

PHILADELPHIA GAS WORKS
SPECIFICATION BOOK
For
Common Trenching For
Natural Gas Mains and Services

October 2008



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Introduction

This manual is designed as a guide and reference source for developers, builders, contractors, engineers, owners and architects responsible for the excavation, maintenance and backfilling of trenches for the proper installation of PGW facilities. For the purpose of this manual, “Developer” shall refer to developers, builders, contractors, engineers, owners and architects.

These specifications describe the basic requirements needed for PGW to approve a joint trench application and is designed to help standardize the method and procedures required for the direct burial of natural gas distribution facilities. All design and installation shall conform to the “*PHMSA US Department of Transportation Pipeline and Hazardous Materials Safety Administration Pipe Safety Regulations Part 192,*” as the same may be amended, modified or superceded.

The terms “Joint trench” and “Common trench” are used to describe any trench that houses both a PGW gas structure and any other utility. Other utilities include electric, telephone and CATV. Joint trenching with the water pipeline is not permitted.

All excavation design plans must be reviewed and approved by the PGW Project Engineer. Furthermore, trenches will be restricted to private property unless the PGW Vice President of Operations or his designee grants permission.

A lead time of at least three months is necessary prior to construction to provide enough time for the proper plan and design to be developed and approved. This time frame can become longer if easements and right-of-ways are involved.

PGW will be responsible for providing all necessary pipe, fittings and material along with the labor to install, test and commission the facilities within a properly excavated trench provided by the Developer.

Once a project has been identified for Developer trenching, the Developer must comply with the following steps and requirements.



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The following Policies and D.S. Standards are referenced in the manual and are available online at www.pgworks.com

- PGW Meter Location Policy
- Distribution Standard 15.0 - Shoring
- Distribution Standard 53.0 - Damage Prevention Material

1. General Design Requirements

The Developer shall agree to the following conditions for all common Trench ventures with PGW.

A. Joint Trench Specification

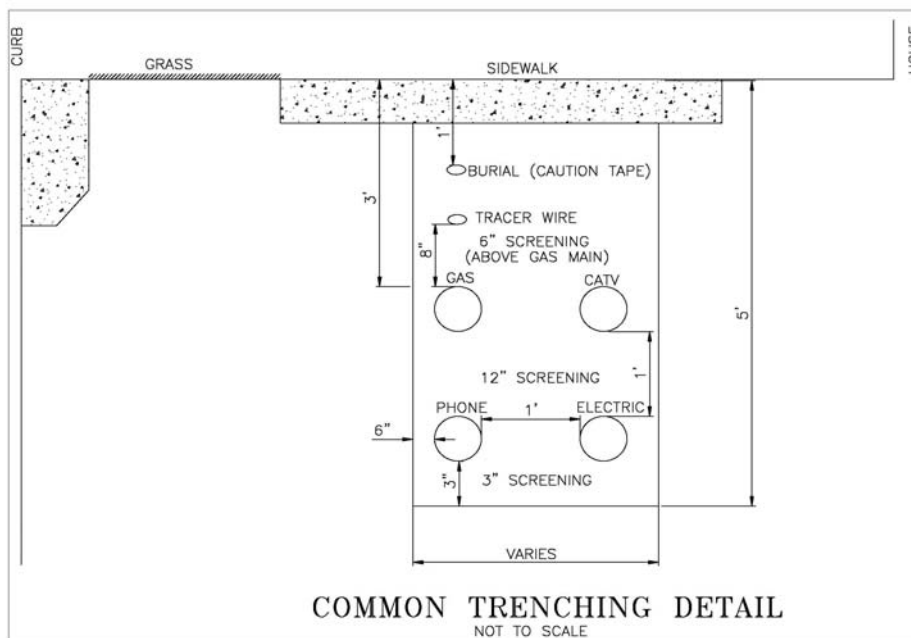
Generally the minimum requirements for joint trenches that house utilities in addition to PGW’s facilities are as follows:

1. Minimum separation between gas facilities and other utilities is 12 inches for mains and 9 inches for services.



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2. Sand is the required material for screening. The PGW Project Engineer must approve other materials.
3. Gas main is to be installed within the sidewalk on outside of trench (street side).
4. Gas Structures are the last utility installed.
5. Service trenches shall be constructed at right angles to the main trench when possible.
6. The placement of gas and electric meters along with telephone and CATV junction boxes on building or structures should be done in a manner that avoids crossing of the various utilities in the service trench.
7. Gas installations in rear of town homes or condominiums shall be approved by PGW prior to construction. The gas main shall be located a minimum distance of 10 feet from the nearest building unless otherwise approved by the PGW Vice President of Operations or his approved designee.





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2. Initial Plans and Loads from Developer

Prior to the Design meeting the Developer shall submit to PGW the most recent gas loads along with detailed drawings of their preferred route of installation, including trench dimensions and any other proposed structures which will be placed in the trench. The Developer shall provide tentative gas meter locations based on “*PGW Meter Location Policy.*”

The use of any proposed easements or right-of-ways shall be shown on all drawings and approved by PGW prior to final design. Obtaining easements and/or right-of-ways can involve a lengthy process so please provide all information to your PGW Marketing Representative early in the process so any issues can be resolved prior to construction. The Developer must identify the limits of paving in his submitted plans.

3. Design Meeting

After detailed site plans are submitted to PGW, PGW shall review the size of the mains and/or service required based on the requested load. PGW will meet with the Developer to discuss the Gas main, service and meter locations along with trench excavation and backfilling. Based on this information PGW will provide the Developer a cost based on the amount of work PGW must do in order to design, inspect and commission the gas facilities. In addition, if the Developer plans to restore paving on the job site it should be communicated at this time.

At this meeting a tentative time schedule for the project will be developed and agreed upon.



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B. Trenching Requirements

1. If a joint trench is desired, the width of the trench must be approved by the PGW Project Engineer.
2. If gas main is the only object in the trench, the widths below are applicable.

<u>Size of Main</u>	<u>Without Shoring</u>	<u>With Shoring</u>
2" to 8"	18"	26"
12"	22"	30"
16"	26"	34"
20"	30"	38"

If shoring is determined to be necessary by the PGW Project Engineer, the Developer must adhere to all applicable rules and regulations in addition to PGW's DS 15.0 construction standard on shoring installations.

3. The Developer shall open at the minimum 300' of trench at a time in order for PGW to properly conduct the Work. Failure to do this would result in the Developer having to accumulate additional expenses for time, materials and any mobilization costs. This length of open trench shall also conform to all City and State regulations. Per the City of Philadelphia's Department of Streets, the Contractor shall not leave more than 500' of trench open at any time. The Contractor will assume all liability for open trenches.
4. Additionally, the Developer shall close up as much of the trench as practical at the end of each day. Coated or plastic pipe shall not lie exposed in an open trench longer than 24 hours, except with the approval of the Project Engineer. This length of open trench shall also conform to all City and State regulations. Per the City of Philadelphia, Department of Streets, the Developer will not exceed a maximum of 500' of trench open at any time.



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5. The Developer shall properly dispose of excess and condemned excavation material and such disposal shall be at the Contractor's expense and responsibility.
6. The trench shall be kept as dry as is practicable until the pipe joints are assembled, tested, coated and the pipe is anchored.
7. The method of backfill shall be acceptable to the PGW Engineer. Backfill shall consist of selected material free from mud, frozen soil, organic material, rubbish, or other objectionable foreign substances. No rock, cinders, or building material shall be used for backfill.
8. When tamping, the backfill shall be placed in layers according to City and/or State regulations, but in no case exceeding 12-inches in depth. Each layer shall be firmly tamped before the next layer is applied. The Developer shall avoid damage to the gas main or other facilities during backfilling and tamping process.



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9. When sand is used to pad the trench and/or backfill the pipe zone, it shall meet the following specifications:

Property	Test Method	Specification Requirements
pH	ASTM C-40	6 to 8
Chlorides	ASTM C-40	less than 0.02%
Moisture content	ASTM C-40	0 to 8%
Density (dry & rodded)	ASTM C-40	95 to 110 lbs./cu.ft.
Organic Impurities	ASTM C-40-66	Must Pass ASTM C40-66 Organic Impurities Test
Sand Equivalent	ASTM D-2419	20 minimum
Compaction Characteristics	ASTM D-1557	When material is compacted to a relative compaction of 95% or greater as determined by ASTM D-1557, the material shall not slough when cross-trenched.
Graduation	ASTM C-136 & ASTM C-117	
	Sieve Size	Percent Passing (By Weight)
3/8" <	(9.5MM)	100
4	(4.75MM)	100
8	(2.36MM)	90-100
16	(1.18MM)	88-100
30	(600MM)	75-100
50	(300MM)	50-70
100	(150MM)	0-30

10. Prior to and during construction the Developer must provide a clear unobstructed path allowing PGW to install its facilities in a timely efficient manner.

4. Damage Prevention Material

PGW reserves the right to install or have installed any of the material listed in DS 53.0 to protect and correctly locate PGW structures. This cost will be included in the estimate.

5. Project Inspection

When the Developer chooses to install PGW facilities, PGW will supply an on-site PGW Inspector to ensure the proper installation of all utilities as



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per PGW Specifications. The Inspector will stay on location until the trench is backfilled. The cost of trench inspection will be included in the estimate. A PGW crew is required for the final tie-in.

6. Drawing Review

Based on the Developer's submitted drawing, PGW will prepare a construction drawing of the proposed trenching project for PGW use. The Developer will then receive a copy of PGW's revised drawing for his review and approval. If revision to the PGW drawing is required, the Developer shall request a meeting with the PGW. If the drawing is acceptable, the Developer shall sign the drawing and return it to the Marketing Representative. PGW will not install any gas facilities unless it has received a signed copy of the drawing from the Developer.

7. Estimate

Once the drawings are approved by PGW and signed off by the Developer, PGW will prepare an estimate of the project. The estimate will include, but is not limited to the following items: PGW's labor costs for the design, planning, inspection, tie-ins and commissioning of the pipeline facilities required for the project; PGW's labor costs to inspect the Developer's installation of all utilities per PGW standards; the tool and machinery needed for the job; pipe, valves and fittings required for a complete installation, administrative and overhead costs. If other utilities are involved, then PGW will check the excavated trench for proper location and depth as described on the drawing.

8. Pre-construction Meeting

Prior to construction, a field meeting should be arranged between the developer, PGW and any other utilities involved. The PGW crew will not begin installation until the trench is acceptable to the on-site PGW Inspector.