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Piping support

Code: 2018 Fuel Gas Code **Date:** August 20, 2019
Section: 407.2
Code: Residential Code
Section: G2418.2

Question:
Does NC FGC Section 404.9 take precedence over NC FGC Section 407.2 for support of gas piping?

Answer:
No.

Section 404.9 discusses minimum heights the piping is to be located above the ground or above a roof surface. It does not address how close the supports need to be, or how (or how not), to secure the piping **to** the supports.

Follow-up Question #1:
Does NC FGC Section 407.2 prohibit the use of treated wood as pipe supports across roofs or ground?

Answer:
No. Although most pipe supports within a building are metal, the language:

> "…or building structural components…"

could include the top of the roof structure, and it does not prohibit the use of treated wood. However, there is no implied roof/support compatibility guarantee with this code section. The responsibility of selecting supports that do not void any roof warranty lies with the installing contractor or design professional. Care in choosing a material is important, as any material that deteriorates over time is no longer holding the weight of the piping and unintended stresses will occur in joints.

As important as the support (be it treated wood or a pre-manufactured support) is the means of attachment **to** said support. A portion of NC FGC Section 407.2 reads:

> "…Supports, hangers and anchors shall be installed so as not to interfere with the free expansion and contraction of the *piping* between anchors. All parts of the supporting *equipment* shall be designed and installed so they will not be disengaged by movement of the supported *piping*."

Accounting for horizontal expansion[1] of the piping is commonly accomplished with trapeze hangars with sufficient lateral sway or rollers mounted on top of the support. The code does not prescribe a method, the exact method conforming to MSS SP-58[2] is to be determined by the installing contractor or design professional. See short list of pertinent definitions for supports, hangers, anchors and required load bearing force from MSS SP-58 at end of this document.

Follow-up Question #2:
Do all piping supports need to be labeled/stamped MSS-SP 58[3]?

Answer:
No.

For minimum code compliance, the language states:

> "…Pipe hangers and supports shall conform to the requirements of MSS SP-58..."

The requirement does not require the components to be *labeled*. The responsible party for selecting components that meet NCFGC Section 407.2, and MSS-SP 58 is the design professional and/or installing contractor. The records demonstrating conformance may be requested by the code official per NC Administrative Code Section 106.2.2 and/or 105.2.

Selected Definitions and Load Requirements from code-referenced standard (ANSI, 2009):
Pipe Hanger Assembly: A general term used to describe a series of assembled components which make up a *Pipe Hanger, Pipe Support, Restraint, Anchor, Guide*

Pipe Hanger: 1) A device which is normally suspended from a structure and is used to carry the piping load in tension.
2) May also describe any device used to transmit the piping load to a structure

Pipe Support: 1) A device by which piping normally carried from beneath and is used to carry the piping weight in compression.
2) May also describe any device used to transmit the piping load to a structure

Restraint: Any device which prevents, resists, or limits the free movement of the piping.

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[1] Refer to NC FGC Section 411 for prescriptive instances of flexible connections required for selected appliances. This section is not an exhaustive list, and any given appliance may need to be evaluated for possible flexible connection due to excessive expansion/contraction and/or seismic requirements under NCBC Section 1613, which further references ASCE 7. Fuel Gas Piping is of course piping carrying a flammable gas. Outside resources are required to determine length of expansion and contraction.

[2] The MSS SP-58 standard can be purchased from American National Standards Institute (ANSI) http://webstore.ansi.org/, or other technical manual dealers. It was $295 in 2015.

[3] From the MSS SP-58 Standard preface "…MSS has no power, nor does it undertake, to enforce or certify compliance with this document. Any certification or other statement of compliance with the requirements of this Standard Practice shall not be attributable to MSS and is solely the responsibility of the certifier or maker of the statement.."

Anchor: A rigid device used to prevent essentially all pipe rotation and displacement at the point of application.

Guide: A device used to permit pipe movement in a predetermined direction while restraining movement in other directions.

Table 1 Minimum Design Load Ratings for Pipe Hanger Assemblies (ANSI, 2009)

Applicable to all components of complete assembly; including pipe attachment, rod, fixtures, and building attachment	
Nom. Pipe or Tube Size	Minimum Design Load Rating at Normal Temperature Range
Inches	Pounds
3/8	150
½	150
¾	150
1	150
1-1/4	150
1-1/2	150
2	150
2-1/2	150
3	200
See full table in MSS SP-58	

Follow-up Question #3:
Are rink-shank nails holding plastic J-hooks driven through a metal building skin meeting the requirements of 407.2 for supporting fuel gas piping?

Answer:
No. This will not meet the minimum load rating, and the nails will cause the owner's building to not be sealed against the rain.

Works Cited

ANSI. (2009). *MSS SP-58.* ANSI.

Keywords: