



**Pacific Gas and
Electric Company**

Electric T&D Bulletin

Title: Underground Residential & Commercial Construction

Check all appropriate boxes

- | | | | |
|---|--|--|--|
| <input type="checkbox"/> SAFETY ALERT | <input type="checkbox"/> GAS | <input checked="" type="checkbox"/> DISTRIBUTION | <input type="checkbox"/> SUBSTATION ENGR. |
| <input type="checkbox"/> MANDATORY COMPLIANCE | <input checked="" type="checkbox"/> ELECTRIC | <input type="checkbox"/> TRANSMISSION | <input type="checkbox"/> TRANS./SUB. M&C |
| <input checked="" type="checkbox"/> RECOMMENDED ACTIONS | <input checked="" type="checkbox"/> ESTIMATING | <input type="checkbox"/> OPERATIONS | <input checked="" type="checkbox"/> APPLICANT DESIGNER /
CONSTRUCTION |
| <input checked="" type="checkbox"/> INFORMATIONAL/CLARIFICATION | <input type="checkbox"/> MAPPING | <input type="checkbox"/> SERVICE | |

This revision to bulletin 2007-09 is being issued to provide additional clarity to the use and intent of the bulletin. Changes have been made to Table 1, the Figures 2A and 2B, and the Financial and Tariff section. A grandfather clause has been added for applicant design jobs that have gone through multiple reviews prior to issuance of the bulletin. The bulletin was originally intended for use with new business construction however it is not limited to new business.

Target Audience for Implementation:

ED Maintenance & Construction, ED Estimating & Mapping, Customer Field Services, Electric Asset Strategy, ED Field Services, ED ECCO, Work Resource Coordinator, Option 2 Inspection, & Applicant Designers

Purpose:

The purpose of this bulletin is to clarify the intention of the underground electric design when construction has been broken down in phases (i.e. Phase 1, Phase 2, Phase 3, Phase 4, etc.). The information contained in this bulletin will eventually be included in the Electric Design Manual.

Background:

PG&E is currently undergoing an effort to reduce the number of planned outage experienced by customers. As new construction is built in phases the customers on the initial phase are experiencing unnecessary and excessive planned outages when future phases are constructed. A majority of planned outages can be prevented when designing new business developments. Additional provisions can be made during the initial design process to prevent unnecessary/excessive planned outages from occurring.

Action:

Beginning immediately, estimated design, regardless of applicant or PG&E design shall include provisions to keep all customers energized during future phased construction projects. Provisions shall include pulling cable that is fed by load break elbows into an additional pull box, clear capping cable and energizing the additional cable section. This should occur in scenarios where cable can not be pulled into or out of an enclosure once energized (see Table 1).

If the project construction is not accomplished in phases, then efforts shall be taken to ensure all PG&E facilities (conduit, enclosures, cable and equipment) are installed in place prior to energizing customers for the first time. The only exception to this will be when it is necessary to provide temporary construction power within the project.

Figure 2a/2b illustrates a scenario where a 200 amp tap is being built in phased construction. The addition of a 3' x 5' enclosure and cable into the enclosure from the junction allows for the last phase of construction to be built without impact to the initial phased construction. By energizing the cable prior to installation the cable will not be considered idle and can remain in the ground for any length of time. When the next phase of construction is built, the new cable(s) can be pulled into the additional pull box and the source cables can be de-energized for splicing by pulling the load break elbows at the J-box or transformer without any customers being de-energized.

In addition to design considerations, tap fuses shall be sized to the maximum fuse size while maintaining coordination. All fuse sizing shall be determined by local distribution engineer. This prevents a planned outage from occurring on fuse resizing.

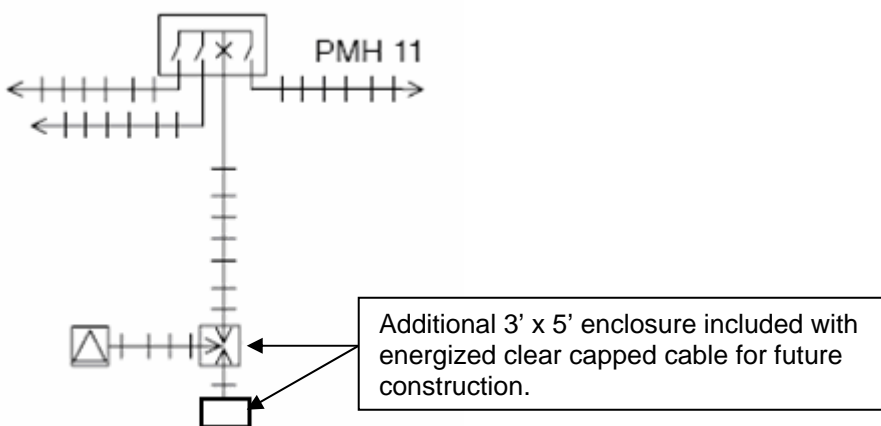
The following table identifies specific enclosure and equipment types where cable can or cannot be pulled into or out of while the facility is energized. Please note in the table, most pad mounted, dead front equipment using load break separable connectors will accept cable installation while the facility is energized and allow for new additional phase to be energized without impacting existing customers. On the other hand all pad-mounted live front type equipment such as PMH switches and all sub-surface equipment will not allow for installation of the new cable while energized and thus will require the extra splice enclosure with the future cable ends clear capped.

Type of Enclosure & Equipment	Live or Dead Front Equipment	Load or Dead Break Elbows	Can Cable be pulled in while equipment energized?
Pad Mounted Transformer	Dead	Load	Yes
Pad Mounted Transformer	Dead	Dead	Yes, as long as there is an internal transformer line switch to make elbow connections
Pad Mounted Transformer	Live	N/A	No
Subsurface Transformer	Dead	Dead	No*
Pad Mounted Switch/Fuse	Live	N/A	No**
Pad Mounted Interrupter	Dead	Load	Yes
Subsurface Switch/Fuse	Dead	Dead	No*
Subsurface Interrupter	Dead	Dead	No*
Pad Mounted "J"	Dead	Load	Yes
Subsurface "J"	Dead	Load	No*
<p>* In some cases space is available to make cable pull without de-energizing equipment. These cases must be approved by field supervisor prior to installation.</p> <p>** If all three cells of any compartment within a PMH switch are empty and de-energized with interphase barriers properly installed in the slide in position, per UO standard S-2006 then cable may be pulled (or pushed as the case may be from near by pull box) and spliced. Exposed grounding attachment shall be tested and proved grounded with approved testing and grounding equipment. All precautions should be exercised to prevent any touching or moving of the interphase barriers and all applicable safety rules shall be observed. These cases must be approved by field supervisor prior to installation.</p>			

Table 1 –Matrix for clarification on UG design

As shown in Figure 2a and 2b below, an additional 3' x 5' enclosure is included as a pull box to provide for future cable pulls into an enclosure that doesn't require de-energizing, preventing initial phased customers from experiencing an unnecessary planned outage.

Phase 1 Construction design (Note: Junction box has load break elbows)



Note: Clear Capping of cable is to be accomplished by utilizing a dead break elbow along with an insulated standoff bushing, and mounted and secured on racking pins installed to support future splice(s). Use of a dead break elbow will enable the cable tails to be tested de-energized and grounded for future splicing.

Figure 2a – Design to accommodate future expansion

Final Phase Construction (Note: Junction box has load break elbows)

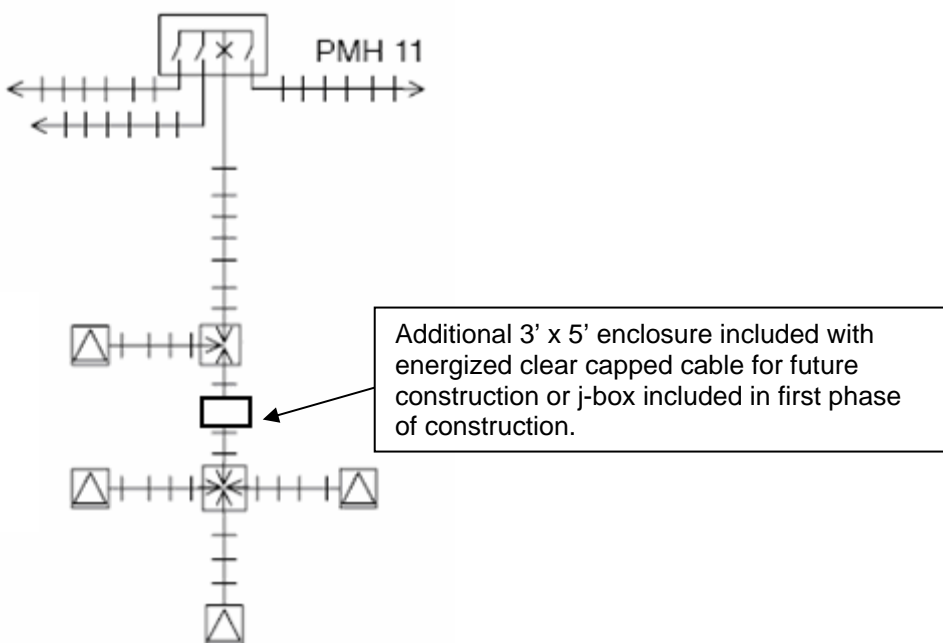


Figure 2b – Completed Design

For use and operational requirement of load break elbows, see Utility Standard S2322 "Operation of Load Break Elbows", and also be aware of Electric T&D Bulletin 2007-04 "Proof Testing Facility to Utilize Load Break Elbows.

Financial and Tariff Implications:

a) For developments where the applicant has elected subsurface facilities:

If the additional enclosure is required solely because the applicant has elected to install subsurface facilities, and the required future cable connection can not be made without interrupting service to other customers, then the additional enclosure is to be installed at the applicant's expense as a Special Facility in accordance with Electric Rule 2. Conduits are treated as a non-refundable obligation of the applicant. (References – Electric Rule 15.A.5, Electric Rule 2.I.)

b) Where the additional enclosure is required for any other operational reason:

If the additional enclosure is installed within the boundaries of the development, the enclosure is included as part of the applicant's responsibility, and is refundable. (References -- Electric Rule 15.B.1.a.2. and 15.D.5.a.2.)

The excavation for substructures is non-refundable. (References -- Electric Rule 15.B.1.a.1 and 15.D.5.d.)

The cable installed past the point required to serve the active (current) phase of the development is not included as an applicant responsibility. Therefore the enclosure and labor associated will be charged to the customer; however the cable and terminations beyond what is required to serve the initial development will be paid for by PG&E. At this time, we would consider this cable to be installed for PG&E convenience

Grandfather Clause:

During applicant design global meetings the ADE, estimator, or service planning rep should notify the customer of the intent and application of this bulletin.

For applicant design projects where the applicant designer has received globals prior to being aware of the bulletin 2007-09, the following should happen:

- a) New Business Rep should notify the applicant designer of the bulletin prior to the first design submittal. First review will note the possible necessity of the additional box to prevent unnecessary planned outage.
- b) If applicant's design has been submitted to PG&E for review prior to being notified of the possible necessity of the additional box then the applicant's job shall be considered grandfathered into the process. If the additional box is still deemed necessary then it will be included in the job at PG&E expense.

No project for which applicant design globals were issue after June 1st, 2007 will be considered grandfathered.

References:

General Design Criteria: Underground and Overhead, Section 2, Electric Design Manual

Approved by:

Young Nguyen

Date: 08-01-07

If you have any questions about this bulletin, please call the employee(s) listed below:

Contact:	J.C. Mathieson	Dave McCall	Steve Dannecker
LAN ID:	JCMs	DJMm	SLD4
Phone:	8-223-1625	8-254-5806	8-223-4065