
BULLETIN 2003-003-EL

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(Revised)

BONDING OF A METAL WATER PIPING SYSTEM INSTALLED IN A BUILDING (Re: Rule 10-406(2) of the CEC, Part 1)

This Bulletin clarifies bonding requirements for a metal water piping system and interior gas piping installed in a building.

Background:

Vancouver Electrical By-law (Section 7.3.4) states that all grounded wiring systems shall employ artificial grounding electrodes as the primary grounding device. This statement recognizes the fact that such metal water piping systems located underground may not necessarily be continuously conductive due to use of plastic materials and therefore they can not be relied upon as primary grounding means. This statement, however acknowledges the fact that an existing metal water piping system that is extended into a building from an underground location will function as a secondary grounding means, (in addition to the required artificial electrodes) and it will carry a significant portion of a fault current into the ground. When such continuously conductive metal water piping system is present in the building it shall be connected to the service equipment by a system grounding conductor sized in accordance with Table 17.

Rule 10-406(2) deals with a metal water piping system in a building that is essentially isolated from the ground by plastic materials. Thus, such a metal water system can not be considered as a grounding electrode.

Rule 10-406(4) covers bonding requirements for interior metal gas piping that is also essentially isolated from the ground by plastic materials. (See Bulletin 2000-037-EL for bonding methods).

Ruling:

In order to establish consistency in installation and enforcement of bonding and grounding of a metal water piping system and interior metal gas piping in a building, the following conditions must be met:

1. When a continuously conductive metal water piping system that is located underground for at least 3m is extended into a building, such metal water piping system is considered as a secondary grounding means. This metal water piping system must be connected to the main neutral assembly in the service compartment of the service entrance panelboard by a means of a system grounding conductor sized in accordance with Table 17 of the CEC, Part I.

Note: Where a service panelboard is located in a detached garage, bonding of the metal water piping system installed in a building is permitted to be made to the panelboard located in the building, provided that this panelboard is connected to the grounding electrode at the building in conformance with Rule 10-208(a).

2. When a metal water piping system or interior metal gas piping installed in a building is isolated from the ground by plastic materials, it shall be bonded to the enclosure of the panelboard located in a dwelling by a means of a copper conductor not smaller than No. 6 AWG via a dedicated bonding lug or terminal block provided.

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