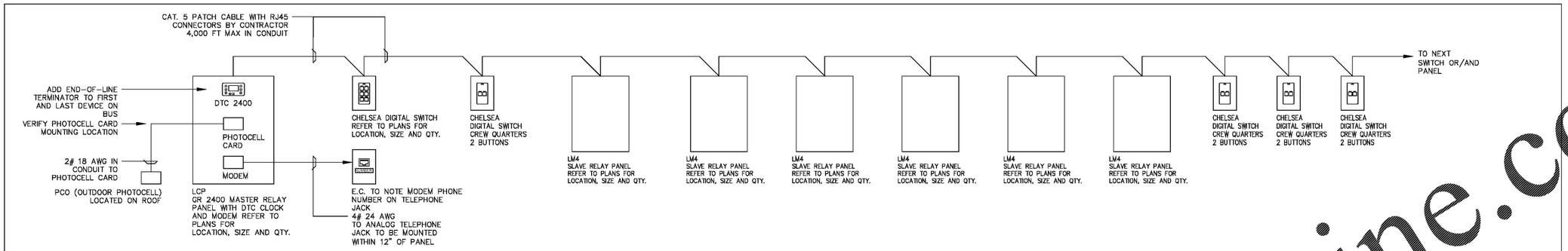
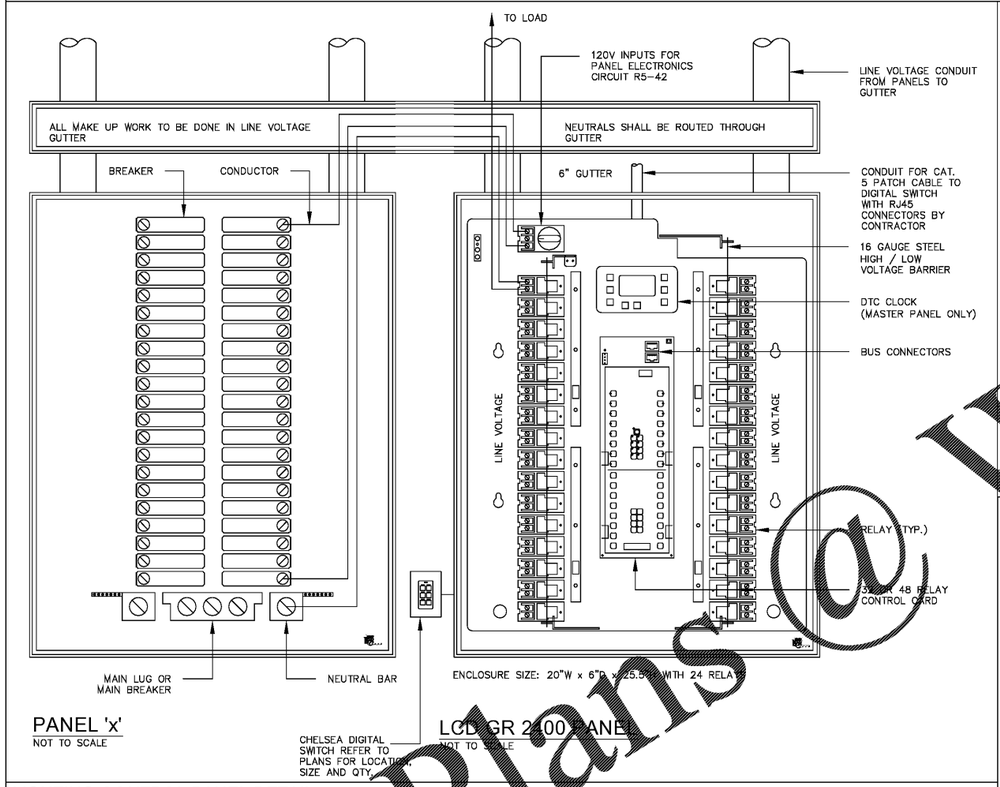


LIGHTING CONTROL ONE-LINE DIAGRAM

NOT TO SCALE



PANEL 'x'

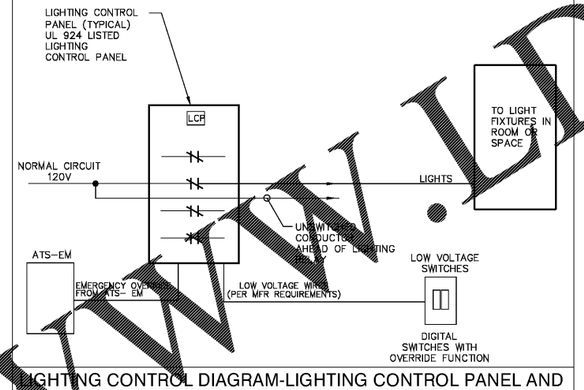
NOT TO SCALE

LCD GR 2400 PANEL

NOT TO SCALE

LIGHTING CONTROL PANEL DETAIL

NOT TO SCALE



LIGHTING CONTROL DIAGRAM-LIGHTING CONTROL PANEL AND GENERATOR TRANSFER DEVICE (GTD)

NOT TO SCALE

SPECIFICATION

1. LIGHTING CONTROL SYSTEM SHALL BE DIGITAL AND CONSIST OF A MASTER LCP (LM24) WITH 24 INDIVIDUAL RELAYS, AND SLAVE LM4 (TOTAL OF 6) WITH 4 INDIVIDUAL RELAYS, DIGITAL SWITCHES AND DIGITAL INTERFACE CARDS. ALL SYSTEM COMPONENTS SHALL CONNECT IN A "DAISY CHAIN" STYLE CONFIGURATION AND BE CONTROLLED VIA CATEGORY 5 PATCH CABLE WITH RJ45 CONNECTORS, PROVIDING REAL-TIME TWO-WAY COMMUNICATION WITH EACH SYSTEM COMPONENT. ANALOG SYSTEMS ARE NOT ACCEPTABLE. ALL CABLES SUPPLIED BY CONTRACTOR. MASTER LIGHTING CONTROL PANEL SHALL HAVE SOFTWARE CARD FOR COMMUNICATION INTERFACE WITH HVAC CONTROLS PANEL.
2. MASTER LIGHTING CONTROL SHALL BE UL924 LISTED FOR EMERGENCY LIGHTING. PROVIDE CONTACT AND INTERCONNECT THE LIGHTING CONTROL PANEL AND EMERGENCY TRANSFER SWITCH (EM). WHEN THE POWER IS TRANSFERRED TO EMERGENCY GENERATOR, THE LIGHTING CONTROL SHALL OVER-RIDE ALL LIGHTING CONTROL AND TURN ON ALL EMERGENCY LIGHTING.
3. LIGHTING CONTROL SHALL BE FAIL SAFE IN ON FUNCTION IN EVENT OF A DEVICE/ELECTRONICS FAILURE (THE LIGHTING CONTROL SHALL TURN ON ALL EMERGENCY LIGHTING.
4. RELAY PANELS SHALL BE PRE-WIRED, PRE-ASSEMBLED, PREPROGRAMMED AND LISTED TO UL916 (NORMAL) AND UL924 (EMERGENCY). PANELS SHALL BE PROVIDED WITH DUAL VOLTAGE POWER SUPPLY AND 16 GAUGE BARRIERS TO SEPARATE HIGH AND LOW VOLTAGE, NORMAL AND EMERGENCY POWER.
5. STANDARD RELAYS SHALL HAVE NORMALLY CLOSED (NC) CONTACTS RATED FOR 120V 20A TUNGSTEN, BALLAST OR HID. STANDARD RELAYS SHALL BE ZERO-CROSS TYPE. NO EXCEPTIONS. OPTIONAL 600V, 2-POLE RELAY, NO OR NC.
6. ALL INCANDESCENT LIGHTING CIRCUITS SHALL BE CONTROLLED BY A NC/SOFT START RELAY. NO EXCEPTIONS.
7. RELAY PANEL ELECTRONICS SHALL PROVIDE CURRENT VISUAL STATUS AND CONTROL OF EACH RELAY OR ZONE. ALL SYSTEM CONTROL ELECTRONICS SHALL STORE PROGRAMMING IN A NON-VOLATILE MEMORY AND PROVIDE 10 YEAR BATTERY BACK UP FOR TIME OF DAY.
8. LIGHTING CONTROL SYSTEM SHALL CONSIST OF MASTER AND SLAVE PANEL(S) CONTROLLED BY A 32-CHANNEL DIGITAL TIME CLOCK (DTC) THAT CONTROLS AND PROGRAMS THE ENTIRE LIGHTING CONTROL SYSTEM. THE DTC SHALL SUPPLY ALL TIME FUNCTIONS AND ACCEPT OTHER INPUTS. THE DTC SHALL ACCEPT CONTROL LOCALLY USING BUILT IN BUTTON PROMPTS AND THE USE OF AN 8 LINE 21-LETTER DISPLAY, FROM A COMPUTER, MODEM, ETHERNET OR INTERNET. ALL COMMANDS SHALL BE IN PLAIN ENGLISH. HELP PAGES SHALL DISPLAY ON THE DTC SCREEN.
9. ALL SWITCHES SHALL COMMUNICATE VIA RS 485, CAT 5 PATCH CABLE WITH RJ45 CONNECTORS. CONTACT CLOSURE STYLE SWITCHES ARE NOT ACCEPTABLE. ANY SWITCH BUTTON FUNCTION SHALL BE ABLE TO BE CHANGED LOCALLY (AT THE DTC OR A PC) OR REMOTELY, VIA MODEM, ETHERNET OR INTERNET. REFER TO SINGLE LINE DIAGRAM FOR WIRING DETAILS. SWITCHES WHICH CANNOT BE PROGRAMMED REMOTELY SHALL NOT BE ACCEPTABLE.
10. PHOTOCELL, EXTERIOR (PCO) OR INTERIOR (PCI), SHALL PROVIDE READOUT ON THE DTC SCREEN IN NUMBER VALUES ANALOGOUS TO FOOT-CANDLES. EACH PHOTOCELL SHALL PROVIDE A MINIMUM OF 14 TRIGGER POINTS. EACH TRIGGER CAN BE PROGRAMMED TO CONTROL ANY RELAY OR ZONE. EACH TRIGGER SHALL BE SET THROUGH DTC, LOCALLY OR REMOTELY. PHOTOCELLS THAT REQUIRE THE USE OF SET SCREWS OR MANUAL ADJUSTMENTS AT THE PHOTOCELL CONTROL CARD SHALL NOT BE ACCEPTABLE.
11. LIGHTING CONTROL SYSTEM INTERFACES TO INCLUDE A DRY CONTACT INPUT INTERFACE, BMS INTERFACE, ETHERNET/INTERNET INTERFACE. VERIFY AND INSTALL ONLY THOSE INTERFACES INDICATED ON THE PLANS.
12. STANDARD LIGHTING CONTROL SYSTEM SOFTWARE, PRE-INSTALLED INTO THE DTC, SHALL CONSIST OF AND USE STANDARD GRAPHICAL MANAGEMENT SOFTWARE (GMS) PAGES. GMS SOFTWARE SHALL PROVIDE, VIA LOCAL OR REMOTE PC, A VISUAL REPRESENTATION OF EACH DEVICE ON THE BUS, SHOW REAL TIME STATUS AND THE ABILITY TO CHANGE THE STATUS OF ANY INDIVIDUAL DEVICE, RELAY OR ZONE. OPTIONAL SOFTWARE THAT ACCEPTS JOB SPECIFIC GRAPHICS SHALL BE AVAILABLE.
13. START UP: EC SHALL CONTACT LC&D AT LEAST 7 DAYS BEFORE TURNOVER OF PROJECT. LC&D WILL REMOTELY DIAL INTO THE LIGHTING CONTROL SYSTEM, RUN DIAGNOSTICS AND CONFIRM SYSTEM PROGRAMMING. EC SHALL BE AVAILABLE AT THE TIME OF DIAL IN TO PERFORM ANY CORRECTIONS REQUIRED BY LC&D. EC IS RESPONSIBLE FOR COORDINATING WITH GC AND THE OWNER, THE INSTALLATION OF A DEDICATED TELEPHONE LINE OR A SHARED PHONE LINE WITH A/B SWITCH. PHONE JACK TO BE MOUNTED WITHIN 12" OF MASTER LCP. LABEL JACK WITH PHONE NUMBER. EC SHALL CONNECT PHONE LINE FROM JACK TO MASTER LCP.
14. TELEPHONE FACTORY DIAL-UP SUPPORT SHALL BE AVAILABLE AT NO ADDITIONAL COST TO THE EC OR OWNER BOTH DURING AND AFTER THE 3 YEAR WARRANTY PERIOD. FACTORY TO PREPROGRAM THE LIGHTING CONTROL SYSTEM PER PLANS AND APPROVED SUBMITTAL. THE LIGHTING CONTROL MANUFACTURER, AT NO ADDED COST, SHALL PROVIDE ADDITIONAL PROGRAMMING VIA MODEM AS REQUIRED BY THE EC OR OWNER FOR THE OPERATIONAL LIFE OF THE SYSTEM. MANUFACTURER WARRANTS THAT THE DTC SOFTWARE CAN BE UPGRADED AND MONITORED REMOTELY.
15. SHOP DRAWINGS: SUBMIT DIMENSIONED DRAWINGS OF LIGHTING CONTROL SYSTEM AND ACCESSORIES INCLUDING, BUT NOT NECESSARILY LIMITED TO, RELAY PANELS, SWITCHES, DTC, PHOTOCELLS AND OTHER INTERFACES. DRAWINGS SHALL INDICATE EXACT LOCATION AND PROGRAMMING OF EACH DEVICE. INDICATE ALL TIME SCHEDULES AND SWITCH BUTTON ENGRAVING.
16. LIGHTING CONTROL SYSTEM TO BE MANUFACTURED BY LIGHTING CONTROL & DESIGN, OR APPROVED EQUIVALENT.
17. CONTRACTOR SHALL INCLUDE MINIMUM (4) HOURS IN HIS BID PROPOSAL FOR OWNER'S TRAINING. THE TRAINING TO BE PERFORMED AFTER COMPLETION OF LIGHTING CONTROL SYSTEM.

ELECTRICAL LIGHTING RISER AND DETAILS

SCALE: N.T.S.

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SCALE: N.T.S.

ELECTRICAL LIGHTING SYSTEM RISER AND DETAILS

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X OF X

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