

TYPICAL DISTRIBUTION TRENCH

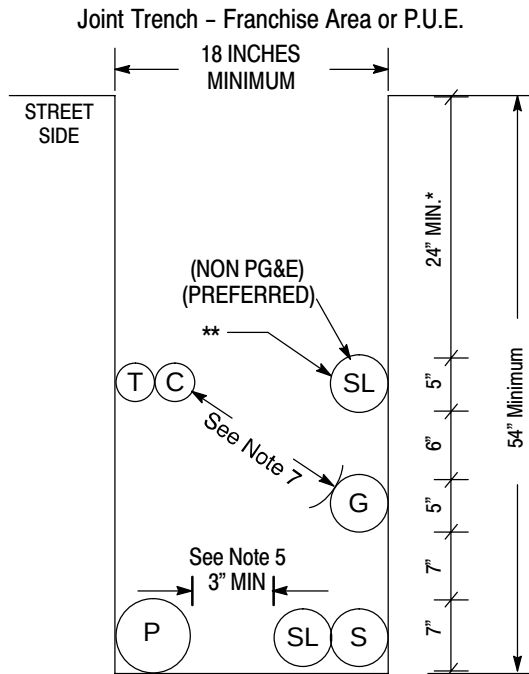


FIG. 1

Placement of the Distribution Trench within a P.U.E. is the preferred method. Trenching in the Franchise Area should only be used when a P.U.E. is unobtainable or otherwise infeasible.

* Increase cover to 30" in the street area (see Note 3).

** Separation must be 12" unless a reduction (6") is mutually agreed upon by affected utilities.

TYPICAL SERVICE TRENCH

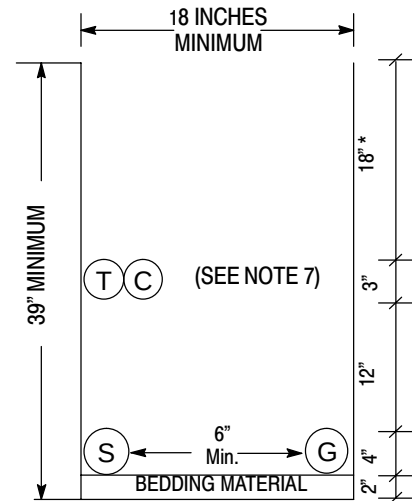


FIG. 2
(View facing Distribution Trench)

MINIMUM SEPARATION AND CLEARANCE REQUIREMENTS

		G	DUCT T	DB T	C	S	P
G	(GAS) SEE NOTES 4, 7 & 13	—	12"	12"	12"	6"	12"
T	(TELEPHONE) DUCT	12"	—	1"	1"	12"	12"
T	(TELEPHONE) DIRECT BURY	12"	1"	—	1"	12"	12"
C	(CATV)	12"	1"	1"	—	12"	12"
S	(ELECTRIC SECONDARY)	6"	12"	12"	12"	—	3"
P	(ELECTRIC PRIMARY)	12"	12"	12"	12"	3"	—
SL	(STREETLIGHT) SEE NOTE 5	6"	12"	12"	12"	1"	3"

SEPARATION AND CLEARANCE DEFINITIONS

Cover:

The term "cover" means the radial distance between the surface of an underground cable, conduit, pipe, or other substructure and the surface elevation (grade).

Backfill:

The term "backfill" refers to the materials used to refill a cut or other excavation, or the act of such refilling after any needed shading is performed.

Shading:

The term "shading" refers to the materials used to provide a measure of separation between facilities installed at different levels within an excavation or cut.

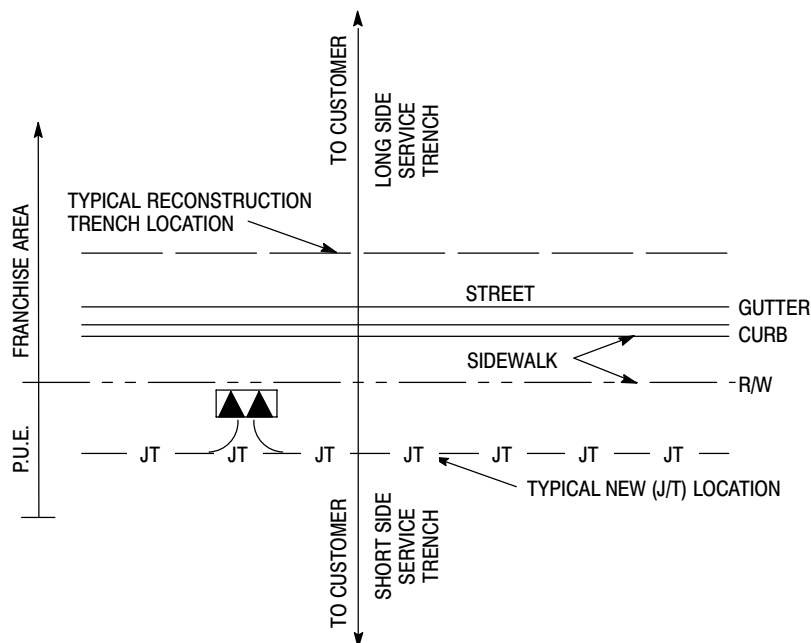
Lift:

The term "lift" is a layer of fill as spread or as compacted or a measurement of material depth that is the rated effective soil depth a compactor can achieve.

Bedding:

The term "bedding" refers to the materials installed beneath facilities at the bottom of a cut or other excavation and intended to provide support and/or protection for those facilities.

STANDARD TRENCH LOCATIONS



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OTHER TYPICAL PG&E DISTRIBUTION JOINT TRENCH CONFIGURATIONS

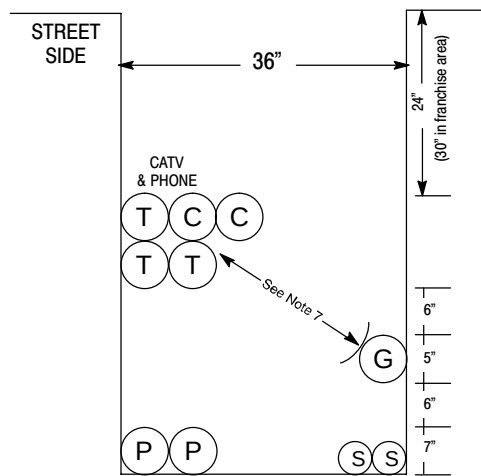


FIG. 3
36" Wide Joint Trench

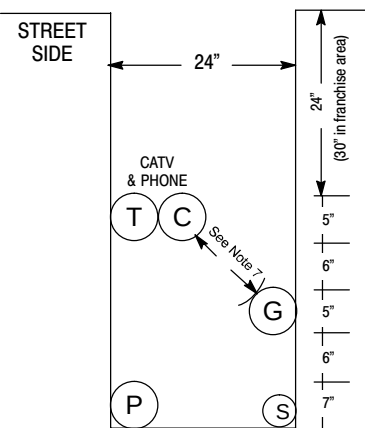


FIG. 4
24" Wide Joint Trench

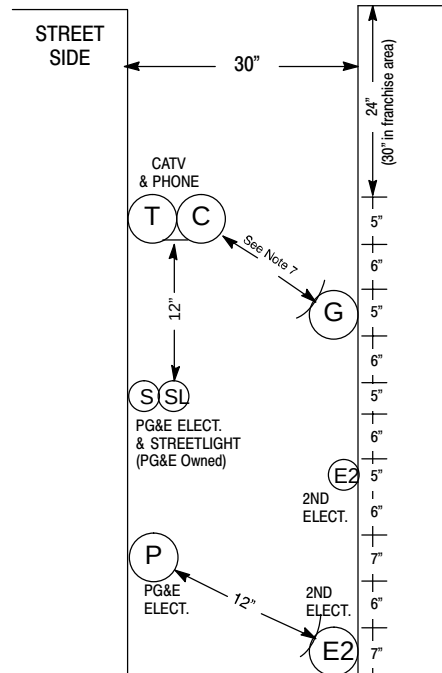


FIG. 5
Joint Trench With Second
Electric Utility

Trench Configuration Notes

The trench configurations shown in this guide are to be considered "typical" only and that other trench widths, depths, as well as utility configurations (placement) may be used, provided all minimum requirements for separation, clearances, and cover are observed. In no case shall electric primary or secondary (excluding street lighting) be placed at a level higher than that of the gas and communications level. Gas shall be placed at the same level or below communications when gas is placed above the electric facilities.

Special Notes for Joint Trench With Second Electric Utility

- A. Refer to Sheet 3 for General Notes.
- B. A red 3-inch wide "PG&E Electric Line in Conduit" plastic marking tape, Code 375054, shall be installed, spiral wound in a manner that allows for the tape to be readily visible every 3 feet, with each conduit intended to be used for PG&E electric facilities. An equivalent red tape marked to identify the owner shall be installed with the conduit intended to be used for the second electric facility.
- C. Each utility shall ensure adequate grounding between electric facilities is provided (See [UO Standard S5453](#), "Joint Trench").
- D. Provide a minimum of 2 inches of compacted PG&E approved bedding material as a trench leveling concourse, where required. See General Notes Items 11 and 12 (on Page 3), in order to obtain proper compaction.

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General Notes

1. The preferred trench location is in a Public Utility easement (P.U.E.).
2. All depths and resulting cover requirements are measured from final grade.
3. Cover, clearances, and separation shall be as great as practicable under the circumstances, but under no circumstances shall be less than the minimum cover, clearance, and separation requirements set forth in [General Order 128](#) and [49CFR 192.321](#), [49CFR 192.325](#), and [49CFR 192.327](#). All facilities shall be anchored in place prior to compaction, or other means shall be taken to ensure no motion of the facilities. Dimensional requirements for shading, leveling, and backfilling shall be determined subsequent to compaction.
4. Trench dimensions shown are typical. Trench sizes and configurations may vary depending upon occupancy and/or field conditions. Trench size and configuration must at all times be constructed in a manner that ensures proper clearances and cover requirements are met. Any "change" to the trench width and configurations as shown in this exhibit must be designed to ensure this requirement.
5. It is preferred to have non-PG&E owned streetlights at a level other than the gas or electric level. Non-PG&E owned streetlights may be at the electric level of the trench as long as minimum clearances are provided and comply with all special notes for a joint trench with a second electric utility.
6. Non-Utility facilities are not allowed in any Joint Utility trench, e.g., irrigation control lines, building fire alarm systems, private telephone systems, outdoor electrical cable, etc.
7. When communication ducts are installed, a minimum of 12" radial separation shall be maintained from gas facilities. Exception: With mutual agreement, when 4-inch diameter or smaller gas pipe is installed, the separation may be reduced to not less than 6 inches.
8. Provide separation from trench wall and other facilities sufficient to ensure proper compaction.
9. Maintain proper separation between PG&E facilities and "wet" utility lines as described in [UO Standard S5453](#). The minimum allowable horizontal separation between Company facilities and "wet" facilities is 3' with a minimum 1' of undisturbed earth or the installation of a suitable barrier between the facilities.

If a 3' horizontal separation cannot be attained between "wet" utilities and Company dry facilities, a variance may be approved by the local Inspection Supervisor and submitted to the Service Planning Support Program Manager for approval. Separations of 1' or less are not permissible and will not be allowed. The Company may agree to waive the minimum 3' separation requirement at the request of an applicant if warranted and the need is justified. The request for a waiver must:

- Be made in writing and submitted to the Company ADE during the planning and design phase of the project,
- Clearly describe the conditions necessitating the waiver,
- Include a proposed design,
- And, include a design for a barrier between the "wet" utilities and Company dry facilities in the event 1' of undisturbed earth cannot be maintained.

Note: Drain lines connected to downspouts on buildings are considered a "wet" utility for the purposes of this standard.

10. Separations shall be maintained at aboveground termination points.
11. Procedures for approving native backfill for shading of PG&E gas facilities:
 - Random soil samples shall be taken from a minimum of 3 locations per 1,000' of trench. 100% of the sample must pass through a 1/2" sieve and 75% must pass through a #4 screen. Additional samples must be taken if existing soil conditions change and are to be taken at the discretion of the PG&E representative on site.
 - The soils must not contain any rocks that have sharp edges or that may otherwise be abrasive.
 - The soils must not contain clods larger than 1/2" if to be used as shading, bedding, or leveling materials.
 - Compaction requirements must meet any applicable PG&E, Federal, State, County, or local requirements.
 - At no time shall the over saturation of native soils be used to achieve these requirements.

The sieves and screens shall be:

- 1/2" Sieve: 8" diameter by 2" deep, stainless steel mesh screen.
- #4 Screen: 8" diameter by 2" deep, stainless steel mesh screen.

Notes continued on the next page

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General Notes, continued

12. Procedures for approving native backfill for shading at PG&E electric facilities:
 - Random soil samples shall be taken from a minimum of 3 locations per 1,000' of trench. Additional samples must be taken if existing soil conditions change and are to be taken at the discretion of the PG&E representative on site.
 - Shading material containing large rock, paving material, cinders, sharply angular substances, or corrosive material shall not be placed in the trench where such material may damage the conduits and/or prevent proper compaction over or around the conduits.
 - Native soils containing clods not to exceed 6" in diameter may be included in the shading material provided the clods are readily breakable by hand.

Note: Soils consisting primarily of adobe, hard compact (dense) clay, and bay muds shall not be used as shading material.
 - At no time shall the over saturation of native soils be used to achieve these requirements.
 - Refer to [Engineering Document 062288](#), Item 13 on Page 2.
13. Competent native soils are preferred to be used for shading, bedding, and backfilling throughout the trench.
 - Where native soils exceed 1/2" minus and/or where gas is to be placed at the bottom of a trench in areas that exceed 1/2" minus soil conditions, or where the bottom of a trench is considered to consist of hard pan, PG&E approved 1/2" minus import material shall be used for shading and/or bedding of gas facilities.
 - PG&E approved import material is per [CGT Engineering Guideline 4123](#).
 - If a leveling course is required for gas facilities, the use of native soils is preferred, but if 1/2" minus conditions are not attainable with the native soils, then the use of PG&E approved import materials is required. Bedding under gas facilities will be a minimum of 2" of compacted 1/2" minus native soils or PG&E approved import material.
 - For electric facilities, refer to Note 12. This applies to leveling courses as well as shading.
 - The minimum PG&E approved bedding material may be increased at the discretion of PG&E when warranted by existing field conditions (e.g., rocky soils, hard pan, etc.).
 - The use of any imported material for backfilling purposes shall be limited to those situations when native soils do not allow for required compaction.
14. The applicant is responsible for the removal of excess spoil and associated costs.
15. Separation between gas facilities and electric facilities may be reduced to 6" when crossing.
16. Service saddles are the preferred service fittings for use throughout the joint trench project. All projects will be designed and estimated using service saddles. However, service tees may be used if all clearances, separation, and coverage requirements are maintained.

Revision Notes

1. Revised Note 9 to clarify the minimum allowable horizontal separations requirements.
2. This document was revised on 09-27-2006.

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