



TECHNICAL BULLETIN

Code Effective Date:	October 3, 2017¹
Source Document:	19NYCRR 1220 - Residential Construction 19NYCRR 1224 - Fuel Gas Equipment and Systems²
Topic	Gas pipe bonding – CSST and Gas pipe bonding – listed CJ-CSST.

This bulletin addresses the need for electrical bonding of Corrugated Stainless Steel Tubing (CSST) and Conductive Jacketed Corrugated Stainless Steel Tubing (CJ-CSST). The requirements for electrical bonding of these types of gas piping are found in the 2015 IRC and the 2015 IFGC as modified by the 2017 Uniform Code Supplement.

Code Path:

Chapter 2, Item 2.44 of the 2017 Uniform Code Supplement modifies Section G2411 (310) of the 2015 IRC by adding the sections G2411.2 and G2411.3. These sections read in part:

G2411.2 (310.2) Gas pipe bonding – CSST. A gas piping system that contains any CSST shall be electrically continuous and shall be directly bonded to the electrical service grounding electrode system. No portion of the gas piping system shall be used as or considered to be a grounding electrode or a grounding electrode conductor. CSST shall be installed and bonded in accordance with Section G2411.2, and the stricter of:

1. The requirements set forth in the CSST manufacturer's installation instructions, or
2. The requirements set forth Sections G2411, and G2415.7 of this code.

Exception: Where all of the CSST contained in a gas piping system is listed CJ-CSST and the gas piping system satisfies all of the other criteria set forth in Section G2411.3 of this code, such gas piping system shall comply with said Section G2411.3 for CJ-CSST.

G2411.3 (310.3) Gas pipe bonding – listed CJ-CSST. Where:

1. All of the CSST contained in a gas piping system consists of listed CJ-CSST,
2. Such gas piping system is electrically continuous, and
3. At least one appliance is:
 - i. Connected to such gas piping system,
 - ii. Connected to a grounded electrical circuit, and
 - iii. Connected to the equipment grounding conductor of such electrical circuit by a bonding conductor that is 14 AWG (or larger) copper,

¹ The "Code Effective Date" for this Technical Bulletin is October 31, 2017, which is the effective date of the current version of the New York State Uniform Fire Prevention and Building Code (the Uniform Code). However, the Uniform Code provisions referenced in this Technical Bulletin were not changed from the previous version of the Uniform Code, which became effective on October 3, 2016.

² The 2015 International Residential Code (2015 IRC) is a publication incorporated by reference in 19 NYCRR Part 1220. The 2015 International Fuel Gas Code (2015 IFGC) is a publication incorporated by reference in 19 NYCRR Part 1224. The 2017 Uniform Code Supplement is a publication incorporated by reference in 19 NYCRR Parts 1219 through 1228. The 2015 IRC, as amended by the 2017 Uniform Code Supplement, and the 2015 IFGC, as amended by the 2017 Uniform Code Supplement, are all part of the Uniform Code.

Such gas piping system shall be installed and bonded in accordance with the stricter of:

1. The requirements set forth in the listed CJ-CSST manufacturer's installation instructions, or
2. The requirements set forth in Sections G2411.3.1, G2411.3.2, G2411.3.3, and G2415.7.

Chapter 6, item 6.2 of the 2017 Uniform Code Supplement adds a definition for CJ-CSST:

LISTED CONDUCTIVE JACKETED CSST (or LISTED CJ-CSST). CSST which is:

1. Encased in a conductive jacket, and
2. Listed in a currently effective evaluation report issued by a nationally recognized building product evaluation service as having been:
 - ii. tested in accordance with the published National Standard ANSI LC 1-2014 including the performance criteria of Section 5.16 and
 - iii. Shown by such testing to satisfy such published performance criteria and to provide, without additional bonding, protection against damage from indirect lightning strikes that is at least equivalent to that provided by direct bonding as prescribed in Section 310 of this code.

Section 310.1 of the 2015 IFGC states in part:

310.1 Pipe and tubing other than CSST. Each aboveground 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*.

Similar language to what was modified in the 2015 IRC is also included Chapter 6, item 6.4 of the 2017 Uniform Code Supplement which modifies Section 310 of the 2015 IFGC by adding the sections 310 and.2 and 310.3 G2411.3

Conclusion:

All CSST and CJ-CSST requires some level of electrical bonding. The method of bonding varies, based on the type of CSST, and any available bonding which may be supplied to the appliance which is connected to the CSST. Bonding of CSST is required per Section G2411.2 of the 2015 IRC and Section 310.2 of the 2015 IFGC as modified by the 2017 Uniform Code Supplement. Bonding is required for protection against damage from indirect lightning strikes, at least to the level of protection indicated in the 2015 IFGC. For CJ-CSST, G2411.2 and 310.2 direct you to G2411.3 and 310.3, respectively.

According to these code sections, such protection is provided when CJ-CSST is connected to a specific appliance that is served by a branch circuit containing an equipment bonding conductor. In a situation where all of the connected gas fired appliances are not electrically powered, such as a natural draft water heater, the presence of CJ-CSST would require the installation of a separate bonding conductor. The bonding conductor for such electrical connection can be a conductor of 14 AWG copper, rather than the 6-gauge bonding conductor normally required for conventional CSST. However, the adopted version of NFPA-70 (National Electric Code-2014) requires protection of conductors of less than 6 AWG³, therefore, in some cases, the use of a 6 AWG copper conductor may be preferred and is permissible for meeting this code requirement.

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³ 250.102 E(3) "**Protection.**" Bonding jumpers or conductors and equipment bonding jumpers shall be installed in accordance with 250.64 (A) and (B).

250.64(B) "**Securing and Protection Against Physical Damage.**" Essentially states that any conductor smaller than 6 AWG shall be protected in RMC, IMC,PVC, RTRC-XW, EMT or cable armor.