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# **Sulphur Springs Valley Electric Cooperative, Inc.**

A Touchstone Energy® Cooperative 

## SERVICE ENTRANCE SPECIFICATIONS FOR RESIDENTIAL AND COMMERCIAL

**0 – 3000 AMPERES**

**AT**

**SINGLE-PHASE, 3 WIRE**

**THREE-PHASE, 4 WIRE**

**120/240 VOLTS  
240/480 VOLTS  
120/208 VOLTS**

**120/240 VOLTS \*  
277/480 VOLTS Y  
120/208 VOLTS Y**

**\*NOT AVAILABLE FROM UNDERGROUND PRIMARY SYSTEMS**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

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## SECTION 100. GENERAL NOTES

### 1.0 General Rules and Recommendations

- 1.1. The scope of this specification has been expanded to include more information regarding the excavation, conduit placement, and utility cabinet installation of underground primary and secondary distribution systems provided by homeowners, contractors, and developers where that work will necessarily interface with that of SSVEC.
- 1.2. Line extensions may include primary and secondary lines, as well as services, and may be aerial (overhead) lines, underground lines, or a combination of any of these configurations. Routing and construction configurations of power lines will be worked out with the customer through the guidance and direction provided by SSVEC line extension personnel. **The customer is responsible for all costs associated with new line extensions, except any part of the work that may be deemed for the exclusive benefit of SSVEC.** This will be determined at the sole discretion of SSVEC.
- 1.3. Poles and other equipment for SSVEC overhead extensions are installed exclusively by SSVEC crews. For underground installations, unless otherwise directed by SSVEC, the customer will be responsible for excavations and other civil work. The customer is responsible for supplying and installing all PVC conduit unless otherwise directed by SSVEC personnel. This specification is intended to be helpful in detailing the customer's responsibilities.
- 1.4. It is the intention of this specification to insure the workmanship and materials of all service entrances, meet or exceed the requirements of the National Electrical Code (NEC--2008) and the National Electric Safety Code (NESC--2007). Any item not specifically mentioned in this specification shall meet or exceed the requirements of these two codes. Specified equipment shall be manufactured according to Electric Utility Service Entrance Requirements Committee (EUSERC) Standards or, if no EUSERC standard exists, then the equipment shall be listed by a nationally recognized testing laboratory (e.g. UL) and shall so be labeled.
- 1.5. It is recommended that the customer or contractor consult qualified SSVEC personnel before starting work on any service entrance, to determine which specification applies, type of service available, permissible service entrance location, etc. The SSVEC Service Representative at either the Willcox or Sierra Vista office will answer questions or refer to other qualified SSVEC personnel.
- 1.6. All parts of the service entrance shall be furnished and installed by the customer or contractor unless the specification states that it will be furnished and installed by SSVEC. All parts of the service entrance that are furnished by the customer shall remain the property of the customer, but all meters, metering transformers, enclosures, etc., that are furnished by SSVEC, shall remain the property of SSVEC.

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- 1.7. It is strongly recommended that the customer install devices to protect equipment from voltage surges, phase imbalance, phase loss and reversal. **It is the customer's responsibility to provide adequate protective devices to protect the customer's equipment from high or low voltage, phase loss or reversal, or any unusual condition.** SSVEC shall not be liable to the customer for any loss, injury, or damage resulting from the customer's use of his/her equipment or from the use of the energy from SSVEC beyond the point of connection of SSVEC equipment (load side).
- 1.8. When an inspection certificate is required by a local authority, SSVEC will not connect the service entrance until an inspection certificate is obtained. It is the customer's sole responsibility to coordinate with any local or state inspection agency having jurisdiction and to abide by the appropriate procedures and requirements of those agencies.
- 1.9. Prior to connecting a service entrance, in areas where an inspection certificate may not be required, SSVEC personnel will inspect the service entrance for conformity with this specification.
- 1.10. No service entrance shall be connected that does not comply with all provisions of this specification, unless permission for variance is granted in writing by qualified SSVEC personnel. Personnel authorized to grant variances are:

The Manager of Engineering  
Or, others designated by him/her.

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## SECTION 200. EXCAVATION AND CIVIL WORK

### 2.0 Trenching and Installation Specifications

- 2.0.1 In order to improve the reliability of underground electric service, the Cooperative has elected to install underground electric conductors in protective conduit, i.e. PVC or CIC (Cable-In-Conduit). Unless otherwise directed by SSVEC, the customer will be responsible for supplying and installing underground PVC conduit required for new line extensions and developments. The customer shall also furnish all necessary trenching, select backfill, warning tape, compaction, and concrete work to the specifications of the Cooperative and other local codes.
- 2.0.2 The following are minimum requirements for typical installations; however, field conditions may dictate other requirements. Specifications on construction drawings and/or specifications determined during the pre-construction meeting supersede the information shown here.
- 2.0.3 Minimum depth (measured from final grade to the bottom of the trench) for a primary system shall be 52" in a non-joint trench and 58" in a joint trench. Minimum depth from final grade for secondary system shall be 36" for non-joint and joint trenches (See Figure 200.2). Trench bottom shall be smooth, level and free of rocks and debris (**NO SHARP ROCKS**). Trench shall be parallel or at right angles to clearly staked right of way or property lines and be as close to right of way line as possible. Spoil shall be a minimum of 2' from trench wall. Do not mechanically excavate within 2 feet of existing facilities. Relocation of lines due to deviations from minimum cover requirements, improper location, etc., shall be done at the total expense of the developer.
- 2.0.4 All permits and easements for the job must be secured prior to the release of the work order. The customer is responsible for acquiring private easements and any permits required by the governing agencies. SSVEC will help facilitate the permit and easement process when deemed appropriate by SSVEC.
- 2.0.5 Unless otherwise indicated on the work order, all primary, secondary, and service conductors shall be installed in Schedule 40 PVC conduit with the printed specification label clearly visible on the upper side of the conduit.
- 2.0.6 When installing PVC conduit apply purple primer/cleaner ASTM F656 to all PVC joints prior to applying a coating of gray PVC to PVC cement ASTM D2564.
- 2.0.7 Unless otherwise indicated on the final design provided by SSVEC, sweeps/bends shall be installed in accordance with the conduit applications shown in Figure 200.4.
- 2.0.8 The conduit sweeps at device locations shall extend 6 inches above the floor of the basement pad. Service conduit stub-out locations shall be identified by subdivision lot number using a permanent black ink marker.



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- 2.0.9 The customer shall provide and install a concrete skirt around three-phase transformer pads as shown in Figures 200.20 and 200.21, and install SSVEC provided equipment box pads and junction cabinets per the final SSVEC design and work order. Conduit stubs shall be positioned in equipment as specified on the work order drawings or details. SSVEC will provide ground rods with all box pads. The customer shall install the ground rod as specified in the approved drawing details.
- 2.0.10 Minimum 95 percent soil compaction is required at all equipment locations (compacted area to extend 1' out from equipment). In the event of an inconsistency or conflict with other agency specifications, the more stringent specification shall apply.
- 2.0.11 The customer shall provide an excavation at each transformer and switch cabinet location according to the approved detail drawings. These excavations must be sufficiently deep to accommodate the conduit sweeps and box pads as illustrated in the figures attached to Section 200 of this specification or other details supplied by SSVEC. After the conduits are installed, the excavations must be backfilled and leveled to allow for the pad. The pad depth and installation must be coordinated with SSVEC construction personnel. Other excavations may be required as situations warrant.
- 2.0.12 **Trenches should not be opened before coordination with the SSVEC Construction Foreman or the SSVEC Inspector.**
- 2.0.13 The SSVEC Inspector shall approve trench depth changes due to obstructions encountered while digging.
- 2.0.14 There shall be a 12" minimum radial clearance between the electric lines and all other utilities. Crossings require a minimum of 12" vertical separation between SSVEC facilities and other utilities, including water and sewer taps. Sewer may not be placed in the same trench. Water lines are also normally in a separate trench. See Figure 200.2 for the proper separation between parallel utilities. In no circumstance, will other utilities be allowed underneath SSVEC pad-mounted equipment.
- 2.0.15 Electric lines shall not be situated under inhabitable/enclosed structures or other utility equipment.
- 2.0.16 The conduit system shall be proven after backfill is completed. Unless otherwise directed by SSVEC, a mandrel, appropriately sized for the conduit, will be routed through the conduit installation leaving a mule tape of 2,500 lb. pulling capacity accessible at both ends of the conduit. All empty conduit ends shall be plugged at equipment locations. Future conduit stub-outs shall be capped and a locate marker installed per the attached drawing (See Figure 200.10). Tape is not an acceptable substitute for caps or plugs.
- 2.0.17 Trench depths and pad excavation depths are based on final grade. Any change in the final grade will require replacement of line and equipment at the customer's expense.
- 2.0.18 All equipment pad excavations shall be level and smooth.

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- 2.0.19 SSVEC approved and customer provided concrete caps shall be installed over conduit in trenches which may cross through drainage areas, washes and other areas subject to erosion and as required by the SSVEC inspector. Concrete caps shall consist of 3000 psi concrete at 28 days. The concrete cap shall cover the entire width of the trench up to a level of 6 inches above the conduit (See Figure 200.16). Shallow trenches are also subject to concrete caps (See Figure 200.18 for details).
- 2.0.20 The customer shall call the SSVEC Inspector whenever excavating closer than 5 feet from existing poles and guy wires.
- 2.0.21 The customer shall restore to its original condition, at customer's expense, any landscaping or property which has been damaged due to customer-provided trenching, backfilling, or equipment installations.
- 2.0.22 SSVEC personnel must inspect and approve all trenching and backfill material prior to any item being installed in the trench. SSVEC shall be responsible for inspecting all trench, conduit and equipment installations. SSVEC will not pull underground cables until the trench and conduit have been properly inspected and completely backfilled.
- 2.0.23 A mandatory pre-construction meeting shall take place a minimum of five (5) working days prior to construction of primary installations. **The SSVEC Inspector will initiate and help coordinate the pre-construction meeting.**

### 2.1 Backfill Specifications

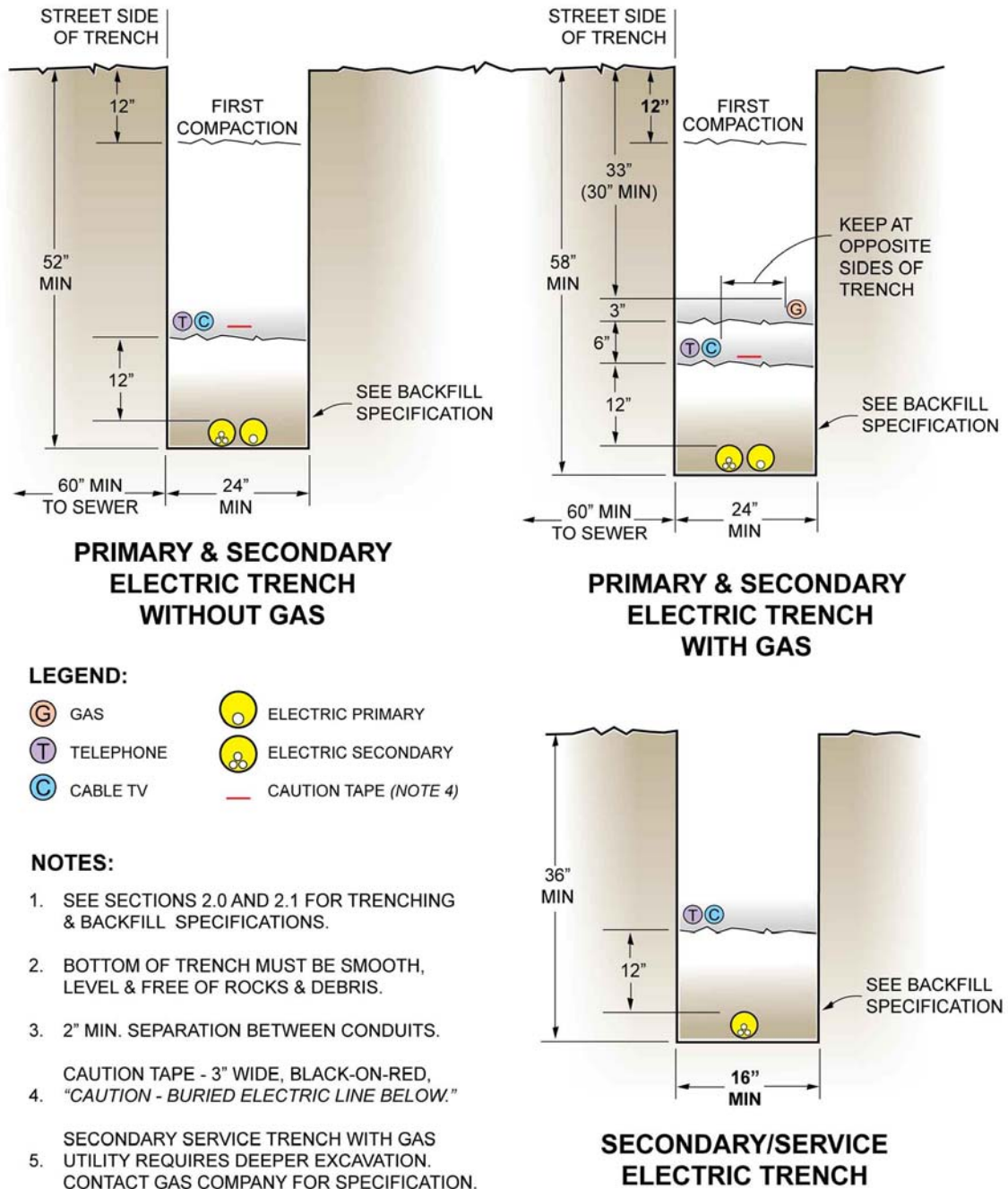
- 2.1.1 100% of the bedding and shading material shall pass through a 1½" standard sieve and shall not have sharp edges. This padding material shall be of sufficient quantity to provide 6" of material along side and above the pipe, and shall be approved by SSVEC personnel prior to installation of the pipe and padding material. The first 6" lift above and around the conduit shall be 1½" minus and shall be installed by the developer.
- 2.1.2 During the course of this installation all bedding, shading, backfill, sleeve, warning tape, material procurement, compaction, material export, site restoration, required blacktop, concrete cuts and repairs, construction staking, compaction testing, required permits, design specifications of drainage crossings, certification of grade and blue-stake notifications shall be the sole responsibility of the developer. All work shall meet the requirements of Sulphur Springs Valley Electric as well as other utility and governmental organizations under whose jurisdiction the work is to be done.
- 2.1.3 SSVEC reserves the right to inspect all and every part of Customer's work during or after completion of trenching, conduit installation, shading, backfilling, or compaction. If all of any part of the work has not been done according to SSVEC specifications, Customer shall take corrective action at Customer's expense. SSVEC may perform the corrective action at the Customer's expense. **Neither inspection of the work by SSVEC nor lack of same shall relieve Customer of the responsibility to provide and perform the work according to SSVEC specifications. In all cases, the Customer is responsible for conduit system location, integrity and usefulness until SSVEC conductors are energized.**

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## 2.2 Service Drop Installations

- 2.2.1 Unless a service work order specifically calls for CIC (cable pre-installed in conduit and direct buried), the customer is required to install a 3" minimum PVC conduit preparatory to the cable installation. All line drops are coordinated on an individual basis by the line crew foreman (See Figure 200.15).
- 2.2.2 **The customer is responsible for coordinating the service trench and conduit inspection with the SSVEC Construction Foreman. This inspection coordination should begin prior to opening the trench. The SSVEC Foreman will provide important information regarding the installation and inspection coordination process. The Sierra Vista Engineering Service Representative or the Construction Clerk at your local office can help connect you with the SSVEC Construction Foreman for your job.**
- 2.2.3 All service conductors shall be installed in Schedule 40 PVC conduit with the printed specification label clearly visible on the upper side of the conduit. Unless otherwise directed by SSVEC, the conduit will be 3" diameter.
- 2.2.4 When installing PVC conduit apply purple primer/cleaner ASTM F656 to all PVC joints prior to applying a coating of gray PVC to PVC cement ASTM D2564.
- 2.2.5 The trench and conduit shall be inspected before the service crew visits the site. SSVEC will not pull underground cables until the trench and conduit have been properly inspected and completely backfilled.
- 2.2.6 SSVEC reserves the right to inspect all and every part of Customer's work during or after completion of trenching, conduit installation, shading, backfilling, or compaction. If all of any part of the work has not been done according to SSVEC specifications, Customer shall take corrective action at Customer's expense. SSVEC may perform the corrective action at the Customer's expense. **Neither inspection of the work by SSVEC nor lack of same shall relieve Customer of the responsibility to provide and perform the work according to SSVEC specifications. In all cases, the Customer is responsible for conduit system location, integrity and usefulness until SSVEC conductors are energized.**
- 2.2.7 **Refer all questions to the SSVEC Construction Foreman or SSVEC Engineering.**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



**FIGURE 200.2  
JOINT USE TRENCH SPECIFICATIONS**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

**FIGURE 200.4  
CONDUIT & SWEEPS - APPLICATION GUIDELINES**

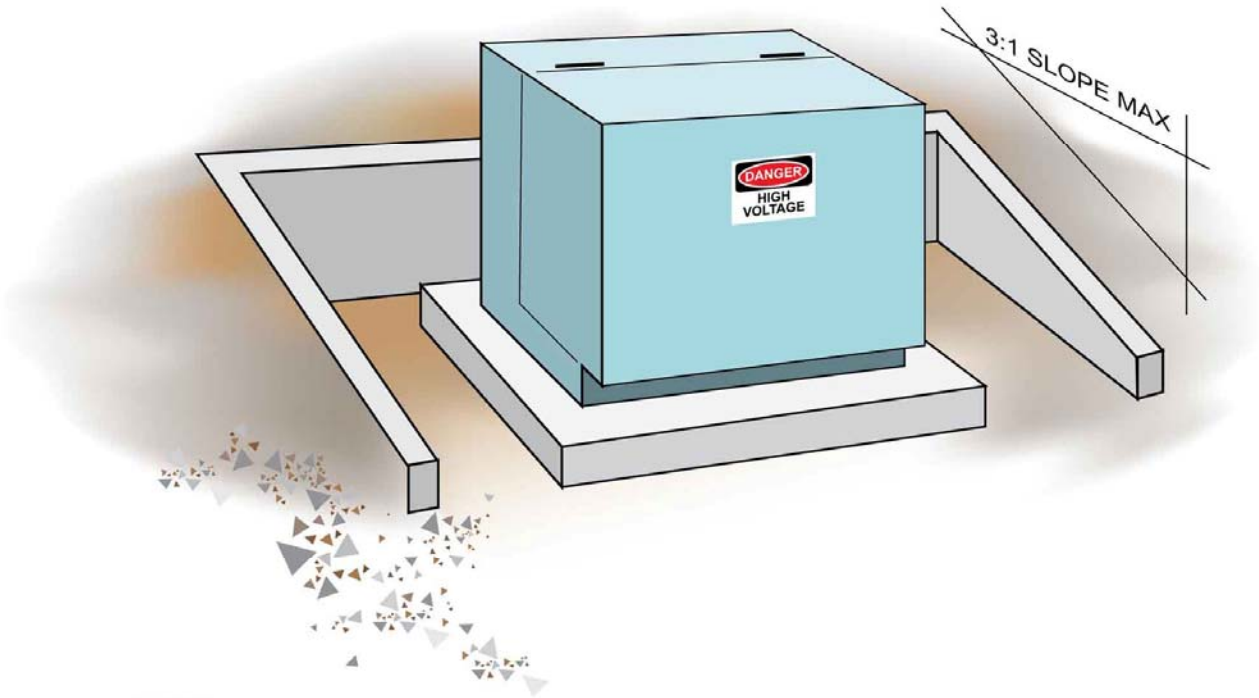
PRIMARY CONDUIT & SWEEPS		
CONDUCTOR SIZE	CONDUIT SIZE	SWEEPS
1/0	3"	90° SWEEP, 36" RADIUS 45° SWEEP 24" RADIUS
4/0	4"	

SECONDARY CONDUIT & SWEEPS		
CONDUCTOR SIZE	CONDUIT SIZE	SWEEPS
1/0 TRIPLEX	3"	90° SWEEP, 36" RADIUS* 90° SWEEP, 24" RADIUS* 45° SWEEP, 24" RADIUS
4/0 TRIPLEX	3"	
4/0 QUAD	4"	
350 TRIPLEX	4"	

TABLES ABOVE SHOW STANDARD APPLICATIONS. COORDINATE WITH  
SSVEC ENGINEERING FOR SPECIAL SITUATIONS.

\* VARIES WITH APPLICATION

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



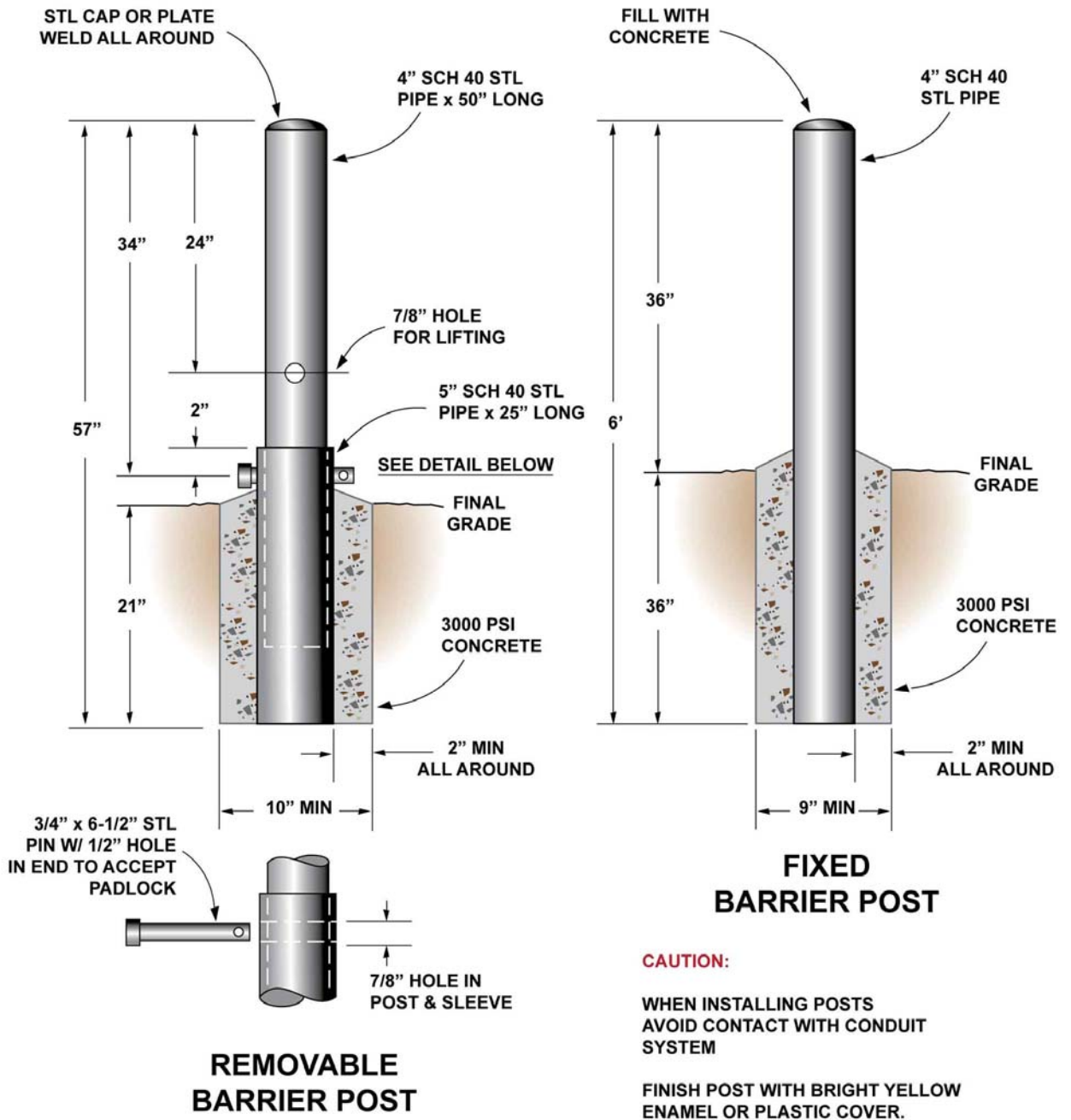
**NOTE:**

HILL-HOLDERS ARE PRE-FABRICATED FIBERGLASS UNITS SUPPLIED BY SSVEC. CONTACT SSVEC TO COORDINATE INSTALLATION OF THIS UNIT.

CONTACT SSVEC ENGINEERING FOR RETAINING WALL APPLICATIONS STEEPER THAN 3:1 SLOPE

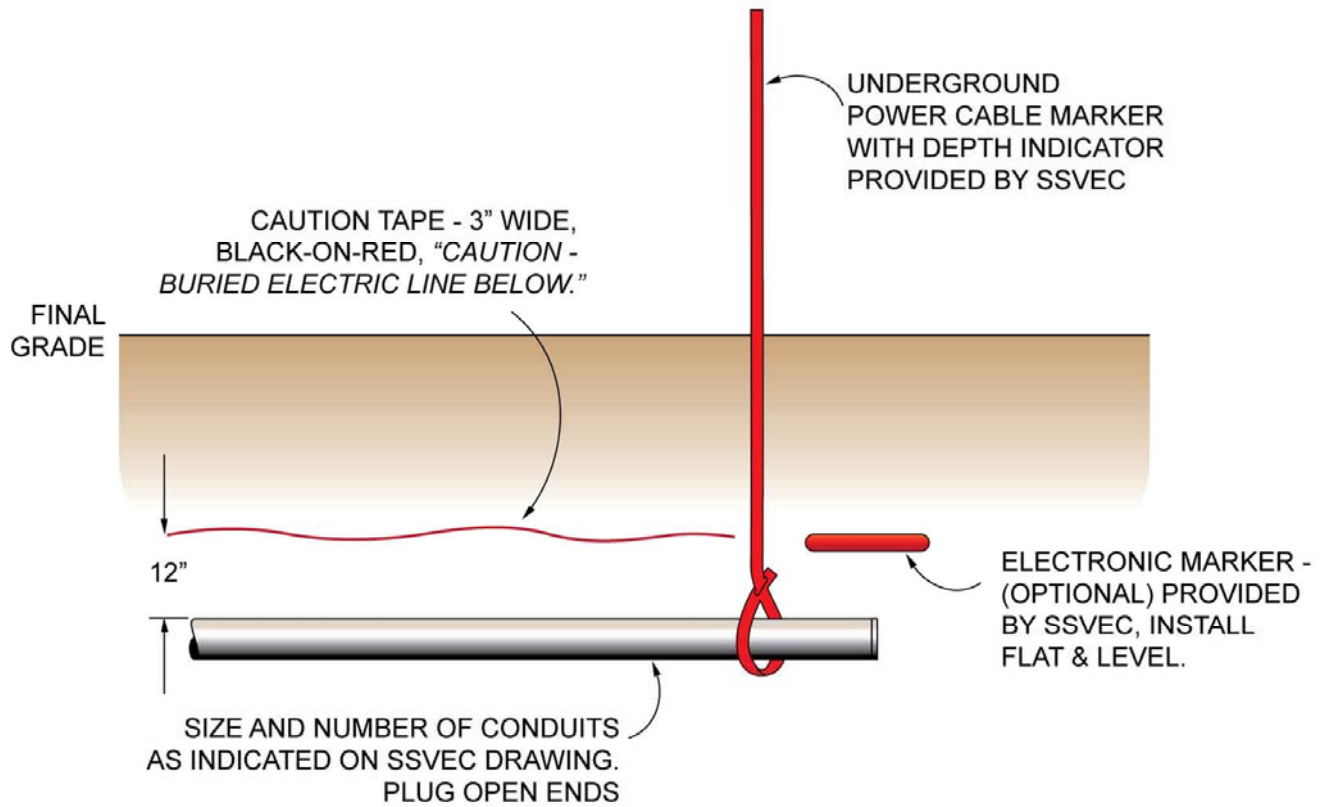
**FIGURE 200.6  
HILL-HOLDER INSTALLATION**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



**FIGURE 200.8  
BARRIER POSTS**

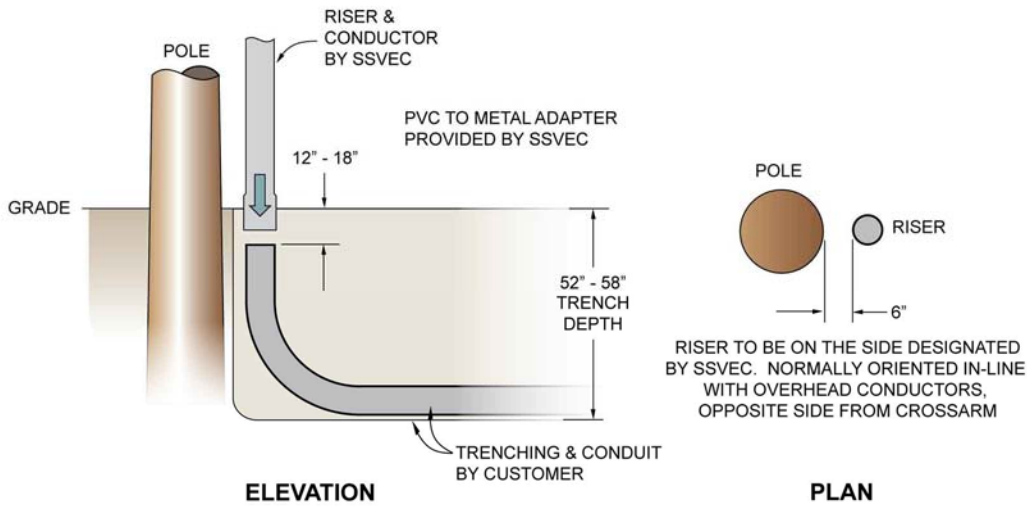
# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



**FIGURE 200.10  
CONDUIT STUB DETAIL**

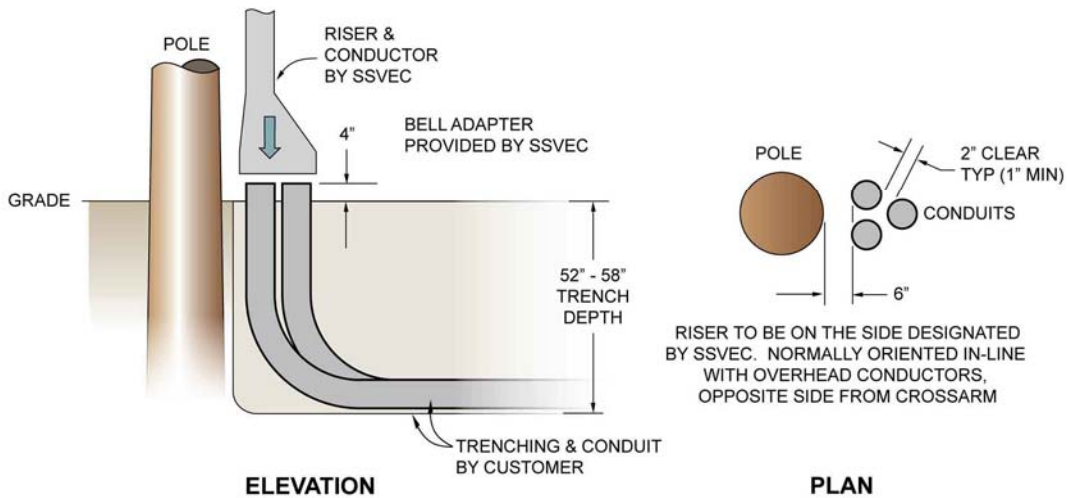


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**FIGURE 200.12**  
**SINGLE-PHASE RISER CONDUIT ARRANGEMENT**

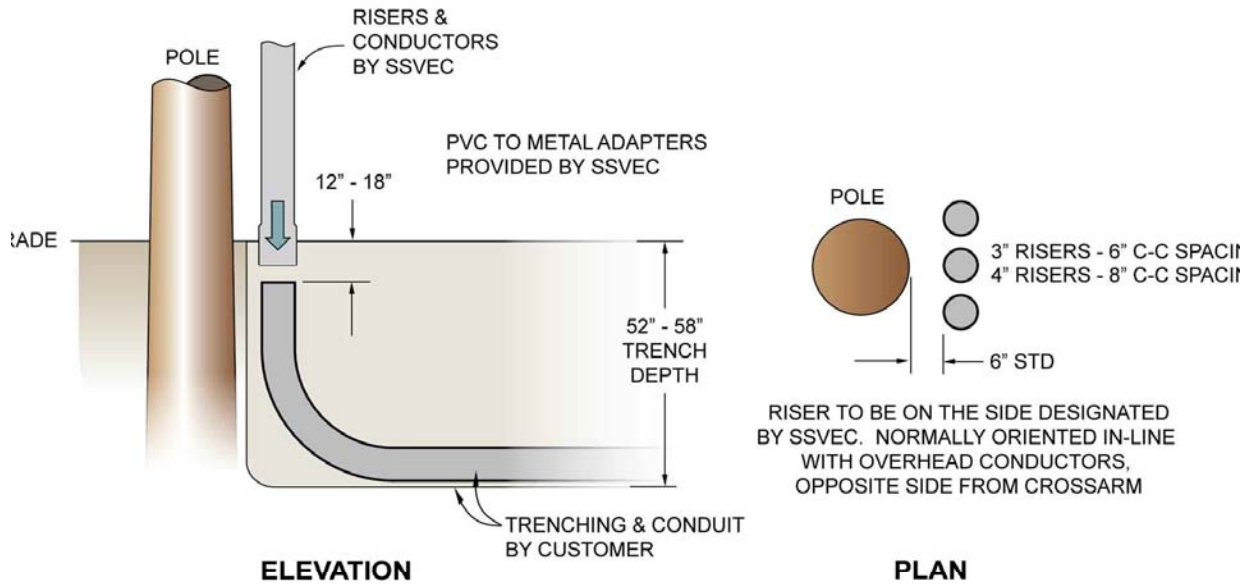
NOTE: COORDINATE WITH SSVEC ENGINEERING OR CONSTRUCTION PRIOR TO INSTALLATION



**FIGURE 200.13**  
**THREE-PHASE RISER CONDUIT ARRANGEMENT**  
**SINGLE RISER**

NOTE: COORDINATE WITH SSVEC ENGINEERING OR CONSTRUCTION PRIOR TO INSTALLATION

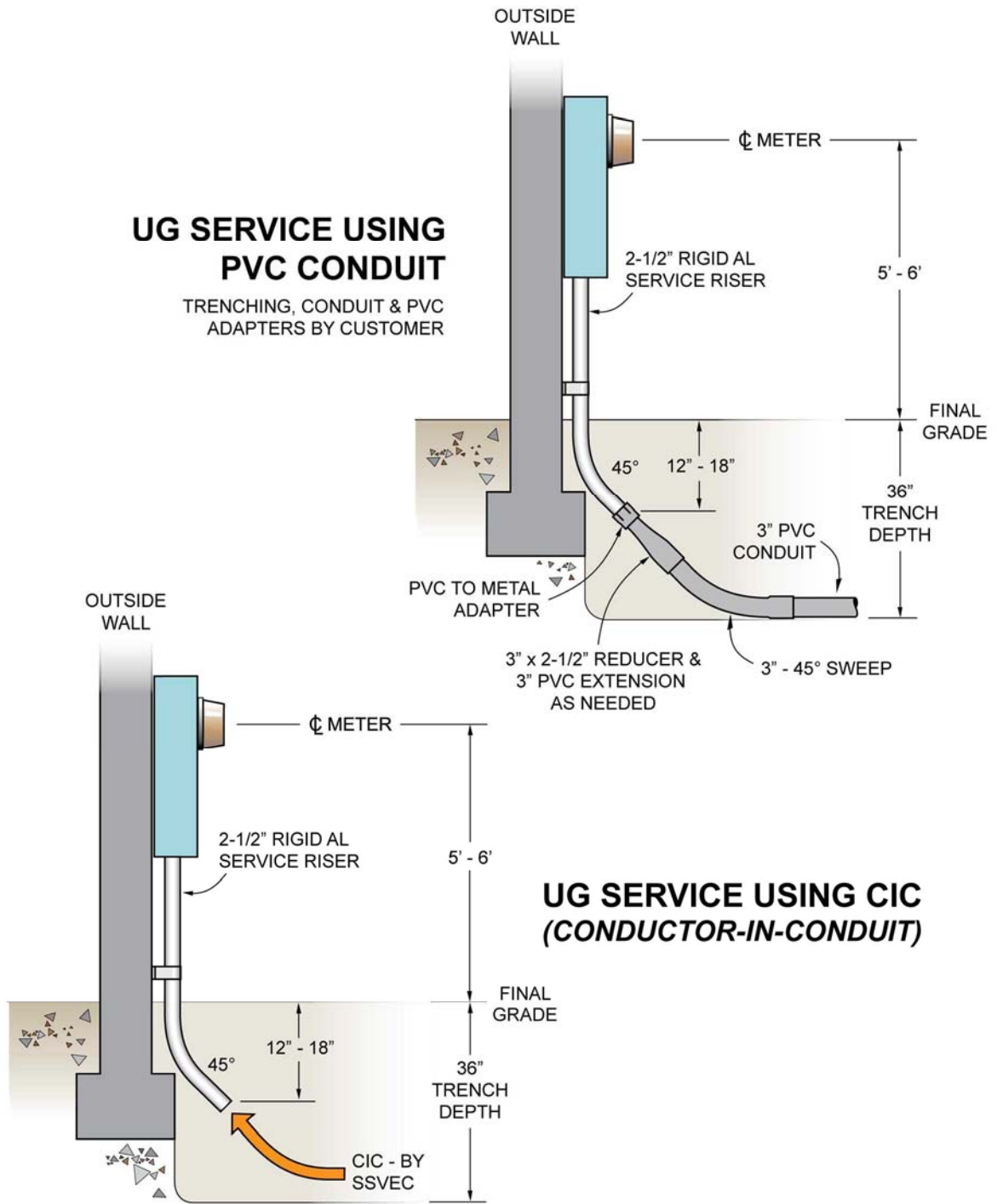
# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



**FIGURE 200.14**  
**THREE-PHASE RISER CONDUIT ARRANGEMENT**  
**SEPARATE RISERS**

NOTE: COORDINATE WITH SSVEC ENGINEERING OR  
CONSTRUCTION PRIOR TO INSTALLATION

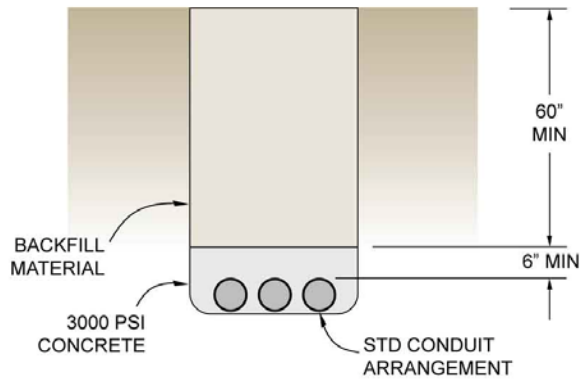
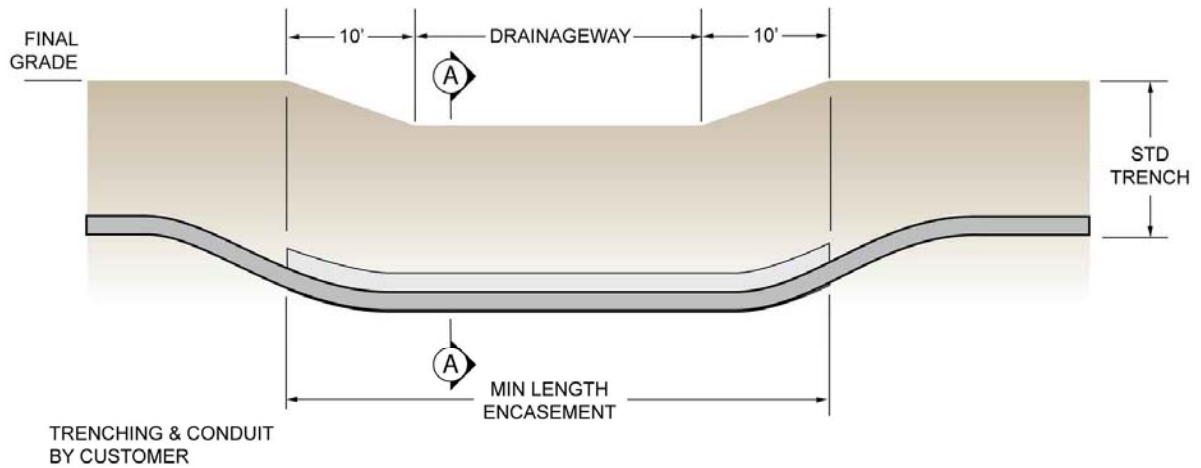
# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



**FIGURE 200.15  
RESIDENTIAL SERVICE RISER ARRANGEMENT**

NOTE: COORDINATE WITH SSVEC ENGINEERING OR CONSTRUCTION BEFORE EXCAVATION

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



SIZE AND NUMBER OF CONDUITS	TRENCH WIDTH
3" - 1	12"
3" - 2	18"
3" - 3	24"
4" - 1	12"
4" - 2	18"
4" - 3	24"

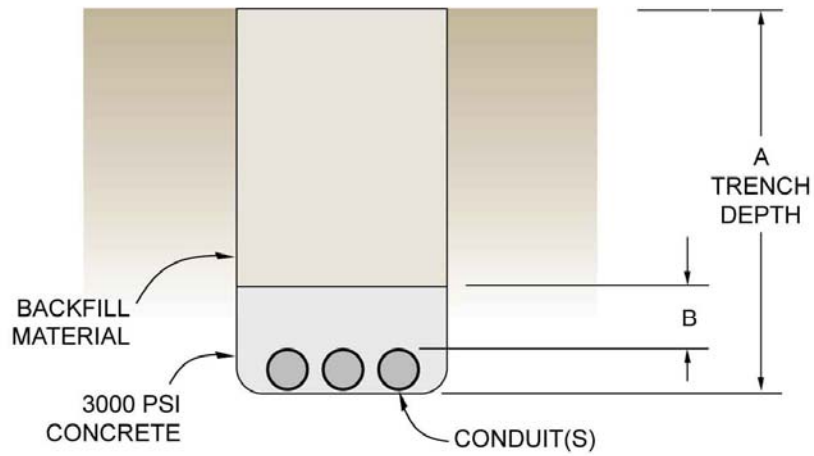
ALL CONCRETE DEPTHS WILL BE CONDUIT DIAMETER PLUS 6" OF CONCRETE ABOVE CONDUIT.

## SECTION A - A

**FIGURE 200.16  
TRENCH & DUCT ENCASEMENT  
DRAINAGEWAY CROSSING**

NOTE: COORDINATE WITH SSVEC ENGINEERING OR CONSTRUCTION PRIOR TO INSTALLATION

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

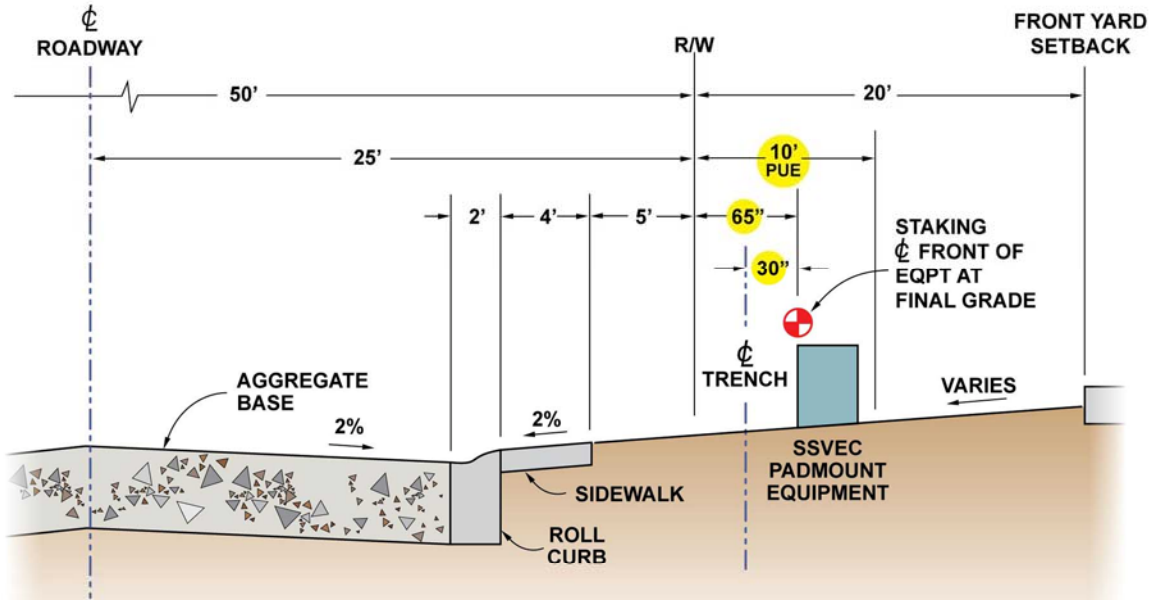


A TRENCH DEPTH	B CONCRETE DEPTH ABOVE TOP OF CONDUIT
More than 24" but less than 28"	18"
More than 28" but less than 40"	12"
More than 40" but less than 52"	6"
52" and above	0

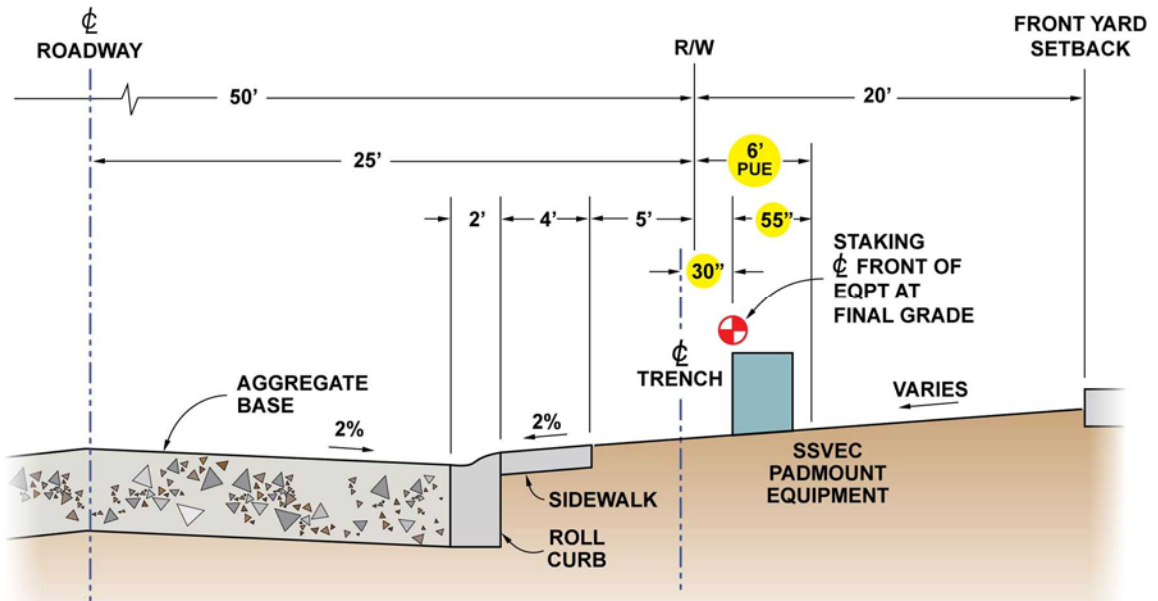
**FIGURE 200.18  
TRENCH & DUCT ENCASEMENT  
SHALLOW TRENCH**

NOTE: COORDINATE WITH SSV EC ENGINEERING OR CONSTRUCTION PRIOR TO INSTALLATION

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



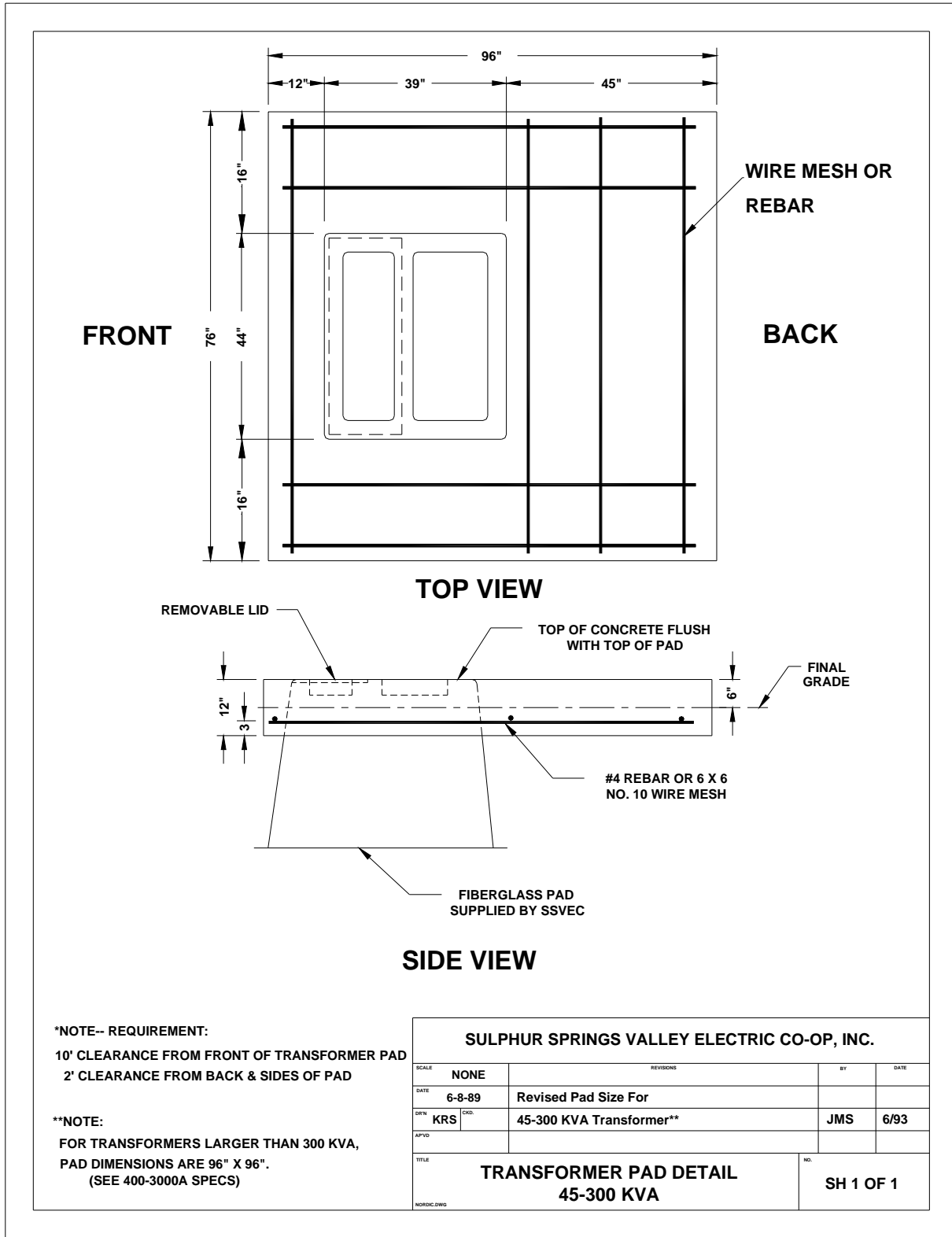
**FIGURE 200.19A  
TYPICAL ROAD CROSS SECTION  
10' PUBLIC UTILITY EASEMENT**



**FIGURE 200.19B  
TYPICAL ROAD CROSS SECTION  
6' PUBLIC UTILITY EASEMENT**

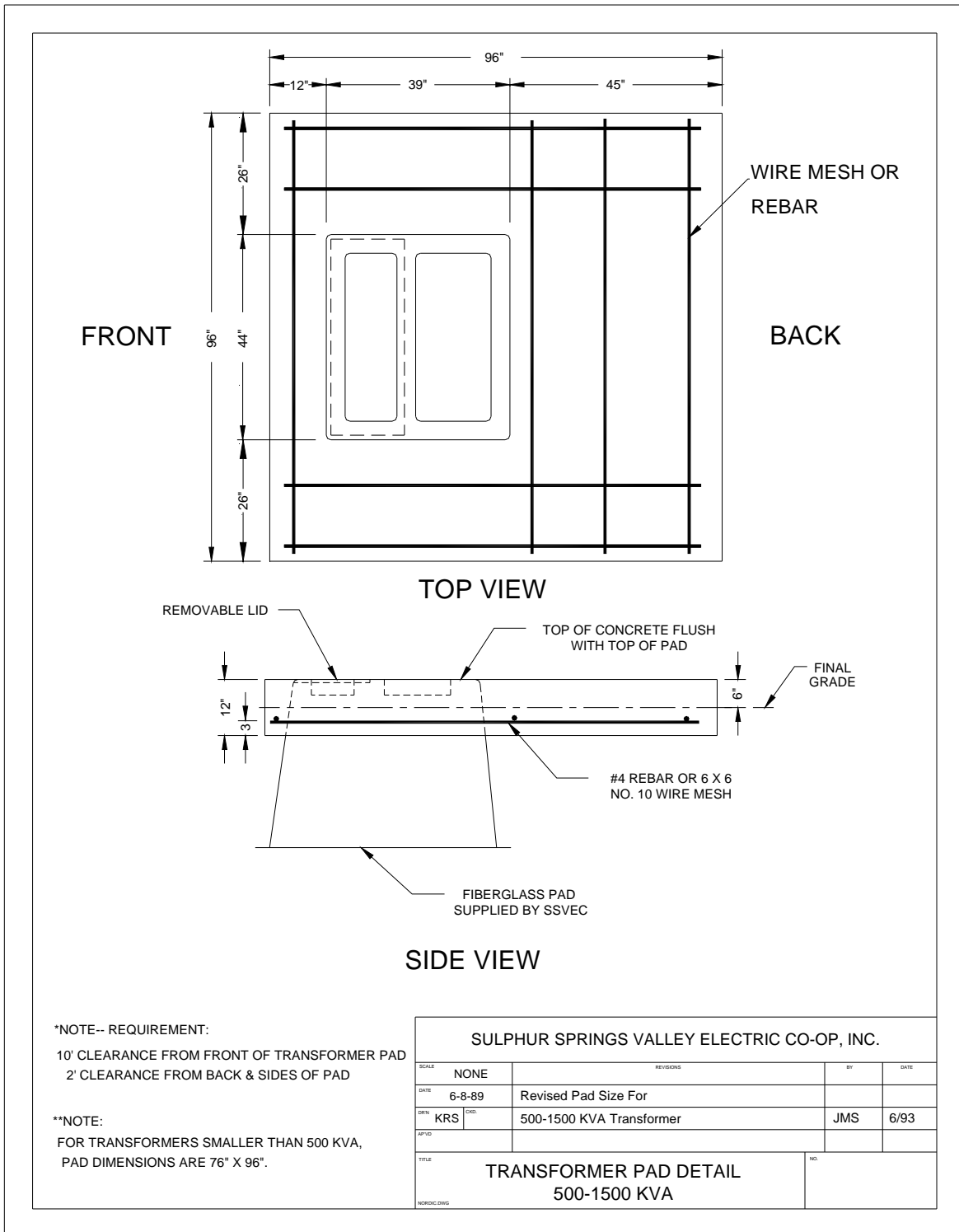
# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

Figure 200.20



# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

**FIGURE 200.21**





# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## FIGURES 200.24 THROUGH 200.30

These are typical specifications only and changes may occur during the course of a specific project. Conduit placement is subject to details shown on each SSVEC construction drawing provided with each job and may vary. Coordinate all civil work with SSVEC Engineering prior to installation.

SSVEC reserves the right to inspect all and every part of Customer's work during or after completion of trenching, conduit installation, shading, backfilling, or compaction. If all of any part of the work has not been done according to SSVEC specifications, Customer shall take corrective action at Customer's expense. SSVEC may perform the corrective action at the Customer's expense. **Neither inspection of the work by SSVEC nor lack of same shall relieve Customer of the responsibility to provide and perform the work according to SSVEC specifications. In all cases, the Customer is responsible for conduit system location, integrity and usefulness until SSVEC conductors are energized.**

### TYPICAL CONDUIT DETAILS

FIGURE 200.24	1 PHASE TRANSFORMER PAD
FIGURE 200.25	1 PHASE SWITCH CABINET
FIGURE 200.26	3 PHASE TRANSFORMER PAD
FIGURE 200.27	3 PHASE SWITCH CABINET
FIGURE 200.28	SECONDARY PEDESTAL

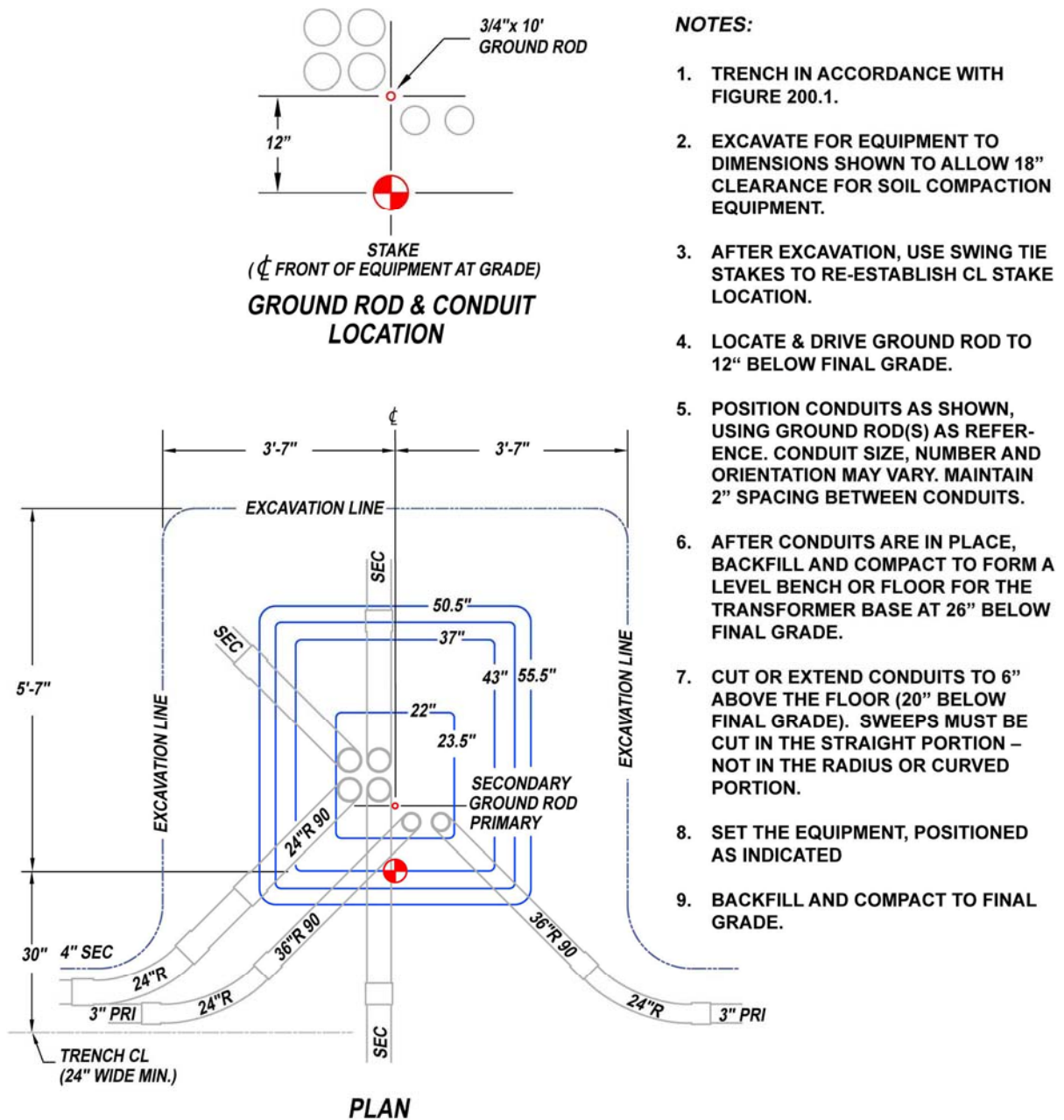
### STAKING DETAIL

FIGURE 200.29

### STREET LIGHT FOUNDATION DETAIL

FIGURE 200.30

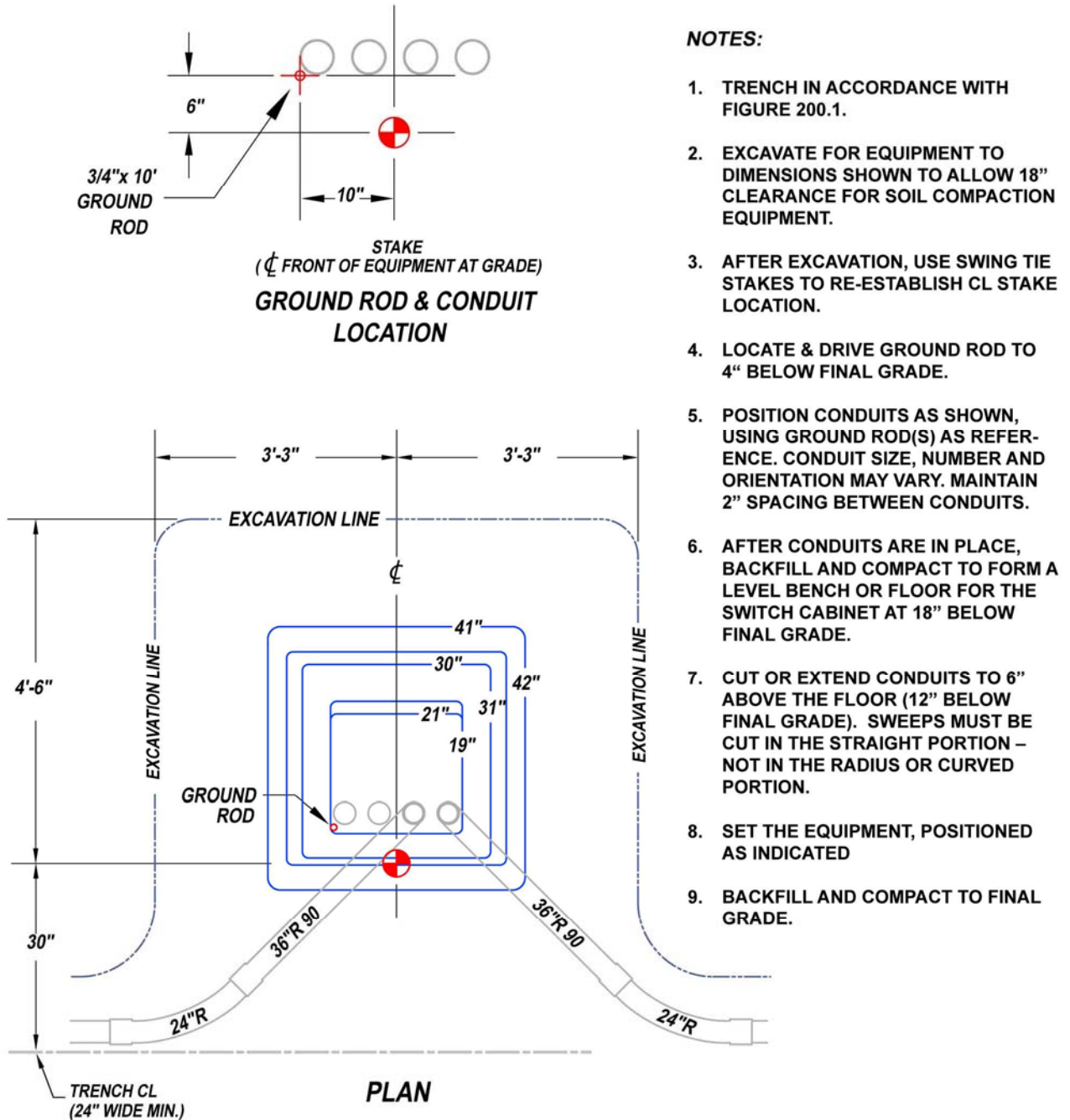
# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



**FIGURE 200.24**  
**1 PH TRANSFORMER BASE**  
**UG CONDUIT PLACEMENT DETAIL**

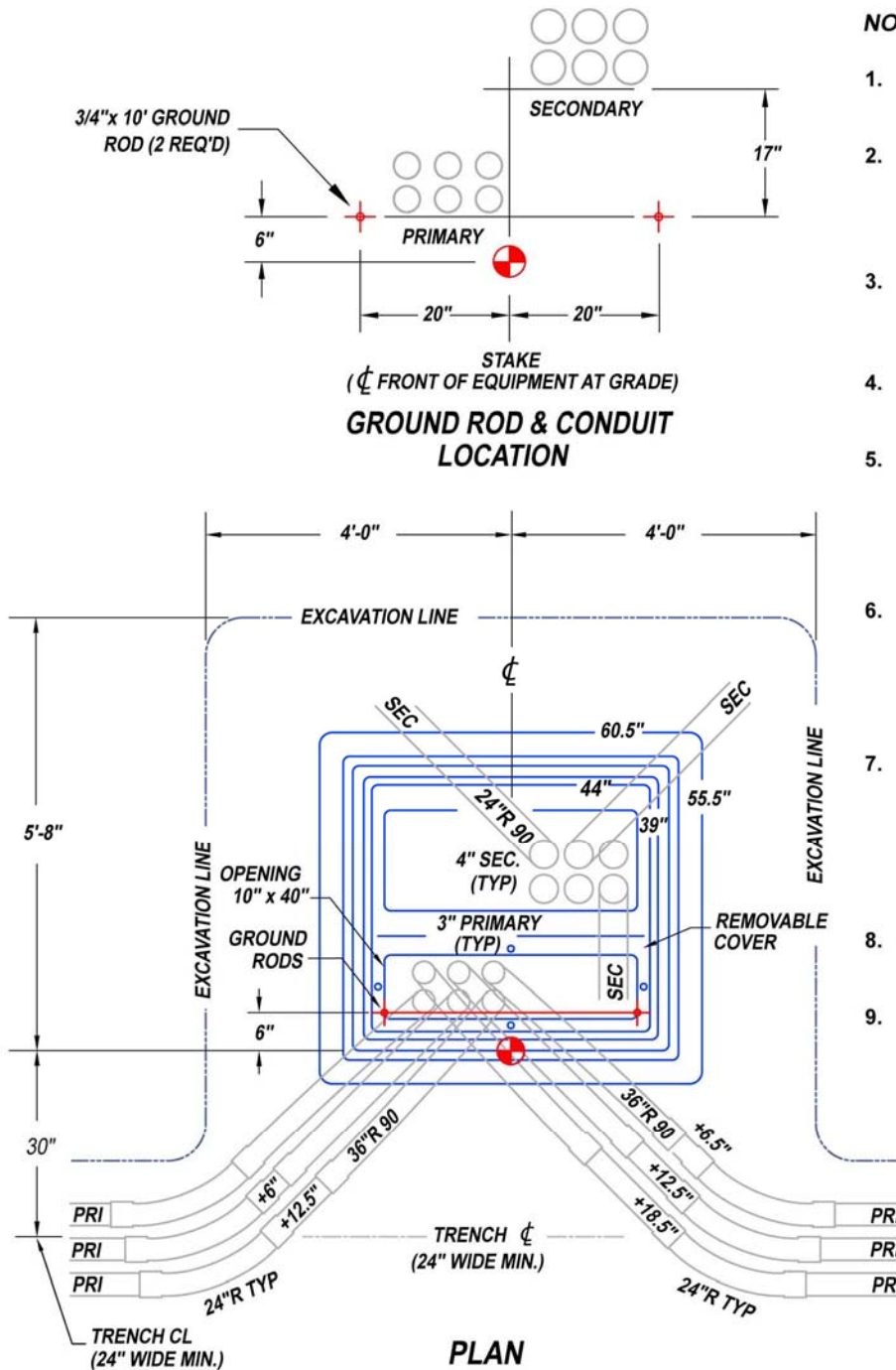
SEE ENGINEERING SPEC UCP-002A.DWG FOR MORE DETAIL

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



- NOTES:**
1. TRENCH IN ACCORDANCE WITH FIGURE 200.1.
  2. EXCAVATE FOR EQUIPMENT TO DIMENSIONS SHOWN TO ALLOW 18" CLEARANCE FOR SOIL COMPACTION EQUIPMENT.
  3. AFTER EXCAVATION, USE SWING TIE STAKES TO RE-ESTABLISH CL STAKE LOCATION.
  4. LOCATE & DRIVE GROUND ROD TO 4" BELOW FINAL GRADE.
  5. POSITION CONDUITS AS SHOWN, USING GROUND ROD(S) AS REFERENCE. CONDUIT SIZE, NUMBER AND ORIENTATION MAY VARY. MAINTAIN 2" SPACING BETWEEN CONDUITS.
  6. AFTER CONDUITS ARE IN PLACE, BACKFILL AND COMPACT TO FORM A LEVEL BENCH OR FLOOR FOR THE SWITCH CABINET AT 18" BELOW FINAL GRADE.
  7. CUT OR EXTEND CONDUITS TO 6" ABOVE THE FLOOR (12" BELOW FINAL GRADE). SWEEPS MUST BE CUT IN THE STRAIGHT PORTION – NOT IN THE RADIUS OR CURVED PORTION.
  8. SET THE EQUIPMENT, POSITIONED AS INDICATED
  9. BACKFILL AND COMPACT TO FINAL GRADE.

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



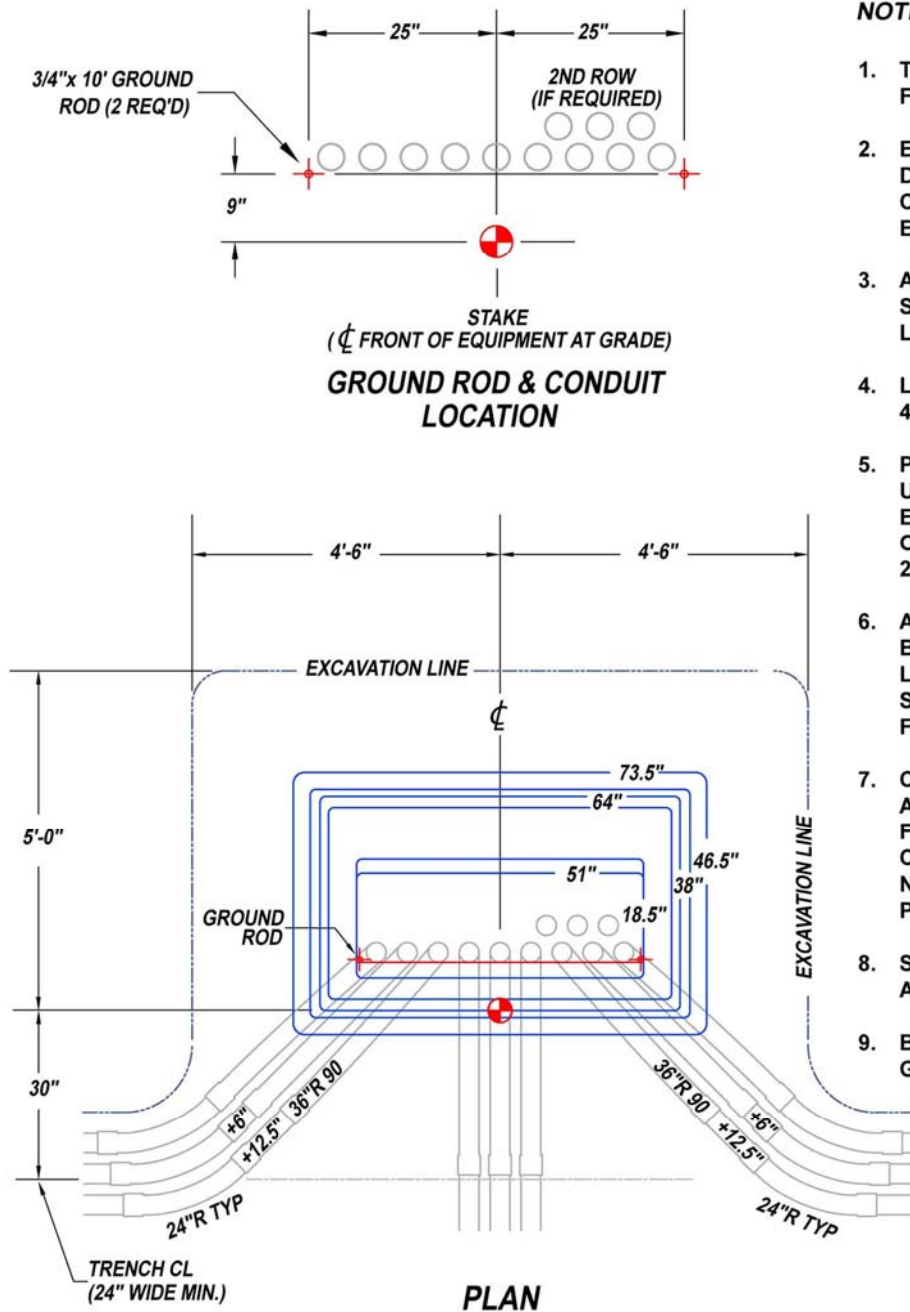
**NOTES:**

1. TRENCH IN ACCORDANCE WITH FIGURE 200.1.
2. EXCAVATE FOR EQUIPMENT TO DIMENSIONS SHOWN TO ALLOW 18" CLEARANCE FOR SOIL COMPACTION EQUIPMENT.
3. AFTER EXCAVATION, USE SWING TIE STAKES TO RE-ESTABLISH CL STAKE LOCATION.
4. LOCATE & DRIVE GROUND ROD TO 16" BELOW FINAL GRADE.
5. POSITION CONDUITS AS SHOWN, USING GROUND ROD(S) AS REFERENCE. CONDUIT SIZE, NUMBER AND ORIENTATION MAY VARY. MAINTAIN 2" SPACING BETWEEN CONDUITS.
6. AFTER CONDUITS ARE IN PLACE, BACKFILL AND COMPACT TO FORM A LEVEL BENCH OR FLOOR FOR THE TRANSFORMER BASE AT 30" BELOW FINAL GRADE.
7. CUT OR EXTEND CONDUITS TO 6" ABOVE THE FLOOR (24" BELOW FINAL GRADE). SWEEPS MUST BE CUT IN THE STRAIGHT PORTION – NOT IN THE RADIUS OR CURVED PORTION.
8. SET THE EQUIPMENT, POSITIONED AS INDICATED
9. BACKFILL AND COMPACT TO FINAL GRADE.

**FIGURE 200.26**  
**3-PHASE TRANSFORMER BASE**  
**UG CONDUIT PLACEMENT DETAIL**

SEE ENGINEERING SPEC UCP-006A.DWG FOR MORE DETAIL

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



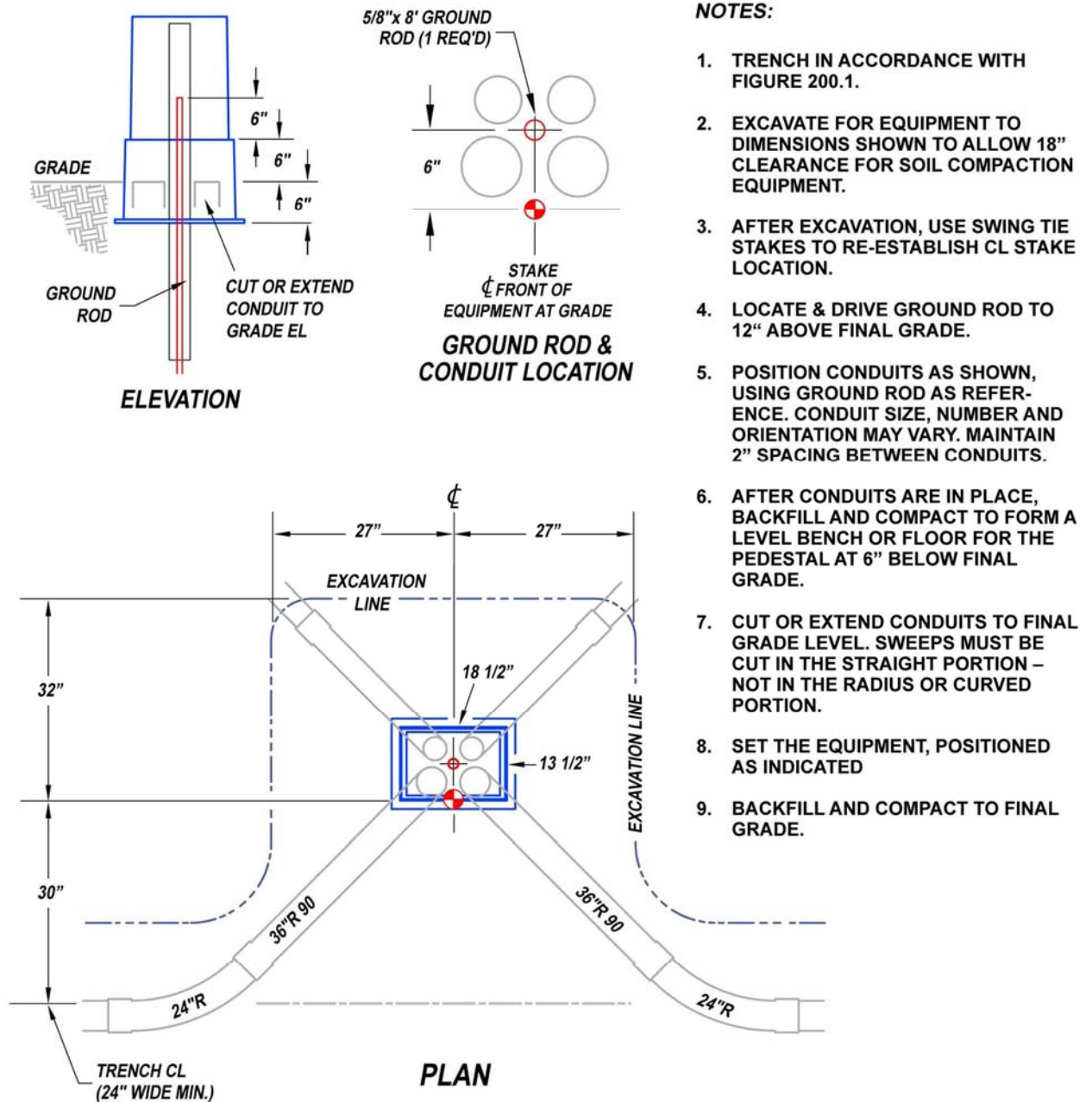
## NOTES:

1. TRENCH IN ACCORDANCE WITH FIGURE 200.1.
2. EXCAVATE FOR EQUIPMENT TO DIMENSIONS SHOWN TO ALLOW 18" CLEARANCE FOR SOIL COMPACTION EQUIPMENT.
3. AFTER EXCAVATION, USE SWING TIE STAKES TO RE-ESTABLISH CL STAKE LOCATION.
4. LOCATE & DRIVE GROUND ROD TO 4" BELOW FINAL GRADE.
5. POSITION CONDUITS AS SHOWN, USING GROUND ROD(S) AS REFERENCE. CONDUIT SIZE, NUMBER AND ORIENTATION MAY VARY. MAINTAIN 2" SPACING BETWEEN CONDUITS.
6. AFTER CONDUITS ARE IN PLACE, BACKFILL AND COMPACT TO FORM A LEVEL BENCH OR FLOOR FOR THE SWITCH CABINET AT 18" BELOW FINAL GRADE.
7. CUT OR EXTEND CONDUITS TO 6" ABOVE THE FLOOR (12" BELOW FINAL GRADE). SWEEPS MUST BE CUT IN THE STRAIGHT PORTION - NOT IN THE RADIUS OR CURVED PORTION.
8. SET THE EQUIPMENT, POSITIONED AS INDICATED
9. BACKFILL AND COMPACT TO FINAL GRADE.

**FIGURE 200.27**  
**ND-350 SWITCH CABINET**  
**UG CONDUIT PLACEMENT DETAIL**

*SEE ENGINEERING SPEC UCP-008A.DWG FOR MORE DETAIL*

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



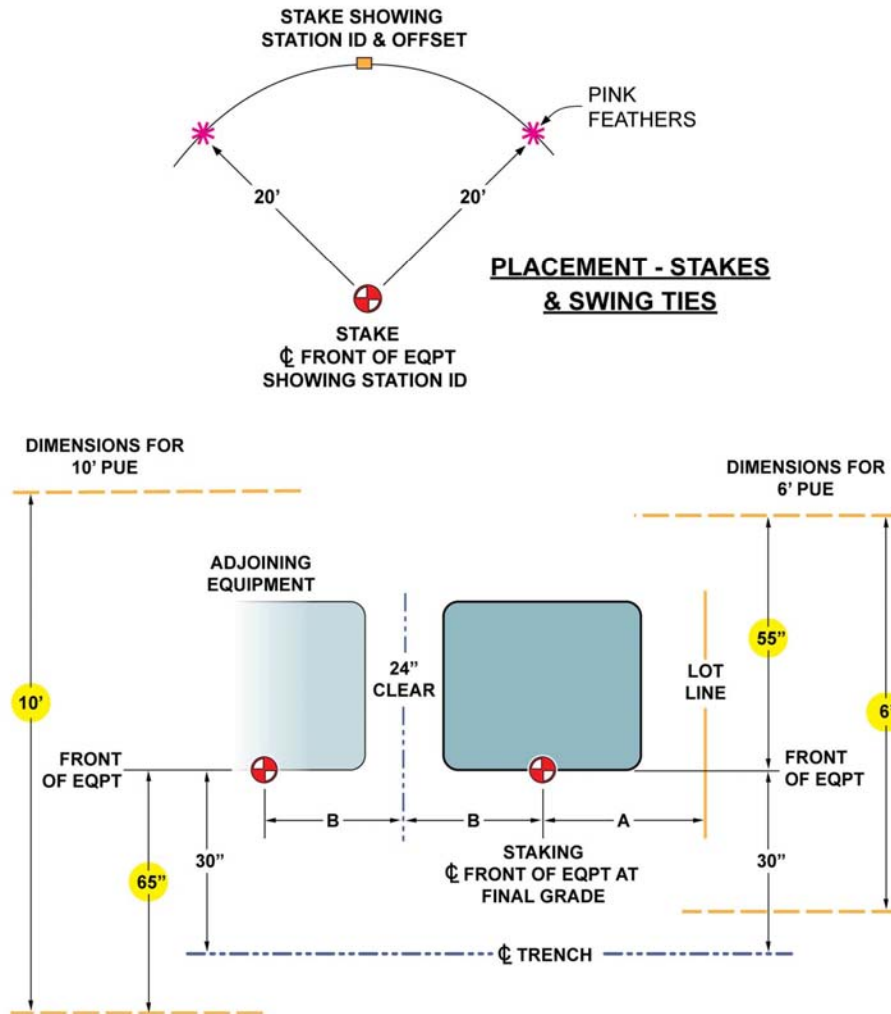
## NOTES:

1. TRENCH IN ACCORDANCE WITH FIGURE 200.1.
2. EXCAVATE FOR EQUIPMENT TO DIMENSIONS SHOWN TO ALLOW 18" CLEARANCE FOR SOIL COMPACTION EQUIPMENT.
3. AFTER EXCAVATION, USE SWING TIE STAKES TO RE-ESTABLISH CL STAKE LOCATION.
4. LOCATE & DRIVE GROUND ROD TO 12" ABOVE FINAL GRADE.
5. POSITION CONDUITS AS SHOWN, USING GROUND ROD AS REFERENCE. CONDUIT SIZE, NUMBER AND ORIENTATION MAY VARY. MAINTAIN 2" SPACING BETWEEN CONDUITS.
6. AFTER CONDUITS ARE IN PLACE, BACKFILL AND COMPACT TO FORM A LEVEL BENCH OR FLOOR FOR THE PEDESTAL AT 6" BELOW FINAL GRADE.
7. CUT OR EXTEND CONDUITS TO FINAL GRADE LEVEL. SWEEPS MUST BE CUT IN THE STRAIGHT PORTION – NOT IN THE RADIUS OR CURVED PORTION.
8. SET THE EQUIPMENT, POSITIONED AS INDICATED
9. BACKFILL AND COMPACT TO FINAL GRADE.

**FIGURE 200.28**  
**UK-5 SECONDARY PEDESTAL**  
**UG CONDUIT PLACEMENT DETAIL**

SEE ENGINEERING SPEC UCP-015A.DWG FOR MORE DETAIL

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



IN A 6' PUE EQUIPMENT WILL BE STAKED 55" FROM BACK OF PUE.  
 IN A 10' PUE EQUIPMENT WILL BE STAKED 65" FROM FRONT OF PUE.

EQUIPMENT	DIM. A	DIM. B
1 Ø TRANSFORMER	36"	30"
3 Ø TRANSFORMER	43"	37"
ND-150 1 Ø SWITCH CABINET	36"	30"
ND-350 3 Ø SWITCH CABINET	50"	44"
ND-450 3 Ø SWITCH CABINET	58"	52"
UK-5 SECONDARY PEDESTAL	27"	21"

**DIMENSION A:** DISTANCE FROM STAKE TO LOT LINE

**DIMENSION B:** DISTANCE FROM STAKE TO MIDPOINT BETWEEN ADJOINING EQUIPMENT. PROVIDES 24" CLEARANCE.

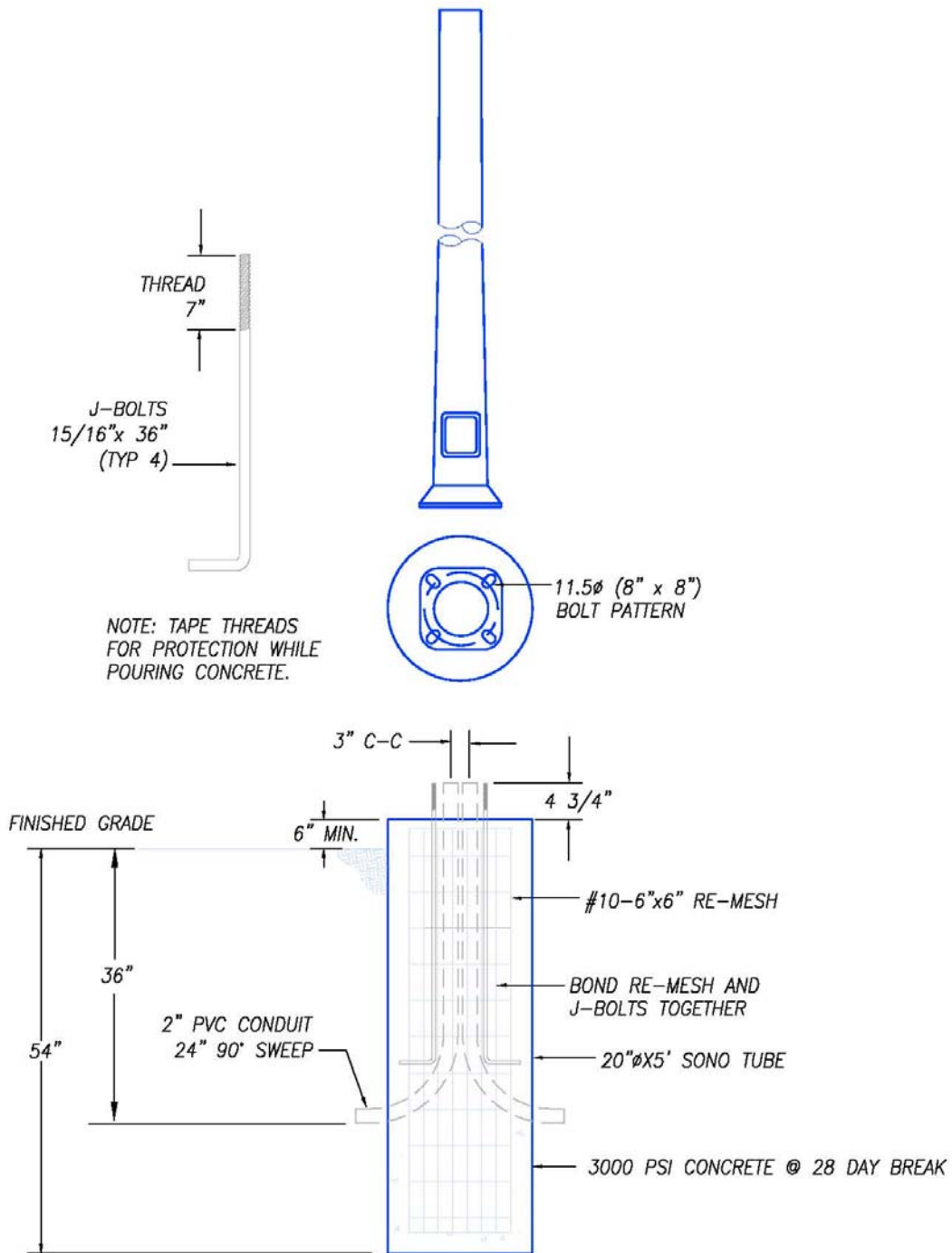
MAINTAIN 24" MIN. BETWEEN SSVEC PADMOUNT EQUIPMENT AND THAT OF OTHER UTILITIES.

**FIGURE 200.29  
EQUIPMENT & TRENCH STAKING DETAILS**

NOTE: COORDINATE WITH SSVEC ENGINEERING OR  
CONSTRUCTION PRIOR TO INSTALLATION

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

FIGURE 200.30



**FOUNDATION DETAIL  
STREET LIGHT - DOUBLE OR SINGLE ARM**



SCALE: NONE

STL001A.DWG



# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## SECTION 300. SAFETY AND ACCESS CONSIDERATIONS

### 3.0 CLEARANCES

3.0.1 Vertical clearance of service conductors above roofs and the ground shall be in compliance with NESC Table 232-1 and NEC Article 230-24.

3.0.2 **Clearance from Building Openings.** NEC Article 230-9. Service conductors .... shall have a clearance of not less than 3 feet from windows, that are designed to be opened, doors, porches, fire escapes or similar locations.

Exception: Conductors run above the top level of a window shall be permitted to be less than the 3 feet requirement above.

3.0.3 **Clearance from Swimming Pools:** Service conductor clearance over or close to swimming pools shall comply with NEC Article 680-8. and other appropriate sections of the National Electrical Code. The customer or contractor may contact qualified Engineering Department personnel for advice on clearances from swimming pools.

3.0.4 A minimum of 3 feet of clearance shall be maintained from the front of any service entrance equipment.

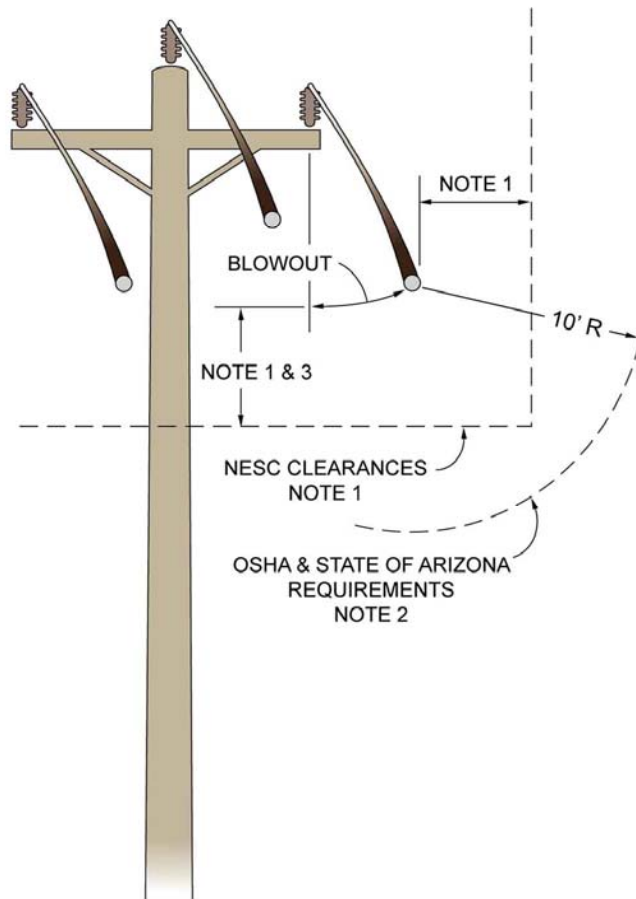
3.0.5 A minimum of 10 feet of working clearance shall be maintained from the front of any pad-mounted equipment.

3.0.6 A minimum of 3 feet of working clearance shall be maintained from the sides of any pad-mount equipment.

3.0.7 No fence, barricade, or structure shall be erected or used to impede access to SSVEC poles or equipment located in any legal utility easement. Property owners served from SSVEC lines and equipment will help provide proper access to that equipment.

3.0.8 A minimum of 10 feet of working clearance from energized SSVEC overhead distribution conductors shall be maintained at all times by non-SSVEC personnel in the course of construction and other duties. This safe working clearance needs to be increased accordingly for line voltages rated over 50 kV. If this clearance cannot be maintained at all times, even in windy conditions, contact qualified SSVEC personnel in construction or engineering to make other arrangements.

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

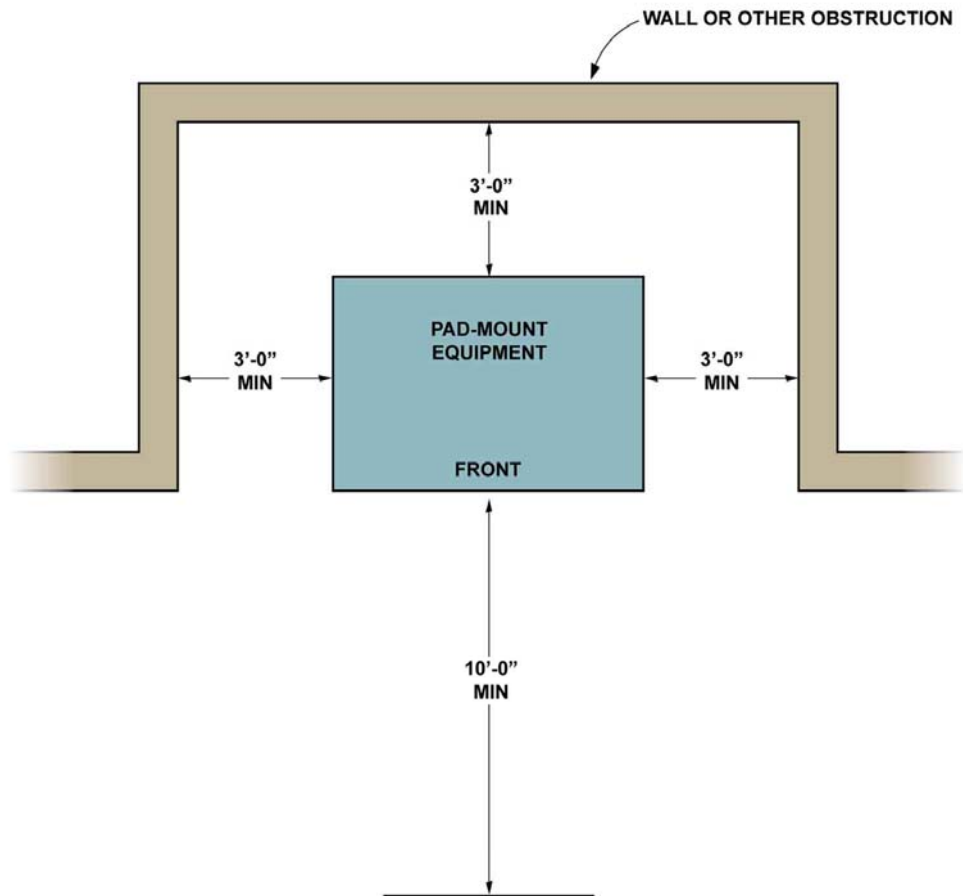


## NOTES:

1. No portion of a building may be within this boundary. See NESC Table 234-1 and NEC Article 230.24.
2. The Occupational Safety and Health Act (OSHA) and Arizona Standards require that non-SSVEC machinery or personnel may not operate within this radius (lines 50 kV and below), unless powerline is first de-energized. "Machinery" includes load, cables, tag lines and any other attachments. OSHA requires that a person not get any portion of his body or anything he's handling within this radius.
3. Buildings are not permitted beneath SSVEC powerlines.

**FIGURE 300.2  
SAFE WORKING CLEARANCES  
AROUND SSVEC POWER LINES**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

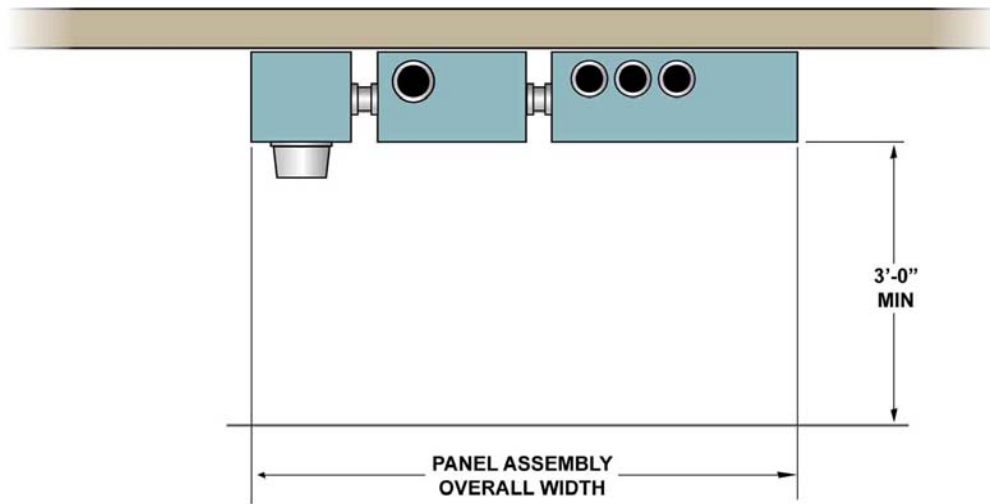


**NOTE:**

FOR LARGER EQUIPMENT WITH ACCESS DOORS ON MORE THAN ONE SIDE, 10' MIN WORKING CLEARANCE IS REQUIRED ON ALL SIDES

**FIGURE 300.4  
PAD-MOUNTED EQUIPMENT STRUCTURES  
WORKING CLEARANCE REQUIREMENTS**

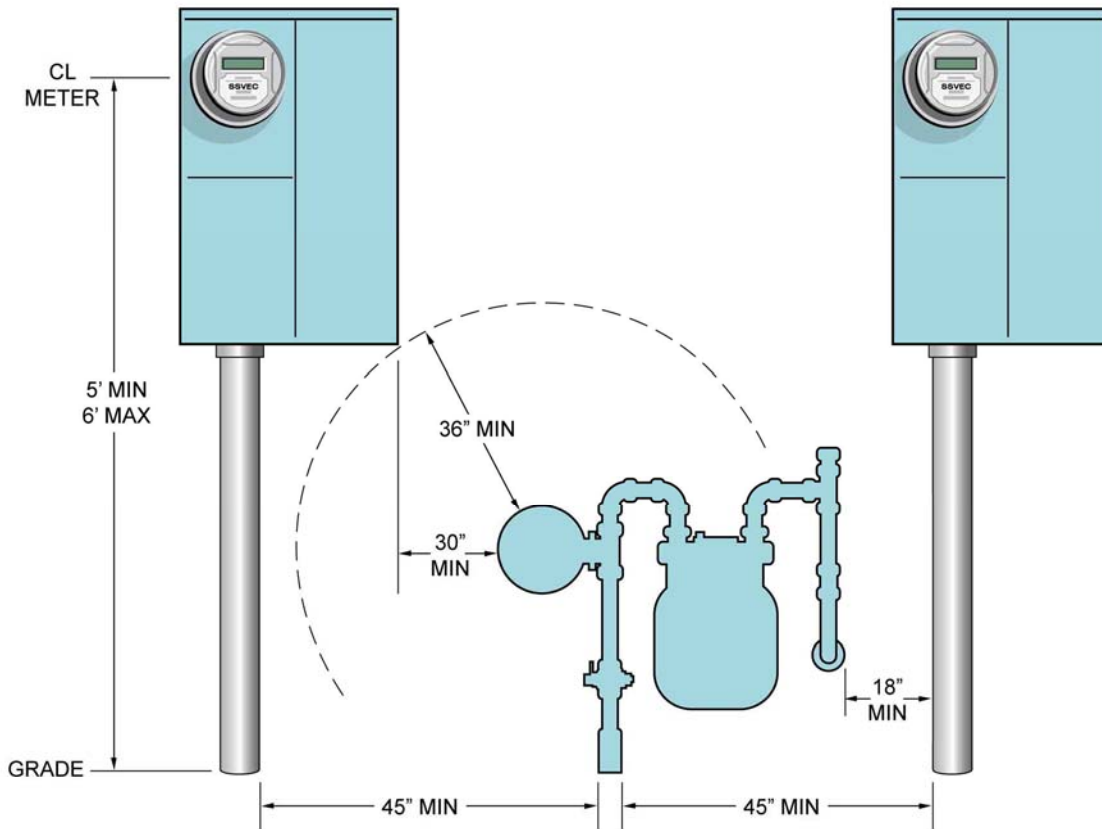
# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



MAINTAIN AT LEAST 3'-0" CLEAR ACCESS IN FRONT OF THE SERVICE ENTRANCE PANEL ASSEMBLY

**FIGURE 300.6  
REQUIRED WORKING CLEARANCE  
AT FRONT OF SERVICE ENTRANCE**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



## NOTES:

1. Electric panel size & dimensions will vary.
2. Working clearance shall be at least 36" wide. If electric panels are wider, working clearance shall be the width of the entire assembly. Working space shall extend a minimum of 36" outward from the face of the electric meter panel.
3. Gas piping above grade may be located below the electric meter panel(s) but no fittings or valves are permitted in that area.

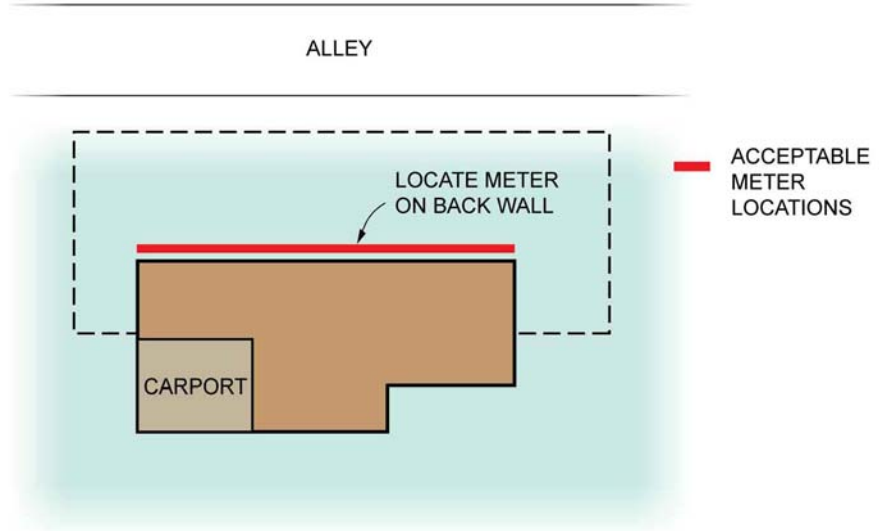
**FIGURE 300.8  
ELECTRIC AND GAS METER SEPARATION**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

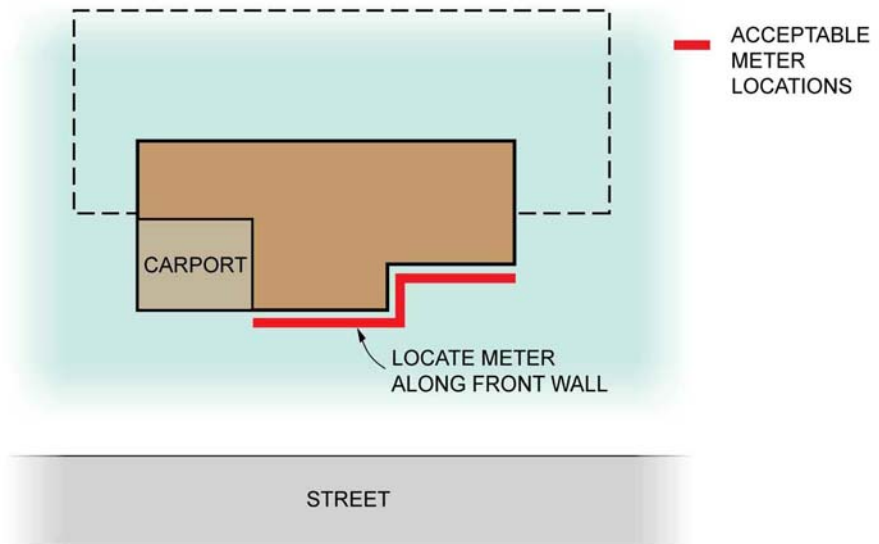
## 3.1 SERVICE ENTRANCE AND METER LOCATIONS

- 3.1.1 Service entrances shall be installed in an outside location approved by SSVEC. Where practicable, service entrances should be installed so that the meter will face a dedicated alley or street for convenience of meter reading (See figure –*meter quadrants*). All meters shall face a direction in which they can be read with binoculars from a vehicle.
- 3.1.2 Meters (as well as other SSVEC facilities located in dedicated easements on private property) shall not be placed behind a fence or any obstacle which will prevent SSVEC personnel from having free access to its facilities. The service entrance shall be installed in a place accessible to SSVEC and emergency personnel at all times. The service entrance shall not be locked except by an arrangement that is agreeable to both the customer and SSVEC.
- 3.1.3 Service entrances shall not be installed under carports or open porches or similar places that are often subject to future enclosure, nor shall they be enclosed or obstructed later. Service entrances enclosed or obstructed after service connection so that the meters cannot be read in the normal manner, shall be re-established in an outside location approved by SSVEC, or such obstruction shall be removed. Failure to comply with this rule, within a reasonable time after notification by SSVEC, shall be grounds for service disconnection.

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



**FIGURE 300.10  
METER LOCATION - BACK OF LOT SERVICE**



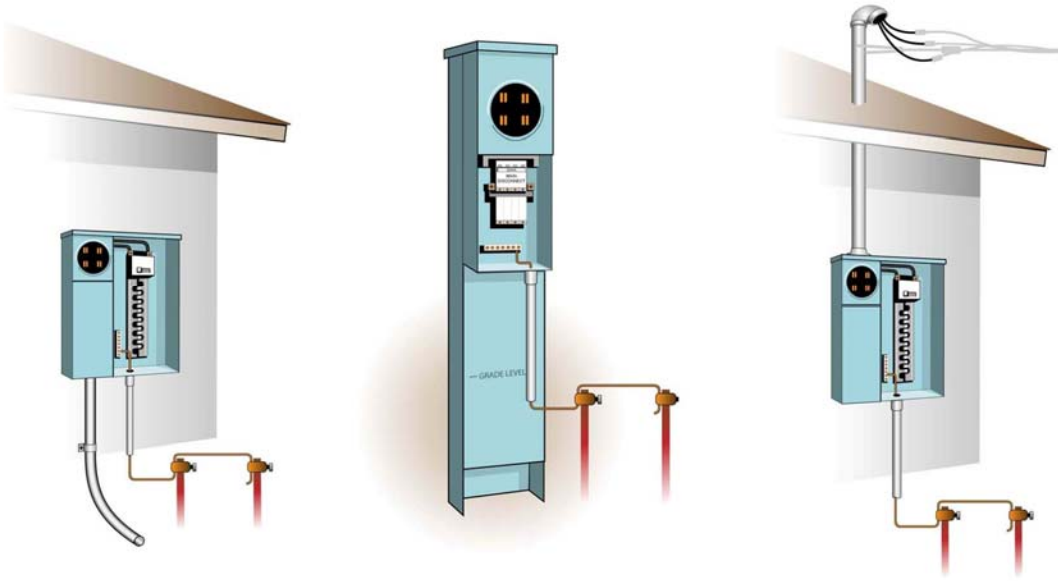
**FIGURE 300.11  
METER LOCATION - FRONT OF LOT SERVICE**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## SECTION 400. SERVICE DISCONNECTS AND METERING

### 4.0 COMMERCIAL AND RESIDENTIAL SERVICES 0-200 AMPS

- 4.0.1 All underground residential single-phase services shall use a combination meter base with built-in single main service disconnect and pull section (See Figures 400.2 through 400.8). This combination unit shall conform to EUSERC requirements as shown on the following pages of this specification. The combination meter base is also the preferred installation for overhead services. A meter pedestal (Figure 400.10) is the preferred underground service entrance installation for manufactured homes, domestic wells, and other situations where wall-mounting is impractical.



- 4.0.2 Similarly, underground three-phase services up to 200 amps shall use a meter base with a bottom-feed termination section. Landing lugs shall accommodate aluminum conductors and have a range up to 250 kCMIL (350 kCMIL if possible). Gutter type service entrance installations are **NOT** approved for underground use.
- 4.0.3 Without prior approval by SSVEC Engineering, commercial applications will be required to supply a meter socket with a bypass (lever or test block—see 4.2.3) and may utilize a separate main disconnect in those cases.



# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## 4.1 SERVICE DISCONNECT 0-200 AMPS

4.1.1 All service entrances up to 200 amps shall be equipped with a single main disconnect device which shall, for this specification, determine the ampacity of the service entrance.

4.1.2 SSVEC service ampacity requirements are as follows:

60 amps is the minimum disconnect size for: (NEC 230-79-D)

1. Multifamily dwelling units
2. Stock or domestic wells
3. Special approved applications

100 amps is the minimum disconnect size for: (NEC 230-79-C) \*\*

1. One-family dwellings
2. Mobile homes
3. Small commercial

**\*\* It is strongly recommended by SSVEC that a 200 amp minimum rated service entrance be installed for any single-family dwelling or manufactured home.**

4.1.3 The service disconnect over-current device shall be a **single** fused switch or circuit breaker. The disconnect shall be rain tight and of a type approved for service equipment, in compliance with the NEC, Article 230-53. It shall disconnect all ungrounded service entrance conductors from the service load.

4.1.4 Except for motor loads, the main service disconnect nameplate ampacity is used to determine the ampacity of the service entrance.. The nameplate ampacity of a fused main switch determines the service disconnect ampacity regardless of the fuse size installed. In a circuit breaker type service disconnect, the nameplate ampacity of the main circuit breaker determines the disconnect ampacity. Where multiple disconnects are allowed for multiple-metered installations (See paragraphs 4.7.2 and 4.7.5), **the sum of the ratings of the main fused switches or circuit breakers shall not be permitted to exceed the ampacity of any main bus or the de-rated ampacity of the service conductors.**

4.1.5 Services which have emergency equipment such as a water pump that may be used for fire fighting or emergency lighting, exits, etc. (see NEC 230-82), may have additional disconnect devices connected ahead of the main disconnect device through which only the emergency equipment may be supplied. The additional device shall not affect the ampacity required for the service entrance (NEC 230-94-Excep. 4), provided that the service entrance would be adequate if the emergency equipment were connected through the main disconnect.

4.1.6 The service entrance disconnect device shall be plainly and permanently labeled with the word **MAIN**. The emergency equipment device (if any) shall be plainly and permanently labeled with the word **MAIN** and the emergency function such as **PUMP** or **EMERGENCY LIGHTS**, etc.

## SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

- 4.1.7 The disconnect device shall be located outside, in a place accessible to SSVEC and emergency personnel at all times. It shall not be locked except by arrangement that is agreeable to both the customer and SSVEC.
- 4.1.8 Where more than one service is permitted on a building, a permanent plaque or directory shall be installed at each service equipment location denoting all other services on that building or structure and the area served by each (NEC 230-2, E).
- 4.1.9 **OVERCURRENT PROTECTION:** A fuse or circuit breaker shall be in series with each ungrounded conductor to provide overload protection.

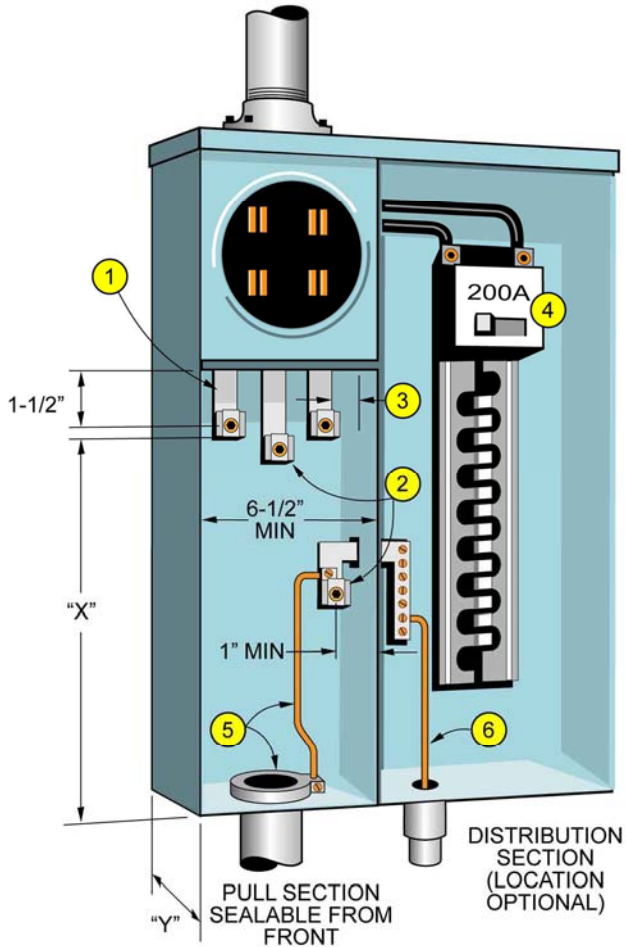
**Interrupting Rating:** The customer shall install service entrance equipment and protective devices capable of interrupting and withstanding available short-circuit current. All service disconnect devices (i.e. fused switch or circuit breaker) shall have a minimum interrupting capacity ( $A_{IC}$ ) of 10,000 amps. Higher  $A_{IC}$  ratings may be required at locations with higher available fault currents (NEC 110-9). **Consult qualified SSVEC Engineering Department personnel for the available fault current for multiple services and for service from large transformers.** When available fault current exceeds 10,000 amps (as calculated by SSVEC), the customer shall provide equipment to meet the expected maximum fault current (see NEC 110-9 and 230, section VII). The customer has the option of providing service equipment with an increased  $A_{IC}$  rating or installing equipment with current limiting fuses which would limit the maximum fault current to less than 10,000 amps.

- 4.1.10 For multiple metered installations, the service entrance for each occupancy shall be plainly and permanently labeled to designate the suite, room, or address of the served occupancy.

### 4.2 METER SOCKET AND METERING 0-200 AMPS

- 4.2.1 For services through 200 amps, an SSVEC approved meter base shall be furnished and installed on the supply side of the service disconnect, by the customer.
- 4.2.2 All meter sockets shall be U.L. listed and be so labeled. Meter/main combinations shall be labeled as a unit. **Any field modifications of the unit that are non-factory approved will make void the U.L. label.**
- 4.2.3 Residential meter sockets, up to 200 amps, may be general duty sockets rated at not less than the service disconnect ampacity. Services other than residential shall use meter sockets rated for continuous duty. The continuous duty ampacity shall not be smaller than that of the service disconnect ampacity. **The recommended minimum ampacity for all residential and commercial applications is 200 amps. Commercial installations shall be equipped with bypass provisions, either test block (equivalent to a Milbank 127TB) or lever type (equivalent to a Milbank U7423-RXL).**
- 4.2.4 The customer shall not reroute any metered conductor through the meter socket enclosure, metering compartment, raceways, or other security sealed areas.

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



## NOTES:

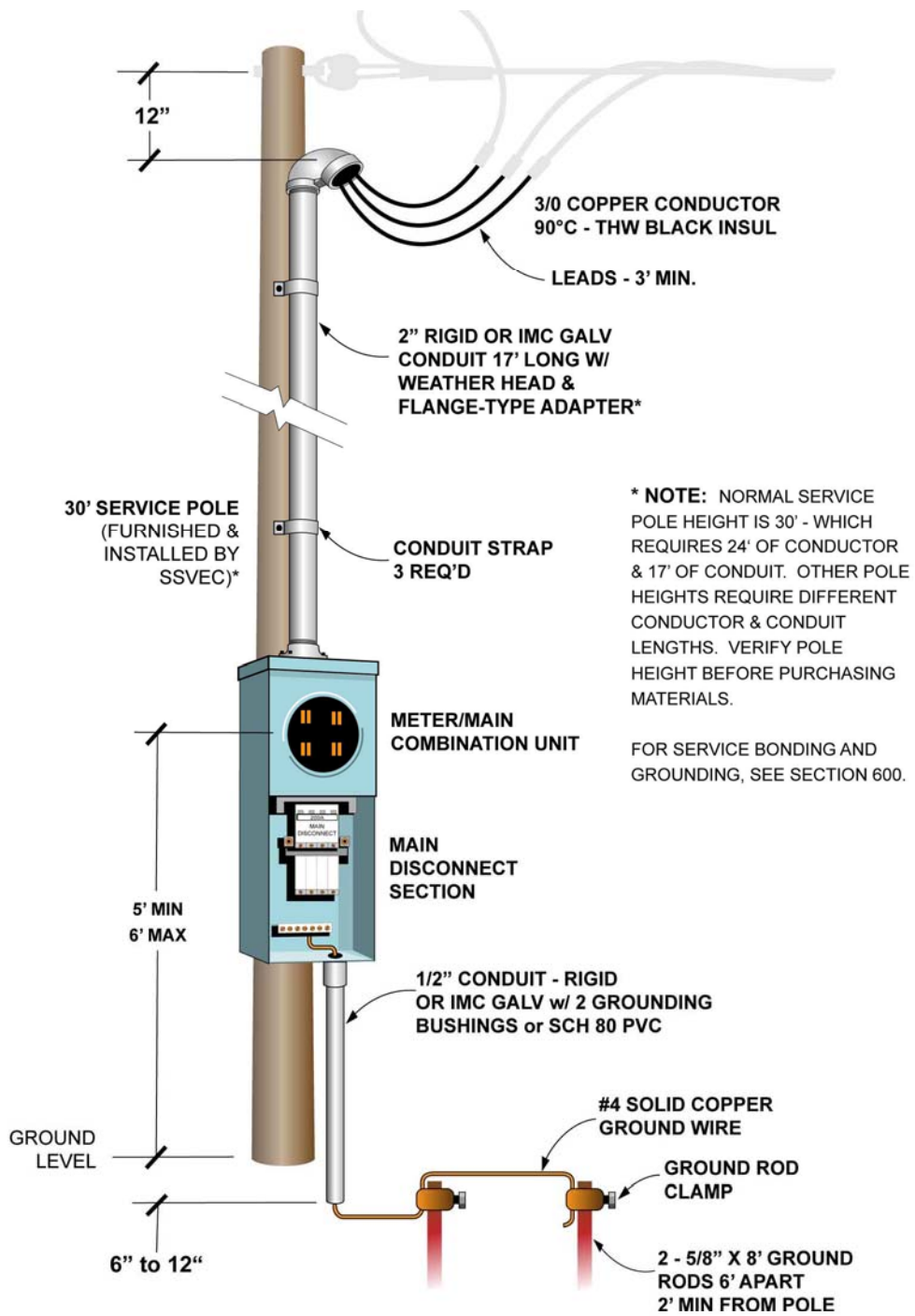
- 1 Terminals for service conductors shall be aluminum bodied range taking lugs with a range of No. 6 through 1/0 AWG for the 125 ampere device and 1/0 AWG through 250 kCMIL for the 200 ampere device. Busses shall be solidly supported.
- 2 Neutral terminals shall be of a minimum dimension from the bottom of the enclosure of 6 inches for the 125 ampere device and 8-1/2 inches for the 200 ampere device. If insulated from enclosure, provide a bonding screw jumper.
- 3 A minimum radial clearance of 1-1/2" shall be provided between hot bus terminals and ground or neutral surfaces.
- 4 A single main disconnect must be easily accessible.
- 5 Bonding ring & #4 copper bonding wire.
- 6 Grounding assy. See section 600.

MAXIMUM AMPACITY	"X" MINIMUM	"Y" MINIMUM	CONDUIT SIZE
125	8"	4"	2"
200*	11"	5-1/2"	3"

NOTE: 200 AMP SERVICE IS RECOMMENDED FOR TYPICAL RESIDENTIAL USE

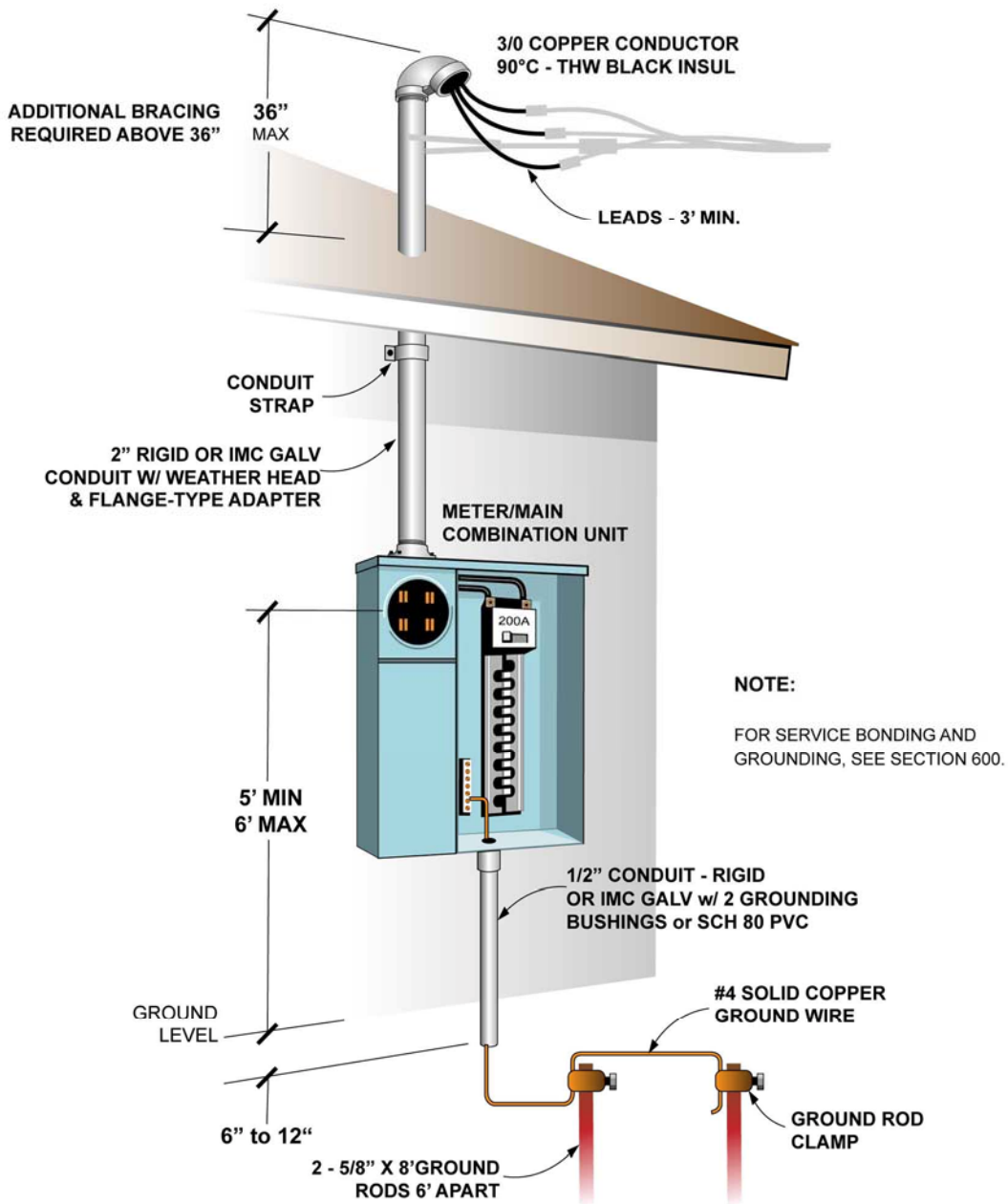
**FIGURE 400.2**  
**UNDERGROUND/OVERHEAD COMBINATION METERING**  
**200 AMPERES, 240 VOLTS MAXIMUM**  
 (SHOWN WITH COVER REMOVED FOR CLARITY)

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



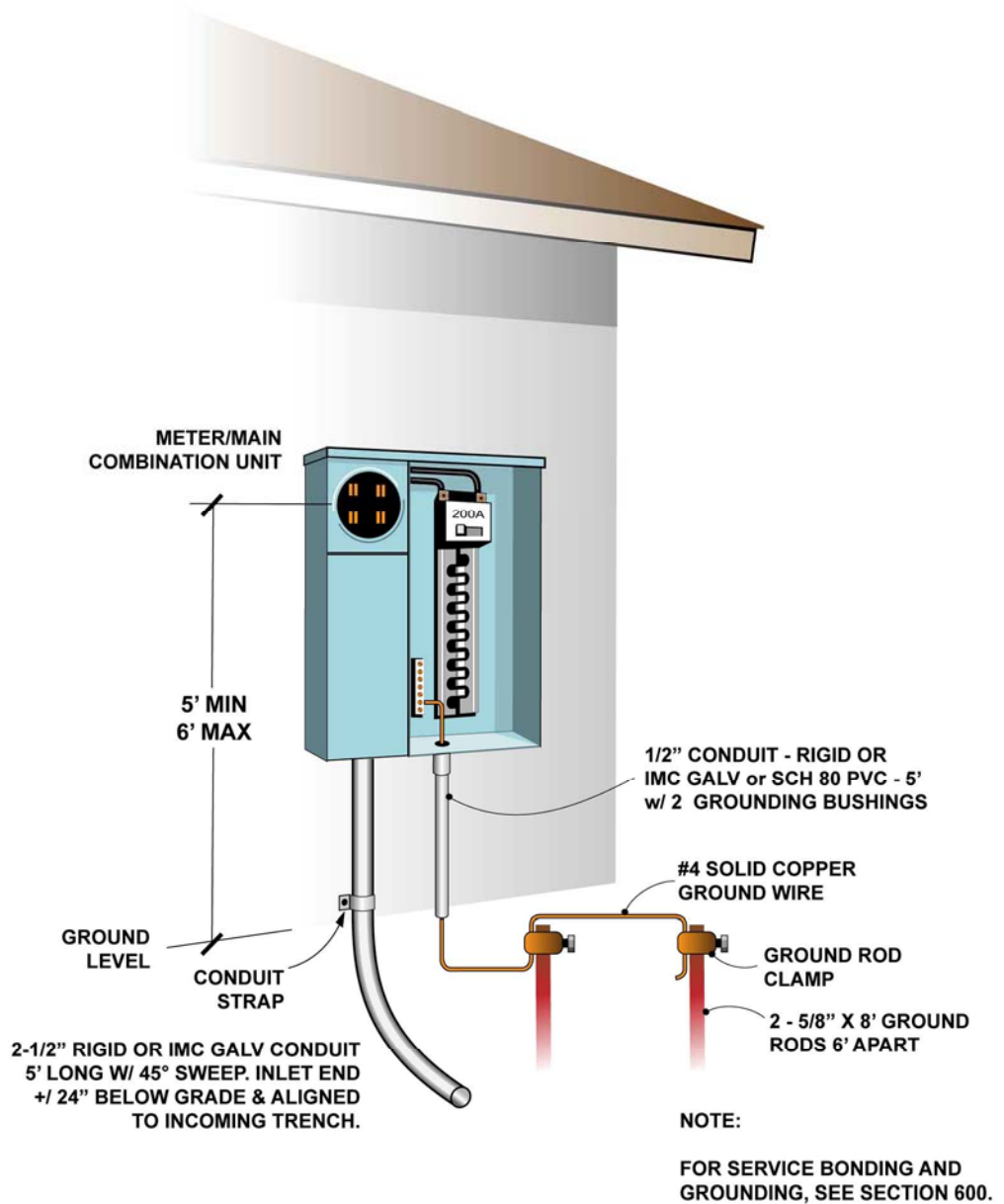
**FIGURE 400.4**  
**POLE - MOUNTED SERVICE ENTRANCE**  
**COMMERCIAL & RESIDENTIAL**  
**200 AMPERES, 240 VOLTS MAXIMUM**  
 (SHOWN WITHOUT COVERS FOR CLARITY)

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



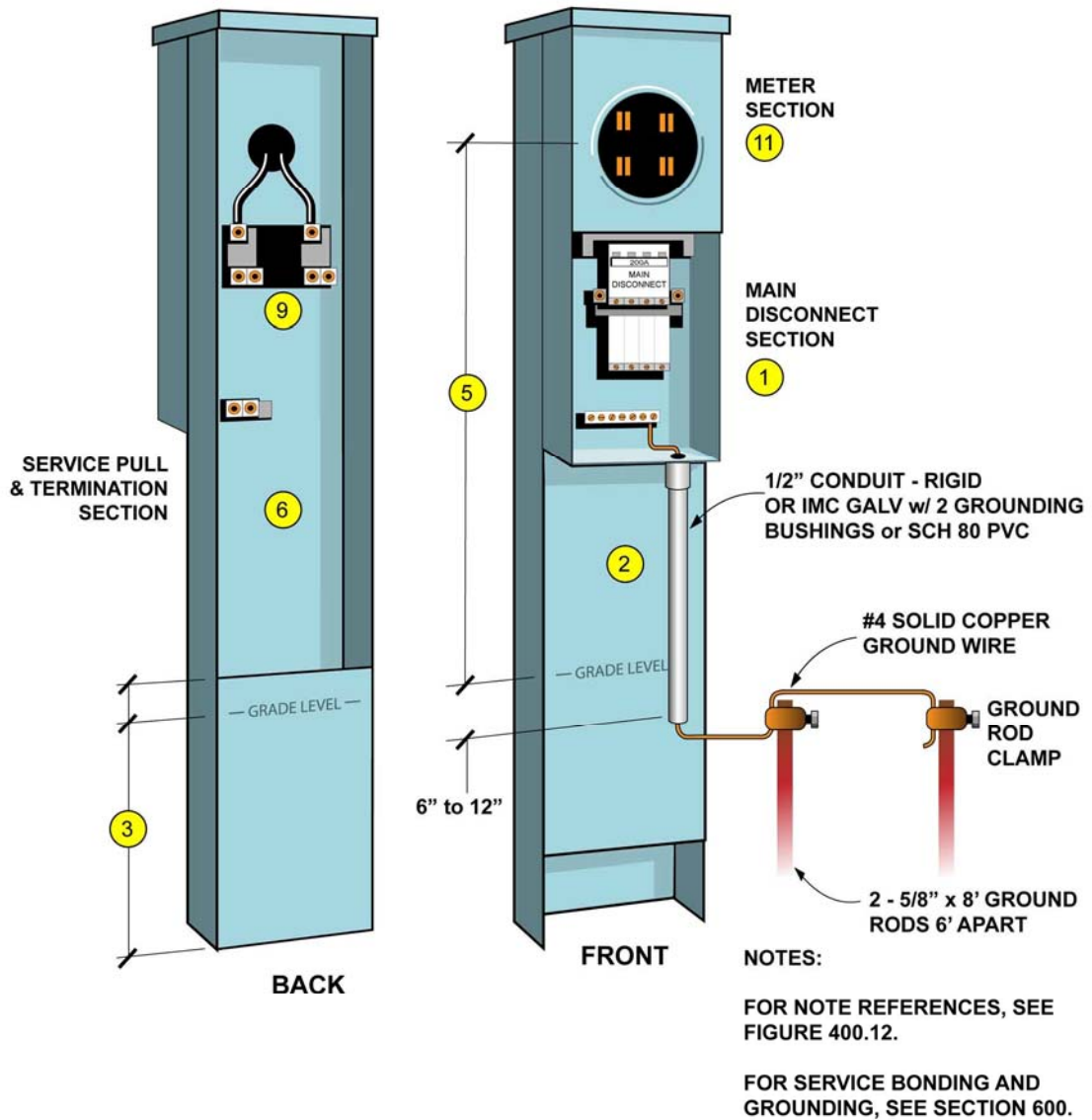
**FIGURE 400.6**  
**OVERHEAD - BUILDING-MOUNTED SERVICE ENTRANCE**  
**COMMERCIAL & RESIDENTIAL**  
**200 AMPERES, 240 VOLTS MAXIMUM**  
(SHOWN WITHOUT COVERS FOR CLARITY)

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



**FIGURE 400.8**  
**UNDERGROUND - BUILDING-MOUNTED SERVICE ENTRANCE**  
**COMMERCIAL & RESIDENTIAL**  
**200 AMPERES, 240 VOLTS MAXIMUM**  
(SHOWN WITHOUT COVERS FOR CLARITY)

**SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE**



**FIGURE 400.10**  
**UNDERGROUND SERVICE & METER PEDESTAL**  
**MANUFACTURED HOME OR NON-COMMERCIAL USE**  
**200 AMPERES, 240 VOLTS MAXIMUM**  
 (SHOWN WITHOUT COVERS FOR CLARITY)

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

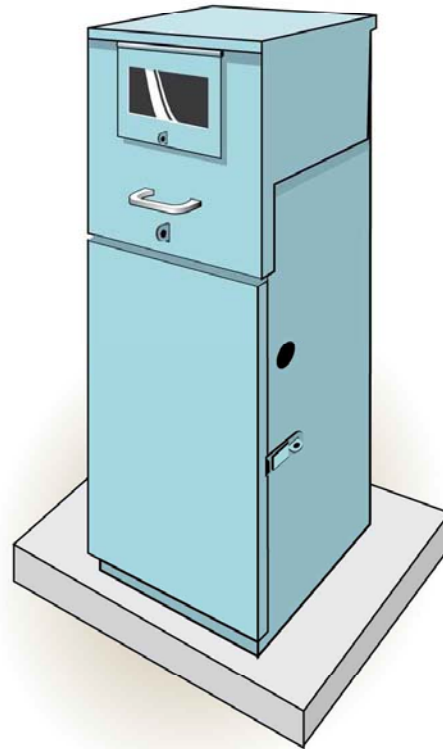
## NOTES:

THE USE OF THIS PEDESTAL REQUIRES PRIOR APPROVAL BY SSVEC ENGINEERING AND IS GENERALLY RESTRICTED TO METERED INSTALLATIONS IN ROADWAYS AND OTHER AREAS OPEN TO THE GENERAL PUBLIC.

- 7 IF THE METER IS ENCLOSED, THE COVER SHALL HAVE A READING WINDOW. THE COVER SHALL BE HINGED, SELF-SUPPORTING, AND REMOVABLE, FOR METER TESTING AND INSPECTION.
- 12 CUSTOMER TO STUB OUT 2-1/2" (MIN) SCH 40 SWEEP FROM UNDER ANY CONCRETE PAD OR FOUNDATION.
- 13 ALSO, SEE EUSERC DRAWINGS 308 AND 309 FOR PEDESTALS WITH ENCLOSED METERS FOR HIGHWAY AND COMMERCIAL USE.

FOR SERVICE BONDING AND GROUNDING, SEE SECTION 600.

FOR NOTE REFERENCING, SEE FIGURE 400.12.



**FIGURE 400.11  
UNDERGROUND SERVICE & METER PEDESTAL  
ENCLOSED METER - COMMERCIAL USE  
UP TO 200 AMPERES, 240 VOLTS MAXIMUM\***

**\* NO 480 VOLTS ALLOWED**



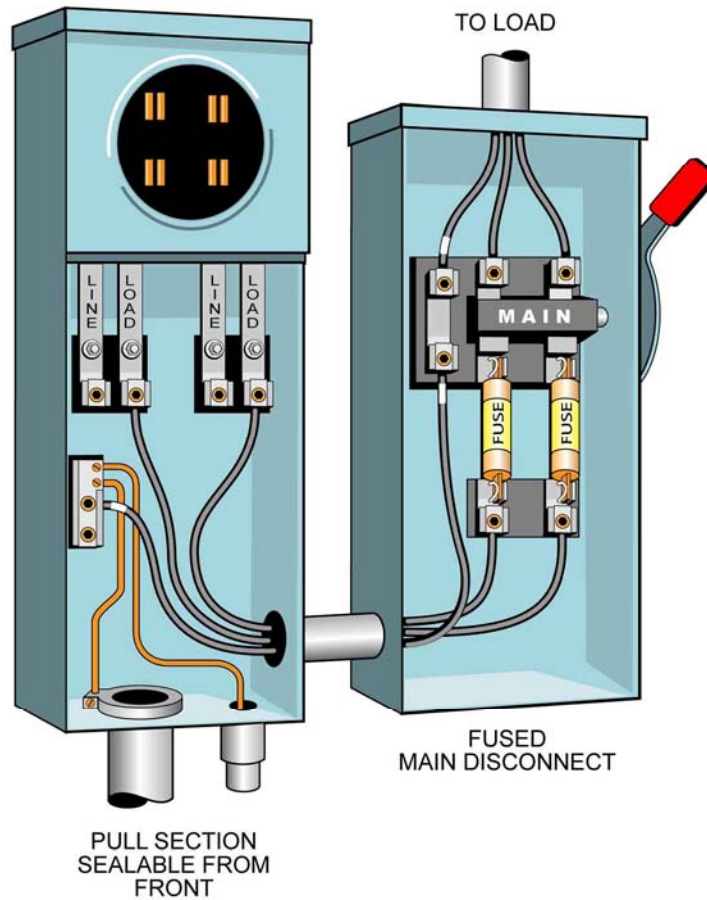
# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## FIGURE 400.12

### NOTES FOR RESIDENTIAL AND COMMERCIAL METER PEDESTALS (FIGURES 400.10 & 400.11) 200 AMPERES, 240 VOLTS MAXIMUM

1. This type pedestal shall have a single main disconnect with a minimum rating of 100 amperes. The unit shall be of a type approved by Underwriters Laboratory (UL) and be labeled as such.
2. The post shall have a minimum cross-sectional dimension of 4" x 8".
3. Unless mounted on a concrete base, the unit shall be set at least 24" below existing grade, with an opening in the base to permit the service lateral conduit sweep to enter the post from the front (meter) side. The rear panel (below *the service pull and termination section*) shall extend 2" to 6" above grade.
4. Adequate ventilation shall be provided to inhibit condensation of moisture within the enclosure, per UL-231.
5. Meter shall be at least 48" above ground when exposed, or 36" when the meter is enclosed.
6. The *service pull and termination section* shall be accessible from either the front or rear of the post by removing a sealable full-width panel. The removable panel shall extend from the top of the unit and, when removed, allow full access to the terminating lugs. This section shall be restricted to SSVEC use only.
7. If the meter is enclosed, the cover shall have a reading window. The cover shall be hinged and self supporting, and removable for meter testing or inspection.
8. The *main disconnect section* shall be isolated from the *service pull and termination section* and to unmetereed conductors.
9. The service termination lugs shall be twin, aluminum-bodied, pressure-type, No. 2 to 350 kCMIL. Distance from the bottom of the panel opening to the bottom of the lug assembly shall be 18" to 48." Distance from terminating lugs to panel surfaces and any grounded surface shall be at least 1-1/2." Rigid insulating barriers are required which project at least 1/4" beyond the energized parts to provide protection if the normal space is reduced. Terminating lugs may be positioned either in-line or staggered. Access around pedestal shall be unobstructed when service conductors are in place.
10. An equipment grounding lug shall be provided, accessible from the grounding lug in the *main disconnect section*. The ground wire requires a protective sheath.
11. The meter base shall be fabricated with components tested by Underwriters Laboratory, and shall be provided with a sealing ring. The meter socket shall be mounted on a support and attached to the meter panel. The meter socket shall be factory wired with the conductors located in a separate section from the service terminating lugs to the meter socket. The conductors which extend from the meter socket to the service terminating lugs shall be connected independently of the connections for the service lateral conductors.
12. Commercial/highway pedestals with enclosed meters, mounted on a concrete base, will have a minimum 2 1/2 " sweep stubbed out from under the pad to accommodate CIC.
13. See EUSERC drawings 308 and 309 for specifications for pedestals with enclosed meters for highway and commercial use.

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



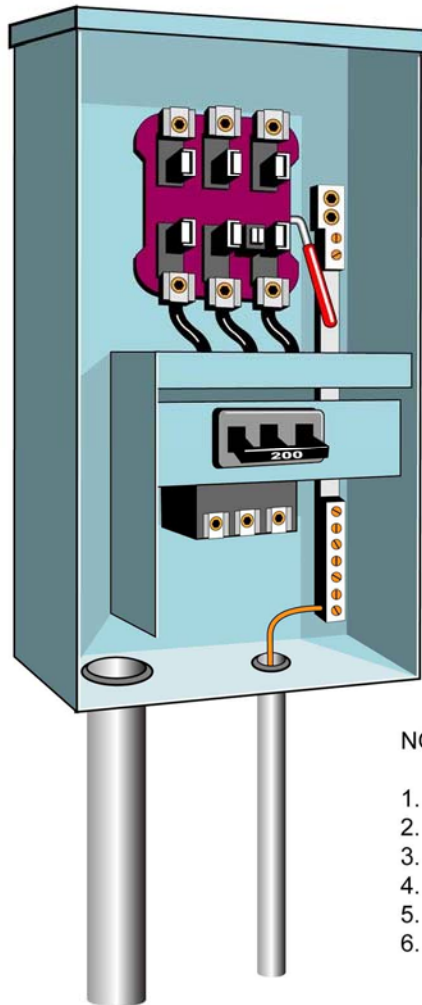
NOTE:

FOR SERVICE BONDING AND  
GROUNDING, SEE SECTION 600.

**FIGURE 400.14**  
**TYPICAL SINGLE-PHASE 100-200 AMP**  
**METER SECTION WITH TEST BLOCK/BYPASS AND**  
**SEPARATE MAIN DISCONNECT**

(SHOWN WITH COVERS REMOVED FOR CLARITY)

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

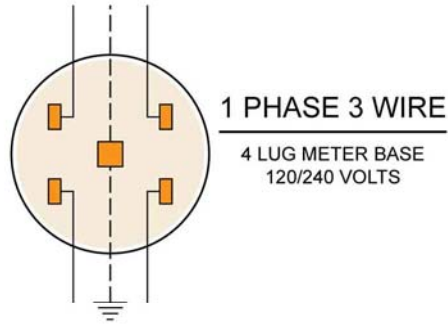


## NOTES:

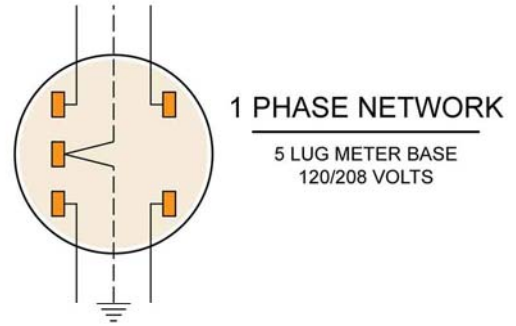
1. SINGLE MAIN DISCONNECT
2. U.L. LISTED - RING-TYPE
3. METER BYPASS
4. SEVEN TERMINAL - 1 PHASE & 3 PHASE
5. 2-1/2" MINIMUM RISER
6. FOR SERVICE BONDING AND GROUNDING, SEE SECTION 600.

**FIGURE 400.16**  
**3-PHASE COMMERCIAL SERVICE ENTRANCE**  
**METER/MAIN COMBINATION UNIT,**  
**UNDERGROUND INSTALLATION**  
**UP TO 200 AMPERES**  
(SHOWN WITHOUT COVERS FOR CLARITY)

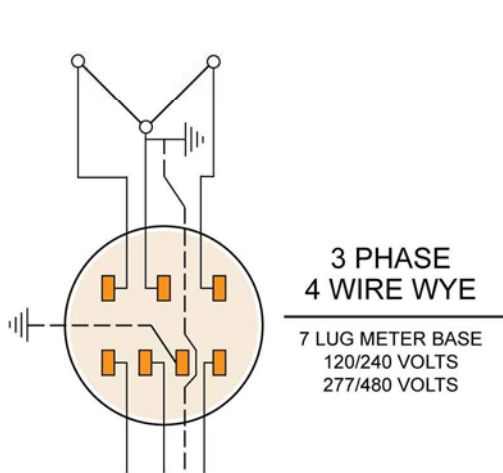
# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



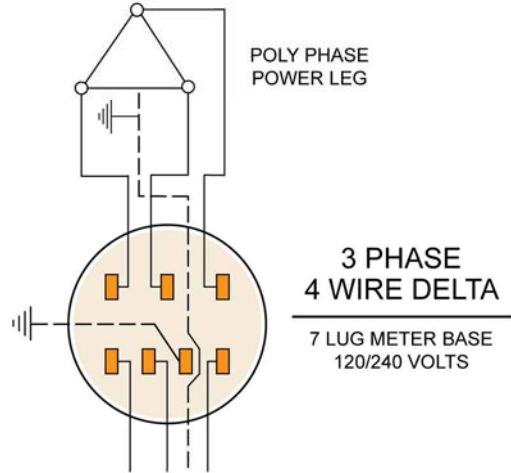
RESIDENTIAL  
SMALL COMMERCIAL  
SMALL PUMPS



SMALL COMMERCIAL



SMALL COMMERCIAL  
SMALL PUMPS  
(COMBINATION 1 AND 3 PHASE LOADS)



SMALL COMMERCIAL  
SMALL PUMPS  
(COMBINATION 1 AND 3 PHASE LOADS)

EITHER A TEST BLOCK OR LEVER BYPASS  
SHALL BE USED IN COMMERCIAL APPLICATIONS

**FIGURE 400.17**  
**METER BASE APPLICATIONS**  
**COMMERCIAL AND RESIDENTIAL**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## 4.3 RESIDENTIAL AND COMMERCIAL SERVICES 201 TO 400 AMPERES

### 4.3.1 MAIN SERVICE DISCONNECT

4.3.1.1 All service entrances over 200 amps shall be equipped with a **single main disconnect** switch or circuit breaker. *However, the 320 amp meter/main and multiple-meter sections with six or less meters may have more than one main disconnect as described in Sub-sections 4.4 and 4.7 of this specification.* The disconnect enclosures shall be rain-tight and of a type approved for service equipment, in compliance with the NEC and the switches shall disconnect all loads from the ungrounded conductors.

4.3.1.2 The main service disconnect shall be plainly and permanently labeled with the word **"MAIN"**. A separate emergency equipment disconnect (if any) may be allowed and shall be plainly and permanently labeled with the word "MAIN" and its emergency function such as "PUMP" or "EMERGENCY LIGHTS", etc. The disconnect device shall be located outside, in a place accessible to SSVEC personnel at all times, or shall be operable to an open position from an outside location accessible to SSVEC personnel at all times. It shall not be locked except by an arrangement agreeable to SSVEC.

4.3.1.3 The main service disconnect(s) shall be connected on the load side of the metering.

4.3.1.4 Except for motor load services, the nameplate ampacity of the main service disconnect determines the ampacity of the service entrance. If more than one main disconnect is allowed, as described in Sub-sections 4.4 and 4.7, the sum of the ampacities shall determine the ampacity of the service entrance. **WHENEVER A DETERMINATION IS MADE BY SSVEC REGARDING THE LIKELY POSSIBILITY THAT MODULES, SECTIONS, OR DISCONNECTS COULD BE ADDED IN THE FUTURE, THE AMPACITY RATING OF THE BUS WILL BE USED TO QUALIFY THE TOTAL RATING OF THE SERVICE SECTION, AS WELL AS THE NEED FOR A MAIN DISCONNECT. IN NO CASE SHALL SERVICE ENTRANCE CONDUCTORS BE SIZED FOR LESS THAN THE AMPACITY RATING OF THE BUS.**

4.3.1.5 The service entrance ampacity of a circuit breaker type of main disconnect shall be determined by the nameplate ampacity of the circuit breaker(s). The service entrance ampacity of a fused-switch type of main disconnect shall be determined by the nameplate ampacity of the switch regardless of the fuse size installed.

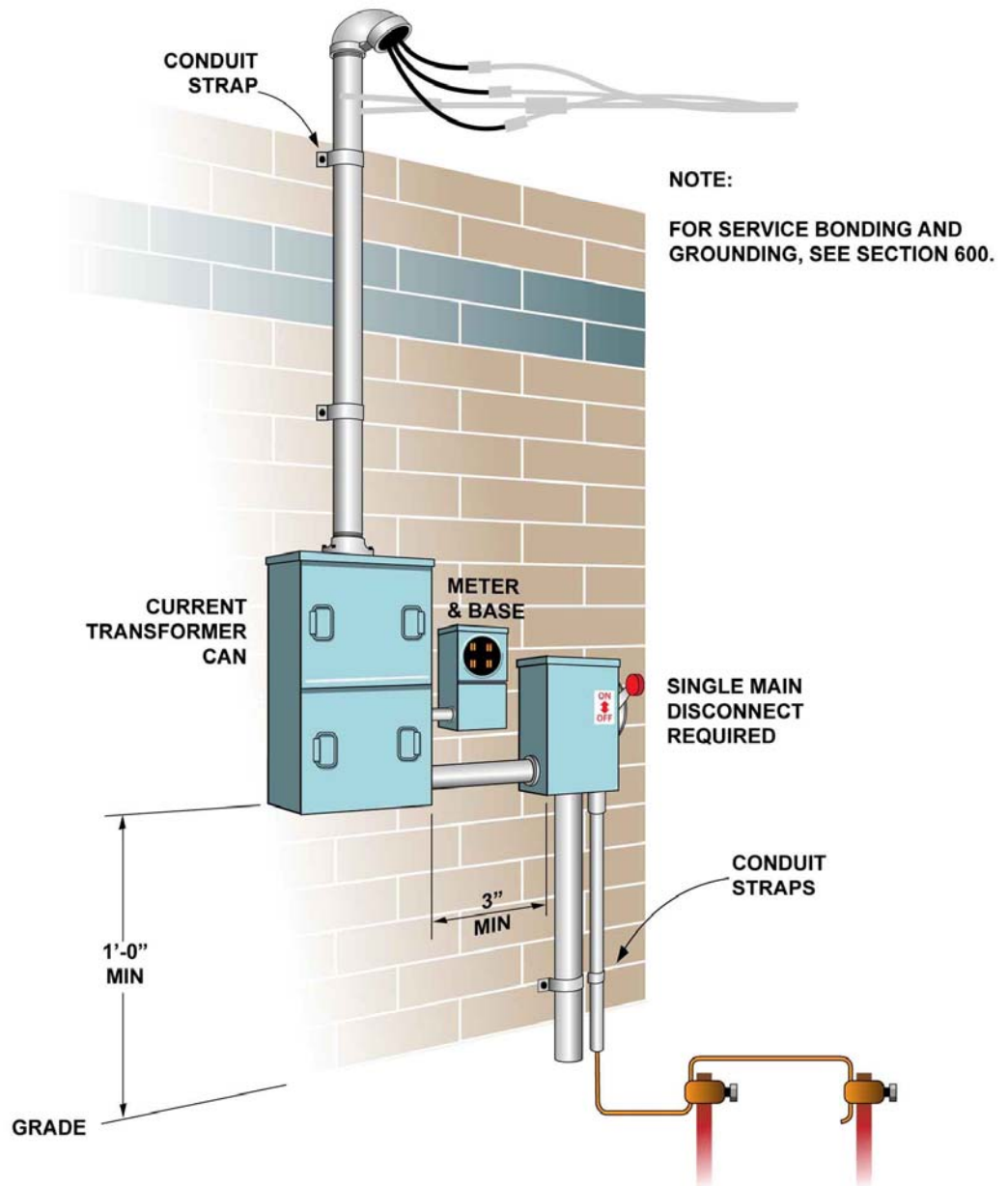
### 4.3.2 METERING FOR SERVICES 201 – 400 AMPS

4.3.2.1 **CURRENT TRANSFORMER ENCLOSURE:** For service entrances of 201 to 400 amperes, as determined by the nameplate ampacity of the service disconnect, a rain-tight current transformer enclosure, constructed of code gauge metal, with an approved mounting base for bar-type current transformers shall be used. The enclosure shall be furnished and installed by the customer or contractor. An approved free-standing service entrance section conforming to EUSERC requirements may be used as an alternative.

## SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

- 4.3.2.2 For **single-phase three-wire services**, the enclosure shall be equivalent or superior to Circle A W or Milbank Products with minimum dimensions of 24" x 36" x 11". The customer will supply the mounting base for the CT's, equivalent to a Beeline 6019-A, and bi-metal supply termination lugs with an upward range to 350 kCMIL.
- 4.3.2.3 For **four-wire services, delta** (such as 120/240 volt) **or wye** (such as 120/208 or 277/480 volt), the enclosure shall be equivalent or superior to Circle A W or Milbank Products, 36" x 42" x 11" N3R CT, with a Beeline mounting base 6067-A, or equivalent, installed along with the appropriate termination lugs as noted above.
- 4.3.2.4 Any hub used to accommodate a riser shall be rain-tight in all cases.
- 4.3.2.5 The current transformer enclosure shall be equipped with a neutral termination block.
- 4.3.2.6 **METER SOCKET ENCLOSURES:** Meter socket enclosures, and potential transformer enclosure if needed, will be furnished and installed by SSVEC.
- 4.3.2.7 **POSITION OF POWER LEG:** On three-phase, four wire delta services, the power leg shall be installed in the right hand position in the meter socket and the CT enclosure.
- 4.3.2.8 **INSTRUMENT TRANSFORMER METERING:** Instrument transformers are used when the current or voltage of a service is too great for a self-contained meter installation. Current and potential (voltage) transformers, where required, and all associated meter circuit wiring will be furnished and installed by SSVEC at the time of service connection.
- 4.3.2.9 **GROUNDING (NEUTRAL) CONDUCTOR SIZE:** The neutral conductor shall be equivalent in size to the ungrounded conductors and may not be reduced in size for this specification. **See warning regarding possible harmonic current in the neutral in paragraph 5.2.2.5 of this specification.**

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**FIGURE 400.18**  
**201-400 AMP WALL - MOUNTED SERVICE ENTRANCE**  
**WITH EQUIPMENT PANEL - ALTERNATE ARRANGEMENT**

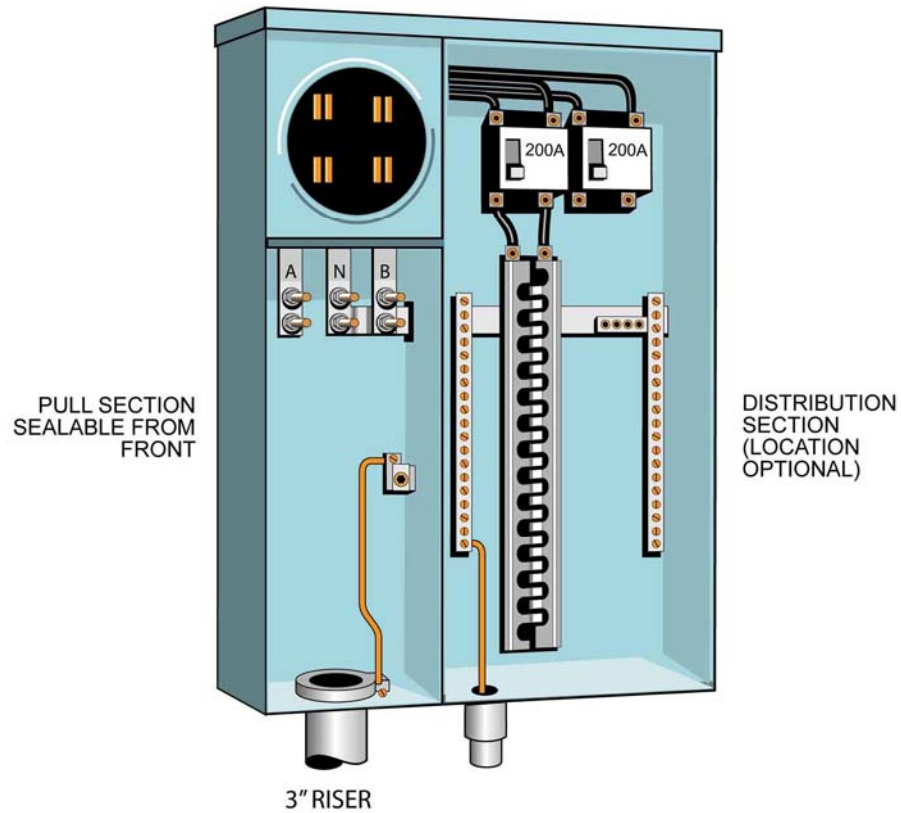
## SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

### 4.4 SINGLE-PHASE 320 AMP METER/MAIN FOR RESIDENTIAL SERVICE ONLY

- 4.4.1 Single-phase, continuous-rated 320 ampere meter/main enclosures which have been tested, listed and labeled by a nationally recognized testing laboratory may be used under the following conditions:
- 4.4.2 Individually metered **residential** services may use an approved 320 amp meter socket enclosure if the disconnect ampacity does not exceed **400 amperes**. This unit is typically utilized for underground installations. An auxiliary raceway is available for overhead installations (or a CT can may be utilized—see Sub-section 4.5)
- 4.4.3 The 320 amp meter socket **is not approved** for use on commercial installations. (Commercial installations require the use of CT cans—see Sub-section 4.5)
- 4.4.4 The service entrance will be capable of carrying the total current of the service supplied to the customer and of being directly connected to the line voltage of the service. The socket will accommodate a standard self-contained meter. SSVEC will supply the meter. **Bolt-in type 400 ampere meter sockets are not acceptable.**
- 4.4.5 This specification allows for **two 200 amp disconnects** to be used, which is standard for the 320 amp meter/main combination.
- 4.4.6 Underground services shall use a 3" conduit for the service entrance riser.



# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



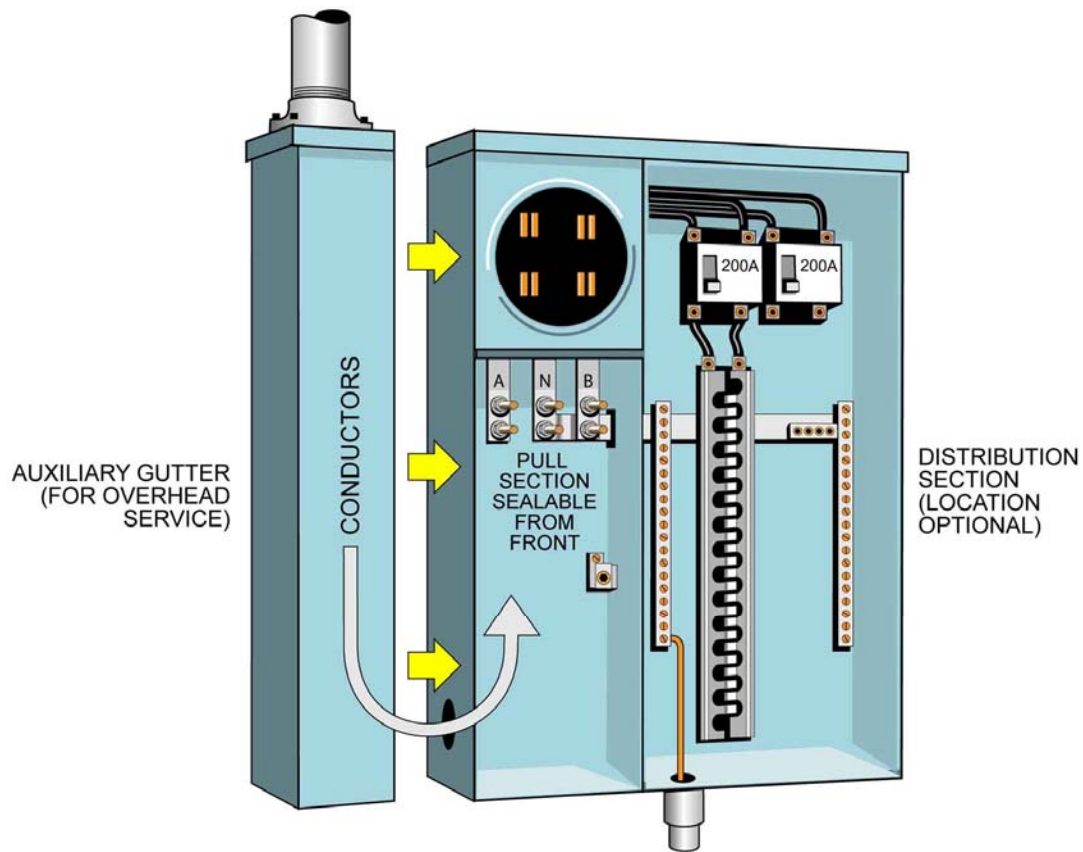
## NOTES:

1. FOR GROUNDING & BONDING DETAILS, SEE SECTION 600.
2. FOUR-TERMINAL STANDARD METER.
3. NO BOLT-IN METERING ALLOWED.
4. NOT FOR COMMERCIAL USE.

**FIGURE 400.20**  
**SINGLE-PHASE METER/MAIN COMBINATION UNIT**  
**320 AMP CONTINUOUS, 240 VOLTS MAXIMUM**  
**UNDERGROUND FEED - RESIDENTIAL USE ONLY**

(SHOWN WITH COVER REMOVED FOR CLARITY)

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



## NOTES:

1. FOR GROUNDING & BONDING DETAILS, SEE SECTION 600.
2. FOUR-TERMINAL STANDARD METER.
3. NO BOLT-IN METERING ALLOWED.
4. NOT FOR COMMERCIAL USE.

**FIGURE 400.22**  
**SINGLE-PHASE METER/MAIN COMBINATION UNIT**  
**320 AMP CONTINUOUS, 240 VOLTS MAXIMUM**  
**OVERHEAD FEED - RESIDENTIAL USE ONLY**  
(SHOWN WITH COVER REMOVED FOR CLARITY)

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## 4.5 COMMERCIAL & RESIDENTIAL SERVICES 401 - 800 AMPERES

### 4.5.1 MAIN DISCONNECT (SSVEC REQUIRES A SINGLE MAIN DISCONNECT--SEE 4.3.1)

4.5.2 **CURRENT TRANSFORMER ENCLOSURE:** For service entrances of 401 to 800 amperes, as determined by the nameplate ampacity of the service disconnect, a weather tight current transformer enclosure, with an approved mounting base for bar-type current transformers shall be used. The enclosure shall be furnished and installed by the customer or contractor. An approved free-standing service entrance section conforming to EUSERC requirements may be used as an alternative. (For specifications regarding service entrance sections, see section 4.7)

4.5.3 For **single-phase three-wire services**, the enclosure shall be equivalent or superior to Circle A W or Milbank Products with minimum dimensions of 24" x 48" x 11" N3R CT (UL Standard 414).

4.5.4 For **four-wire services, delta** (such as 120/240 volt) **or wye** (such as 120/208 or 277/480 volt), the enclosure shall be equivalent or superior to Circle A W or Milbank Products, 36" x 48" x 11" N3R CT (UL Standard 414).

4.5.5 Please note that a 3" or 4" hub is optional for the 800 ampere cabinet. A 3" hub is factory type for the 400 ampere enclosures. Where a larger hub is needed, a knockout type weather-tight hub shall be used.

4.5.6 The current transformer enclosure shall be equipped with a neutral termination block.

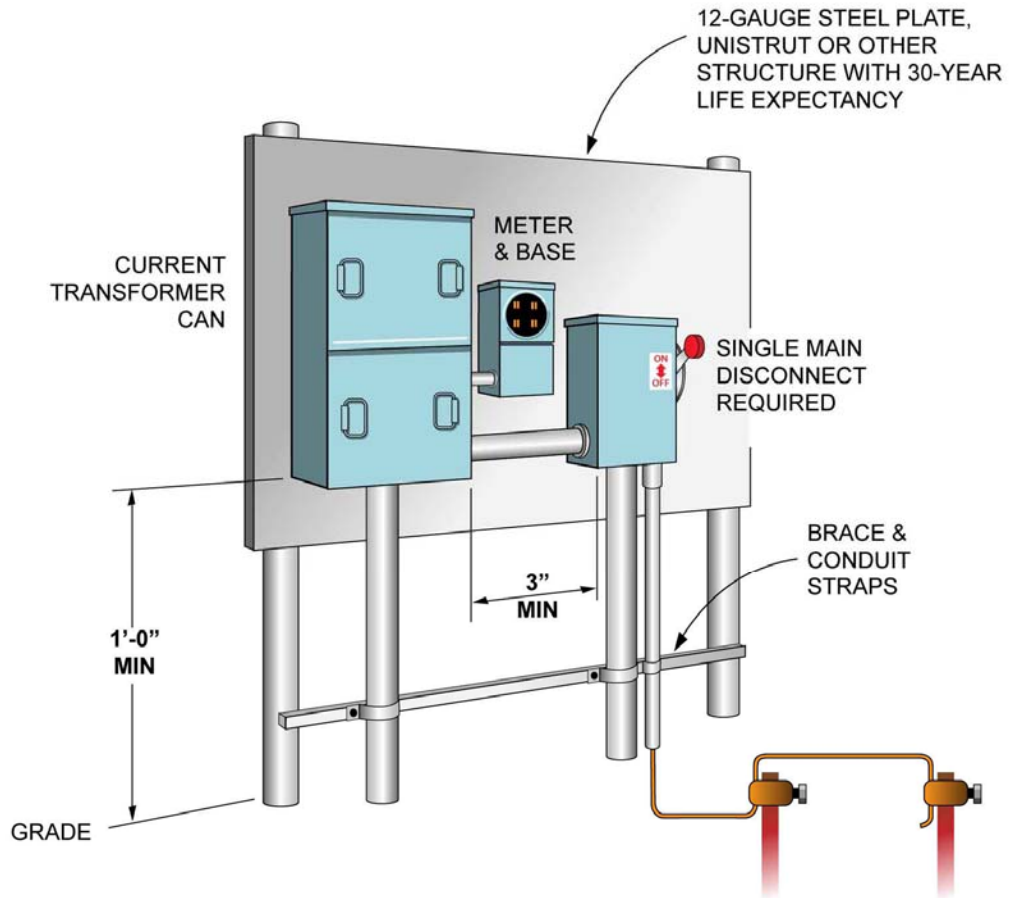
4.5.7 **METER SOCKET ENCLOSURES:** Meter socket enclosures, and potential transformer enclosure if needed, will be furnished and installed by SSVEC.

4.5.8 **POSITION OF POWER LEG:** On three-phase, four wire delta services, the power leg shall be installed in the right hand position of the meter socket and the CT enclosure.

4.5.9 **INSTRUMENT TRANSFORMER METERING:** Instrument transformers are used when the current or voltage of a service is too great for a self-contained meter installation. Current and potential (voltage) transformers, where required, and all associated meter circuit wiring will be furnished and installed by SSVEC at the time of service connection.

4.5.10 **GROUNDING (NEUTRAL) CONDUCTOR SIZE:** The neutral conductor shall be equivalent in size to the ungrounded conductors and shall not be reduced in size for this specification. **See warning regarding possible harmonic current in the neutral in paragraph 5.2.2.5 of this specification.**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



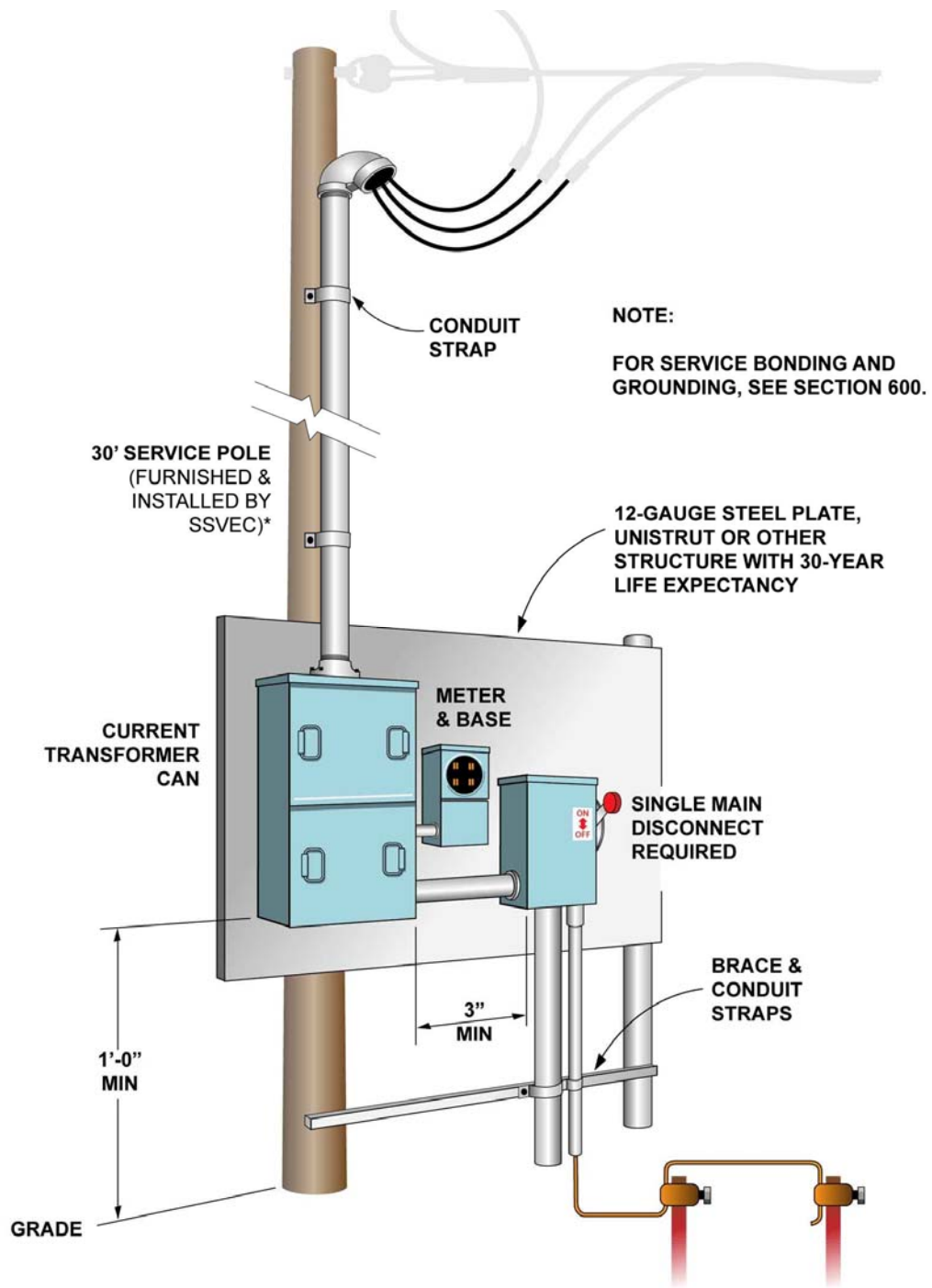
**NOTE:**

FREE-STANDING SERVICE ENTRANCE SECTION ON A CONCRETE PAD IS THE PREFERRED INSTALLATION FOR SERVICES RATED ABOVE 400 AMPS.

FOR SERVICE BONDING AND GROUNDING, SEE SECTION 600.

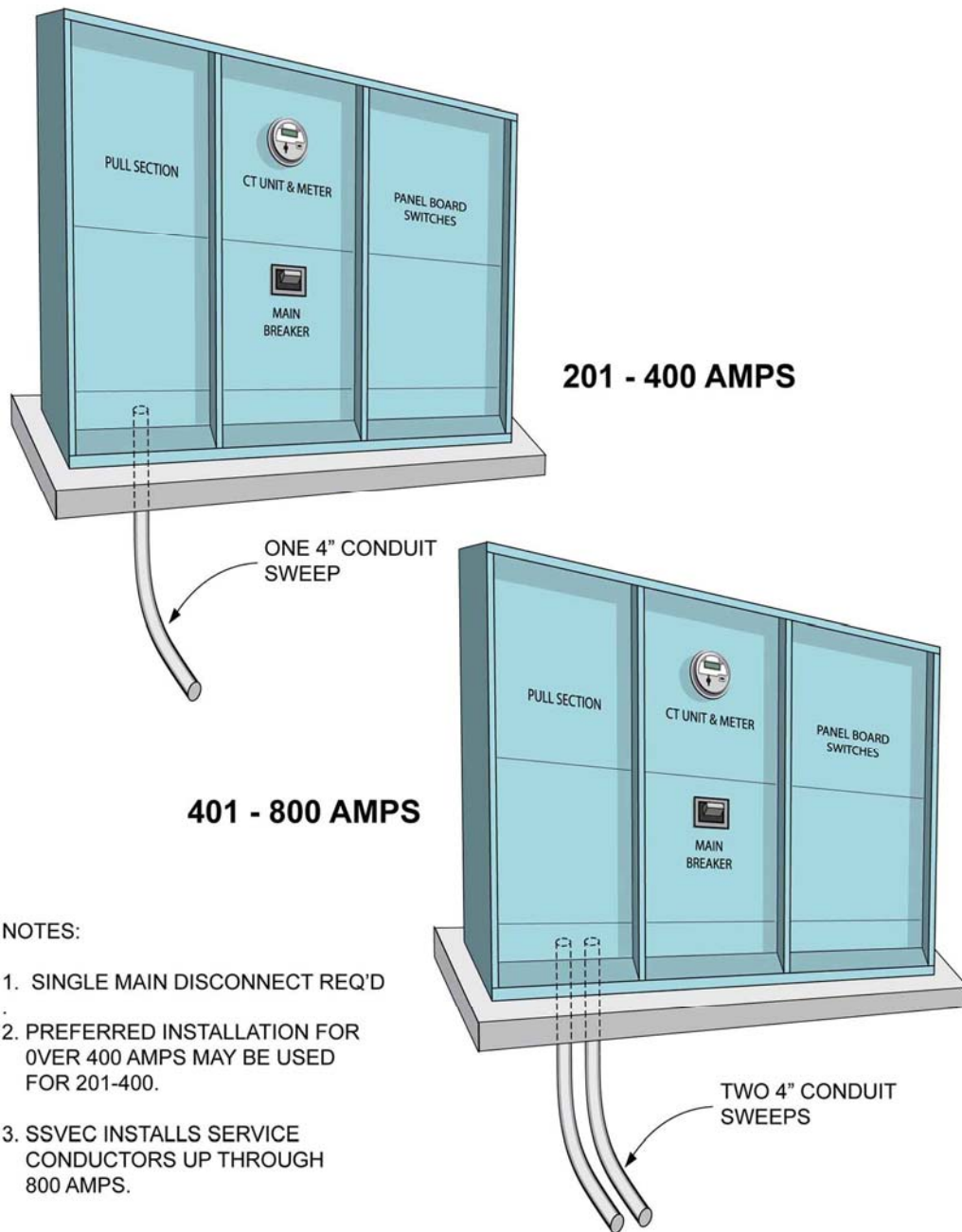
**FIGURE 400.24  
401-800 AMP UNDERGROUND FEED SERVICE  
ENTRANCE WITH EQUIPMENT PANEL  
WALL-MOUNTED OR FREE-STANDING STRUCTURE**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



**FIGURE 400.26**  
**401-800 AMP POLE - MOUNTED SERVICE ENTRANCE**  
**WITH EQUIPMENT PANEL - ALTERNATE ARRANGEMENT**

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**FIGURE 400.28**  
**TYPICAL FREE-STANDING SERVICE ENTRANCE SECTION**  
**201-800 AMPS - OUTSIDE (ACCESSIBLE) LOCATION**  
(SHOWN WITH DOORS REMOVED FOR CLARITY)

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## 4.6 COMMERCIAL & RESIDENTIAL 801-3000 amperes / 0-600 volts

### 4.6.1 MAIN DISCONNECT (SSVEC REQUIRES A SINGLE MAIN DISCONNECT--SEE 4.3.1)

4.6.2 **DETERMINATION OF SERVICE ENTRANCE AMPACITY:** The **service entrance ampacity** shall **not be larger than 3000 amperes** for this specification and, except for some multiple-metered installations and motor loads, the **nameplate ampacity of the main service disconnect determines the ampacity of the service entrance which shall not exceed the ampacity of the bus. In all cases, service conductors shall be sized to accommodate the ampacity of the bus.** Customers requiring more than 3000 amperes shall consult the SSVEC Engineering Department for special design requirements.

4.6.3 The service entrance ampacity of a **circuit breaker** type of main disconnect shall be determined by the **nameplate ampacity of the circuit breaker.**

4.6.4 The service entrance ampacity of a **fused** or **solid state** type of main disconnect shall be determined by the **ampacity rating of the bus.**

4.6.5 **SERVICE ENTRANCE SECTION:** A **free-standing service entrance section**, conforming to EUSERC specifications, mounted on a concrete pad or floor shall be furnished and installed by the customer or contractor on all services from 801 to 3000 amperes. A free-standing service entrance section, conforming to EUSERC specifications, is acceptable but not required for services rated less than 801 amperes. **All free-standing service entrance equipment is subject to being rejected unless it has the appropriate manufacturer's drawings submitted to SSVEC Engineering for approval prior to ordering and installing said equipment.**

4.6.6 **SERVICE ENTRANCE SECTION LOCATION:** Service entrance sections shall be permitted to be **located inside buildings only under the following conditions:**

4.6.6.1 SSVEC personnel shall be permitted to have access to the service entrance at all reasonable times.

4.6.6.2 The main disconnect device shall be operable by a shunt trip device (powered directly from the main bus) located outside and accessible to SSVEC personnel at all times.

4.6.6.3 The customer or contractor shall run separate conduits for the metering circuit (1" RIGID minimum) and for remote operation of the main disconnect (1/2" RIGID minimum) a distance **not to exceed 50 (fifty) feet** to an approved outside location accessible to SSVEC personnel at all times (See Figure 400.15). **This requirement may be waived when the customer has made prior arrangements with SSVEC to have the metering equipment installed in a dedicated transformer.**

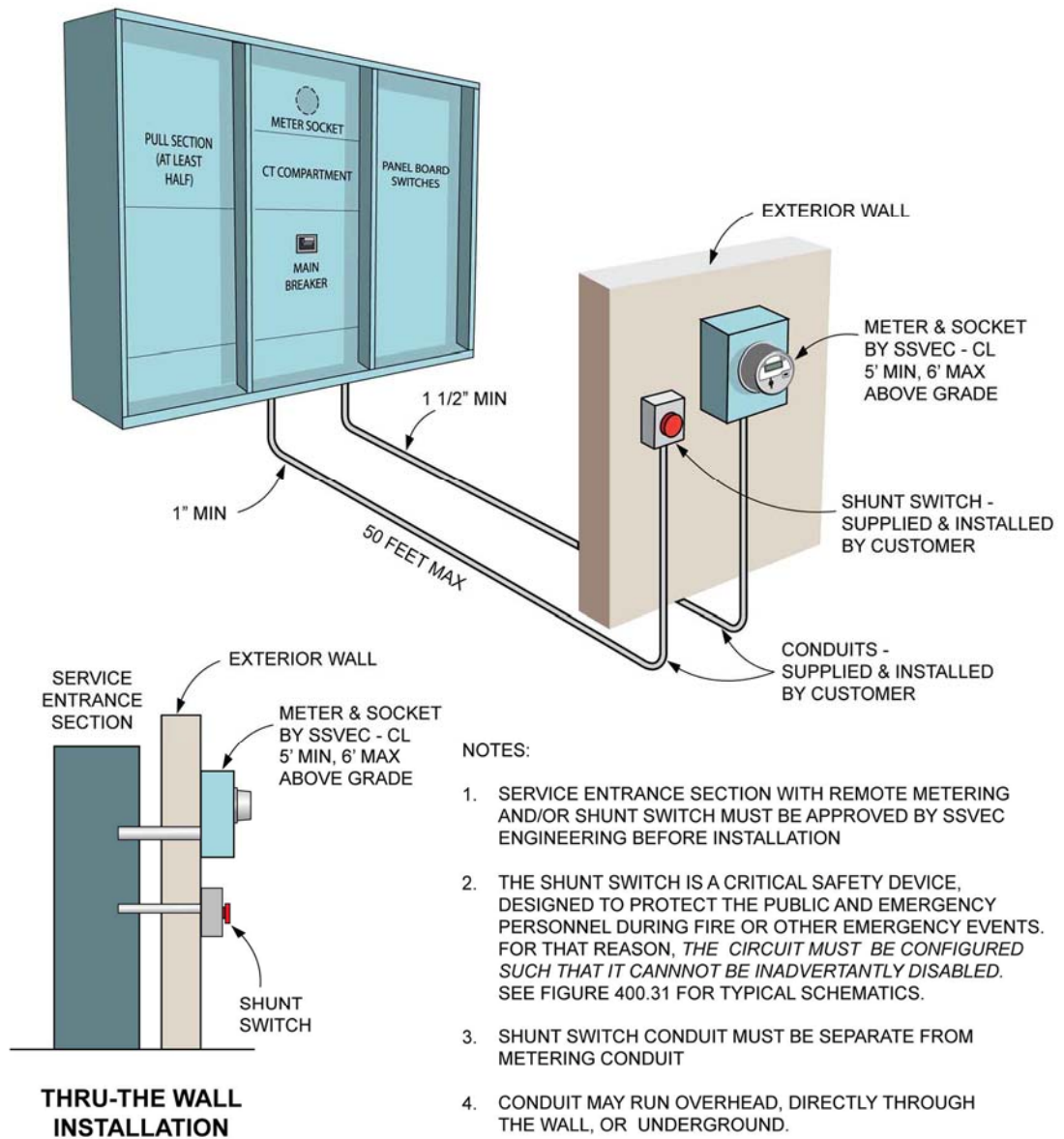
4.6.6.4 If any of the above conditions is not met, the service entrance section shall be located outside in a place accessible to SSVEC employees at all times, and shall not be locked except by an arrangement agreeable to both the customer and SSVEC.

## SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

- 4.6.6.5 If located outside, the service entrance section shall be raintight (NEMA 3R).
- 4.6.7 **METER SOCKET ENCLOSURES:** For outside service entrances, meter sockets and panels, per EUSERC drawings, shall be furnished and installed by the customer or contractor in the manufactured service entrance section. When the service entrance equipment is located inside with metering conduit run outside, meter sockets and enclosures will be furnished and installed by SSVEC.
- 4.6.8 **CURRENT AND POTENTIAL TRANSFORMERS:** Current transformers, meter test switches and potential transformers, if required, will be furnished and installed at the time of service connection by SSVEC personnel in the space provided by the customer.
- 4.6.9 **DRAWING SUBMITTAL:** To avoid costly changes, the customer or contractor shall have the manufacturer **submit service entrance drawings to SSVEC for review and approval** by the Line Extension Services Manager **before the equipment is manufactured. Faxed submittals are not acceptable for approval purposes.**
- 4.6.10 **GROUNDING (NEUTRAL) CONDUCTOR SIZE:** The neutral conductor shall be equivalent in size to the ungrounded conductors and shall not be reduced in size for this specification. **See warning regarding possible harmonic current in the neutral in paragraph 5.2.2.5 of this specification.**

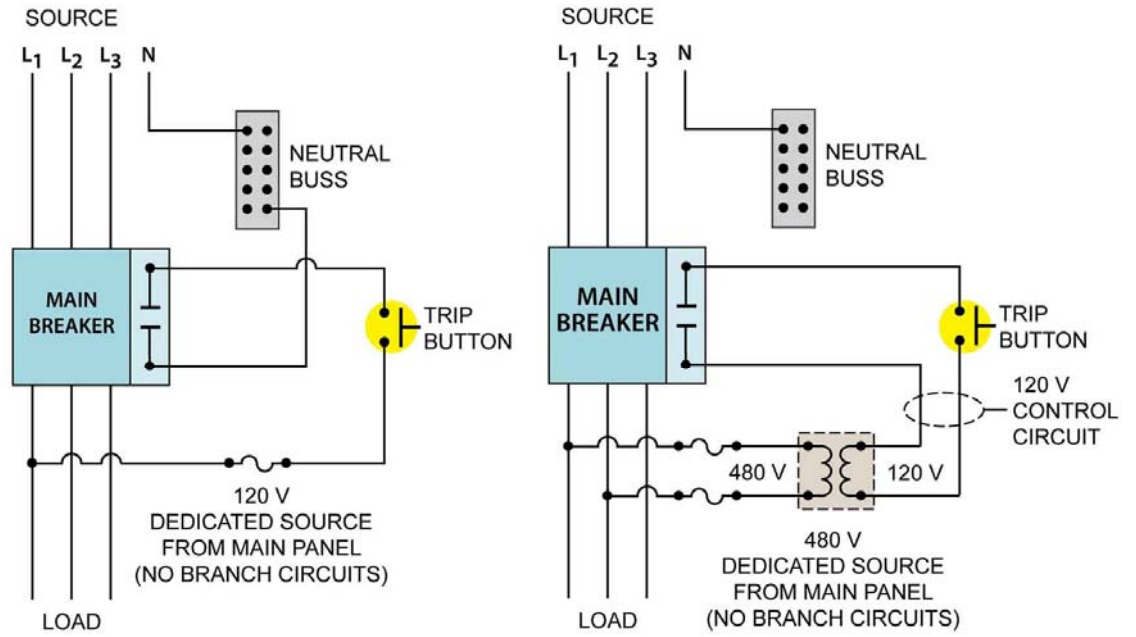


# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



**FIGURE 400.30  
 REMOTE METER AND SHUNT SWITCH  
 FOR LESS ACCESSIBLE LOCATIONS  
 OR INSIDE BUILDINGS**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



**SCHEMATIC FOR  
120/208 OR 120/240 V SERVICE**

**SCHEMATIC FOR  
277/480 V SERVICE**

**FIGURE 400.31  
TYPICAL SHUNT TRIP SCHEMATICS**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## 4.7 MULTIPLE METERED INSTALLATIONS

- 4.7.1 For this specification, there are three types of service configurations generally accepted by SSVEC. Prior to the installation of any multiple metered service entrance, the customer shall submit a configuration drawing to SSVEC for approval.
- 4.7.2 Type I installations shall be used on multiple occupancy buildings or mobile home parks where the customer chooses to group not more than 6 meters at a common location (NEC 230-71) and the total service ampacity does not exceed 800 amps\*\*\*.

TYPE I



TYPE I  
UP TO SIX METERS

- 4.7.3 Type II and Type III installations shall be used on multiple occupancy buildings when more than 6 meters are grouped at a common location and/or the total service ampacity exceeds 800 amps\*\*\*.

TYPE II



TYPE II  
MORE THAN SIX METERS

TYPE III



TYPE III  
MORE THAN SIX STANDARD METERS  
(FREE-STANDING)

**Note: Gutter type installations are not approved for use except in specific pre-approved applications. ONLY QUALIFIED ENGINEERING PERSONNEL ARE AUTHORIZED TO ALLOW PRIOR APPROVALS FOR THE USE OF A GUTTER IN CERTAIN MULTIPLE-METER SITUATIONS.**

## SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

- 4.7.4 The service entrance to each occupancy shall be equipped with a single disconnect device. The nameplate ampacity of this device shall determine the service ampacity for each occupancy. 200 amps is the maximum disconnect size allowed for each individual occupancy for Types I and II (wall-mounted) installations. Any combination of self-contained or instrument rated metering may be allowed for Type III (free-standing SES). For configuration types II and III, in addition to the disconnect device for each occupancy, a central main disconnect ("cold sequence") device will also be required. A cold sequence disconnect device is optional for Type I installations.
- 4.7.5 Where multiple disconnects are allowed for multiple-metered installations (See paragraph 4.7.2), **the sum of the ratings of the main fused switches or circuit breakers shall not be permitted to exceed the ampacity of any main bus or the de-rated ampacity of the service conductors. AT THE SOLE DISCRETION OF SSVEC, THE AMPACITY RATING OF THE BUS MAY BE USED TO QUALIFY THE TOTAL RATING OF THE SERVICE SECTION, AS WELL AS THE NEED FOR A MAIN DISCONNECT, WHENEVER A DETERMINATION IS MADE BY SSVEC REGARDING THE POSSIBILITY OF MODULES, SECTIONS, OR DISCONNECTS BEING ADDED IN THE FUTURE.**
- 4.7.6 For multiple metered installations, the service entrance for each occupancy shall be plainly and permanently labeled to designate the suite, room, or address of the served occupancy.
- 4.7.7 For residential services, to determine the total service ampacity, multiply the sum of the ampacities of the single disconnect devices by the demand factors found in the NEC, Table 220.84.

Example Demand Factors:

2 units	None
3 - 5 units	45%
8 – 10 units	43%

Example Calculation for 14 units with a demand factor of 40%:

Determine the total service ampacity for a service consisting of fourteen services, nine 60 amp and five 100 amp disconnects.

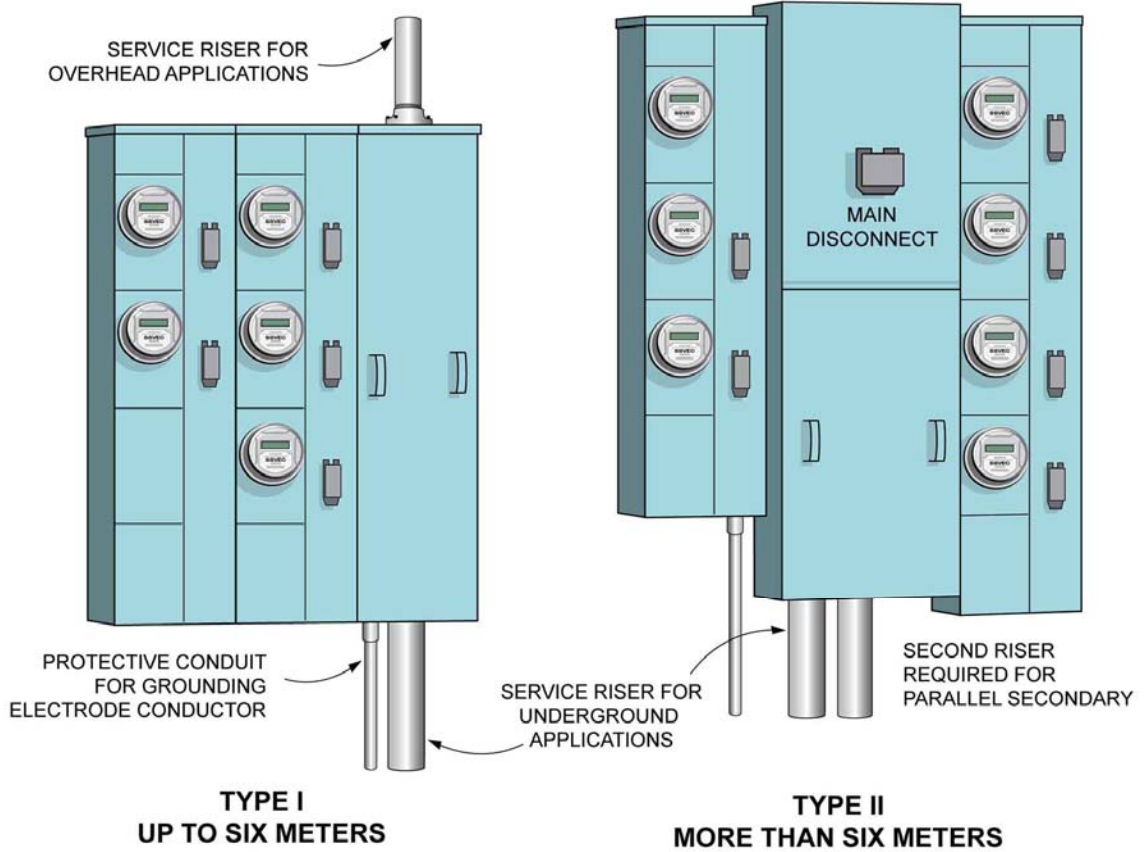
$$\begin{array}{r} 9 \times 60 \text{ amps} = 540 \text{ amps} \\ 5 \times 100 \text{ amps} = \underline{500 \text{ amps}} \\ 1040 \text{ amps total} \end{array}$$

$$1040 \text{ amps} \times 40\% = 416 \text{ amps}$$

In this example, the central main disconnect and service entrance conductors must be sized to carry at least 416 amps.

- 4.7.8 For commercial services, the total service ampacity is based on the calculated or computed load as per the NEC 230-80.

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

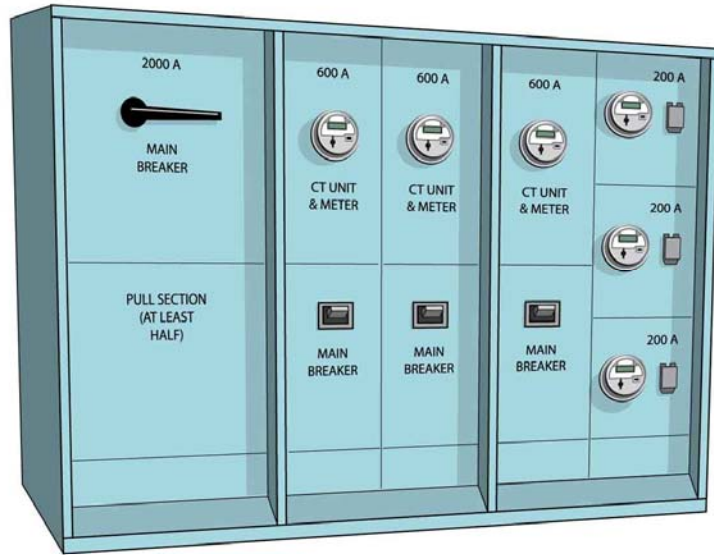


## NOTES:

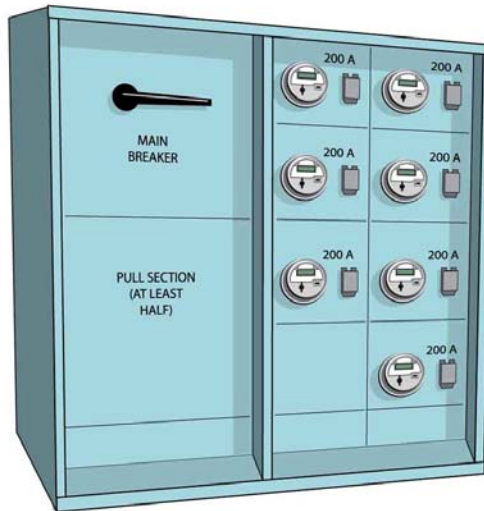
1. 3" MINIMUM DIAMETER FOR UNDERGROUND SERVICE RISER.
2. SINGLE MAIN DISCONNECT REQUIRED AHEAD OF GROUPS OF MORE THAN SIX METERS.
3. INDIVIDUAL DISCONNECTS AT EACH METER IDENTIFIED BY PERMANENT METAL TAG.
4. PROVISIONS FOR SSVEC SEAL IN TERMINATION AND/OR MAIN DISCONNECT SECTION
5. CONTACT SSVEC SERVICE REPRESENTATIVE PRIOR TO DOING WORK.
6. FOR GROUNDING & BONDING DETAILS, SEE SECTION 600.

**FIGURE 400.34  
TYPICAL WALL-MOUNTED MULTIPLE METERING  
COMMERCIAL AND RESIDENTIAL**

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**FIGURE 400.36 - TYPE III  
TYPICAL MULTIPLE METER SECTION (FREE-STANDING)  
COLD SEQUENCE COMBINATION INSTRUMENT-RATED  
AND STANDARD METERS**



**FIGURE 400.38 - TYPE III  
TYPICAL MULTIPLE METER SECTION (FREE-STANDING)  
MORE THAN SIX STANDARD METERS**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## SECTION 500. SERVICE CONDUIT AND CONDUCTORS

### 5.0 SERVICE CONDUIT (OVERHEAD SERVICES)

- 5.0.1 The customer shall furnish the service entrance riser conduit. This conduit shall be galvanized rigid metallic conduit or intermediate metal conduit (IMC) and shall be factory stamped as "RIGID" or "IMC". NEC 230-50 (conductor protection). Galvanized water pipe or thinner walled electric metallic tubing (EMT) are not acceptable. The service entrance conductors for overhead services shall be installed in conduit no smaller than is permitted by the NEC for the size and number of conductors used.
- 5.0.2 Where the service entrance conduit extends through the roof and supports the service drop attachment, conduit no smaller than 2" (trade size) shall be used for single-phase services and 3" (trade size) is the minimum acceptable conduit size for three-phase services.
- 5.0.3 The service entrance conduit shall be capped by an approved service entrance weather head and the service entrance conductor shall be left extending from it a minimum of 3 feet. A rain-tight hub shall be used to connect the service entrance conduit to the meter base, gutter, or other approved enclosure.
- 5.0.4 To determine proper conduit sizes, refer to the conduit size table of the National Electric Code Appendix C.

### 5.1 SERVICE LATERAL RISER CONDUIT (UNDERGROUND SERVICES)

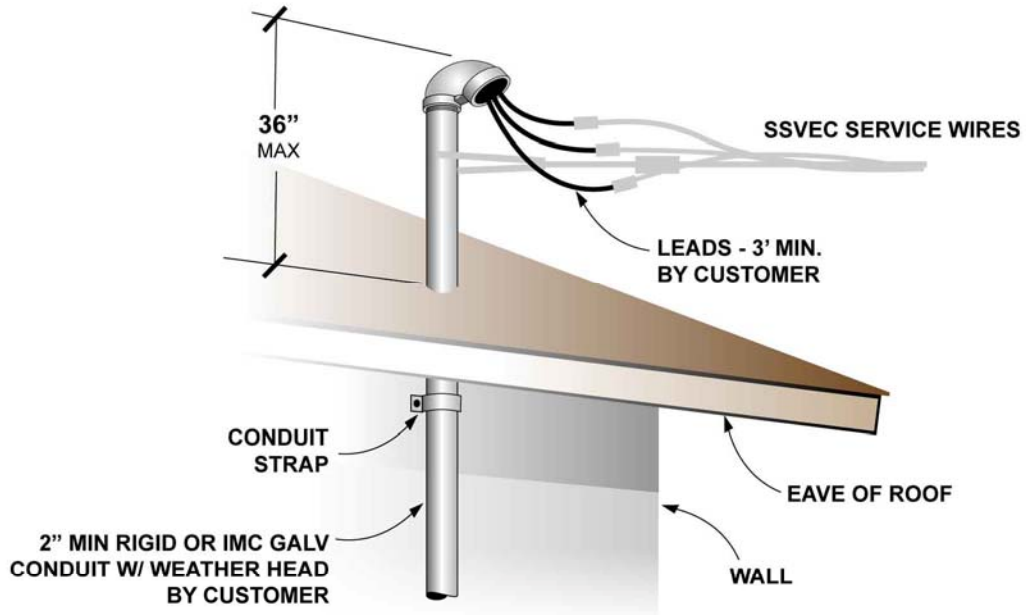
- 5.1.1 Service lateral conduit from the transformer or secondary pedestal to the service lateral riser conduit will be installed by the customer unless SSVEC elects to utilize CIC (Cable in Conduit).
- 5.1.2 The customer shall furnish the service lateral riser conduit. This conduit shall be galvanized rigid metallic conduit or intermediate metal conduit (IMC) and shall be factory stamped as "RIGID" or "IMC" (see NEC 230-50). Galvanized water pipe or thinner walled electric metallic tubing (EMT) are not acceptable for use as service lateral riser conduit.
- 5.1.3 Rigid conduit no smaller than 2 ½" shall be used for all single-phase services up to 400 amps and three-phase services up to 200 amps. A minimum diameter of 3" shall be used for single-phase services from 400-600 amperes and for three-phase services from 400-599 amps. A 45° kick (bend) shall be required to clear the footer.
- 5.1.4 Two parallel conduits, 4" minimum diameter, are suitable for 600-800 amp services. Conduits shall be stubbed out beyond any concrete pads or foundations for easy access by the utility. Consideration should be given, in sizing encased conduits, future requirements and possible upgrades.

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- 5.1.5 The rigid conduit shall be run to a point not less than 12 inches and not more than 18 inches below finished grade.
- 5.1.6 Both ends of the rigid conduit shall be reamed and threaded, with an insulated bushing installed on the top end. A PVC adapter will be installed on the bottom end by SSVEC.
- 5.1.7 Rigid metallic conduits and fittings installed underground or in concrete shall be protected against corrosion by half-wrapping with an approved plastic tape or by a coating of an approved corrosion-resistant material. NEC 300-6 a, b & c.



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## NOTE:

IF CONDUIT IS INSTALLED MORE THAN 36" ABOVE THE ROOF, ADDITIONAL BRACING WILL BE REQUIRED.

CUSTOMER SHOULD CHECK WITH LOCAL SSVEC SERVICE REPRESENTATIVE BEFORE USING ANY ALTERNATIVE METHOD OF ATTACHING WIRES TO THE HOUSE SERVICE ENTRANCE.

ALL NEW SERVICE INSTALLATIONS AND UPGRADES ARE SUBJECT TO CODE REQUIREMENTS, PERMITS AND INSPECTIONS ENFORCED BY LOCAL GOVERNMENT AGENCIES.

**FIGURE 500.1  
OVERHEAD SERVICE ATTACHMENT  
COMMERCIAL & RESIDENTIAL**

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## 5.2 SERVICE ENTRANCE CONDUCTORS

### 5.2.1 GENERAL.

5.2.1.1 The customer or contractor shall not reroute any metered conductor through the meter socket enclosure, metering compartment, raceways or other security sealed areas.

5.2.1.2 Because of high ambient temperatures likely to be encountered in outdoor service entrances, no conductor with insulation rated lower than 75 degrees C. shall be used. All service entrance conductors shall be stranded. Manufactured service entrance equipment shall be listed by a nationally recognized testing laboratory and the factory installed conductors shall be accepted at nameplate rating of the unit.

5.2.1.3 Service entrance conductor ampacity shall be determined from Table 310-16 of the latest edition of the NEC.

5.2.1.4 Service entrance conductors for overhead services shall be furnished and installed by the customer or contractor. The conductors will exit the upper end of a rigid steel conduit through an approved weatherhead. Overhead services using bus duct shall have entrance heads conforming to EUSERC requirements.

### 5.2.2 OVERHEAD SERVICE ENTRANCE CONDUCTORS

5.2.2.1 No more than four conductors per phase shall be used. All service entrance conductors shall be stranded.

5.2.2.2 All service entrance conductors in the riser (and also any conductors that run from the load side of CT section to the disconnect device) shall be furnished and installed by the customer. The service entrance conductors shall have ampacities sufficient to carry the load as determined by the service disconnect ampacity. Conductor ampacities can be limited by correction factors determined by conditions of excessive heat (see NEC Tables 310.15,B,2,a and 310.16).

5.2.2.3 All ungrounded conductors of three-phase services shall be clearly identified at both ends by tape or other effective means. Phase B shall be the power leg (highest voltage to ground) on three-phase four-wire delta services and shall be durably and permanently marked by an outer finish that is orange in color or by other effective means (NEC 230-56).

5.2.2.4 On three-phase four wire delta services, the power leg shall be connected to the right hand meter base and CT enclosure terminals. The power leg conductor, on three phase four wire delta services, shall not be reduced in size from that of the other ungrounded conductors.

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5.2.2.5 For all services, the grounded conductor (neutral) shall not be reduced in ampacity from that of the ungrounded conductors.

**NOTE: Electric discharge lighting, data processing equipment, and variable speed motors may create harmonic currents in the neutral that may exceed the load current in the ungrounded conductors. Although not mandated by SSVEC, it may be appropriate to require an oversized feeder neutral conductor depending on the total harmonic distortion contributed by the equipment to be supplied.**

5.2.2.6 The grounded conductor shall enter the service entrance or service lateral conduit, continuing straight through the meter base to terminate at the neutral lug in the main disconnect switch. The grounded conductor must be bonded at the meter base but may not be spliced at the meter base neutral lug.

5.2.2.7 The grounded conductor (neutral) if copper may be bare. If insulated conductor is used, the insulation shall be white or natural gray or shall be permanently identified at both ends with white or natural gray tape. (NEC 230-4, A and NEC 200-6)

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**FIGURE 500.3**

## RESIDENTIAL WIRE SIZE TABLE

AMPERAGE	COPPER WIRE SIZE	ALUMINUM WIRE SIZE
100	#3 MINIMUM	#2 MINIMUM
125	#2 “	#1/0 “
150	#1 “	#2/0 “
200	#3/0 “	#4/0 “
400	PARALLEL #3/0	PARALLEL 300 kCMIL

**Notes:**

- #1. Information for wire size tables taken from **National Electrical Code Article 310-15 and Table 310-16**. All wire sizes in the table above are based on 90° C. Conductors rated 75° C. may also be used but must be adjusted per NEC Table 310-16. The wire sizes in the table above are only suggestions based on minimum requirements and are for **residential services only. See Note 2 below for commercial applications.**
  
- #2. Commercial services usually have a higher load factor than residential services. SSVEC uses the ampacity correction factors for an ambient temperature of 36° to 40° C. (97° to 104° F.) to determine the allowable ampacity for conductors used for commercial services. Conductors with 75° C. insulation are derated to 88% and those with 90° C. insulation are derated to 91%.
  
- #3. Only insulation types RHH, THHN, XHHW 90° C. and RH, RHW, RUH, THW, THWN, XHHW, USE 75° C. are acceptable for service entrances on SSVEC's system.
  
- #4. No cable with an extra covering such as romex shall be used for service entrance conductors.
  
- #5. When 90° C. insulation is used all lugs shall also be rated 90° C.

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## 5.3 SERVICE LATERAL CONDUCTORS (UNDERGROUND SERVICES)

- 5.3.1 SSVEC will furnish and install all service lateral conductors up to and including 800 amps. Conductors for services **larger than 800 amperes and where conductors are under or inside a building shall be furnished and installed by the customer or contractor.** SSVEC will furnish and install connectors at the transformer up through 800 amps.
- 5.3.2 **No conductor larger than 750 kCMIL, no more than six copper conductors per phase or seven aluminum conductors per phase, and no conduit larger than six inch trade size shall be used without special review and prior approval by qualified SSVEC personnel. For services requiring larger conductor or conduit, approved bus duct shall be used.**
- 5.3.3 SSVEC will connect the service lateral conductors up through 800 amps to the landing lugs at the customer's meter base or termination section and at the transformer or secondary pedestal in all cases.
- 5.3.4 SSVEC will not furnish, install, or assume responsibility for conductors under or inside of any building.

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## SECTION 600. SERVICE BONDING AND GROUNDING

### 6.0 SERVICE BONDING

- 6.0.1 The neutral conductor and all service equipment enclosures shall be effectively bonded together (see NEC 250-92)
- 6.0.2 A wire, bus, screw or similar suitable conductor may be used for bonding. If a wire is used, it shall be no smaller than 6 AWG copper. For other acceptable means of bonding, see NEC 250-94.

### 6.1 GROUNDING ELECTRODE CONDUCTOR

- 6.1.1 An unspliced copper grounding electrode conductor shall be connected, on the supply side in the service disconnect enclosure, to the grounded (neutral) conductor and run to an approved grounding electrode.
- 6.1.2 When the Grounding Electrode Conductor is installed in an outside location such as on a service pole or on the outside of a building the conductor shall be installed in a protective conduit.
- 6.1.3 The protective conduit shall be galvanized rigid metallic conduit, intermediate metal conduit (IMC) or sunlight resistant Schedule 80 PVC conduit, and shall be factory stamped as "RIGID" or "IMC" or Schedule 80. The protective conduit shall attach to the service disconnect or other approved enclosure in a weather-tight manner and run to a point not less than 6" or more than 12" below finished grade. Rigid metallic conduits and fittings installed underground or in concrete shall be protected against corrosion by half wrapping with an approved plastic tape or by a coating of an approved corrosion resistant material. (NEC 300-6, A & B). When a metallic protective conduit is installed, the grounding electrode conductor shall be bonded to the metallic protective conduit at its entrance and exit points. (NEC 250-64, E).
- 6.1.4 When approved by SSVEC and an authorized municipal or county building official, the grounding electrode conductor may be routed up through the inside of a wall. A protective conduit will not be required for this type of installation.
- 6.1.5 Local codes require the grounding electrode conductor to be no smaller than #4 AWG, even to a ground rod, and no smaller than allowed by the NEC for the size of service connected (NEC Table 250-66).

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## 6.2 GROUNDING ELECTRODE

- 6.2.1 All service entrances shall be connected to an approved grounding electrode. SSVEC will accept grounding electrodes as follows:
- 6.2.1.1 When a metal underground water pipe (a metal water pipe in direct contact with the earth for 10 feet or more) or a metal well casing is located within 25 feet of the service entrances, the water pipe or casing shall be used as the grounding electrode. This type of grounding electrode shall be supplemented by one of the following grounding electrodes. (NEC Article 250-50)
  - 6.2.1.2 A minimum of two 5/8 inch by 8 foot copper or copperweld ground rods installed 6 feet apart may be used as the grounding electrode and installed such that at least 8 feet of length is in contact with the soil. All reasonable means will be used to insure the upper end of the ground rod is driven vertically to a point not less than 6 inches below finished grade and after inspection by SSVEC shall be covered. If vertical driving is not possible because of a rock bottom, the rod may be driven at an oblique angle not to exceed 45 degrees from vertical (NEC Article 250-53, G). Any other ground rod applications or configurations are not approved unless through special review and consideration by qualified SSVEC personnel.
  - 6.2.1.3 If an outside metal underground water pipe is located more than 25 feet from the service entrance, the consumer may bond this water pipe to the grounding electrode to obtain a better grounded system.
  - 6.2.1.4 Other grounding electrodes (e.g. UFER) as specified in the NEC Article 250-50, (c) will be accepted only if previous arrangements have been made with SSVEC personnel to permit inspection before cover up. The Cooperative will accept as a "previous arrangement" the inspection of an authorized municipal or county building official qualifying that a UFER ground was properly installed.
- 6.2.2 Any grounding electrode which does not have a resistance to ground of 25 ohms or less, as measured by SSVEC, shall be augmented by one or more additional electrodes, until the combined electrodes have a resistance to ground of 25 ohms or less as measured by SSVEC (NEC 250-56). **Note: City, county, and state specifications require a minimum of two ground rods, spaced 6 feet apart, for all services where an adequate UFER ground has not been installed.**
- 6.2.3 If there is reason to believe that a driven ground rod may not be of the required eight foot length, as decided by SSVEC, an additional electrode may be required.
- 6.2.4 The grounding electrode conductor clamp, including the bolt or screw, shall be solid brass or bronze or stainless steel, to prevent failure by corrosion. (NEC 250-70)

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## SECTION 700. MOUNTING AND FASTENING

- 7.1 The service entrance equipment shall be securely fastened to a wall or other permanent structure in a safe and workmanlike manner. The structure shall be constructed to last the thirty-five year life of the service. Acceptability of materials and workmanship shall be determined by SSVEC.
- 7.2 Service entrances shall be installed so that the meter is level and not more than six feet and no less than five feet above finished grade to the center of the meter socket. Mobile home type meter pedestals shall be no more than five feet and no less than three feet above finished grade to the center of the meter socket.
- 7.3 Nipples connected to the meter base shall not be shorter than 3 inches nor longer than 6 inches. Holes made in meter bases, disconnect enclosures, etc., shall be made in a neat and workmanlike manner and unused holes shall be covered with suitable rain-tight metallic covers. Damage to the finish, paint galvanizing, etc., of all exposed ferrous metal parts shall be touched up with paint or a suitable coating to restore corrosion resistance. Poorly painted, bare non-galvanized or rusty steel enclosures shall be painted to provide corrosion resistance.
- 7.4 All conduit straps used to fasten service entrance conduit to a wall or other structure shall be the two hole type rigid conduit strap or clamp type conduit hanger, and of proper size for the conduit.
- 7.5 No more than two conduits shall be mounted vertically on any SSVEC service pole.

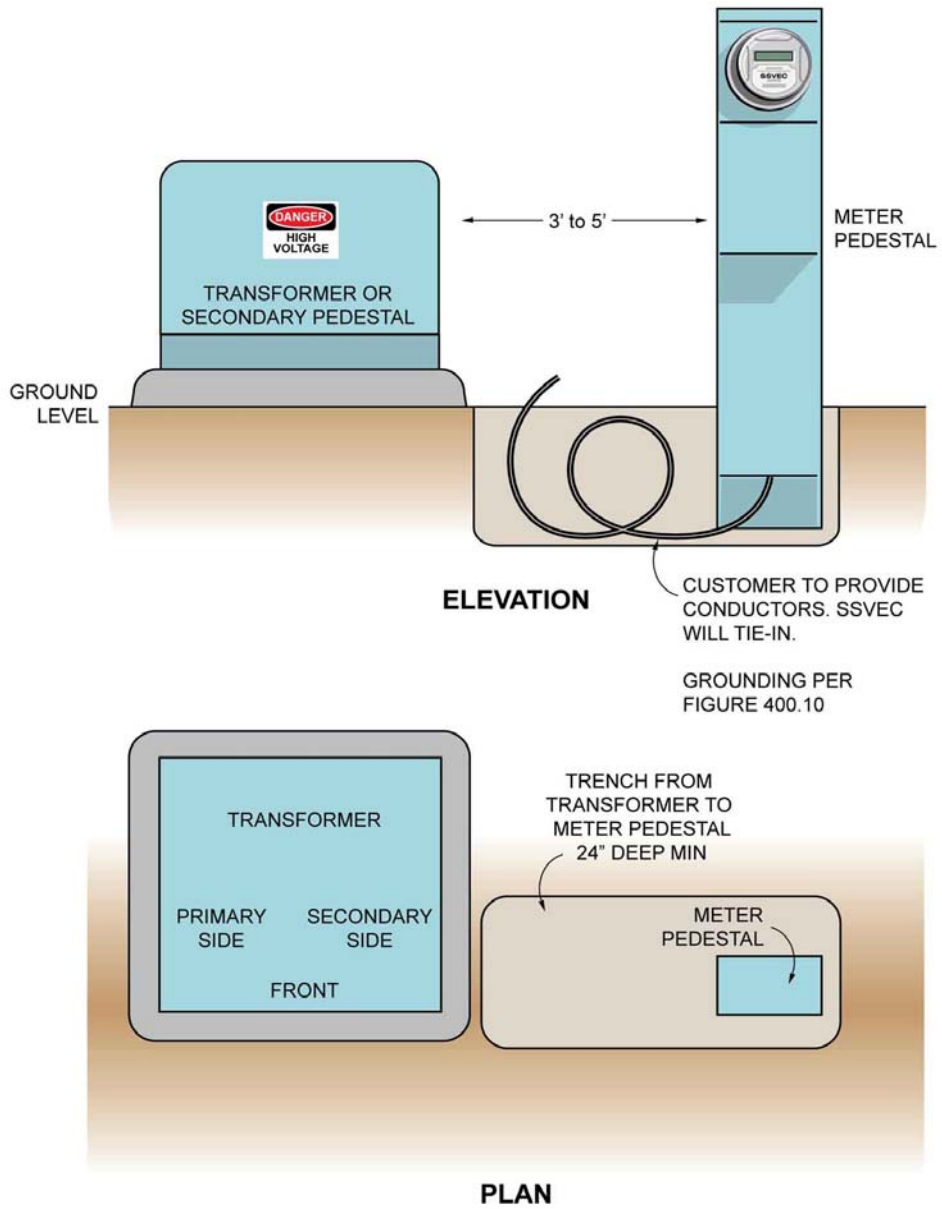


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## SECTION 800. TEMPORARY SERVICES

- 8.1 TEMPORARY SERVICE ENTRANCES: Temporary service entrances shall meet the same requirements as permanent service entrances.
- 8.2 TEMPORARY SERVICE ENTRANCE CHARGES: The customer or contractor shall pay in advance the installation and removal cost (up and down charge) for each specific temporary service connection. This cost will be determined by the SSVEC Engineering Service Representative or Field Technicians at the Sierra Vista, Benson, or Willcox offices.
- 8.3 TEMPORARY OVERHEAD SERVICES: Temporary overhead service entrances may be mounted on an existing SSVEC power pole supplying the appropriate voltage. Customer installed poles are not allowed. Customers are encouraged to check with SSVEC Engineering prior to the installation in order to verify the adequacy of power poles for temporary use.
- 8.4 TEMPORARY UNDERGROUND SERVICES: The preferred temporary underground service equipment is an approved mobile home type meter pedestal (See Figure 800.1) of this specification. With advanced approval by SSVEC Engineering, other configurations may apply for jobsite installations.
- 8.5 For underground temporary services, SSVEC will utilize the customer's conductor, if existing and properly rated for the ampacity of the service disconnect, and tie it into the transformer or secondary pedestal. Otherwise, for an additional charge, SSVEC may furnish and install the conductors from the transformer or secondary power pedestal and make connection to the terminals in the customer or contractor furnished meter pedestal. The meter pedestal should be installed within five (5) feet of the transformer or power pedestal. The trench shall be furnished by the customer or contractor and shall not be less than twenty-four (24) inches deep.

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**FIGURE 800.2**  
**UNDERGROUND TEMPORARY SERVICE**

NOTE: COORDINATE WITH ENGINEERING SERVICE REP  
PRIOR TO INSTALLATION

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## SECTION 900 FAULT CURRENTS

### AVAILABLE SHORT CIRCUIT CURRENT AT THE TRANSFORMER

The National Electrical Code, State, County and Municipal Codes and/or Regulations require that service entrance equipment shall be suitable for the short-circuit current available at its supply terminals.

It is the responsibility of the Customer to install service entrance equipment and protective devices (fuses or circuit breakers) capable of interrupting and withstanding the available fault current.

Table 900.1 illustrates standard interrupting and bracing capabilities commonly manufactured in service equipment for residential and commercial applications up through 400 amps. These  $A_{IC}$  ratings represent minimum interruption and bracing capabilities to be provided by the customer in the service equipment. The ratings are typically within the short-circuit limits of any standard SSVEC transformer utilized for service applications. In some cases where a transformer feeds or will feed more than one section, the utility contribution at the delivery point may exceed the stated value.

Customers should consult qualified SSVEC Engineering Department personnel for the available fault current **for multiple services and for services over 400 amps**, specific to the design of the actual SSVEC distribution system which will serve them. Actual fault current values are based on an infinite bus calculation at the transformer.

The Customer's load shall not exceed the power quality impact described in IEEE-519, Recommended Practices and Requirements for Harmonic Control in Electric Power Systems.

**TABLE 900.1**

### MINIMUM SERVICE EQUIPMENT SHORT CIRCUIT CAPABILITIES

SERVICE EQUIPMENT AMPERAGE	SERVICE EQUIPMENT VOLTAGE	PHASE	TYPICAL SSVEC TRANSFORMER SIZE	$A_{IC}$ RATING
60 - 125	240	1	10 kVA – 25 kVA	10,000
125 - 200 RESIDENTIAL & COMMERCIAL	240	1 & 3	15 kVA – 25 kVA	22,000
320 - 400 RESIDENTIAL & COMMERCIAL	240	1 & 3	25 kVA – 37.5 kVA	22,000
100 - 400	480	1 & 3	10 kVA – 50 kVA	14,000

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## SECTION 1000. MOTOR START REQUIREMENTS

### 10.0 GENERAL MOTOR LOAD (0-500 HORSEPOWER / 0-600 volts) (compare to Exhibit H as filed with the ACC effective 9/1/2009)

#### 10.1. GENERAL REQUIREMENTS

**Note: Before any motor installation larger than 50 HP is planned qualified personnel in the Engineering Department should be consulted.**

10.1.1. To assure all customers of uniform, well regulated service, it is necessary that the following motor requirements and general information be adhered to for installations on SSVEC lines.

10.1.2. Abnormal loads are those requiring non-standard voltages, or three phase motors 200 HP or larger, or single phase motors larger than 10 HP, or single phase to three phase converters, or intermittent loads (large welders, electric furnaces, elevators), or other requiring non-standard service characteristics. SSVEC may at its option extend service to an abnormal load.

10.1.3. Motors and equipment can have special load requirements that cause excessive voltage/current and harmonic changes to SSVEC's system. When SSVEC must install special equipment to protect against SSVEC system problems caused by the Customer's equipment, the Customer shall pay the excess costs.

10.1.4. SSVEC reserves the right to inspect and test all motors and other devices and equipment which are owned by the Customer and which are, or shall be, connected to SSVEC's lines.

#### 10.2. PROTECTION OF MOTORS AND OTHER EQUIPMENT

10.2.1. Under/Over voltage, overload, phase failure (single phasing), phase reversal, power interruptions and short circuit protection is strongly recommended for each motor installation.

10.2.2. It is the customer's responsibility to provide adequate protective equipment to protect the customer's equipment from high or low voltage, Phase loss or reversal or any unusual condition.

10.2.3. SSVEC will not be responsible in any way for damage to Customer's equipment due to failure of the Customer to provide adequate protective devices, or due to any failure of such devices.

#### 10.3. VOLTAGE FLUCTUATION LIMITS

10.3.1. High starting (locked-rotor) currents create voltage dip which may cause objectionable light flicker and problems operating other equipment. The voltage dip shall not exceed 4% and must be maintained within tolerable limits.

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10.3.2. Voltage dip caused by the Customer's equipment in excess of these limits may require SSVEC to disconnect the Customer's service until corrective action is taken by the customer to the satisfaction of SSVEC.

10.3.3. In addition to complying with starting requirements, running motors with fluctuating loads shall not cause excessive voltage fluctuations.

### 10.4. MOTOR STARTING

#### 10.4.1. Single-Phase Motors

10.4.1.1. Below 10 HP: Do not require reduced voltage/current starters.

10.4.1.2. 10 HP or Larger: Considered an abnormal load and may be extended service at SSVEC's option. SSVEC engineering will determine on a case by case basis if motor may be extended service. Will require reduced voltage/current starting.

10.4.1.3. Written Pole Motors up to 60 HP: Reduced voltage/current starting limits current at no more than 50% of locked rotor values. SSVEC engineering will also need to determine if motor may be extended service.

10.4.1.4. Will be limited to 60 HP maximum on SSEVC service.

#### 10.4.2. Three-Phase Motors

10.4.2.1. Up to 60 HP: Do not require reduced voltage/current starters.

10.4.2.2. 61-150 HP:

10.4.2.2.1. Reduced Starting Requirements (Use one of the following starting methods)

- Primary Resistor or Reactor: For resistor starting, resistor shall be sized to limit starting currents to no more than 60% of locked rotor current.
- Autotransformer: Required 50% tap
- Wye-Delta
- Solid-State (soft start): Required 50% or less of starting current setting.
- Part Winding motor may be considered if starting current is limited to 60% (typical range is 60%-75%) of locked-rotor. SSVEC engineering will determine if service can be extended on a case by case basis.

10.4.2.3. 151-499 HP

It is preferred for these motors to utilize a **soft start** set at 50% or less of normal starting current, plus a SSVEC engineering study to determine the expected voltage dip to determine soft start settings. Other reduced starting methods may be considered for these motors once the engineering study has

## **SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE**

been completed. Motors 200 hp or larger are considered abnormal loads and may be extended service at SSVEC's option.

### 10.4.2.4. 500 HP or Larger

10.4.2.4.1. Customer will need to provide engineered design. Design should include at a minimum a one-line diagram, load information, and motor starting information.

10.4.2.4.2. Engineered design must be signed by an Electrical Engineer with a State of Arizona P.E. license.

10.4.2.4.3. Design must be approved by SSVEC engineering before Customer can proceed with project.

10.4.2.4.4. If after installation, voltage dip limits are exceeded, the service will be disconnected until corrective action is taken by Customer to the satisfaction of SSVEC.

## **10.5. VARIABLE FREQUENCY DRIVES—1Ø to 3Ø CONVERTER REQUIREMENTS**

### 10.5.1. Variable Frequency Drives

10.5.1.1. The Customer's load shall not exceed the power quality impact described in IEEE-519, Recommended Practices and Requirements for Harmonic Control in Electric Power Systems.

10.5.1.2. The customer shall be responsible to make sure the installation complies with the guidelines set forth in IEEE-519 as measured at the point of common coupling (PCC). At the very least, if the Customer is unable to verify performance, the Customer shall install one of the following at Customer's expense:

- 6-Pulse Drive w/5% Line Reactor
- 6-Pulse Drive w/3% DC Link Choke
- 6-Pulse Drive w/drive-applied harmonic filter
- 12-Pulse Drive w/Delta-Delta drive isolation transformer.

### 10.5.2. Single-Phase to Three-Phase Converters

10.5.2.1. Considered an abnormal load and may be extended service at SSVEC's option.

10.5.2.2. The Customer's load shall not exceed the power quality impact described in IEEE-519, Recommended Practices and Requirements for Harmonic Control in Electric Power Systems.

10.5.2.3. Customer will need to provide an engineered design. Design should include at a minimum a one-line diagram, load information, and motor starting information.

## **SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE**

10.5.2.4. Design must be signed by an Electrical Engineer with a P.E. license.

10.5.2.5. Design must be approved by SSVEC engineering before Customer can proceed with project.

10.5.2.6. If after installation, voltage dip limits are exceeded, the service will be disconnected until corrective action is taken by the customer.

### **10.6. AIR-CONDITIONING UNITS (Compressor Motors)**

10.6.1. The high starting (locked-rotor) currents of the compressor motor may cause objectionable light flicker seen by the customer. In the case of Customer complaints, a three-wire Hard Start or Kickstart kit will be required by SSVEC. The Hard Start or Kickstart kit's installation and costs are the Customer's responsibility. Customers may check with a local HVAC dealer for information on Hard Start or Kickstart kits.

10.6.2. If light flicker still persists after the Hard Start or Kickstart installations, SSVEC will take corrective action if the voltage at the Customer's meter extends into Range B voltage, set forth by ANSI/IEEE standards.

### **10.7. SERVICE ENTRANCE REQUIREMENTS FOR MOTOR LOADS**

10.7.1. Customer to Supply Motor Nameplate Information to SSVEC Engineering

- **HP**- Horsepower
- **RPM** - Speed
- **DES.** – Design Letters (describes motor torque characteristics)
  - A for Low
  - B for medium
  - C for special
  - D for high with high slip
- **CODE** – NEMA locked-Rotor Code letter. Ex:G is for KVA/HP 5.6 to 6.3
- **VOLT** - Voltage rating Example: 208-230/460
- **FLA.** – Full load Amp rating. Example: 24- 21.6/10.8
- **FLEF** – Full load efficiency
- **FLPF** – Full load power factor

#### **10.7.2. MAIN DISCONNECT (SSVEC REQUIRES A SINGLE MAIN DISCONNECT—SEE 4.3.1)**

10.7.3. **DETERMINATION OF SERVICE ENTRANCE AMPACITY:** The service entrance ampacity shall be 125% of the single motor ampacity determined from the National Electrical Code (NEC) but not less than 60 amperes.

To determine the service entrance ampacity of multiple motor loads, see the NEC Article 430. The service disconnect may be larger, but not smaller than the required minimum ampacity.

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10.7.4. **OVER-CURRENT PROTECTION:** All installations under this specification shall have a running overload protection device such as a trip coil, relay or thermal cutout installed in all ungrounded conductors unless there is such a device integral with the motor being protected.

### 10.7.5. **METERING REQUIREMENTS:**

10.7.5.1. **METER GROUNDING:** All motor frames shall be grounded by a copper equipment grounding conductor, run in the same raceway with the non-grounded conductors. The equipment grounding conductor shall be connected to the grounded conductor and shall be no smaller than allowed by the National Electrical Code.

The point that the equipment grounding conductor fastens to the motor frame shall be made with a connector designed and suitable for the purpose.

### 10.7.5.2. **0 THROUGH 125 HORSEPOWER:**

- **Meter Socket.** An SSVEC approved 7-jaw meter socket with a bypass and continuous ampacity rating at least equal to the ampacity required of the rest of the service entrance, shall be furnished and installed by the customer or contractor.
- **Position Of Power Leg.** On three-phase four wire delta services the power leg shall be connected to the right hand meter base terminals.
- **Grounded Conductor Size.** The grounded conductor may be reduced in size from that of the ungrounded conductors, but may be no smaller than allowed by the National Electrical Code.

### 10.7.5.3. **126 THROUGH 200 HORSEPOWER:**

- **Current Transformer Enclosure (CT can) Required.** Service entrances for motors of 126 through 200 horsepower shall use an approved raintight current transformer enclosure, which shall be furnished and installed by the customer or contractor. The approved enclosure for this specification shall be equivalent or superior to Circle A W or Milbank Products, 36" x 42" x 11" N3R CT, with a Beeline mounting base 6067-A, or equivalent, installed along with bi-metal supply termination lugs with an upward range of 350 kCMIL.
- Please note that 3" hub is the largest factor type hub available for these boxes. Where a larger hub is needed, a rain-tight knockout type hub shall be used.
- **Grounded (Neutral) Conductor Size.** The grounded conductor may not be reduced in size from that of the ungrounded conductors.



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- If significant size load is to be connected to ground, neutral size shall be increased accordingly. Current transformer enclosures served from underground shall be equipped with a neutral termination block.
- **Meter Socket and Enclosure.** The meter socket and enclosure and potential transformer enclosure (if required) will be furnished and installed by SSVEC.

### 10.7.5.4. 201 THROUGH 500 HORSEPOWER:

- **Current Transformer Enclosure (CT Can) Required.** The approved current transformer enclosure for this specification shall be equivalent or superior to Circle A W or Milbank Products, 36" x 48" x 11" N3R CT (UL Standard 414), with a raintight hub through the top on overhead services. When served by underground conductors, the transformer enclosure shall be equipped with a neutral termination block.
- **Meter Socket and Enclosure.** The meter socket and enclosure and potential transformer enclosure will be furnished and installed by SSVEC.
- **Grounded (Neutral) Conductor Size.** The grounded conductor may not be reduced in size from that of the ungrounded conductors.

### 10.7.5.5. MOTOR LOADS LARGER THAN 500 HORSEPOWER:

**Special Case.** Motor loads larger than 500 horsepower may be served on a special case basis. The customer shall consult qualified personnel in the Engineering Department before designing the installation.

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE

## SECTION 1100. CO-GENERATION AND UTILITY INTERCONNECTION

### 11.1 Types of Installation

- A traditional standby generator with a transfer switch that **will never parallel** with our system.
- A new system involving solar, wind, traditional generator, or any combination thereof that has the capability of operating in parallel with our system and installed on an existing service.
- A previously stand-alone generation system that will connect to the grid and installed on a new service.

### 11.2 Installation Procedure Summaries

#### 11.2.1 Standby Generators That Will Never Parallel Our System

- There are three main requirements for standby generators.
  - They must have an open (break before make) transfer switch (See Figure 1100.1).
  - The transfer switch must be UL approved.
  - The entire installation must be NEC compliant and meet local codes as required.
- The following information shall be forwarded to the designated Distributed Generation Engineer (DGE) at SSVEC.
  - Make and model of the transfer switch;
  - SSVEC Facility ID# or Location # of the service the generator will connect to.
- Any generator/system that varies from these requirements must obtain written permission from the DGE or other qualified SSVEC personnel.

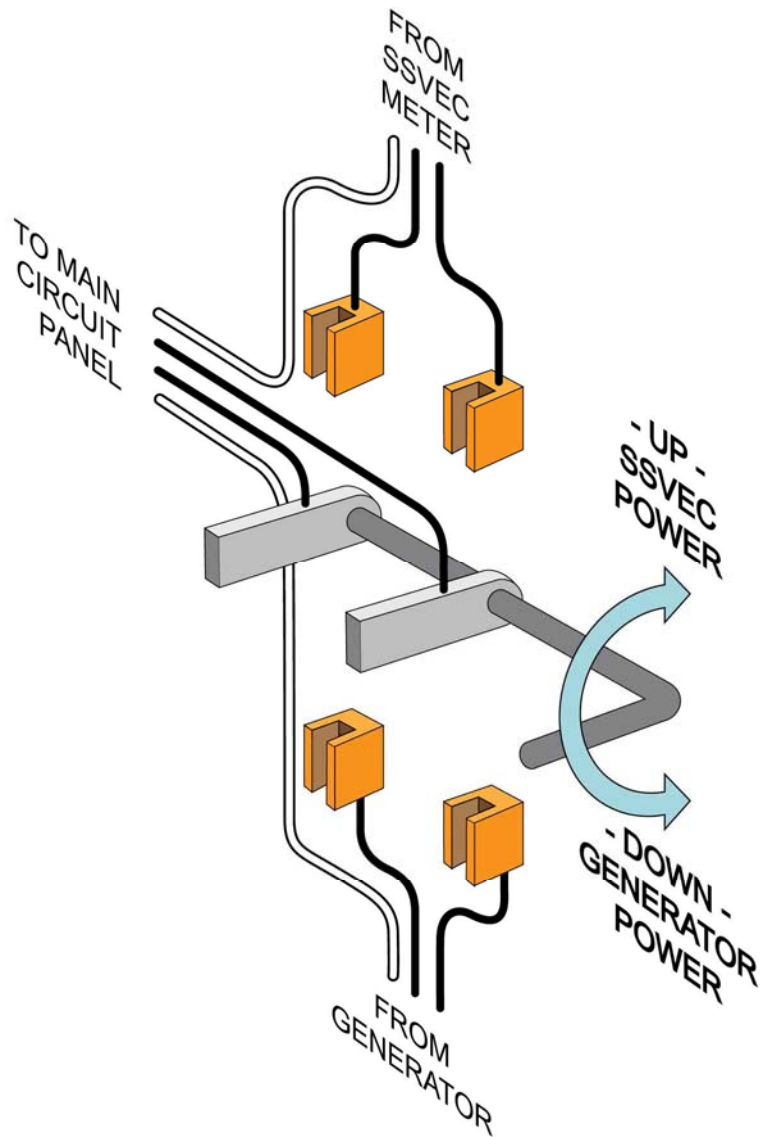
#### 11.2.2 New Systems on Existing Services

Contact SSVEC for the appropriate specifications and procedures prior to designing and connecting new distributed-generation or co-generation units.

#### 11.2.3 Old DG system on a New Service

Converting an existing stand-alone system to tie to the grid can be very complicated. These installations are usually not designed to connect to the grid, so the system will probably need to be reworked to accommodate the connection. **If not connected properly, these systems present a potential safety hazard** and can back-feed onto the SSVEC distribution system. Contact SSVEC for the appropriate specifications and procedures prior to designing and connecting new distributed-generation or co-generation units.

# SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE



**FIGURE 1100.2  
MANUAL ISOLATION (TRANSFER) SWITCH**