



# ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector

Vol. 8 No. 3

March 2005

## ● Public Hearings on 2005 WAC Changes

Public hearings will be held in two locations regarding the proposed electrical Washington Administrative Code changes which will become effective June 30, 2005. The changes made are the reflections of proposals sent in and recommendations provided, regarding those proposals, by the technical advisory committee and the Electrical Board. The dates and times for the public hearings are listed below.

5-April Yakima, L&I Office, 15 West Yakima Avenue, Suite 100 11 a.m.  
6-April Tumwater, L&I Building, 7273 Linderson Way, Auditorium 10 a.m.

## ● Electrical Board Recruitment

Three electrical board appointments are scheduled to expire in July 2005. The positions open to represent factions of the electrical industry are as follows: one certified electrician, one combination RCCD certified/electrical engineer, and one telecommunications worker. **Applications must be received no later than March 31, 2005.**

Applicants must submit a letter of interest, completed application form and a current resume to the Office of the Governor, Attn: Shana Melanson, PO Box 40002, Olympia, WA 98504-0002. Applicants must specify the position sought and should be prepared to demonstrate support from the group(s) in the electrical industry that the position represents.

Requests for copies of the applications and any questions may also be directed to Angie Wharton at (360) 902-5259 or downloaded at:

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

## ● Job Site Must Be Free from Hazards to Perform an Electrical Inspection

When an electrical inspection is requested, the jobsite must be clear of hazards and have a safe entry to the area that is to be inspected. If an inspection is unable to be performed due to a hazardous condition the electrical contractor could be subject to a \$36.40 trip fee.

To avoid a trip fee, insure that ladders used to gain entry are not damaged and are properly secured. Additional lighting may be needed if ambient lighting is not adequate to perform the inspection. The access to the site must be free of debris and vegetation must be cut back in areas where an inspection is requested. In addition, all animals must be restrained during the inspection process.

Department policies do not allow inspectors to perform the inspection if any of these conditions exist.

## ● Preview 2005 NEC Code Changes – NEC 250.50 Grounding Electrode System

NEC Code Panel 5 made an editorial change, consistent with the NEC Style Manual, to NEC 250.50 language, requiring all grounding electrodes available on the premises to be bonded together to form the grounding electrode system, by removing the vague term "available". The new language now refers to all grounding electrodes "present at each building". There is an exception to making concrete-encased rebar part of the grounding electrode system in existing buildings if concrete must be disturbed to access the rebar. Several code change publications and some instructors imply that this now means a concrete encased electrode is mandatory on all new structures.

The Chief Electrical Inspector does not agree with that opinion. It is an unnecessary burden on the electrical contractor to remove concrete to bond to concrete-encased rebar on new or existing construction. Many electrical contracts are not signed until after the concrete foundation work is done. In addition, some building officials are reluctant to allow an electrical connection to the structural rebar and advocate a separate electrical conductor or additional length(s) of rebar to serve this function.

The Chief Electrical Inspector interprets “present at each building” to mean exposed and accessible for installation or use when the electrical contractor first begins work on the electrical installation or when the property owner purchases an electrical work permit. The electrical system designer may always intentionally install a Code compliant concrete-encased electrode and have it inspected prior to placing the concrete.

### ● When Are Fixed Generators Rated 600 Volts Or Less Required To Be Listed?

Whenever a new product standard is developed for equipment regulated under chapter 19.28 RCW, the department allows the affected manufacturers and distributors a reasonable amount of time to conform to the standard. Our April 30, 2003 deadline requiring fixed generators rated 600 volts or less to be listed/labeled (or field evaluated) was nearly five years after the publication of ANSI/UL 2200-Stationary Engine Generator Assemblies.

We require conformance for new generator equipment (or equipment modified from its original manufactured configuration) when installed after the April 30, 2003 deadline. If the equipment was compliant with appropriate Washington standards when originally manufactured or installed, it remains in compliance unless modified. Unlisted, relocated equipment manufactured before April 30, 2003 is acceptable if its date of manufacture can be documented. We will not require engine generator installations existing before the deadline to be brought into compliance with the latest standard.

Development of a new product standard or Code requirement does not make existing equipment or installations unsafe. The electrical industry is constantly improving the safety of equipment based on positive and negative installation experience and advancements in materials and technology.

### ● When Are Permits Required For Like-In-Kind Equipment Replacement?

RCW 19.28 defines “like-in-kind” as having similar characteristics such as voltage requirements, current draw, and function, and being in the same location. There is a common misconception that replacing **any** electrical equipment with something like-in-kind does not require a permit or inspection. This is only true for **specific Class A basic electrical work**. This work is defined as the like-in-kind replacement of a: contactor, relay, timer, starter, circuit board, or similar control component; household appliance; circuit breaker; fuse; residential luminaire; lamp; snap switch; dimmer; receptacle outlet; thermostat; heating element; luminaire ballast with an exact same ballast; or a ten horsepower or smaller motor. Except for a household appliance, all of these items are **components** of electrical equipment or systems.

A household appliance is a water heater, dishwasher, disposal, insta-hot water device, washing machine, clothes dryer, range, oven, or cook-top, and other cord and plug connected equipment listed for household use performing common functions. **A permit is required for all other like-in-kind equipment replacement.**

### ● Electrical Question of the Month

**This Month’s Question:** When installed on the outside of a raceway or enclosure, the length of the equipment bonding jumper shall not exceed \_\_\_\_ feet and shall be routed with the raceway or enclosure. **A) 4, B) 5, C) 6, D) 8**

**Last Month’s Question:** A 277/480V, 3-phase service will supply a new 20 HP, 460V, 3-phase, intermittent duty (5-minute rated) motor with a nameplate rating of 22.41 FLA. What is the calculated load in VA for this motor that will be added to the building service? Choose the best answer from the following choices: **A) 15829, B) 18623, C) 22437, D) 28046.**

The answer is: **A).** References: NEC 430.22(E) refers to Table 430.22(E). In this table the ampacity for the (5-minute rated) intermittent duty motor is 85% of nameplate. The system voltage for the 460V rated motor is 480V as specified in Notes to NEC Annex D-Examples. For 3-phase systems the department uses the following voltage values for consistency when applying a round-off value for the square root of 3: 480V— $3\phi=831$  volts; 240V— $3\phi=416$  volts; 208V— $3\phi=360$  volts. The VA load calculation for the motor is:  $22.41 \times .85 \times 831=15829$  VA. Since no information was provided about other motors served by this system, no other assumption about load for this motor on the service conductors can or should be made.