

SECTION G2411 (310) ELECTRICAL BONDING

G2411.1 (310.1) Pipe and tubing other than CSST. Each above-ground portion of a *gas piping system* other than corrugated stainless steel tubing (CSST) that is likely to become energized shall be electrically continuous and bonded to an effective ground-fault current path. *Gas piping* other than CSST shall be considered to be bonded where it is connected to *appliances* that are connected to the *equipment* grounding conductor of the circuit supplying that *appliance*.

G2411.2 (310.2) CSST. This section applies to corrugated stainless steel tubing (CSST) that is not listed with an arc-resistant jacket or coating system in accordance with ANSI LC 1/CSA 6.26. CSST *gas piping* systems and piping systems containing one or more segments of CSST shall be electrically continuous and bonded to the electrical service grounding electrode system or, where provided, the lightning protection grounding electrode system.

G2411.2.1 (310.2.1) Point of connection. The bonding jumper shall connect to a metallic pipe, pipe fitting or CSST fitting.

G2411.2.2 (310.2.2) Size and material of jumper. The bonding jumper shall be not smaller than 6 AWG copper wire or equivalent.

G2411.2.3 (310.2.3) Bonding jumper length. The length of the bonding jumper between the connection to a gas piping system and the connection to a grounding electrode system shall not exceed 75 feet (22 860 mm). Any additional grounding electrodes installed to meet this requirement shall be bonded to the electrical service grounding electrode system or, where provided, the lightning protection grounding electrode system.

G2411.2.4 (310.2.4) Bonding connections. Bonding connections shall be in accordance with NFPA 70.

G2411.2.5 (310.2.5) Connection devices. Devices used for making the bonding connections shall be listed for the application in accordance with UL 467.

G2411.3 (310.3) Arc-resistant CSST. This section applies to corrugated stainless steel tubing (CSST) that is listed with an arc-resistant jacket or coating system in accordance with ANSI LC 1/CSA 6.26. The CSST shall be electrically continuous and bonded to an effective ground fault current path. Where any CSST component of a piping system does not have an arc-resistant jacket or coating system, the bonding requirements of Section G2411.2 shall apply. Arc-resistant-

jacketed CSST shall be considered to be bonded where it is connected to an appliance that is connected to the appliance grounding conductor of the circuit that supplies that appliance.

SECTION G2412 (401) GENERAL

G2412.1 (401.1) Scope. This section shall govern the design, installation, modification and maintenance of *piping systems*. The applicability of this *code* to *piping systems* extends from the *point of delivery* to the connections with the *appliances* and includes the design, materials, components, fabrication, assembly, installation, testing, inspection, operation and maintenance of such *piping systems*.

G2412.1.1 (401.1.1) Utility piping systems located within buildings. Utility service *piping* located within buildings shall be installed in accordance with the structural safety and fire protection provisions of this code.

G2412.2 (401.2) Liquefied petroleum gas storage. The storage system for *liquefied petroleum gas* shall be designed and installed in accordance with the *Florida Fire Prevention Code* and NFPA 58.

G2412.3 (401.3) Modifications to existing systems. In modifying or adding to existing *piping systems*, sizes shall be maintained in accordance with this chapter.

G2412.4 (401.4) Additional appliances. Where an additional *appliance* is to be served, the existing *piping* shall be checked to determine if it has adequate capacity for all *appliances* served. If inadequate, the existing system shall be enlarged as required or separate *piping* of adequate capacity shall be provided.

G2412.5 (401.5) Identification. For other than steel *pipe*, exposed *piping* shall be identified by a yellow label marked "Gas" in black letters. The marking shall be spaced at intervals not exceeding 5 feet (1524 mm). The marking shall not be required on *pipe* located in the same room as the *appliance* served.

G2412.6 (401.6) Interconnections. Where two or more *meters* are installed on the same premises but supply separate consumers, the *piping systems* shall not be interconnected on the outlet side of the *meters*.

G2412.7 (401.7) Piping meter identification. *Piping* from multiple *meter* installations shall be marked with an *approved*

Vaporizer Pressure Relief Valve.

5.21.9.1 The minimum rate of discharge in cubic feet of air per minute for pressure relief valves for LP-Gas vaporizers, of the indirect type or direct-fired type, shall comply with 5.21.9.2 through 5.21.9.4.

5.21.9.2 Based on conservative heat transfer calculations (assuming that the vaporizing chamber is liquid full), the maximum vapor generating capacity (rate) shall be determined when maximum heat is available. That vapor rate shall be converted to an equivalent air rate.

5.21.9.3 If the vaporizer is direct fired or if a substantial exterior surface is in contact with the LP-Gas, the sum of the vaporizer surface and the LP-Gas wetted exterior surface shall be used in conjunction with Table 5.7.2.6 to determine the required relief valve capacity.

5.21.9.4 The minimum rate of discharge in cubic feet of air per minute for pressure relief valves for LP-Gas vaporizers, of the indirect type or direct-fired type, shall be at least 150 percent of the rated vaporizing capacity.

5.22 Vehicle Fuel Dispensers.

5.22.1 The dispenser shall have a maximum design pressure equal to or greater than the maximum discharge pressure from the pump and bypass valve, if provided.

5.22.2 The maximum design pressure and all equipment downstream from the pump shall be in accordance with Table 5.17.2.1.

Chapter 6 Installation of LP-Gas Systems

6.1 Scope.

6.1.1* Application. This chapter applies to the following:

- (1) Location and field installation of LP-Gas systems that use components, subassemblies, container assemblies, and container systems that are fabricated in accordance with Chapter 5
- (2) Location of containers and liquid transfer systems
- (3) Installation of container appurtenances and regulators
- (4) Installation of piping (including flexible connectors and hose), hydrostatic relief valves, and piping service limitations
- (5) Installation of equipment
- (6) Testing of piping systems

6.1.2 Nonapplication. This chapter does not apply to the following:

- (1) Refrigerated containers
- (2) Installation of systems used in the highway transportation of LP-Gas

6.1.3* Additional Features. For any purpose or application addressed within the scope of this chapter, if the requirements of the chapter are met, any or all additional features or components of equipment not prohibited by the chapter shall be permitted to be used.

6.2 Location of Containers.

6.2.1 LP-Gas containers shall be located outside of buildings unless they are specifically allowed to be located inside of buildings.

6.2.2 LP-Gas containers shall be allowed in buildings only for the following applications:

- (1) Cylinders as specifically provided for in Section 6.20

- (2) Containers of less than 125 gal (0.5 m³) water capacity for the purposes of being filled in buildings or structures complying with Chapter 10
- (3) Containers on LP-Gas vehicles complying with, and parked or garaged in accordance with, Chapter 9
- (4) Containers used with LP-Gas portable engine fuel systems complying with 11.15.1
- (5) Containers used with LP-Gas stationary engine fuel systems complying with 6.26
- (6) Containers used with LP-Gas-fueled industrial trucks complying with 11.13.4
- (7) Containers on LP-Gas-fueled vehicles garaged in accordance with Section 11.16
- (8) Cylinders awaiting use, resale, or exchange when stored in accordance with Chapter 8

6.3 Container Separation Distances.

6.3.1 Aboveground Containers.

6.3.1.1* Containers installed outside of buildings, whether of the portable type replaced on a cylinder exchange basis or permanently installed and refilled at the installation, shall be located with respect to the adjacent containers, important building, group of buildings, or line of adjoining property that can be built upon, in accordance with Table 6.3.1.1, Table 6.4.1.2, 6.3.1.2 through 6.3.1.3, 6.3.3, 6.3.4.1 through 6.3.4.4, and 6.4.4.6 through 6.4.4.11.

6.3.1.2 When the provisions of 6.28.3 through 6.28.5 are met, the minimum distance from an ASME container to a building shall be reduced by one-half for ASME containers of 2001 gal through 30,000 gal (7.6 m³ through 114 m³) water capacity.

6.3.1.3 The 25 ft (7.6 m) minimum distance from aboveground ASME containers of 501 gal through 2000 gal (1.9 m³ through 7.6 m³) water capacity to buildings, a group of buildings, or the line of adjoining property that can be built upon shall be reduced to 10 ft (3 m) for a single ASME container of 1200 gal (4.5 m³) or less water capacity where such container is at least 25 ft (7.6 m) from any other LP-Gas container of more than 125 gal (0.5 m³) water capacity.

6.3.2 Underground or Mounded ASME Containers.

6.3.2.1 Minimum distances for underground or mounded ASME containers of 2001 gal through 30,000 gal (7.6 m³ through 114 m³) water capacity, incorporating all the provisions of Section 6.28, shall be reduced to 10 ft (3 m).

6.3.2.2 Distances for all underground and mounded ASME containers shall be measured from the container surface.

6.3.2.3 No part of an underground or mounded ASME container shall be less than 10 ft (3 m) from a building or line of adjoining property that can be built upon.

6.3.3 Minimum Separation Distances for ASME Containers.

6.3.3.1 The minimum separation distances specified in Table 6.3.1.1 between containers and buildings of other than woodframe construction devoted exclusively to gas manufacturing and distribution operations shall be reduced to 10 ft (3 m).

6.3.3.2 If the aggregate water capacity of a multicontainer installation is 501 gal (1.9 m³) or more and the installation is comprised of individual containers, each with a water capacity of less than 125 gal (0.5 m³), the minimum distance shall comply with Table 6.3.1.1 and 6.3.3.2(A) through 6.3.3.2(C).

(A) The aggregate capacity shall be used rather than the capacity per container.