1. GENERAL

1.01 SECTION INCLUDES

.1 Emergency lighting units with battery back-up for emergency illumination of remote emergency fixtures and internally illuminated exit signs.

.2 Remote emergency fixtures.

1.02 RELATED REQUIREMENTS

.1 Section 26 51 19 – LED Interior Lighting.

.2 Section 26 52 13.16 – Exit Signs.

1.03 REFERENCES

.1 CSA Group:

.1 CSA C22.2 No. 141-15 (R2020), Emergency lighting equipment.

.2 CSA C22.1:21, Canadian Electrical Code, Part 1 (25th Edition), Safety Standard for Electrical Installations.

.3 Ontario Electrical Safety Code (28th edition/2021).

.2 Ontario Building Code.

.3 National Building Code of Canada.

.4 Underwriters Laboratories, Inc. (UL):

.1 UL 924 – Standard for Safety of Emergency Lighting and Power Equipment.

1.04 SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for emergency lighting and include product characteristics, performance criteria, physical size, finish, and limitations.

1.05 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00.

.2 Operation and Maintenance Data: submit operation and maintenance data for emergency lighting for incorporation into manual.

1.06 EXTRA MATERIALS

.1 Allow the cost for material and for installation of the following to be installed as directed by the Consultant during construction:

.1 An additional [five] single head emergency remote units.

.2 An additional [five] dual head emergency remote units.

.3 An additional [one] battery unit, based on the maximum battery capacity as specified.

1.07 QUALITY ASSURANCE

.1 Manufacturer Qualifications: Products shall be free of defects in material and workmanship.

.2 Furnished products are listed and/or certified by third party agencies as suitable for the intended purpose.

.3 All units will be certified that they have been tested prior to shipping.

1.08 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store, and handle materials in accordance with Section 01 61 00 and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect emergency lighting from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

.4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 00.

1.09 WARRANTY

.1 Product is warranted free of defects in material and workmanship.

.2 Product is warranted to perform the intended function within design limits.

.3 For batteries in this Section, 12 month warranty period is extended to 24 months.

2. PRODUCTS

2.01 EMERGENCY BATTERY UNITS

.1 Manufacturers:

.1 Lumacell RG12S series.

.2 Aimlite.

.3 BeLuce (formerly Beghelli).

.4 Emergi-Lite.

.5 Lithonia (Acuity Brands Lighting).

.6 Stanpro.

.2 Battery Unit Features:

.1 Self-contained unit equipment for LED emergency lighting shall be manufactured and labeled as certified to meet CSA C22.2 No 141.

.2 Housing: Constructed of formed and welded 18 gauge cold rolled steel with knockouts for conduit, finished in baked white enamel. Cabinet suitable for direct or shelf mounting to wall. Removable or hinged front panel for easy access to batteries.

.3 Charger:

.1 Solid-state micro-controller PCB, Pulse-Guard charger, features include; auto-equalized, temperature compensated, current limited, short circuit and reverse polarity protected.

.2 Recharges battery within 24 hours in accordance with CSA requirements.

.4 Transfer: Upon failure of the power supply, or voltage dip below 75 per cent of nominal, a sealed relay automatically and instantaneously connects the battery to the emergency lighting

load and disconnects when battery discharge reaches 87.5 per cent expectancy.

.5 Batteries: seal lead calcium, maintenance free, and 10 year pro-rated service life.

.6 Auto-test: Unit to perform self-test for 1 minute ever 30 days, 10 minutes on the 6th month and 30 minutes ever 12 months.

.3 Battery Electrical Features:

.1 Input Voltage:120 VAC universal input:

.1 Provided with plug and receptacle when connected to 120 volt source panelboard.

.2 Output Voltage: 12 VDC; balance loads to battery unit terminals.

.1 Normally "Off" output: wattage capacity as indicated for emergency remotes and internally illuminated exit signs.

.2 Battery Run Time at full load: must meet OBC minimum, 30 minutes.

.3 Voltage regulation: ± 5 per cent of nominal maximum.

.3 Signal lights: solid state, for 'AC Power ON' and 'High Charge'.

.4 Lamp heads:

.1 Integral on unit, 345 degrees horizontal and 180 degrees vertical adjustment.

.2 Lamp type:

.1 Two 12 V, 6 W MR16 LED lamps mounted on top of the battery cabinet, shall be injection molded thermoplastic, white finish.

.2 Average lamp lumens: 170 lm.

.3 Centre Beam Candlepower: 440 cd.

.4 Beam angle: 30 degrees.

.5 Lamp efficacy: 42.5 lm/W.

.5 Auxiliary equipment:

.1 Ammeter.

.2 Voltmeter.

.3 Test switch.

.4 Time delay relay.

.5 Battery disconnect device.

.6 AC input and DC output terminal blocks inside cabinet.

.7 Shelf Bracket.

.8 Cord and single twist-lock plug connection for AC.

.9 RFI suppressors.

.10 Voltage Sensing Relay:

.1 Up to six inputs for line voltage detection from different normal lighting zone. The wire connection from each zone circuit shall be made with terminal blocks.

.2 Operation Sequence: In the case of power failure of one or several circuits feeding normal lighting, the output circuit will open and transfer the battery unit(s) in emergency lighting mode.

.3 Provide "push to test" push button and a pilot light for each zone circuit for manual testing and service.

2.02 VOLTAGE SENSING RELAY (VSR) ZONE CONTROL STAND-ALONE EXTENSION MODULE

.1 Manufacturers: Lumacell VSR series (basis of design).

.2 The equipment shall have an adequate quantity of inputs (up to 24 inputs) for line voltage detection from different building zones. The wire connection from each zone circuit shall be made with terminal blocks. The output circuit shall be a dry-contact relay, normally closed and shall be accessible for connection on a terminal block. The output circuit shall be connected at installation in series with the AC line supplying the battery unit equipment.

.3 Operation Sequence: In the case of power failure of one or several circuits feeding normal lighting, the output circuit will open and transfer the battery unit(s) in emergency lighting mode.

.4 Include a "push to test" push button and a pilot light for each zone circuit for manual testing and service.

2.03 EMERGENCY LIGHTING EMERGENCY REMOTE HEADS

.1 [Refer to drawings and lighting schedule.

.1 EM1 – Single head

.2 EM2 – Double head

.3 EM3 – Recessed Ceiling Downlight

.4 EM4 – Surface mounted Downlight]

.2 One or two lamps, shall be injection molded thermoplastic, white finish, lamps shall be MR16 LED 12 V, 540 lumen, 25 degree beam angle, 6 watt.

.3 Remote heads to be mounted not less than 2100 mm (6'-10") AFF.

.4 LED MR16 lamps:

.1 Lumacell MQM-x-12V4W-LD10 series.

.2 Approved equal by Emergi-Lite.

.3 Approved equal by Stanpro.

.4 Approved equal by Beghelli.

3. EXECUTION

3.01 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections are acceptable for emergency lighting installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Owner.

.2 Inform Owner of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Owner.

3.02 INSTALLATION

.1 Install emergency lighting in compliance with local inspection authorities.

.2 Wiring:

.1 Connect battery input to source panelboard. Balance the emergency lighting loads connected to battery output terminal blocks. Provide and connect remote fixtures and internally illuminated exit signs as specified and as required for system

performance in compliance with OBC minimum egress illumination requirements. Install remotes in locations as shown on the drawings. Connect all remotes to normally "Off" output from battery units.

.2 Contractor is responsible for revisions to system, including relocations, aiming and additional remote heads as determined by testing results. All wiring shall be in accordance with manufacturer's recommendations.

.3 Use minimum #10 gauge or heavier if needed to provide a maximum voltage drop of 5 per cent. Consult manufacturer's table for sizing the minimum gage and length of wire runs permitted for connected loads to ensure a maximum voltage drop of 5 per cent from the battery unit to the farthest emergency remote, in accordance with OBC and local inspection authorities.

.3 Mounting: Suitable for wall mounting, complete with bracket from manufacturer lighting heads, test switch and diagnostic LED indicator shall be visible.

.4 Provide Voltage Sensing Relays internal or external to battery units to meet the intent of OESC Rule 46-304 (4). Unit equipment shall be installed in such a manner that it will be automatically actuated upon failure of the power supply to the normal lighting in the area covered by that unit equipment.

3.03 TESTING AND COMMISSIONING

.1 When installation of emergency lighting equipment is complete, contractor shall commission and test the entire system and adjust if necessary.

.2 Contractor is responsible for arranging and cost of a verification test of emergency illumination levels by the manufacturer’s representative.

.1 Verification test shall be performed with a lux/footcandle meter at 1 m intervals along all paths of egress throughout the space, and record light level readings on floor plans provided by the consultant.

.2 The contractor shall also provide consultant with a letter stating the recorded emergency lighting levels meet the OBC requirements of 10 lx (1 fc) average with minimum readings not less than 1 lx (0.1 fc) on the path of egress.

.3 The manufacturer is to provide a letter of verification confirming testing and operation of all emergency lighting as well as installation to all applicable codes.

.3 Contractor is to indicate in the letter the duration of emergency lighting run time that was observed.

.4 Testing shall be performed during non-daylight hours. Contractor shall aim all remotes to optimise illumination on the floor and stair.

.5 Contractor shall certify in writing to the consultant that the system is complete, installed per CSA C22.2 No. 141, has been tested, and operates for the specified battery run time.

.6 Contractor shall notify Owner and consultant at least ten days prior to proposed testing date and schedule testing at time and date acceptable to the Owner.

.7 Installation shall be in accordance to the electrical code and manufacturer's instructions.

.8 The Contractor is to submit a letter on Contractor's letterhead confirming the criteria specified above is met, including light levels, and run time, and include a copy of the plans with light levels recorded.

.9 Provide breaker lock on emergency lighting circuit at source panelboard.

3.04 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by emergency lighting installation.

3.05 TESTING, MAINTENANCE, AND WARRANTY SERVICE

.1 Provide complete instructions for the operation and care of the emergency power supply or unit equipment that shall specify testing at least once every month to ensure security of operation. Instructions to be framed under glass.

.2 OBC testing obligations: Owner's facility maintenance personnel are required to document one manual test of the battery units each month, and conduct one full discharge test once a year per OBC and CSA C22.2 No.141 requirements.

.3 Annual Maintenance: The manufacturer recommends maintenance to be performed by a qualified service provider. Contact the manufacturer for any warranty service.

End of Section