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| Version | Date | Description of Revisions |
| 1 | August 30, 2006 | Approved final document. |
| 2 | February 19, 2010 | Modified ‘Related Sections’ |
| 3 | July 2, 2013 | Incorporation of new Commissioning Specification cross references. Incorporated several aspects of the NL building specifications. |
| 4 | July 30, 2014 | Changes to reflect renaming of commissioning specification and final review (AV) |
| **5** | **February 4, 2015** | **Finalized Specification – Reference eDOCS #5630512 v7 (AV)** |
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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.

# 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].

### Section 01300 – Submittals

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

### Section 01810 – Equipment Testing and Facility Commissioning

### Section 16010 – Electrical General Requirements

### Section 16412 – Moulded Case Circuit Breakers

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

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

## References

### ANSI/NEMA

#### ANSI/NEMA PB 1 -2011, Panelboards.

#### ANSI/NEMA PB 1.1-2013, General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 V or Less.

### Ontario Electrical Code

### National Fire Protection Association (NFPA)

#### National Electrical Code 70.

### Canadian Standards Association (CSA)

#### CSA C22.2 No.29-11, Panelboards and Enclosed Panelboards.

### Underwriters Laboratories, (UL Canada)

#### UL 67 Panelboards.

## Shop Drawings

### Submit shop drawings in accordance with Section 01300 – Submittals.

### Drawings shall include electrical details of panel, branch breaker type, quantity, ampacity and enclosure dimension.

# PRODUCTS

## Panelboards

### Panelboards: shall be the product of one manufacturer.

#### Install circuit breakers in panelboards before shipment.

#### In addition to CSA requirements (C22.2 No. 29-11), the manufacturer's nameplate must show the fault current that the panel, including breakers, has been built to withstand.

### [347][600] V panelboards: bus and breakers rated for 22,000 A (symmetrical) interrupting capacity or as indicated by the Co-ordination Study [*Consultant to insert citation to Section detailing Coordination Study or to indicate whether the study already exists]* to determine the thousand ampere interrupting capacity (KAIC) which shall be a minimum of [18,000] A.*[Consultant to confirm capacity and amend as required. Consultant to consider whether Short Circuit Study is required and amend this Section as required]*

### All branch breakers shall be bolt-on type.

### Provide barriers for the main breaker.

### Sequence phase bussing with odd numbered breakers on the left and even on the right, with each breaker identified by permanent number identification as to circuit number and phase.

### Panelboards: mains, number of circuits, and number and size of branch circuit breakers as indicated in the Contract Documents.

### Two keys for each panelboard and key panelboards alike.

### Copper bus with neutral of same ampere rating as mains.

### Mains: suitable for bolt-on breakers.

### Trim with concealed front bolts and hinges.

### Trim and door finish: baked grey enamel.

### Each panelboard shall contain a minimum of four spare circuits (unused) as shown on the Contract Drawings. *[Consultant to ensure spare circuits are defined in the Contract Drawings]*

## Custom Built Panelboard Assemblies

### 125 mm relay section on both sides of panels as indicated in the Contract Documents for installation of low voltage remote control switching components.

### Double stack panels as indicated in the Contract Documents.

### Contactors in mains as indicated in the Contract Documents.

### Feed through lugs as indicated in the Contract Documents.

### Isolated ground bus.

## Breakers

### Breakers: in accordance with the requirements of Section 16412 - Moulded Case Circuit Breakers.

### Breakers with thermal and magnetic tripping in panelboards except where indicated otherwise in the Contract Documents.

### Main breaker: separately mounted on top or bottom of panel to suit cable entry. When mounted vertically, the down position should open the breaker.

## Equipment Identification

### Provide equipment identification in accordance with Section 16010 - Electrical General Requirements.

### Refer to Section 01425 - Computerized Maintenance Management System Data Requirements.

### Nameplate for each panelboard size 4 engraved as indicated in the Contract Documents.

### Nameplate for each circuit in distribution panelboards size 2 engraved as indicated in the Contract Documents.

### Complete circuit directory with typewritten legend showing the location and load of each circuit.

# EXECUTION

## Installation

### Locate panelboards as indicated on the Contract Drawings and mount securely, plumb, true and square, to adjoining surfaces.

### Install surface mounted panelboards on fire rated backboards (as per Ontario Electrical Code). Where practical, group panelboards on a common backboard.

### Mount panelboards to the height specified in Section 16010 - Electrical General Requirements or as indicated in the Contract Documents.

### Connect loads to circuits.

### Connect neutral conductors to common neutral bus with respective neutral identified.

## Commissioning

### For all commissioning activities on systems where components of this Section 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 commissioning plan that shall be provided to the Consultant prior to the commencement of commissioning activities.

**END OF SECTION**