

NEW HAMPSHIRE STATE BUILDING CODE
PROPOSED AMENDMENT FORM

Exhibit No.
EL-11-01-13-Y

Proposed amendment submitted by:

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Date: 12/13/13

Company /Organization: State Building Code Review Board

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Applicable code: NEC-14 (NFPA 70)

Applicable code section: 210.5 (C)(1)

Select only one code: IEBC-09 IBC-09 IRC-09 IPC-09 IMC-09 IECC-09 IEBC-09 NEC-14 (NFPA 70)

Current language (including section numbers and include prior adopted amendments):

210.5 Identification for Branch Circuits

(C) Identification of Ungrounded Conductors. Ungrounded conductors shall be identified in accordance with 210.5(C)(1) or (2), as applicable.

(1) Branch Circuits Supplied from More Than One Nominal Voltage System. Where the premises wiring system has branch circuits supplied from more than one nominal voltage system, each ungrounded conductor of a branch circuit shall be identified by phase or line and system at all termination, connection, and splice points in compliance with 210.5(C)(1) (a) and (b).

(a) *Means of Identification.* The means of identification shall be permitted to be by separate color coding, marking tape, tagging, or other approved means.

(b) *Posting of Identification Means.* The method utilized for conductors originating within each branch-circuit panel-board or similar branch-circuit distribution equipment shall be documented in a manner that is readily available or shall be permanently posted at each branch-circuit panelboard or similar branch-circuit distribution equipment.

Check one: Delete without substitution: Add new section to read as follows:

Delete section and substitute the following: Revise section to read as follows:

~~Show Line through material to be deleted.~~ Underline material to be added.

Proposed code language:

210.5 Identification for Branch Circuits

(C) Identification of Ungrounded Conductors. Ungrounded conductors shall be identified in accordance with 210.5(C)(1) as amended below or (2), as applicable.

(1) Branch Circuits Supplied from More Than One Nominal Voltage System. Where the premises wiring system has branch circuits supplied from more than one nominal voltage system, each ungrounded conductor of a branch circuit shall be identified by ~~phase or line and~~ system at all termination, connection, and splice points in compliance with 210.5(C)(1) (a) and (b).

(a) *Means of Identification.* The means of identification shall be permitted to be by separate color coding, marking tape, tagging, or other approved means.

(b) *Posting of Identification Means.* The method utilized for conductors originating within each branch-circuit panel-board or similar branch-circuit distribution equipment shall be documented in a manner that is readily available or shall be permanently posted at each branch-circuit panelboard or similar branch-circuit distribution equipment.

Reason./Justification:

This proposed amendment brings forward the prior amendment from the 2011 NEC.

The language "~~phase or line and~~ system at all termination, connection, and splice points" in this section, will greatly complicate the branch wiring when it is already installed in junction boxes or terminated in end use equipment (i.e., receptacles, switches, lights, motors and heating equipment). At a finish point in the project construction, the ceilings, floors and walls are complete. The electrical wiring is not until the end user has occupied the structure and can safely utilize the electric power system.

The issue at hand is that the trade practice of load balancing the three phases in the panelboards, per NFPA 70 section 210.11 (B) "Load Evenly Proportion Among Branch Circuits," is done when the building owner equipment is powered up along with all the electrical usage equipment. Electricians take current measurements between the three phase feeder conductors feeding the panel, to see if any particular phase has a higher amperage draw than the other two. If this is the case, branch circuit conductors are swapped between the higher load phases to those with the least phase load. The goal is to get all three phases to be as close to the same current level as possible during normal operation.

The problem with the language "~~phase or line and~~ system at all termination, connection and splice points" is that in the process of providing balance to the panelboard, the electrician would have to reopen every receptacle, switch, junction box, and light on the circuits that were redistributed (swapped) during the load balancing procedure and re-identify the conductors.

Remember, at this point, the building finishes are complete. This may require the removal of ceiling tiles as well to get back to all termination, connection, and splice points.

The code language does state: "the means of identification shall be permitted to be by separate color coding, marking tape, tagging or other approved means." Due to longevity, approximately 99% of the electricians in NH use the method of color coding with marking tape. The code does not instruct on the colors that will be used but, like in all trades, a common practice or rule of thumb has been derived through the years.

The color code that 99% of electricians use is as follows:

120/208 Voltage System

Black
Red
Blue

277/480 Voltage System

Brown
Orange
Yellow

If the language of "~~phase or line and~~" is part of the code section, then above colors would need to be assigned to a particular phase as described below:

120/208 Voltage System

Phase A Black
Phase B Red
Phase C Blue

277/480 Voltage System

Phase A Brown
Phase B Orange
Phase C Yellow

The language "phase or line and system at all termination, connection, and splice points" does not provide any additional safety to an installation. The only people who are authorized by RSA 319 C:1 to work on all termination, connection and splice points are electricians licensed by the Electricians Board. Knowing a branch conductor is of a certain voltage system is the most important identification of the conductor.

The proposed language will still require the identification by voltage system.

Financial Analysis/Fiscal Impact of proposed amendment:

While previously listed as unknown, it is generally accepted that this amendment will lead to savings given the relaxation of the code requirement.

For Building Code Review Board Use:

Not approved: _____ Approved: _____

Approved with ^{conditions} ~~modifications~~: (SAB 3-14-2014)

Scheduled Hearing Date: 14 March 2014

Exhibit #: EL-11-01-13-P

Chair's Signature: 

Date: 3-14-2014

Printed Name: Shawn G. Bergeron