

Question of the Month

Hospitals require an electrical system designed to ensure continuity of electrical power, what is the correct terminology for each system and each branch of each system?

Note From the Chief

In anticipation of the previously adopted 2014 NEC becoming effective on July 1, 2014, the department is starting the process for revising [WAC 296-46B](#). During this process, you will have the opportunity to submit rule proposals to amend the 2014 NEC or existing rules in WAC 296-46B. A draft of the 2014 NEC Reports on Proposals (ROP) is currently available on the [NFPA](#) website. The electrical program will publish a special edition *Electrical Currents* Newsletter later in the month of August. It will contain complete information about the rulemaking timeline and Technical Advisory Committee (TAC), as well as proposal and TAC application forms. The department cannot accept early TAC applications; please do not put your name in for the TAC prior to reading the special edition.

The last two editions of this newsletter contained updates about a proposal to expand the scope of work of (07) nonresidential maintenance electrical contractors and electricians. At their regular meeting on July 25, 2013, the Electrical Board expressed support for the proposal. Soon, a public comment period and a hearing date for this single issue rulemaking will be announced.

You can stay apprised of new developments by visiting the [Rule Development](#) page.

Sizing an Equipment Bonding Jumper on the Supply Side of Service

There is more than one way to bond service equipment on the supply side of a service. What is the minimum size of a single bonding jumper used for bonding a CT metering enclosure to the grounded conductor when the service consists of two separate service disconnects supplied each by a set of, 3/0 copper service entrance conductors originating from the CT enclosure? The size of the bonding jumper is based on the sum areas of corresponding ungrounded conductors. For this exercise, the following would apply. NEC Chapter 9, Table 8 lists the area of 3/0 copper as 167800 circular mils. Two 3/0 conductors would be equal to 335600 circular mils. Using NEC Table 250.66, 335600 circular mils of service entrance conductor requires a #2 AWG copper or 1/0 aluminum equipment bonding jumper. Below are NEC references that apply to this example.

NEC 230.40 Exception No. 2 allows for up to six service disconnects in separate grouped enclosures, each served by one set of service entrance conductors. Service entrance conductors as defined by the NEC are the service conductors between the terminals of the service equipment and the service drop or overhead service conductors for overhead services or the service lateral or underground service conductors for underground services. In the case of a CT enclosure, they are the service conductors between the CT enclosure and the terminals of the service equipment.

NEC 250.102(C) and Table 250.66 utilize the size of the largest ungrounded service entrance conductor to size the supply side bonding jumpers. Note #1 of Table 250.66, states "Where multiple sets of service entrance conductors are used as permitted in NEC 230.40 Exception No. 2, the equivalent size of the largest service entrance conductor **shall** be determined by the largest sum of the areas of the corresponding conductors of each set".

Safety Tip of the Month!

In the State of Washington, it is a misdemeanor to attach signs, posters, vending machines, or any similar object to a utility pole without the permission of the utility. Such items can interfere with the climbing gear used to keep electrical workers safe while climbing poles. [RCW 70.54.090](#)

Information Technology Cabling in Dwellings – 06 Limited Energy or 09 Telecommunications?

Contractors and installers must know the end use of information technology cabling prior to beginning installation. This knowledge allows them to ensure they are properly licensed and their installers are properly certified and a valid electrical work permit is obtained prior to start of installation if it is required.

Rampant innovation in the information technology industry is shifting toward systems that employ cables that not only carry signals, but power equipment at ever increasing power levels. Changes in technology - signal and power distribution in the same cable - have caused work traditionally performed by 09 telecommunications contractors to fall outside the 09 work scope.

Some examples:

“Daisy chained” cabling originating at the service provider’s point of demarcation terminated on jacks (typically RJ 11) inside the dwelling.	09
Multiple cables originating at the service provider’s point of demarcation terminated on jacks (typically RJ 11) inside the dwelling.	09
Cable only or prewire installations where the end use of the cable is <u>not</u> known or evident at the time the installer has completed installation.	06
Cable or equipment for systems that employ Power over Ethernet (PoE) , HDBaseT or similar technologies which provide signal and power distribution in the same cable.	06
Systems comprised of non-PoE cable and equipment – jacks, patch panels, routers, Ethernet switches, racks, enclosures etc. - that form a complete telecommunication system.	09

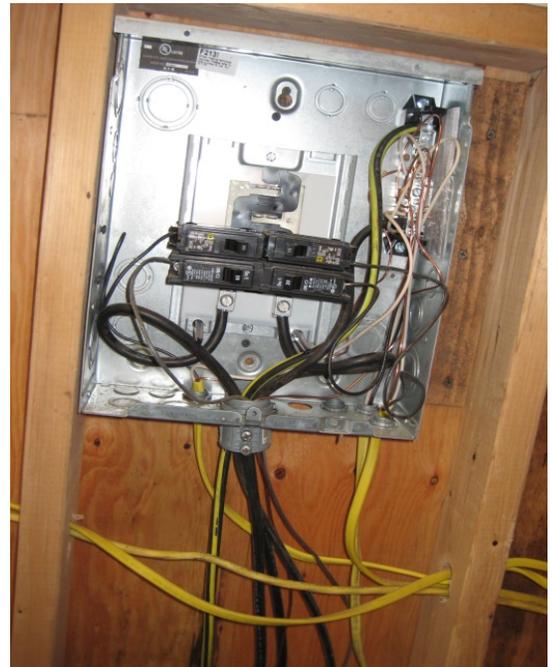
All 09 telecommunications installations within the residential dwelling units of single-family, duplex, and multi-family dwellings do not require permits or inspections. In residential multi-family dwellings, permits and inspections are required for all backbone installations, all fire barrier penetrations, and installations of greater than ten outlets in common areas.

Electrical permits are required for 06 limited energy systems, except those exempted in [WAC 296-46B-901\(7\)\(c\)](#). Many limited energy installations are eligible for Class B random inspection electrical permits as described in [WAC 296-46B-908\(10\)\(c\)](#).

The links provided in this article are not endorsements of products or technologies; they merely serve to provide additional information for clarity.

Ugly Installations: Online readers - click on the picture to open larger images. Violations: Unlicensed contractor doing unpermitted electrical work. NEC 300.3 single conductors shall be installed as part of a recognized wiring method. Multiple grounding and bonding issues; four supply conductors with the grounded conductors, equipment grounding conductors, and the grounding electrode conductor all connected to the same isolated bar. Numerous other violations.

Answer to Question of the Month: NEC 517.30; a NEC 517 essential electrical system for a hospital is supplied by both a normal and alternate power source. The normal source supplies both nonessential and essential loads. The alternate power source is the backup for the essential system. The essential electrical system supplies the emergency system and the equipment system; the emergency system is comprised of both the critical branch and the life safety branch. Note: In the 2014 NEC, the term emergency system was removed from Article 517, leaving the essential system with the critical, life safety and equipment branches.



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