

ELECTRICAL SYMBOLS LEGEND

OUTLETS	FIXTURES	SERVICE and EQUIPMENT
⊕ SINGLE RECEPTACLE (120 VOLT)	⊕ LIGHT FIXTURE	⊕ TRANSIENT VOLTAGE SURGE SUPPRESSION
⊕ DUPLEX RECEPTACLE	⊕ STRIP FIXTURE	⊕ VARIABLE FREQUENCY DRIVE
⊕ EMERGENCY RECEPTACLE	⊕ IN-GRADE LIGHT FIXTURE	⊕ TRANSFORMER
⊕ DOUBLE DUPLEX RECEPTACLE	⊕ SPOTLIGHT (number of heads shown)	⊕ DISCONNECT SWITCH (fuse size shown)
⊕ FLUSH FLOOR BOX	⊕ EXIT SIGN (face & direction as shown)	⊕ MAGNETIC STARTER (BY X/C U.O.N.)
⊕ SURFACE FLOOR BOX	⊕ WALL MOUNT LIGHT FIXTURE	⊕ COMB. STARTER (BY X/C U.O.N.)
⊕ SPECIAL EQUIPMENT RECEPTACLE	⊕ CEILING LIGHT FIXTURE	⊕ PANELBOARD, SURFACE MOUNTED
⊕ TELEPHONE OUTLET	⊕ TRACK & FIXTURE	⊕ PANELBOARD, FLUSH MOUNTED
⊕ DATA OUTLET	⊕ STREET TYPE POLE FIXTURE	⊕ WEATHERHEAD
⊕ TELEPHONE / DATA OUTLET	⊕ POLE MOUNTED LIGHT FIXTURE	⊕ UTILITY METER, AS REQUIRED
⊕ POWER POLE	⊕ EXTERIOR WALL MOUNT LIGHT FIXTURE	⊕ CURRENT TRANSFORMERS
⊕ JUNCTION BOX	⊕ WALLPACK LIGHT FIXTURE	⊕ GENERATOR, KW SHOWN
⊕ WALL JUNCTION BOX	⊕ SPECIAL PURPOSE LIGHT FIXTURE	⊕ TELEPHONE TERMINAL BOARD
⊕ FULL JUNCTION BOX	⊕ HIGH BAY LIGHT FIXTURE	⊕ GROUND CONNECTION PER N.E.C.
⊕ UNDERFLOOR JUNCTION BOX	⊕ EMERGENCY EGRESS LIGHT FIXTURE (number of heads shown)	⊕ WIREWAY
SWITCHES	⊕ DOCK LIGHT FIXTURE	⊕ TRANSFER SWITCH
⊕ SINGLE-POLE SWITCH	CIRCUITRY and RACEWAYS	⊕ ENCLOSED CIRCUIT BREAKER
⊕ THREE-WAY SWITCH	— CONDUIT INSTALLED (by E.C.)	⊕ CAPACITOR
⊕ FOUR-WAY SWITCH	— CONDUIT INSTALLED (by others)	CONTROL
⊕ SWITCH WITH PILOT LIGHT	— CONDUIT STUB UP	⊕ THERMOSTAT
⊕ THERMAL OVERLOAD SWITCH	— CONDUIT STUB DOWN	⊕ PHOTOCELL (voltage as required)
⊕ MANUAL MOTOR SWITCH	— HOME RUN (with circuit numbers)	⊕ TIME CLOCK (24 hour U.O.N.)
⊕ KEY SWITCH	— END OF CONDUIT RUN	⊕ PUSHBUTTON STATION (number of buttons indicated)
⊕ TIME SWITCH	— END OF CONDUIT RUN, CAP AND STAKE	⊕ CONTROL TRANSFORMER
⊕ DIMMER SWITCH	— "CONDUIT RUN CONTINUES" INDICATION	⊕ LIGHTING CONTACTOR
MECHANICAL	— FLEXIBLE FITTINGS/CONNECTIONS	⊕ IRRIGATION CONTROLLER (120 volt x/Va connection by x/C)
⊕ SINGLE PHASE MOTOR	— WIREMOLD AS SPECIFIED	⊕ WALL MOUNT DUAL TECHNOLOGY SENSOR
⊕ THREE PHASE MOTOR	— FLUGMOLD AS SPECIFIED	⊕ SENSOR SWITCH CHMR-PC-ADC SERIES
⊕ RESISTANCE HEATER, KW SHOWN	— BUS DUCT	⊕ ULTRASONIC SENSOR - 360' - 2 CIRCUIT
⊕ PIPE TRACE HEATER	— UNDERFLOOR DUCT	⊕ SENSOR SWITCH CHMR-PDT-10-2P
⊕ ELECTRIC UNIT HEATER	SOUND and SIGNAL	⊕ ULTRASONIC SENSOR - 360' - 1000 SQ FT
⊕ ELECTRIC WATER HEATER	⊕ SPEAKER	⊕ SENSOR SWITCH CHMR-PDT-10
NURSE CALL	⊕ WALL MOUNTED SPEAKER	⊕ ULTRASONIC SENSOR - 360' - 500 SQ FT
⊕ NURSE CALL CONTROLLER	⊕ WALL MOUNTED SPEAKER / CLOCK COMBO	⊕ SENSOR SWITCH CHMR-PDT SERIES
⊕ MASTER STATION	⊕ SINGLE FACE CLOCK	⊕ SWITCH STYLE OCCUPANCY SENSOR
⊕ EMERGENCY PULL STATION	⊕ DUAL FACE CLOCK	⊕ SENSOR SWITCH U50-PDT SERIES
⊕ EMERGENCY PUSH STATION	⊕ VIDEO INPUT	POLE PACK
⊕ CODE BLUE STATION	⊕ AUDIO / VIDEO INPUT	⊕ SENSOR SWITCH MP20 SERIES
⊕ PENDENT INTERFACE	⊕ BELL	⊕ DIGITAL TIME SWITCH
⊕ BED / LIGHT INTERFACE	⊕ VOLUME CONTROL	⊕ WATT STOPPER T5-400
⊕ SINGLE BED STATION	⊕ BUZZER	
⊕ DUAL BED STATION	⊕ CHIME	
⊕ DOME LIGHT	⊕ TELEVISION OUTLET	
⊕ STAFF REGISTER STATION	⊕ MICROPHONE OUTLET	
⊕ STAFF STATION	⊕ INTERCOM OUTLET	
⊕ DUTY STATION	⊕ CAMERA	
DESIGNATIONS	⊕ DOOR CONTACT	
⊕ DEMOLITION NOTE	⊕ MOTION DETECTOR	
⊕ PLAN NOTE	⊕ BEAM DETECTOR	
⊕ ADDENDUM NOTE	⊕ KEY PAD	
	⊕ SECURITY SYSTEM CONTROL PANEL	
	⊕ CCTV CONTROL PANEL	
	⊕ CARD READER	
	⊕ STUDENT STATION	
	⊕ ADMINISTRATION STATION	
	⊕ TEACHER STATION	
	⊕ GLASS BREAK	

ABBREVIATIONS LEGEND

GC	GENERAL CONTRACTOR	P	POLE
GFI	GROUND FAULT INTERRUPTER	P.L.	PUMP
GND	GROUND	PB	FULL BOX
H	HUMIDIFIER	PANL	PANEL
HOA	HIGH INTENSITY DISCHARGE	PRV-	POWER ROOF VENTILATOR
HP	HAND-OFF-AUTO SELECTOR SWITCH	PVC	POLY VINYL CHLORIDE
HR	HORSEPOWER	PUR	POUR
HVAC	HEATING/VENTILATING/AIR CONDITIONING	RECEPT	RECEPTACLE
IG	ISOLATED GROUND	RGC	RIGID GALVANIZED STEEL CONDUIT
IMC	INTERMEDIATE METAL CONDUIT	RTU-	ROOF TOP UNIT
JB	JUNCTION BOX	SF-	SUPPLY FAN
LC	LIGHT CONTROL	SPEC	SPECIFICATIONS
LT	LIGHT	SU	SWITCH
LTG	LIGHTING	SUBD	SWITCHBOARD
LT FLEX	LIQUID TIGHT FLEXIBLE METAL CONDUIT	TCC	TEMPERATURE CONTROL CONTRACTOR
MAX	MAXIMUM	TR	TAMPER PROOF RECEPTACLE
MC	MECHANICAL CONTRACTOR	TS	TAMPER PROOF SWITCH
MCC	MOTOR CONTROL CENTER	TYP	TYPICAL
MIN	MINIMUM	UF	UNDER FLOOR
MLO	MAIN LUG ONLY	UH-	UNIT HEATER
MT	MOUNT	UL	UNDERWRITERS' LABORATORIES, INC.
MTD	MOUNTING	UNO	UNLESS NOTED OTHERWISE
MTG	MAKE-UP AIR UNIT	V	VOLTS
MJAU-	MAKE-UP AIR UNIT	VV	VERIFY LOCATION WITH OWNER
NC	NORMALLY CLOSED	W	WATTS
NIC	NOT IN CONTRACT	W/O	WITHOUT
NO	NIGHT LIGHT	W/P	WEATHER PROOF
NTS	NORMALLY OPEN	XFR	TRANSFORMER
	NOT TO SCALE		

DIVISION 26.000

ELECTRICAL SPECIFICATIONS

DESCRIPTION OF WORK
 WORK SHALL INCLUDE BUT NOT NECESSARILY BE LIMITED TO THE FOLLOWING:
 1. WIRING METHODS.
 2. LIGHTING CONTACTORS AND CONTROLS.
 3. LIGHTING.

STANDARDS
 MATERIALS AND EQUIPMENT SHALL CONFORM TO THE REQUIREMENTS OF IBC, MICHIGAN NFPA ULL, NEMA, A.D.A., AND RESPECTIVE PUBLICATIONS AND OTHER REQUIREMENTS SPECIFIED BELOW. ALL MATERIALS AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER.

CODES AND ORDINANCES
 CONPLY WITH ALL CODES AND ORDINANCES. BIDDERS SHALL INFORM THEMSELVES OF CODE REQUIREMENTS.

PERMITS, INSPECTION FEES, AND CODES
 THE CONTRACTOR SHALL OBTAIN AND PAY ALL PERMIT AND INSPECTION FEES. FINAL INSPECTION CERTIFICATES BY THE LOCAL ELECTRICAL INSPECTOR AND FIRE MARSHAL SHALL BE OBTAINED BY THE CONTRACTOR AND TURNED OVER IN DUPLICATE TO THE OWNER.

SUBMISSIONS
 SUBMIT SHOP DRAWINGS, WIRING DIAGRAMS, AND DESCRIPTIVE LITERATURE ON ALL MATERIALS AND EQUIPMENT. MAKE SUBMITTALS WITHIN THIRTY (30) DAYS AFTER THE SIGNING OF THE CONTRACT. SHIPMENT SHALL NOT BE RELEASED UNTIL DRAWINGS AND LITERATURE HAVE BEEN FINALLY APPROVED.

GUARANTEE
 PROVIDE GUARANTEE FOR ALL LABOR AND MATERIALS FOR ONE (1) YEAR AFTER OWNER'S WRITTEN ACCEPTANCE OF THE PROJECT. PROVIDE MANUFACTURER WARRANTY INFORMATION FOR PERIODS LONGER THAN ONE YEAR ON LIGHT FIXTURES.

LAYOUT OF THE WORK
 EXAMINE THE SITE AND ALL THE DRAWINGS BEFORE PROCEEDING WITH THE LAYOUT AND INSTALLATION OF THIS WORK. LOCATE ESSENTIALLY AS SHOWN ON THE DRAWINGS, BUT IN EXACT LAYOUT DETERMINED ON THE JOB, TO SUIT ACTUAL CONDITIONS. CONFER AND COOPERATE WITH OTHER TRADES ON THE JOB SO ALL PARTS WILL BE INSTALLED IN PROPER RELATIONSHIP. PRECISE LOCATION OF PARTS TO COORDINATE WITH OTHER WORK IS THE RESPONSIBILITY OF THE CONTRACTOR.

DEMOLITION
 CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND MATERIAL AS INDICATED ON THE DEMOLITION PLAN. LIGHT FIXTURES TO BE REUSED SHALL BE CLEANED AND RELAMPED BEFORE REINSTALLING IN NEW LOCATION. ALL REMOVED AND UNUSED LIGHTS AND EQUIPMENT SHALL BE TURNED OVER TO THE OWNER. ALL OTHER ITEMS SHALL BE REMOVED FROM THE SITE. EXISTING CONDUIT HOOKUPS MAY BE REUSED WHENEVER POSSIBLE. CONTRACTOR SHALL PATCH EXISTING WALL AND CEILING OPENINGS IN FINISHED AREAS UPON REMOVAL OF ELECTRICAL EQUIPMENT. CONTRACTOR SHALL ALSO PROTECT ALL EXISTING ELECTRICAL EQUIPMENT TO REMAIN DURING CONSTRUCTION PERIOD.

CUTTING AND PATCHING
 ALL NECESSARY CUTTINGS OF THE BUILDING CONSTRUCTION FOR THE NEW INSTALLATION OF THE WORK SHALL BE FURNISHED BY THE CONTRACTOR. NO STRUCTURAL MEMBERS OF THE BUILDING SHALL BE CUT WITHOUT PRIOR APPROVAL OF THE ARCHITECT. ALL NECESSARY PATCHING OF THESE SURFACES TO BE FURNISHED BY THIS CONTRACTOR.

WIRE AND CABLE
 ALL WIRING SHALL BE INSTALLED IN CONDUIT, TUBING, OR SURFACE METALLIC RACEWAY. CONDUCTORS SHALL BE CONTINUOUS BETWEEN OUTLETS OF JUNCTION BOXES WITH SPLICES MADE ONLY WITHIN SUCH BOXES. SOLID BARE PRESSURE-TYPE CONDUCTORS PROPERLY INSULATED SHALL BE USED FOR ALL JOINTS. NO WIRE SMALLER THAN #12 MAY BE USED UNLESS SPECIFICALLY SPECIFIED UNDER DESCRIPTIONS OF SPECIAL SYSTEMS. BRANCH CIRCUIT WIRING SHALL BE THHN.

OUTLET BOXES
 A STANDARD GALVANIZED OUTLET BOX, COMPLETE WITH PLASTER RING, IF NECESSARY, SHALL BE INSTALLED FOR EACH AND EVERY FIXTURE AND OUTLET SHOWN. EACH OUTLET SHALL BE RIGIDLY SUPPORTED FROM THE BUILDING CONSTRUCTION (INDEPENDENT OF THE RACEWAY SYSTEM). CEILING OUTLET BOXES SHALL BE 4-INCH OCTAGON, 1-1/2-INCH DEEP, WITH FIXTURE HICKEY, AND SUPPORTED TO WITHSTAND 80 LBS.

GROUNDING
 ALL ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN A MANNER APPROVED BY THE LOCAL INSPECTOR.

LIGHTING FIXTURES
 ALL LIGHTING FIXTURES AND COMPONENTS THEREOF SHALL BE U.L. AND E.T.L. APPROVED. CONTRACTOR SHALL FIELD VERIFY MOUNTING CONDITIONS AFTER EXISTING FIXTURES ARE REMOVED. IF ADDITIONAL DEMOLITION IS REQUIRED FOR MORE SUPPORT THE CONTRACTOR MUST NOTIFY THE ARCHITECT SO THE PROCESS CAN BE REVIEWED BEFORE PROCEEDING.

LIGHTING CONTACTORS
 ALL LIGHTING CONTACTORS SHALL BE U.L. APPROVED MULTIPOLAR LIGHTING CONTACTORS SQUARE D TYPE L OR EQUAL. 30A ELECTRICALLY HELD, 24V COIL VOLTAGE. SEE PLANS FOR POLES REQUIRED.

LIGHTING CONTROLS
 LIGHTING CONTROLS FOR THE EXTERIOR LIGHTING MUST BE CONTROLLED AND MONITORED BY THE EXISTING HONEYWELL/TRIDIMUM BUILDING AUTOMATION SYSTEM (BAS). BAS SYSTEM IS MAINTAINED BY CONTROL RESOURCE - DENNY MOINE (616) 184-2221. CONTROL INTEGRATION OF LIGHTING SHALL INCLUDE CREATION OF A NEW FLOOR PLAN TAB WITHIN THE EXISTING TRIDIMUM SOFTWARE VIEWED BY CATA STAFF. THE NEW GRAPHICS SHALL ALLOW CATA STAFF TO ADJUST TIME SCHEDULES FOR ALL FIVE LIGHTING CONTACTORS. INITIAL TIME SCHEDULES MUST BE COORDINATED WITH CATA STAFF DURING START-UP OF THE PROJECT. SOME CONTACTORS MAY REQUIRE MULTIPLE TIME SCHEDULES FOR ON/OFF CONTROL THROUGHOUT THE DAY. TIME CLOCK MUST UTILIZE ASTRONOMICAL CLOCK FOR DUSK TO DAWN CONTROL. NEW BUILDING FLOOR PLAN SHALL GRAPHICALLY SHOW WHEN THE LIGHTS ARE ON/OFF BY AREA AND INCLUDE A MANUAL OVERRIDE OF THE BAS CONTROL SYSTEM TO TURN THE LIGHTS ON/OFF. BAS CONTRACTOR SHALL INCLUDE ALL RELAYS, CONTROL MODULES AND LOW VOLTAGE WIRING REQUIRED TO INTERFACE WITH THE EXISTING CONTROL SYSTEM AND TO PROVIDE A COMPLETE AND WORKING SYSTEM. PROJECT CLOSEOUT AFTER THE CONTROL SYSTEM IS OPERATIONAL SHALL INCLUDE 4 HOURS OF TRAINING FOR CATA STAFF. TRAINING SHALL INCLUDE WRITTEN INSTRUCTIONS ON HOW TO CHANGE THE TIME PROGRAMS, IT SHALL ALSO INCLUDE DEMONSTRATION OF THE NEW GRAPHICS AND REMOTE MANUAL CONTROLS.

SUPPORTS AND HANGERS
 PROVIDE AND INSTALL NECESSARY STEEL BRACKETS, RODS, CLAMPS, ETC., FOR SUPPORT OF ALL WORK UNDER THIS CONTRACT.

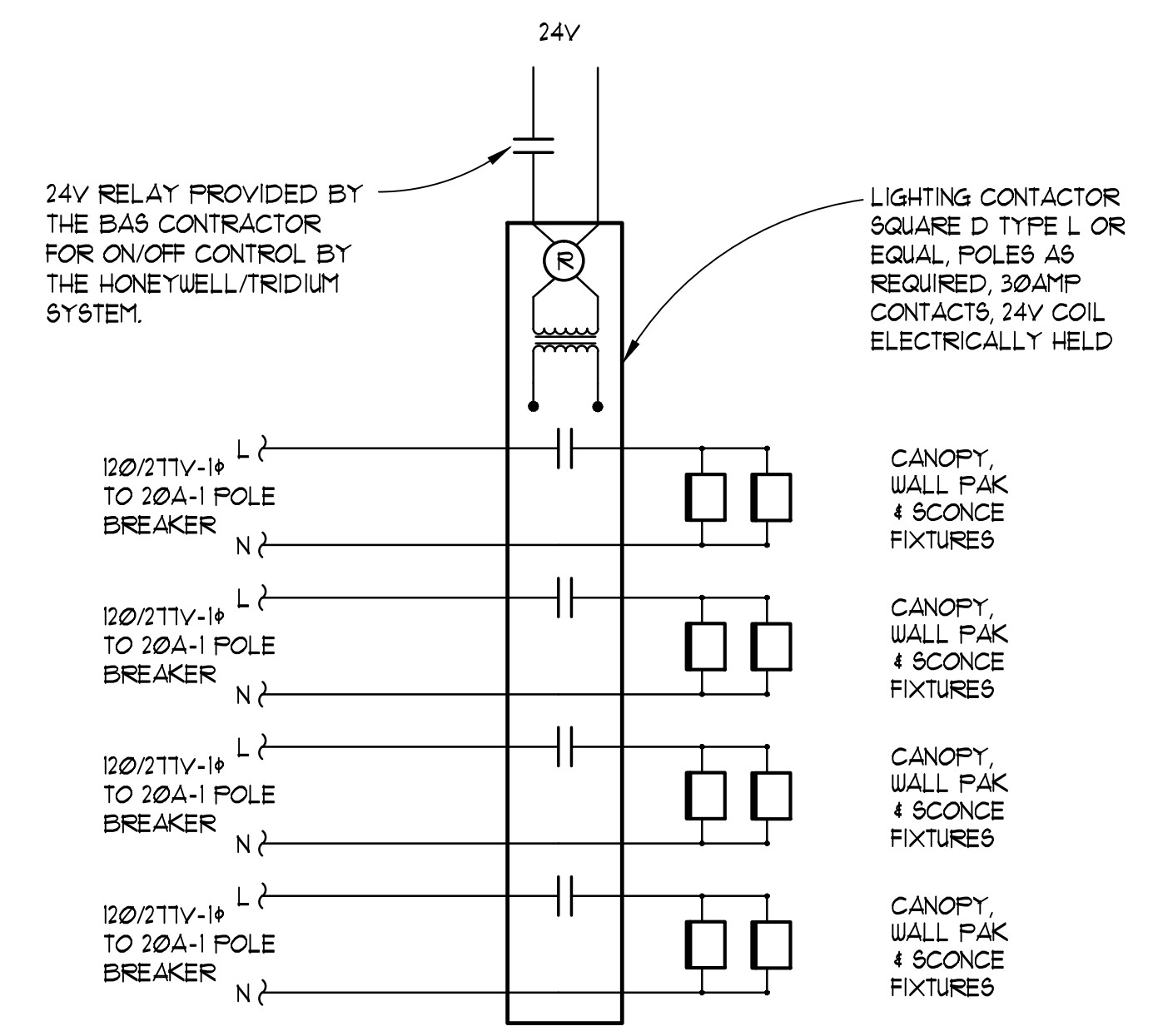
END OF DIVISION 26.000

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG NO.	DESCRIPTION AND COMMENTS	BALLAST INFO	FIXTURE MOUNTING HEIGHT	LAMPS
H	CREE KENALL MCGRAW-EDISON	CPY250-A-DM-F-A-UL-40K FT1-DTS-55-82L40K-DV-10KV-BG TT-A4-LED-E1-MQ	CANOPY MOUNTED TO REPLACE 12" RECESSED DOWNLIGHT, PROVIDE BACK PLATE TO ALLOW MOUNTING OVER EXISTING OPENING, EXTEND EXISTING CIRCUIT TO NEW FIXTURES, COLOR BY ARCHITECT.	NON-DIMMING	19'-1/2" IN CANOPY	LED
I	GOTHAM LUMENOPTIX PATHWAY	EVO CYL 4129 8AR MVOLT WM DWING CL91-12PW-HU-28-40-M-R1-A03 C3ULED3000K8VLED	WALL MOUNT CYLINDER DOWNLIGHT ONLY, REPLACE EXISTING FIXTURES.	NON-DIMMING	6'-1/2" WALL MOUNTED	LED
M	CREE KIM LIGHTING LITHONIA	FLD-EDG 25 AA 12 D UL WH 350 40K WD18 U4 E35 120L 4K 120 SH D5XFS3 LED 8 A530V40K 1PFL 120 IS DUWHD FRUB U	WALL MOUNT INDIRECT ATRIUM UP LIGHT, PROVIDE WALL MOUNTING BRACKET AND HARDWARE TO MOUNT IN THE EXISTING FIXTURE LOCATION.	NON-DIMMING	25'-1/2" WALL MOUNTED	LED

GENERAL ELECTRICAL NOTES

- ALL WALL AND FLOOR PENETRATIONS ARE TO BE SEALED TO MAINTAIN ORIGINAL RATING.
- ALL CONDUITS TO BE FIELD ROUTED ALONG EXISTING PIPING AND STRUCTURAL STEEL.
- THE DIVISION 26 CONTRACTORS SHALL VISIT THE PROJECT AND DETERMINE THE EXACT EXTENT OF THE DEMOLITION WORK REQUIRED BEFORE BIDDING THE PROJECT.
- REMOVE ALL EXISTING OBSOLETE EXPOSED CONDUIT, WIRE AND UNUSED EQUIPMENT WHERE WORK IS BEING DONE EXCEPT ITEMS NOTED OTHERWISE.
- WHERE BUILDING SURFACES ARE DAMAGED BY THE REMOVAL OF OLD WORK, SURFACES SHALL BE PATCHED TO MATCH ADJACENT.
- EXISTING WORK WHICH IS PRESENTLY CONCEALED AND WHICH WILL REMAIN CONCEALED AND DOES NOT INTERFERE WITH ANY NEW WORK OF ANY TRADE NEED NOT BE REMOVED, HOWEVER, ALL CONDUIT SHALL BE CARRIED BELOW FINISH SURFACE AND THEN PATCHED TO MATCH, OR AS NOTED.
- EXISTING OPENINGS, WHICH ARE TO BE REUSED, SHALL BE MODIFIED OR ENLARGED TO SUIT THE NEW SYSTEMS AS REQUIRED, PROVIDE ALL REQUIRED CUTTING AND PATCHING.
- IF ASBESTOS IS PRESENT, IT WILL BE REMOVED OR RENDERED HARMLESS UNDER SEPARATE CONTRACT BY THE OWNER.
- THE DIVISION 26 CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING THE EXISTING WALLS TO MATCH THE ADJACENT SURFACES BEHIND ALL SURFACE MOUNTED EQUIPMENT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CIRCUITING, MAXIMUM LIGHTING LOAD PER 20A-1P CIRCUIT IS 1400 WATTS, MAXIMUM RECEPTACLE LOAD PER 20A-1P CIRCUIT SHALL BE (8) DUPLEXES, 9/12 MOTOR OR EQUIPMENT CIRCUITS 125% OF RATED LOAD.
- CONTRACTOR SHALL FIELD VERIFY ALL EQUIPMENT VOLTAGES AND LOADS PRIOR TO INSTALLING SERVICE TO EQUIPMENT.
- DRAWINGS ARE BASED ON EXISTING DOCUMENTS AND CASUAL FIELD OBSERVATION. REPORT ANY DISCREPANCIES TO ENGINEER FOR CLARIFICATION.



TYPICAL LIGHTING CONTACTOR DETAIL
 SCALE: N.T.S.

EDLZ

MATRIX
 CONSULTING ENGINEERS, INC.

DRAWN: JLS
 CHECKED: JFS
 DESIGNED: JLS
 APPROVED: JLS
 DATE: DECEMBER 12, 2014
 SCALE: AS NOTED

PROJECT NUMBER
0941.6302.00

LANSING MICHIGAN
**CAPITAL AREA TRANSPORTATION AUTHORITY
 CATA TRANSFER CENTER (CTC) – LIGHTING UPGRADES**

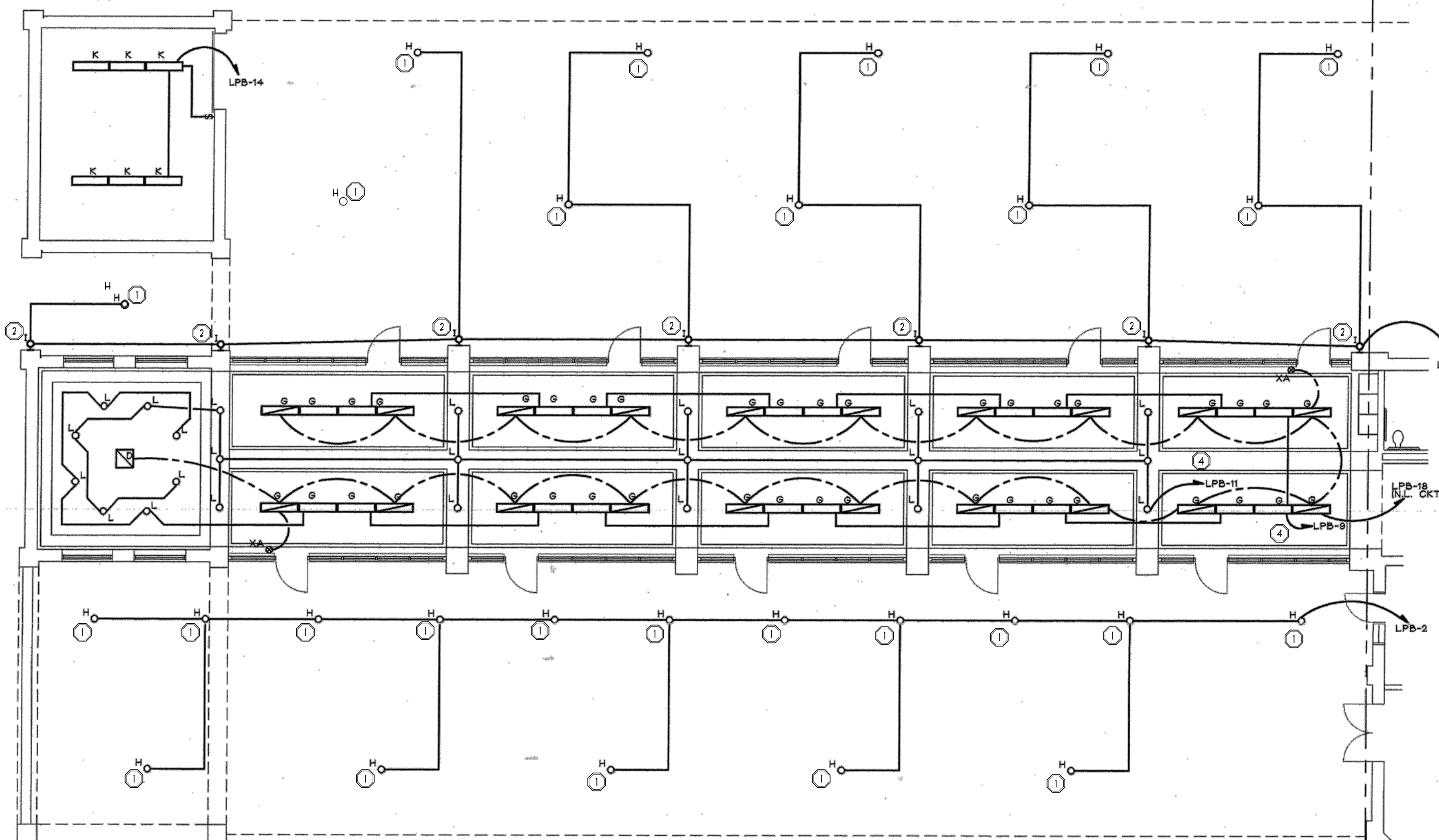
ELECTRICAL NOTES, DETAILS AND SCHEDULES

SHEET 2
 OF 5
 DRAWING NUMBER
EO

EXISTING LIGHT FIXTURE SCHEDULE

LIGHT FIX

MATCHLINE A-B



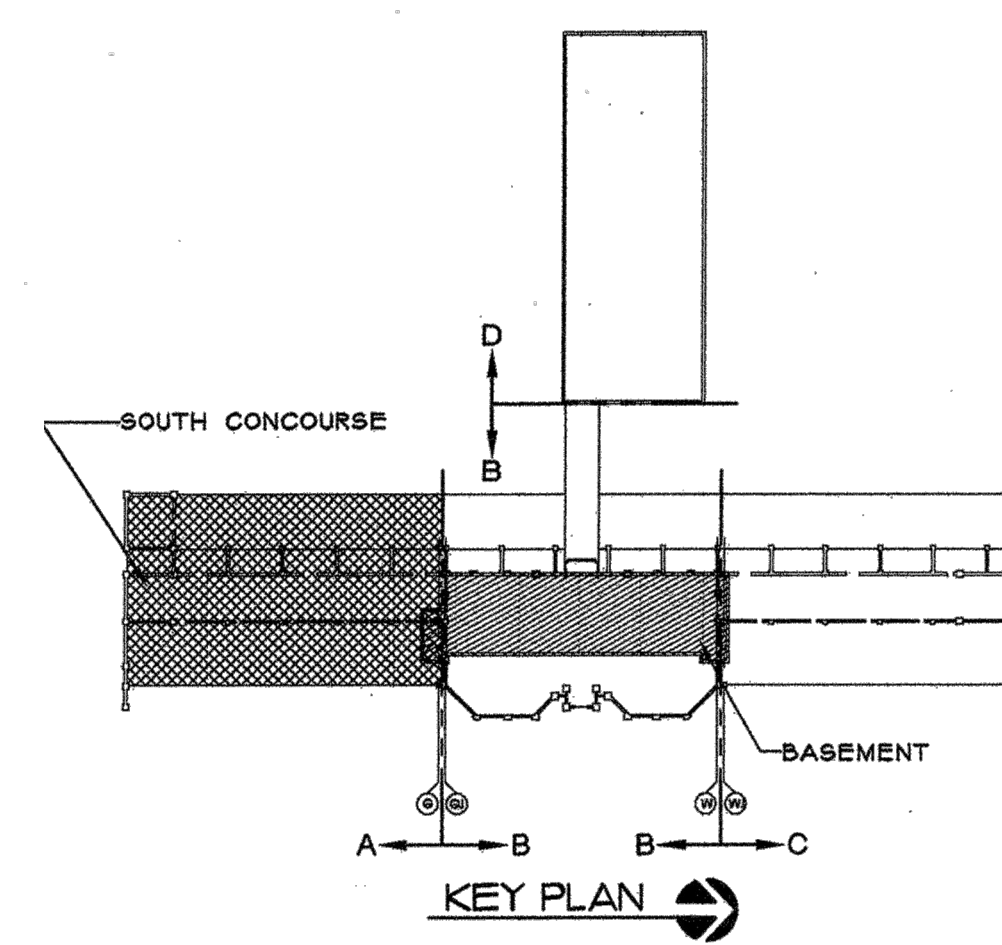
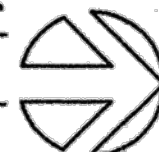
- A. METALUX CAT. # 2P3GX-432S46H-277V-EB81-GL: LAY IN GRID 2' X 4' PARABOLIC FLUORESCENT LIGHT FIXTURE WITH FOUR 32 WATT T8 RAPID START FLUORESCENT LAMPS AND ONE ELECTRONIC BALLAST. FIXTURE TO HAVE A 5-5/8" DEEP STEEL HOUSING WITH A BAKED WHITE POLYESTER POWDER ENAMEL FINISH, 24" CELL (4 X 6) 3" DEEP SEMI-SPECULAR/HAZE FINISHED LOUVER, AND SINGLE INTERNAL ELEMENT FUSING. FIXTURE TO OPERATE AT 277 VOLTS. EQUAL PRODUCT MANUFACTURERS: COLUMBIA OR LITHONIA.
- B. METALUX CAT. # 2P3GX-332S36H-277V-EB81-GL: THIS FIXTURE IS THE SAME AS LIGHT FIXTURE TYPE 'A' EXCEPT WITH THREE 32 WATT T8 RAPID START FLUORESCENT LAMPS AND AN 18 CELL (3 X 6) LOUVER.
- C. METALUX CAT. #2P3GX-2U6S44H-277V-EB81-GL: LAY IN GRID 2' X 2' PARABOLIC FLUORESCENT LIGHT FIXTURE WITH TWO 32 WATT U-SHAPED T8 RAPID START FLUORESCENT LAMPS AND AN ELECTRONIC BALLAST. FIXTURE TO HAVE A 5-5/8" DEEP STEEL HOUSING WITH A BAKED WHITE POLYESTER POWDER ENAMEL FINISH, A 18 CELL (4 X 4) SEMI-SPECULAR/HAZE FINISHED LOUVER, AND SINGLE INTERNAL ELEMENT FUSING. FIXTURE TO OPERATE AT 277 VOLTS. EQUAL PRODUCT MANUFACTURERS: COLUMBIA OR LITHONIA.
- D. METALUX CAT. #2P3GX-2U6S44H-277V-EB81-GL: THIS FIXTURE IS THE SAME AS LIGHT FIXTURE 'C', EXCEPT WITH A FLANGE TRIM FOR MOUNTING IN GYPSUM BOARD OR PLASTER CEILING.
- E. METALUX CAT. #6217-LTS-277V-EB81: SURFACE MOUNTED 4-1/4" X 27" LONG FLUORESCENT STAGGERED STRIP LIGHT FIXTURE WITH TWO 17 WATT T8 LAMPS AND AN ELECTRONIC BALLAST. FIXTURE TO HAVE A STEEL HOUSING WITH A BAKED WHITE ENAMEL FINISH, AND FIXTURE IS TO BE MOUNTED IN A CONTINUOUS ROW WITH LAMPS LIGHTING UPWARDS. FIXTURE IS FOR 277 VOLT OPERATION. EQUAL PRODUCT MANUFACTURERS: COLUMBIA OR LITHONIA.
- F. VISA CAT. #0W1042-277V: SURFACE MOUNTED COMPACT FLUORESCENT LIGHT FIXTURE WITH THREE 13 WATT TYPE QP15 COMPACT FLUORESCENT LAMPS AND A ZERO DEGREE FAHRENHEIT STARTING BALLAST. FIXTURE TO HAVE AN ALUMINUM HOUSING AND A WHITE ACRYLIC DIFFUSER. FIXTURE TO OPERATE AT 277V. EQUAL PRODUCT MANUFACTURERS: ADVENT OR MANNING.
- G. ARCHITECTURAL LIGHTING SYSTEMS CAT. #RL01-162-EFP: PENDANT MOUNTED INDIRECT FLUORESCENT LIGHT FIXTURES 1' X 4' LONG, WITH ELECTRONIC BALLASTS AND TWO 32-WATT T8 RAPID START FLUORESCENT LAMPS. FIXTURES TO HAVE CONTINUOUS MOUNTING RAIL WITH A HIGH REFLECTIVE WHITE FINISH. PERFORATED STEEL HOUSING WITH A WHITE FINISH, A WHITE OVERLAY DIFFUSING LIGHT THROUGH PERFORATIONS, 1/4" IPS PIPE STEMS, AND FUSING. FIXTURE IS FOR 277 VOLT OPERATION. EQUAL PRODUCT MANUFACTURERS: LINEAR OR LITECONTROL.
- H. KIRLIN CAT. #RR-51222-45-46-58: RECESSED 12" ROUND COMPACT METAL HALIDE LIGHT FIXTURE WITH ONE 175 WATT COATED ED-17 MEDIUM BASE VERTICAL METAL HALIDE LAMP AND A HIGH POWER FACTOR BALLAST. FIXTURE TO HAVE A SPECULAR ALZAK ALUMINUM REFLECTOR, WITH BLACK OPTIGROOVE, WHITE SELF-FLANGED TRIM, GASKETS BETWEEN TRIM AND CEILING AND BETWEEN TRIM AND LENS, A NICKEL PLATED BRASS SCREW SHELL, A PORCELAIN SOCKET, A LOW BRIGHTNESS PRISMATIC LENS, AN ACRYLIC ENAMELED ALUMINUM HOUSING, AND FUSING. FIXTURE IS FOR 277 VOLT OPERATION AND WET LOCATION. EQUAL PRODUCT MANUFACTURERS: LITHONIA, OR PRESCOLITE.
- I. KIRLIN CAT. #SR51234-WB-45-46-58: SURFACE MOUNTED ON WALL 12" ROUND, COMPACT METAL HALIDE LIGHT FIXTURE WITH ONE 175 WATT COATED ED-17 MEDIUM BASE VERTICAL METAL HALIDE LAMP AND A HIGH POWER FACTOR BALLAST. FIXTURE TO HAVE A SPECULAR ALZAK ALUMINUM REFLECTOR, WITH BLACK OPTIGROOVE, WHITE SELF-FLANGED TRIM, GASKETS BETWEEN TRIM AND HOUSING AND BETWEEN TRIM AND CEILING, A NICKEL PLATED BRASS SCREW SHELL, A PORCELAIN SOCKET, A LOW BRIGHTNESS PRISMATIC LENS, AN ACRYLIC ENAMELED ALUMINUM HOUSING, AND FUSING. FIXTURE IS FOR 277 VOLT OPERATION AND WET LOCATION. EQUAL PRODUCT MANUFACTURERS: LITHONIA, OR PRESCOLITE.
- J. METALUX CAT. #BE-217-HTS-277V-EB81: SURFACE MOUNTED 7-1/2" X 24-3/4" WALL BRACKET FLUORESCENT LIGHT FIXTURE WITH TWO 17 WATT T8 RAPID START FLUORESCENT LAMPS AND AN ELECTRONIC BALLAST. FIXTURE TO HAVE A 3-1/2" DEEP STEEL HOUSING WITH A BAKED WHITE ENAMEL FINISH, AND AN ACRYLIC LENS. FIXTURE IS TO OPERATE AT 277 VOLT OPERATION. EQUAL PRODUCT MANUFACTURERS: COLUMBIA, LITHONIA OR WILLIAMS.
- K. METALUX CAT. #WS-232-120V-EB81-GL: THIS FIXTURE IS THE SAME AS LIGHT FIXTURE 'J' EXCEPT FIXTURE IS FOR 120 VOLT OPERATION.
- L. KIRLIN CAT. #RR50925-FR-45-46-58: RECESSED 8" ROUND COMPACT METAL HALIDE LIGHT FIXTURE WITH ONE 100 WATT COATED ED-17 MEDIUM BASE HORIZONTAL METAL HALIDE LAMP AND A HIGH POWER FACTOR BALLAST. FIXTURE TO HAVE A SPECULAR ALZAK ALUMINUM REFLECTOR, WITH BLACK OPTIGROOVE, WHITE SELF-FLANGED TRIM, GASKETS BETWEEN TRIM AND CEILING AND BETWEEN TRIM AND LENS, A NICKEL PLATED BRASS SCREW SHELL, A PORCELAIN SOCKET, A LOW BRIGHTNESS PRISMATIC LENS, AN ACRYLIC ALUMINUM HOUSING AND FUSING. FIXTURE IS FOR 277 VOLT OPERATION. EQUAL PRODUCT MANUFACTURERS: EDISON PRICE, INFINITY, LITHONIA OR PRESCOLITE.
- M. ELLIPTIPAR CAT. #N406-0400-W-00-D-OR: SURFACE MOUNTED 23" LONG INDIRECT H.L.D. LIGHT FIXTURE WITH ONE 400 WATT T8 METAL HALIDE LAMP, AND AN INTEGRAL ENCAPSULATED, HIGH POWER FACTOR BALLAST IN A SCONCE ENCLOSURE. FIXTURE TO HAVE AN EXTRUDED SPECULAR ALUMINUM HOUSING, ADJUSTABLE REFLECTOR, HEAT AND IMPACT RESISTANT CLEAR PRISMATIC GLASS LENS, AND A 150 WATT TUNGSTEN HALOGEN AUXILIARY LAMP, AND STANDBY RELAY. FIXTURE IS FOR 277 VOLT OPERATION. EQUAL PRODUCT MANUFACTURERS: KIM OR SPI.
- N. VISA CAT. #CB3325-IF39-BA-BL-TL-277V: SURFACE MOUNTED UP AND DOWN LINEAR FLUORESCENT LIGHT FIXTURE WITH ONE 38 WATT TYPE F99 LINEAR FLUORESCENT LAMP AND HIGH FACTOR BALLAST. FIXTURE TO HAVE A TRANSLUCENT ACRYLIC DIFFUSER, BRUSHED SOLID ALUMINUM FINISH, BOTTOM AND TOP OPAL GLASS LENSES AND A RECESSED BALLAST BOX. FIXTURE IS FOR 277 VOLT OPERATION. EQUAL PRODUCT MANUFACTURER: ADVENT OR MANNING.
- O. HALO CAT. #L642P TRACK LIGHTING SYSTEM TO BE SURFACE MOUNTED WITH TWO CIRCUIT CAPABILITY, SWITCHED SEPARATELY. FIXTURE TO HAVE A WHITE FINISH, EXTRUDED ALUMINUM STRUCTURAL CHANNEL, SOLID COPPER BUS BAR CONDUCTORS ENCASED IN RIGID EXTRUDED PVC INSULATORS, AND POLARIZED CONNECTORS AND END CAPS MADE OF LEXAN. TRACK SYSTEM IS FOR 120 VOLT OPERATION.
 PROVIDE WITH EACH TRACK SYSTEM TWO HIGH INTENSITY DISPLAY LAMP HOLDERS, HALO CAT. #L3760P. EACH LAMP HOLDER TO HAVE A WHITE FINISH. PROVIDE WITH EACH LAMP HOLDER:
 1. ONE 250 WATT PAR 38 LAMP (HALO CAT. #Q250W PAR 38 CAP/SP).
 2. ONE CUBE CELL LOUVER (HALO CAT. #L275).
 3. ONE WARM RED COLOR FILTER (HALO CAT. #L212).
 4. ONE DAYLIGHT BLUE COLOR FILTER (HALO CAT. #L220).
 5. ONE MEDIUM AMBER COLOR FILTER (HALO CAT. L231).
 6. ONE MEDIUM GREEN COLOR FILTER (HALO CAT. L241).
 EQUAL PRODUCT MANUFACTURERS: LITHONIA OR PRESCOLITE.

ELECTRICAL KEY NOTES

- 1 DISCONNECT AND REMOVE THE EXISTING TYPE 'H' FIXTURES AND REPLACE WITH THE NEW LED FIXTURES AS SPECIFIED. COORDINATE REMOVAL WITH OWNER. THIS WORK WILL NEED TO BE COMPLETED AFTER BUS OPERATION HOURS OR POSSIBLY PHASED TO KEEP BUS OPERATION OPEN.
- 2 DISCONNECT AND REMOVE THE EXISTING TYPE 'I' FIXTURES AND REPLACE WITH THE NEW LED FIXTURES AS SPECIFIED.
- 3 DISCONNECT AND REMOVE THE EXISTING TYPE 'M' FIXTURES AND REPLACE WITH THE NEW LED FIXTURES AS SPECIFIED.
- 4 PROVIDE CONTACTOR SO THE CONTROL SYSTEM CAN MONITOR AND CONTROL THE CONCOURSE LIGHTING SIMILAR TO THE EXTERIOR LIGHTING. FIELD VERIFY CIRCUIT NUMBER.

FIRST FLOOR ELECTRICAL PLAN- AREA 'A'- LIGHTING

1/8" = 1'-0"



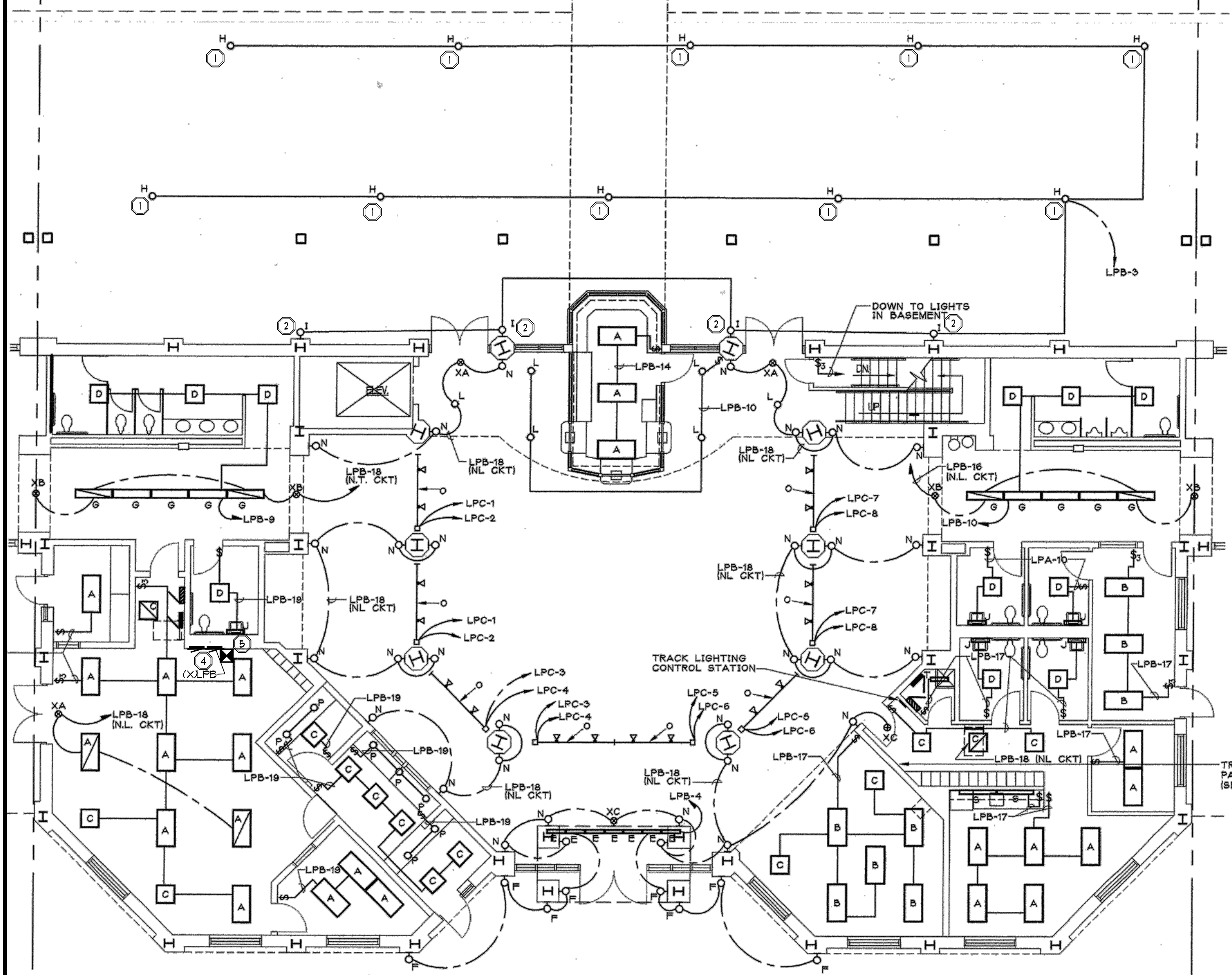
MATRIX
CONSULTING ENGINEERS, INC.

100 S. OAKLAND AVE.
LANSING, MI 48201
PHONE: (313) 224-1100
FAX: (313) 224-1100

DRAWN: JLS	CHK'D: JFS	DESIGNED: JLS	APPROV'D: JLS	DATE: DECEMBER 12, 2014	PROJECT NUMBER
				SCALE: AS NOTED	0941.6302.00
MICHIGAN CAPITAL AREA TRANSPORTATION AUTHORITY CATA TRANSFER CENTER (CTC) - LIGHTING UPGRADES					FIRST FLOOR LIGHTING PLAN - AREA 'A'
SHEET 3	OF 5	DRAWING NUMBER	E1		

MATCHLINE
A B

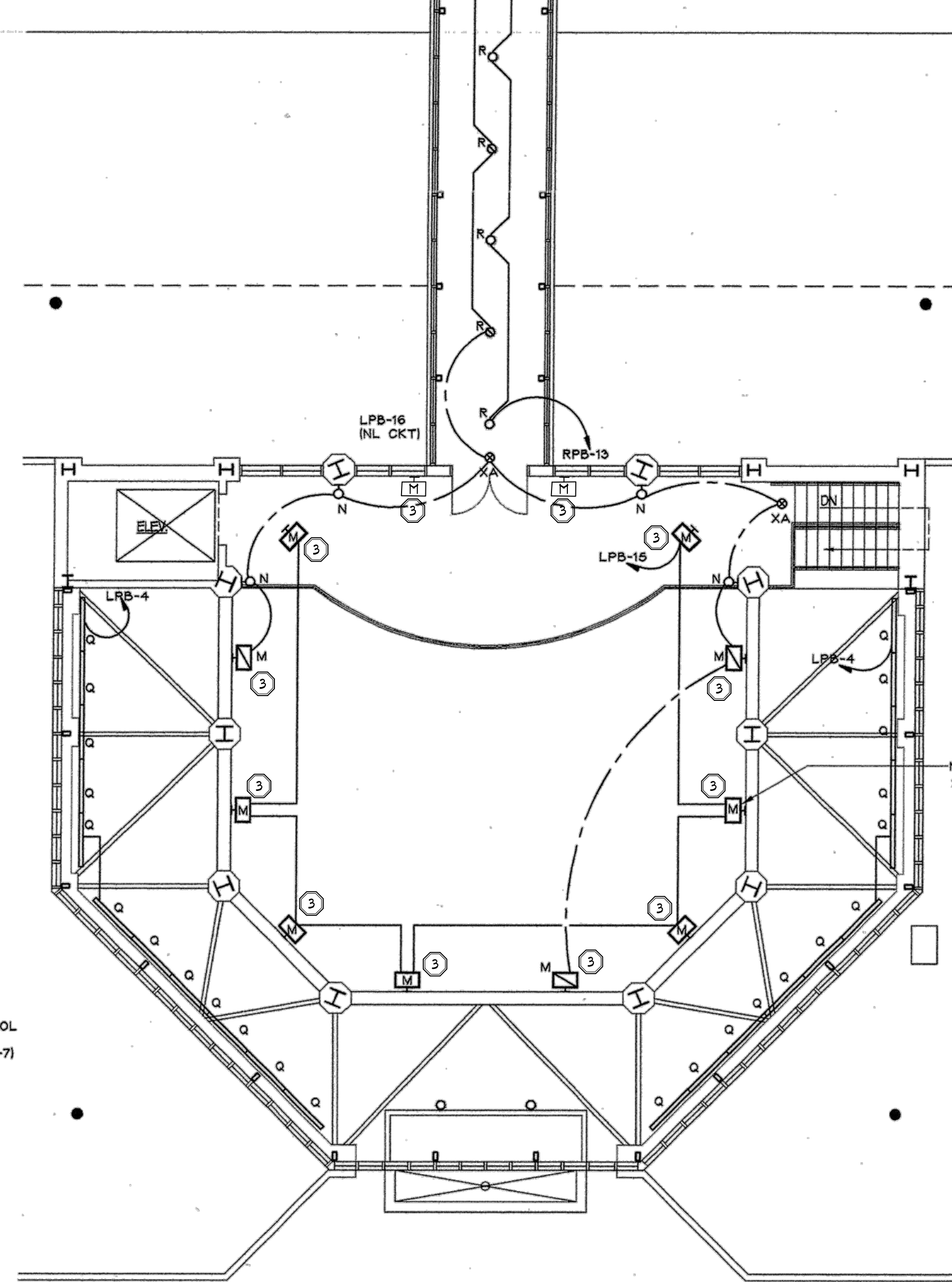
MATCHLINE
B C



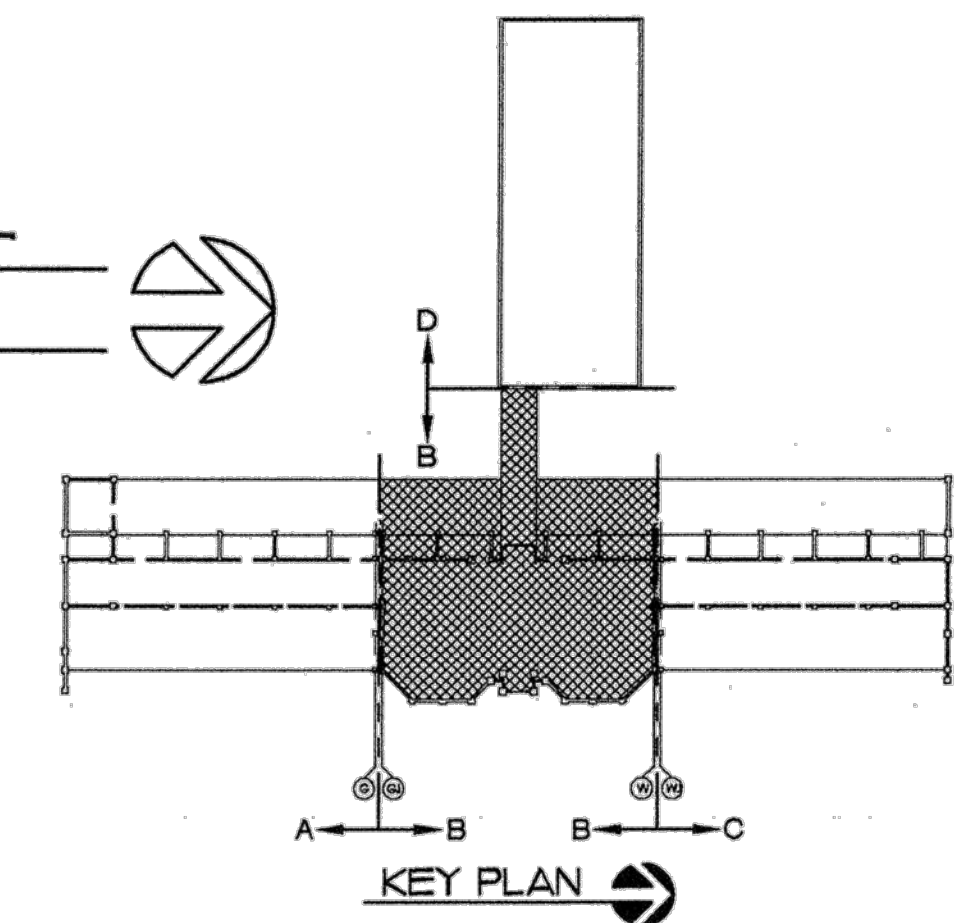
**FIRST FLOOR ELECTRICAL PLAN-
AREA "B" LIGHTING**
1/8" = 1'-0"

ELECTRICAL KEY NOTES

- 1 DISCONNECT AND REMOVE THE EXISTING TYPE "H" FIXTURES AND REPLACE WITH THE NEW LED FIXTURES AS SPECIFIED. COORDINATE REMOVAL WITH OWNER. THIS WORK WILL NEED TO BE COMPLETED AFTER BUS OPERATION HOURS OR POSSIBLY PHASED TO KEEP BUS OPERATION OPEN.
- 2 DISCONNECT AND REMOVE THE EXISTING TYPE "I" FIXTURES AND REPLACE WITH THE NEW LED FIXTURES AS SPECIFIED.
- 3 DISCONNECT AND REMOVE THE EXISTING TYPE "M" FIXTURES AND REPLACE WITH THE NEW LED FIXTURES AS SPECIFIED.
- 4 EXISTING RECESSED PANEL LPB. ALL LIGHT FIXTURES BEING REPLACED ARE FED FROM THIS PANEL. CIRCUIT WIRING MUST BE TRACED TO INSTALL A LIGHTING CONTROL TO CONTROL CIRCUITS 2, 3, 4, 6, 8, 9, 10, 13, 20 AND 22. DISABLE THE SWITCHABLE BREAKERS FROM THE PANEL CONTROL BUS WHEN THE NEW LIGHTING CONTROL IS COMPLETE SO THE BREAKER WILL ONLY BE USED AS THE OVERCURRENT DEVICE.
- 5 PROVIDE AND INSTALL A NEMA 1 ENCLOSURE WITH HINGED LOCKABLE COVER TO INSTALL OPEN STYLE LIGHTING CONTACTORS, BAS CONTROL MODULE, CONTROL RELAYS AND ASSOCIATED EQUIPMENT FOR THE LIGHTING CONTROL. PROVIDE (5) SEPARATE LIGHTING CONTACTORS FOR DIFFERENT CONTROL SCHEDULES AS NOTED IN THE SPECIFICATIONS. PROVIDE (1)-5 POLE (CKTS 1,3,4,6,9), (1)-3 POLE (CKTS 10,20,22), (2)-1 POLE (CKTS 8 AND 9) AND (1) - 6 POLE (CONCOURSE LIGHTING CKTS. FIELD VERIFY BREAKER NUMBERS) CONTACTORS. FIELD LOCATE EXISTING CIRCUITS AND RE-ROUTE THROUGH THE LIGHTING CONTACTORS FOR NEW CONTROLS. SURFACE MOUNT ENCLOSURE ABOVE THE PANEL. CONNECT BAS CONTROL MODULE TO LOCAL CONTROLLER OR DIRECTLY TO THE MAIN BAS CONTROL PANEL IN THE BASEMENT BELOW THE LPB PANEL. FIELD VERIFY CONDUIT ROUTING TO CONCEAL IN NON PUBLIC SPACES.

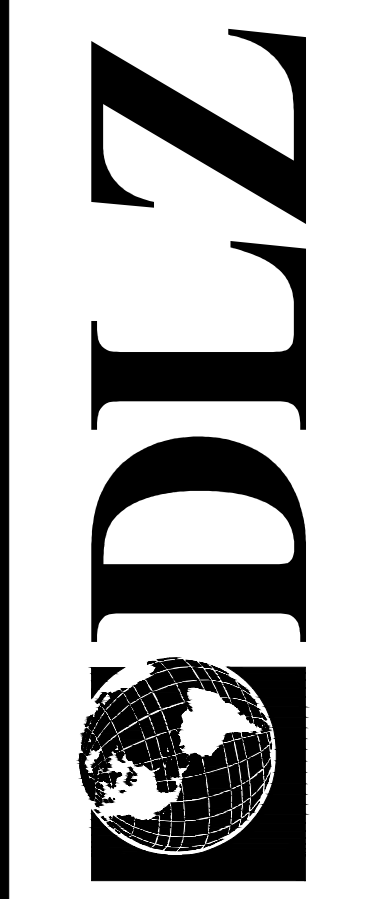


**MEZZANINE ELECTRICAL PLAN-
AREA "B" LIGHTING**
1/8" = 1'-0"



MOUNT LIGHT FIXTURE
25' ABOVE FIRST FLOOR
TO CENTER OF FIXTURE
(TYPICAL FOR ALL "M" TYPE
LIGHT FIXTURES)

TRACK LIGHT LIGHTING CONTROL
PANEL MOUNT 7'-6" A.F.F.
(SEE RISER DIAGRAM SHEET E-7)



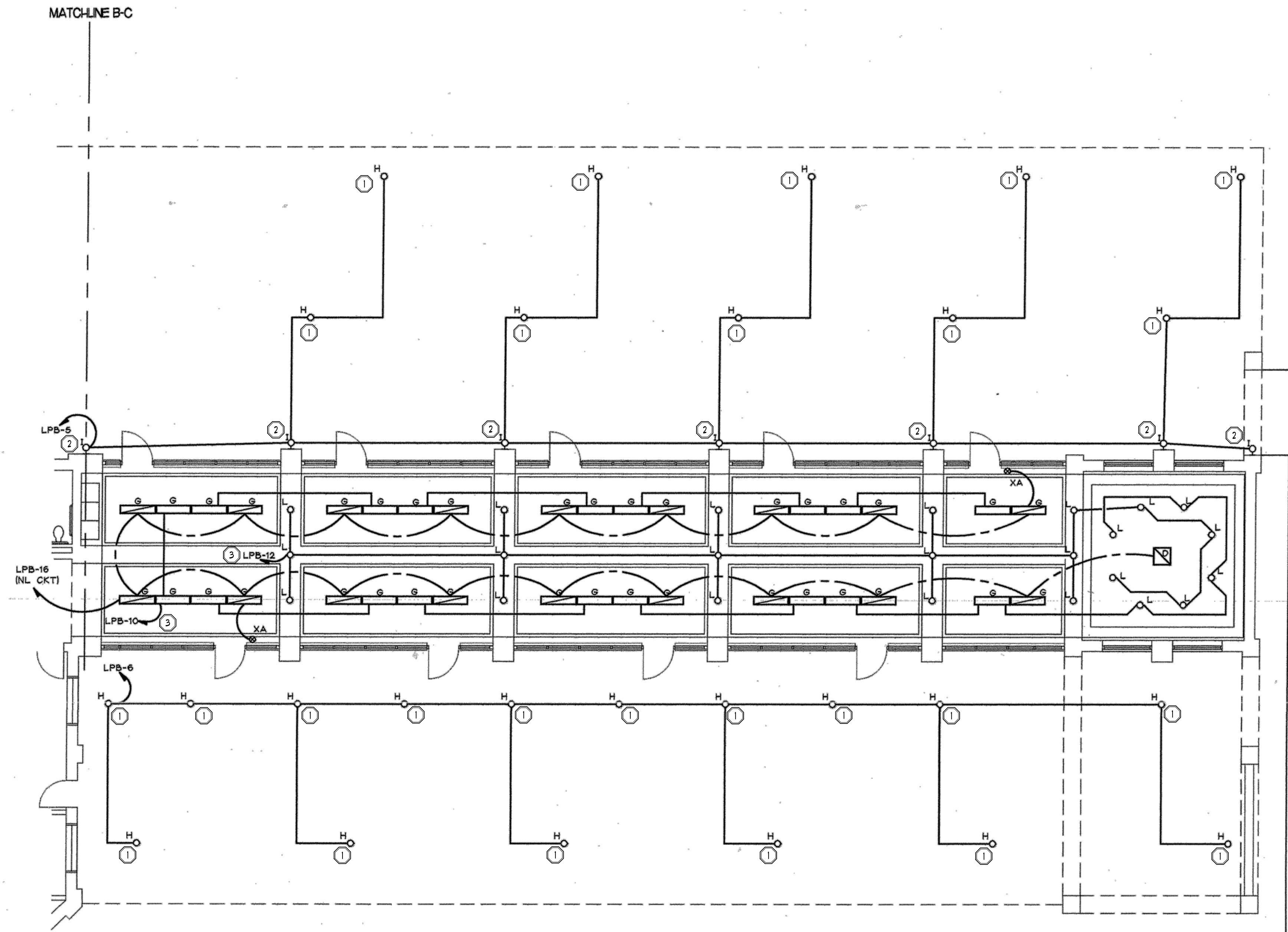
DRAWN: JLS
DESIGNED: JLS
DATE: DECEMBER 12, 2014
SCALE: AS NOTED

CHK'D: JFS
APPROV'D: JLS

PROJECT NUMBER
0941.6302.00

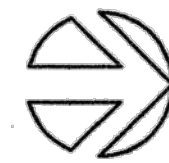
LANSING MICHIGAN
CAPITAL AREA TRANSPORTATION AUTHORITY
CATA TRANSFER CENTER (CTC) - LIGHTING UPGRADES
FIRST FLOOR LIGHTING PLAN - AREA 'B'

SHEET 4
OF 5
DRAWING NUMBER
E2



**FIRST FLOOR ELECTRICAL PLAN-
AREA "C"- LIGHTING**

1/8" = 1'-0"



ELECTRICAL KEY NOTES

- ① DISCONNECT AND REMOVE THE EXISTING TYPE 'H' FIXTURES AND REPLACE WITH THE NEW LED FIXTURES AS SPECIFIED. COORDINATE REMOVAL WITH OWNER. THIS WORK WILL NEED TO BE COMPLETED AFTER BUS OPERATION HOURS OR POSSIBLY PHASED TO KEEP BUS OPERATION OPEN.
- ② DISCONNECT AND REMOVE THE EXISTING TYPE 'L' FIXTURES AND REPLACE WITH THE NEW LED FIXTURES AS SPECIFIED.
- ③ PROVIDE CONTACTOR SO THE CONTROL SYSTEM CAN MONITOR AND CONTROL THE CONCOURSE LIGHTING SIMILAR TO THE EXTERIOR LIGHTING. FIELD VERIFY CIRCUIT NUMBER.

