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Protection of Aboveground Outdoor Fuel Gas Piping

Code: 2018 Fuel Gas Code

Date: August 20, 2019

Section: 404.9¹

Code: Residential Code

Section: G2415.9

Question:

Is aboveground gas piping outdoors required to be protected where it is subject to damage²?

Answer:

Yes. Section 404.9³ is clearly prescriptive about **minimum support heights** above ground and roof surfaces:

“...All *piping* installed outdoors shall be elevated not less than 3-1/2 inches (152 mm) above ground and where installed across roof surfaces, shall be elevated not less than 3-1/2 inches (152 mm) above the roof surface.”

However, section 404.9 is only general in nature for **protection of piping** above ground but still subject to damage:

“...Piping installed above ground, outdoors, and installed across the surface of roofs shall be securely supported and located where it will be protected from physical damage

In order to provide a standard acceptable means of protecting fuel gas piping from damage commonly caused by string trimmers and similar lawn tools, the following method⁴ has been and shall continue to be an acceptable minimum installation method to provide protection if the gas piping is installed in an area frequently associated with string trimmers such as the perimeter of a house, deck, or light commercial building:

Copper tubing, corrugated stainless steel tubing (csst), and brass pipe shall be protected with a schedule 40 polyvinyl chloride (pvc) sleeve or equivalent⁵ from a point 3 inches below

¹ This code language appeared in Section 404.7 in the 2012 NCFGC

² See NCFGC Section 403.8 for above-ground corrosion protection, and NCFGC Section 404.11 for underground corrosion protection. The interpretation in this document is addressing physical damage protection, not corrosion.

³ Section 404.9 is not an all-inclusive section for piping installation. Refer to NCFGC Section 407 for minimum piping support requirements, including spacing, expansion and contraction considerations, etc.

⁴ This method was first distributed in the 2002 Fuel Gas Code NCDOT interpretations, and is still considered valid. It is not meant to be the only acceptable means, but is a method that shall be considered acceptable in meeting NCFGC Section 404.7 for the conditions described herein in this document. It is not, of course, considered a valid method for protection against vehicular damage, and does not address corrosion protection. See NCFGC Section 403.8.

⁵ Materials that can withstand a string trimmer’s incidental contact would be acceptable also.

grade to a point 3 feet above grade. The protection shall be provided at the building, when the piping is not protected by the gas meter, gas appliance or other means, and also at the storage tank when LP gas is used. The protection will not be required for black steel and galvanized steel pipe. When the manufacturer's installation instructions require additional protection, that protection shall be provided. Exposed ferrous metal shall be protected from corrosion.

The previous language from 2002 – 2009 is being clarified with the following language in order to facilitate more consistent enforcement:

After the vertical riser is protected, in situations where the tubing is less than 36" (nom.) above grade, and extends or runs horizontally on the exterior of a building, it is also acceptable to have the tubing be considered protected if it is mounted under the edge of the building's exterior siding, or simply tight to the exterior building wall. Similarly, if the gas line to a package unit is run higher than 18" (nom.) above grade, no additional protection of horizontal piping is required unless required by manufacturer.

It is common to have gas lines running or stubbing up under decks for deck-mounted quick disconnects and permanently installed appliances. Many times this is below the 36" mentioned in this interpretation, but if the gas lines are protected by the deck itself, i.e. it is impractical for a hedge or string trimmer to damage the gas piping, this interpretation is not intending to have that gas line sleeved for purposes of NCFGC 404.7.

Follow up Question #1:

Does the 3-1/2" pipe elevation apply to situations where the piping is run across outdoor concrete or asphalt patios, driveways, etc?

Answer:

Yes.

Similar to maintaining at least 3-1/2" above a roof surface, maintaining this nominal clearance above concrete surfaces will allow debris to be cleaned away or not accumulate in the first place. This is assuming the piping is up alongside a building wall or other vertical surface where a trip hazard is not created. Using the 3-1/2" above ground, roof surfaces, and outdoor concrete/asphalt surfaces should foster greater consistency in installations and enforcement.

In all cases, care needs to be taken to allow the sediment trap cap, if present, to be removed and used to empty sediments and scale or use as a pressure port connection.

Keywords: