



REQUIREMENTS FOR CUSTOMER-OWNED POLES

025055

Asset Type: Electric Distribution	Function: Construction
Issued by: C. A. Partridge (CAP4) <i>C.A. Partridge</i>	Date: 07-01-14

Rev. #13: This document replaces PG&E Document 025055, Rev. #12. For a description of the changes, see Page 15.

This document is also included in the following manuals:

- [Electric and Gas Service Requirements Manual](#) (Greenbook)
- [Electric Meter Work Practices](#)

Purpose and Scope

Equipment installed on service poles as shown in this document will also meet the requirements of the California Building Standards Code - Electrical Regulations. These requirements have been established by the state of California in the interest of safety to the public and to workers, and are applicable to all customer-owned service poles. PG&E cannot establish service to poles that do not meet these minimum requirements. The maintenance of customer-owned service poles in conformity with these requirements is the sole responsibility of the customer.

Local ordinances may include wiring requirements in addition to those shown in this document. Consult local inspection authorities for these requirements and for city or county permits and inspections that may be required before service can be connected.

References	Location	Document
Dead-End Attachments for Service and Street Light Drop Cables	ELS	015009
Methods of Attaching Services to Customers Premises	OH: Services	025202
Dead-End and Angle Attachments for Aluminum Conductors - Distribution Lines	OH: Conductors	028851
Connectors for Aluminum Conductors on Distribution Lines	OH: Conductors	028852
Temporary Underground Electric Service Single-Phase, 120/240 Volt 100 Amps Maximum ..	UG-1: Services/Greenbook	036670
Conductors for Overhead Lines Overhead and Underground	OH: Conductors	059626
Panel Board Construction	OH Services/UG-1 Services/Greenbook	065374
Engineering Material Specification #57 "Preservative Treated Wood Poles, Stubs, and Anchor Logs for Overhead Lines"	TIL	EMS57
Utility Standard TD-2325S, "Wood Pole Inspection, Testing, and Maintenance"	TIL	TD-2325S

Temporary Service Pole Installation

1. The use of temporary service poles must be restricted to installations of a temporary nature, such as building construction, temporary sales locations, etc., where the period of service is estimated to be 1 year or less.
2. Temporary service poles must be furnished and installed by the customer and may be wooden or metallic. The minimum length must be 20 feet (set 4 feet in the ground). A longer pole may be necessary to provide the required clearance from the ground (see Note 9 on Page 3) or to supply the customer's overhead line (see Figure 3 on Page 7).
3. A temporary, wood service pole may be rectangular or circular in cross section and must be solid (not laminated). Rectangular poles must have a minimum cross section of 6" x 6" nominal; circular poles must meet the requirements for permanent service poles specified in Note 7 on Page 2 except that the minimum length may be 20 feet providing the required clearances are maintained.

Requirements for Customer-Owned Poles

4. The butt of the temporary, wood service pole must at least be painted with creosote or other approved preservative. However, it is recommended that these poles be full-length treated with a suitable preservative in order to obtain the maximum useful life of the pole and to provide increased safety to workers and to the public. The permanent service pole specified in Note 6 below is approved for temporary installations. It will usually be the more economical pole for repeated use.
5. A metal pole may be used for temporary service provided its strength is at least equivalent to the wood service poles specified in Note 3 on Page 1 and provided its base or foundation is designed to provide at least an equivalent resistance to overturning when set at the same depth. The use of 4-inch extra-strong steel pipe (Schedule 80), set in concrete to obtain equivalent bearing surface, or the use of a 5-inch standard steel pipe (Schedule 40), set directly in the ground, will meet these requirements.

Permanent Pole Installation

6. A permanent wood or metal service pole must be used when it is estimated that the installation will remain for a period longer than 1 year. Permanent wood service poles, as specified in Note 7, must be furnished and installed by the customer. PG&E will, however, furnish and install the pole (wood or metal) exclusive of wiring and service entrance equipment, at the customer’s expense, if the customer is unable to have the pole installed by a private contractor.
7. Customer Owned Wood Poles:
 - A. Customer-owned, permanent wood poles must meet all pertinent requirements of ANSI O5.1.2008, “Wood Poles – Specifications and Dimensions,” and American Wood Protection Association Standards T1-10 and U1-10, as modified or described in [Engineering Material Specification 57, “Preservative Treated Wood Poles and Stubs for Overhead Lines.”](#)
 - B. Approved pole suppliers and treatments are shown in Table 1 and Table 2 of this document.
 - C. **Before** setting the pole(s), the customer/contractor must notify the local PG&E inspector who will look at the pole(s) to verify that they meet the requirements stated within this note (Note 7).
 - D. Customer-owned, permanent wood poles must be of circular cross section, minimum Class 6, with a minimum length of 25 feet (4-1/2 feet in the ground). A longer pole may be necessary to obtain the required clearance from the ground. Consult PG&E before ordering. Exception: minimum length may be 20 feet providing the required clearances are maintained.
 - E. The pole brand must remain visible at all times. The customer-owner shall not install the main service switch meter socket box, or conduit runs over the brand.
 - F. Used poles may be installed provided they are inspected and accepted by PG&E **before** installation.
 - G. Applicants must obtain a certificate of treatment or a letter from a supplier indicating that the pole was treated in accordance with the American Wood Protection Association (AWPA) and ANSI requirements. PG&E should receive a copy of this certificate before accepting the pole.

Table 1 Approved Suppliers for Permanent Wood Poles (Table 3, Item 2 on Page 5) ¹

Service Poles 35 Feet and Shorter:	
Koppers	Pacific Wood Treating of Oregon
McFarland Cascade	Thunderbolt Wood Treating
Nevada Wood Preserving	
Distribution Poles Taller than 35 Feet:	
McFarland Cascade (Tacoma, WA. or Eugene, OR. Yards only)	

¹ Service poles are sold to lumberyard/hardware companies.

Table 2 Approved Service Pole Treatments ¹

Species	Treatment			
	Penta-A Pressure (Oil-Penta)	ACZA	Creosote	CCA
Western Red Cedar	X	X	X	X
Douglas-Fir	X	X	X	-

¹ All poles must be full-length treated, except Western Red Cedar may be butt treated with oil pentachlorophenol.

Requirements for Customer-Owned Poles

8. A metal pole may be used for permanent service provided its size and strength are at least equivalent to the wood pole described in Note 7, and provided its base or foundation is designed to provide at least equivalent resistance to overturning when set at the same depth. The following are some poles that will meet these requirements:
- A. An 11-gauge steel pole with 8-1/2-inch minimum diameter at ground line, set directly in the ground.
 - B. A 7-gauge steel pole with 7-inch minimum diameter at ground line, set directly in the ground.
 - C. A 5-inch extra-strong steel pipe (Schedule 80) set in concrete to obtain equivalent bearing surface.
 - D. A 6-inch standard steel pipe (Schedule 40) set in concrete to obtain equivalent bearing surface.

All steel permanent metal poles must be galvanized.

Vertical Clearance for Service Poles

9. Conductors to service poles must have a minimum ground clearance as follows:
- A. Over the center portion of the street, 18' 0" minimum. For conductor height over trolleys, railroad tracks, telephone lines, etc., consult PG&E.
 - B. At the curb or outer limits of possible vehicular traffic, 16' 0" minimum.
 - C. Over private driveways, lanes, or other areas accessible to vehicles used for industrial, commercial, or agricultural purposes, 16' 0" minimum.
 - D. If required clearances cannot be obtained with a minimum-length service pole and the constructions illustrated on Pages 7 through 9, the required clearances should be obtained by using a longer pole. The setting depth for a 25-foot and longer pole must be as specified in Table 5 on Page 6.

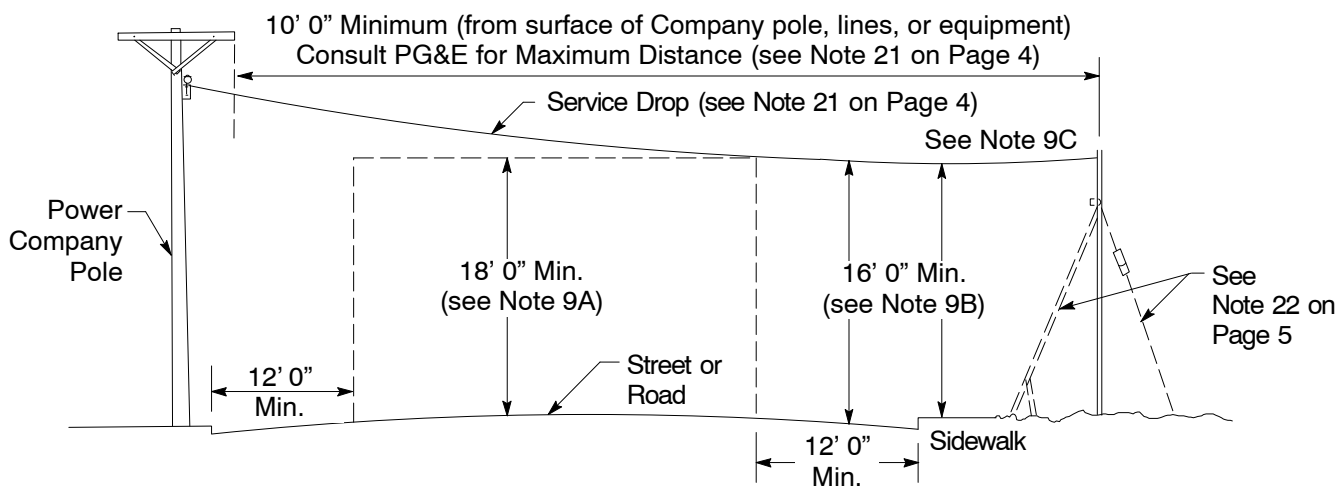


Figure 1
Clearances for Service Poles

Service Entrance Conductors

- 10. The customer must furnish, install, and maintain the service entrance wiring and service equipment beyond the point of attachment to PG&E's service wires. The service entrance wires must be continuous and must be of a size and type that will provide not less than the minimum standard of safety as specified in local city and county ordinances or, where there is no local ordinance, as specified in the current issue of the National Electrical Code (NEC).
- 11. The neutral conductor of 2-wire, 120 V and 3-wire, 120/240 V (or 120/208 V) services must be securely connected to the neutral terminal of the meter socket and extended through to the neutral terminal of the service entrance switch. It must be continuous (without splice) from the service head to the service entrance switch.
- 12. At least 18 inches of service entrance conductors must be provided outside the service head.
- 13. Weatherproof wire is not permitted in conduit.

Service Entrance and Load Side Conduit and Conduit Covering

14. Service entrance and load side conduit and conduit covering requirements must comply with applicable codes and local requirements. [G.O. 95](#) requires that any conduit installed **below** the 8-foot level on the pole must be treated as a riser; in which case, the conduit must be either rigid galvanized steel or 2-inch minimum diameter Schedule 40 PVC.

Exception: Conduit that enters the top of an enclosure is considered to be “protected” by the enclosure and need not be treated as a riser unless installed below the 6-foot level. Conduit installed above the 6-foot or 8-foot level (whichever height applies) must be either: (1) galvanized rigid steel conduit, (2) rigid aluminum conduit, (3) electrical metallic tubing, (4) IMC, or (5) PVC plastic conduit having a minimum wall thickness of 0.15 inches (Schedule 40 for 2-inch PVC conduit or larger, Schedule 80 for 1-1/2-inch or smaller). All fittings must be rain-tight. If PVC plastic conduit is used, it need not be covered. If rigid steel or other approved metallic conduit is used, it must be enclosed with PVC “U” shaped molding for a minimum distance of 8 feet below the lowest open service entrance conductor. The covering must be fastened to the pole at intervals not greater than 3 feet (see Page 10).

15. Wood Block:

A. A wood block must be attached directly over the service head in the following situations:

- (1) On a service pole where electrical metallic tubing, rigid steel, or IMC is used.
- (2) On a wood pole with plastic conduit installation when the service head is metallic and the neutral service entrance conductor is not insulated.

B. A wood block over the service head is not required in the following instances:

- (1) On a service pole with plastic conduit installation except as noted in Note 15, A. above.
- (2) On a metallic pole, provided the pole is effectively grounded and provided all metallic conduits are adequately bonded to the metal pole with approved clamps or connectors.

C. Attach wood blocks as shown on Pages 7 through 9.

16. All conduit and fittings must be rain-tight.

17. Water pipe and fittings are not permitted for use as electrical conduit.

Service Entrance Switch

18. Main switch, receptacles, and other equipment on the load side of the meter must be of weatherproof design or protected by weatherproof enclosures. Such equipment must comply with local ordinances and must also comply with the California Building Standards Code - Electrical Regulations.

19. The switch cover must be locked if the enclosure contains exposed live parts.

Grounding

20. The customer must be responsible for bonding and grounding all exposed, non-current-carrying metal parts. Grounding must be in accordance with NEC and local ordinances, except that the grounding wire must be protected against mechanical damage by rigid steel conduit or armored copper ground wire (see Pages 7 and 9 for details).

Pole Location

21. Poles must be located so that the vertical clearances specified in Note 9 and Figure 1 on Page 3 can be obtained. A service pole must not be located less than 10 feet from the surface of the PG&E pole, or pole-mounted equipment, or within 10 feet of the vertical plane of a PG&E line.

PG&E must be consulted for maximum span lengths, as they can vary depending on wire type and size, loading area, clearances, and suitable guying. The maximum span length of PG&E’s service drop to a temporary pole must not exceed 100 feet, and if 4/0 conductor is necessary, not more than 80 feet. The maximum span length for a permanent type installation may vary from 80 feet to 150 feet upward depending on the variables mentioned.

The pole must also be positioned so that the pole brand will not be hidden by the main service switch, meter socket box, or conduit runs.

Requirements for Customer-Owned Poles

Guying or Bracing

22. Where conductors cross a street or road, the customer's pole must be guyed or braced against the pull of conductors as follows:
- A. Temporary Poles: Anchor guy as shown in Figure 13 on Page 11, or with wood braces not smaller than 2" x 4" timber and securely bolted to the pole as per Figure 14 on Page 11. See Figure 2 on Page 7 for the correct placement of guy or brace.
 - B. Permanent Service Poles: Anchor guy only as shown in Figure 13 on Page 11. See Figure 5 on Page 9 for the correct placement of guy.
 - C. The guy strain insulator is to be located in a zone: 8 feet or more above the ground; and 8 feet or more below the level of the lowest supply conductor, or 6 feet or more from the surface of the pole and 1 foot or more below the level of the lowest supply conductor.

Metering Requirements

23. Meters must be furnished by PG&E.
24. For residential installations, meter sockets without test bypass facilities must be furnished, installed, and wired by the customer as shown on Page 11.
25. For commercial and industrial applications, meter sockets with PG&E-approved test bypass facilities must be furnished, installed, and wired by the customer. Excepted from this test-bypass requirement are single-phase installations with a standard delivery voltage less than 300 V and a meter switch rating 200 amps or smaller where short interruptions of service are acceptable to the customer for testing and maintenance of the meter by PG&E. This configuration is limited to temporary power and exclusively nighttime loads such as parking lots, tennis courts, etc.
26. Customer-owned poles are limited to only one meter panel rated 320 amps or less. Two or more meter panels or a meter panel rated greater than 320 amps must be installed on panel board construction as shown in [Document 065374](#).

Table 3 Materials to Be Furnished and Installed by the Customer

Item	Description
1	Pole, 6" x 6" Timber, Class 6 Round, or Equivalent Metal (length as required, see Note 2 on Page 1)
2	Pole, Wood, or Equivalent Metal (see Note 6, Note 7, and Note 8 on Page 2). (See Table 1 on Page 2 for approved list of wood pole suppliers.)
3	Meter Socket, Main Service Switch
4	Conduit, Service (see Note 14 on Page 4)
5	Conduit, Load Side (see Note 14 on Page 4)
6	Conduit Fitting, Threaded, With Cover and Gasket
7 ¹	Covering, PVC Conduit, or PVC Moulding (see Page 9)
8 ¹	Wood Block (4" x 4" x 6" or two 2" x 4" x 6" nailed together)
9	Service Head
10	Service Knob
11	Wire, Insulated (size as required) (18" minimum extension from service head)
12	Eyebolt, 5/8", Length (as required), Galvanized
13	Washer, 2-1/4" Square for 5/8" Bolt Size, Galvanized
14	Padlock, for Main Service Switch
15	Guy Cable, 1/4" Minimum Galvanized Steel or Equivalent, With Guy Strain Insulator (10,000 lbs. minimum), Anchor and Fittings (see Page 11 for details of anchor and brace), and Guy Marker
16	Push Brace, 2" x 4" Minimum Timber (securely bolted to pole)
17	Grounding by Customer (see Pages 7 and 9)

¹ Omit conduit covering, Item 7, and wood block, Item 8, on a metal pole or on a wood pole with plastic conduit (see Note 15 on Page 4). **Exception:** The wood block is required for a wood pole with plastic conduit when the service head is metallic and the neutral service entrance conductor is uninsulated (see Note 15 on Page 4).

Requirements for Customer-Owned Poles

Table 4 Materials to Be Furnished and Installed by PG&E

Items	Description	Document
18	Meter, Watthour (as required)	-
19	Service Wire (as required)	059626
20	Insulator, for Service Wire (as required)	025202
21	Connectors, Service Sleeve (as required)	028852
22	Preformed Grip, Dead-End (as required)	028851
23	Rack, Extended	015187
24	Spool and Clevis	022439

Table 5 Pole Setting Depths

Pole Length (feet)	Setting Depth (feet)	
	Firm Soil	Rock
25	4-1/2	3
30	5	3
35	5	3-1/2
40	5-1/2	3-1/2
45	6	4

Table 6 Customer's Weatherhead Location ¹

Panel Rating (amps)	Minimum Distance From Top of Pole (inches)
< = 225	16
226-400 (1-Phase)	32
226-400 (3-Phase)	40

¹ All open wire services require extended rack construction. See Figure 7 on Page 10 and Figure 4 on Page 8.

Requirements for Customer-Owned Poles

Temporary Installations

Notes

1. Locate the guy in line with the service drop. The guy must be maintained taut.
2. Grounding, by the customer, must be in accordance with NEC and local ordinances, except that the grounding wire must be protected against mechanical damage by rigid steel conduit (or #8 AWG minimum armored copper ground wire may be used). The ground rod must be located no less than 12 inches from the pole surface.
3. Customer's equipment must not be installed in the climbing space or over the pole brand. See Note 20 on Page 4 for grounding requirements.
4. For customer-owned poles, span lengths are limited to 100 feet. The vertical separation between conductors in extended rack construction is 8 inches minimum.
5. If the poles are to be set in **firm** soil, use the setting depths from the "Firm Soil" column of Table 5 on Page 6. If the poles are to be set in **rock**, use the setting depths from "Rock" column of Table 5 on Page 6. If the poles are to be set in **soft** soil, the poles must be set deeper than the depths shown in Table 5. Consult the PG&E project coordinator for the other approved methods for **soft** soil.

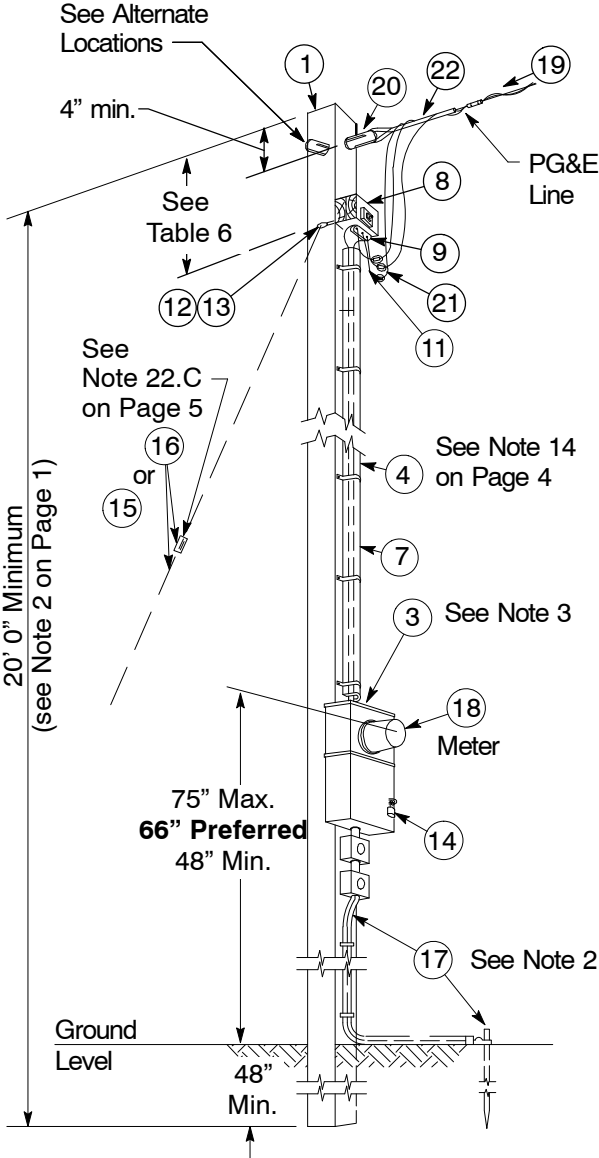


Figure 2
Service Drop Cable to Receptacles

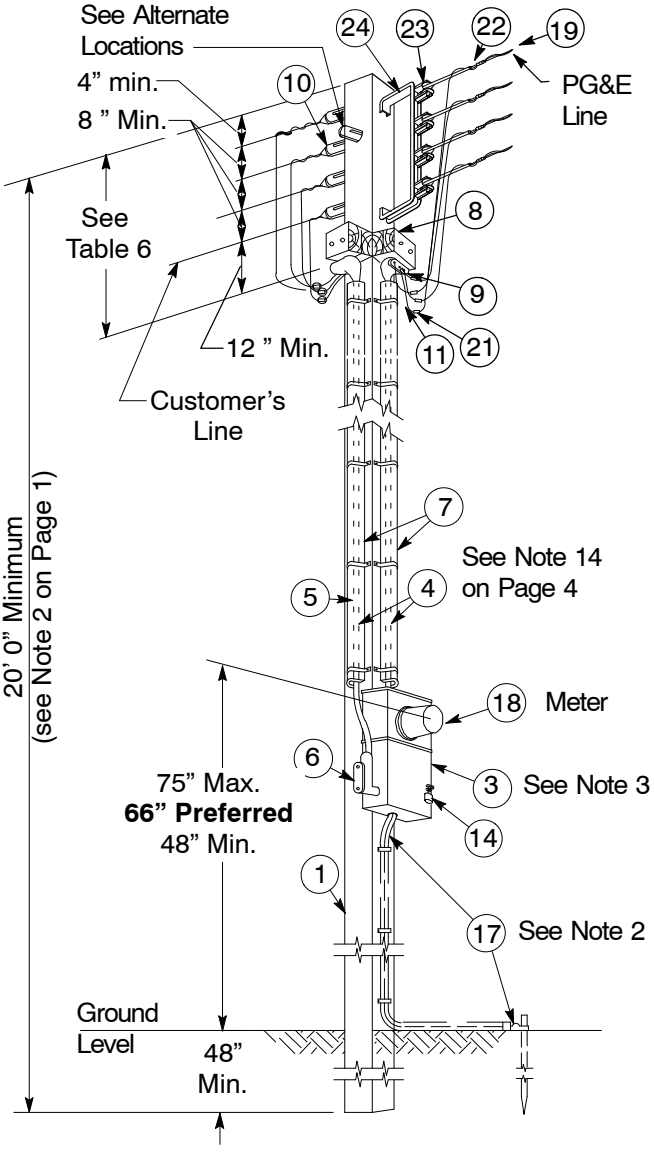
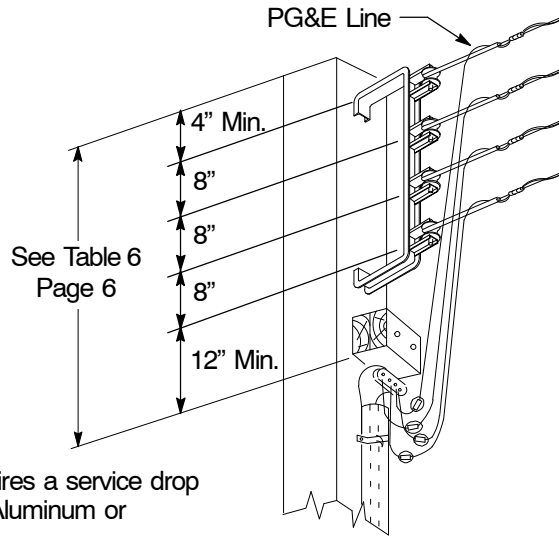


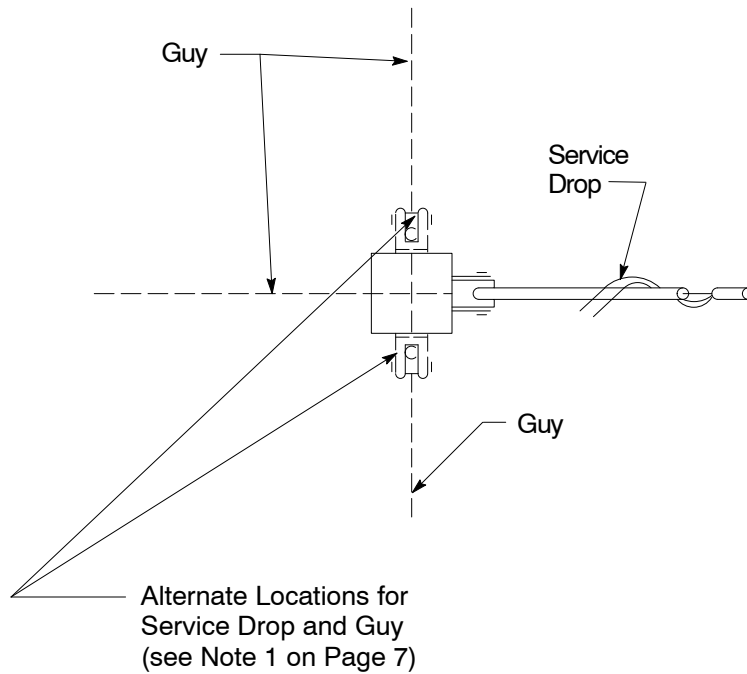
Figure 3
Service Drop Cable to Overhead Line

Temporary Installations (continued)



For use when the load requires a service drop conductor larger than #4/0 Aluminum or #4 Copper.

Figure 4
Open Wire Construction



Detail A
See Figure 15 on Page 13

Requirements for Customer-Owned Poles

Permanent Installations

Notes

1. Locate the guy in line with the service drop. The guy must be maintained taut.
2. Grounding, by the customer, must be in accordance with NEC and local ordinances, except that the grounding wire must be protected against mechanical damage by rigid steel conduit (or #8 AWG minimum armored copper ground wire may be used). The ground rod must be located no less than 12 inches from the pole surface.
3. Customer's equipment must not be installed in the climbing space or over the pole brand. See Note 20 on Page 4 for grounding requirements.
4. For customer-owned poles, span lengths are limited to 150 feet. The vertical separation between conductors in extended rack construction is 8 inches minimum.
5. If the poles are to be set in **firm** soil, use the setting depths from the "Firm Soil" column of Table 5 on Page 6. If the poles are to be set in rock, use the setting depths from "Rock" column of Table 5 on Page 6. If the poles are to be set in **soft** soil, the poles must be set deeper than the depths shown in Table 5. Consult the PG&E project coordinator for the other approved methods for **soft** soil.

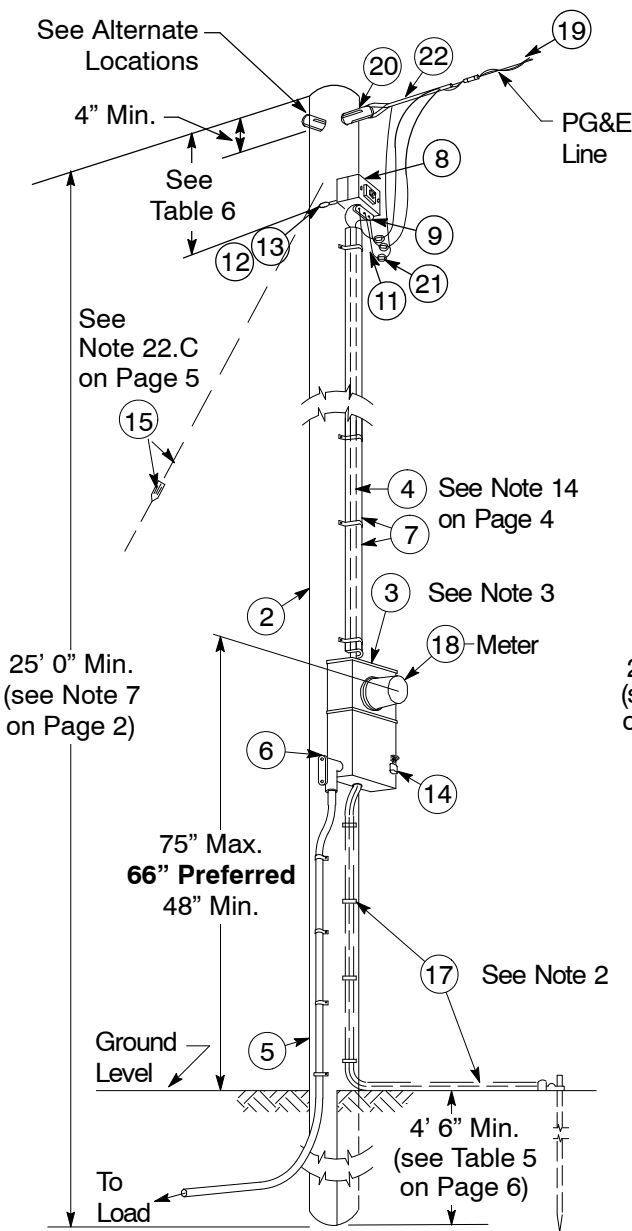


Figure 5
Service Drop Cable to Underground Line

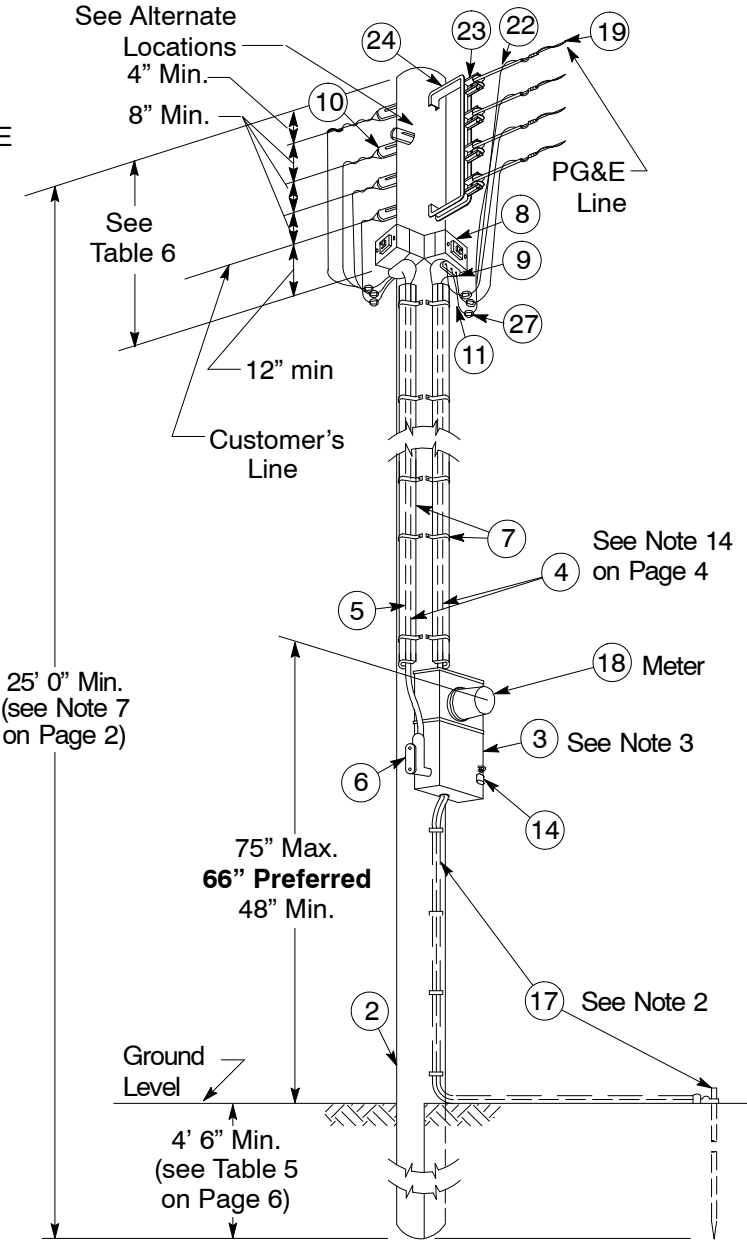
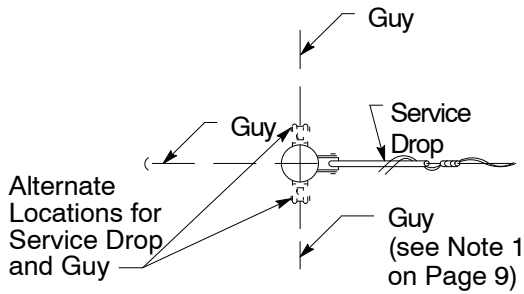


Figure 6
Service Drop Cable to Overhead Line

Permanent Installations (continued)



Detail B
See Figure 5 and Figure 6 on Page 9

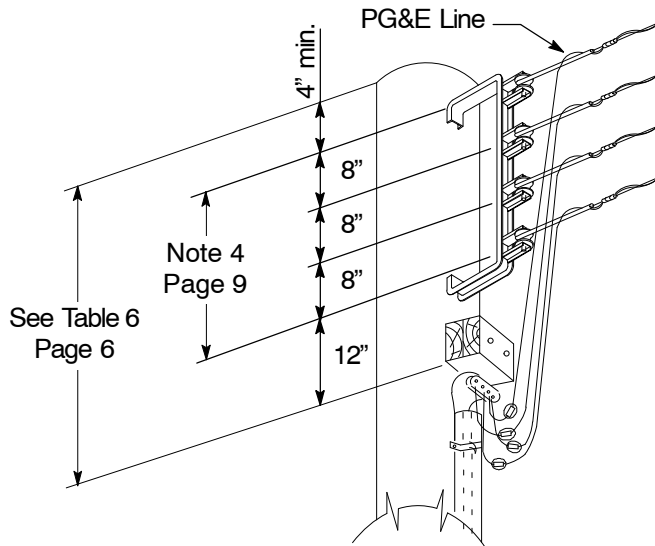


Figure 7
Open Wire Construction
(for use when the load requires a service drop conductor larger than #4/0 Aluminum)

Method of Covering Metal Conduits and Attaching Coverings on Wood Poles

Notes

1. Strap PVC conduit to the pole with pipe straps or galvanized perforated plumber's tape spaced not more than 3 feet apart (see Figure 8).
2. Attach PVC molding to the poles with 1/4" x 2-1/2" galvanized washer-head lag screws.

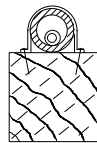


Figure 8
PVC Conduit
(see Note 1)



Figure 9
PVC Molding
(see Note 2)

Requirements for Customer-Owned Poles

Meter Connections

1. For test bypass facilities, see Note 25 on Page 5.
2. All wiring material on the load side of the meter socket must be in accordance with applicable electrical codes, city and county ordinances, and must comply with the California Building Standards Code – Electrical Regulations. Unless threaded connections are used, adequate bonding of all sections of the service equipment must be provided.

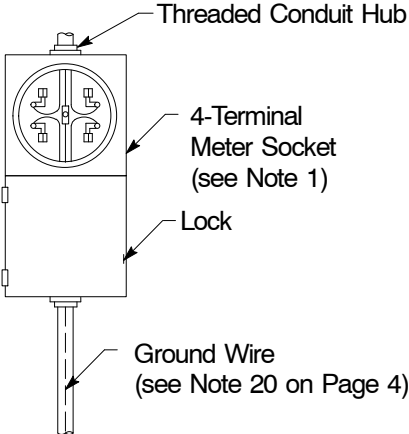


Figure 10
120/240 V, 3-Wire
With WHM, Service
Switch, and Receptacle in
Weatherproof Cabinet
(see Note 2)

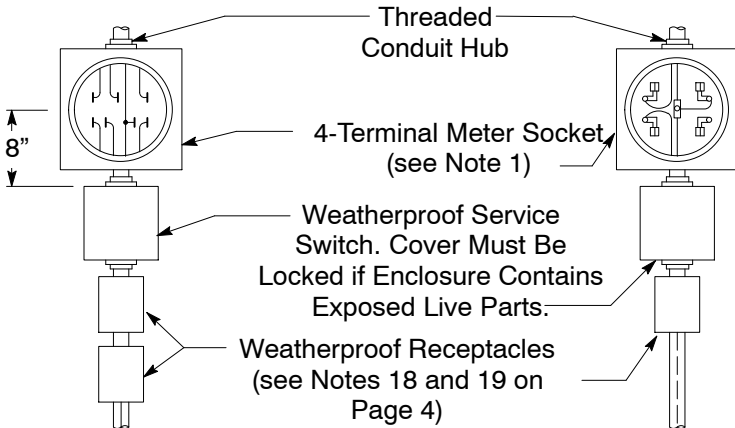


Figure 11
120/240 V, 4-Wire Delta
With Weatherproof Service
Switch and Receptacles
(see Note 2)

Figure 12
120 V, 2-Wire
With Weatherproof Service
Switch and Receptacles
(see Note 2)

Details of Anchors and Brace

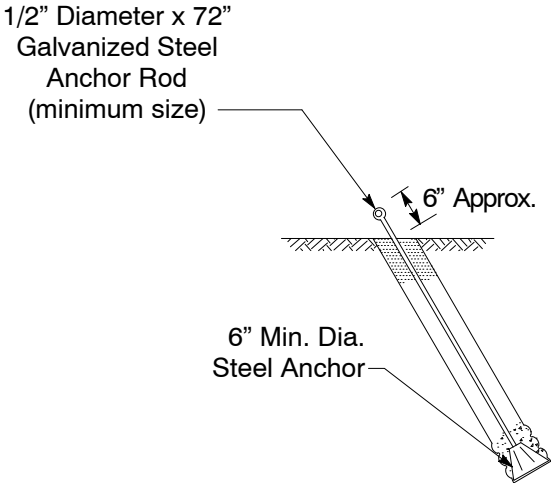


Figure 13
Steel Anchor

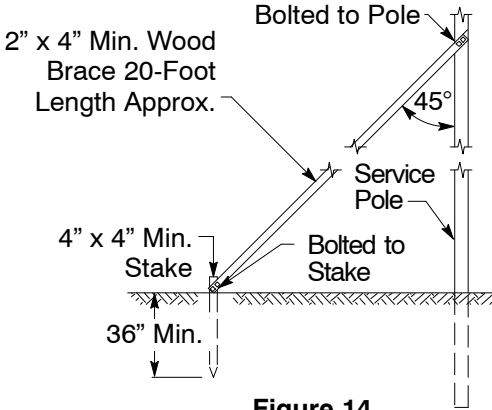


Figure 14
Wood Brace
(for use with temporary
pole only)

Temporary Commercial Service to Non-Substantial Portable Structure

Notes

1. Temporary Service Attachment

Temporary services will not be directly attached to any structure considered by PG&E to be of inadequate strength. The structure must, in all cases, be **substantial** (see Note 2) and capable of supporting the service span, as well as the force of the ladder and worker against the service mast.

2. Portable Buildings (Figure 15 on Page 13 and Figure 16 on Page 15)

Portable buildings, such as small sheds, combined office/toilet structures, etc., are not considered to be **substantial** structures unless they are staked in place in the manner shown in Figure 16 on Page 15. Furthermore, periscopes must be installed and adequately braced in accordance with Figure 16 on Page 15 and the "Electric Service: Overhead" Section of the [Electric and Gas Service Requirements Manual](#) (Greenbook).

3. Temporary Poles (Figure 15 on Page 13)

Customer-owned temporary poles are required for support of PG&E's overhead service wires if the temporary building to be served is considered by PG&E as **not substantial**.

4. Method of Serving

Non-substantial structures that have been approved for the attachment of metering equipment and service periscopes may be served in the manner shown on Page 13. However, if desired, the metering equipment may be removed from the structure and placed on the temporary pole as shown in Figure 2 on Page 7.

5. The distance from the centerline of the periscope service mast to the pole face must not exceed 24 inches.

6. A portable structure must not obstruct the climbing space of a temporary pole.

7. The working space in front of the meter must not be obstructed.

8. The minimum distance from the surface of a PG&E pole to a customer's pole is 10 feet.

9. The maximum permitted span to a PG&E pole is 100 feet and may be only 80 feet in some cases (see Note 21 on Page 4).

Requirements for Customer-Owned Poles

Temporary Commercial Service to Non-Substantial Portable Structure (continued)

10 Feet Minimum (see Note 8 on Page 12)
100 Feet Maximum (see Note 9 on Page 12)

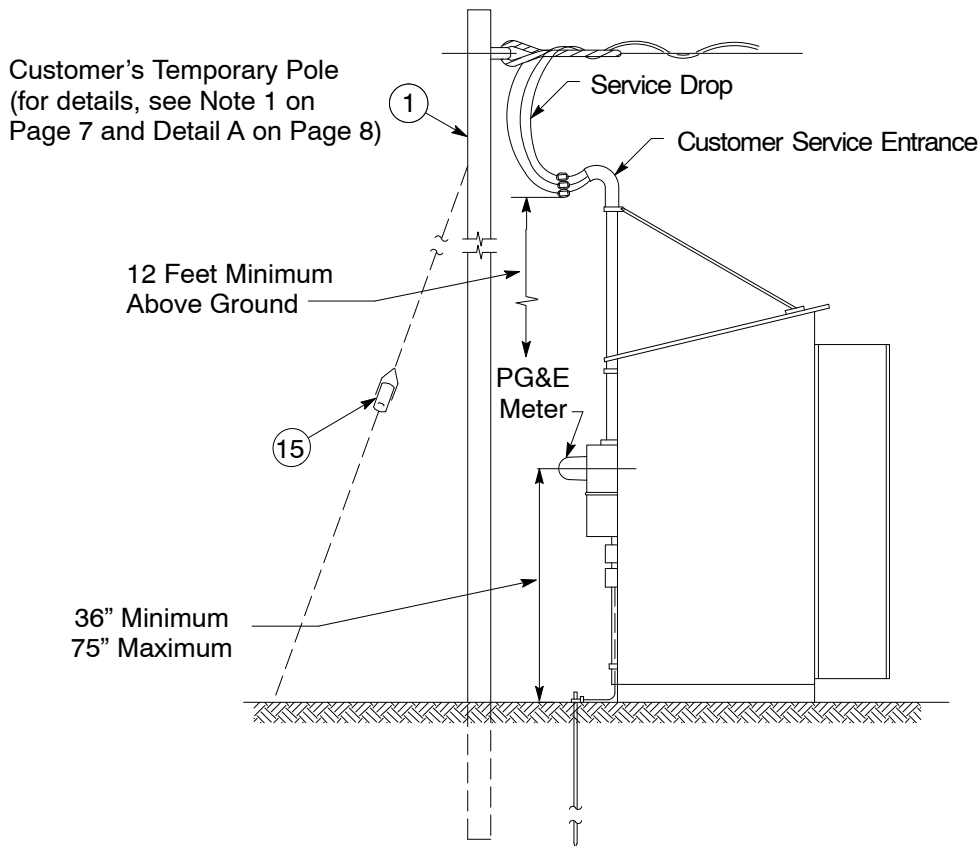
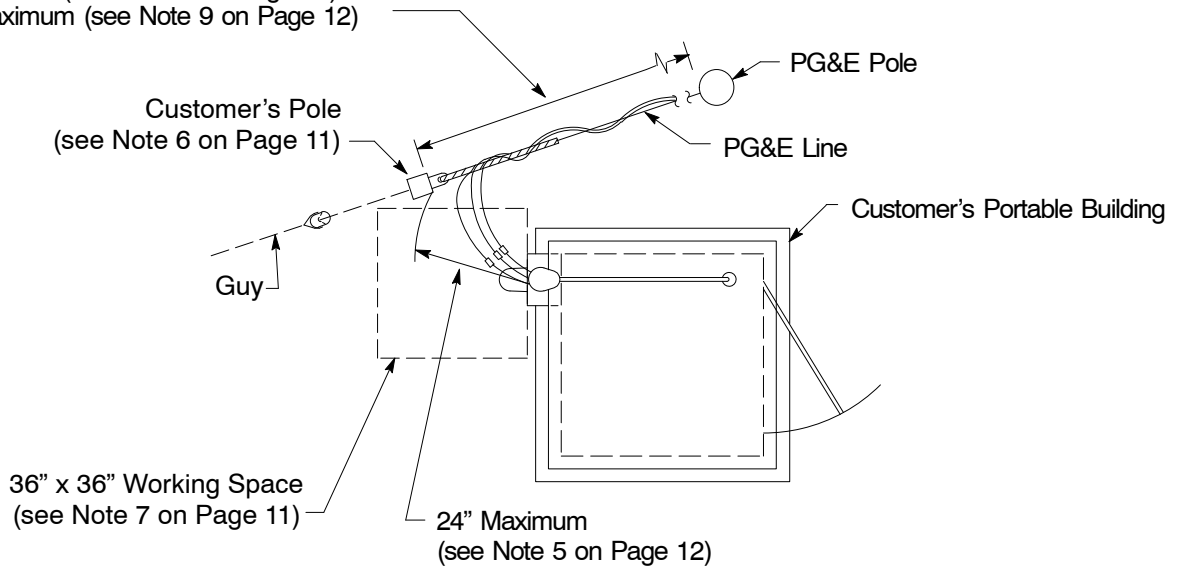


Figure 15
Portable Structure (non-substantial)
(see Note 2 on Page 11)

Temporary Commercial Service to Substantial Portable Structure

Notes

1. Substantial Building

See Note 2 on Page 12 for an explanation of a “substantial” portable building.

2. Structure Anchoring

To prevent overturning, the structure is required to be securely anchored in place using one of the following methods:

- A. Four 2” x 4” minimum wood stakes driven a minimum of 24 inches into the ground and attached to the framework of the structure using 1/4-inch minimum bolts or lag screws.
- B. Four steel stakes having strength equivalent to 3/4-inch rigid steel pipe driven a minimum of 24 inches into the ground and attached to the framework of the structure using 1/4-inch minimum bolts or lag screws.
- C. Four steel stakes having strength equivalent to a 3/4-inch rigid steel pipe driven a minimum of 24 inches into the ground with a cross member of each stake firmly contacting the upper surface of the timber used as a base or skid for the structure.

Note: Methods 2A and 2B above describe the **preferred** methods of attaching the stakes to the structure framework. However, four 16d (8-gauge, 3-1/2-inch) common nails per stake may be used in lieu of the bolts or lag screws, providing the wood is in good enough condition to permit a secure attachment.

3. Periscope Mast Bracing

Two galvanized steel braces, securely bolted or lagged to the structure’s framework with approximately a 90° spread, must be installed. Use 3/4-inch galvanized rigid steel pipe or 1-1/4” x 1-1/4” x 1/8” galvanized steel angle (minimum size).

4. Service Disconnection

When initial service is disconnected, sufficient service drop cable should be left connected to the service entrance cable to permit the future splicing of service cable from the ground level. This practice will limit the need for placement of ladders against the periscope mast when the structure is moved to a new location.

5. The working space in front of the meter must not be obstructed.

6. For temporary underground commercial service to substantial portable structures, see [Document 036670](#).

Requirements for Customer-Owned Poles

Temporary Commercial Service to Substantial Portable Structure (continued)

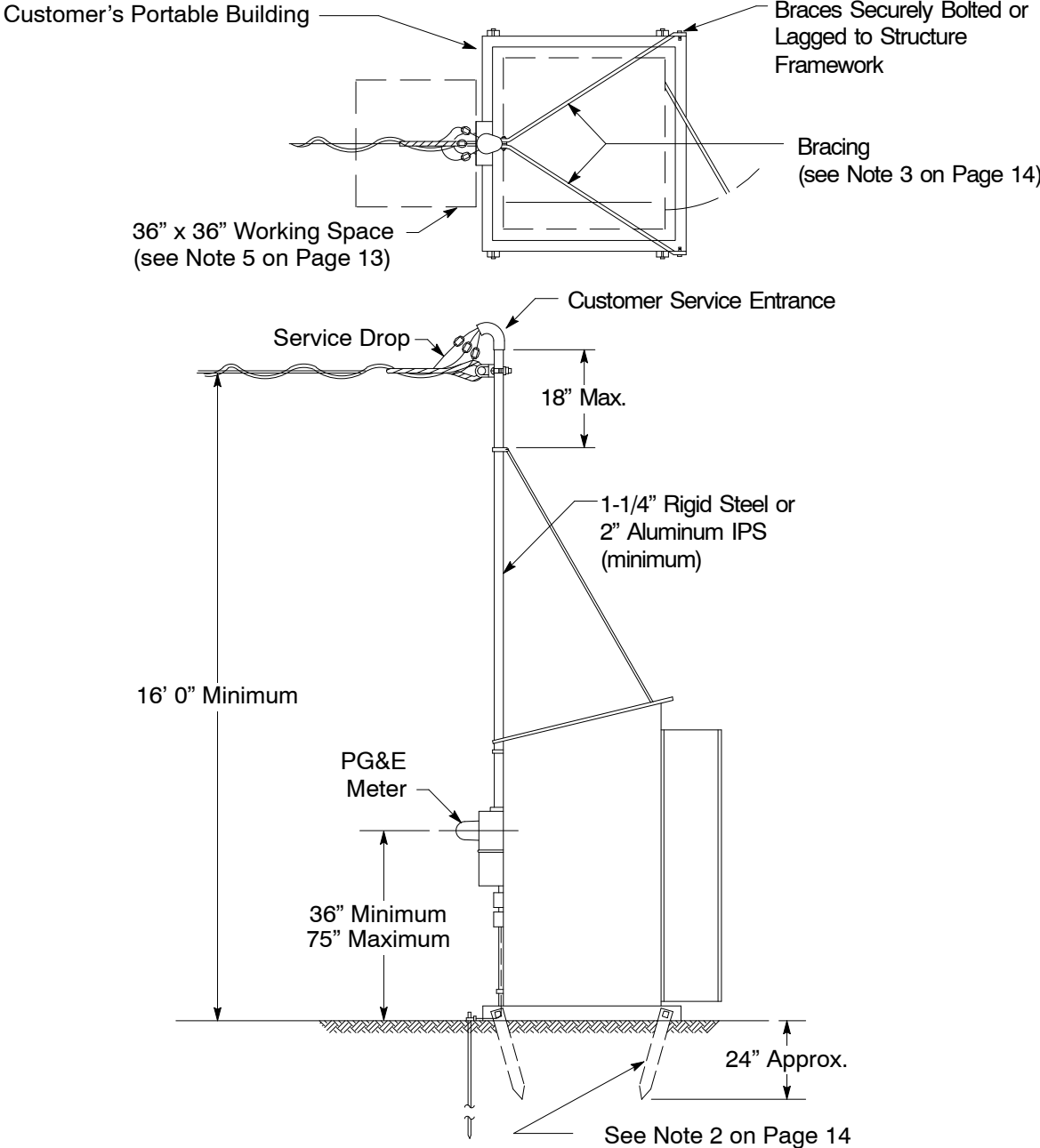


Figure 16
Portable Structure - Substantial
(see Note 2 on Page 12)

Revision Notes

Revision 13 has the following changes:

- 1. Corrected Approved Suppliers in Table 1 on Page 2.
- 2. Updated the 10'-0" clearance on Figure 1 on Page 3 and Note 21 on Page 4.
- 3. Updated Note 26 on page 5 on allowed panel(s).
- 4. Added Table 6 on page 6.
- 5. Added extended rack construction and dimensions to Figure 3, 4, 6 and 7.

