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| Version | Date | Description of Revisions |
| 1 | August 30, 2006 | Approved final document. |
| 2 | February 19, 2010 | Modified ‘Related Sections’ |
| 3 | March 15, 2011 | Minor changes from Legal |
| 4 | June 3, 2013 | Final Draft – Consolidated Comments Spec Update Project |
| 5 | June 18, 2013 | Incorporation of new Commissioning and Computerized Maintenance Management System Data Requirements Specification cross references. |
| 6 | July 29, 2014 | Changes to reflect renaming of commissioning specification and final review (AV) |
| **7** | **November 17, 2014** | **Updated, Finalized Specification – Reference eDOCS #5630488 v5 (AV)** |
| 8 | February 2, 2015 | Updated standards (C22.1-12) |
| 9 | February 10, 2017 | Removed the acceptable manufacturers section. (CPD PMO, OMM) Updated Reference Standards (C22.1-15, CSA-C22.2 No. 18.4-15 (AV & AAM) |

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 01250 – Substitutions

### Section 01425 - Computerized Maintenance Management System Data Requirements

### Section 01810 – Equipment Testing and Facility Commissioning

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

### Section 16010 – Electrical General Requirements

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

## Measurement and Payment

*[Choose one of the following payment language provisions that best suits the individual project.*

*If this Section is not specifically referenced by an item in the Bid Form, please use the following language:*

### The work of this Section will not be measured separately for payment. All costs associated with the work of this Section shall be included in the Contract Price.

*OR If this Section is specifically referenced in the Bid Form, use the following language and identify the relevant item in the Bid Form:*

### All costs associated with the work of this Section shall be included in the price(s) for Item No(s). \_\_\_ in the Bid Form.

*If the work of this Section is to be measured and paid for by several different methods, please amend the standard wording given above to reflect the different methods of measurement and payment.*]

## 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:

#### Canadian Electrical Safety Code (CESC), latest Ontario Edition.

#### Canadian Standards Association (CSA),

##### CSA C22.2 No. 45.1-07 (R2012), Electrical Rigid Metal Conduit - Steel (Tri-National standard, with UL 6 and NMX-J-534-ANCE-2007).

##### CSA C22.1-15, Canadian Electrical Code, Part 1.

##### CSA C22.2 No. 18.3-12, Conduit, tubing, and cable fittings (Tri-national standard, with ANCE NMX-J-017 and UL 514B).

##### CSA-C22.2 No. 18.4-15 Hardware for the Support of Conduit, Tubing, and Cable (Bi-National standard, with UL 2239).

# PRODUCTS

## Outlet and Conduit Boxes General

### Size boxes in accordance with the code requirements of the CESC Ontario Edition and CSA C22.1-15, Canadian Electrical Code, Part 1.

### [All materials shall be CSA approved.]

### 102 mm square or larger outlet boxes as required for special devices.

### Gang boxes where wiring devices are grouped.

### Blank cover plates for boxes without wiring devices.

### 347 V outlet boxes for 347 V switching devices.

### Combination boxes with barriers where outlets for more than one system are grouped.

### All boxes used with exposed conduits shall be rigid PVC.

### Each light, switch, receptacle and/or outlet shall be provided with a suitable outlet box, each approved for the particular area in which it is to be installed.

### One outlet box shall be installed per switch, receptacle, light, etc.

## Sheet Steel Outlet Boxes

### Electro-galvanized steel single and multi gang flush device boxes for flush installation, minimum size 76 mm x 50 mm x 38 mm or as otherwise indicated in the Contract Documents. Use 102 mm square outlet boxes when more than one conduit enters one side with extension and plaster rings as required in the Contract.

### Electro-galvanized steel utility boxes for outlets connected to surface-mounted EMT conduit, minimum size 102 mm x 54 mm x 48 mm

### 102 mm square or octagonal outlet boxes for lighting fixture outlets.

### 102 mm square outlet boxes with extension and plaster rings for flush mounting devices in finished walls.

## Masonry Boxes

### Electro-galvanized steel masonry single and multi gang boxes for devices flush mounted in exposed block walls.

## Concrete Boxes

### Electro-galvanized sheet steel concrete type boxes for flush mounting in concrete with matching extension and plaster rings as required.

## Conduit Boxes

### Cast FS boxes with factory-threaded hubs and mounting feet for surface wiring of switches and receptacles.

## Outlet Boxes for Non-metallic Sheathed Cable

### Electro-galvanized, sectional, screw ganging steel boxes, with a minimum size of [76 mm x 50 mm x 63 mm] with two double clamps to take non-metallic sheathed cables

## Fittings- General

### Bushing and connectors with nylon insulated throats.

### Knock-out fillers to prevent entry of debris.

### Conduit outlet bodies for conduit up to 32 m and pull boxes for larger conduits.

### Double locknuts and insulated bushings on sheet metal boxes.

## Service Fittings

### 'High tension' receptacle fitting made of two-piece stainless steel housing finish for single receptacle(s). Bottom plate with two knockouts for centered or offset installation. The extension piece shall be 12 mm x 102 mm as indicated in the Contract Documents.

### Pedestal type 'low tension' fitting made of two-piece [stainless steel] [die cast aluminum] with [brushed aluminum] [satin aluminum] housing finish to accommodate [one] [two] amphenol jack connectors.

# EXECUTION

## Installation

### Installations shall be in accordance with C22.2 No. 18.3-12, Conduit, tubing, and cable fittings (Tri-national standard, with ANCE NMX-J-017 and UL 514B).

### Installations shall be in accordance with C22.2 No. 45.1-07 (R2012), Electrical Rigid Metal Conduit - Steel (Tri-National standard, with UL 6 and NMX-J-534-ANCE-2007).

### Installations shall be in accordance with CAN/CSA-C22.2 No. 18.4-15, Hardware for the Support of Conduit, Tubing, and Cable (Bi-National standard, with UL 2239).

### Support boxes independently of connecting conduits.

### Fill boxes with paper, sponges or foam or similar approved material to prevent the entry of debris during construction. Remove upon the completion of the Work.

### For flush installations, mount outlets flush with the finished wall using plaster rings to permit the wall finish to come within 6 mm of the opening.

### Provide the correct size of openings in boxes for conduit armoured cable connections. Reducing washers shall not be allowed.

### Vacuum clean interior of outlet boxes before the installation of wiring devices.

### Identify systems for outlet boxes as required.

## Commissioning

### For all commissioning activities on systems where components of this Specification are integral to functionality, refer to Section 01810 – Equipment Testing and Facility Commissioning. All inspection and testing activities shall be completed in accordance with the documentation required as part of the commissioning plan that shall be provided to the Consultant prior to start of commissioning activities.

**END OF SECTION**