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SPECIFICATION: G-704-4a

TITLE: GAS METER AND REGULATOR
INSTALLATION REQUIREMENTS

VOLUME: 3, 10, and Yellow Book

★ **COURSE ID:** [GAS4114](#)

★ **REQUIRED TRAINING GROUPS:** Gas Distribution Services (GDS), Gas Construction, Construction Management, Gas Conversion Group, and Energy Services,

★ Each group listed is responsible for its own training which may be specific to a title/individual and not to the group in its entirety. Please check with your local training coordinator/department.

Administrative Revisions

REV 4a (7/18/22)

Section 12.0: Added new section on "Climate & Environmental Considerations".
Renumbered subsequent sections.

SUBSTANTIVE REVISIONS: (See ★)

- 1) Cover Page - Changed "Core Group" to "Required Training Group". Deleted "Target Audience". Added statement of group responsibility.
- Added Course ID.
- 2) Section 6.2(F) - Changed the word "point" to "points".
- 3) Section 6.2(G) - Changed "2" to "2 feet".
- 4) Section 10.3 - Renumbered Figures 1 & 2 to Figures 2 & 3, respectively.
- 5) Section 12.0 - Minor revisions to Titles for consistency in their references.



Gas Operations Standards

TITLE: GAS METER AND REGULATOR INSTALLATION REQUIREMENTS

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	G. Ludwig	Tomas Hernandez General Manager Technical Operations	3/29/2022	Metering Specs and Procedures, O&M Manual, and Yellow Book	20 PAGES
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TITLE: GAS METER AND REGULATOR INSTALLATION REQUIREMENTS

1.0 SCOPE

This specification outlines gas meter and regulator installation requirements.

2.0 LEGAL REQUIREMENTS

In compliance with the following:

- A) NYCRR Title 16 Part 255 Sections 255.353, 255.355, 255.357, and 255.359
- B) 49 CFR Part 192, Sections 192.353, 192.355, 192.357, and 192.359
- C) New York City Fuel Gas Code, Appendix E
- D) New York State Gas Code, Sections 401.6 and 416

3.0 GAS METER AND REGULATOR LOCATIONS

- 3.1 Each meter and service regulator must be installed in a readily accessible (accessible without the use of special equipment, ladders or step stools) location and be protected from atmospheric corrosion and other damage, including any vehicular damage that may be anticipated. All meters should be installed outdoors with exceptions handled in accordance with this specification.
- 3.2 Due to the many determinants associated with meter and regulator selection, it is imperative that the Customer, or the Customer's agent, contact the assigned Con Edison Representative in Energy Services or Gas Conversion early in the project's engineering design phase to determine the exact requirements for specific gas meter installations, including location and space requirements.
- 3.3 Installation of a gas meter(s) inside a building requires advance approval by the company prior to a customer's fuel line installation. If permission for an inside meter installation is granted, the meter shall be located as near as practical to the point of entry of the gas service in an area meeting venting and building code requirements of the local authority having jurisdiction.

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TITLE: GAS METER AND REGULATOR INSTALLATION REQUIREMENTS

3.0 GAS METER AND REGULATOR LOCATIONS (Continued)

3.3 (Continued)

- A) For protection from Atmospheric Corrosion, refer to [G-8100](#), “General Specification for Installation of Gas Distribution Services”, for cleaning and coating requirements for aboveground piping.
- B) Vehicular damage prevention is covered in Section 4.0 of this specification

3.4 Each service regulator on new and replacement service lines, except for replacements by insertion, must be installed outside of the building, unless it is impractical or unsafe.

- A) Where the service regulator must be installed within the building, it is to be located as near as practical to the point of service line entrance.
- B) For service line replacements where the service regulator must remain inside, the regulator shall be tested and inspected in accordance with [G-11838](#), “High Pressure Gas Service Line Inspection”.

3.5 The upstream regulator in a series must be located outside the building, unless it is located in a separate metering or regulating building.

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

3.7 The meter shall not be located under combustible stairways.

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TITLE: GAS METER AND REGULATOR INSTALLATION REQUIREMENTS

3.0 GAS METER AND REGULATOR LOCATIONS (Continued)

- 3.8 When installing a new gas service for which gas pressure regulating and associated gas cleaning equipment and accessories is required for a building of public assembly ([G-11813](#), "Identification, Inspection, and Documentation of Buildings of Public Assembly (BOPA)", or apartment building, or building within an apartment, industrial or commercial complex, each with a capacity for normal occupancy of 75 or more persons, the following requirements shall be met:
- A) When outside installation is impracticable, regulations applicable to indoor installations with high pressure services shall pertain.
 - B) The associated gas cleaning equipment and accessories may be located in the same area as the metering and/or pressure regulation equipment.
 - C) Where practicable, the regulating and gas cleaning equipment shall be installed within a separate room that is designed for two-hour fire resistance, and is effectively sealed off from the remaining space in the building.
 - D) In the case of indoor installations, special effort shall be made to prevent and indicate tampering by unauthorized persons.
 - E) In all the above installations and on doors or accesses leading to all the above installations, a conspicuous notice shall be posted indicating the instructions for actions to be taken and the telephone number of the proper person to be called in the event a gas odor is detected.
- 3.9 When located inside the building, meters shall be located as near as practicable to the point of entrance of the service and, where possible, the meters shall be located in the cellar or basement unless otherwise permitted by the NYC DOB Commissioner or Authority Having Jurisdiction. The meter location shall be clean, dry, and free of refuse, steam or chemical fumes. Meters shall be adequately protected against extreme cold or heat and shall be readily accessible for reading and inspection.

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TITLE: GAS METER AND REGULATOR INSTALLATION REQUIREMENTS

3.0 GAS METER AND REGULATOR LOCATIONS (Continued)

- 3.10 The area in which the meter is located shall be properly ventilated. Notwithstanding the foregoing, outside meter installations shall be permitted in areas where the utility company certifies that dry gas is being distributed. Con Edison's natural gas is considered to be dry gas.
- 3.11 In a multiple dwelling, no gas meter, other than the replacement of an existing meter, shall be located in any boiler room or other room or space containing a heating boiler, in any stair hall, nor in any public hall above the cellar or above the lowest story if there is no cellar.
- 3.12 In any multiple dwelling where there is an existing gas meter located in any boiler room or other room or space containing a heating boiler, one additional gas meter may be installed in such room or space, provided such additional gas meter is installed adjacent to the existing gas meter and is used in conjunction with the supply of gas for a gas-fired heating boiler or a gas-fired water heater used as a central source of supply of heat or hot water for the tenants residing in such multiple dwelling. Such additional gas meter may be installed only upon the condition that space heaters or hot water appliances in the dwelling units are eliminated.
- 3.13 Gas meters shall not be installed:
- A) within three feet of sources of ignition including burners, electric panel boxes or machinery. **NOTE:** Electric meters are not normally considered a source of ignition.
 - B) in a corrosive atmosphere;
 - C) where they may be subjected to vehicular damage unless approved protection from damage is installed in accordance with Section 4.0;
 - D) in areas that are not readily accessible for reading, replacement or necessary maintenance;
 - E) in public passages, halls, bedrooms, over doors;
 - F) other areas deemed inconvenient or hazardous by the company.

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TITLE: GAS METER AND REGULATOR INSTALLATION REQUIREMENTS

3.0 GAS METER AND REGULATOR LOCATIONS (Continued)

3.14 Meters are installed so that the meter inlet is on the left when reading the meter. The Customer shall install the fuel line on the right side of the meter.

4.0 PROTECTION FROM DAMAGE

4.1 If the customer's equipment or supplemental gas supply might create either a vacuum or a back pressure, a device must be installed to protect the Con Edison distribution system. Commingling of a customer's supplemental gas supply with utility supplied gas is permissible provided the customer verifies that the supplemental gas is interchangeable with the gas supplied by the utility.

4.2 The outside terminal of each service regulator vent and relief vent must:

- A) be rain and insect resistant;
- B) be located at a place where gas from the vent can escape freely into the atmosphere and away from any opening into the building (a minimum of 18 inches);
- C) be protected from damage caused by submergence in areas where flooding or ice accumulation may occur; and
- D) vent line protectors (VLP) shall be installed per requirements of [G-699](#) at locations specified in [G-8217](#).

4.3 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.

4.4 Meter and regulator piping which may be subjected to accidental vehicular impact shall be suitably protected. Where piping may be subject to vehicular damage, bumpers shall be placed by the customer around regulator and metering equipment. Bumpers shall be located and installed in accordance with Section 10.0.

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TITLE: GAS METER AND REGULATOR INSTALLATION REQUIREMENTS

4.0 **PROTECTION FROM DAMAGE** (Continued)

4.5 Large commercial/industrial outdoor meter locations shall be protected by a 6-foot-high lockable fence, chain link or equivalent. The fence shall be equipped with a dual custody locking mechanisms per Con Edison Yellow Book to allow access by Con Edison and Customer.

5.0 **INSTALLATIONS**

5.1 Each meter and each regulator must be installed so as to minimize anticipated stresses upon the connecting piping and the meter. Refer to [G-695](#), "Supporting Gas Service Regulators and Meters", for design and installation requirements to be used for gas meter and regulator installations.

5.2 When close (all-thread) nipples are used, the wall thickness remaining after the threads are cut must meet the minimum wall thickness requirements of NYCRR Title 16 Part 255. All close nipples shall be black steel, 150#, schedule 40.

5.3 Connections made of lead or other easily damaged material may not be used in the installation of meters or regulators. If a leaded connection is found in an active field installation, contact EH&S for instructions for proper removal.

5.4 Each inside regulator that might release gas in its operation must be vented to the outside atmosphere. Refer to [EO-17118](#) for the sizing and installation requirements to be used for regulator vent lines.

5.5 Field personnel that install meters, customer regulators, and volume correction equipment shall check the meter manufacturer's data plate for actual meter MAOP to assure that customer delivery pressure is below MAOP.

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5.0 **INSTALLATIONS** (Continued)

★ 5.6 Coating Painting Requirements

- A) All meters, regulators, set piping and fittings should be protected from atmospheric corrosion in accordance with [G-11815](#) and [G-11882](#).
- B) Only company approved lead free paint shall be used for meter/regulator set piping and fittings exterior finish. Meter/regulator set piping and fittings shall have a painted exterior finish, at least 2 mils thick and a gray finish coat per ASA Z55.1, color number 49.
- C) The meter and regulator are painted at factory using above paint finish specification and do not require painting in accordance with [G-233](#) and [G-257](#). If painting of meter or regulator is required due to mishandling, use above paint finish specification.

6.0 **OUTDOOR METER SETS**

- 6.1 Solid or vented fencing, walls, louvers, lattice, or landscaping surrounding meter/regulator sets shall meet the following requirements:
 - A) Meter/regulators must be fully accessible to Con Edison personnel for inspection and maintenance.
 - B) Open to the atmosphere at the top. Gas must be allowed to rise and vent unobstructed.
 - C) Must be protected from corrosion and other damage, including any vehicular damage that may be anticipated.
 - D) Vents shall meet all distance from building openings in accordance with [EO-17118](#).
 - E) Solid or vented fencing, walls, louvers, lattice, or landscaping surrounding meter/regulator set shall be sized at minimum to meet meter set footprint dimensions in Con Edison Yellow Book and Figure 1.

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6.0 OUTDOOR METER SETS (Continued)

6.1 (Continued)

- F) Cement slab shall be able to support meter set and meet applicable building department code requirements. Minimum thickness of cement slab shall be 3" thick for residential and 4" thick for commercial meter sets.
- G) All gates shall be locked with dual custody locking mechanisms per Con Edison Yellow Book.
- H) If gated, minimum/maximum width of single gate panel is 3' to 4' respectively.
- I) When cyclone fencing is installed it shall be constructed with corrosion resistant piping and fencing with fabric diamond size shall be no greater than 1-1/4".

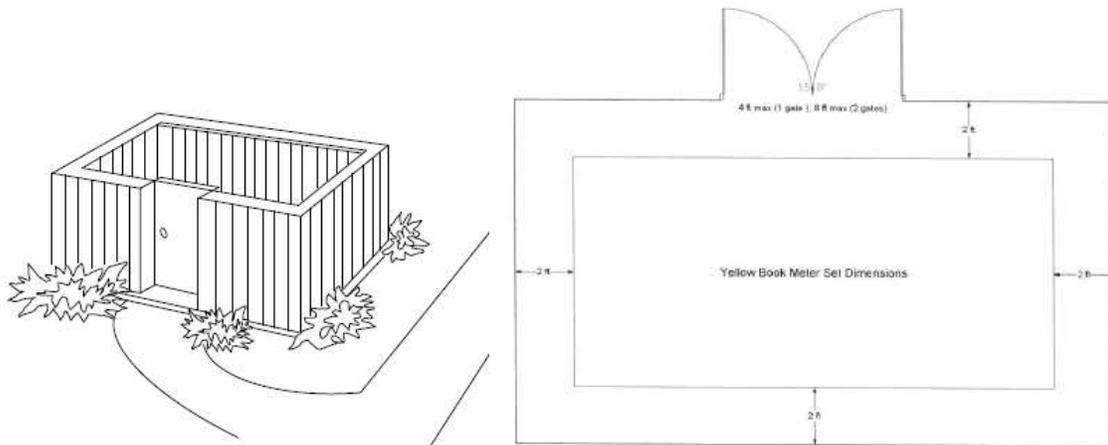


FIGURE 1

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6.0 OUTDOOR METER SETS (Continued)

6.2 Recessed areas/alcoves housing meter/regulator sets shall meet the following requirements:

- A) Must be fully accessible to Con Edison personnel for inspection and maintenance.
- B) Must be protected from corrosion and other damage, including any vehicular damage that may be anticipated.
- C) Recess/alcove interior walls and seams may be the same material as the structure's exterior and must be gas tight. All seals must be permanent to prevent gas from entering into the building or walls.
- D) Louvered doors or decorative ventilated gates may be installed.
- E) Only Con Edison gas-related facilities are allowed within the recess/alcove.
- ★ F) Required distances of meter/regulator equipment and piping must be maintained between all walls, ceilings, and front access points (e.g. louvered doors, gate, or landscaping).
- ★ G) The ceiling must be sloped to ease the escape of gas to the outside. A minimum ceiling slope of one foot height to every 2 feet depth shall be maintained.
- H) The floor shall be above ground level and must be graded to prevent water from collecting in the recess/alcove. Floor shall be constructed of concrete and able to support meter set and meet applicable building department code requirements.
- I) A conspicuous notice shall be posted on doors or accesses leading to recessed area/alcove, indicating the instructions for actions to be taken and the telephone number of the proper person to be called in the event a gas odor is detected.
- J) Alcoves shall be sized at minimum to meet meter set footprint dimensions in Con Edison Yellow Book.

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6.0 OUTDOOR METER SETS (Continued)

6.2 (Continued)

- K) If the alcove is more than 2 feet in depth, the following alcove size dimensions shall not be exceeded: 6' 6" height minimum; 12' maximum width; 4' maximum depth. The ceiling slope would be in addition to the height minimum. Building support beams shall be considered in design and shall not interfere with access to meter.
- L) If the alcove is gated, minimum/maximum width of single gate panel is 3' to 4' respectively. Gates shall be hinged (following building code requirements) so that they do not block/impede pedestrian traffic.
- M) Building below alcove shall be notched into foundation and follow same contour and dimensions of alcove.
- N) Regulator vents shall be piped to a location as close as possible to outside of alcove and include vent terminus. Vents shall meet all distance from building openings in accordance with [EO-17118](#).
- O) If the gate is louvered construction, it shall be constructed of materials acceptable to applicable building requirements. Louvers shall have a free area rating of at least 60%. All gates shall be locked with dual custody locking mechanisms per Con Edison Yellow Book.
- P) Meter piping into building shall meet all applicable Con Edison and building department code requirements.
- Q) If gate is lattice construction, it shall be constructed of materials acceptable to applicable building requirements. Lattice shall be a have a free area rating of at least 60%.

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6.0 OUTDOOR METER SETS (Continued)

6.2 (Continued)

- R) When field conditions do not permit exact compliance with these requirements, alternatives may be proposed. All designs should consider the following: combustible atmosphere; emergency access; regulator vents; meter readability; meter installation access; proximity to side walk; security; location in a flood plain and protection (barricades). All alternative proposals concerning location, placement and security of meters/regulators shall be approved by applicable Section Manager of Energy Services or Gas Conversion Departments PRIOR to construction. All alternative proposals for meter/regulator design requirements shall be approved by the Section Manager of Gas Measurement PRIOR to construction.

7.0 OPERATING PRESSURE

- 7.1 Gas meters shall not be operated at a pressure that is more than 67 percent of the Manufacturer's shell test pressure as required by 16 NYCRR 255.359(a). A meter's shell test pressure is defined as 1.5 times the Maximum Allowable Operating Pressure (MAOP) established by the manufacturer. The MAOP can be found on the meter manufacturer's badge.
- 7.2 When qualifying a new diaphragm meter type, the manufacturer shall test the aluminum case to a minimum of 10 psig, or 1.5 times MAOP, whichever is greater per requirements of ANSI B109.1 and 109.2.
- 7.3 For rotary and turbine meters, the manufacturer shall test the meter body to 1.5 times the MAOP of the meter per requirements of the applicable standards (ANSI B109.3 & AGA-7). Meter MAOP is found on the data plate installed by the manufacturer.

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7.0 OPERATING PRESSURE (Continued)

- 7.4 Rebuilt or repaired tinned steel case meters may not be operated at a pressure that is more than 50 percent of the pressure used to test the meter after rebuilding or repairing as required by 16 NYCRR 255.359(c). Con Edison further requires that rebuilt or repaired tinned steel case meter may not be operated at elevated delivery pressures
- 7.5 Regulators equipped with internal reliefs (IR) shall be installed so that the regulator orifice size and expected range of inlet pressures is compatible with overpressure protection requirements for the customer piping:
 - A) For regulator sizing refer to [G-48](#), "Gas Meter and Service Regulator Sizing" or contact Gas Measurement.
 - B) Refer to [G-294](#), "Code Identification of Gas Service Regulators", for tables showing the code identification numbers used to identify gas service regulators installed on customer services (manufacturer, model, body size, inlet outlet piping, orifice size, and other factors).

8.0 INDOOR METER ROOM AND OUTDOOR METER SET CLEANLINESS

- 8.1 Gas meter rooms, when provided, shall at all times be kept clear of all rubbish; and shall not be used in any way for storage purposes, including material or equipment of any kind. A legible sign reading "Gas meter room-No storage permitted" shall be permanently and conspicuously posted on the exterior of the meter room door, except that the sign may be posted on the interior of the meter room door in buildings classified in occupancy group J-3. The lettering of such signs shall be of bold type at least one inch in height and shall be properly spaced to provide good legibility. The lettering and background shall be of contrasting colors.
- 8.2 Where gas meters and related equipment are not located in a separate room but are located in an open floor area, no combustible material shall be stored or kept within five feet of such equipment; nor shall the gas meter be within three feet of any heating boiler or sources of ignition and, except for buildings in occupancy group J-3, there shall be a physical bumper required if the room is also used for storage purposes or the like.

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9.0 COMPLIANCE AND EXCEPTIONS

- 9.1 All gas meters, service regulators and associated piping shall be installed in accordance with the applicable Con Edison meter and regulator specifications/drawings and shall comply with the requirements of this specification.
- 9.2 The Customer (or their agent) shall obtain the approval of the local authority having jurisdiction for any exceptions to the requirements specified in this specification.

10.0 INSTALLATION GUIDELINES FOR GAS METER BUMPERS

- 10.1 This section provides guidelines and instructions for selecting and installing new and retrofitted gas meter bumpers for residential and commercial meters subject to vehicular traffic. These meter bumpers are designed to protect against incidental bump damage during typical low-speed maneuvering (i.e., turning, backing, etc.).
- 10.2 If a risk of vehicular damage exists at a location, the meter shall be protected by bumper posts. The following provides guidelines for the physical protection of gas meter sets.
 - A) Type 1 bumpers protect gas meter sets that are at risk in residential areas using minimum 2” diameter, Schedule 40 steel pipe. See Figures 1 through 4 for installation requirements.
 - B) Type 2 bumpers protect gas meter sets that are at risk in commercial and industrial areas using concrete-filled, minimum 4” diameter, Schedule 40 steel pipe. See Figures 1 through 4 for installation requirements.
 - C) Install all utilities before installing the bumpers. Bumpers should be provided on all sides of the meter set that are exposed to vehicle hazards and that are not already protected by existing structures.
 - D) The final arrangement of the bumpers should not allow a vehicle approaching at any angle to damage the meter set.

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10.0 INSTALLATION GUIDELINES FOR GAS METER BUMPERS (Continued)

10.2 (Continued)

- E) The bumpers should be installed so that they do not obstruct vehicular traffic, inconvenience customers, or hamper gas meter maintenance and meter reading.

- ★ 10.3 All bumpers should be installed to have the same height.

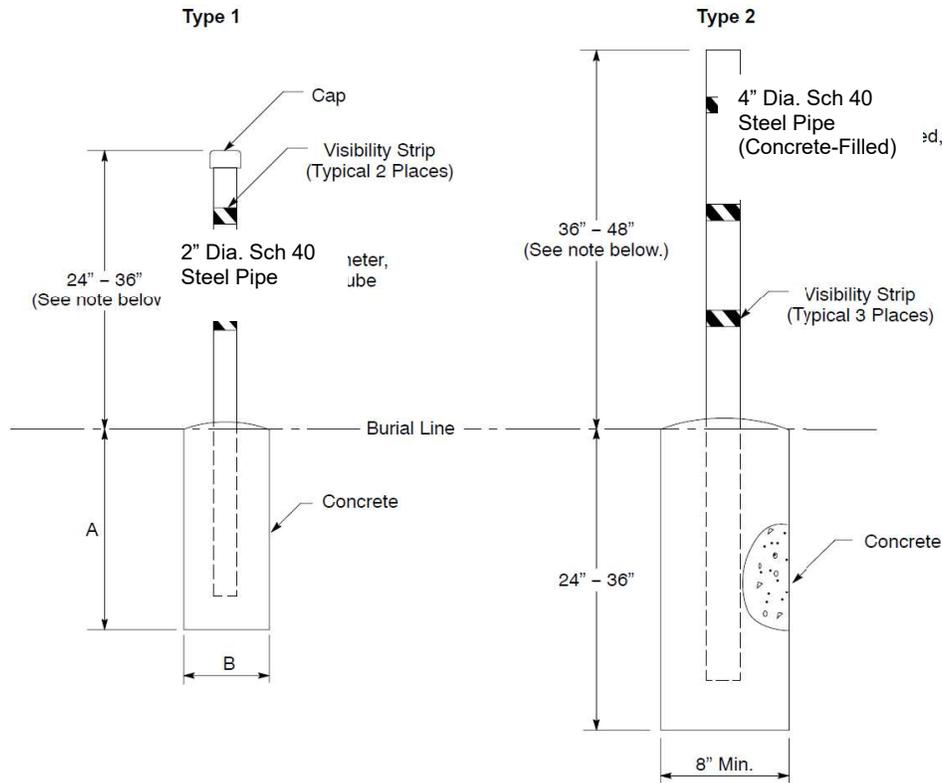
Note When field conditions do not permit exact compliance with these requirements, alternatives may be proposed. Alternative meter bumper arrangements must sufficiently protect the meter set and ensure adequate distance for maintenance and meter reading. A meter bumper may be used in conjunction with man-made bumpers such as wing-walls, planters, fences, etc., to provide protection; these bumpers may be a 6” or higher curb, large tree, permanently installed planter, bumper post(s), fence, or other similar permanent structure. All alternative proposals shall be approved by the Section Manager of Gas Measurement PRIOR to construction.

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10.0 INSTALLATION GUIDELINES FOR GAS METER BUMPERS (Continued)



★ **Figure 2**

Note: Bumper should extend 6" above the highest point on the meter set, but not to exceed maximum height above grade.

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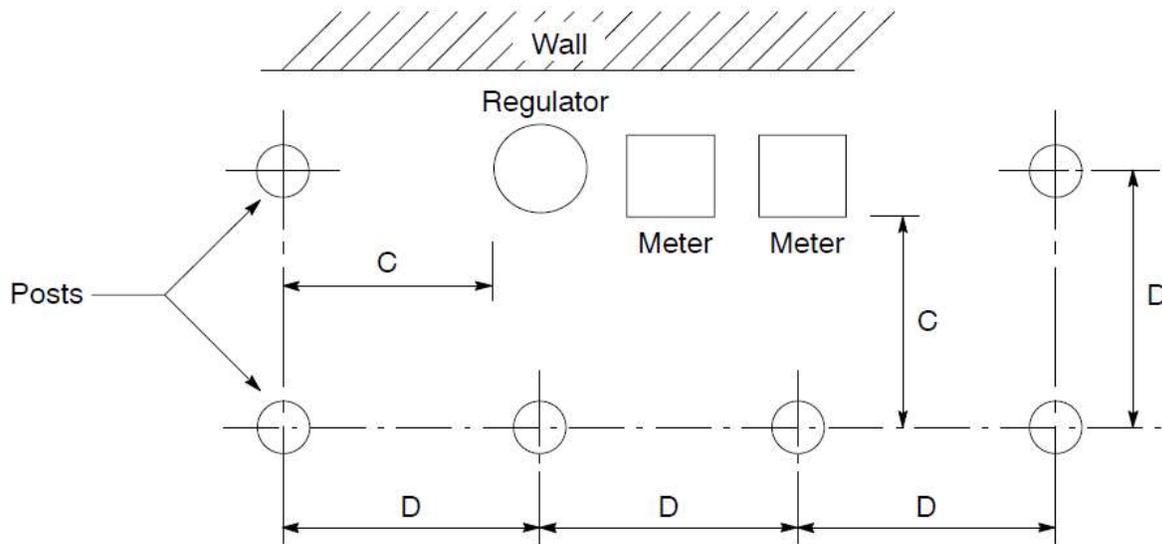


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10.0 INSTALLATION GUIDELINES FOR GAS METER BUMPERS (Continued)

Table 1 - Dimensions for Concrete Footing

A (Inches)	B (Inches)
12	8
15	8
20	6



★ **Figure 3**

Note: The concrete footing should be at least 6” away from any point on the riser. If the bumper is positioned above an underground gas service, a minimum distance of 3” should be maintained between the service and the concrete footing.

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10.0 INSTALLATION GUIDELINES FOR GAS METER BUMPERS (Continued)

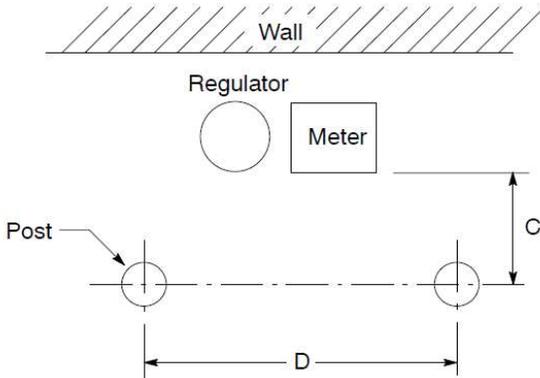


Figure 3
Single Meter Post Arrangement

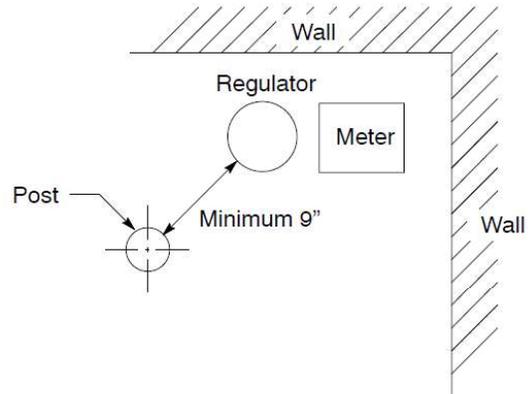


Figure 4
Single Post Arrangement

Table 2 Dimensions for Post Arrangement

C ¹ (Inches)	Maximum D ² (Inches)
Less than 12	Space posts to prevent vehicle from contacting meter set but leaving room for meter access and maintenance.
12	18
15	24
18	30
24	42

¹ Distance to meter or regulator.

² May not be more than 42".

11.0 RECORDS

Any records generated in the course of performing work in accordance with this specification shall be maintained as required by Corporate Instruction [CI-870-1](#) "Records Management". Guidance on the retention of Company Gas Operations records can also be found on the [Records Management](#) intranet site.

12.0 CLIMATE & ENVIRONMENTAL CONSIDERATIONS

Climate change may impact certain design criteria of the Gas system. For guidance on climate change impact considerations, please refer to the "Climate Change Adaptability & Resiliency" Corporate Instruction ([CI-610-4](#)).

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13.0 **REFERENCES**

- [EO-17118](#) - Regulator Vent Installation
- [G-48](#) - Gas Meter and Service Regulator Sizing
- [G-233](#) - Purchase Information for Gas Service Regulators
- [G-257](#) - Purchase of Approved Diaphragm and Rotary Meters
- [G-294](#) - Code Identification of Gas Service Regulators
- [G-695](#) - Supporting Gas Service Regulators and Meters
- [G-699](#) - Installation and Inspection of Gas Service Regulator Vent Line Protectors (VLPs)
- [G-8100](#) - General Specification for the Installation of Gas Distribution Services
- [G-8217](#) - Flood-Prone Areas for the Installation of Gas Service Regulator Vent Line Protectors (VLPs)
- [G-11813](#) - Identification, Inspection, and Documentation of Gas Services Supplying Buildings of Public Assembly
- [G-11815](#) - Inspection of Aboveground Gas Service Piping, Gas Mains on Bridges, Submarine Crossings, Expansion Joints, and Aboveground Piping at Stations and Plants.
- [G-11838](#) - High Pressure Gas Service Inspection
- [G-11875](#) - Procedure for Purging Gas Piping in a Building with Natural Gas with an Appliance, Gas Burner, or Venting Outside of the Building
- [G-11882](#) - Inspection of Indoor Gas Service Lines and Gas Services Passing through Vaulted Areas

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13.0 REFERENCES (Continued)

[CI-870-1](#) - Records Management

National Fuel Gas Code, ANSI Z223.1

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