



SERVICE TO CELLULAR ON TRANSMISSION TOWER

068179

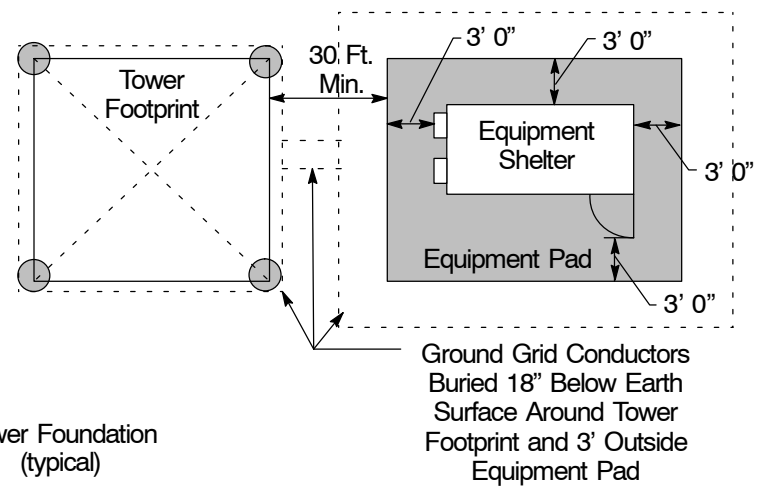
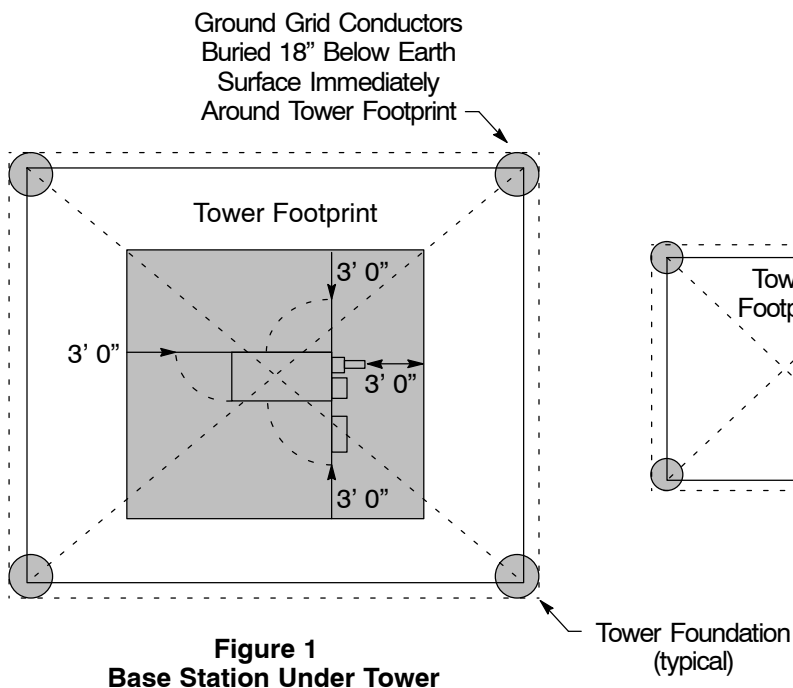
Asset Type: Electric Distribution	Function: Design
Issued by: D. H. Mulkey (DHM3) <i>Daniel H. Mulkey</i>	Date: 07-01-14
Rev. #08: This document replaces PG&E Document 068179, Rev. #07. For a description of the changes, see Page 2.	

Purpose and Scope

This document establishes safety policy, tariff interpretation, and electric service installation guidelines when providing service to wireless carriers with antennas located on high-voltage transmission towers and poles (60 kV and above).

General Information

- When cellular antennas are located on high-voltage transmission towers and poles, take special safety precautions when providing normal 120 V/240 V service to their base-station equipment. The base-station equipment normally is located on a pad (typically a concrete pad) directly under the tower (see Figure 1) or adjacent to the transmission-line tower (see Figure 2). There is a direct metallic path from the antenna to the base-station equipment ground bus, which also is connected to the service neutral and ground from the incoming power service. Should a fault occur on the transmission tower, fault current and voltage could transfer into the service neutral and meter. Normal construction practices for meter installations **do not** always provide adequate protection for personnel touching the meter and standing on the ground from experiencing "touch voltages" in excess of the allowable limits.



Guidelines

2. The applicant must determine the predicted RMS ground potential rise, GPR_{RMS} . The GPR_{RMS} may be shown at <http://www.t2/Weather/ATS/Grounding/Substation.asp>.
3. If the primary distribution system from which the cell site will be served is a uni-ground system (i.e., 12 kV, 17 kV, 3-wire 21 kV, or a primary neutral), and the predicted GPR is above 12,470 V symmetrical, then a dedicated transformer is required. On 3-wire primary systems, a transmission-line ground fault at the cell-site tower may create a very high ground-potential rise and become a safety concern. The PG&E transformer must be a dedicated transformer, serving only the cell site (now and forever), and the meter pedestal must be installed within the cell-site ground grid with a switch platform in front (see Note 8 below) to ensure that personnel will be standing on the equipment pad when they touch the meter. To ensure that no other customers share the 120 V/240 V neutral connection with these cell sites, these customers must have a dedicated service transformer that feeds only the cell sites.
4. If the GPR is 12,470 V symmetrical or less, **or** if the primary distribution system from which the cell site will be served is a multi-grounded system (i.e., 4-wire, 21 kV common neutral), the site is treated as a normal [Rule 16](#) service **except** the meter pedestal must be installed within the cell-site ground grid with a switch platform in front (see Note 8 below) to ensure that personnel will be standing on the equipment pad when they touch the meter. PG&E is responsible for planning, designing, and engineering its service extension using PG&E's standards for design, materials, and construction ([Rule 16](#) A.1).

Requirements

5. [Electric Rule 2](#) special facility charges apply to any additional costs if the application requires a dedicated transformer.
6. If cell sites are on the same tower, they can share the ground grid and transformer. If the cell sites are on two adjacent towers and the towers are on the same transmission circuit, they can share the ground grid and transformer.
7. Cell sites on towers of different transmission circuits may **not** share the same transformer.
8. The applicant must install a 3' x 3' operating switch platform, Material Code M155036 ([Document 034851](#)), centered 6" in front of the meter pedestal **and** interconnect the platform with the cell-site ground grid using a 250 Cu conductor.
9. Any deviation from these guidelines requires a specific engineering analysis and design to develop sufficient compensatory design to provide touch and step protection to personnel working on the meter or cell-site equipment. Please contact applied technology services engineering personnel for assistance.
10. Installations with meters that are not within the cell-site ground grid require an isolation transformer for protection. When performing work is at such a location without an isolation transformer, correct the meter installation by either installing an isolation transformer or by extending the cell-site ground grid to encompass the meter.

Inspections

11. Distribution employees are responsible for inspecting work on the PG&E side of the meter.

Revision Notes

Revision 08 has the following changes:

1. Revised Note 2 above to indicate that the GPR to be used is the symmetrical value.
2. Revised Note 3 above to "uni-ground" instead of "not solidly grounded."
3. Revised Notes 6 and 7 above to refer to "transformer" rather than "service."