Purpose and Scope

This document illustrates the underground service requirements for specifically designed steel streetlight poles that are to be used when cellular antenna and communication equipment attachments are installed. This document also includes installation information and the required foundation for this pole.

The service and metering requirements in this document also apply to existing LS1−C streetlight poles where PG&E owns the streetlight, service, and may or may not own the pole.

General Information

1. The streetlight pole is designed to support two communication radios, one 4G antenna, one 5G antenna, SmartPole Meter with enclosure, and a disconnect switch. Additional equipment is not allowed to be installed on the pole. See pole details in Figure 1 PG&E Steel Street Light Pole with Attachments on page 4.

2. The installation of all customer equipment and PG&E’s Smart Pole metering equipment must meet all PG&E requirements and CPUC General Order 95 rules and clearances.

3. Communication equipment must have an ownership label with a contact number, site identification information, and a disconnect switch which will shut off RF transmission.

4. All materials noted as “Communication” shall be furnished and installed by the requesting communication company.

5. Inspection and approval by a qualified PG&E inspector are required.

6. If changes are made to an existing antenna installation that requires the pole to be replaced, then all requirements in this document must be met.

7. Customer equipment shall be fused or otherwise protected against short-circuit currents. A fused switch or circuit breaker, approved for service entrances, is required. Communication type fuses and fuse holders are not satisfactory means of disconnecting the power source.
Electric Service

8. Install a 2−wire (1−hot, 1−neutral) 1−phase 120 volt service (Duplex, 600 V insulated) or a 2−wire (1−hot, 1−neutral) 1−phase 240 volt service along with a #6 bare Cu ground wire to the street light pole with the SmartPole meter.

9. A 3−wire 1−phase 120/240 volt service (triplex) is allowed with SmartPole metering if requested for the antenna and communication equipment.

10. Customer service loads in this type of application must be less than 68 amps. Loads exceeding this limit cannot be served on the pole.

Disconnect Switch

11. Refer to Document 094675 for installation requirements.

12. A lockable disconnect switch must be installed that will de−energize all customer equipment (ac and dc) on the pole, including antennas, power supplies, radios, and any types of backup power sources.

13. The disconnect switch must not de−energize (turn off) the streetlight(s) or the PG&E Smart Meter.

14. The disconnect switch must be readily accessible at all times. The switch will be used as part of the normal or emergency shutdown protocols required in California Public Utility Commission (CPUC) General Order 95, Rule 94.

15. The disconnect switch is required regardless if the antenna meets or exceeds the FCC's General Population (G.P.) Uncontrolled Limits.

16. Signage must be attached to the switch identifying what equipment it will de−energize.

17. The switch must not de−energize (turn off) the PG&E Smart Meter. See the Single Line Drawing in Figure 2 on Page 8.

18. If using an individual disconnect switch it must be attached externally on the pole less than 10 feet above grade and more than 4 feet above grade, as measured to the bottom of the switch enclosure.

Signage

19. Antennas and communication equipment installed on PG&E poles must have an ownership label with a contact number, site identification information. Poles shall be marked for each equipment installation. The sign shall contain the following information and placement.

   A Name / identification of the antenna operator
   B A 24-hour contact number of antenna operator for emergency notification or other information
   C Unique identifier of the antenna installation
   D Indication that the antennas RF output is in compliance with the FCC General Population (G.P.) uncontrolled exposure limits or, if the antenna exceeds those limits indication of the minimum approach distance. See Utility Procedure TD-2001P-01 Procedures for Working Around Antennas for examples of typical RF signage.
   E Located above the SmartPole Meter and not greater than 15 feet above grade.

SmartPole Metering

20. A PG&E SmartPole Meter and enclosure are required for these installations. Refer to Document 094675 listed in the reference documents on Page 1 for the SmartPole metering options and specific requirements.

   The metering provision contained herein is an exception to the Greenbook requirement and is designed primarily for communication equipment requiring metering. The SmartPole meter must be mounted on the same pole as the PG&E service, antenna, and communication equipment. Remote metering is not allowed.
21. PG&E Meters must not be installed on poles that are in traffic medians or traffic islands where vehicle thoroughfares are on more than one side of the pole. A different pole must be selected for the meter, service, antenna, and communication equipment.

22. Do not install the SmartPole Meter in the shroud at the top of the pole for new or upgraded installations. The meter and enclosure must be installed on the pole at a minimum of 7 feet to a maximum of 8 feet above grade, as measured from the bottom of the enclosure, and not exposed to vehicular traffic. Refer to Document 094675.

23. Clear and level working space that is 30 inches wide by 36 inches deep by 10 feet high is required in front of the meter. The working space must clear of all obstacles and not be located on slopes, ramps, or driveways.

24. The streetlight bracket (arm) must not be covered by a shroud or other antenna cover. There must be a minimum of 3" of clearance for compliance inspections of the pole.

25. Document 027911 Clearance from street signs and signs on poles

26. Document 027911 Wood poll distance from street light pole must be greater than 10 feet?

27. Antennas and communication equipment on the pole must not block or impede the illumination projecting (throw) from the streetlight fixture (luminaire). For specific requirements see document TD-092817-B002 Streetlighting Design Restrictions: Mounting Apparatus below Streetlights.

Streetlight Pole Foundation

28. The foundation must be poured in place. Concrete shall be poured directly against the soil. If casing is used, remove the casing as concrete is placed.

29. Concrete shall have a minimum compressive strength of 4000 pounds per square inch in 28 days.

30. Verify all dimensions and any existing elements in the field prior to starting work.

31. Pipes and sleeves shall not pass through structural members except as shown in Figure 9.

32. Steel items other than reinforcing steel bars shall be hot-dipped galvanized in accordance with ASTM A153.

33. Headed reinforcing steel bars, per HRC 555 or equivalent, shall be used.

34. Use non-shrink grout that meets ASTM C1107 requirements. Grout shall have a minimum compressive strength of 5000 pounds per square inch when mixed to the flowable condition.
Figure 1
PG&E Steel Streetlight Pole with 4G and 5G Antennas and Communication Equipment − Underground Service Only
Table 1  Bill of Material to be Furnished and Installed by PG&E¹

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Street Light Pole with Antenna Provisions</td>
<td>See Tables 3A &amp; 3B (in this document)</td>
</tr>
<tr>
<td>2</td>
<td>#6 Al Duplex–UG (XLP) Service, Street Light only</td>
<td>M294347</td>
</tr>
<tr>
<td>3</td>
<td>#6 Al Duplex–UG (XLP) Service, Communications and Antenna Equipment only</td>
<td>M294347</td>
</tr>
<tr>
<td>4</td>
<td>Triplex–UG (XLP) Service (if needed), Communications and Antenna Equipment only</td>
<td>As Required</td>
</tr>
<tr>
<td>5</td>
<td>SmartPole Meter</td>
<td>As Required</td>
</tr>
<tr>
<td>6</td>
<td>Photo Cell</td>
<td>As Required</td>
</tr>
<tr>
<td>7</td>
<td>Luminaire</td>
<td>As Required</td>
</tr>
</tbody>
</table>

¹ Includes contractors or applicant installers hired by PG&E.

Table 2  Bill of Material to be Furnished and Installed by Communication Company

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breaker Box/Load Center</td>
<td>Required</td>
</tr>
<tr>
<td>#12 Cu 600V (Hot, Neutral, Ground)</td>
<td>As Needed</td>
</tr>
<tr>
<td>#2 Cu 600 V Ground</td>
<td>As Needed</td>
</tr>
<tr>
<td>Micro Maxcell Innerduct or Equivalent</td>
<td>Required</td>
</tr>
<tr>
<td>Radios or Relay Units</td>
<td>As Needed</td>
</tr>
<tr>
<td>Fiberglass Shroud</td>
<td>As Needed</td>
</tr>
<tr>
<td>Diplexers</td>
<td>As Needed</td>
</tr>
<tr>
<td>Terminal Block/Splice Connection</td>
<td>As Needed</td>
</tr>
<tr>
<td>Hoist Grip for cable support</td>
<td>As Needed</td>
</tr>
<tr>
<td>RF Sign (Above SmartPole Meter, Maximum 15 feet above grade)</td>
<td>Required</td>
</tr>
<tr>
<td>0.5” Coaxial Cables</td>
<td>As Needed</td>
</tr>
<tr>
<td>Shutoff Sign</td>
<td>Required</td>
</tr>
<tr>
<td>Ground Rod</td>
<td>Required</td>
</tr>
<tr>
<td>Antenna</td>
<td>As Needed</td>
</tr>
<tr>
<td>Fiber from communication network</td>
<td>As Needed</td>
</tr>
</tbody>
</table>
**Table 3  PG&E Material Codes for Streetlight Poles with Antenna Provisions**

<table>
<thead>
<tr>
<th>Material Code</th>
<th>Style / Post Height</th>
<th>Arm Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M150392</td>
<td>Steel / 26 Ft.– 6 In.</td>
<td>4 foot</td>
<td>Antenna streetlight pole, Steel, 26.5 foot, 4 foot arm, Smooth, Galvanized</td>
</tr>
<tr>
<td>M150393</td>
<td>Steel / 26 Ft.– 6 In.</td>
<td>6 foot</td>
<td>Antenna streetlight pole, Steel, 26.5 foot, 6 foot arm, Smooth, Galvanized</td>
</tr>
<tr>
<td>M150395</td>
<td>Steel / 26 Ft.– 6 In.</td>
<td>8 foot</td>
<td>Antenna streetlight pole, Steel, 26.5 foot, 8 foot arm, Smooth, Galvanized</td>
</tr>
<tr>
<td>M150396</td>
<td>Steel / 31 Feet</td>
<td>6 foot</td>
<td>Antenna streetlight pole, Steel, 31 foot, 6 foot arm, Smooth, Galvanized</td>
</tr>
<tr>
<td>M150399</td>
<td>Steel / 31 Feet</td>
<td>8 foot</td>
<td>Antenna streetlight pole, Steel, 31 foot, 8 foot arm, Smooth, Galvanized</td>
</tr>
</tbody>
</table>

Note: The base plate on these poles may be redesigned in the future and any stocked poles could become obsolete, therefore it is suggested a minimal quantity of poles should be stocked.
Figure 2
(by Communications Company unless note as by PG&E)
SmartPole Meter Not Allowed at Top of Pole

Do Not Cover Mast Arm with Shroud or Other Material

Figure 3
Pole Top Antenna Detail
NON EMERGENCY NODE SITE POWER SHUT DOWN PROCEDURES

1. FOR NON EMERGENCY/SCHEDULED POWER SHUT DOWN
   • CALL <INSERT NAME OF COMMUNICATION COMPANY AND PROVIDE PHONE NUMBER>
   • 24 HRS PRIOR TO SCHEDULED POWER SHUT OFF PROVIDE THE FOLLOWING INFORMATION:
     • SITE NUMBER IDENTIFIED ON SITE NUMBERING STICKER
     • YOUR NAME AND REASON FOR POWER SHUTOFF
     • PROVIDE DURATION OF OUTAGE
   • PULL DISCONNECT HANDLE TO “OFF” POSITION
   • POWER SHUT OFF VERIFICATION WITH APPROVED PG&E PROCEDURES
   • NOTIFY <INSERT NAME OF COMMUNICATION COMPANY> UPON COMPLETION OF WORK
   • RESTORE POWER BY PLACING POWER DISCONNECT HANDLE IN THE “ON” POSITION
   • REINSTALL LOCK ON POWER HANDLE

2. EMERGENCY POWER SHUT OFF
   • CALL <INSERT NAME OF COMMUNICATION COMPANY AND PROVIDE PHONE NUMBER>
   • PROVIDE THE FOLLOWING INFORMATION:
     • SITE NUMBER IDENTIFIED ON SITE NUMBERING STICKER
     • YOUR NAME AND REASON FOR POWER SHUTOFF
     • PROVIDE DURATION OF OUTAGE
   • PULL DISCONNECT HANDLE TO “OFF” POSITION
   • POWER SHUT OFF VERIFICATION WITH APPROVED PG&E PROCEDURES
   • NOTIFY <INSERT NAME OF COMMUNICATION COMPANY> UPON COMPLETION OF WORK
   • RESTORE POWER BY PLACING POWER DISCONNECT HANDLE IN THE “ON” POSITION
   • REINSTALL LOCK ON POWER HANDLE

Figure 4
Shut Down Procedure Sign

Figure 5
ILSCO PBT-D-2-1/0 MULTI TAP
TWO SIDED TERMINAL CONNECTOR
FOR CONDUCTOR SIZES 14-1/0 AWG
NOTE: All streetlight, power, and communication cables are to be isolated using Micro Maxcell Innerduct throughout the pole.
## Street Light Pole Details

### General Notes

<table>
<thead>
<tr>
<th>Material Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaft</td>
</tr>
<tr>
<td>Base &amp; Misc Plates</td>
</tr>
<tr>
<td>Pipe</td>
</tr>
<tr>
<td>Anchor Bolts</td>
</tr>
</tbody>
</table>

### Manufacturing Processes

- Butt Welds: Ground flush with base metal
- Longitudinal Welds: Butt welded by the electrical resistance process

### Finish Coating

- Structure: Hot dip galvanize per ASTM A153
- Hardware: Hot dip galvanize per ASTM A153

### Design Criteria

- Designed in accordance with 2001 AASHTO "Standard Specifications for Structural Supports of Highway Signs, Luminaries and Traffic Signals"

- Welding: In accordance with the latest edition of the AWS D1.1 specification

### Table 4: Pole Data

<table>
<thead>
<tr>
<th>PG&amp;E Material Code</th>
<th>Pole Description</th>
<th>Shaft Dimensions</th>
<th>Base Plate Data</th>
<th>Anchor Bolts</th>
<th>Arm Length (&quot;L&quot;)</th>
<th>Nominal MTC Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>150392</td>
<td>PL-ANT-264</td>
<td>26&quot;-6&quot;</td>
<td>7 7/8&quot;</td>
<td>4 1/4&quot;</td>
<td>0.1196&quot;</td>
<td>11 1/2&quot; 11 1/2&quot;</td>
</tr>
<tr>
<td>150393</td>
<td>PL-ANT-266</td>
<td>26&quot;-6&quot;</td>
<td>7 7/8&quot;</td>
<td>4 1/4&quot;</td>
<td>0.1196&quot;</td>
<td>11 1/2&quot; 11 1/2&quot;</td>
</tr>
<tr>
<td>150395</td>
<td>PL-ANT-268</td>
<td>26&quot;-6&quot;</td>
<td>7 7/8&quot;</td>
<td>4 1/4&quot;</td>
<td>0.1196&quot;</td>
<td>11 1/2&quot; 11 1/2&quot;</td>
</tr>
<tr>
<td>150396</td>
<td>PL-ANT-316</td>
<td>31'-0&quot;</td>
<td>8 1/2&quot;</td>
<td>4 1/4&quot;</td>
<td>0.1196&quot;</td>
<td>11 1/2&quot; 11 1/2&quot;</td>
</tr>
<tr>
<td>150399</td>
<td>PL-ANT-318</td>
<td>31'-0&quot;</td>
<td>8 1/2&quot;</td>
<td>4 1/4&quot;</td>
<td>0.1196&quot;</td>
<td>11 1/2&quot; 11 1/2&quot;</td>
</tr>
</tbody>
</table>
### Table 5  Arm Data

<table>
<thead>
<tr>
<th>ARM LENGTH &quot;E&quot;</th>
<th>ARM TUBE DIMENSIONS</th>
<th>RISE</th>
<th>θ</th>
</tr>
</thead>
<tbody>
<tr>
<td>4’−0”</td>
<td>3” 2 3/8” 0.1196”</td>
<td>1’−6”</td>
<td>28”</td>
</tr>
<tr>
<td>6’−0”</td>
<td>3 5/16” 2 3/8” 0.1196”</td>
<td>2’−0”</td>
<td>28”</td>
</tr>
<tr>
<td>8’−0”</td>
<td>3 11/16” 2 3/8” 0.1196”</td>
<td>2’−0”</td>
<td>20”</td>
</tr>
</tbody>
</table>

### Ordering Nomenclature

- **PL-ANT-268**
- **POLE TYPE**
- **SHAFT LENGTH**

#### Figure 8
Street Light Pole with Antenna Provisions – Elevation
Figure 9
Foundation – Elevation View

Figure 10
Foundation – Plan View
UG-1: Services
Greenbook

PG&E Metered Electric Service to
Antenna and Communication Equipment
on Company Owned Steel Streetlight Poles

DETAIL "A" ANCHOR BOLT DETAIL

ANCHOR BOLTS (THREADED 16" AT TOP END
& 3" AT BOTTOM END & GALVANIZED FULL
LENGTH). FOR LENGTH AND DIAMETERS SEE
"ANCHOR BOLT" COLUMN IN POLE DATA TABLE.
(TYPICAL=4 REQUIRED)

DETAIL "B" BASE PLATE DETAIL

HANDHOLE RIM SEE DETAIL "C"

1/2"-13NC TAP IN ANGLE FOR GROUNDING

THK

THK+1/8"

1/2"-13NC TAP IN HANDHOLE RIM FOR GROUNDING

POLE SHAFT (REF)

1/4"

HANDHOLE RIM

1/4" PL X 2" WIDE

RAINTIGHT HANDHOLE COVER

(11 GA)

1/4"-20NC x 1 1/2" LG ALLEN HD CAP SCREW

DETAIL "C" HANDHOLE DETAIL

THICKNESS OF FILLER RING (IF REQUIRED) TO MATCH DIFFERENCE IN TAPERED TUBE THICKNESS

1/8" NOMINAL or THICKER BACK-UP RING

FULL PENETRATION

WHEN REQUIRED BASED UPON MATERIAL AVAILABILITY

DETAIL "D" SPLICE DETAIL
1 AMERON TO SUPPLY (1) 2” AND (2) 1 1/2” PLUGS TO BE INCLUDED WITH EACH POLE.
2 AMERON TO SUPPLY COVER PLATE & HARDWARE (A307 GALV) FOR TOP OF POLE.
Revision Notes
Revision 00 has the following changes:

1. Converted Bulletin TD−027911−B003 to this new numbered engineering document.
2. Updated requirements throughout.
3. Updated Figure 1 on Page 4.
4. Updated Figure 3 on Page 8.