

PSE&G Gas Meter Set Protection Best Practices

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October 30, 2013

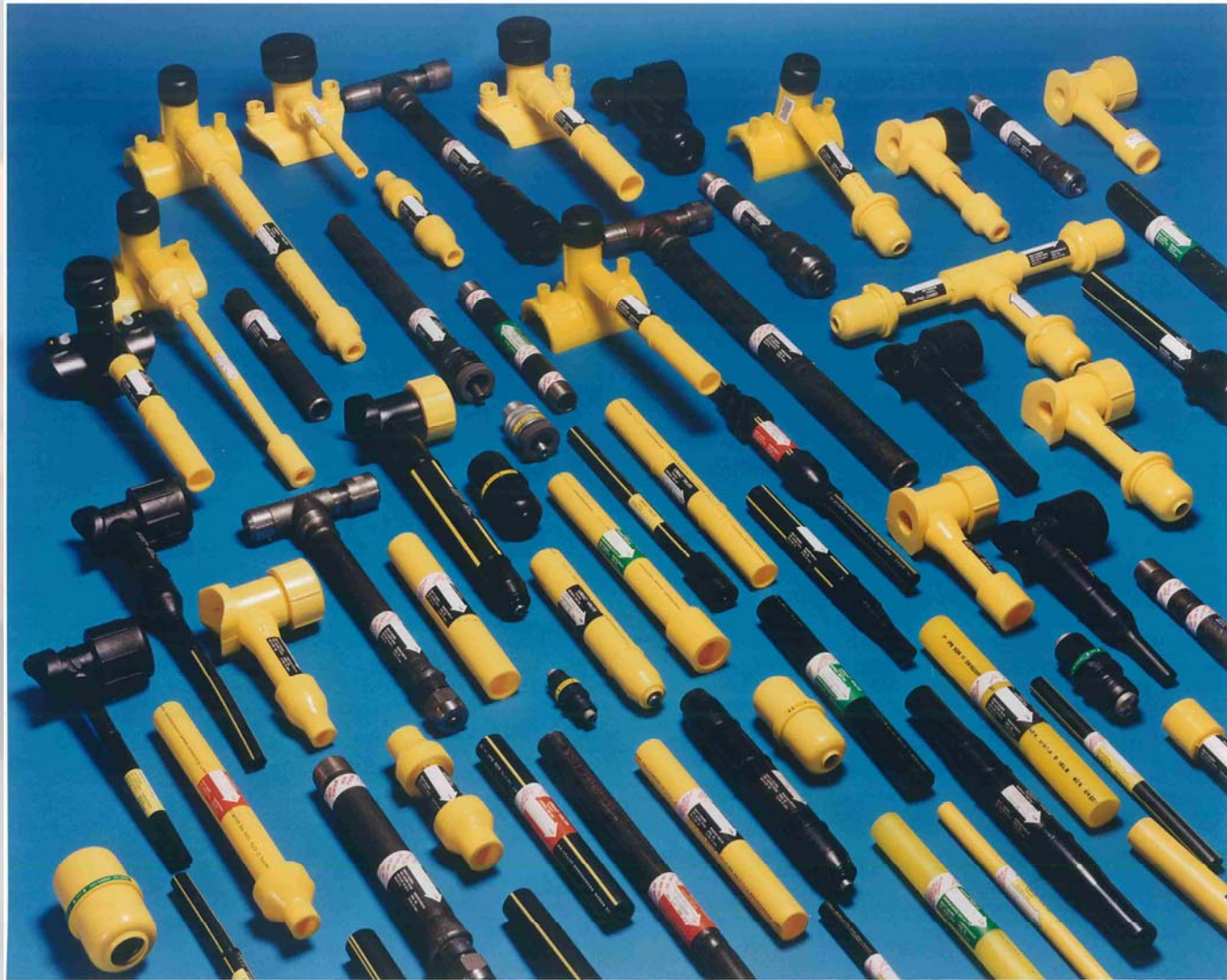
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Protecting Outside Meter Set from Vehicle Impact

NJAC – New Jersey Administrative Code:

- New NJAC Code wording was introduced in 2003.
- High pressure natural gas meter sets, including regulators and associated piping, may present a significant hazard if damaged by vehicular impact because the subsequent release of a large volume of gas may lead to ignition with resulting explosion, death, injury or property damage.
- Appropriate protection of these facilities by the installation of an excess flow valve (EFV) or some physical barrier can mitigate or prevent damage.

Excess Flow Valve Products



EG

Excess Flow Valve Installed



SEG

Elster-Perfection Excess Flow Valves



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UMAC Excess Flow Valve (Cut-Away View)



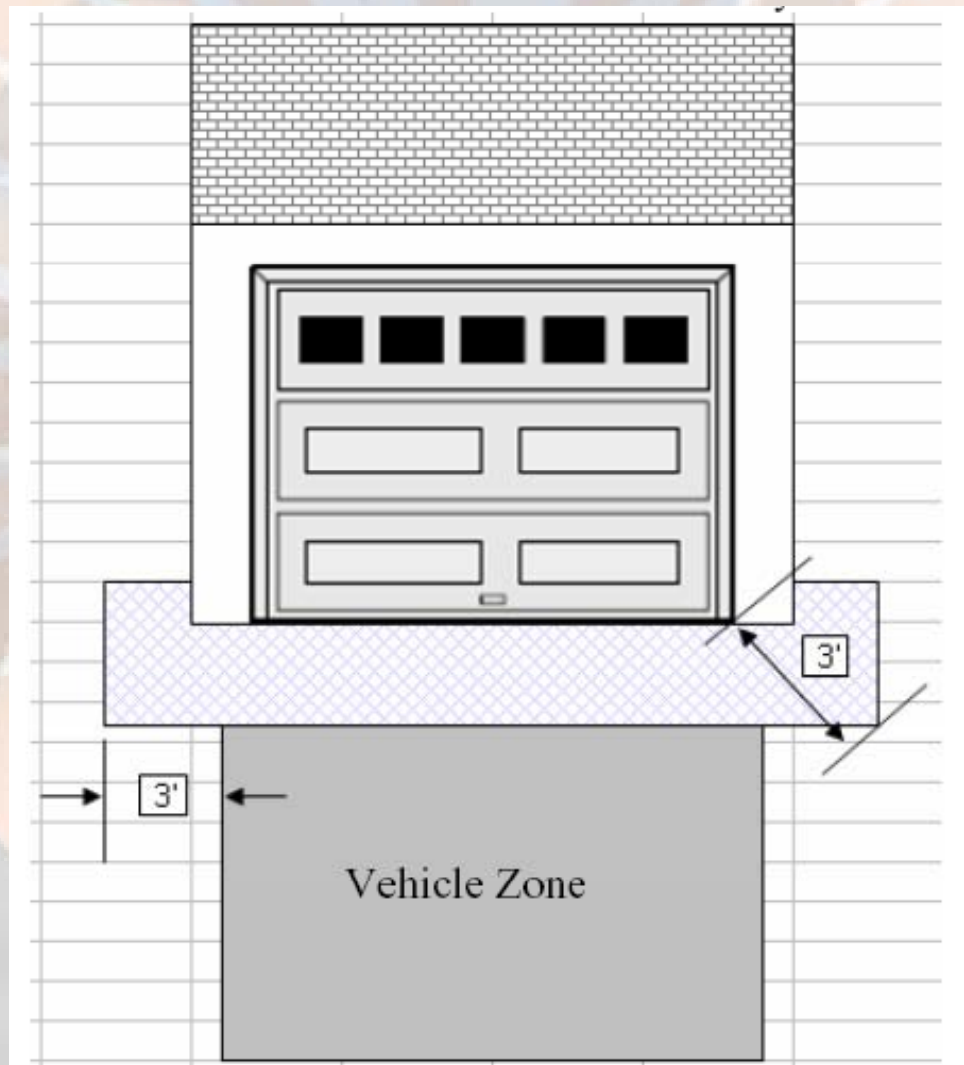
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Protecting Outside Meter Set from Vehicle Impact

- N.J.A.C. 14:6 -7.3(e) explains that the gas public utility shall ensure that any high pressure gas meter set connected to a new residential service line when an EFV is not feasible and the high pressure gas meter set is located within three feet or less of a vehicular zone, is protected.
- This section is limited to locations within three feet or less of a vehicular zone which is a radial area extending out three feet from the meter set piping.

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Outside Meter Set Clearances from Driveway or Parking Area



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Protecting Outside Meter Set from Vehicle Impact

- N.J.A.C. 14:6 -7.3(f) provides that physical barriers shall be installed to protect the residential gas meter set when the gas meter set meets the requirements of section (e) above.
- Physical barrier requirements are codified in N.J.A.C. 14:6-7.8. These physical barriers will provide protection to the gas meter set itself thereby reducing the likelihood of a gas meter set rupture due to vehicular impact.

Richards Manufacturing

- Steel Bollard for Meter Protection



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Residential Meter Set with Bollard Protection



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LV Meter Set with Fence & Bollard Protection



OSEG

Large Volume Meter Set with Bollard Protection



LEG

Protecting Outside Meter Set from Vehicle Impact

- N.J.A.C. 14:6 -7.3(g) provides a third option when both an EFV and physical barriers are not practical.
- Physical barriers may not be practical if the installation of such barriers would limit the ability of a vehicle to maneuver in a vehicular area, such as when the gas meter set is located in a small or narrow driveway.
- In such instances, the entire gas meter set must be relocated to a safer area where the likelihood of vehicular impact and other damage is reduced.

Protecting Outside Meter Set from Vehicle Impact

- When new NJAC Code requirements were adopted in 2007, PSE&G took the following actions to address existing affected locations.
 - Inspected and tracked locations that fit the new code criteria.
 - Installed either EFV's or bollards as protection.

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PSE&G Meter Set Protection Criteria

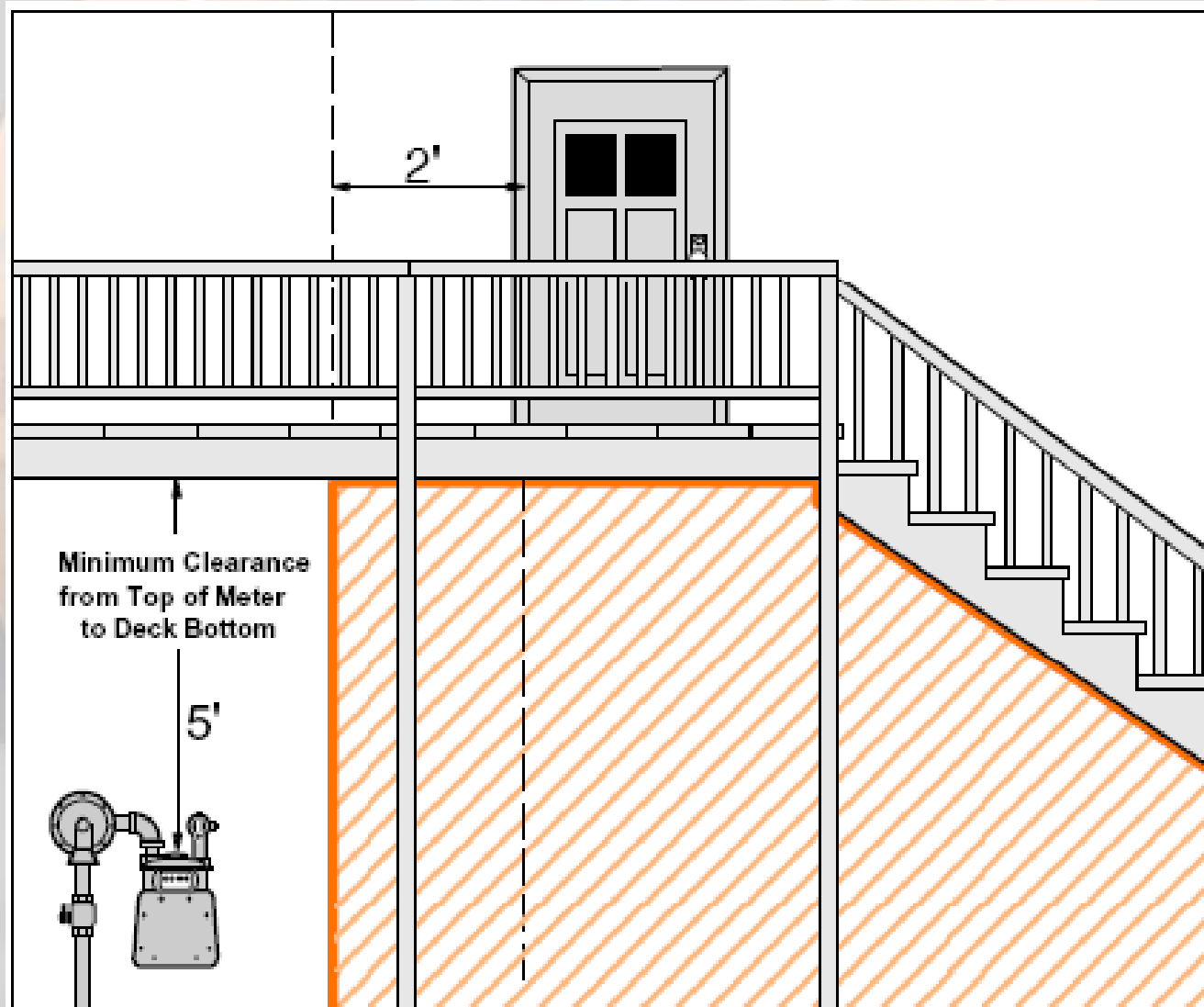
- Meter sets must be reasonably protected and shall not be located where they may be subject to damage.
- The customer is responsible for providing an appropriate location for the meter installation.
- Whenever maintenance or repair activities are performed on any existing outside meter set, the location should be evaluated to ensure it is not in a hazardous location.

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Meters Under Decks or Porches

- Meters should not be installed under decks or porches, if possible.
- If meters are installed under first floor decks or porches, they should be installed along the edge where they can easily be read and maintained.
- A meter may be installed under the deck if a clearance height of 5 feet or more can be accommodated.

Outside Meter Set Under Elevated Deck



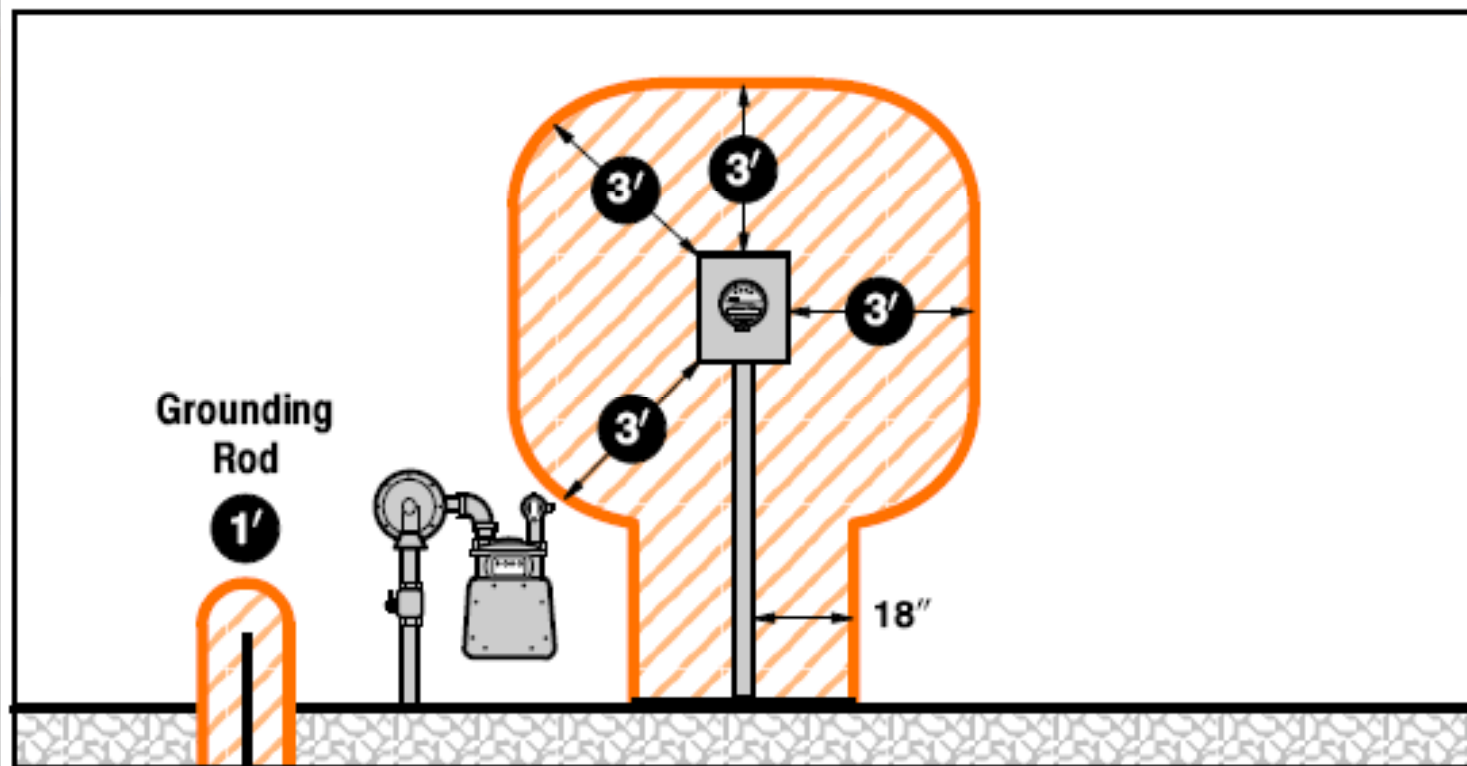
PSE&G Provisions - Meter Set Location

- Meters cannot be installed under combustible stairs if they are the primary exit from the building. If the stairs are not the primary exit and no other meter location is available, a meter may be installed.

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Gas Meters Near Electric Sources

- Outside meters shall be located at least 3 feet from electric meters and other sources of ignition (unguarded flames or possibility of electric sparks).



Gas Meter Installed Near Electric Panel



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Gas Meter Installed Near Electric Panel



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Gas Meter Installed Near Electric Panel



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PSE&G Provisions - Meter Set Location

- Gas meters shall be installed with a minimum of 1-inch clearance on all sides of the meter casing.
- Meters shall not be installed in locations where the meter casing is in direct contact with mulch, soil or concrete walls. Alkali in concrete and other corrosive elements in soil can cause premature corrosion to the meter casing.

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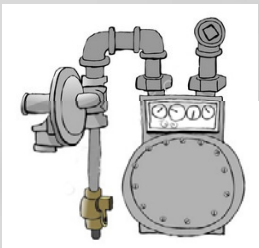
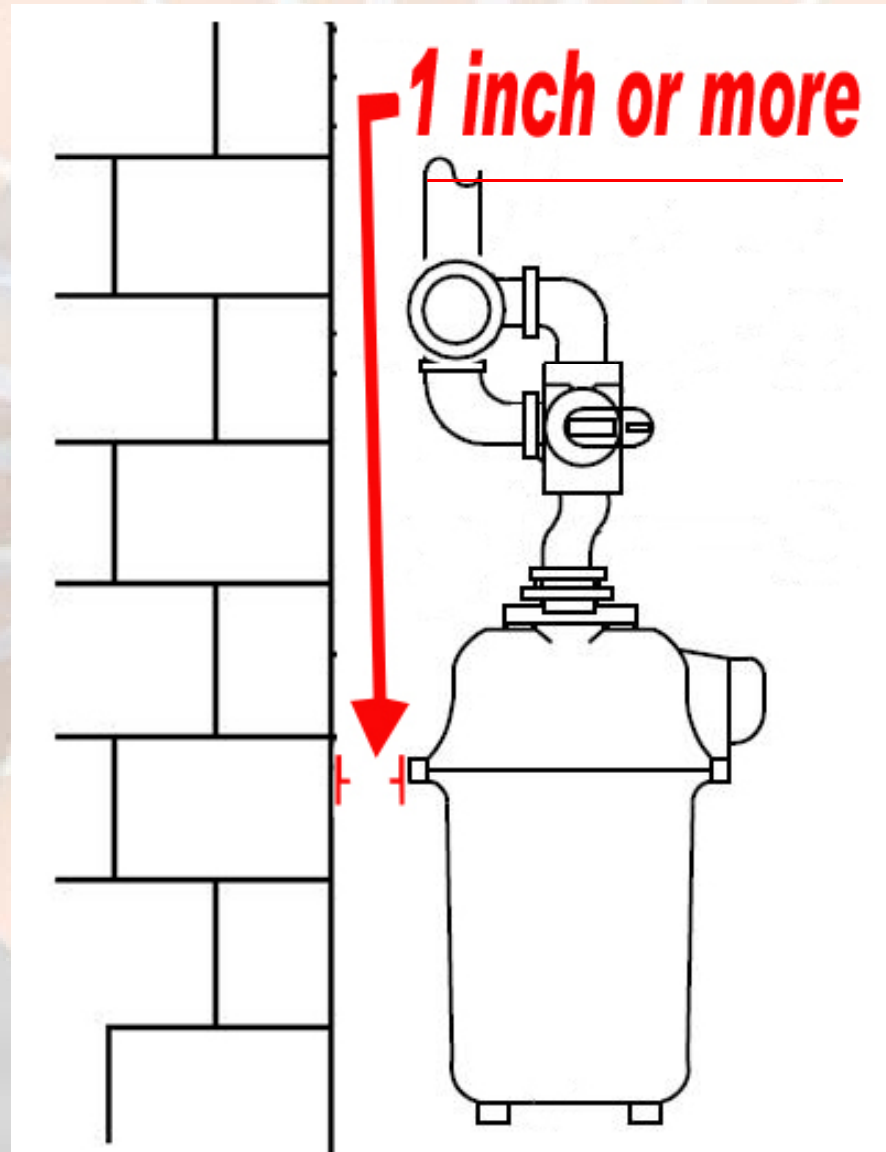
Corroded Meter Example

This AL800 meter base had been buried in landscaping mulch.

Note the damage:



Requirement for Meter Clearance



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Common Message for Field Personnel

You can protect gas meters from corrosion by inspecting meter installations for clearance and taking corrective actions, when necessary.

RUST FREE



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Prohibited Outside Meter Set Locations

- Meters shall not be located in walkways, driveways, material loading areas or storage areas where they may be subjected to damage.
- Meter sets shall not be installed under an opening to a building (operating windows, doors, or air intake vent).

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Meter Set Protection Guidelines

- If the meter set piping is located within 3 ft. of, and adjacent to, any garage opening, driveway, or designated parking area, and is not separated by a building wall, it may potentially be subject to vehicle impact. Meter sets require a minimum of 3 ft. clearance from this “vehicle zone”.
- A “vehicle zone” is defined as a street, parking space, driveway, loading dock, garage entrance, or other area where vehicle use is likely to occur.

Apartment Multi-Meter Manifold Set with Bollard Protection



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Large Volume Meter Set with Fence and Bollard Protection



EG

Meter Set Protection Guidelines

1. Outside meter sets shall be installed a minimum of 3 ft. from the edge of a driveway or vehicle zone.
2. Action shall be taken to provide protection for the meter and meter set piping.
3. If an industrial or commercial customer requires a meter set to be installed in an area subjected to traffic conditions, the customer shall provide suitable protection (i.e., concrete bollards) to prevent meter set damage.

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Large Volume Meter Set with Fence and Bollard Protection

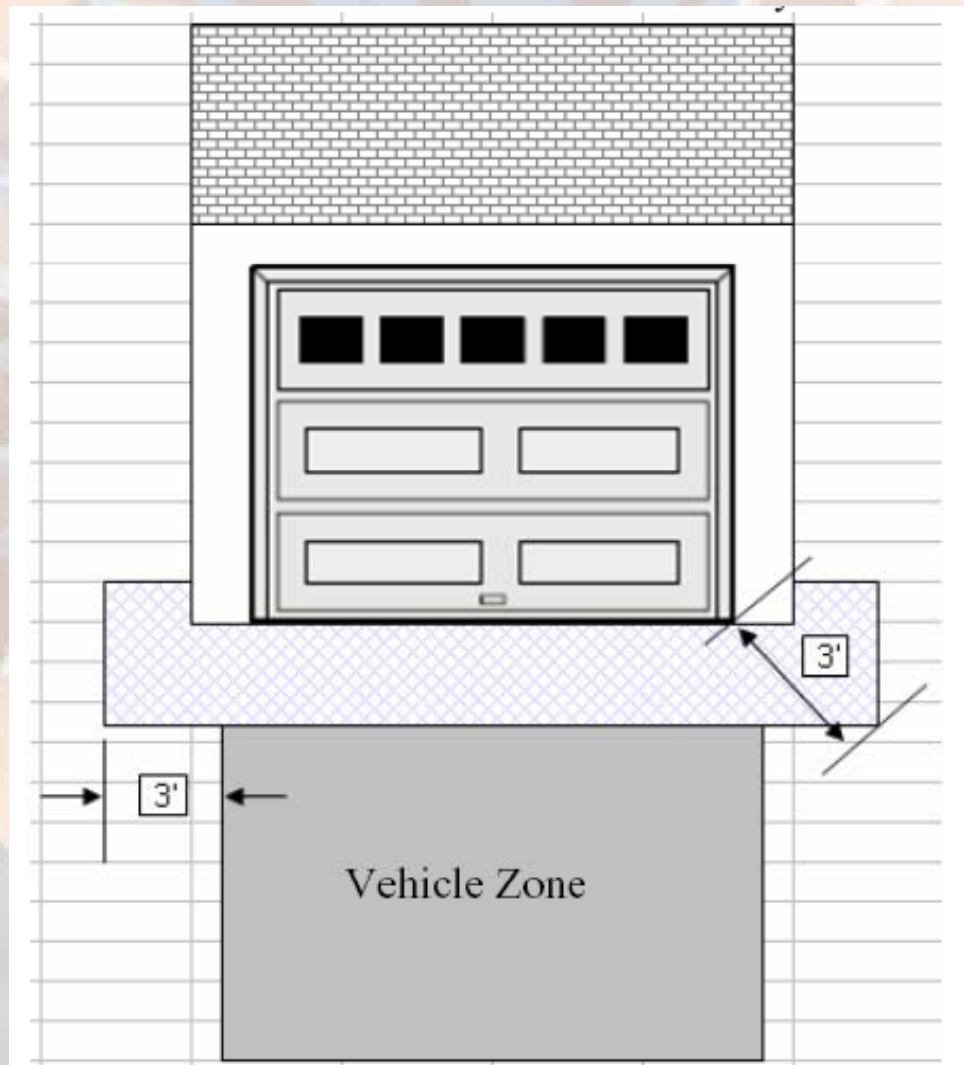


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Protecting Outside Meter Set from Vehicle Impact

1. Barriers shall be installed to meet the requirements of Section 312 of the International Fire Code to protect the meter and meter set piping.
2. Installation of Excess Flow Valve
 - An excess flow-limiting device (**EFV**) may be installed on single residential services in 15 psig and 60 psig design systems.
3. Outside Relocation
 - The existing meter set may be relocated to an acceptable alternative outside location.

Outside Meter Set Clearances from Driveway or Parking Area



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Protecting Outside Meter Set from Vehicle Impact

- 4. Inside Relocation
 - The existing meter set may be relocated to an acceptable inside location, with appropriate design modifications to accommodate venting of regulators, etc.
 - A building wall must exist between the meter set and a space that a vehicle may be operated.

Customer Safety Message

- Protection Against Snow & Ice

- Accumulation of ice or snow can interfere with the proper operation of your gas metering system.
- The meter assembly may contain a regulator that is designed to safely release pressurized gas in the event of a malfunction.
- Blocking the regulator vent could create an unsafe condition where gas is not able to escape from internal piping.



Customer Safety Message

- Protection Against Snow & Ice

- Snow and ice can damage gas meters and piping. Be careful when removing snow from around the gas meter; any damage to the gas meter could potentially create a possible leak hazard.
- Use a broom to keep the gas meter set, including the pressure regulator and vent piping, clear of snow and ice during the winter season.



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Gas Meters Affected by Ice and Snow



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Gas Meters Affected by Ice and Snow



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Gas Meters Affected by Ice and Snow



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Gas Meters Affected by Ice and Snow



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“GasCov” Meter Protection Against Snow & Ice



SEG

Regulator “Vent Skirt” Protection Against Snow & Ice



Ventskirts.com

Meter Set Damage – Frozen Meter Support

- PSE&G experienced Large Volume Meter Set Damage in the past due to frozen Meter Set Supports.
- In the past, PSE&G used hollow pipe to make meter set support stands.
- In the winter, the hollow pipe would fill with water, turn into ice and create stress on the meter set.
- Past damage included meters separations, sheared regulators and broken meter set piping.

Damaged Meter Set Support



Meter Set Damage Review



Damaged I&C Regulator



New Meter Set Support



Meter Explosion Incidents

- In 2008, PSE&G experienced meter explosion incidents in Milburn and Cliffside Park, NJ.
- In both cases, Jewelry Stores used a Gas/Oxygen mixture to supply a finishing torch.
- In both cases, check valves were not installed on the gas line, as required by PSE&G Requirements for Gas Service Installations, NJ Fire Code & IFG Code.

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Meter Explosion Incidents

- Torch flashbacks can occur when the tip of a jeweler's torch is blocked or when the oxygen supply is turned on prior to gas.
- As a result, oxygen will flow back through gas piping toward the meter.
- For jeweler torches, oxygen pressure is set much higher than natural gas pressure (NG pressure - $\frac{1}{4}$ psi; O₂ pressure - up to 70 psi).
- When the torch is ignited under this condition, a flashback can reach the gas meter.



Jeweler Torch Solution

- In 2008, Con Edison worked with the NYC Fire Department to require jeweler torches to have a listed combination flashback arrestor and check valve installed.
- G-TEC Natural Gas Torch Boosters will elevate utility natural gas pressure enough so that the flashback arrestor check valve protects the gas meter and the jeweler has a robust flame at the torch.
- More info: <http://www.safe-t-gas.com/page4.html>

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Large Volume Meters

- Protection Against System Debris

- PSE&G requires gasket strainers or filters to be installed ahead of new rotary or turbine gas meters.
- Strainers must include a minimum of #20 wire mesh size for protection against gas system debris.



FOR MORE INFORMATION

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