

PART 1 - GENERAL

1.1 RELATED WORK

- .1 Section 26 05 00: Electrical General Requirements.
- .2 Section 26 28 21: Moulded Case Circuit Breakers.
- .3 Section 26 36 23: Automatic Load Transfer Equipment.

1.2 REFERENCES

- .1 CAN/CSA C22.2 No. 31-14, Switchgear Assemblies

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit shop drawings and product data for review and approval in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Indicate on shop drawings.
 - .1 Floor anchoring method and foundation template.
 - .2 Dimensioned cable entry and exit locations.
 - .3 Dimensioned position and size of bus.
 - .4 Overall length, height and depth.
 - .5 Dimensioned layout of internal and front panel mounted components.
 - .6 Dimensions and weight of shipping splits.
- .3 Include time-current characteristic curves for circuit breakers.

1.4 OPERATIONS AND MAINTENANCE DATA

- .1 Provide maintenance data for service entrance board for incorporation into manual as specified in Section 01 78 00 – Closeout Procedures.

1.5 SOURCE QUALITY CONTROL

- .1 Submit two (2) copies of certified factory test results in accordance with 01 33 00 - Submittal Procedures.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Switchboards to CSA C22.2 No. 31.

2.2 SERVICE ENTRANCE BOARD

- .1 Rating: 600 Vac, 3 phase, 4 wire, ampere rating as noted on the drawings, minimum bus bracing rating 32kA (momentary rms symmetrical).
- .2 Cubicles: free standing, front accessible.
 - .1 Section 1: main circuit breaker complete with utility metering section and outgoing lugs. Outgoing lugs wired to transfer switch then to Section 2.
 - .2 Section 2: separate enclosure, 1000 ampere distribution section with a lag compartment.
- .3 Provision for installation of power supply authority metering in barriered section.
- .4 Hinged access panels with captive knurled thumb screws.
- .5 Bus bars and main connections: 99.3% copper, tin plated. Main horizontal busbars shall be mounted with all three phases arranged in the same vertical plane.
- .6 Bus from side wireway (where required by manufacturer or where specified) to the line terminals of main breaker.
- .7 Bus from load terminals of main breaker to the outgoing load section via utility metering section.
- .8 Identify phases with colour coding.
- .9 38 mm channel sill.
- .10 Switchboard to be complete with driphood.
- .11 Switchboard must be suitable for use as service entrance equipment, meet local utility requirements and be labelled in accordance with CSA requirements.
- .12 Provide the assembly with adequate lifting means and so it is capable of being moved into installation position and bolted directly to the floor.
- .13 Equip all breakers in the main switchboard with lock out hardware.
- .14 Provide enclosure complete with drip hood.

2.3 MAIN BREAKER

- .1 Provide low voltage moulded case circuit breaker, 600 Vac, frame and trip rating as indicated on the drawings. Circuit breaker must be CSA listed for application in its intended enclosure.
- .2 Provide circuit breaker complete with electronic overcurrent trip unit (LSI).
- .3 Refer to specification Section 26 28 21 – Moulded Case Circuit Breakers for additional circuit breaker specifications.
- .4 Equip breaker with “lock out” hardware.

2.4 GROUNDING

- .1 Furnish copper ground bus firmly secured to each vertical section structure and extended to entire length of the switchboard.
- .2 Lugs at each end for size #4/0 AWG grounding conductor.

2.5 POWER SUPPLY AUTHORITY METERING

- .1 Separate compartment and metal raceway for exclusive use of power supply authority metering.
- .2 Mounting accessories and wiring for metering supplied by utility:
 - .1 Three (3) current transformers.
 - .2 Two (2) potential transformers.
- .3 Relocate existing CT's APT's and wire into existing meter.

2.6 INCOMING LUGS

- .1 Provide screw type mechanical lugs to terminate incoming service entrance cables.
- .2 Refer to drawings for quantity and configuration of service entrance cables.
- .3 Provide sufficient space to route cables from underground feed and into bottom of main breaker. Modify existing conduit as required.

2.7 FINISHES

- .1 Apply finishes in accordance with Section 26 05 00 – Electrical General Requirements.
 - .1 Service entrance board exterior: gray.

2.8 OWNER'S DIGITAL METERING

- .1 Provide advanced digital meter on the main incoming power to measure phase amps, volts, power factor, kVAR, kW, harmonic distortion.
- .2 Provide necessary PT's and CT's for metering.
- .3 Provide network connection box to connect directly to owner BACNET control/monitoring system.

2.9 EQUIPMENT IDENTIFICATION

- .1 Provide equipment identification in accordance with Section 26 05 00.
- .2 Nameplates:
 - .1 White plate, black letters.
 - .2 Complete board labelled: "Main 600V Switchboard."
 - .3 Main disconnect labelled: "Main Breaker".

2.10 PHYSICAL SIZE

- .1 The new equipment will replace existing equipment located in an existing electrical room that has limited physical space. Equipment selection must be based on technical specifications and physical size. Equipment that is larger than that shown on the drawings may not be accepted.

2.11 ACCEPTABLE MANUFACTURERS

- .1 Square D.
- .2 Cutler-Hammer.
- .3 Siemens.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Locate service entrance board and install in accordance with manufacturer's instructions.
- .2 Shorten and connect existing main utility service to incoming cable lugs on main breaker. Modify existing conduit as required.
- .3 Provide one (1) grounding conductor #4/0 AWG bare copper in 27 mm conduit from ground bus to building ground.
- .4 Apply trip unit settings against Protection Co-ordination study to ensure proper working and protection of components. Verify operation of breakers on site after installation.
- .5 Install the equipment and check in accordance with the manufacturer's recommendations. This includes, but is not limited to:
 - .1 Checking to confirm the pad location is level to within 3 mm.
 - .2 Checking to confirm that bus bars are torqued to the manufacturer's recommendations.
 - .3 Assemble all shipping sections, remove all shipping braces and connect all shipping split mechanical and electrical connections.
 - .4 Secure assemblies to foundation or floor channels.
 - .5 Measure and record Megger readings phase to phase, phase to ground and neutral to ground.
- .6 Take note of the limited entry dimensions for the main switchboard and arrange for installation prior to the erection of interior walls, if required.

END OF SECTION