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**C22.3 No. 7-15**

## **Underground systems**

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# Preface

This is the fifth edition of CSA C22.3 No. 7, *Underground systems*, one of a series of Standards issued under the *Canadian Electrical Code, Part III*. It supersedes the previous editions published in 2010, 2006, 1994, and 1986.

This edition includes the following major changes:

- a) reference publications have been updated;
- b) the definitions for duct bank, gradient control conductor, tamper-resistant, and subsurface box have been revised; and definitions for terms no longer used in the Standard have been removed;
- c) backfill compaction values and layering requirements have been removed;
- d) requirements for bonding of supply and communication cable shields/sheaths have been updated;
- e) new clauses have been included dealing with:
  - i) depth below grade of grounding conductors;
  - ii) separation between grounding conductors and gas lines; and
  - iii) marking for supply cables installed at a reduced depth of burial;
- f) the clause on common trenches has been modified to permit installation of communication cables in the lower position relative to supply cables in a joint trench subject to agreement among the parties involved;
- g) material has been added to the Annex A dealing with
  - i) line of sight at intersections; and
  - ii) supply cable bonding techniques; and
- h) some clauses have been restructured or reordered to improve readability of the Standard.

This Standard was prepared by the Technical Committee on Underground Construction, under the jurisdiction of the Strategic Steering Committee on Power Engineering and Electromagnetic Compatibility, and has been formally approved by the Technical Committee.

## Notes:

- 1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
- 2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*
- 3) *This Standard was developed by consensus, which is defined by CSA Policy governing standardization — Code of good practice for standardization as “substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity”. It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Standard.*
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  - c) *wording of the proposed change; and*
  - d) *rationale for the change.*

# C22.3 No. 7-15

## *Underground systems*

### 1 Scope

#### 1.1

This Standard applies to the lines and equipment associated with underground electric supply and communication systems located entirely outside buildings and fenced supply stations.

This Standard, which forms part of the *Canadian Electrical Code, Part III*, covers the requirements for construction of underground systems and includes electric supply and communication circuits that are installed alone, in joint use, or in proximity to each other or other facilities.

**Note:** See CAN/CSA-C22.3 No. 61936-1 for installations within fenced or indoor supply stations.

#### 1.2

Existing installations, including maintenance replacements and maintenance alterations, meeting the original designs that currently comply with prior editions of this Standard need not be modified to comply with this edition of the Standard, except as might be required for safety reasons by the authority having jurisdiction.

#### 1.3

The requirements of this Standard do not constitute complete construction specifications but stipulate the minimum design requirements with regard to

- a) safety to persons;
- b) continuity of service; and
- c) protection of property.

#### 1.4

The selection, design, and installation of supply transmission cables ( $\geq 69$  kV) are not addressed in this Standard.

#### 1.5

Conditions not covered by this Standard are governed by equivalent Standards in common use or by the authority having jurisdiction.

#### 1.6

In some cases, requirements are written for specific types of construction. This does not preclude the use of other types of construction arising out of continuing advancements in the field, provided that engineering representatives can demonstrate the safety and suitability of these alternatives.

## 1.7

The use of terms such as “where practical” is not intended to provide an opportunity for not meeting the minimum requirements of this Standard. When an alternative is not specified, the engineering solution that most closely approximates the preferred method is to be used.

## 1.8

In this Standard, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

## 1.9

The values given in SI units are units of record for the purposes of this Standard. The values given in parentheses are for information and comparison only.

## 2 Reference publications

This Standard refers to the following publications, and where such reference is made, it shall be to the edition listed below, including all amendments published thereto.

### CSA Group

B137.4-13 (part of B137 Series-13)  
*Polyethylene (PE) piping systems for gas services*

C22.2 No. 41-13  
*Grounding and bonding equipment*

CAN/CSA-C22.2 No. 198.2-05 (R2010)  
*Sealed wire connector systems*

CAN/CSA-C22.2 No. 257-06 (R2011)  
*Interconnecting inverter-based micro-distributed resources to distribution systems*