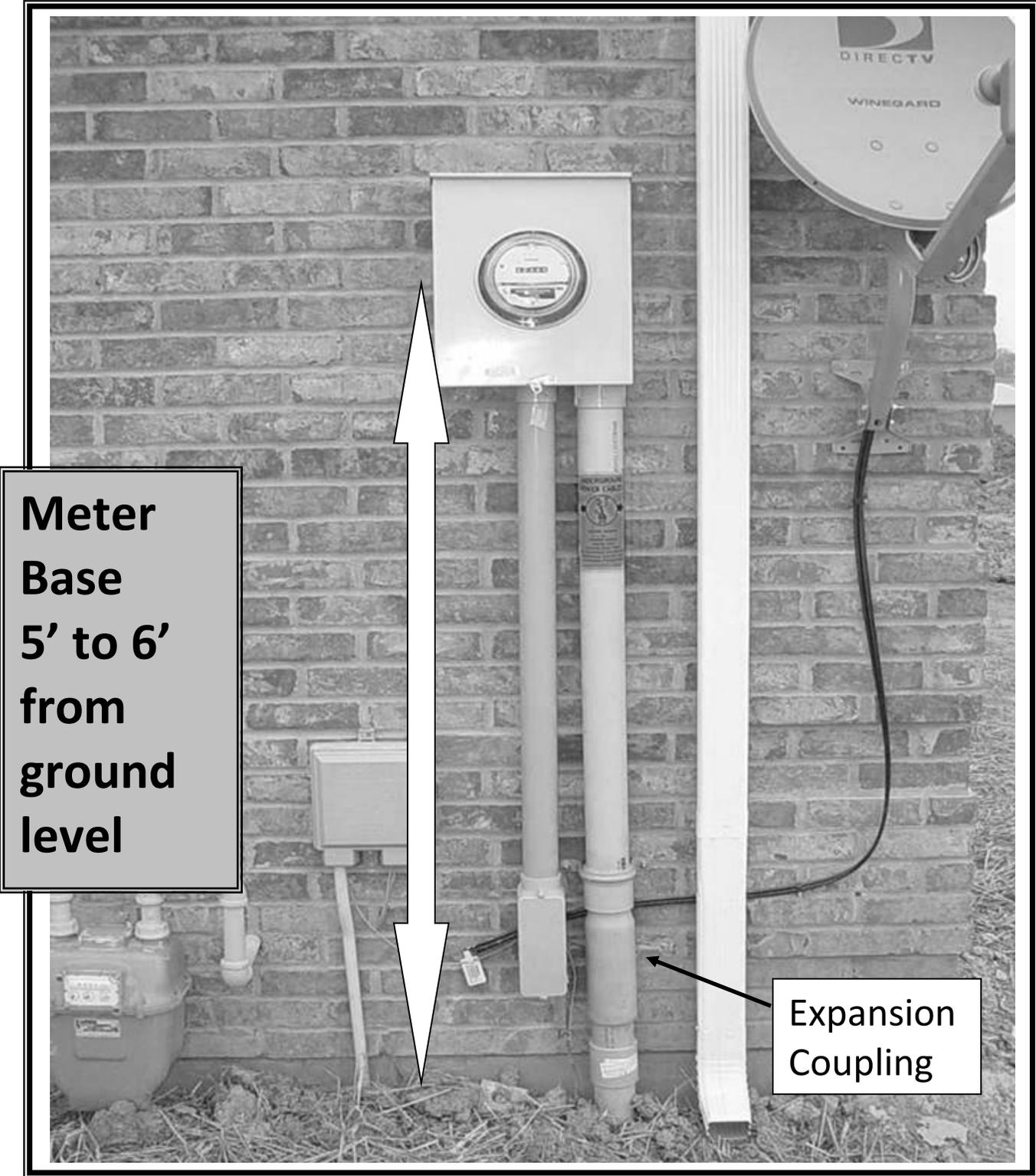
Service Clevis with Bolt

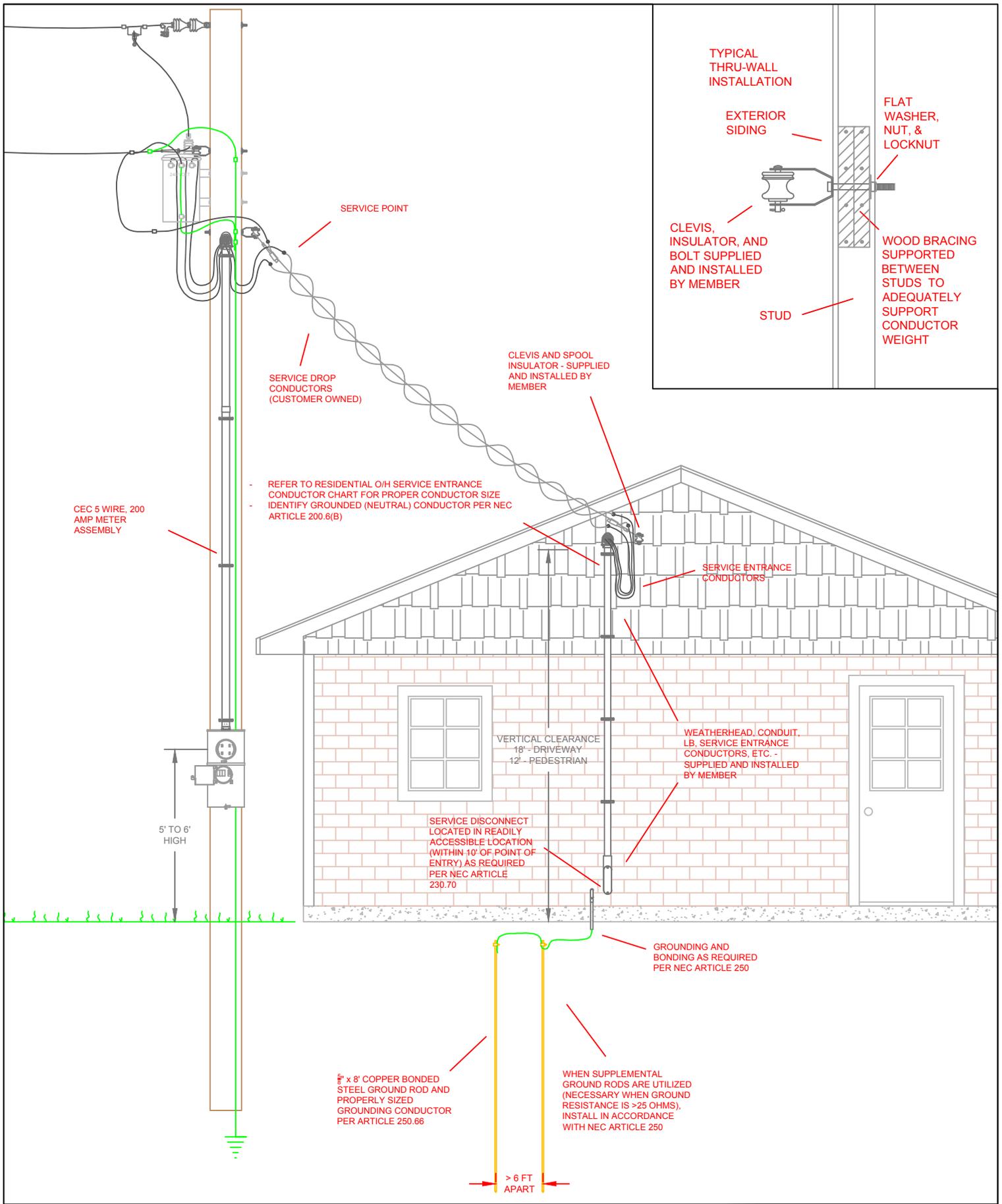
Vertical Clearance:
18' - Driveway
12' - Pedestrian



Clevis with bolt

Meter on Structure, Underground





REVISIONS		NO.	DATE	DWN.	APPD.

CITIZENS ELECTRIC CORPORATION
 PERRYVILLE - STE. GENEVIEVE - FRUITLAND
 877.876.3511 - Option 5

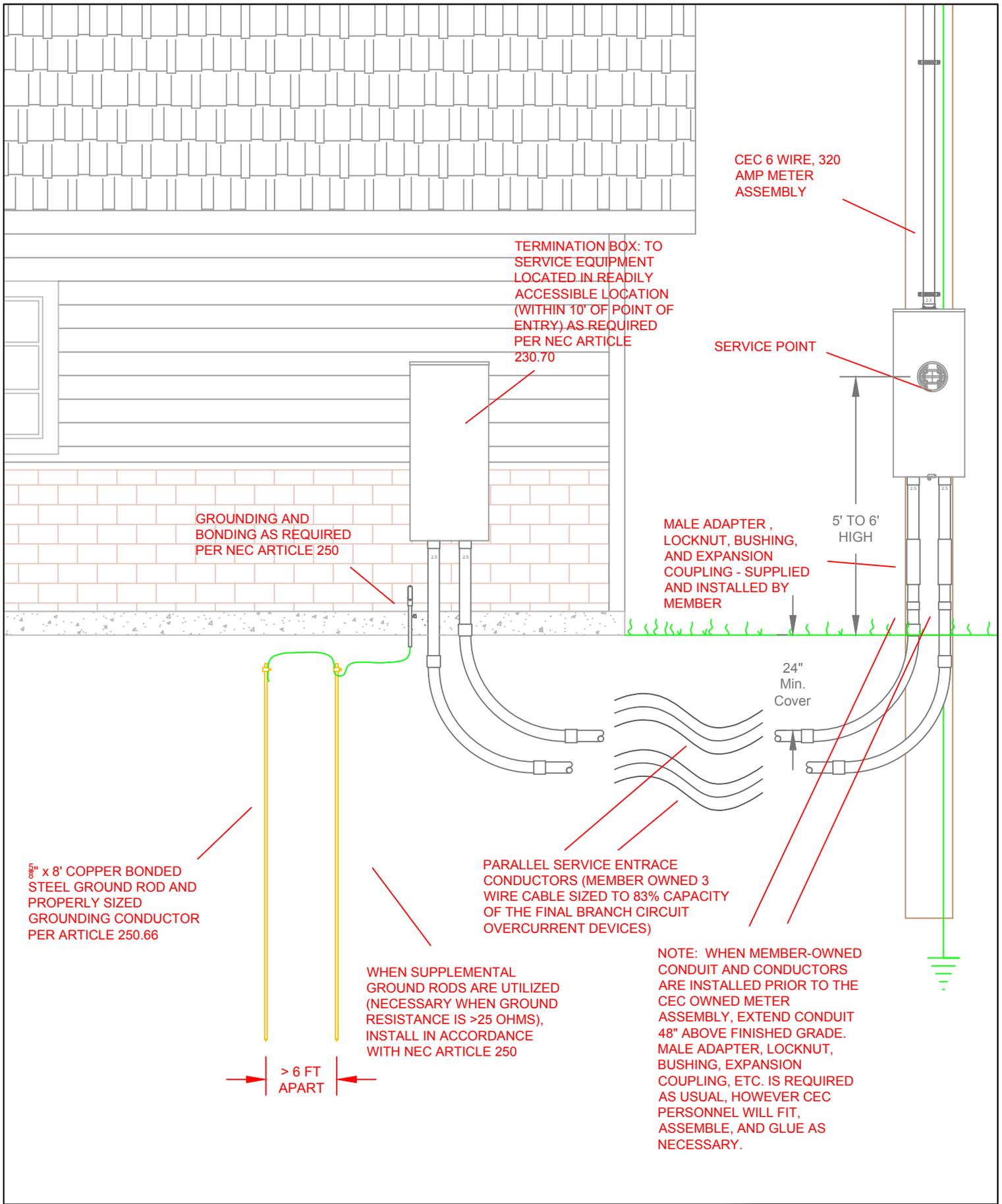
DATE: 6.20.18 DWN: SRH CHKD: APPD:

SERVICE GUIDELINES

SERVICE (METER ON POLE-STRUCTURE O/H)
 200 AMPERE
 METER/BREAKER COMBINATION

14

Drawing No.
3.A.5



CEC 6 WIRE, 320 AMP METER ASSEMBLY

TERMINATION BOX: TO SERVICE EQUIPMENT LOCATED IN READILY ACCESSIBLE LOCATION (WITHIN 10' OF POINT OF ENTRY) AS REQUIRED PER NEC ARTICLE 230.70

SERVICE POINT

GROUNDING AND BONDING AS REQUIRED PER NEC ARTICLE 250

MALE ADAPTER, LOCKNUT, BUSHING, AND EXPANSION COUPLING - SUPPLIED AND INSTALLED BY MEMBER

5' TO 6' HIGH

24" Min. Cover

5/8" x 8' COPPER BONDED STEEL GROUND ROD AND PROPERLY SIZED GROUNDING CONDUCTOR PER ARTICLE 250.66

PARALLEL SERVICE ENTRANCE CONDUCTORS (MEMBER OWNED 3 WIRE CABLE SIZED TO 83% CAPACITY OF THE FINAL BRANCH CIRCUIT OVERCURRENT DEVICES)

WHEN SUPPLEMENTAL GROUND RODS ARE UTILIZED (NECESSARY WHEN GROUND RESISTANCE IS >25 OHMS), INSTALL IN ACCORDANCE WITH NEC ARTICLE 250

NOTE: WHEN MEMBER-OWNED CONDUIT AND CONDUCTORS ARE INSTALLED PRIOR TO THE CEC OWNED METER ASSEMBLY, EXTEND CONDUIT 48" ABOVE FINISHED GRADE. MALE ADAPTER, LOCKNUT, BUSHING, EXPANSION COUPLING, ETC. IS REQUIRED AS USUAL, HOWEVER CEC PERSONNEL WILL FIT, ASSEMBLE, AND GLUE AS NECESSARY.

> 6 FT APART

REVISIONS		DATE	DWN	APPD.
NO.				

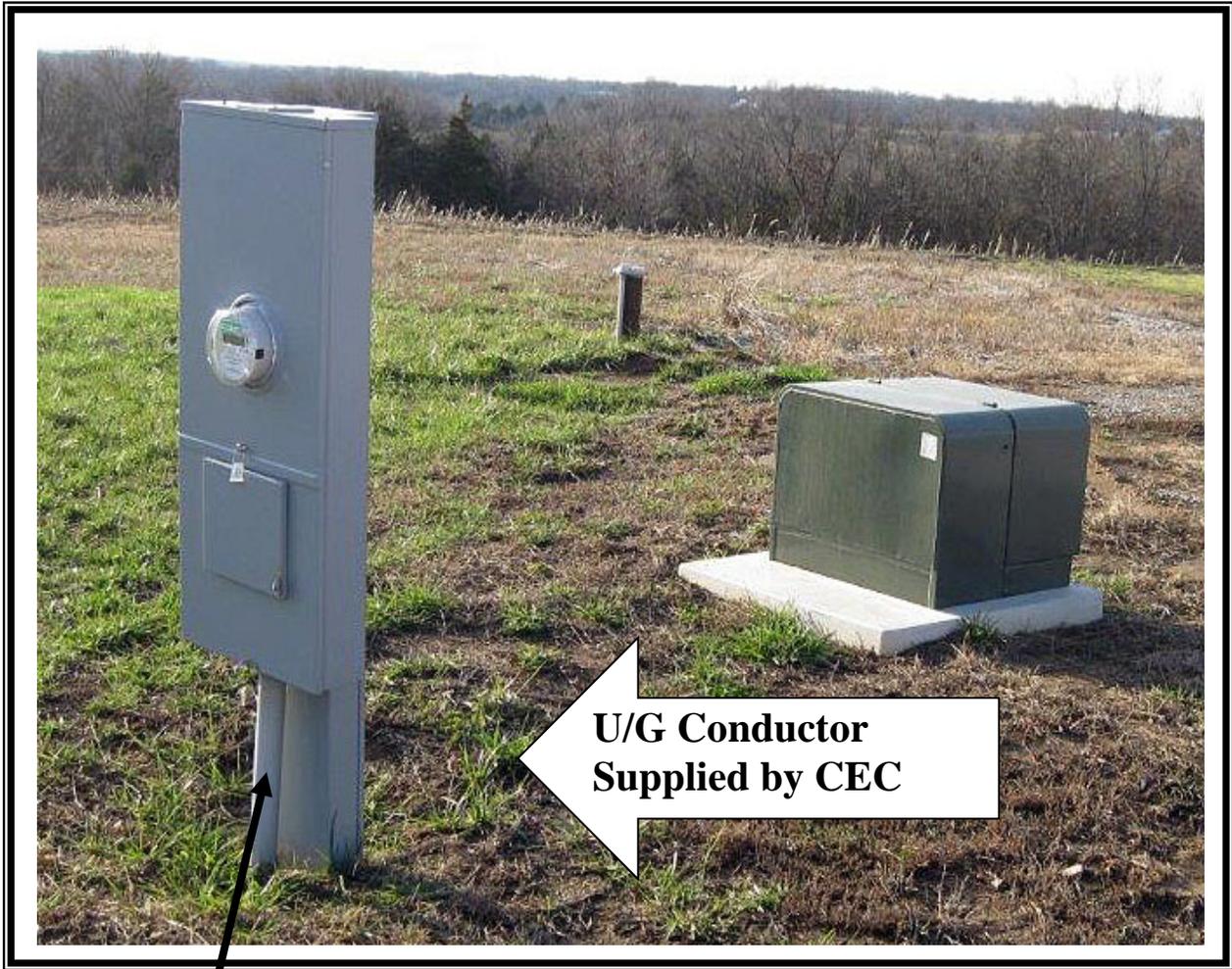
CITIZENS ELECTRIC CORPORATION
 PERRYVILLE - STE. GENEVIEVE - FRUITLAND
 877.876.3511 - Option 5

DATE: 6.20.18 DWN: SRH CHKD: APPD:

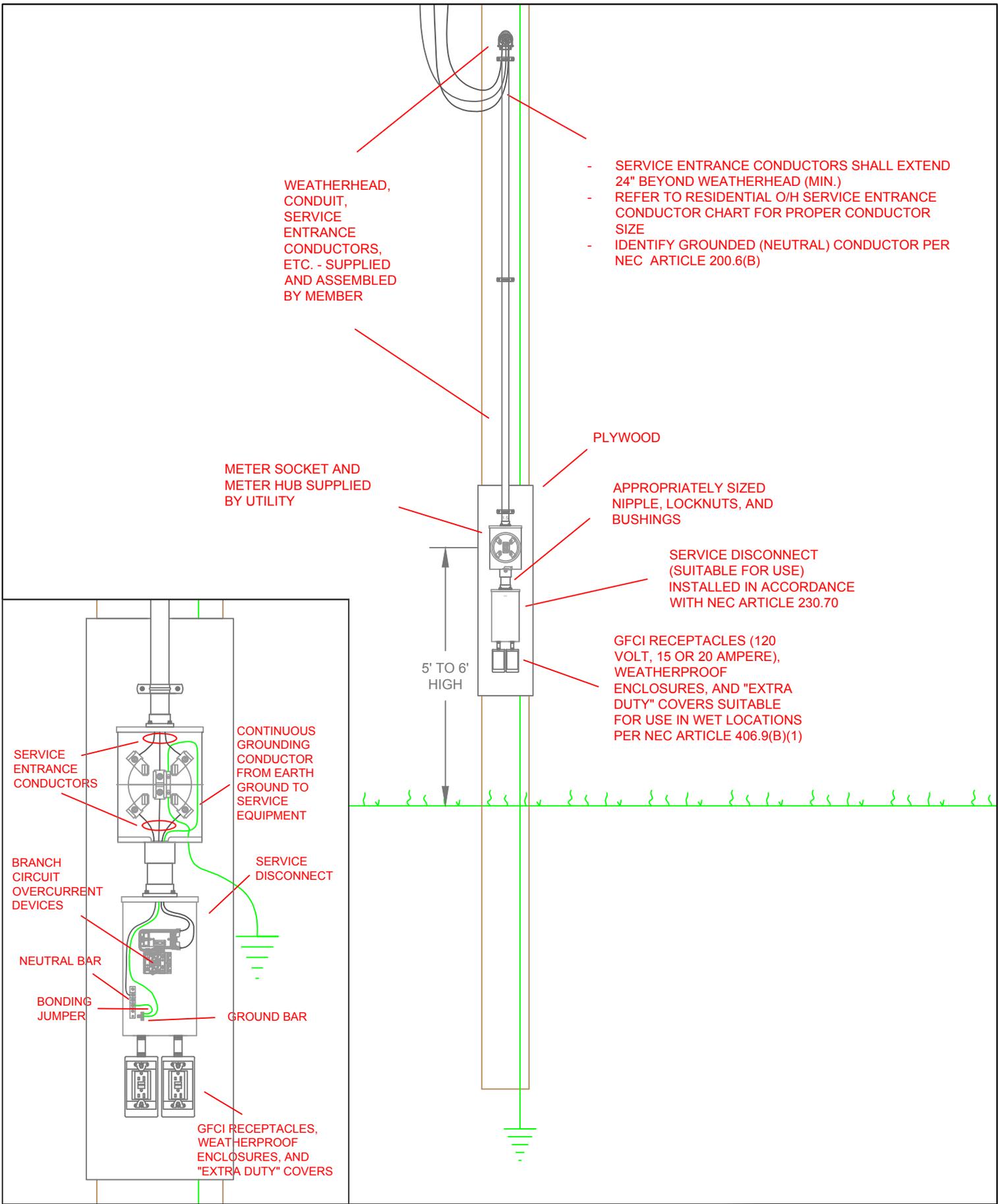
SERVICE GUIDELINES
 SERVICE (METER ON POLE-STRUCTURE U/G)
 2-200 AMPERE
 METER/BREAKER COMBINATION

Drawing No.
3.A.7b

Metering Pedestal, Underground



**Conduit & U/G
Conductor to
House or
Building
Supplied by
Customer**



- SERVICE ENTRANCE CONDUCTORS SHALL EXTEND 24" BEYOND WEATHERHEAD (MIN.)
- REFER TO RESIDENTIAL O/H SERVICE ENTRANCE CONDUCTOR CHART FOR PROPER CONDUCTOR SIZE
- IDENTIFY GROUNDED (NEUTRAL) CONDUCTOR PER NEC ARTICLE 200.6(B)

WEATHERHEAD,
CONDUIT,
SERVICE
ENTRANCE
CONDUCTORS,
ETC. - SUPPLIED
AND ASSEMBLED
BY MEMBER

METER SOCKET AND
METER HUB SUPPLIED
BY UTILITY

PLYWOOD

APPROPRIATELY SIZED
NIPPLE, LOCKNUTS, AND
BUSHINGS

SERVICE DISCONNECT
(SUITABLE FOR USE)
INSTALLED IN ACCORDANCE
WITH NEC ARTICLE 230.70

GFCI RECEPTACLES (120
VOLT, 15 OR 20 AMPERE),
WEATHERPROOF
ENCLOSURES, AND "EXTRA
DUTY" COVERS SUITABLE
FOR USE IN WET LOCATIONS
PER NEC ARTICLE 406.9(B)(1)

5' TO 6'
HIGH

SERVICE
ENTRANCE
CONDUCTORS

CONTINUOUS
GROUNDING
CONDUCTOR
FROM EARTH
GROUND TO
SERVICE
EQUIPMENT

BRANCH
CIRCUIT
OVERCURRENT
DEVICES

SERVICE
DISCONNECT

NEUTRAL BAR

BONDING
JUMPER

GROUND BAR

GFCI RECEPTACLES,
WEATHERPROOF
ENCLOSURES, AND
"EXTRA DUTY" COVERS

NO.	DATE	DWN	APPD.	REVISIONS

CITIZENS ELECTRIC CORPORATION
PERRYVILLE - STE. GENEVIEVE - FRUITLAND
877.876.3511 - Option 5

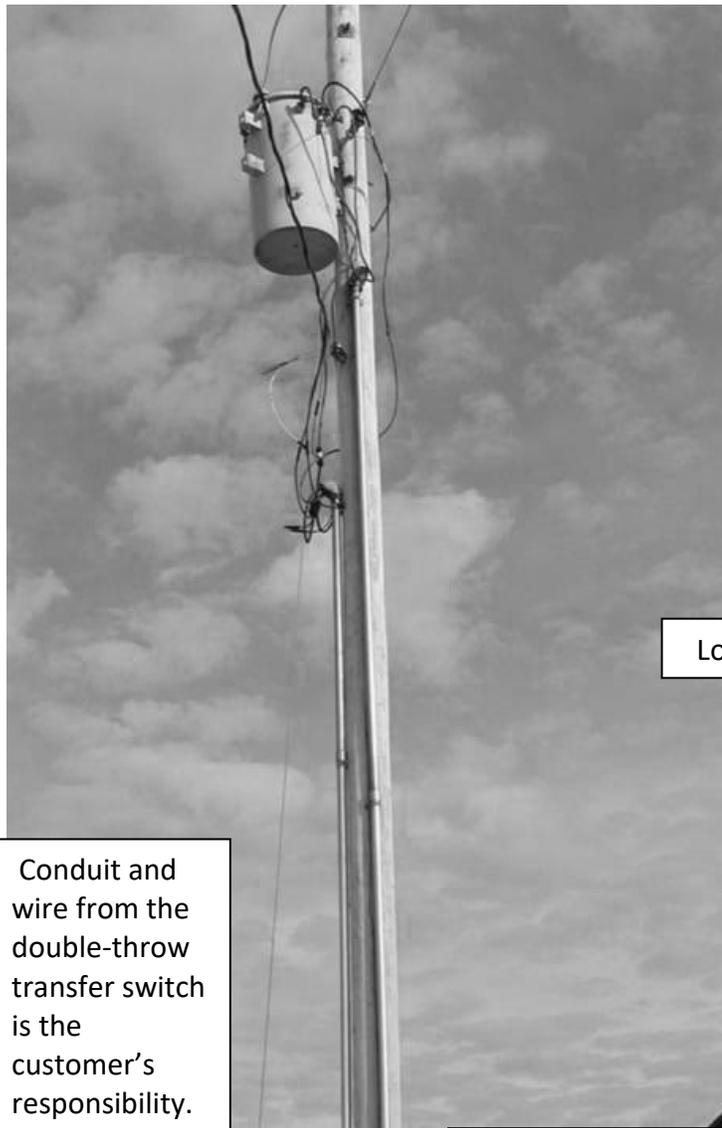
SERVICE GUIDELINES
SERVICE (CONSTRUCTION POWER-O/H)
100 AMPERE
STANDARD METER SOCKET

24

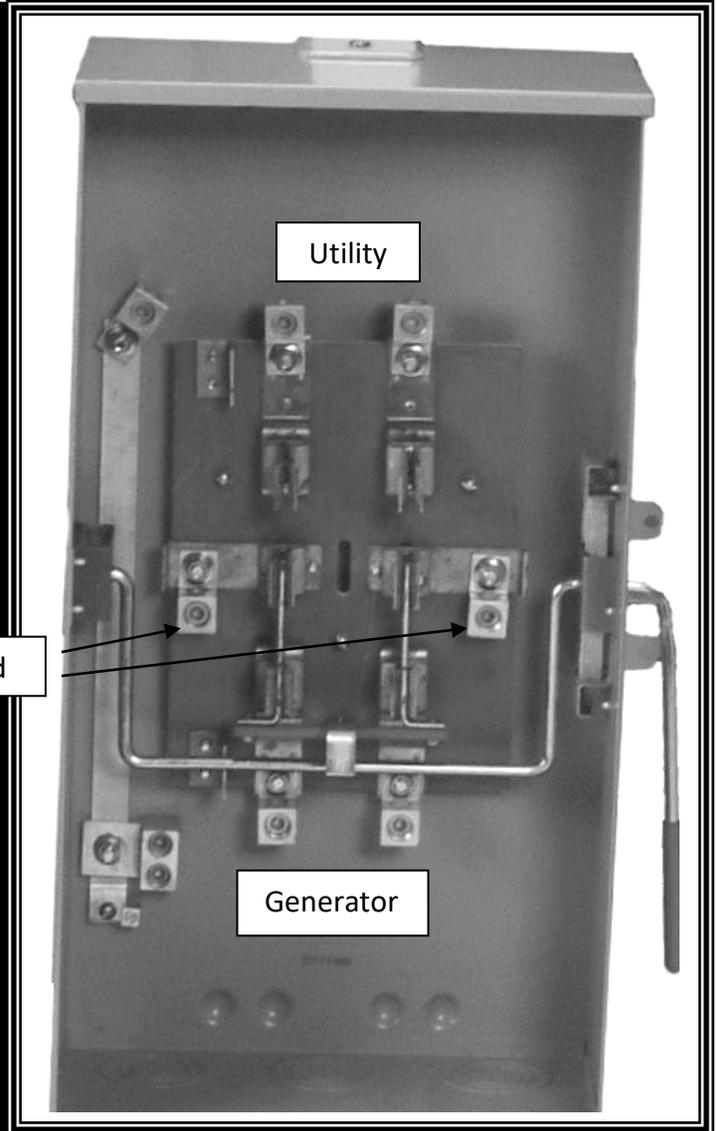
Drawing No.
3.B.1

DATE: 6.20.18	DWN: SRH	CHKD:	APPD:
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Meter Loop with Double-Throw Switch



Conduit and wire from the double-throw transfer switch is the customer's responsibility.



Load

Utility

Generator

Meter base on a CEC pole with a double-throw device for a generator hookup will need to have conduit going from the double-throw back up the pole for any overhead services to be connected to the meter loop.

MEMBER-OWNED RESIDENTIAL UNDERGROUND SERVICE ENTRANCE CONDUCTOR SIZE - SINGLE PHASE, 120/240 VOLT SYSTEMS

Based on 2017 NEC Table 310.15(B)(16) and sized in accordance with NEC Articles 310.15(B)(3)(a) and 310.15(B)(7)(1).

Copper (THHN/THWN/THWN-2)

<u>Service Equipment Rating</u>	<u>Limiting Conductor Temperature Rating</u>	<u>Required Ampacity</u>	<u>Minimum Conductor Size</u>	<u>Conductor Ampacity</u>	<u>Maximum Length @ 83% & 3% Voltage Drop</u>	<u>Maximum Length @ 100% & 3% Voltage Drop</u>	<u>Minimum Conduit Size</u>	<u>Minimum Size of Grounding Electrode Conductor (AWG)</u>
100	60°C	83	3 - #3	85	189	-	1"(SCH. 40 PVC), 1.25"(SCH.80 PVC)	#8 Copper
			3 - #2 (Option)	95	228	-	1.25"(SCH.40, SCH. 80 PVC)	
150	75°C	125	3 - #1	130	181	-	1.25"(SCH.40, SCH. 80 PVC)	#6 Copper
			3 - #1/0 (Option)	150	222	185	1.25"(SCH. 40 PVC), 1.5"(SCH.80 PVC)	
200	75°C	166	3 - #2/0	175	197	-	1.5"(SCH.40, SCH.80 PVC)	#4 Copper
			3 - #3/0 (Option)	200	246	205	2"(SCH.40, SCH.80 PVC)	
300	75°C	249	3 - 250 kcmil	255	219	182	2"(SCH. 40 PVC), 2.5"(SCH.80 PVC)	#2 Copper
400	75°C	332	3 - 400 kcmil	335	221	184	2.5"(SCH. 40 PVC), 3"(SCH.80 PVC)	#1/0 Copper

Aluminum (RHH/RHW/RHW-2)

<u>Service Equipment Rating</u>	<u>Limiting Conductor Temperature Rating</u>	<u>Required Ampacity</u>	<u>Minimum Conductor Size</u>	<u>Conductor Ampacity</u>	<u>Maximum Length @ 83% & 3% Voltage Drop</u>	<u>Maximum Length @ 100% & 3% Voltage Drop</u>	<u>Minimum Conduit Size</u>	<u>Minimum Size of Grounding Electrode Conductor</u>
100	60°C	83	3 - #1	85	181	-	2"(SCH.40, SCH.80 PVC)	#8 Copper
			3 - #1/0 (Option)	100	228	189	2"(SCH.40, SCH.80 PVC)	
150	75°C	125	3 - #2/0	135	181	150	2"(SCH.40, SCH.80 PVC)	#6 Copper
			3 - #3/0 (Option)	155	222	185	2"(SCH. 40 PVC), 2.5"(SCH.80 PVC)	
200	75°C	166	3 - #4/0	180	197	164	2.5"(SCH.40, SCH.80 PVC)	#4 Copper
			3 - 250 kcmil (Option)	205	231	191	3"(SCH. 40, SCH.80 PVC)	
300	75°C	249	3 - 350 kcmil	250	198	164	3"(SCH. 40, SCH.80 PVC)	#2 Copper
400	75°C	332	3 - 600 kcmil	340	213	176	3.5"(SCH. 40 PVC), 4"(SCH.80 PVC)	#1/0 Copper

MEMBER-OWNED RESIDENTIAL **OVERHEAD** SERVICE ENTRANCE CONDUCTOR SIZE - SINGLE PHASE, 120/240 VOLT SYSTEMS

Based on 2017 NEC Table 310.15(B)(16) and sized in accordance with NEC Articles 310.15(B)(3)(a) and 310.15(B)(7)(1).

Copper (THHN/THWN/THWN-2)

<u>Service Equipment Rating</u>	<u>Limiting Conductor Temperature Rating</u>	<u>Required Ampacity</u>	<u>Minimum Conductor Size</u>	<u>Conductor Ampacity</u>	<u>Minimum Conduit Size</u>	<u>Minimum Size of Grounding Electrode Conductor</u>
100	60°C	83	3 - #2	84	1"(RMC), 1.25"(SCH.40, SCH.80 PVC)	#8 Copper
150	75°C	125	3 - #1/0	132	1.25"(RMC, SCH.40 PVC), 1.5"(SCH.80 PVC)	#6 Copper
			3 - #2/0 (Option)	154	1.5"(RMC, SCH.40, SCH.80 PVC)	#4 Copper
200	75°C	166	3 - #3/0	176	1.5"(RMC), 2"(SCH.40, SCH.80 PVC)	#4 Copper
			3 - #4/0 (Option)	202	2"(RMC, SCH.40, SCH.80 PVC)	#2 Copper
300	75°C	249	3 - 300 kcmil	251	2.5"(RMC, SCH. 40, SCH.80 PVC)	#2 Copper
400	75°C	332	3 - 500 kcmil	334	3"(RMC, SCH. 40, SCH.80 PVC)	#1/0 Copper

Aluminum (RHH/RHW/RHW-2)

<u>Service Equipment Rating</u>	<u>Limiting Conductor Temperature Rating</u>	<u>Required Ampacity</u>	<u>Minimum Conductor Size</u>	<u>Conductor Ampacity</u>	<u>Minimum Conduit Size</u>	<u>Minimum Size of Grounding Electrode Conductor</u>
100	60°C	83	3 - #1/0	88	2"(RMC, SCH.40, SCH.80 PVC)	#8 Copper
150	75°C	125	3 - #3/0	136	2"(RMC, SCH.40 PVC), 2.5"(SCH.80 PVC)	#6 Copper
			3 - #4/0 (Option)	158	2.5"(RMC, SCH. 40, SCH.80 PVC)	#4 Copper
200	75°C	166	3 - 250 kcmil	180	2.5"(RMC), 3"(SCH.40, SCH.80 PVC)	#4 Copper
			3 - 350 kcmil (Option)	220	3"(RMC, SCH. 40, SCH.80 PVC)	#2 Copper
300	75°C	249	3 - 500 kcmil	273	3.5"(RMC, SCH. 40, SCH.80 PVC)	#2 Copper
400	75°C	332	3 - 750 kcmil	339	4"(RMC, SCH. 40, SCH. 80 PVC)	#1/0 Copper

MEMBER-OWNED RESIDENTIAL **OVERHEAD TRIPLEX** SERVICE CONDUCTOR SIZE - SINGLE PHASE, 120/240 VOLT SYSTEMS

Based on 2017 NEC Table 310.15(B)(20) and sized in accordance with NEC Article 310.15(B)(7)(1).

Aluminum (XHHW)*

<u>Service Equipment Rating</u>	<u>Limiting Conductor Temperature Rating</u>	<u>Required Ampacity</u>	<u>Minimum Conductor Size</u>	<u>Conductor Ampacity</u>	<u>Maximum Length @ 83% & 3% Voltage Drop</u>	<u>Maximum Length @ 100% & 3% Voltage Drop</u>
100	75°C	83	#3	92	120	-
			#2 (Option)	106	153	124
150	75°C	125	#1/0	143	152	-
			#2/0 (Option)	165	191	155
200	75°C	166	#3/0	192	172	-
			#4/0 (Option)	224	212	172
300	75°C	249	250 kcmil	251	155	-
400	75°C	332	400 kcmil	339	165	-

* XLP is XHHW equivalent NEC type