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| Version | Date | Description of Revisions |
| 1 | August 30, 2006 | Approved final document. |
| 2 | February 19, 2010 | Modified ‘Related Sections’ |
| 3 | June 3, 2013 | Final Draft – Consolidated Comments Spec Update Project |
| 4 | June 18, 2013 | Incorporation of new Commissioning and Computerized Maintenance Management System Data Requirements Specification cross references (AV). |
| 5 | July 29, 2014 | Changes to reflect renaming of commissioning specification and final review (AV) |
| **6** | **November 17, 2014** | **Updated, Finalized Specification – Reference eDOCS #5630524 v5 (AV)** |
| 7 | February 2, 2015 | Updated standards (C22.2 No. 0.3-09 (R2014)) |
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NOTE:

This is a CONTROLLED Document. Any documents appearing in paper form are not controlled and should be checked against the on-line file version prior to use.

**Notice:** This Document hardcopy must be used for reference purpose only.

**The on-line copy is the current version of the document.**

# GEneral

## Related Sections

### [Under "Related Sections", identify other Sections that are related to, and/or dependent on, the work results or information specified elsewhere. The list should be limited to Sections with specific information that the reader might expect to find in this Section, but is specified elsewhere. For example, if hardware for aluminum entrances is specified in the aluminum entrance Section, a cross-reference would be appropriate in the finish hardware Section. The purpose of this cross-referencing is for information only, to aid in finding those other requirements—not to define the scope of the Section.

### Cross-referencing here may also be used to coordinate assemblies or systems whose components may span multiple Sections and which must meet certain performance requirements as an assembly or system.

### Contractor is responsible for coordination of the Work. Contractor is responsible for being familiar with and incorporating all required elements of cross-referenced Specifications cited.

### This Section is to be completed/updated during the design development by the Consultant. If it is not applicable to the section for the specific project it may be deleted.]

### [List Sections specifying installation of products supplied but not installed under this Section and indicate specific items.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: Execution requirements for ...[item]... specified under this Section.

### [List Sections specifying products installed but not supplied under this Section and indicate specific items.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: Product requirements for ...[item]... for installation under this Section.

### [List Sections specifying related requirements.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: [Optional short phrase indicating relationship].

### Sections:

#### Section 01300 – Submittals

#### Section 16133 – Conduits, Conduit Boxes and Cables

#### Section 16051 – Installation of Cables in Trenches and Ducts

#### Section 01810 – Equipment Testing and Facility Commissioning

#### *[Division 13 – SCADA and Instrumentation - insert applicable specifications]*

#### Product requirements for [item]... for installation under this Section.

## References

*[Delete .1 if Section 01060 – Regulatory Requirements is included in Contract Documents.]*

### Comply with the latest edition of the following statutes, codes, standards, and all amendments thereto:

#### C22.2 No.0.3-09 (2014), Test Methods for Electrical Wires and Cables.

#### CAN/CSA-C22.2 No.131-14, Type TECK 90 Cable.

### Refer to drawings for wiring type required under different applications.

### For all commissioning activities on systems where components of this Section are integral to functionality, refer to Section 01810 – Equipment Testing and Facility Commissioning.

## Product Data

### Submit Product data in accordance with Section 01300 – Submittals.

# PRODUCTS

## Building Wires

### Conductors: stranded for all copper conductors.

### Copper conductors: size as indicated in the Contract Documents, with [600] [1000] V insulation of chemically cross-linked thermosetting polyethylene material rated T90.

### Neutral supported cable: [1] [2] [3] phase insulated conductors of [aluminum] and one neutral conductor of aluminum steel reinforced, size as indicated in the Contract Documents.

### Insulation: [Type NS-1 rated 300 V] [Type NSF-2 flame retardant rated 600 V].

## TECK Cable

### Cable: in accordance with CAN/CSA-C22.2 No.131-14.

### Conductors:

#### Grounding conductor: copper

#### Circuit conductors: copper, size as indicated in the Contract Documents.

### Inner jacket: polyvinyl chloride material.

### Armour: aluminum.

### Insulation: Cross-linked polyethylene XLPE, rating – 600 V.

### Overall covering: polyvinyl chloride material.

### Fastenings:

#### One-hole malleable iron straps to secure surface cables 50 mm and smaller. Two hole steel straps for cables larger than 50 mm.

#### Channel type supports for two or more cables at 600mm centers.

#### Threaded rods: minimum 10 mm diameter to support suspended channels.

### Connectors:

#### [Watertight], [explosion-proof] approved for TECK cable.

## Armoured Cables

#### Conductors: insulated, copper, size as indicated.

#### Type: *[Consultant to specify.]*

#### Armour: interlocking type fabricated from aluminum strip.

#### Type: PVC flame retardant jacket over thermoplastic armour meeting the requirements of Vertical Tray Fire Test of CSA C22.2 No.0.3-09 (R2014) with maximum flame travel of 1.2 m.

#### Connectors: *[Consultant to specify type of cable]*.

# EXECUTION

## Installation of Building Wires

### Install wiring as follows:

#### In conduit systems shall be in accordance with Section 16133 – Conduits, Conduit Boxes, and Cabinets.

#### In underground ducts shall be in accordance with Section 16051 – Installation of Cables in Trenches and Ducts.

## Installation of TECK Cable 0 - 1000 V

### Install cables in compliance with applicable sections of the Ontario Electrical Code and other codes. [*Consultant to add to this subsection as appropriate]* .

### Group cables wherever possible on channels.

### Install cable in trenches in accordance with Section 16051 – Installation of Cables in Trenches and Ducts.

## Installation of Armoured Cables

### Group cables wherever possible.

### Install cable in trenches in accordance with Section 16051 – Installation of Cables in Trenches and Ducts.

### Lay cable in cable troughs in accordance with Section [Create specification section if necessary.]

## Field Quality Control

### Perform tests in accordance with Section 16031 – Inspection and Testing.

### Perform tests using methods appropriate to Site conditions and to the approval of the Consultant, ESA, and other authorities having jurisdiction over the installation.

### Perform tests before energizing the electrical system and performing commissioning activities.

**END OF SECTION**