PART 1 - GENERAL

1.1 REFERENCES   .1   Canada Green Building Council (CaGBC)
                            .1   LEED Canada-NC-2009, LEED (Leadership in
                            Energy and Environmental Design): Green
                            Building Rating System Reference Package For
                            New Construction and Major Renovations.

                       .2   CSA International
                            .1   CAN/CSA C22.2 No.107.2, Battery
                            Chargers.

1.2 ACTION AND   .1   Product Data:
INFORMATIONAL   .1   Submit manufacturer's instructions,
SUBMITTALS   printed product literature and data sheets for
                            battery chargers and include product
                            characteristics, performance criteria,
                            physical size, finish and limitations.
                            .2   Charger data: type and capacity, battery
                            charging sequence, current-time data for
                            Silicon Controlled Rectifier (SCR) protective
                            devices, estimated noise level, metering,
                            alarms, controls and efficiency.

                       .2   Shop Drawings:
                            .1   Include outline schematic diagrams with
                            dimensions showing arrangement of cubicle,
                            components, meters and controls.

1.3 CLOSEOUT   .1   Operation and Maintenance Data: submit
SUBMITTALS   operation and maintenance data for battery
                            chargers for incorporation into manual.

                       .2   Operation and maintenance instructions
                            covering design elements, construction
                            features, component functions and maintenance
                            requirements to permit effective operation,
                            maintenance and repair.

                       .3   Copy of approved shop drawings.

                       .4   Technical description of components.

1.3 CLOSEOUT SUBMITTALS (Cont'd)	.5	Parts lists with catalogue numbers and names and addresses of suppliers.
1.4 DELIVERY, STORAGE AND HANDLING	.1	Deliver, store and handle materials in accordance with manufacturer's written instructions and to Section 26 05 00.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS	.1	Automatically maintain battery in fully charged state while mains power available. Maintain DC float voltage within plus or minus 1% of setting.
	.2	Charging rate such that after battery has provided full power output for specified duration, charger returns battery to 95% of fully charged state in 8 hours.
2.2 CHARGER CHARACTERISTICS	.1	Battery charger: to CAN/CSA C22.2.
	.2	Input: 120 Vac, 1 phase, 2 wire, grounded neutral, 60Hz.
	.3	Output: 10 A, DC at 12/24 V, DC, ripple voltage less than 2 %.
2.3 ACCESSORIES	.1	DC voltmeter: accuracy plus or minus 2 % of full scale, to measure rectifier output voltage.
	.2	DC ammeter: accuracy plus or minus 2 % of full scale, to measure rectifier output current.
	.3	Red LED's for ac power failure with time delay to prevent alarm during short power outages.

2.3 ACCESSORIES   .4   Red LED's to indicate over discharge and
     (Cont'd)   emergency time available.

                      .5   Red LED's for high DC voltage.

                      .6   Red LED's for ground detector.

                      .7   LEDs mounted on front to indicate: failure AC
                            power, low DC voltage, high DC voltage, no
                            rectifier output.

                      .8   Alarms: audible alarm when any LED indicates
                            trouble. Silence pushbutton not to extinguish
                            trouble light.

                      .9   Common LED test switch and one common Form C
                            alarm contact.

2.4 ENCLOSURE   .1   Dead front sheet steel, 2.5 mm thick minimum
                            CSA Enclosure Type 1.

                      .2   Access from front.

                      .3   Convection ventilated.

                      .4   Meters, indicating lamps and controls group
                            mounted on front panel.

PART 3 - EXECUTION

3.1 INSTALLATION   .1   Connect input terminals to AC mains.

                      .2   Connect output terminals to battery.

3.2 TESTS   .1   Energize battery charger and operate until
                            battery shows full charge.

                      .2   Discharge battery to full discharge
                            condition.

                      .3   Recharge battery, recording DC voltage and
                            current once per hour for 8 hours. Test

3.2 TESTS   .3   (Cont'd)
   (Cont'd)   battery to ensure it has reached at least 95%
                        full charge.

                  .4   Continue charging to ensure charger changes
                        from bulk rate to float charge rate.

                  .5   Demonstrate that automatic timer controls
                        charging and correctly transfers from equalize
                        to float charge after selected period.

                  .6   Simulate faults to demonstrate that alarm
                        lights and audible alarms are performing as
                        designed.

                  .7   At end of tests, with battery in fully
                        charged condition, operate charger on "float"
                        for minimum period of 24 hours to ensure
                        stable condition is reached and held.

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