Natural Gas Line Extension & Service Standards

2025 Revision Table

(To the 2024 Natural Gas Line Extension and Service Standards)

CHAPTER	TITLE	REVISION DESCRIPTION AND RATIONALE
1.03a6)	**Excavation and Boring Requirements near Utility Lines**	Provided City's specification for filling of potholes/keyhole excavations in public right-of way. Changed flowfill to CLSM.
2.01	**Introduction**	Possible changes to a recovery system and changes to contracts **PENDING**
2.02	**Application**	Corrected in 2 locations in this section the website link for applications for gas service.
2.02c	**Location & Clearances of Gas Lines**	Referenced Table 8 for fiber clearance requirements
2.05	**Construction**	Requested change by City (Tyra) for minor edits and to clarify soil compaction testing to note that must meeting City of CS Standard Specifications. Also, required the use of City approved CLSM.
3.02d	**Utility Service Installer License Renewal, Suspension and Revocation Process**	City Attorney Office's of this section to ensure that LUSIs receive procedural due process if their license is suspended or revoked. **PENDING**
4.01	**Introduction**	Referenced the Operations and Maintenance Manual
4.01a	**Service Line Repair or Replacement**	Changed the language from repair non-plumb riser installations to "correct" the risers. Removed language regarding PUC requirements for pre-1984 service lines. Issues addressed with RIP84 program and URRs discuss replacement costs of gas service lines.
4.01e	**Gas Service Lines Being Abandoned**	Changes in this section requested by Somer, Nate, Mike F, and Josh D. -changed "killing" a service to "abandoning" a service to be consistent with other internal documents -require gas service abandonment if converting to all electric service - Only Colorado Springs Utilities personnel are qualified to perform work to abandon the service line - Services are commonly terminated at the main, but if done at the property line, the stub must meet current standards
4.03b)1)	**Service Line Location**	Reference O&M Main and Service Installation Policy for additional information related to service line location
4.03b)2)	**Joint Trench**	Joint trenches shall not be installed under structures. Damage Prevention requested that we clarify that utilities housing or structures (such as fiber boxes) are not allowed to be placed over gas lines
4.03b)3)	**Single Trench**	Damage Prevention requested that we clarify that utilities housing or structures (such as fiber boxes) are not allowed to be placed over gas lines and horizontal separation requirements must also be met for those structures.
4.03d)2)	**Service Line Installation**	Gas service lines shall not be installed under buildings/structures such as walls, sheds, utilities housing or structures, or other appurtenances (excludes sidewalks) for safety and ease of maintenance and locating.

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4.03d)3)	**Service Line Installation**	Removed language on types of fusion that CSU and contractor perform as this is covered in internal documents.
4.03d)20)	**Service Line Installation**	Removed unnecessary text (reference to risers and manifold).
4.03d)22)	**Service Line Installation**	Where welded steel gas service risers are installed, Colorado Springs Utilities, Utility Construction and Maintenance Department follows the same tracer wire installation criteria for anodeless risers. Internal documents provide details off this activity.
4.03e)	**Leak Test Requirements for New Construction**	Referenced the O&M Pressure Testing Procedure
4.05b)2)	**Prefabricated, Welded, and Below Ground Multiple Meter Manifold**	Removed "manifold" and left "assembly"
4.05b)4)	**Prefabricated, Welded, and Below Ground Multiple Meter Manifold**	Referenced the O&M Manual for welded gas riser work that is performed by CSU or its contactor.
4.06	**Materials**	Further clarified that all materials in the gas distribution system must be approved by Colorado Springs Utilities. Note that details of the material requirements are found in the Colorado Springs Utilities' Natural Gas Material Specifications.
4.06a)	**Pipe and Fittings**	LUSIs are limited to fittings listed in Table 7. All MDPE polyethylene pipe and fittings shall be manufactured date is less than 3 years prior unless approved for use by Colorado Springs Utilities Gas Construction operations supervisors and Engineering Standards.
4.06b)	**Risers**	All gas service risers used by LUSIs shall be approved prefabricated polyethylene-insert type anodeless risers as noted in Table 7. Four-inch anodeless risers are approved for use in the gas distribution system, however, only Colorado Springs Utilities or its' contractors may install the 4-inch prefabricated or welded steel risers fabricated by Colorado Springs Utilities Machine Weld Shop.
Appendix C	**Table 7: Materials**	LUSIs can use Holcim/Daniels Sand (cone sand). Holcim acquired the company.
Appendix C	**Table 7: Materials**	Gas caution tape is optional for services.
Appendix C	**Table 7: Materials**	Noted that details of the material requirements are found in the Colorado Springs Utilities' Natural Gas Material Specifications and sometimes in the item long descriptions.
Appendix C	**Table 8: Clearance Matrix**	Telecom/fiber may be permitted to have a 3' horizontal separation from gas mains, electric primary or electric secondary in locations where the gas main and electric primary or secondary are behind the curb and either in the tree lawn or under sidewalk. The exception may be allowed when the requirements listed in Table 8 are met. Pending City policy regarding requirement #2 on pneumatic missiles in ROW and PUE. Must be in compliance with City policy once finalized.

Natural Gas Line Extension & Service Standards

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(To the 2024 Natural Gas Line Extension and Service Standards)

Appendix C	**Table 8: Clearance Matrix**	Emphasized the past requirement that high pressure gas main requires a 10-foot horizontal clearance with no exceptions
Appendix C	**Table 8: Clearance Matrix**	The horizontal clearance distance applies to fiber appurtenances, to include boxes (boxes must be the required horizontal and vertical distance away from gas and electric and shall not be placed over electric or gas pipe). Requested by Damage Prevention
Appendix D	**Figure 8A: Typical Residential Meter Set**	Chris Kaufman/Zach Meyer (Field Services) requested adding wording that an elbow and nipple no more than or up to 6" allowed to achieve approved vertical spread

system (see Table 8 for clearance requirements). Gas standby appointments are also required for potholing on the high-pressure distribution system but not required on the low pressure system when only potholing, unless requested by Colorado Springs Utilities. These activities will be noted with a "Dig Alert (DA)". Note that with potholing and in order to further protect the coating of gas lines, water pressure shall be limited to 1700 psi around the natural gas infrastructure, dropping to 1200 psi around tar coat pipes which are more susceptible to coating damage.

No more than a maximum of 40 feet of natural gas main or service line may be exposed at a time. At the discretion of Colorado Springs Utilities, Utility Construction and Maintenance Department, Quality Control the exposed footage may be further restricted due to site specific conditions. The exposed span of pipe shall be properly supported and protected from being damaged.

The contractor shall have an adequate amount of approved padding (see Table 7 for Approved Materials) onsite at time of the scheduled gas standby appointment. All Colorado Springs Utilities gas infrastructure that is exposed shall have a minimum of six inches of approved padding sand (see Table 7) placed around the entire circumference of the pipe in the area at which it was exposed and/or crossed in its entirety. No other padding materials are approved, even if only used temporarily.

Potholes must be filled in a timely manner and site cleanup must include the removal of the core. Similar to El Paso County requirements, all core holes must be temporarily filled within 24 hours of being drilled into a hard or soft surface and permanently filled within 7 days of being drilled into the surface. If the core holes need to remain open longer than 24 hours, it is acceptable to cover the holes using a metal plate.

Per the City Standard Specifications (Addendum 3: Revision to Section 206), ~~T~~the City ~~has an additional requirement for potholes and~~ requires that non-Utilities personnel filling potholes/keyhole excavations in the public right-of-way must do so with controlled low strength material (CLSM) ~~flowfill~~ (Colorado Springs Utilities requires 12" of padding above the top of pipe prior to CLSM~~flowfill~~ due to the heat generated. CLSM~~Flowfill~~ in joint trench areas behind curb is not allowed). Contractors working within the City shall also comply with the City's pothole/keyhole excavation backfilling requirements. Utilities personnel may use acceptable compaction methods (e.g., pneumatic compactors) to fill keyhole excavations~~potholes~~ and avoid the use of CLSM~~flowfill~~ (practice in place for over 10 years and official variance in process). No other type of material(s) than what has been approved by Colorado Springs Utilities (see Table 7), even if only used temporarily, shall be used on or around Colorado Springs Utilities gas infrastructure or piping after being exposed when backfilling potholes, excavations, etc.

Directional Drilling Crews and/or Potholing Crews shall use all available resources to locate and expose gas mains and service lines before contacting Colorado Springs Utilities for assistance (note: crews shall comply with standby requirements as described above).

The standards herein are supplementary to, and are not intended to conflict with, the rules and regulations on file with the City Clerk of the City of Colorado Springs or applicable city ordinances.

and actual costs of construction. Once all amounts due to Colorado Springs Utilities are paid, the Applicant will be entitled to execute a Refund Contract. Colorado Springs Utilities constructs the gas mains, service stubs and associated facilities. The Builder contracts with a LUSI to construct the service lines from the service stubs to the buildings (i.e. on the Applicant's private property). The gas meter is set, and Colorado Springs Utilities refunds the Applicant for each new meter set (i.e. new service connection) under the terms of the executed Refund Contract.

2.02 Application

The Applicant initiates the line extension process by submitting an **Application for Gas & Electric Line Extension**, as well as the required plans for design and construction. The application is a standard form provided by Field Engineering that captures pertinent information about the Applicant and the requested extension. A copy of the Application is included at the end of this chapter and online at www.csu.org/Pages/~~development files-forms~~PermitsApplicationsForms.aspx.

a) Required Plans:

Along with the application, the Applicant must submit the following plans: water plans, street plans and profiles showing the location and elevation of sanitary and storm sewer lines, service stub plans showing the planned location of utility service stub lines into each lot, and a recorded plat. The Applicant may submit a request without a recorded plat. However, construction will not begin until the Applicant has submitted a recorded plat or an appropriate easement document granting the required right-of-way to Colorado Springs Utilities.

Please Note: Unless the Applicant is extending gas service in existing streets, **a Utilities Addressing Plan (UAP) and/or Utilities Design Cad File (UDCF) must be submitted to the Colorado Springs Utilities Facility Information Management Systems (FIMS) Office before any action will be taken on a line extension request.** The UAP/UDCF requirements are included in Appendix B of this document. For more information about UAP/UDCF, please call the Colorado Springs Utilities FIMS office (see Phone Section).

b) Private Streets:

For projects with private streets, including most apartment, condominiums, townhouse and commercial projects, the Applicant must also submit site development plans, master facilities plans, and landscaping plans. The Applicant should also pay special attention to the separation requirements discussed in 2.02(c) "Location of Gas Main Lines", since private streets are typically narrower and thus more challenging to provide required utility separations.

c) Location & Clearances of Gas Lines:

The location of water, electric, sanitary sewer, storm sewer and other underground facilities must provide adequate separation for gas facilities (see Table 8 for Clearance Matrix; See 4.03c for additional Service Line Clearances). At time of installation, typical depths of gas main lines are installed, from top of pipe to grade, between 30 inches minimum and 48 inches maximum for ≤ 76 pounds per square inch gauge (psig) gas mains, and between 48 inches minimum and 72 inches maximum for the high-pressure distribution system (>76 psig).

1) Gas main lines (≤ 76 psig) shall have the following minimum separations:

a) Minimum 6 foot horizontal separation when installed parallel to other utilities and structures (see Table 8 for Fiber requirement).

EXCEPTION: Hillside Minor Residential Streets – Minimum 5 foot horizontal separation.

b) Minimum one foot of vertical separation when crossing other utilities.

c) Minimum one foot radial separation when gas, electric, and communication lines are approved to be in the same trench.

d) Minimum 30 inches of cover required.

e) Minimum 6 foot horizontal separation for trees [see c)3) below].

2) High-pressure distribution system main lines operated at >76 psig must have the following separations. Rare exceptions to the below must be approved by Colorado Springs Utilities, Utility Construction and Maintenance Department:

a) Minimum 10 foot horizontal separation when installed parallel to other utilities.

b) Minimum 15 foot horizontal separation with structures.

c) Minimum 5 foot vertical separation when crossing other utilities.

d) Minimum 10 foot horizontal separation from trees [see c)3) below].

e) Minimum 4 foot cover required.

3) Gas lines (mains and services) shall have the following minimum separation with trees:

a) Trees may not be planted within 10 feet horizontally of the high-pressure distribution natural gas system (>76 psig) and within 6 feet of a natural gas system (≤ 76 psig gas main or service) with limited exceptions listed in the Time of Landscape Plan Approval table below. Exceptions that allow planting of shallow root medium/small species shall use the Approved Street Tree with Shallow Roots table. The horizontal separation distance is measured from the base of the tree to the gas pipe.

b) When dead trees are replaced per the below table, buried utilities must be located pursuant to Chapter 12 Article 10 of Colorado Springs City Code prior to removing the dead trees and planting the replacement species.

c) Standby requirements (see Section 1.03) apply to activities within 6 feet of a gas pipe that is four inches (4") or larger in size or any size facility on the high-pressure distribution system (>76 psig). In addition to standby requirements, potholing is required when activities are within 6 feet of a gas pipe. These requirements must be met during tree planting/removal/replacement activities.

d) If excavation will occur within 18" from either side of the exterior sides of any marked utility regardless of size, the marked utility must be exposed by **potholing** using non-destructive & non-mechanical means of excavation. Examples: shovel, hand tools, water or air vacuum methods.

Approved Street Tree with Shallow Roots List			
Approved Medium Trees (25-45 ft)		**Approved Small Trees (< 25 ft)**	
Amur corktree *(male only)*	*Phellodendron amurense*	Amur chokecherry	*Prunus maackii*
Golden raintree	*Koelreuteria paniculata*	Newport plum	*Prunus cerasifera*
Japanese pagoda *(protected site)*	*Styphnolobium japonicum*	Princess Kay plum	*Prunus nigra*
Japanese tree lilac *(protected site)*	*Syringa reticulata*	Tatarian maple	*Acer tataricum*
Bigtooth maple *(single stem only)*	*Acer grandidentatum*	Amur maple	*Acer ginnala*
Maple, Miyabe/ State Street	*Acer miyabei*		
Mountain ash	*Sorbus aucuparia*		
Ohio buckeye	*Aesculus glabra*		
Ussurian pear *(fruitless only)*	*Pyrus ussuriensis*		
Turkish filbert	*Corylus colurna*		

Note: Approved Street Tree List for Colorado Springs updated by City Forestry in Oct 2019. The list provided above is a subset of the City's Steet Tree List and includes those with shallow rooting habits. Plant substitutions due to lack of plant availability or seasonal planting constraints may be considered with approval from City Planning and Colorado Springs Utilities, Utility Construction and Maintenance Department.

d) Easements:

Service lines are considered a condition of service as allowed by the Utilities Rules and Regulations and easements may not be required. It's more typical for easements to be required for distribution systems in private streets or right-of-ways. However, City Code (12.3.303) requires that Colorado Springs Utilities determines the location or locations at which any owner service line shall be connected to the gas distribution system and that the connection shall be made without entering upon property other than the property of the owner so connected, unless an acceptable recorded utility easement is provided.

The Applicant must submit an acceptable utility easement for private streets and right-of-ways. A standard easement document form is available online at www.csu.org/Pages/PermitsApplicationsForms~~development-files-forms~~.aspx, or through Colorado Springs Utilities Field Engineering, and should be submitted with the line extension application as necessary.

The easement widths for underground utilities can vary based on the number of utilities installed in a given area, the size of the utility lines, depth of utilities, multiple utility infrastructure of the same designation (e.g., gas with gas), construction methods, and the pressure of the gas lines. Typical gas only easements are a minimum of 50 feet for a gas main that is part of the high-pressure distribution system and a minimum of 20 feet if part of the less than or equal to 76 psig system and if joint gas/electric trench. Colorado Springs Utilities Field Engineering, with input from Colorado Springs Utilities, Utility Construction and Maintenance Department, will determine the necessary easement required based on site and project specific variables.

Commented [LR1]: Mike F brought up issue with Classic (Loren) using a generic "utility" easement. Thought was that we need a dedicated gas only 50' easement for the high pressure system (150). Also now sometimes have other utilities going in the gas HP 50' easement.
Found discrepancies in w and w/w LESS and pup checklist. Working with UDS and w and w/w standards on this. Those standards do allow w or ww in the HP gas easement

2.03 Design and Estimate

Upon receipt of the **Application for Gas & Electric Line Extension** and all required plans, Colorado Springs Utilities will begin designing the new gas facilities and estimating the cost of

installing these facilities. There will be a specified design fee assessed for this work. Any variations to gas facility designs that are requested different from Colorado Springs Utilities current design standards and specifications (e.g., GLESS, Natural Gas Design and Engineering Manual, etc.) will be reviewed to ensure they meet or exceed existing design requirements. If approved, the costs for the variations are charged 100% to the customer with the estimate to be determined at the time of the request and all final costs being reconciled at the end of the project.

Projects are prioritized for design according to how close they are to being ready for construction of gas facilities. Gas facilities are installed in a joint trench with electric or after all other utilities are installed and the curb and gutter is constructed. Application for line extensions should be made as early as possible in the development process to assure adequate time for design and estimate.

2.04 Execution of Extension Contract

After the design and estimate are completed, the Applicant receives copies of each, plus a copy of the applicable Extension Contract along with a letter requesting execution of the contract and remitting either the percentage of the estimated cost of construction, as described in the current tariff, plus the specified design fee or 100 percent of the estimated cost of construction plus the specified design fee to Colorado Springs Utilities. The estimated cost of construction for oversized facilities is based on a nominal pipe size. The Extension Contracts detail the terms under which the new gas facilities will be constructed. Samples of both Extension Contracts are included at the end of this chapter.

2.05 Construction

Gas mains and service stub facilities may be constructed only by Colorado Springs Utilities or by Colorado Springs Utilities gas contractor. The onsite materials testing~~geotechnical~~ company, developer, or the developer's representative shall be responsible for promptly and consistently providing copies~~a copy~~ of all completed soil compaction test results ~~that are~~ taken on ~~any and~~ all new construction projects where the gas and/or electric utilities are or ~~have been~~were installed by Colorado Springs Utilities or its designated contractor. The frequency of density tests shall be a minimum of every 250 linear feet of gas / joint / electric mainline trench, at each service stub installed, ~~and~~ at all street crossings, and per the City of Colorado Springs Standard Specifications for public streets, city property and right-of-way. The number of density tests may be increased if directed by the Colorado Springs Utilities Gas Construction Quality Control Inspector or developer. If flowable fill (CLSM) that meets the City's design requirements is installed, compaction and density tests are not required~~.~~ These soil compaction test results shall be explained to the onsite Colorado Springs Utilities Gas Construction Quality Control Inspector immediately upon the completion of said soil compaction tests and prior to the installation crew leaving and/or moving off the development, subdivision, or jobsite. This is to ensure that any soil compaction test failures or issues that may exist can be remedied prior to the crew moving off or leaving the jobsite. A copy of all soil compaction test reports, including the subdivision name, shall be emailed to compactiontests@csu.org.

a) Construction Scheduling:

Construction of new gas facilities is scheduled after the Applicant has executed an Extension Contract, remitted the appropriate fees and prepared the site for construction. The site is considered ready for gas facility construction after all other utilities are installed, and curb

CHAPTER 4

Service Line Design and Construction

4.01 Introduction

Service line design and construction specifications are adopted as rules and regulations by Colorado Springs Utilities in accordance with Chapter 12, Article 3, Sections 12.3.301 and 12.3.304 of the Code of the City of Colorado Springs. The purpose is to ensure that requirements established in Colorado Springs Utilities Natural Gas Tariffs/Rules and Regulations, and the U.S. Department of Transportation Minimum Federal Safety Standards for Natural Gas Pipelines (49 CFR Part 192), are adhered to by all persons engaged in design and/or construction of natural gas service lines.

The scope of the following specifications includes all new polyethylene gas service lines. Mainlines and related infrastructure are installed by Colorado Springs Utilities, Utility Construction and Maintenance Department or their contractors and follow internal design, installation, and operation standards and specifications (e.g., Design and Engineering Manual, Operations and Maintenance Manual, etc.).

A Licensed Utility Service Installer (LUSI) shall only perform installation of the affected gas service lines that they are qualified in but in no instances shall be larger than 2 inches nominal diameter. LUSI's are limited to using socket fusion methods. The contractor and/or LUSI shall be held responsible for the integrity of gas service line installations for a period of 3 years beginning the day final approval is granted by the Colorado Springs Utilities, Utility Construction and Maintenance Department.

Colorado Springs Utilities Gas Construction personnel shall evaluate each of the following, on a case-by-case basis to determine the best course of action.

a) Service Line Repair or Replacement:

LUSIs are responsible to correct ~~repair~~ non-plumb risers for installations that they completed and that do not yet have a gas meter installed. Riser corrections~~repair~~s must be made within 72 hours or 3 business days (whichever comes first) of notification by Colorado Springs Utilities. If corrections~~repair~~s are not made within this timeframe, the LUSI will not be allowed to perform additional tie ins and the LUSI may be issued a violation, which could result in the temporary suspension of the LUSI's license. All other repairs or replacement of service lines and risers shall be completed by Colorado Springs Utilities and may be charged to the customer (e.g., LUSI, homebuilder, and/or others) on a Time & Materials (T&M) basis.

~~Per the requirements of the Colorado Public Utilities Commission as it pertains to non-residential service lines, "Service lines installed prior to 9/1/1984 which require repair or renewal due to leakage shall be repaired or renewed by the Division (Colorado Springs Utilities) at the owner's expense." In addition, for pre 9/1/1984 installed non-residential service lines, Colorado Springs Utilities will replace, at the owner's expense, substandard material not consistent with gas industry standards of that time period (i.e. installation of PVC pipe, clear plastic pipe, sprinkler hose, etc.).~~

b) Service Line Relocation:

Any residential or commercial relocation of service lines required due to customer actions is charged to the customer on a Colorado Springs Utilities T&M basis (Example: grade changes, new buildings/structures which jeopardize existing gas service lines). T&M contracts are initiated by Colorado Springs Utilities Field Engineering Section. Upon completion, the contract will be reconciled for actual costs.

c) Gas Service Line to an Existing Structure that has Natural Gas Service:

Work required for any structure that already has a natural gas service line and now requires the gas service line to be relocated, upgraded, replaced, to have additional risers installed, to have a branch service installed, or the gas meter to be moved for any reason, shall be performed by Colorado Springs Utilities Operator Qualified (OQ) personnel. The work required is charged to the customer on a Colorado Springs Utilities T&M basis.

(Note: A branch gas service line is a gas service line which intersects, attaches, and is fed from an existing natural gas service line.)

d) Gas Service Line to a New Building or Existing Buildings that have not had previous Natural Gas Service:

Colorado Springs Utilities LUSIs shall be allowed to install all new natural gas service lines for all brand new structures or existing structures, which require natural gas service and are creating new gas load. Plastic socket fusions shall be performed by the LUSIs in compliance with Colorado Springs Utilities Plastic Joining Procedure. Appendix F provides the socket portion of the approved procedure. Updates to this procedure may be necessary at times with some updates requiring an immediate change to the procedure. If this occurs, Colorado Springs Utilities, Utility Construction and Maintenance Department Quality Control Inspectors will distribute the updated procedure to the LUSIs.

e) Gas Service Lines Being Abandoned~~Killed~~:

Commented [LR1]: Changes in this section requested by Somer, Nate, Crystal, Mike F, and Josh D.

Abandonment of natural gas service lines within the Colorado Springs Utilities gas service area is required for the demolition of a building, home or structure or for conversion to all electric service. ~~All natural gas service lines within Colorado Springs Utilities gas service area that are being killed, for the demolition of a building, home or structure, shall always be killed and capped at the designated property line of the address and an electronic marker placed at this location.All natural gas service lines that are servicing any buildings, homes or structures within Colorado Springs Utilities gas service area, that are being demolished and no building, home or structure shall be rebuilt in its place, the lot or property is to remain vacant or may become a parking lot, and no longer requires natural gas service, the gas service line shall be killed and capped at the main.~~Only Colorado Springs Utilities personnel are qualified to perform work to abandon the service line. Customer piping will be disconnected from the gas supply and sealed. Services are commonly terminated at the main, but if done at the property line, the stub must meet current standards.

f) Gas Service Line Excess Flow Valves and/or Service Valves:

1) The typical residential service line installation utilizes a joint trench for both electric and gas services. NOTE: Joint trenching of electric and gas service lines shall only occur when an address being served resides within both Colorado Springs Utilities electric and gas service territories where both utilities are owned by Colorado Springs Utilities. The LUSI is responsible for providing the trenching, padding & backfilling, electric wire and gas service lines (see Table 7 for Approved Materials, Table 10 for Inspection Checklist, and Figures 1-9 for installation details).

2) LUSIs shall only install gas service lines smaller than or equal to 2" and only the sizes of pipe that they were tested on and passed qualification requirements.

3) 1-1/4" risers shall be installed for all commercial services unless an alternative is required by Field Engineering or Gas Advanced Design.

4) Prior to inspection, gas service line(s) shall be leak-tested with air in accordance with 4.03(e) Leak Test Requirements. Also, each gas service line trench shall be properly padded per 4.03(d) Service Line Installation notes 9 and 10.

5) The LUSI must contact Colorado Springs Utilities ~~-~~for an inspection (719-668-3524, option 1). See 4.04 Inspections, for inspection procedure. Questions and/or problems regarding gas service line inspections must be referred to Colorado Springs Utilities, Utility Construction and Maintenance Department (719-668-3524, option 1).

6) Upon approval of the LUSI's installation through inspection by a Gas Construction Quality Control Inspector or a Colorado Springs Utilities qualified inspection contractor, the Colorado Springs Utilities, Utility Construction and Maintenance Department will energize (tie-in) the gas service line(s).

7) Once the service line(s) is approved, the LUSI installing the gas service line(s) shall be responsible for back-filling the gas service line(s) trench to existing or final grade at time of tie-in before the OQ qualified inspector leaves site. The final back-fill procedure should be completed within 24 hours from the time of tie-in to best protect services in the trench.

8) If the service riser and/or fuel gas piping inlet are not located by the LUSI such that a standard meter set can be constructed (see Figures 4, 5 & 8), the configuration will be rejected. Contact Colorado Springs Utilities Field Services (719-668-7350) for questions and/or problems with the rejection.

a) If the configuration is rejected due to the fuel gas piping, the Builder will be responsible to resolve the issue.

b) If the configuration is rejected due to the service riser, Colorado Springs Utilities will be responsible. If~~, unless~~ the service riser location provided by the Builder proves incorrect at time of meter set, the Builder will be responsible.

b) Service Line Location:

Any utility service lines (other than communication as shown in Figure 1B) owned by any entity other than Colorado Springs Utilities are not allowed to be installed in a joint trench with

Colorado Springs Utilities owned natural gas service lines. See Figure 4B for non-Colorado Springs Utilities owned electric utility lot layout requirements.

1) Each gas service line shall be located within the property lines of the lot that is intended to serve. Utilities will provide only one Natural Gas Service Stub to each individual lot that will extend to the property line where practical. Each separate and/or additional structure/building shall be served by a single or separate gas service line, riser and meter where practical. Mainline extensions may be required onto a lot when there is more than one building on the lot. All gas service lines shall be installed in the most direct, straightest and practical path possible from the gas service stub location to the gas service riser and meter location. See 2.02c for Location & Clearances of Gas Main Line and Figure 4 for Utility Lot Layout. Additional information is found in the O&M Main and Service Installation Policy.

2) Joint Trench:

Gas service lines installed in a joint trench with Colorado Springs Utilities owned electric and/or communication lines require a 12 inch minimum radial separation (see Figures 1 & 9, as well as the ELESS joint trench lot layout figures). Joint trenches shall not be installed under structures such as walls, sheds, utilities housing or structures, or other appurtenances (excludes sidewalks). This is done for safety and ease of maintenance and locating.

Commented [LR3]: Verify???

Joint trench is for residential applications. Commercial installations are not to be in a joint trench unless approved by Colorado Springs Utilities and joint trench shall not be used with the high-pressure distribution system (>76 psig).

3) Single Trench (Gas Only):

All gas service lines shall maintain the minimum required horizontal separation from other buried utilities, utilities housing or structures, property lines and structures adjacent to the gas service line when installed in a gas only trench (Figure 1A). Gas service lines shall not be installed under structures such as walls, sheds, utilities housing or structures, or other appurtenances (excludes sidewalks) for safety and ease of maintenance and locating.

Commented [LR4]: Added at the request of Damage Prevention to address fiber boxes

Where the required horizontal or vertical separation distance cannot be maintained or if the proposed route is determined by Colorado Springs Utilities to be unavoidable, an exception or a variance to a crossing standard may be requested All exceptions or variances are to be submitted to the Gas Quality Control Supervisor and/or the Gas Construction Section Leader in written form with detailed documentation of the exact circumstances, terms, and conditions of conflict and proposed solution. Exceptions or variances from the required gas standards may only be approved by the Colorado Springs Utilities, Utility Construction and Maintenance Department Gas Quality Control Supervisor and/or the Gas Construction Section Leader.

If exceptions or variances are approved in cases where buried utilities and/or underground structures prohibit adherence to separation requirements, a polyethylene protective sleeve may be required. The protective sleeve shall have an inside diameter sufficient for insertion of the gas service line (and tracer wire) without causing undue resistance and shall be of the same material as the gas service line. A minimum one-foot vertical separation from the gas carrier pipe or protective sleeve to the structure footer shall be required for all unavoidable utility crossings. The protective sleeve shall extend a minimum of 3 feet beyond the perimeter of the conflicting structure.

c) Service Line Clearances:

Gas service lines should have the following minimum separations (see also Section 2.02c and Table 8):

1) Minimum 3 foot horizontal separation from property lines, above or below ground structures, and/or other utilities.

EXCEPTION: Minimum 2'-6" (30 inch) horizontal separation from property lines, above or below ground structures, and/or other utilities, shall only be allowed where and when residential structures are built on less than a 6 foot setback from the side property line (distance of less than 6 feet between the side wall of the structure and the side property line). See Figure 4A.

~~2)~~ Minimum one foot vertical separation when crossing other utilities.

~~3)~~2) Minimum 24 inch cover required.

Note: separations are measured from the outside diameters of the utility lines.

d) Service Line Installation:

Colorado Springs Utilities allows the use of prefabricated service line assemblies, but only for 3/4 inch service lines, and only where the line does not exceed a length of 120 feet. Prefabricated service line assemblies include an approved anodeless riser, up to 120 feet of factory-installed polyethylene gas piping, and tracer wire. LUSIs who install these types of lines need to self-inspect for gouges greater than 10 percent. A socket heat fusion is allowed on these lines. All socket heat fusions must be performed using tools and equipment maintained to manufacturer specifications. All fusions shall remain exposed and the trench shall remain open for inspection.

Steel gas service lines shall only be installed by the Colorado Springs Utilities, Utility Construction and Maintenance Department or their contractor. Trenching, padding & backfilling for all new services shall be provided by the builder's representative.

Boxed property line valves shall be installed by Colorado Springs Utilities or their contractor as required by 49 CFR Part 192. Property Line valves shall also be installed for new or replaced services 2" or larger or services designed for public assemblies including, but not limited to; schools, churches, hospitals, and nursing homes. Property line valves should be installed when commercial/industrial customers have significant amounts of private utilities that could impede construction crews during future gas work.

Any gas service line that is located within Colorado Springs Utilities natural gas service territory that needs to be relocated and or replaced after the initial installation, that has had natural gas being delivered through it to the point of sale (the meter) shall require any and all such work to be performed by Colorado Springs Utilities personnel.

NOTE: Colorado Springs Utilities, Utility Construction and Maintenance Department Quality Control Inspectors or Colorado Springs Utilities operator qualified inspection contractor will examine all trenches and padding. If any violation of the service line installation standard is

discovered during an inspection, the Utility Service Installer's license may be suspended or revoked at the discretion of the Colorado Springs Utilities, Utility Construction and Maintenance Department.

1) All gas service lines shall be installed in the most direct, straightest and practical path possible from the gas service stub location to the gas service riser. Where field bends are necessary, the radius of the bend shall not be smaller than specified in Table 4. Field bends that have fittings within the bend shall only be installed by Colorado Springs Utilities, Utility Construction and Maintenance Department or their contractor.

2) ~~Gas service lines shall not be installed under any building/structure.~~ Gas service lines shall not be installed under buildings/structures such as walls, sheds, utilities housing or structures, or other appurtenances (excludes sidewalks) for safety and ease of maintenance and locating. Nor shall gas service lines or meters be installed within or under partially enclosed surface structures (e.g., tunnel) where gas from potential leaks can accumulate and access and maintenance are challenging. Underground and surface structures include, but are not limited to foundation and basement walls, patios or other sealed surfaces, which abut a building, or its foundation. Excluded from this category are unavoidable structures where a protective sleeve is required.

3) LUSIs fusing gas service line piping up to and including 2" diameter shall be joined by socket heat fusion only. ~~Colorado Springs Utilities and their contractor may use socket, saddle, butt, or electrofusion~~.

4) All socket heat fusions shall be performed in accordance with Colorado Springs Utilities Plastic Joining Procedure (see Appendix F). If discrepancies exist between this document and the Plastic Joining Procedures, the Plastic Joining Procedures shall be implemented. Only persons who are LUSIs shall perform socket heat fusions and/or install prefabricated service line assemblies.

5) *NOTE:* Due to the thermal expansion & contraction of polyethylene, sufficient pipe length shall be provided by installer (polyethylene pipe changes in length one inch for every 100 feet for every 10 degrees Fahrenheit).

6) Cold weather (below 55°F) fusions shall be performed using the method detailed in the Colorado Springs Utilities Plastic Joining Procedure (see Appendix F). See 4.04(d) for Inclement Weather and Show Up Time explanation.

7) For gas service line(s) installed by LUSIs no more than 2 socket fusion couplings between the gas service stub and the gas service riser shall be allowed. Colorado Springs Utilities Gas Construction Quality Control Inspectors must approve the use of more than 2 socket fusion couplings. All couplings must be exposed for inspection. The minimum pipe lengths between adjacent socket fusions, except for those associated with field bends, are detailed in Table 6.

8) No gas service line shall be installed in an "over dig" area of a building foundation prior to it being completely backfilled and appropriately compacted. After the entire "over dig" area of the foundation is backfilled and compacted, a separate trench shall be dug for the installation of the gas only service line or joint trench service lines.

15) A minimum of 12 inches of the existing gas service stub shall be exposed during excavation of the bell-hole.

16) If gas service stubs are damaged such that greater than 10 percent of the wall thickness is gouged, stripping back of the trench shall be required in order to replace the entire portion of damaged pipe.

17) If gas service stubs are damaged, (including cuts, kinks, breaks and/or those that are leaking) the damage shall be treated as an emergency, call (719-448-4800). **ONLY** Colorado Springs Utilities, Utility Construction and Maintenance Department shall repair the gas service stub, at the expense of the LUSI.

18) All Colorado Springs Utilities, Utility Construction and Maintenance Department-owned electronic markers are to remain in the trench.

19) The new gas service line shall extend a minimum of 12 inches alongside the existing gas service stub and shall be at the same elevation as the end of the existing gas service stub. The existing gas service stub shall not be realigned or moved.

20) A #12 tracer wire (see Table 7) shall be installed with each gas service line. The tracer wire shall be taped to the gas service line in at least three locations and not to exceed 10 feet from each other. The tracer wire shall be brought above existing grade adjacent to the building side of the riser and taped securely in 3 places to the contour of the gas service riser. See Figures 5 & 6 for tracer wire installation details ~~included on service risers and manifolds~~.

21) The tracer wire shall be continuous (without splices) except where a branch service exists, which makes it necessary to splice additional wire onto the gas service line tracer wire. Where splices are necessary, Colorado Springs Utilities, Utility Construction and Maintenance Department approved wire connectors shall be used. All gas service risers shall have tracer wire installed with the riser and adhere to Colorado Springs Utilities Operator Qualification requirements.

22) Where welded steel gas service risers are installed, Colorado Springs Utilities, Utility Construction and Maintenance Department follows the same tracer wire installation criteria for anodeless risers. Internal documents provide details off this activity. ~~Also, a one pound magnesium anode shall be thermite welded to the riser below grade. Tracer wire is not to be thermite welded to any steel riser.~~

23) The electric service wire in a joint trench installation with the gas service line shall not be installed until the Colorado Springs Utilities Gas Construction Quality Control Inspector arrives on site. The electric wire is provided by the LUSI. Additionally, in the event the electric service wire must be installed under a driveway, patio, deck or similar structure, a 2 inch (PVC SCH40) electrical rated (grey) conduit must be installed, extending 24 inches beyond both sides of the obstruction, with a utility-provided locator biscuit installed on each side of conduit for future locating purposes. See Table 7 for Approved Electrical Materials.

24) Refer to the Colorado Springs Utilities Electric Line Extension & Service Standards book for additional details.

e) Leak Test Requirements for New Construction:

The pressure gauge used by the LUSI for pressurizing the pipe shall be a test gauge with a range of zero to 300 pounds per square inch (psig) and shall be operational and in good working condition. Colorado Springs Utilities or its contractor performing the actual leak test shall use a calibrated gauge.

1) The leak tests for new services will be evaluated at a targeted starting point of 125 pounds per square inch, but it is acceptable to start at any pressure between 115 and 135 pounds per square inch. Any pressure difference of +/- 1 pound per square inch, within the approved leak test time period, will be a failed leak test.

2) The pressure to which the gas service line is subjected shall be no more than 135 pounds per square inch. If a gas service line is pressurized over 135 psig, installer will be required to replace entire line including the riser.

3) All gas service lines 2" diameter and smaller shall be leak tested for a minimum of 15 minutes for lengths less than or equal to 200' prior to tie-in. For pipe lengths greater than 200' air test for 15 minutes for every 200 feet in length (e.g., 201' to 400' test for 30 minutes; 401' to 600' test for 45 minutes, 601' to 800' test for 1 hour, etc.). When the gas service line is allowed to be installed with the prior approval of Colorado Springs Utilities Gas Construction Quality Control Inspections personnel prior to the gas service stub installation, the service line shall remain under leak test until a gas service stub is installed by Colorado Springs Utilities. When this occurs, the licensed Utility Service Line Installer shall be billed daily fees for Colorado Springs Utilities Gas Construction Quality Control Inspections personnel to check and affirm that leak test pressure is maintained, and that the gas service line has not been unknowingly damaged. NOTE: This is not the preferred process or method of installation.

4) To help ensure a passing leak test, it is important to let the pump up air/medium stabilize before starting the leak test.

5) Additional information on pressure testing requirements is detailed in the Gas Operations and Maintenance Manual Pressure Testing Procedure, to include testing of mixed material pipe segments.

f) Venting Through Pavement:

Except as specified in this paragraph, gas service line(s) shall not be located below or pass through any underground or surface structure.

1) Where a structure abuts a building, a gas service riser vent shall be installed. As shown in Figure 2, the gas service riser vent shall consist of a 12 inch by 12 inch opening in the sealed or concrete pavement surface. Field conditions may allow for a 6 inch by 6 inch with approval of the Field Service Inspector. The top 6 inches of the gas service riser vent opening shall be fitted with dirt, loose gravel or rock, as outlined in Figure 2. Other gas service riser vents may be used only with prior approval from the Colorado Springs Utilities, Utility Construction and Maintenance Department.

3) All remodels that require a larger meter need to have the gas service line size re-evaluated by a Colorado Springs Utilities Field Engineer.

b) Meter/Riser Manifolds:

1) Location:

All gas service risers shall be located and installed in accordance with Figures 2 through 9 as applicable. Each gas service riser shall serve only one meter unless an Above Ground Multiple Meter Manifold assembly has been formally approved by Colorado Springs Utilities (see Figure 7). The intended gas service riser shall be clearly indicated by a yellow paint mark on the structure foundation prior to service line installation.

2) Prefabricated, Welded, and Below Ground Multiple Meter Manifold:

Prefabricated polyethylene-insert type anodeless gas service risers shall not be bent or altered. Heating or welding of polyethylene-insert type anodeless gas service risers is prohibited. All gas service risers and gas service line connections shall be properly supported on well-compacted soil to prevent damage during back-filling and compaction, and to prevent settling. Compaction shall be completed using either hydraulic or pneumatically operated equipment and shall be completed up to the surface level of the bottom of the riser. After back-filling, the gas service riser shall be in a vertical position. The minimum depth of the entire ~~Manifold~~ assembly shall be 24 inches.

3) All 1-1/4 inch and larger risers shall have a bypass installed.

EXCEPTIONS: Buildings with multiple risers shall have a bypass installed every 10 to 12 feet, instead of every riser. If the distance between the risers on the underground manifold exceeds 12 feet, a bypass shall be installed on every riser.

4) All welded gas service risers and welded steel multiple meter manifolds shall be field wrapped per the Operation and Maintenance Manual.~~in accordance with Figure 11.~~

5) All polyethylene multiple meter manifolds shall be constructed and installed in accordance with Figure 6. Horizontal stair stepping or vertical stacking of multiple meter manifolds is prohibited unless Above Ground Multiple Meter Manifold assemblies have been formally requested by the LUSI, Developer, and/or property owner, and approved by the Colorado Springs Utilities, Utility Construction and Maintenance Department (see Figure 7). All gas service risers shall extend in a straight and perpendicular fashion from the manifold header.

6) Every effort shall be made by LUSIs to utilize prefabricated anodeless risers or polyethylene multiple meter manifolds.

c) Above Ground Multiple Meter Manifolds:

1) Request Procedure:

a) Requests for Above Ground Multiple Meter Manifold systems will only be considered for structures intended to serve 3 or more individual tenants, owners or occupants. Residential~~–~~ Above Ground Multiple Meter Manifold systems (no commercial aboveground manifolds allowed) will be considered if the following requirements are

b) Colorado Springs Utilities performs a sample test of 10 percent of all new residential gas meters to verify accuracy. Residential gas meters must be plus or minus 1.0 percent accurate to pass the acceptance testing.

c) Colorado Springs Utilities performs a sample test of 100 percent of all new commercial and industrial gas meters to verify accuracy. Commercial and industrial gas meters must be plus or minus 1.0 percent accurate to pass the acceptance testing.

d) All rebuilt or repaired gas meters will follow the same accuracy limits as denoted in 4.05(e)1b & c before being placed in service.

2) Gas Meter Periodic Test Schedule:

a) Gas meters not tested since original acceptance test will be periodically tested. Gas meters must be plus or minus 2 percent accurate to pass the periodic test.

4.06 Materials

Commented [LR5]: Changes in this section added by Standards to clarify information regarding materials.

All materials covered in this manual shall be new and free from obvious or visible defects and shall conform to the Colorado Springs Utilities Natural Gas Material Specifications. Only m~~M~~aterials that are approved by Colorado Springs Utilities shall be ~~for~~ used in gas distribution system ~~service line construction~~. Approved materials that can be used by LUSIs are detailed in Table 7. Colorado Springs Utilities details the requirements of the gas materials in the Natural Gas Material Specifications.

a) Pipe and Fittings:

Polyethylene pipe and fittings used by LUSIs for construction of gas service lines shall be limited to those listed on Table 7 and shall bare all pertinent markings as specified in the Colorado Springs Utilities Natural Gas Material Specifications for polyethylene pipe and fittings.

All MDPE polyethylene pipe and fittings shall be free of material defects. The ~~and the~~ manufactured date must be ~~is~~ less than 3 years prior unless approved for use by Colorado Springs Utilities Gas Construction operations supervisors and Engineering Standards. HDPE fittings shall have manufactured dates of less than 10 years prior. Sections of pipe with gouges deeper than 10 percent of wall thickness of the pipe shall be removed and replaced.

b) Risers:

All gas service risers used by LUSIs shall be approved prefabricated polyethylene-insert type anodeless risers as noted in Table 7.~~, unless fabricated by Colorado Springs Utilities. All gas service risers larger than 2 inches~~ Four-inch anodeless risers are approved for use in the gas distribution system, however, only Colorado Springs Utilities or its' contractors may install ~~shall be~~ the 4-inch prefabricated or welded steel risers fabricated by Colorado Springs Utilities Machine Weld Shop~~ and installed by Colorado Springs Utilities, Utility Construction and Maintenance Department or its contractors~~. 1-1/4" risers shall be installed for all commercial services unless an alternative is required by Field Engineering or Gas Advanced Design.

TABLE 7

MATERIALS APPROVED FOR USE IN GAS/JOINT SERVICE LINE CONSTRUCTION (1)

Item Description	Designation		Approved Manufacturer
Anodes	1 pound, bare, magnesium alloy		Galvotec Alloys Inc. Farwest Corrosion Control Corrpro Co. Anode Systems
1Pipe/Socket Fittings	PE 2708, ASTM D2513 < 3 yrs. Old 3/4", 1", 2" SDR 11 1-1/4" SDR 10		Performance Pipe JM Eagle Duraline (pipe only) Pipeline Plastics (pipe only)
Service Risers	Polyethylene Insert, Anodeless		R. W. Lyall, Perfection Corporation, Georg Fischer Central Plastics (GFCP)
	PE Size	**THREADS**	
	1" IPS SDR 11	1" NPT	
	1-1/4" IPS SDR 10	1-1/4" NPT	
	3/4" IPS SDR 11	1" NPT	
	2" IPS SDR 11	2" NPT	
	3/4" IPS SDR 11 Vertical Riser (1)		(1) Only with QC Inspector Supervisor approval
Service Riser Bracket	T-41 (1-1/4" diameter pipe, adjustable 6"-10")		Energy Control Systems, Inc.
Tape	Split Bolts		3M Scotch 130C Linerless Rubber Splicing Tape
			3M Scotch 33+, 3/4" Tape
	Wrap- Primerless Tapecoat, M50RCG (2", 4" & 6") Wrap – Gray Pipe Wrap Tapecoat, H35 UV Resistant (2") Scotchrap #50 (2")		The Tapecoat Company 3M
Thermite Weld Cartridge	15 Gram Charge		CadWeld
Copper Sleeve	For Tracer Wire		Continental A-200
Wire Connector	Direct Burial Split Bolt		Burndy Mechanical or Equiv.

Commented [LR1]: Follow up on other options. It appears that a lot of folks are using the Super 33+ 1.5" since it is in free pick

Commented [LR2R1]: LUSIs use #50. Internal folks addressed in D&E and O&M manuals

Tracer Wire	Tracer wire, #12 high strength, soft-drawn CCS (copper clad steel), HDPE/ HMWPE yellow insulation, 30 mils, 30 VAC (wire to be labeled minimum interval of every two feet with "Gas" (preferred), Manufacturers name (or manufacturer's code), 12 AWG, CCS TRACER WIRE, 30V, 30M HDPE all other labeling will be rejected)	Kris-Tech Wire Company Copperhead Industries, LLC Proline Agave Wire, Ltd. (Note that Lyall risers, a division of Continental, use Agave Wire but label it as Continental)

Item Description	Designation	Approved Manufacturer
Gas Caution Tape (optional for services)	Yellow, Caution, Buried Gas Line Tape, min of 3 inches wide, 4 mil thick (non-detectable)	Brady
Padding (Bedding Sand)	Fine Material able to pass a #40 sieve and retained on a #200 sieve.	Holcim Daniels Sand, Cone Sand (multiple suppliers sell material from approved manufacturer)
4/0 AWG AL with 2/0 AWG AL Neutral Service Wire	600V UD "SureSeal" or "SuperSeal" Self-repairing wire types only	Southwire (SureSeal): • Wesco- Utility, Denver • Western United Electric Supply Pirelli/ Prysmian (SuperSeal): • Wesco- Utility, Denver • Utility Products Supply
350 MCM AL with 4/0 AWG AL Neutral	Abuse-Resistant type only	Southwire Pirelli (Prysmian) Alcan General Cable (BICC)
2" SCH 40 PVC	Electrical Rated (grey only)	All manufacturers including: Prime Cantex Heritage

3” & 4” DB120 or SCH 40 PVC	Electrical Rated (grey only)	All manufacturers including: Prime Cantex Heritage

(1) approved items typically have material specifications that are available from Engineering Standards. Alternatively, some items have specifications within the long description of the approved item.

TABLE 8

CLEARANCE MATRIX FOR TYPICAL COLORADO SPRINGS UNDERGROUND UTILITIES (Separate Trenches)

TYPICAL PARALLEL/HORIZONTAL CLEARANCE MATRIX FOR COLORADO SPRINGS UNDERGROUND UTILITIES

(all dimensions in feet) All separations shown are the clear horizontal distance between two objects measured surface to surface

Colorado Springs Utilities (Underground)	Potable Water	Non-Potable Water	Waste-water	Storm Sewer	Gas mains 150 psig (MAOP)	Gas main	Gas Service	Electric Primary up to 34.5kV	Electric Second-ary (0-480 Volt)	Telecom / Fiber
Potable Water	X	10	10	10 [c]	10	6	3	10 [d]	3	5
Non-Potable Water	10	X	10	10	10	6	3	10	3	5
Wastewater	10	10	X	10 [c]	10	6	3	10 [d]	3	5
Storm Sewer	10 [c]	10	10 [c]	X	10	6	3	10	3	5
Gas mains 150 psig (MAOP)	10	10	10	10	X	6	6	10	10	10
Gas main	6	6	6	6	6	X	3	6	3	5 [e]
Gas Service	3	3	3	3	6	3	X	3	3	3
Electric Primary up to 34.5kV	10 [d]	10	10 [d]	10	10	6	3	X	3	5 [e]
Electric Secondary (0-480 Volt)	3	3	3	3	10	3	3	3	X	5 [e]
Telecom / Fiber	5	5	5	5	10	5 [e]	3	5 [e]	5 [e]	X

TYPICAL CROSSINGS/VERTICAL CLEARANCE MATRIX FOR COLORADO SPRINGS UNDERGROUND UTILITIES:

(all dimensions in feet) All separations shown are the clear vertical distance between two objects measured surface to surface

Colorado Springs Utilities (Underground):	Potable Water	Non-Potable Water	Waste-water	Storm Sewer	Gas mains 150 psig (MAOP)	Gas main	Gas Service	Electric Primary up to 34.5kV	Electric Second-ary (0-480 Volt)	Telecom / Fiber
Potable Water	X	1.5 [a]	1.5 [a]	1.5 [a]	5	1	1	1	1	1
Non-Potable Water	1.5 [a]	X	1.5 [a]	1.5 [a]	5	1	1	1	1	1
Wastewater	1.5 [a]	1.5 [a]	X	1.5	5	1	1	1	1	1
Storm Sewer	1.5 [a]	1.5 [a]	1.5 [a]	X	5	1	1	1	1	1
Gas mains 150 psig (MAOP)	5	5	5	5	X		5	5	5	5
Gas main	1	1	1	1		X	1	1/5 [b]	1	1
Gas Service	1	1	1	1	5	1	X	1	1	1
Electric Primary up to 34.5kV	1	1	1	1	5	1/5 [b]	1	X	0	1
Electric Secondary (0-480 Volt)	1	1	1	1	5	1	1	0	X	1
Telecom / Fiber	1	1	1	1	5	1	1	1	1	X

NOTES:

1. If compliance with these separation requirements, or those set forth in the Clearance Matrix cannot be met they will be addressed on a case-by-case basis following variance procedures described in the applicable Line Extension and Service Standards book. This includes areas of redevelopment within alleys. Colorado Springs Utilities subject matter experts for the utility being impacted will make the determination regarding clearances.
2. These clearance matrix table dimensions are for separate trenches. Joint trench between Electric, Gas, and Colorado Springs Utilities Telecom/Fiber requires a 1' radial separation.
3. See the Gas Line Extension and Service Standards, 2.02c for certain exceptions, including tree separation requirements.
4. See Water & Wastewater Line Extension and Service Standards, latest edition.
5. Clearance to other Colorado Springs Utilities infrastructure (telecommunication, fiber optics, etc.) or high voltage underground transmission cables shall be determined on a case-by-case basis by Field Engineering.
6. Storm Sewer clearances must be verified by City Engineering.
7. Larger clearances than shown may be required – clearances must meet all requirements set forth in all four of the Colorado Springs Utilities Line Extension and Service Standards, Colorado Springs City Codes, NEC, and NESC, latest editions.
8. Additional support structures may be required at crossings.
9. For separation from trees to gas and electric lines, see GLESS 2.02c and ELESS 4.02c1.
10. See City of Colorado Springs Standard Drawings #1 "Street Cross Sections" and Drawings #2 "Street Sections Plan View" at the following web address link: https://coloradosprings.gov/public-works/page/standard-drawings

[a] These utilities require a sleeve when crossing under another utility.
[b] 1' separation from electric primary to plastic pipe gas main and 3' separation from electric primary to metallic gas main.
[c] Exception: Minimum 5' separation if meets the means of secondary containment listed in the Water Line Extension and Service Standards Book 2.6.G.2 Separation Criteria and Wastewater Line Extension and Service Standards Book 2.5.D.2 Separation Criteria.
[d] Exception: Minimum 6'-10" clearance from Electric Primary to Potable Water and Wastewater.
[e] Exception: ~~In scenarios where the gas main and electric primary or secondary is behind the curb and either in the tree lawn or under sidewalk, 3 feet of horizontal separation between telecom/fiber and gas mains, electric primary or electric secondary may be permitted. The exception may be allowed when the following requirements are met: 1) potholing and exposing the pipe every 50 feet must occur when directional drilling is within 5 feet of the gas or electric pipe; 2) potholing and exposing the pipe every 25 feet is required when pneumatic missiles/moles are used within 5 feet of the gas or electric pipe; 3) for bores less than 50 feet and within 5 feet of the gas or electric pipe (regardless of trenchless technology used), a minimum of one pothole is required; 4) potholing and exposing the gas or electric pipe where points of typical deviation may occur (e.g., hydrants, transformers, etc.) and 5) compliance with all State and local excavation, boring, and damage prevention rules and regulations. Additional excavation requirements are listed in the GLESS Section 1.03. All other scenarios must comply with clearance requirements in Table 8~~

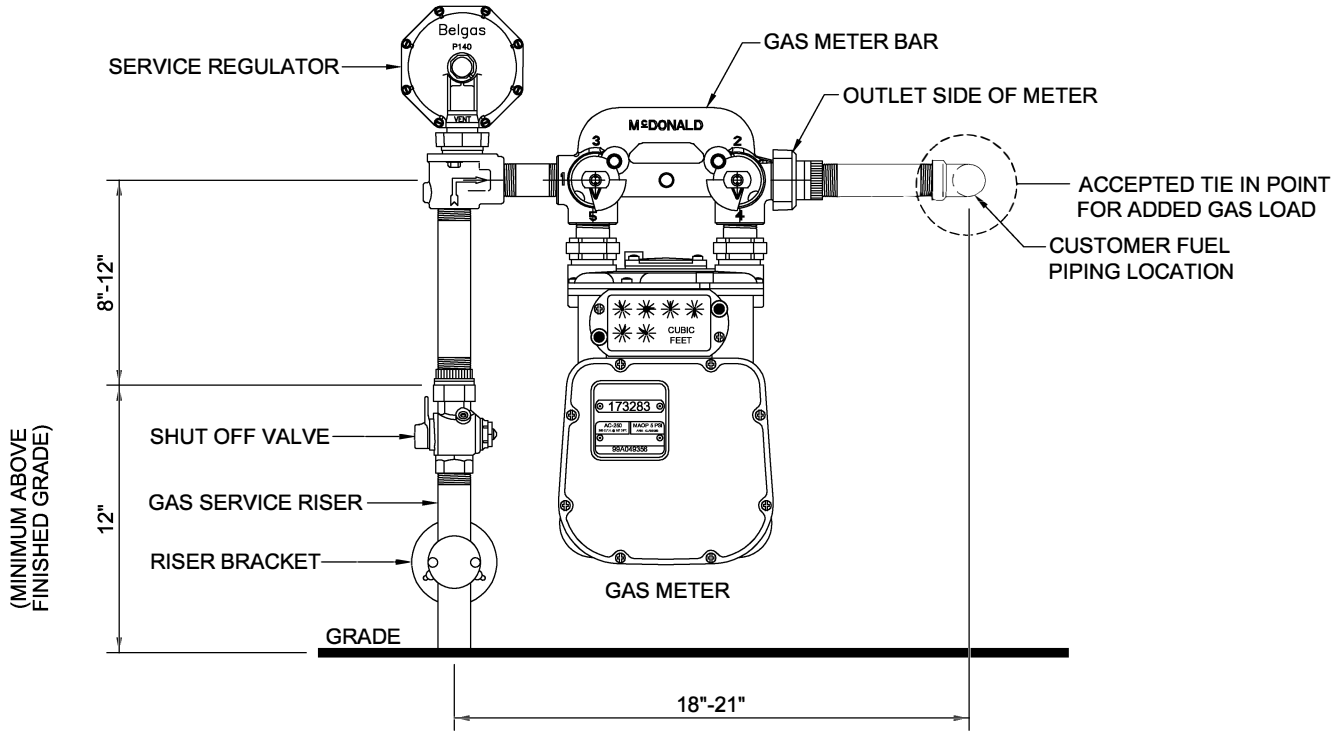
Telecom/fiber may be permitted to have a 3' horizontal separation from gas mains, electric primary or electric secondary in locations where the gas main and electric primary or secondary are behind the curb and either in the tree lawn or under sidewalk. The exception may be allowed when the following requirements are met:

1) potholing and exposing the pipe every 50 feet must occur when directional drilling is within 5 feet of the electric gas pipe;
2) the use of pneumatic missiles must be in compliance with City Policy and may prohibit the use of pneumatic methods for installation of underground utilities in the right-of-way and public utility/improvement easements. If the City Policy does allow for the use of pneumatic methods to install underground utilities, then potholing and exposing the pipe every 25 feet is required when pneumatic missiles/moles are used within 5 feet of electric or gas pipe;
3) for bores less than 50 feet and within 5 feet of electric or gas pipe (regardless of trenchless technology used), a minimum of one pothole is required;
4) potholing and exposing electric or gas pipe where points of typical deviation may occur (e.g., hydrants, transformers, etc.) and;
5) compliance with all State and local excavation, boring, and damage prevention rules and regulations.

All other scenarios must comply with clearance requirements in Table 8. If any one of the 5 listed requirements are not met, then per the Table 8, a 5-foot clearance is required. In all cases, the high pressure gas main requires a 10-foot horizontal clearance with no exceptions. The horizontal clearance distance also applies to fiber appurtenances, to include boxes (boxes must be the required horizontal and vertical distance away from gas and electric and shall not be placed over electric or gas pipe.) Additional excavation requirements are listed in the GLESS Section 1.03.

FIGURE 8
TYPICAL METER SETS

FIGURE 8A
TYPICAL RESIDENTIAL METER SET
0 - 390,000 (BTU/HR)



NOTE:
SEE TABLE 7 FOR APPROVED MANUFACTURERS FOR TYPICAL METER SET MATERIALS.

METER LOOP SPECIFICATIONS:

APPLICATION: TOTAL CONNECTED LOAD OF 390,000 BTU/HR OR LESS

GAS SERVICE RISER: 7" - 10" OUT FROM THE FINAL EXTERIOR FINISHED SURFACE

COMMERCIAL RISERS: 16" - 18" OUT FROM THE FINAL EXTERIOR FINISHED SURFACE

REQUIRED DISTANCE FROM FINISHED EXTERIOR WALL TO END OF CUSTOMER FUEL PIPING IS 1" SHORTER THAN CENTER OF RISER VALVE. MUST BE ONE CONTINUOUS PIPE WITH NO FITTINGS (I.E., **COUPLINGS)*.**
***Note: an elbow and nipple (no longer than 6") may be added to achieve approved vertical spread.**

HORIZONTAL SPREAD: 18" - 21" (CENTER OF GAS RISER TO CENTER OF FUEL LINE)

VERTICAL SPREAD: 8" - 12" (TOP OF GAS RISER VALVE TO FUEL LINE INLET)
: 12" - 16" (VERTICAL SPREAD WITH 2" RISER)

GAS RISER SHUT OFF VALVE: NEED TO BE A MINIMUM OF 12" FROM FINISHED GRADE

SEE CHAPTER 4 [4.05d)3)d)1)i)] FOR ADDITIONAL REQUIREMENTS WHEN METERS ARE LOCATED NEAR TRANSFORMERS AND GENERATORS.