

Inspector Training – No Inspections on December 8th and 9th

There will be no inspections scheduled in L&I's jurisdiction on December 8th and 9th. The department will be holding a two day training for all L&I inspectors. We regret the inconvenience this may cause to our customers who rely on timely inspections. We have found that a statewide approach to training improves consistency and is the most efficient use of our limited training budget. Please let your customers know and plan for your inspections accordingly.

Ampacity of Service Entrance Cable as Branch Circuits, Feeders, and as the Main Power Feeder to a Dwelling

National Electrical Code® (NEC®) changes in 2011 and 2014 affect the ampacity of service entrance (SE) cable used as feeders and branch circuits, and as a feeder that supplies the entire load associated with a dwelling. This article supersedes an article that appeared in the [January 2009](#) newsletter that was written due to a change in ampacity of SE cable in the 2008 NEC®.

NEC® 338.10(B)(4) gives the installation methods for SE cables used as branch circuits and feeders. In 2011, this section changed to require that when SE cables are installed in thermal insulation, the ampacity shall be in accordance with the 60° conductor temperature rating. This was a change from the 2008 requirement that the ampacity of all SE cables installed as branch circuits or feeders must be in accordance with the 60° temperature rating.

At that time, 2011 NEC® 310.15(B)(7) specified conductor sizes for types SE, USE, and USE-2 (among others) when installed as the main power feeder to a dwelling. This table allowed the specified sizes of these cables to be used regardless of whether they were installed in thermal insulation, and the 2009 newsletter article stated that the department would not restrict the table ratings of type SE cable any further. In 2014, this section changed again and removed the table and specification of conductor types. The 2014 language stated that when used as service or feeder conductors supplying the entire load of a dwelling, the ampacity of the conductors shall be permitted to have an ampacity not less than 83 % of the service or feeder rating. This meant that instead of specifying a size for the types of cables listed, the ampacity must be determined in accordance with the type of conductor or cable used. The result of this change for SE cable was that now, the ampacity of the cable must be determined in accordance with NEC 338.10(B)(4) using 83 % of the service or feeder rating. If SE cable is used, and not installed in insulation, its ampacity may be determined in accordance with the cable's listed temperature rating (typically 75°C) and the temperature rating of the termination device. If the cable is installed in thermal insulation, the ampacity must be determined in accordance with the 60° temperature rating.

A cable is considered to be installed in thermal insulation when the cable is enclosed in a wall cavity that is insulated or in an insulated ceiling space where the cable is within the insulation. Air circulation is restricted and the cable is unable to dissipate the heat generated if the cable is operated at its allowable load. It should also be noted that if the cable is installed in an attic space above the level of insulation, it may be subject to extremely high levels of ambient temperature that may warrant an even greater ambient temperature adjustment.

If the length of cable in thermal insulation is limited, there is a provision to allow a higher ampacity to be used in accordance with NEC® 310.15(A)(2) Exception. Where two different ampacities apply to adjacent portions of a circuit, the higher ampacity shall be permitted to be used beyond the point of transition, a distance equal to 10 ft. or 10 % of the circuit length figured at the higher ampacity, whichever is less. This exception allows a limited portion of the circuit to be installed in thermal insulation and still be allowed to operate at the higher ampacity.

Safety Tip of the Month

Running propane or other fuel-powered equipment indoors can cause deadly amounts of carbon monoxide to build up quickly inside rooms and other enclosed work areas. Exposure symptoms may not be detected until it's too late.

Installing Satellite and Conventional Antenna Systems

We continue to receive questions about telecommunications installations that involve customer satellite dish and conventional antenna systems receiving a telecommunications service provider's signal. All satellite receiving equipment is on the customer side of the telecommunications network demarcation point and under the jurisdiction of RCW [19.28.400](#) and [.420](#). Because of federal law, satellite system installations are exempt from permitting and inspection, but are not exempt from licensing requirements. The telecommunications laws were passed by the legislature in 2001, to address increasing instances where the safety of buildings and the people occupying them was being degraded by poor telecommunications work. The department and city jurisdictions were finding serious problems, especially with firewall penetrations and cable support. The legislation established a minimum level of regulation to address these types of problems.

A telecommunications contractor license is required for firms that do any work on satellite systems, including all or part of the dish (antenna) installation, cabling from the dish to the structure, and installation of the necessary conductors and interface equipment in or on the building.

Any individual or firm found working on a satellite system without a telecommunications contractor or appropriate electrical contractor license is in violation of the electrical contracting laws and may be issued a civil penalty of up to \$10,000 per day per violation.

Wear Your Certificate With Pride

One of the greatest keys to ensuring safe electrical installations in Washington is the requirement for electrical work to be performed by properly certified electricians and properly supervised trainees. The requirement in [WAC 296-46B-940\(3\)](#) and [WAC 296-46B-942\(1\)](#) for wearing and visibly displaying a valid certificate while engaged in the electrical construction trade went into effect on March 1, 2013. You must display your original certificate, not a copy. Visibly displaying certification allows the public, customers, and other workers to know that properly certified persons are performing electrical work. The requirement provides a deterrent for contractors who knowingly work trainees unsupervised and will help fight the underground economy and level the playing field for those who comply with the law.

The certificate may be worn inside the outer layer of clothing when outer protective clothing (e.g. rain gear when outside in the rain, arc flash, welding gear, etc.), is required. The certificate must be worn inside the protective clothing so that when the protective clothing is removed, the certificate is visible. A cold weather jacket or similar apparel is not protective clothing. The certificate may be worn inside the outer layer of clothing when working in an attic or crawl space or when operating equipment (e.g. drill motor, conduit threading machine, etc.) where wearing the certificate may pose an unsafe condition for the individual.

Certified electricians should display their certificates proudly. Protect your livelihood and help ensure safe electrical installations by [reporting electrical workers](#) who are not properly certified. You earned your certificate, wear it with pride and make sure others do too.

Ugly Picture: *If viewing this document online, you may click on the picture to open a larger image in another window.* This picture is a good example of a serious non-compliance problem that was discussed in a [September 2015](#) newsletter article. The unprotected energized service conductors present a life safety hazard to everyone approaching this jobsite. The contractor and administrator who purchase a permit and request inspection of such a temporary service but do not ensure the ditch is backfilled and the energized service conductors are protected from damage are subject to a compliance process that will probably end with suspension of their electrical contracting license and administrator's certificate. The law also provides for civil penalties of up to \$10,000 per day for a violation of this type.



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