
Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 00 10 – General Instructions.
- .2 Section 26 05 00 – Common Work Results for Electrical.
- .3 Section 26 28 16.01 – Air Circuit Breakers.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-C22.2 No.31-04, Switchgear Assemblies.
- .2 Electrical and Electronic Manufacturers' Association of Canada (EEMAC)
 - .1 EEMAC G8-3.3, Metal-Enclosed Interrupter Switchgear Assemblies.

1.3 SHOP DRAWINGS PRODUCT DATA

- .1 Submit shop drawings and product data in accordance with Section 01 00 10 – General Instructions.
- .2 Indicate on shop drawings:
 - .1 Floor anchoring method and foundation template.
 - .2 Dimensioned cable or conduit entry and exit locations.
 - .3 Dimensioned position and size of bus.
 - .4 Overall length, height and depth of complete switchgear.
 - .5 Dimensioned layout of internal and front panel mounted components.
- .3 Indicate on product data:
 - .1 Time-current characteristic curves for air circuit breakers.

1.4 QUALITY ASSURANCE

- .1 Submit six(6) copies of certified factory test results.

1.5 CLOSEOUT SUBMITTALS

- .1 Provide operating and maintenance data for secondary switchgear assembly and incorporate into manual in accordance with Section 01 00 10 – General Instructions.
- .2 Provide six copies of maintenance data for complete switchgear assembly including all components.

1.6 STORAGE AND PROTECTION

- .1 Store switchgear on site in protected, dry location. Cover with plastic to keep off dust.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 00 10 – General Instructions.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal all packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
- .4 Divert unused metal and wiring materials from landfill to metal recycling facility as approved by Departmental Representative.
- .5 Fold up metal banding, flatten and place in designated area for recycling.

Part 2 Products**2.1 MATERIALS**

- .1 Switchgear assembly: to EEMAC G8-3.3 and CAN/CSA-C22.2 No.31.

2.2 RATING

- .1 Secondary switchgear: indoor, 600 V, amperage as indicated, 3 phase, 3 wire, grounded wye system, 60 Hz, minimum short circuit capacity 42 kA (rms symmetrical).

2.3 ENCLOSURE

- .1 Enclosure construction: metal enclosed free standing, floor mounted, dead front, indoor, 1 cubicle unit with each section of uniform dimensions and appearance.
- .2 Switchboard designed, factory assembled and factory tested in accordance with latest applicable NEMA, EEMAC and CSA standards. Designed for front and sides and top accessible.
- .3 Dimensions to suit: . Overall dimension of switchboard shall not exceed the following: Height: 2250 mm, Width: 5080 mm, Depth: 1220 mm].
- .4 Compartments in sections shall be numbered from top to bottom.
- .5 Corresponding parts, in same duplicated equipment, to be inter-changeable, and when so interchanged shall perform their functions equally well in every respect.
- .6 Main incoming section to contain:
 - .1 Air circuit breaker sized as indicated.
 - .2 Metering.
- .7 Ventilating louvers: as necessary.
- .8 Access from front only and suitable for mounting directly up against a wall with no service or ventilation requirements.

- .9 Steel channel sills for base mounting in single length common to multi-cubicle switchboard.
- .10 Structure designed for feeders to enter top only.
- .11 Breaker and metering compartment sections to be separated from each other by steel barriers. Bus-stab connections between sectional barriers shall be run through suitable rectangular openings equipped with insulating ring.
- .12 Doors: complete with lockable handles. Provide door detent mechanism to maintain hinged door at open position.
- .13 Switchboard enclosures shall be painted with a rust inhibiting primer immediately following a thorough cleaning, degreasing process and then finished with two coats of ASA-61 grey enamel.

2.4 BUSBARS

- .1 Copper bus bars and connections with 98% conductivity. All copper bus bar joints, main contacts and auxiliary contacts to be tin plated. Main buses and/or conductors, when installed in their housings to be capable of carrying the maximum load continuously with a temperature not exceeding 60°C above an ambient temperature of 30°C.
- .2 Conductors to be braced to prevent displacement of any part due to stresses caused by short circuits.
- .3 Provision for expansion or contraction of bus bars and other conductors without undue stress or injury when assembled in groups and in place. Design and construct panel to withstand strains, jars, vibrations and other conditions incident to shipping, storage, installation and service.

2.5 AIR CIRCUIT BREAKERS

- .1 Refer to Section 26 28 16.01 – Air Circuit Breakers.

2.6 METERING PROVISIONS AND WIRING

- .1 For switchboard use stranded, minimum No.14AWG, TEW 105°C and coloured for control wiring. Use No.10AWG for CT secondary connections. Coded to manufacturer standard to differentiate between function and voltage.
- .2 Code wiring at each wire end with permanent, non-aging slip on markers. Support and run wiring neatly. Protect wiring from mechanical damage.
- .3 Code terminal blocks, clamp type, serrated for positive grip and of non-brittle, unbreakable material.
- .4 For current transformer secondary circuits, provide terminals blocks of dual connector type.
- .5 Provide test block for current transformer secondary connections.
- .6 Supply loose 2 sets of wiring markers for each external wiring connection. Place markers in plastic bag and secured inside panel.

2.7 GROUNDING

- .1 Copper ground bus not smaller than 75 x 6 mm extending full width of the switchboard cubicles.
- .2 Lugs at each end for size 3/0 AWG grounding cable.

2.8 FINISHES

- .1 Apply finishes in accordance with Section 26 05 00 - Common Work Results for Electrical.
 - .1 Cubicle interiors and exteriors grey.

2.9 EQUIPMENT IDENTIFICATION

- .1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Front panels to be provided with blue plastic laminate mimic bus fastened with rivets.
- .3 Nameplates:
 - .1 Complete switchgear labelled: "600 V". Nameplate size 7.
 - .2 Main cubicle labelled: "Main Breaker". Nameplate size 4.
 - .3 Breakers, instruments and switches to be identified with white lamicaid sandwich plates with black lettering – size 4. Each plate to be fastened with minimum 2 screws or rivets.
 - .4 Distribution units labelled: "Feeder No.1" "Describe the Load Fed". Nameplate size 2.

Part 3 Execution**3.1 INSTALLATION**

- .1 Locate switchgear assembly as indicated and bolt to floor on base channels.
- .2 Connect incoming supply to main breaker.
- .3 Connect load side of breakers in distribution cubicles to distribution feeders.
- .4 Check factory made connections for mechanical security and electrical continuity.
- .5 Run two (2) grounding conductors 3/0AWG insulated stranded copper in separate conduits from each end of switchboard ground bus to ground bus in enclosure 6.
- .6 Check trip unit settings against co-ordination study to ensure proper working and protection of components.

END OF SECTION