		<b>GAS OPERATIONS MANUAL</b> <b>GENERAL CONSTRUCTION REQUIREMENTS</b>		<b>GOM 30.10.20</b>
Department:	Operations	Date Approved:	2-6-2023	
Approved by:	Todd Lakatos, Chris Clancy	Date Effective:	4-1-2023	
Revision Number:	14			

## Purpose

The purpose of this procedure is to provide information relating to the general installation requirements for steel and polyethylene (PE) pipe.

## Scope

This procedure is applicable to all UGI pipelines including distribution and transmission lines. Any requirements specific to service lines only is covered in the General Service Construction Standards (GOM 35.20).

## Responsibilities

- A. Personnel involved in construction of pipe facilities for UGI are responsible for following these procedures.
- B. Inspectors are responsible for ensuring pipe facilities are installed in accordance with this procedure.
- C. Capital Project Management or Area Engineering, Business Development Engineering, and M&R Design Engineering is responsible for notifying the PUC of proposed major construction according to the requirements in section 1.1.
- D. Director of Capital Project Management or Director of Engineering Design, Director of Pipeline System Planning & Optimization, or designee is responsible for notifying PHMSA of any planned construction that meets the criteria listed in section 1.3.
- E. The Sr. Manager Standards and Materials or designee is responsible for reviewing and updating this procedure to meet changes in regulations or operating practices.
- F. Users of a procedure are encouraged to provide feedback on the procedure.
- G. Director Capital Construction and Director(s) Operations are responsible for approving changes to this document.

## Equipment

There is no specific equipment required for this procedure.

## Operator Qualifications and Training

There are no Covered Tasks associated with this procedure.

## References

### A. Federal Regulations

- 49 CFR § 191.22 National Registry of Pipeline and LNG Operators
- 49 CFR § 192.301 Scope
- 49 CFR § 192.303 Compliance with specifications or standards
- 49 CFR § 192.305 Inspection: General
- 49 CFR § 192.307 Inspection of Materials
- 49 CFR § 192.313 Bends and elbows



- 49 CFR § 192.315 Wrinkle bends in steel pipe
- 49 CFR § 192.319 Installation of pipe in a ditch
- 49 CFR § 192.321 Installation of plastic pipe
- 49 CFR § 192.323 Casing
- 49 CFR § 192.325 Underground clearance
- 49 CFR § 192.327 Cover
- 49 CFR § 192.361 Service Lines: Installation
- 49 CFR § 192.517 Records
- 49 CFR § 192.605 Procedural manual for operations, maintenance, and emergencies

## **B. Pennsylvania Regulations**

Title 52 § 59.38 Filing of major construction reports

## **C. Maryland Regulations**

COMAR 20.55.03.02 Information to be Filed. (J) – Construction Notice



- 2.4 Gas lines shall not be run through manholes or footings and will generally be offset around them unless a utility sleeve has been provided. NOTE: Steel main shall only be inserted into steel casing unless otherwise approved by Corrosion.
- 2.5 Trench bottoms must be level and free of rock and debris that could damage the pipe. Approved padding material or rock shield must be used.
- 2.6 All excavation shall be done in accordance with state laws and in a manner to prevent damages to pipelines and other facilities. When determining the exact location of a pipeline, hand digging or other prudent techniques (such as vacuum excavation) are required when within 18 inches of all marked underground facilities.
- 2.7 All employees working in or around excavations or trenches shall take proper safety protection from any hazards. Refer to Safety and Health Manual 500.210 Excavation Safety & 500.210.10 Excavation Atmospheres.
- 2.8 Proper equipment shall be selected for excavating. To minimize the potential damage, the size of excavation equipment, including the bucket, should be chosen to match the job requirements, with smaller equipment used when practical. In areas where facility location is unknown, or in congested areas with numerous facilities, vacuum excavation should be considered.
- 2.9 Paving material and earth removed from an excavation must be located in an area that will:
  - 2.9.1 Minimize erosion of the spoil pile;
  - 2.9.2 Be a minimum of two (2) feet from the edge of the excavation;
  - 2.9.3 Be at least eight (8) feet from a fire hydrant;
  - 2.9.4 Allow surface water to flow in its natural watercourse;
  - 2.9.5 Provide for the unobstructed flow of water along the gutter when a curb exists;
  - 2.9.6 Where practical, all loam and sod will be removed carefully and kept separate from the subsoil, to be used for final restoration.
- 2.10 Tunneling should be avoided wherever possible. Where an open trench is inadvisable, such as crossing heavily traveled highways, streets and railways, boring or driving may be another alternative.
- 2.11 During construction, make certain line segments are free from internal debris. Whenever practical use a pig to remove all debris.
- 2.12 Open ends of the pipeline shall be protected from foreign materials by use of plugs or caps, at the end of each day's work.

### 3.0 Trench Requirements

- 3.1 The minimum trench width shall be four (4) inches plus the diameter of the pipe when using a backhoe. A minimum of a two (2) inch distance must be maintained between the pipe and the trench wall.
- 3.2 When the installation is made with a trencher, the trench width is determined by the installation process. The pipe must be installed in a manner to minimize the stresses on the pipeline and protect the coating from damage.
- 3.3 Sharp objects or protrusions in the bottom of the ditch shall be removed.



- 3.4 The bottom of the ditch must provide firm, uniform support for the pipe and shall be padded with sand, screening, or clean soil, and extend the full width of the trench.

#### 4.0 Bedding and Padding

- 4.1 Padding material must be sandy type soil that is a relatively smooth, fine, granular material (minimum AASHTO #10 specifications). If padding material is unavailable or unfeasible, approved rock shield may be used. Rock shield is to be used as a secondary or supplemental method of protecting PE pipe. Use of padding material is the preferred method of protecting PE pipe.
- 4.2 Manufactured padding material, such as crushed rock, requires inspection for sharp edges.
- 4.3 When padding material is used to protect the pipe, a minimum of six (6) inches must be used below and on top of the pipe.
- 4.4 Blocking for Support
- 4.4.1 Avoid blocking if possible. Blocking shall not be used unless unusual installation conditions arise.
- 4.4.2 Where it is necessary, use blocking material that will not damage the pipe. Materials include a FRP lily-pad, wood blocking or sandbags.
- 4.4.3 Do not use blocking to change pipe grade.
- 4.4.4 Due to potential stress points created by blocking, protective sleeves must be installed between blocking and pipe and must be centered.
- 4.4.5 Pad temporary blocking with FRP lily pad to prevent coating damage.

#### 5.0 Cover

- 5.1 The minimum depth of mains and services is measured from the top of the pipe to the finished grade and must meet the requirements of the following tables. See GOM 30.10.30 Section 6.0 for cover criteria related to joint trench installations.

Pipeline	Mains				
	State Rd In Roadway	Normal Soil			Consolidated Rock (Not in State Road)
		Non-State Rd In Road		Out of Roadway	
	Direct Bury	Insert			
Transmission	36"	36"	N/A	36"	36"
High Pressure Distribution (>100 psig)	36"	36"	N/A	24"	24"
Distribution	36"	36"	24"	24"	24"

Table 30.10.20 - 1: Minimum Main Depth



Services	
Location	Depth
Private Property	18"
Public Right-of-Way – State Road	36"
Public Right-of-Way – Non-State Road	24"
New Business Services Where Final Grade is Unknown	36"

Table 30.10.20 - 2: Minimum Service Depth

- 5.2 MARYLAND ONLY: Install service lines to a depth of 24", except in solid rock where the minimum depth must be 18". Solid rock is indicated by the necessity for blasting or the use of pneumatic equipment.
- 5.3 Where underground structures prevent pipe installation to the depths noted in [Table 30.10.20 - 1](#) and [Table 30.10.20 - 2](#), additional protection must be placed above the pipe, and the pipe must be able to withstand any additional anticipated loads. Consult Engineering for recommendations.

## 6.0 Clearance from Underground Structures

- 6.1 Each transmission line must be installed with at least 12 inches of clearance from any other underground structure not associated with the transmission line. If this clearance cannot be attained, the transmission line must be protected from damage that might result from the proximity of the other structure(s).
- 6.2 Each distribution main must be installed with enough clearance from any other underground structure to allow proper maintenance and to protect against damage that might result from proximity to other structures.
- 6.2.1 A minimum clearance of six (6) inches is required when new or replacement mains or services cross another structure.
- 6.2.2 A clearance of two (2) feet (one (1) foot minimum) is recommended when new or replacement mains parallel another structure and are not installed as a common trench installation.
- 6.2.3 If this clearance cannot be attained, the distribution line must be protected from damage that might result from the proximity of the other structure(s).
- 6.3 Engineering shall design the proposed running line for transmission and distribution. If the running line must deviate from the design by more than three feet, contact Engineering to ensure the new placement is a sufficient distance from buildings and any underground structures.
- 6.4 If the required clearance cannot be obtained, a lily-pad (FRP insulation spacer) should be installed. If the clearance is three (3) inches or less, a lily-pad shall always be installed. See [Figure 30.10.20 - 1](#).

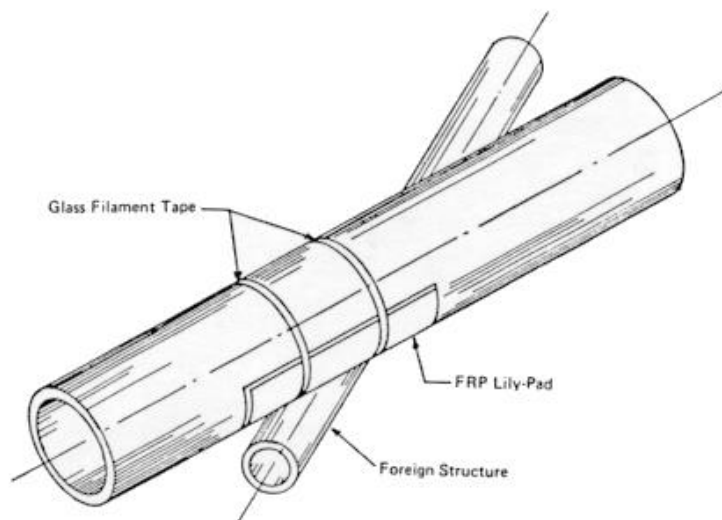


Figure 30.10.20 - 1: Lily Pad Installation

- 6.5 Cases may occur where more than one lily-pad is required. Ensure that the lily pad(s) extend at least four (4) inches to either side of the structure.
- 6.6 When trenching operations conflict with surface encumbrances (i.e., rocks, trees, telephone poles, fire hydrants, or other structures), the surface encumbrances must be removed or supported, as necessary.
- 6.7 When an excavation is open, underground facilities will be protected, supported, or removed as necessary.
- 6.8 Each plastic pipeline must be installed with sufficient clearance, or must be insulated, from any heat source such as steam or electric power lines. Contact Engineering to determine the clearance needed.
- 6.9 The Engineering department must be consulted when any of the separation criteria cannot be met, to discuss the use of further protective measures such as double casing or concrete encasement of the other structures.

## 7.0 Underground Caution Tape

- 7.1 Non-conductive underground caution tape with print, facing up, indicating that a gas line is buried in the vicinity should be placed over new installations when utilizing the open/joint trench installation methods. Tape may also be installed over gas lines during maintenance activities.
- 7.2 Install a Company approved caution tape approximately six (6) to twelve (12) inches below ground surface.
- 7.3 Care must be exercised to avoid disturbing the caution tape during backfill and compaction operations.