

ARE YOU READY FOR THE ONTARIO ELECTRICAL SAFETY CODE 24TH EDITION?

By Ted Olechna, P.Eng.

THE ONTARIO ELECTRICAL SAFETY CODE (OESC) 24th edition becomes effective May 1, 2009, and represents the first update of the code in seven years.

In reviewing the need for changes to code requirements, focus was placed on:

- electrical incident reports;
- new electrical technology and enhancements;
- societal safety value (public, homeowners, workers, industry, etc.); and
- financial impact.

Modifications to the Canadian Electrical Code and Ontario amendments were considered when making changes to the OESC. Changes were considered following active review and discussion with industry stakeholder groups and the Ontario Provincial Code Committee (OPCC). The OPCC includes representation from consumers, contractors, standards organizations, electrical manufacturers and professional engineering practitioners. This diversity offers many interesting, yet cohesive, perspectives about electrical safety and ensures the most reasonable and effective changes to the OESC. Changes were reviewed and accepted by the OPCC, the Electrical Safety Authority's Regulatory Affairs Committee, and the Ministry of Small Business and Consumer Services.

WHAT'S CHANGED?

There are over 255 changes introduced in the OESC 24th edition, and about 75 per cent are technical. Changes were introduced in Section 10 Grounding and Bonding, Section 18 Hazardous Locations, Section 26 Installations of Electrical Equipment, and others.

Specifically:

- Rule 2-130 was added to require all wiring and cables and totally enclosed non-metallic raceways exposed to direct rays of the sun to be specifically approved for the purpose and be marked "sunlight resistant";
- Rule 2-010 Plans and Specifications introduced a number of changes concerning when plans are required to be submitted, as well as subrule (5), which states: "The person responsible for the plan design shall file with the inspection department complete wiring plans and specifications relating to the proposed work and shall pay the plan review fees as prescribed by the inspection department";

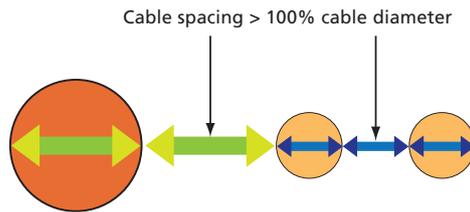
The Ontario Electrical Safety Code (OESC) is Ontario Regulation 169/99, as amended by O.Reg. 453/08, and is the responsibility of the Ministry of Small Business and Consumer Services.

The object of the OESC is to establish safety standards for the installation of electrical equipment. In its preparation, consideration has been given to the prevention of fire and shock hazards. The OESC includes administrative rules and Ontario-specific technical rules, and is produced in conjunction with the Canadian Electrical Code.

Compliance with the requirements of the OESC will ensure an essentially safe installation.

PROFESSIONAL PRACTICE

- Rule 4-004 clears up confusion in the previous code as to the spacing requirements of single-conductor and single-conductor metal-sheathed or armoured cable in a free air. The cable spacing is to be no less than 100 per cent of the larger cable diameter;



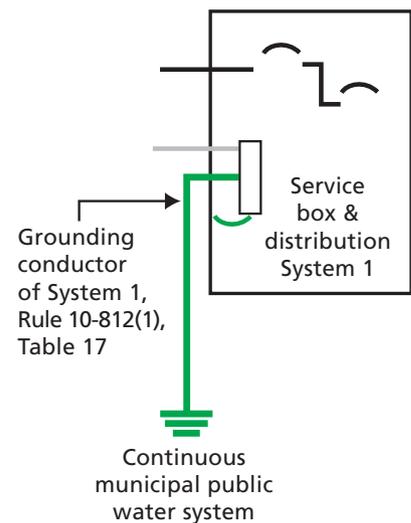
- Rule 10-204 was amended so that the grounded conductor size will need to be sized as required in Table 16. The grounded conductor (neutral in some cases) is required to carry the same fault current as the bonding conductor;

Service rating	2002 Table 17	2009 Table 16
200	#3 AWG Cu	#6 AWG Cu
400	00	#3
1000	000	00
2000	000	250 kcmil

- Rule 10-700 Grounding Electrodes is revised and now specifies three types of grounding electrodes:
 - Manufactured grounding electrode: a ground rod or plate,
 - Field-assembled grounding electrodes: includes bare copper conductor buried below finished grade or below a concrete foundation, and

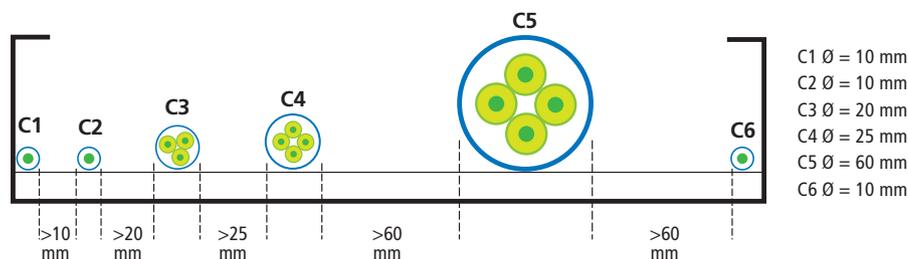
- In-situ grounding electrodes: includes the traditional copper water pipe, but has also been expanded to include metallic reinforcement of a concrete slab, concrete piling, or concrete foundation and iron pilings. The proposed changes are intended to recognize the structure as an extension of the grounding electrode in installations where the integrity of the grounding system has an adequately low impedance to ground;

- Rule 10-812 was amended to identify the difference between a continuous metallic public water system and other grounding means. The grounding conductor for the continuous metallic public water system is selected from Table 17, while the grounding conductor for other grounding means is to be sized not smaller than a 6 AWG;



- Rule 12-2210 was amended so that adjacent conductors in cable trays are required to be spaced based on the larger of the two. Previously, all spaces were based on the diameter of the largest cable in the tray;

Configuration #1



- Rule 26-700 (12) was modified to require receptacles to be protected by a ground fault circuit interrupter of the Class A type within 1.5 metres of sinks (wash basins complete with drainpipe), bathtubs or shower stalls. The previous requirements specified kitchen sinks only;
- Rule 26-712 (g) will require all receptacles in dwellings to be tamper-resistant and marked as such. Tamper-resistant receptacles are designed to protect children from injuries when they try to insert keys and other conductive objects into a receptacle;
- Section 18 Hazardous Locations was amended to require a primary seal, which isolates process fluids from an electrical system and that has one side of the seal in contact with the process fluid; and a secondary seal that is designed to prevent the passage of process fluids at the pressure it will be subjected to upon failure of the primary seal. The determination of when a seal is required is to be determined by an engineer;
- Rule 68-000 has been expanded to include splash pads in the scope of Section 68; providing greater safety requirements to these types of installations. Children's splash pads

are a recent development and have similar safety hazards as pools, i.e. water control centres and electrical installations are in close proximity to the splash pads and therefore require similar safety requirements;

- A new 75-239 sets out the requirements for the manufacture, marking, guying and framing of composite (fibre-reinforced polymer) poles. The new rule reflects current industry practice and permits the use of fibre-reinforced poles; and

- New rule 86-306 sets up the requirements for receptacles for electric vehicle charging equipment, which should be supplied by a separate branch circuit.

FOR MORE INFORMATION

The above rules are just a small sampling of the upcoming changes for Ontario in the new code. A training package has been developed to highlight changes. Specific details on the locations and times for ESA training courses are available on www.esasafe.com. The 2009 code book and the bulletins are available at www.orderline.com. The 2009 OESC contains the complete text of the CSA C22.1-09, Canadian Electrical Code, and the Ontario amendments. Σ

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