



ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector

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● Remaining Stakeholders Meetings

Ten electrical stakeholder meetings remain in the months of October and November. Stakeholder meetings are a great opportunity to interact with Inspectors, Supervisors and Central Office staff. An open forum will be included for stakeholders to give comments, concerns and opinions on the current and future direction of the program. For the remaining locations and times visit the website at:

<http://www.lni.wa.gov/tradeslicensing/electrical/whatsnew/calendar>

● No Inspections In L&I Jurisdictions Tuesday, November 14th

The Electrical Program will be holding a statewide training for inspection staff on November 14th. The training will focus on consistency and emerging new technologies. Areas served by Labor and Industries, including the cities of Auburn and Shoreline, will not have any inspections performed on this date. Areas further away from Tumwater likely will have additional down time while the inspectors travel to and return from the training. Due to space limitations this training will not be open to stakeholders.

● Electrical Correction Initiative

Correction writer, an addition to the mobile inspection software program, has been collecting important inspection correction data for the last three months. The data collected will help in identifying two groups of electrical contractors that will be involved in a project called the Correction Initiative. The top 5% of contractors in each group will be included in the project.

The first group of Contractors identified received the highest amount of corrections per inspection during the two month period. Contractors receiving an unusually high average amount of corrections require a disproportionate use of inspection staff time. The second group of contractors identified received the most corrections total during the two month period. Typically these contractors deal in high volume and the quality of their installations have a significant impact on department resources.

Contractors in both groups received initial contact letters with additional correspondence to follow. We will work closely with these contractors to achieve the goal of a 15% reduction by July 1, 2007.

● Bonding Of Natural Gas Piping Systems

Safety concerns have been expressed that building officials may be misinterpreting a notice sent out by a gas utility provider concerning electrical bonding to natural gas facilities. The intent of the notice was to eliminate the use of underground gas lines as grounding electrodes; however the result has been the disconnection of bonding connections that significantly reduces electrical safety.

Any required bond removed from a gas line creates the potential for a serious safety hazard. NEC 250.104(B) clearly requires that gas piping, when installed in or when attached to a building or structure must be bonded to the service equipment enclosure, the grounded conductor at the service, the grounding electrode conductor where of sufficient size, or to one or more of the grounding electrodes used. The bond establishes continuity and an adequate path for any fault current likely imposed. A gas piping system that is not properly bonded to the electrical system can present serious fire or shock hazard within a building if it is energized accidentally.

The Department has asked the gas utility provider to clarify its position with the building officials. Until this issue is resolved please notify the Chief Electrical Inspectors office of any building official requiring the gas or other metal piping bonding disconnected.

● Temporary Permit, Licensing, And Certification Fee Reductions

The dedicated electrical fund completely supports the electrical licensing, certification, and inspection programs. The electrical program is only allowed to spend up to the maximum amount allocated by the legislature. The electrical industry in Washington is healthy and growing; the current program revenue is up; and the electrical fund is growing. If we are not allowed to spend excess revenue on improving the

services that our customers are paying for, then it is appropriate to reduce the fees and slow the growth of the fund.

The current WAC revisions to be effective December 31, 2006 will include permanent and temporary fee schedules. The proposed temporary fee schedules lower permit, licensing and certification fees by 5% and round down to the nearest dollar when possible and the nearest ten cents otherwise. The proposed reduced permit fees are projected to be effective until December 31, 2007. Licensing reductions are scheduled to remain in place for a period of renewal for each license type. We will monitor the fund and set fees as necessary. If the electrical fund balance permits it, these reduced fees may be extended or the reductions increased.

● Top 10 Corrections Written By Our Inspectors In July And August Combined

The Correction Writer software our inspectors have been using since mid-June allows us to easily view your work in useful ways. Return trips to jobsites to complete corrections and verify completion are costly to you and to the department. Contractors and assigned company administrators should make your electrical workers aware of the following top ten electrical corrections written for the months of July and August. They are ranked with 1) being the most commonly written correction.

- 1) **WAC-296-46B-010(5)** Electrical wiring or equipment must be sufficiently accessible at the time of inspection.
- 2) **NEC 110.3** Listed or labeled equipment shall be installed and used in accordance with any instructions included in the listing or labeling.
- 3) **WAC 296-46B-905(7)(b)** Submitter notifies the department that work is ready for inspection when it is not ready.
- 4) **WAC 296-46B-900(1)** Inspection address must be clearly identifiable from the street. Driving directions and or a legible map is required.
- 5) **NEC 300.4(A)(1)** Where subject to physical damage, conductors shall be protected.
- 6) **WAC 296-46B-905(7)(d)** Trip fee due to inspect corrections, repeated neglect, carelessness or improperly installed electrical work.
- 7) **NEC 210.52(A)** Receptacle outlets required to meet the spacing requirements in 210.52(A)(1) through (A)(3).
- 8) **NEC 210.8(A)** All 125 Volt, single phase, 15 and 20 amp receptacles installed in the locations specified in (1) through (8) shall have ground fault circuit interrupter protection for personnel.
- 9) **NEC 110.12(A)** Unused cable or raceway openings in boxes, raceways, auxiliary gutters, cabinets, cutout boxes, meter socket enclosures, equipment cases or housings shall be effectively closed to afford protection substantially equivalent to the wall of the equipment.
- 10) **NEC 408.4** Every circuit and circuit modification shall be legible identified as to its clear, evident and specific purpose or use. The identification shall include sufficient detail to allow each circuit to be distinguished from all others. The identification shall be included in a circuit directory that is located on the face or inside of the panel door in the case of a panelboard.

● Difference Between Impracticable And Impractical

The word "impracticable" appears no less than 10 times in the 2005 NEC. For example: "NEC 240.33 Vertical Position. Enclosures for over-current devices shall be mounted in a vertical position unless that is shown to be impracticable." A common misinterpretation for the word is when it is substituted with the word "impractical". "Impractical" should never be substituted.

So what is the definition of impracticable? Webster's Dictionary says, "impracticable (im-prak-ti-ke-bel) 1. Not capable of being done or carried out. Usage: Impracticable applies to that which is not capable of being carried out or put into practice. Impractical refers to that which is not sensible or prudent. A plan may be impractical because it involves undue cost or effort and yet in may not be impracticable."

When you encounter this term in the NEC you should equate it to "impossible."

● How Does The New Pump Installer Law Affect 01, 02, 07, 07B, 07C, 07D, and 07E Electricians That Occasionally Work On Domestic And Irrigation System Pumps?

The pump installer law (SSB 6225) primarily allows those working exclusively in the well drilling, irrigation, and pump installation industry to combine general contractor registration and specialty electrical (03 and 03A) contractor licensing into one certificate. It allows industry workers to combine specialty electrician (03 or 03A) certification and the new (03 or 03A) specialty plumber certification into a single certificate.

Electrical Section Internet Address: <http://www.Lni.wa.gov/TradesLicensing/electrical> Page 2 of 4

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Those of you who occasionally work on these water systems and their pumps may also be affected. (This law does not cover pumps in other than drinking or irrigation water systems, within appliances, or when associated with pools, spas, etc.)

The law defines the plumbing scope of domestic and irrigation water pumping systems and now mandates **both** electrician and plumber certification if you work on both the electrical parts and piping components of these systems. If you already have 01, 02, 07, 07B, 07C, 07D, or 07E electrical certification that includes domestic and/or irrigation system pump electrical work in the scope, you may apply to receive the necessary "matching" plumber certification that you need to do the complete installation, including the water piping or pressure tanks. If you work on the plumbing components of the water systems, you will need the 03 or 03A (depending on the equipment and your experience) specialty plumber certification. If you only work on the electrical equipment and do not install (or open up) the water system components, your existing electrical certification is adequate.

If you do not "grandfather" the new specialty plumbing certification before December 31, 2006 deadline, then you must work for a registered contractor as a trainee, under the supervision of an individual that has the appropriate plumber certification, until you get qualifying hours to take the specialty plumbing test.

The law only intends the combination contractor license/registration or combination pump installer plumbing/electrical certification to be available to those working exclusively in the pump installation business. If you work on pumping systems with other than 03 or 03A electrical contractor licensing or electrician certification, then you must maintain the specialty plumbing certification (and appropriate contractor registration) separate from your electrical licensing and certification.

The ability to "grandfather" necessary certification without examination expires December 31, 2006. Details on qualifying were published in the July 2006 edition of this newsletter available at: <http://listserv.wa.gov/archives/electrical.html>. Applications for contractors (F500-104-000), electrician-plumbers (F500-102-000), and pumping industry trainees (F500-103-000) are available online at the **Forms & Publications** link on our homepage at: <http://www.lni.wa.gov/TradesLicensing/Electrical>. If you do not have Internet access available, we have a toll-free automated information line at 1-800-706-5631. If you have questions or need help, you may contact the Outreach Coordinator, Roger Chick at (message line) 360-902-5249, (cell phone) 360-292-5825, and e-mail at: <mailto:Outreach@Lni.wa.gov>.

● Washington Administrative Code Revisions Effective December 31, 2006

Law changes, resulting from the 2006 legislative session, required significant rule changes to implement. In addition basic housekeeping and reorganization of the rule was included to better serve cities that adopt portions of the WAC. Take the time to review the changes before the effective date of December 31, 2006. The summaries below are not all the changes but may have the most impact on the industry. To view the complete document with changes visit the website below.

<http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/RuleDev>

WAC 296-46B-210(25) This change allows loads for septic or water well systems that are shared by no more than two dwelling units to be supplied from either of the two dwelling units if approved by the local building official and local health department

WAC 296-46B-230(28)(4)(c) A residential patio cover, that is not over one-story and not over 12 feet in height and is used only for recreation or outdoor living purposes and not as a carport, garage, storage room, or habitable room as described in the IBC will not be considered a roof for the purposes of NEC 225.19 and NEC230.24. Overhead conductor spans must maintain a minimum of 36 inch clearance above those covers.

WAC 296-46B-250(52)(3) This section creates three inspection possibilities for a concrete encased electrode.

- 1) At the time of inspection of other work on the project, providing the concrete-encased electrode is accessible for visual inspection.
- 2) At the time of the service inspection providing the installer has provided a method so the inspector can verify the continuity of the electrode conductor along its entire length. This can be accomplished by attaching a length of copper wire to one end of the electrode that reaches the location of the grounding electrode conductor that will enable the inspector to measure the resistance of the required 20 feet of rebar with a standard resistance tester.
- 3) Other methods when prior approval, on a jobsite basis, is given by the inspector.

WAC 296-46B-250(56) For services only, when multiple buildings or structures are located adjacent, but structurally separate from each other, any installed rod, pipe or plate electrodes used for those services must be installed so that each building's or structure's electrodes are not less than 6 feet apart from the adjacent building's or structure's electrodes.

WAC 296-46B-700 (27) The requirements for selective coordination described in NEC 700.27 are not required where the emergency system was installed prior to June 1, 2006. For new emergency systems that are supplied from an existing emergency system installed prior to June 1, 2006, the new portion of the emergency system must comply with NEC 700.27. The ground fault sensing function of overcurrent protective devices will only be required to selectively coordinate with the ground fault sensing functions of other overcurrent protective devices.

WAC 296-46B-701 (18) The requirements for selective coordination described in NEC 701.18 are not required where the emergency system was installed prior to June 1, 2006. For new emergency systems that are supplied from an existing emergency system installed prior to June 1, 2006, the new portion of the emergency system must comply with NEC 701.18. The ground fault sensing function of overcurrent protective devices will only be required to selectively coordinate with the ground fault sensing functions of other overcurrent protective devices.

WAC 296-46B-800 Changes in this section require the telecommunications provider to identify the demarcation point. Definitions and different methods of determining the demarcation point is included.

WAC 296-46B-900 (8)(b) This revision clarifies that unless specifically noted Class A basic electrical work does not include the replacement of an equipment unit, assembly, or enclosure that contains an exempted component or combination of components (e.g., an electrical furnace/heat pump, industrial milling machine, etc.) or any appliance/equipment described as work allowed with a class B permit.

WAC 296-46B-905, 906, 910 and 911 A new temporary fee reduction schedule valid from January 1, 2007 until December 31, 2007. The fee reduction is 5% and includes permitting, licensing and certification.

WAC 296-46B-920 (e) The scope of the (06) Limited Energy Systems specialty electrician has been expanded minimally to allow the disconnection and reconnection of line voltage like in kind replacement components inside the low voltage control cabinet. It also allows the repair of replacement of line voltage connections terminated inside the cabinet to power supplies internal to the low voltage equipment provided there are no modifications to the characteristics of the branch circuit/feeder load being supplied to the circuit. The line voltage circuit is limited to 120 volts 20 amps maximum and must have a means of disconnect.

WAC 296-46B-935 (10) and 940 (13) Revisions in these two sections allow continuing education for (03) Pump and Irrigation and (03A) Domestic pump specialties to comprise of 50% electrical and 50% plumbing. These revisions were required from SSB 6225.

WAC 296-46B-940 (20) Changes in this section allows the use of shipyard or shipboard military experience to count for not more than 50% of the minimum required work experience for qualifying for an electrical examination.

WAC 296-46B-965 Changes in this section require trainees to have 8 hours of classroom education per year to re-new a training certificate. Continuing education classes will not count as required classroom education for trainees. The change is a result of legislation passed, SHB 1841.

● Electrical Question of the Month

This Month's Question: A solar photovoltaic system is being added to an existing single phase, 200 amp, single family dwelling service to help supplement the dwelling's energy consumption. The electrician decides to connect the feeders from the DC-AC inverter to the load side of the panel's service disconnecting means through a dedicated two-pole circuit breaker. What is the maximum standard size (amps) circuit breaker that can be installed for this 14kW system? **A)** 40 amps, **B)** 50 amps, **C)** 60 amps, **D)** 70 amps.

Last Month's Question: No overcurrent device shall be connected in series with any conductor that is intentionally grounded, unless: **A)** The overcurrent device is part of a selectively coordinated distribution system. **B)** Where the grounded conductor is part of an electrical service, and is attached to a made electrode. **C)** The overcurrent device opens all conductors of the circuit, including the grounded conductor, and is designed so that no pole can operate independently. **D)** None of the above. This is never allowed. **The answer is: C) [NEC 240.22(1)].**