

**NC Department of Insurance
Office of the State Fire Marshal - Engineering Division
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**CSST Bonding Requirements for Contractors and Code Official, Arc-Resistant CSST
Bonding**

Code: 2012 Fuel Gas Code
Section: 310.1.1

Date: August 18, 2014,
Revised: November 1, 2016

Question:

What Certificate is the Code Official required to have in order to inspect the bonding of CSST piping required by NC FGC Section 310.1.1?

Answer:

A Level I Electrical Certificate at a minimum.

Follow-up Question #1:

Is the contractor required to have an electrical contractor's license to perform the bonding of CSST?

Answer:

NC General Statute 87-43 requires an electrical contractor's license when installing wiring or equipment. NC General Statute 87-43.1 provides exceptions for when a license is not required, which includes the bonding of CSST. An electrical contractors license is not required if the bonding can be properly performed outside of the electrical panel. This is as a result of an amendment to NCGS 87-43.1 (8) which became effective April 24th, 2013¹.

Per the State Board of Examiners of Electrical Contractors, in instances where it is required to enter the electrical panel to perform the required bonding, the contractor would be required to hold an electrical contractors license. Further information on this topic can be found on the State Board of Examiners of Electrical Contractors website at the following link:

<http://ncbeec.org/wp-content/uploads/2013/05/CSST-Bonding-Board-Determination-Letter.pdf>

The letter referenced in the link above is attached to the end of this document for convenience.

Follow-up Question #2:

For arc-resistance coating, NC Amendment 310.1.1, Chapter 8 CSST. (141209 Item B-11)i does not require the supplemental bonding of said CSST gas piping. However, does the NC Electrical code Article 250.104(B) require it to be bonded with #6 cu?

¹ <http://www.ncga.state.nc.us/Sessions/2013/Bills/Senate/PDF/S148v3.pdf>

Answer:

No.

Here is a reprint of NC Electrical Code 250.104 (B) for reference:

(B) Other Metal Piping. If installed in, or attached to, a building or structure, a metal piping system(s), including gas piping, that is likely to become energized shall be bonded to any of the following:

- (1) Equipment grounding conductor for the circuit that is likely to energize the piping system
- (2) Service equipment enclosure
- (3) Grounded conductor at the service
- (4) Grounding electrode conductor, if of sufficient size
- (5) One or more grounding electrodes used

The bonding conductor(s) shall be sized in accordance with 250.122, using the rating of the circuit that is likely to energize the piping system(s). The points of attachment of the bonding jumper(s) shall be accessible.

As can be seen in the excerpt, there is no unique requirement for bonding CSST vs. any other metal gas piping from the NEC perspective. The most typical scenario used to bond gas piping (CSST or other) is via Article 250.104(B)(1), whereby the gas piping is connected to the appliance usually with metallic threaded couplings that are metal-to-metal. With the metal-to-metal attachment of the CSST coupling to the gas inlet of the bonded appliance, this is meeting 250.104(B)(1), as this fulfills the "...shall be bonded to any of the following.." requirement, as the gas piping is now electrically continuous with the equipment grounding conductor.

Also please refer to definitions in NC Electrical Code, chapter 1:

Bonded (Bonding). Connected to establish electrical continuity and conductivity.

The metal-to-metal pipe threads provide the bonding.

Keywords:

Energized electrical panels

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STATE BOARD OF EXAMINERS OF ELECTRICAL CONTRACTORS

October 2, 2013

William H. Moeller, P.E.
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Mr. Moeller:

During its meeting held September 19, 2013, the Board considered your question regarding the recent law amendment to NCGS 87-43.1, the statute which lists exceptions from the requirement to hold license as an Electrical Contractor. The new language provides as follows: *"The provisions of this Article shall not apply to the bonding of corrugated stainless steel tubing (CSST) gas piping systems as required under Section 310.1.1 of the 2012 N.C. Fuel Gas Code."*

The following response is submitted:

Question

Does this mean that anyone, licensed or unlicensed, can open the panel, remove the cover and install the ground wire for the bonding?

Board Response

The Board carefully considered all aspects of this issue with respect to Section 310.1.1 of the 2012 N.C. Fuel Gas Code, the best interest of the unlicensed CSST installers and the best interest of the public. The Board determined that the referenced exemption provision of NCGS 87-43.1 would apply to installing the bonding conductor from the point where the gas service enters the building or structure and running it to a readily accessible external mounted intersystem bonding termination device, an approved grounding electrode conductor or an approved grounding electrode such as the metal frame of the building or structure, rod, or pipe, but outside of any energized electrical panels. The Board further determined that, when such external connections are not available, a licensed electrical contractor will be required to make the connection inside an energized electrical panel, or provide a termination device for use by the public.

William H. Moeller
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The Board appreciates your interest in this matter. If we can assist you further, please let us know.

Sincerely,



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cc: Board Members
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310.1.1 Corrugated stainless steel tubing (CSST). (120312 Item B-3)

310.1.1, Chapter 8 CSST. (141209 Item B-11)

310.1.1 CSST. Corrugated stainless steel tubing (CSST) gas *pipng* systems shall be bonded to the electrical service grounding electrode system at the point where the gas service enters the building. The bonding jumper shall be not smaller than 6 AWG copper wire or equivalent.

CSST with an arc-resistant jacket listed by an *approved* agency for installation without the direct bonding, as prescribed in this section, shall be installed in accordance with Section 310.1 and the manufacturer's installation instructions.

The delayed effective date of this Rule is January 1, 2015.

The delayed effective date of this Rule is January 1, 2016.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.