ELECTRICAL CURRENTS

A Newsletter from the Office of L&I Chief Electrical Inspector Wayne Molesworth *February 2023*

Question of the Month:

You are installing (or inspecting) a 480 volt three-phase service rated at 1600 amperes. The ungrounded supply conductors consist of seven parallel 300 kcmil aluminum XHHW conductors. What is the minimum size copper main bonding jumper required?

See correct answer on page 2.

Safety Tip of the Month

When installing or using listed electrical equipment, always read and follow the manufacturer's installation instructions. Also, leave a copy of the instructions for the inspector and the owner.

QR codes keep up with electrical apprenticeship

Keep up with what's happening regarding electrical apprenticeship through QR codes. Scan the code with this article and you can see the information at www.Lni.wa.gov/ElectricalApprenticeship.

Regarding electrical apprenticeship (Substitute Senate Bill 6126), L&I plans to adopt the "Good Cause" rulemaking Feb. 14. The new rule will take effect July 1. You can read more about the rule in the December 2022 edition of the Electrical Currents.

Once adopted, L&I will reach out to electricians and electrical contractors with a postcard – which will include a QR code to find out more information.

Electrical Apprenticeship Outreach

Since SSB 6126 passed in 2018 the electrical program has:

- Mailed over 28,000 letters to trainees, master electricians and electrical administrators assigned to electrical contractors in June 2018, explaining new apprenticeship requirements taking effect in 2023 after passage of SB 6126.
- Since August 2019, mailed over 43,000 automated letters to trainees informing them of upcoming apprenticeship requirements. Every time a worker becomes a trainee or renews their training certificate, an automated letter goes out to inform them of the change in 2023. The trainee certificate is valid for 2 years.
- Updated webpages for electrical trainees and electricians with information about new apprenticeship requirements. Established www.lni.wa.gov/ElectricalApprenticeship to inform contractors and trainees. Web traffic is high, with roughly 99% of all new trainees applying online. About 95% of all renewals were done online.
- Began distributing informational cards and posting on jobsites the attached card, beginning in June 2019. L&I electrical inspectors have so far distributed about 20,000 to date.
- Published multiple articles (as many as 16 since 2018) in the monthly Electrical Currents newsletter that reaches roughly 11k subscribers.

Installation Methods – Power and Control Tray Cable: Type TC

Manufacturers of ductless split-system HVAC systems typically specify Type TC cable for the branch-circuit wiring between outdoor and indoor units. WAC 296-46B-336 allows the use of Type TC cable in any location allowed for nonmetallic sheathed cable in NEC 334 when installation requirements in NEC 336, 334, and WAC 296-46B-334 are met.

Pay close attention to cable installation and cable marking requirements for particular applications in NEC 336.10. For exposed runs, the cable must be marked Type TC-ER. In one- and two-family dwelling units, Type TC-ER-JP (joist pull) must be used where pulled through building framing. You can find cable marking information in UL's Wire and Cable Marking Guide.

It is never appropriate to support branch-circuit cables by attaching them to mechanical piping such as HVAC line sets. Exposed cables must be installed and protected from physical damage in accordance with NEC 334.15 and secured and supported by the building structure in accordance with NEC 334.30 and 110.12(C).

Review these articles before installing Type TC cable for branch-circuits.

The 2026 National Electrical Code is Open for Public Input

Not happy with something in the 2023 National Electrical Code (NEC)? The 2026 edition is now open for public input!

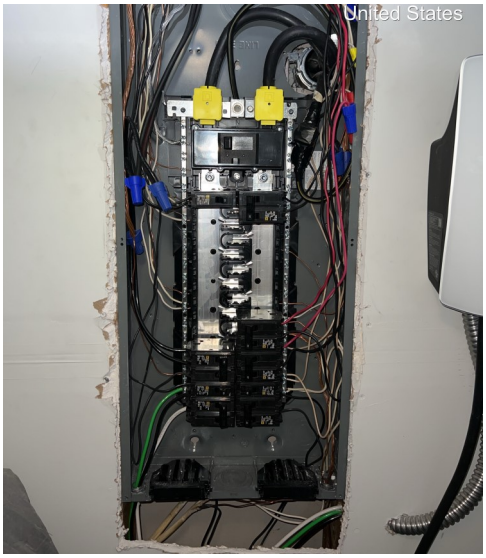
Anyone can submit a proposal to make changes to the NEC to be published in August 2025. The public input closing date is September 7, 2023.

To submit a public input using the online submission system, go directly to the National Fire Protection Association – NFPA70 page using this link. Once on the NFPA 70 page, select the link "Submit a Public Input" to begin the process.

You will be asked to sign-in or create a free online account with NFPA before using this system. If you have any questions when using the system, a chat feature is available, or contact NFPA by email or phone at 1-800-344-3555

Answer to the Question of the Month:

Answer: 4/0 Copper.
You will need to use: NEC® Table 250.102(C)(1) including Notes 1 and 2; Table 310.16; Chapter 9, Table 8.
7 X 300 kcmil aluminum = 2100 kcmil total aluminum supply conductor area.
Ampacity of 300 kcmil aluminum 75° supply conductors = ampacity of 4/0 copper 75° supply conductors (both are 230 amperes).
4/0 copper = 211.6 kcmil (Chapter 9, Table 8).
7 X 211.6 kcmil = 1481.2 kcmil total copper supply conductor area.
Per notes 1 and 2, 1481.2 kcmil X 12.5% = 185.15 kcmil.
Next higher conductor size = 4/0 copper main bonding jumper



Picture of the Month:

Here is part 2 from last months picture. Notice there is no main bonding jumper, conductors without a raceway under the panel, a white conductor installed on a breaker without being identified. Can you find anything else?