

Meter Location and Relocation

Company Policy

While customer preference regarding meter location deserves reasonable consideration, it remains the right of the Company to determine the placement of meters.¹ Meter locations for multiple points of service shall have the approval of the local authority having jurisdiction.

Meters and service regulators are to be set outside the serviced structure where they will be readily accessible and be protected from corrosion and other damage, including vehicular damage that may be anticipated.² See subsection 8.14 – *Relief Device Lines and Vent Lines* for relief device line or vent line requirements. (See Table 8.5.1 for Clearances)

- *In Michigan,³ the customer's meter and regulator installation must be located outside the building or shall include an outside above grade riser, except for the following:*

- 1) A distribution system that operates at 10 psig or less if an outside meter set assembly is not practical.*
- 2) A commercial building, industrial building, and apartment building if an outside meter set assembly is not practical.*
- 3) Row-type houses or houses where the proximity of adjoining buildings makes outside meter set assembly impractical.*

A service line excluded under the above shall include an outside above grade riser, if practical.

- The service regulator installed in a building shall be located as near as practical to the point of service line entrance.⁴
- The meter installed in a building shall be located in a ventilated place not less than 3' from a source of ignition or heat that might damage the meter.⁵
- The upstream regulator in a series shall be located outside of the building unless it is located in a separate metering or regulating enclosure.⁶

¹ Public Service Company of Colorado Gas Tariff, Rules and Regulations, and Colorado Code of Regulations 4 CCR 723-4, Part 4301

² Title 49 CFR Part 192.353(a), and Colorado Code of Regulations 4 CCR 723-4, Part 4301

³ Michigan Gas Safety Standards, Rule 308

⁴ Title 49 CFR Part 192.353(b)

⁵ Title 49 CFR Part 192.353(c)

⁶ Title 49 CFR Part 192.353(d)

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- Meters should be located as near as practical to the side of the building closest to the main. This minimizes service length and simplifies leakage surveys and meter reading.
- No meter shall be installed in any location where it may be unnecessarily exposed to heat, cold, dampness, or other cause of damage or in any unduly dirty or inaccessible location. Where these conditions cannot be avoided, a location must be chosen that will least affect the meter's accuracy and condition.⁷
- Meter sets shall be located to eliminate or minimize possible damage from moving objects and vehicular traffic. If the meter installation, including service riser and valve, is subject to vehicular damage, an adequate guard (or barricade) must be provided.
- Meter sets must not be located where they interfere with the design purpose of any building opening (passageway, window or other opening designed to open to the outside atmosphere) and/or movable fixtures (doors, shutters, etc.) used for opening or closing building openings.
- If an outside meter set assembly or an outside above grade riser is installed, then the above grade piping shall be designed to prevent an external force that is applied to the service line from being transferred to and damaging the inside piping.⁸
- Each pit or vault that houses a customer meter or regulator at a place where vehicular traffic is anticipated, must be able to support that traffic.⁹
- Meter sets shall be protected from damage caused by submergence in areas where flooding may occur.
- New Meter Sets: In areas where deep (in excess of four feet) snow or ice buildup may occur, new meter sets shall be located on the gable or non-drip side of the structure.
- Existing Meter Sets: In areas of deep snow (in excess of four feet) and/or subject to falling snow or ice that could damage the meter set, the meter set should be relocated or an engineered canopy or protection device should be installed to protect the meter set (see Figure 8.5.1).¹⁰ The engineered canopy or protection device shall allow for adequate workspace to work on the meter set. Service regulators should not be installed where conditions are likely to allow ice to accumulate around the vent. However, if conditions are such that water could repeatedly moisten an outside service regulator and eventually freeze around the vent, a vent ice guard shall be installed. Situations where this could occur are:
 - a. where roof valleys, gutters or downspouts direct water toward the regulator; or

⁷ North Dakota Administrative Code, Section 69-09-01-10

⁸ Michigan Gas Safety Standards, Rule 308

⁹ Title 49 CFR Part 192.355(c)

¹⁰ PHMSA ADB 08-03

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- b. where overhangs, drip lines, or edges of roofs (without gutters) are directly above the regulator; or
- c. where splashing of water off nearby objects could be directed toward the regulator.

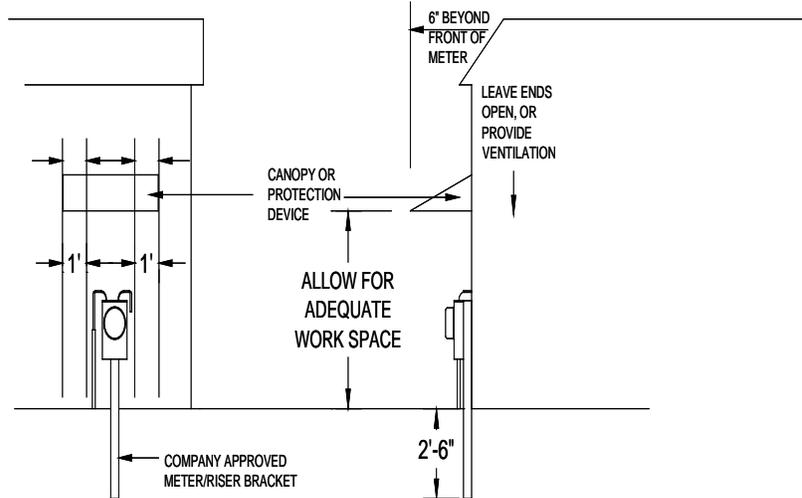


Figure 8.5.1 - Canopy or Protection Device

- In areas where the snow may accumulate to a depth greater than 3', consideration should be given to either installing the meter set as high above grade as possible or using vent lines. Standard Residential Meter Set components allow for the top of the set to be installed at elevations over 50" above the finished grade.
- Premises with multiple units such as motels, apartments, condominiums, mobile home parks, or shopping centers may be served by a master meter, individual meters located in banks of two or more, or meters located independently at each unit.
- The required clearances from a meter set shall be maintained.
- Each newly installed regulator that might release gas in its operation must be vented to the outside atmosphere.

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When it is impossible to adhere to these rules, a variance shall be approved by the appropriate Engineering or Operations Manager.

Although the rules outlined in this Section are not retroactive, they shall be followed on all new construction, whenever repair, maintenance or reconstruction work is being performed on existing meter sets. Any unsafe condition encountered shall be considered as a "Special Case" and acted on accordingly.

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Whenever any changes are made on a meter/regulator set including the replacement of any component such as a fitting, section of pipe, the meter, or regulator, etc., the installation shall be brought up to current standards or scheduled for updating if necessary¹² (Refer to section 8.12 – **Updating Meter Sets** for additional information). The gas meter and regulator should be removed from within the confines of an occupied structure and relocated to the outside whenever possible.

When work is performed on the meter set and it is not practical to relocate the set at that time, a vent line must be connected to the regulator's vent and terminate to the outside atmosphere, where the gas can escape freely into the atmosphere and away from any opening into the building.

Prohibited Meter Locations

- Each meter existing within a building must be located in a ventilated place and not less than 3 feet from a source of ignition or heat source that might damage the meter.
- Gas meters shall not be located in engine, boiler, heater or electric meter rooms.
- Gas meters shall not be located under interior stairways or show windows.
- *In Michigan, a meter shall not be installed in a bedroom, closet, bathroom, under a combustible stairway, or in an unventilated or inaccessible place.*¹³

Meter to Meter Extensions

If a meter to meter extension is installed, all piping should be fully exposed, all the meters should be installed outside, and all shutoff valves shall be readily accessible. The decision to offer a meter to meter extension should be made after consulting with the gas operations unit to determine the feasibility of the installation.

As a guide to help the person responsible for locating the service in deciding between more than one service to a building or meter to meter extensions, the following items are to be considered.

- **Roof Piping.** Meter to meter extensions may be installed on a roof where the owner provides a safe and reasonable access to the roof such as a stairway. The access shall be constructed with sufficient strength, width and of proper slope to permit safe handling of any gas meter or associated Company equipment that will be located on the roof.

The extension piping and meter sets shall be installed and supported in such a manner as may be directed by the local building authority, who shall be consulted prior to their installation.

- **Expansion and Contraction.** On any exposed piping, allowance must be made for movement and/or stresses caused by thermal expansion and contraction. A 1" allowance for movement must be made for each 100 linear feet of exposed pipe.

Three methods by which pipe elongation due to thermal expansion may be taken care of are:

¹² Title 49 CFR Part 192.13(b)

¹³ Michigan Gas Safety Standards, Rule 308

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- Expansion joints.
- Swivel joints.
- Inherent flexibility of the pipe itself utilized through pipe bends, right-angle turns, or offsets in the line.

The most economical method of providing for expansion of piping in a long run is to take advantage of the directional changes which might occur in the piping system. Ninety-degree bends with long, straight tangents in either a horizontal or a vertical plane are an excellent way to obtain adequate flexibility with larger sizes of pipe. When flexibility cannot be obtained in this manner, it may be necessary to make use of some type of expansion bend.

The following method of calculating the necessary length of pipe required to construct an expansion bend that will provide for the approximate amount of expansion and contraction is:

$$L = 6.16 * (D\Delta)^{1/2}$$

Where: L = Length of pipe required in the bend, in feet.

D = Outside diameter of pipe used, in inches.

Δ = The amount of expansion or contraction to be taken up, in inches.

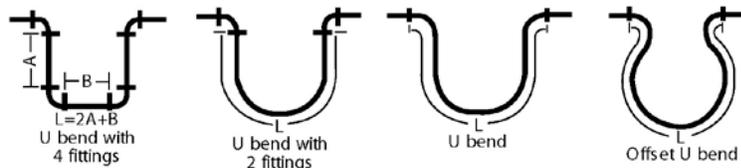


Figure 8.5.2 —Measurement of L on various Pipe Bends

In this formula, the bends are designed with a radius of 6 times the pipe diameter. When square bends are used, the width of the bend should not exceed two times the height. It is further assumed that the corners are made with screwed or flanged elbows (the use of weld ells having a radii of 1-1/2 times the pipe diameter will decrease the end thrusts to some degree). The applicable Division Engineering office should be consulted for the design of an expansion joint or pipe bend.

Discharge\Release Point Clearances

Each meter installed within a building must be located in a ventilated place and not less than 3 feet from a source of ignition or heat source that might damage the meter.

Table 8.5.1, along with figure 8.5.3, lists the discharge\release point clearances from sources of ignition, from other equipment, and from common building openings and mechanically induced air intakes.

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Table 8.5.1 Discharge\Release Point Clearances

(See Figure 8.5.3)

From Sources of Ignition

There shall be a 3' radial minimum clearance between the discharge\release point of the relief device line or regulator vent or connected terminal outlet piping of all gas meter sets and sources of ignition¹⁴. Any discharge\release point of the relief device line or regulator vent or connected terminal outlet piping must be located outside where the gas can escape freely into the atmosphere and away from any opening into the building.

Examples: Watt/hour electric meters with open contacts (some demand, time of use, or meters with pulse indicators*), breaker boxes, electric outlets, motor starter contactor in air conditioner or refrigeration condensers, and electric compressors are some examples of sources of ignition often found near meter sets.

* The local electric meter shop will confirm if a meter has open contacts.

From Other Equipment (Non-Sources of Ignition)

There should be no mechanical, electrical, or communication equipment installed directly behind a gas meter set, in an area 12" on either side of a gas meter set, or above a gas meter set. Conduit may pass through the space above a meter set if it is attached directly to the wall behind the set.

Examples: Standard watt/hour electric meters, conduits, TV or telephone terminal boxes are examples of devices that are non-sources of ignition.

Upon approval of the local Gas Operating Unit, other electrical devices such as outdoor lighting or signs may be placed above a meter set, at a sufficient elevation, that it will not interfere with access or encourage making the meter set a "step ladder" to reach or maintain these devices.

From Common Building Openings

There should be a 3' radial preferred minimum clearance between the discharge\release point of the relief device line, regulator vent, or connected terminal outlet piping of all gas meter sets and common building openings (doors, garage doors, windows, crawl space, attic, and dryer vents, etc.).

For the situations when meter set equipment is exchanged, or the meter set is refurbished, retrofitted or modified, the discharge\release point of the relief device line or regulator vent or connected terminal outlet piping must be located where the gas can escape freely into the atmosphere and away from any openings in the buildings. The minimum clearances can be commensurate with local conditions and the volume of gas that might be released.

See subsection 8.14 - **Relief Devices Lines and Vent Lines** for relief device line or vent line requirements.

From Mechanically Induced Air Intakes

¹⁴ NFPA 54 National Fuel Gas Code (2002 Edition)

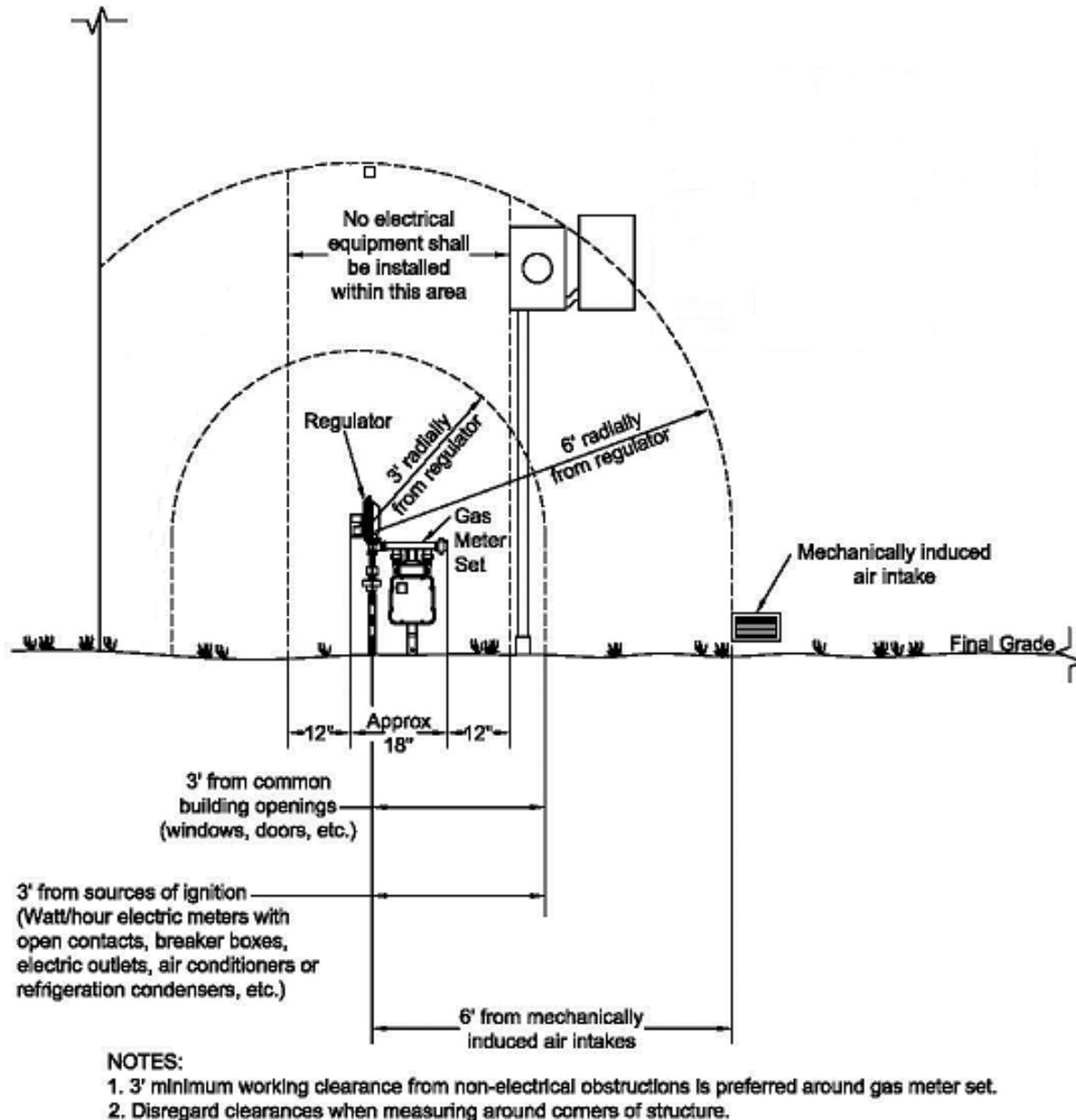
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There shall be a 6' radial minimum clearance between the discharge/release point of the regulator vent, relief line vent, or connected terminal outlet piping of all gas meter sets and mechanically induced air intakes.

For the situations when meter set equipment is exchanged, or the meter set is refurbished, retrofitted or modified, the discharge/release point of the regulator vent or relief line vent or connected terminal outlet piping shall be located where the gas can escape freely into the atmosphere and away from any openings in the buildings.

See subsection 8.14 - *Relief Devices Lines and Vent Lines* for relief device line or vent line requirements.



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**Figure 8.5.3 – Clearance Requirements from Residential/Commercial Gas Meter Sets
and Sources of Ignition, Building Openings, and Working Clearances**

Meter Relocation

General

Meters may be relocated when requested by the customer or when requested by the applicable Gas Department due to service renewal, inside meter move-out, system upgrade, or for cathodic protection purposes.

When meter change of location work is performed that includes exposing the buried service line in order to accomplish the relocation, the following policy shall be adhered to whenever possible:

- Service valves shall be located in a readily accessible location that, if feasible, is outside of the building (or enclosure) and above final grade.
- The meter shall be relocated, if at all possible, so that it is readily accessible for reading, routine maintenance, and yet will not introduce a foreseeable hazard to the customer, general public or company employees.
- For the situations when meter set equipment is exchanged, or the meter set is refurbished, retrofitted or modified, the discharge/release point of the relief device line or regulator vent or connected terminal outlet piping must be located where the gas can escape freely into the atmosphere and away from any openings in the buildings. The minimum clearances can be commensurate with local conditions and the volume of gas that might be released. (See Table 8.5.1 for clearances)
- Threading is not allowed on any size of plastic pipe or on steel pipe used in buried portions of a service line. Threaded ends of pipe shall not be buried.
- When threaded fittings are discovered on underground portions of the service line or riser, that portion of the service line or riser must be replaced using standard methods outlined in Section 7.22.
- Threaded nut type compression fittings, shall only be used as temporary repair underground.

Service Entry To A Building

The preferred location for a service riser and terminal valve is outside of the building it serves. There may be instances where the relocation of gas meters requires that they be located within the structure. In such cases, the preferred method of entry shall be through the building wall, **above** grade, with a service terminal valve located outside.

Service entry holes shall be made with extreme care to avoid damage to the structure. Where possible, drill from both sides of the wall. Holes shall be large enough to permit proper placement of grout between the pipe and wall.

The old below grade service pipe shall be removed and the resulting hole patched as follows:

For concrete or block walls, remove all loose material from the hole, wet the inside surface of the hole with water and pack thoroughly with quick set cement. Trowel the inside wall to a smooth

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finish. After drying (5 to 10 minutes), the outside surface of the patch shall be troweled over with plastic tar or a suitable substitute for waterproofing.

Existing Service Line

At such time that a change of meter location is requested, and it is anticipated the existing service will be used, the following information shall be used as a guide:

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- The customer shall be billed for meter relocations made at his request and for his convenience, unless leakage necessitates service renewal.
- If leakage on the service line necessitates a service renewal, an inside meter will, with the customer's concurrence, be relocated outside at no cost to the customer.

There will be occasions where, on customer requested meter relocations, examinations of the service records of the services themselves indicate that some economy may be realized by renewing the services while the crews are on the job, even though the services are not leaking. This determination will be made by the appropriate Division Cathodic Protection Technician under guidelines from the Gas Distribution Engineering Division. The appropriate Division Engineering Office should be consulted in those areas not assigned a Cathodic Protection Technician. In this case, the cost of the **meter relocation**, as stated in the above policy, will be billed to the customer, and the cost of the **service renewal**, will be borne by the Company.

Procedure Guidelines

In order to avoid customer misunderstandings and provide coordination between the departments concerned, the following guidelines are suggested.

- Company personnel should advise the customer at the time the meter relocation is requested that they will be billed for this work. They should also be informed there is a possibility the Company may elect to do additional work on the main or service at the same time **at no additional cost** to the customer. The customer should not be given a firm date for completion of the work unless it has been cleared with the Gas Operations and Maintenance Unit.
- The Division Cathodic Protection Technician (or Division Engineering Office) shall be notified of the impending relocation work, so that appropriate recommendations may be made as to renewal of the existing service line and/or cathodic protection requirements.
- When the Division Cathodic Protection Technician (or Division Engineering Office) recommends renewal of the service in conjunction with a meter relocation, normal routing procedures shall be followed. The Gas Construction Unit shall coordinate the work with the Gas Operations and Maintenance Unit.
- When the Division Cathodic Protection Technician (or Division Engineering Office) recommends **not** to renew the service, the service record with the necessary

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Cathodic Protection notations, will be sent to the Gas Operations and Maintenance Unit for processing.

Operational Guidelines

When a customer requests to have their meter moved outside, they may elect to do the trenching (to Company specifications) in order to reduce their costs.

If backfilling is also to be completed by the customer, the Company crew shall be responsible for backfilling and tamping the service riser, and for covering the service line enough to safely support it, prior to leaving the job site. Plastic pipe **shall not** be left exposed.