



● This Month's Question of the Month

In other than one-family dwellings, the branch circuits for pool-associated motors shall be installed in any of the following wiring methods, except _____. A) rigid or intermediate metal conduit B) reinforced thermosetting resin conduit C) flexible metal conduit D) Type MC cable listed for the location – See the correct answer on page 2.

● Note From The Chief

The Governor recently issued Executive Order 10-06 that suspends all non-critical rule development and adoption through January 1, 2012. You may read the order at this link: http://www.governor.wa.gov/execorders/eo_10-06.pdf.

In response to Executive Order 10-06, the Department of Labor and Industries (L&I) is in the process reviewing all rules currently in the process of rule-making to determine which rule-making should move ahead and which should be delayed for a year. Once an initial determination is made, the information will be posted on our website.

The program's electrical inspectors continue to see installations where it is obvious that the contractor and/or assigned administrator have not done their necessary quality control. Here are some of the most common serious corrections encountered in October by our inspectors:

- NEC 110.3(b) – Didn't follow the manufacturer's instructions (228 total);
- NEC 210.8(A) – Missing or inoperable Ground Fault Protection (70 total);
- NEC 314.25 – Missing cover plates (39 total);
- NEC 210.4(B) – Missing tie handles on circuit breakers supplying multi-wire circuits (32 total); and
- NEC 406.11 – Missing tamper resistant receptacles (29 total).

As I have discussed in previous articles, these types of corrections are unacceptable and are solely a result of the electrician's decisions and a lack of quality control by the contractor/administrator. Contractors and administrators, please make certain these are not the type of corrections your company is receiving.

● Electrical Board Position Available - Electrician

There is currently one opening for an electrician position on the Electrical Board. An applicant should be a certified electrician and not have ownership in an electrical contracting business. The position will expire July 7, 2014. Applications should be submitted to the Governor. Application information is available at:

<http://www.governor.wa.gov/boards/default.asp>

● Installing Optional Standby Generators – The Right Way

Installing a generator system is potentially one of the most dangerous types of electrical installations to your family, employees, and the utility's linemen. Legally and safely installing a generator system is very specialized work that requires expertise and experience. Prior to making a generator system purchase, review the special edition *Electrical Currents* – October 2007. All the information in the article is still relevant and accurate.

You can find a copy at: <http://www.lni.wa.gov/TradesLicensing/Electrical/files/currents/elc0710special%20.pdf>

Everyone interested in having a generator system installed at their house or business is strongly encouraged to work with a legally licensed electrical contractor. Before beginning the work, get written bids from two or three electrical contractors and verify that each has significant experience installing generator systems. Ask for references. Then make certain your contractor gets an electrical permit and has an inspection to verify that the work was done correctly and safely.

Safety Tip of the Month!

Be aware of and avoid potential arc fault hazards. Wear appropriate personal protection equipment. Look for the arc flash labeling required by NEC 110.16.

L&I statistics show that for a five year period, at least 30 workers were hospitalized for serious burn injuries due to arc flash/blast events. Compensation for those claims exceeded \$1.3 million and almost 1,800 days of lost work time.

Make certain that if you are using a portable generator that you follow the manufacturer’s instructions. It is imperative that you do not operate a portable generator inside a building or too close to windows or doors. Make certain the cord you use is large enough to supply the load you are powering. Protect the cord from damage and make certain your generator is capable of providing the power required for your limited load. Portable generators can only be used to power individual plug-in type appliances (e.g. refrigerator, individual heater, etc.). If you fail to properly install and use a portable generator, you and your family are at significant risk from asphyxiation, electrocution, and structural fire.

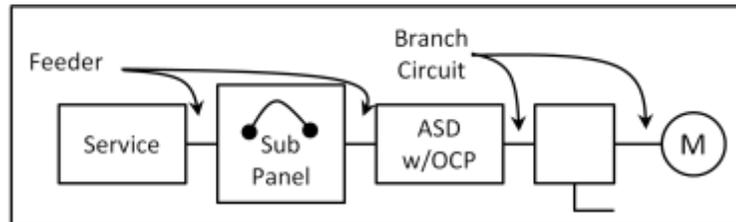
If you have installed a generator system, this year, without a permit and inspection, L&I will not assess any penalties if you proactively get the required permit and inspection before January 30, 2011. Protect your loved ones!

● **NEC 430, Part X – Adjustable Speed Drive Systems**

Part X was added in the 2005 NEC, but some installers and designers seem to be unaware of its requirements, especially in the area of overcurrent protection. One of the first things to determine is if the adjustable speed drive (ASD) contains overcurrent protection. This is a key question that must be answered before sizing conductors and overcurrent protection and determining what part of the circuit is or is not a feeder. By definition, NEC 430.2, an ASD includes a power converter. This is important point when sizing conductors to the ASD.

First, let’s look at the definition of overcurrent protection in NEC 240.2. An overcurrent device is any device that, “when interrupting currents in its current-limiting range, reduces the current flowing in the faulted circuit to a magnitude substantially less than that obtainable in the same circuit if the device were replaced with a solid conductor having comparable impedance.” This broad definition includes the normal overcurrent devices, fuses, circuit breakers, and thermal overloads; but, it can also include devices like an ASD where the current is limited, by any means. Most ASDs contain some type of overcurrent protection.

Second, let’s look at the definition of a feeder in NEC 100. A feeder includes “all circuit conductors between the...power source and the final branch-circuit overcurrent device.” If the ASD contains any type of overcurrent protection, the circuit from the power supply to the ASD is a feeder(s) – see the diagram. If the disconnecting means, shown in the diagram, contains fuses or is a circuit breaker, the circuit between the ASD and the disconnecting means will also be considered a feeder. For determining fees only, L&I does not consider a circuit a feeder until the last overcurrent protection exceeds 30 A.



NEC 430.122(A) requires the minimum ampacity of the branch/feeder conductors from the sub-panel to the ASD to be not less than 125% of the rated input of the ASD. Paragraph (B) says that if the ASD utilizes a bypass device – to allow full-speed operation – the ampacity of the ASD’s supply conductors must be the larger of:

- 125% of the rated input to the power conversion equipment; or
- 125% of the motor full-load current rating as determined by NEC 430.6.

Per NEC 430.124, overload protection of the motor(s) supplied by an ASD must meet the following conditions:

- For an ASD w/o a bypass, it must be sized per the label on the ASD – additional protection is not required;
- For an ASD with a bypass, it must be sized per NEC 430, Part III in the bypass circuit; or
- For an ASD supplying multiple motors, it must be sized per NEC 430, Part III

Per NEC 430.128, the ASD’s disconnecting means may be in the ASD or the incoming circuit and must be rated not less than 115% of the rated input current of the ASD.

● **Answer to This Month’s Question of the Month**

C) flexible metal conduit. (See NEC 680.21(A)).