

**GENERAL ELECTRICAL NOTES:**

- MINIMUM STANDARDS FOR ALL ELECTRICAL WORK SHALL BE THE LATEST REVISION OF THE NATIONAL ELECTRICAL CODE (NEC), WHICHEVER AND WHEREVER OSMA, FEDERAL AND STATE LAWS, REGULATIONS AND DESIGN CRITERIA REQUIRE HIGHER STANDARDS THAN NEC, THESE LAWS, REGULATIONS, AND DESIGN CRITERIA SHALL BE FOLLOWED.
- PROVIDE ELECTRICAL INSPECTION BY A LICENSED AND RECOGNIZED ELECTRICAL INSPECTOR. ALL COSTS INCIDENTAL TO ELECTRICAL INSPECTION SHALL BE BORNE BY THE CONTRACTOR. PRIOR TO FINAL ACCEPTANCE OF THE WORK AND RELEASE OF FINAL PAYMENT, DELIVER TO THE ENGINEER THE CERTIFICATE OF FINAL INSPECTION.
- UNLESS INDICATED OTHERWISE, INSTALL ALL WIRING IN RIGID METAL CONDUIT, ELECTRICAL METALLIC TUBING, OR FLEXIBLE CONDUIT AS SPECIFIED. ALL CONDUIT SHALL BE 3/4" OR LARGER.
- DO NOT INSTALL ELECTRICAL METALLIC TUBING UNDERGROUND, ON GRADE OR IN WET LOCATIONS. IN HAZARDOUS AREAS, OR FOR CIRCUITS OPERATING AT MORE THAN 600 VOLTS, METALLIC CONDUIT BURIED IN GROUND SHALL BE THREADED, RIGID STEEL CONDUIT ONLY. SCHEDULE 40 PVC MAY BE USED BELOW SLAB ON GRADE PROVIDED THAT ALL RISERS THROUGH THE SLAB ARE MADE WITH RIGID STEEL CONDUIT.
- UNLESS INDICATED OTHERWISE, PROVIDE NO. 12 AWG THIN OR LARGER FOR ALL BRANCH CIRCUIT CONDUCTORS. ALL CONDUCTORS SHALL BE 98% CONDUCTIVITY COPPER.
- ALL ELECTRICAL EQUIPMENT SHALL BE UL LISTED FOR THE APPLICATIONS IN WHICH IT IS UTILIZED.
- ALL CONDUIT SHALL BE INSTALLED CONCEALED EXCEPT IN DESIGNATED MECHANICAL ROOMS OR UNLESS INDICATED OTHERWISE HEREIN.
- A SEPARATE, INSULATED EQUIPMENT GROUND WIRE SHALL BE RUN CONTINUOUS TO ALL EQUIPMENT, LIGHTING FIXTURES AND RECEPTACLES.
- UNLESS INDICATED OTHERWISE, ALL INTERIOR AND EXTERIOR WIRING DEVICES SHALL BE INSTALLED FLUSH IN WALL, ELECTRICAL BOX LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE UNLESS DIMENSIONED.
- ALL EQUIPMENT DISCONNECT SWITCHES, MOTOR STARTERS, PUSHBUTTON STATIONS, PANELBOARDS AND SWITCHBOARDS SHALL BE CLEARLY IDENTIFIED USING ENGRAVED LAMINATED PLATES AS SPECIFIED.
- UNLESS INDICATED OTHERWISE, LOCATE STARTERS WITHIN SIGHT OF THEIR ASSOCIATED MOTORS. WHERE STARTER IS NOT WITHIN SIGHT OF MOTOR, PROVIDE A DISCONNECT DEVICE WITHIN SIGHT OF THE MOTOR. UNLESS INDICATED OTHERWISE, DISCONNECT DEVICES SHALL BE EITHER AN UNFUSED SWITCH OR NON-AUTOMATIC CIRCUIT BREAKER. SWITCHES SHALL BE UNFUSED AND CIRCUIT BREAKERS SHALL BE WITHOUT OVERCURRENT DEVICES.
- THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL POWER WIRING TO ALL MOTORS AND ALL LINE VOLTAGE FEEDERS TO ALL FACTORY CONTROL PANELS FURNISHED UNDER DIVISION 15. THE ELECTRICAL CONTRACTOR SHALL ALSO PROVIDE MOTOR STARTERS (3-PHASE) OR MOTOR RELAYS (SINGLE PHASE) AND DISCONNECTS FOR ALL MECHANICAL EQUIPMENT WHICH HAS NOT BEEN SPECIFIED TO HAVE FACTORY CONTROL PANELS OR FACTORY-MOUNTED MOTOR CONTROLS.
- IDENTIFY CIRCUITS CONTAINED IN EACH JUNCTION BOX ON EXTERIOR COVER WITH A PERMANENT MARKER, TAG EACH CONDUCTOR INSIDE.
- CHECK WITH OTHER TRADES ON SCOPE OF THEIR WORK AND COORDINATE ON ALL LOCATIONS OF VARIOUS ITEMS OF EQUIPMENT AND OUTLETS BEFORE THEY ARE FINALLY PLACED AND CONNECTED. RELOCATION OF MATERIAL OR EQUIPMENT NECESSITATED BY FAILURE TO COORDINATE WORK SHALL BE AT NO COST TO THE OWNER.
- PROVIDE FINISHING AT ALL FIRE SEPARATION WALLS AND FLOOR PENETRATIONS. REFER TO ARCHITECTURAL PLANS FOR DATED LOCATIONS.
- BREAKERS FOR BRANCH PANELS SHALL BE MOLDED CASE BOLT-IN TYPE. SINGLE BREAKERS IN BRANCH PANELS SHALL HAVE AN INTERRUPTING CAPACITY OF NOT LESS THAN 10,000 AMPS SYMMETRICAL AT 208/120 VOLTS AND 14,000 AMPS SYMMETRICAL AT 480/277 VOLTS. BREAKERS SHALL MATCH EXISTING PANELBOARD MANUFACTURER AND MODEL.
- ALL FUSES SHALL BE CURRENT LIMITING WITH 200,000 AMP. INTERRUPTING CAPACITY. ALL FUSES SHALL BE VOLTAGE RATED FOR THE SYSTEM IN WHICH THEY ARE INSTALLED. MANUFACTURERS: BUSMANN, GE, GOLD SWINART, OR LITTELFUSE.
- LIGHT FIXTURES SHALL CONSIST OF, BUT NOT BE LIMITED TO LAMPS, LAMPHOLDERS, REFLECTORS, BALLASTS, STARTERS AND WIRING. FLUORESCENT LAMPS SHALL BE F32T12 RAPID START ENERGY SAVING TYPE.
- EACH BALLAST SHALL BE ENERGY SAVING TYPE AND SHALL MEET REQUIREMENTS OF CERTIFIED BALLAST MANUFACTURERS.
- FLUORESCENT EMERGENCY BATTERY PACKS FOR FLUORESCENT LAMPS SHALL POWER TWO LAMPS AT 1400 LUMENS FOR 90 MINUTES.
- SET LIGHTING FIXTURES AND EQUIPMENT PLUMB, SQUARE, AND LEVEL AND SECURE TO STRUCTURAL SUPPORT MEMBERS OF THE BUILDING. RECESSED AND SEMI-RECESSED FIXTURES SHALL BE SUPPORTED INDEPENDENT OF SUSPENDED CEILING SYSTEM.

**LIGHT FIXTURE SCHEDULE:**

- A ADJUSTABLE AIRCRAFT CABLE MOUNTED LUMINAIRE WITH WIRE GUARD AND HIGH IMPACT CLEAR ACRYLIC LENS, WIDE BODY CONSTRUCTION FOR 6 LAMPS CROSS SECTION 1530 SERIES LAMPS. BALLAST SHALL BE RATED FOR 55 DEGREE C AND UNIT PROVIDED WITH 4 CONDUCTOR SUPPLY CORD FOR MULTI LEVEL LIGHTING OPERATION, BEVELED WIRING REFLECTOR SURROUND EACH LAMP FOR OPTIMUM EFFICIENCY, PRECISION DIE FORMED EMBOSSED STEEL HOUSING, ARCHITECTURAL POST PAINTED FINISH ELIMINATES EXPOSED EDGES FOR SAFE HANDLING. LOW PROFILE, MULTI LEVEL SWITCHING CAPABILITY, TOP ACCESS PLATE, ROTABLE ENDS PROVIDE ACCESS TO WIRING CHAMBER, RINGED REFLECTOR PANEL/ACCESS DOOR. FIVE YEAR LIMITED WARRANTY. PROVIDE UNISTRUT SUPPORT AS REQUIRED. EXCELNINE FLW-654-HA-EB2 FLWYTM-C-8-12C/4COND-FF/FG1E5 CABLE AND HANGERS. HOLOPHANE EQUAL. LITOMINA EQUAL.
- AE SAME AS LF-J EXCEPT TO HAVE 1400 LUMEN EMERGENCY BATTERY PACK WIRED TWO LAMPS
- B EXTERIOR WALL MOUNTED FLUORESCENT LIGHT FIXTURE WITH INJECTION MOLDED POLYCARBONATE LENS, 277 VOLT TFF BALLAST, AND 28 WATT QUAD TUBE LAMP. MOUNT FIXTURE 4" ABOVE CEILING. PROVIDE FIXTURE WITH FIELD SHIELD. HOUSING SHALL HAVE DARK BRONZE FINISH. UL LISTED FOR WET LOCATIONS. PROVIDE WITH PHOTOCELL. FA-SAFE 1000-W-284-277-FB-277V LITOMINA, KEVAL, LUMINAIRE EQUALS
- C FIXTURE SHALL BE A SURFACE MOUNTED TWO LAMP BATTERY COVERED FLUSH IN WALL ELECTRICAL BOX LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE UNLESS DIMENSIONED. PROVIDE WITH 24 WATT QUAD TUBE LAMP. MOUNT 9 FT. A.F.F. OPERATION. CAST ALUMINUM HOUSING. HEAVY WALL CLEAR TEMPERED GLASS LENS. LITOMINA, KEVAL, LUMINAIRE EQUALS
- D FIXTURE SHALL BE AN EMERGENCY DUAL LAMP 42 WATT COMPACT FLUORESCENT FIXTURE PROVIDED IN EMERGENCY MODE BY TYPE H FIXTURE. MOUNT AT 15" ABOVE FINISHED GRADE. UL LISTED FOR WET LOCATIONS. 277 VOLT OPERATION. CAST ALUMINUM HOUSING. HEAVY WALL CLEAR TEMPERED GLASS LENS. LUMINIS TP200 CF242 277V
- E UNIVERSAL MOUNTED DIE CAST STEEL SINGLE FACE LED EXIT SIGN WITH SOLID STATE CHARGER, CHARGER LIGHT, NICKEL CADMIUM BATTERIES, WHITE FINISH WITH RED STENCIL. LITOMINA LE 5 1 FT 120/277V EM EXIT SIGN. LITOMINA, KEVAL, LUMINAIRE EQUALS
- F FOUR FOOT CHAIN MOUNTED INDUSTRIAL WITH 277 VOLT 10% THD ELECTRONIC BALLAST. WHITE ENAMEL FINISH, AND FOUR T320 FLUORESCENT LAMPS. PROVIDE WITH WIRE GUARD. MOUNT 9 FT. A.F.F. DYNALITE, HUBBELL, METALUX EQUALS
- FE SAME AS TYPE F EXCEPT TO HAVE PRE-INSTALLED FACTORY INSTALLED AND UNCONDITIONAL THREE YEAR FACTORY GUARANTEED INVERTER WITH POLARIZED QUICK-CONNECT LIGHT SWITCH ASSEMBLY, SEALED MAINTENANCE FREE NICKEL CADMIUM RECHARGEABLE BATTERIES, SOLID STATE CHARGER WHICH SHALL PRODUCE 1400 LUMENS FOR 90 MINUTES. LITOMINA EAS2 277V6 EL14 HUBBELL, COLUMBIA
- G FIXTURE SHALL BE A 250 WATT METAL HALIDE WALL PACK WITH DIE-CAST ALUMINUM HOUSING, SEED-BEAN ALUMINUM REFLECTOR, HEAT RESISTANT PRISMATIC BOROSILICATE GLASS REFLECTOR, 100% RESISTANT TEXTURED DARK BRONZE FINISH. UL LISTING FOR WET LOCATION AND ONE - 250 WATT METAL HALIDE LAMP. MOUNT 15 FT. ABOVE FINISHED GRADE. PROVIDE WITH PHOTOCELL. HUBBELL 596-250W-10-AT-PC 277V POWERLITE, CEN, LUMINA, KEVAL, LITOMINA EQUALS
- H FLUORESCENT TYPE EMERGENCY POWER SYSTEM. UNIT SHALL POWER 84 WATTS OF EMERGENCY POWER DURING A POWER OUTAGE. UNIT SHALL PROVIDE 90 MINUTES OF EMERGENCY POWER TO CONNECTED LOAD. 22 GAUGE STEEL CABINET WITH BASED ON CORROSION RESISTANT POWDER COAT PAINT. MAINTENANCE FREE LEAD CALCIUM BATTERY. UNIT SHALL CARRY A FULL 5 YEAR WARRANTY FROM DATE OF SHIPMENT. THE BATTERY SHALL CARRY A 7 YEAR PRO RATA WARRANTY. UNIT SHALL BE PROVIDED WITH REMOTE TEST SWITCH. HEAVY-LITE PFC-84-15-RT 277V SURE-LITE, EMER-LITE EQUALS

**ELECTRICAL SYMBOL LIST**

	2' x 4' FLUORESCENT LIGHTING FIXTURE. (LETTER DENOTES TYPE, SEE SPECIFICATIONS)		MOTOR OR MOTOR OUTLET
	FLUORESCENT LIGHTING FIXTURE PROVIDED WITH EMERGENCY BATTERY.		MOTOR NUMBER
	1' x 4' FLUORESCENT LIGHTING FIXTURE		HOMERUN
	1' x 4' FLUORESCENT LIGHTING FIXTURE PROVIDED WITH EMERGENCY BATTERY.		CONCEALED CONDUIT BELOW FLOOR SLAB.
	STRIP OR INDUSTRIAL TYPE FLUORESCENT LIGHTING FIXTURE.		CONCEALED CONDUIT IN WALLS OR ABOVE CEILING.
	STRIP OR INDUSTRIAL TYPE FLUORESCENT LIGHTING FIXTURE PROVIDED WITH EMERGENCY BATTERY.		OUTLET BOX
	CEILING MOUNTED LIGHTING FIXTURE PROVIDED WITH EMERGENCY BATTERY.		REFERENCE NUMBER TO SHEET NOTE.
	WALL MOUNTED TYPE LIGHTING FIXTURE.		WORKSTATION OUTLET: (1) DATA, (1) VOICE AND (1) VIDEO/TV PORT
	WALL MOUNTED TYPE LIGHTING FIXTURE PROVIDED WITH EMERGENCY BATTERY.		WORKSTATION OUTLET: (1) DATA AND (1) VOICE PORT
	DIRECTIONAL SIGN (EXIT, STAIRS, ETC.) WITH ARROW(S) WHERE REQUIRED.		WORKSTATION OUTLET: DATA PORTS ONLY (NUMBER DENOTES NUMBER OF PORTS)
	SWITCH: SINGLE POLE, 3-WAY, 4-WAY		WORKSTATION OUTLET: VOICE/PHONE PORT ONLY
	SWITCH: WITH PILOT LIGHT, KEY OPERATED.		WORKSTATION OUTLET: VIDEO/TV PORT ONLY
	MOTOR STARTER SWITCH WITH OVERLOADS.		
	SINGLE CONVENIENCE RECEPTACLE, 125V, GROUNDING TYPE.		
	DUPLEX CONVENIENCE RECEPTACLE, 125V, GROUNDING TYPE.		
	DUPLEX CONVENIENCE RECEPTACLE, 125V, GROUND FAULT INTERRUPTER TYPE.		
	DUPLEX RECEPTACLE, 125V, WITH SURGE SUPPRESSION.		
	DUPLEX RECEPTACLE, 120V, WEATHER PROOF.		
	RECEPTACLE, 250V, 2P, 3W SINGLE PHASE		
	RECEPTACLE, 250V, 3P, 4W THREE PHASE		
	QUAD RECEPTACLE, 125V.		
	QUAD RECEPTACLE, 125V, WITH SURGE SUPPRESSION.		
	PANELBOARD		
	DISCONNECT SWITCH		
	MAGNETIC MOTOR STARTER		
	COMBINATION STARTER/DISCONNECT SWITCH		
	MAGNETIC MOTOR STARTER		
	COMBINATION STARTER/DISCONNECT SWITCH		
	UTILITY MARKER		

NOTES:  
1. ALL SYMBOLS SHOWN ABOVE ARE NOT NECESSARILY USED ON THIS PROJECT.

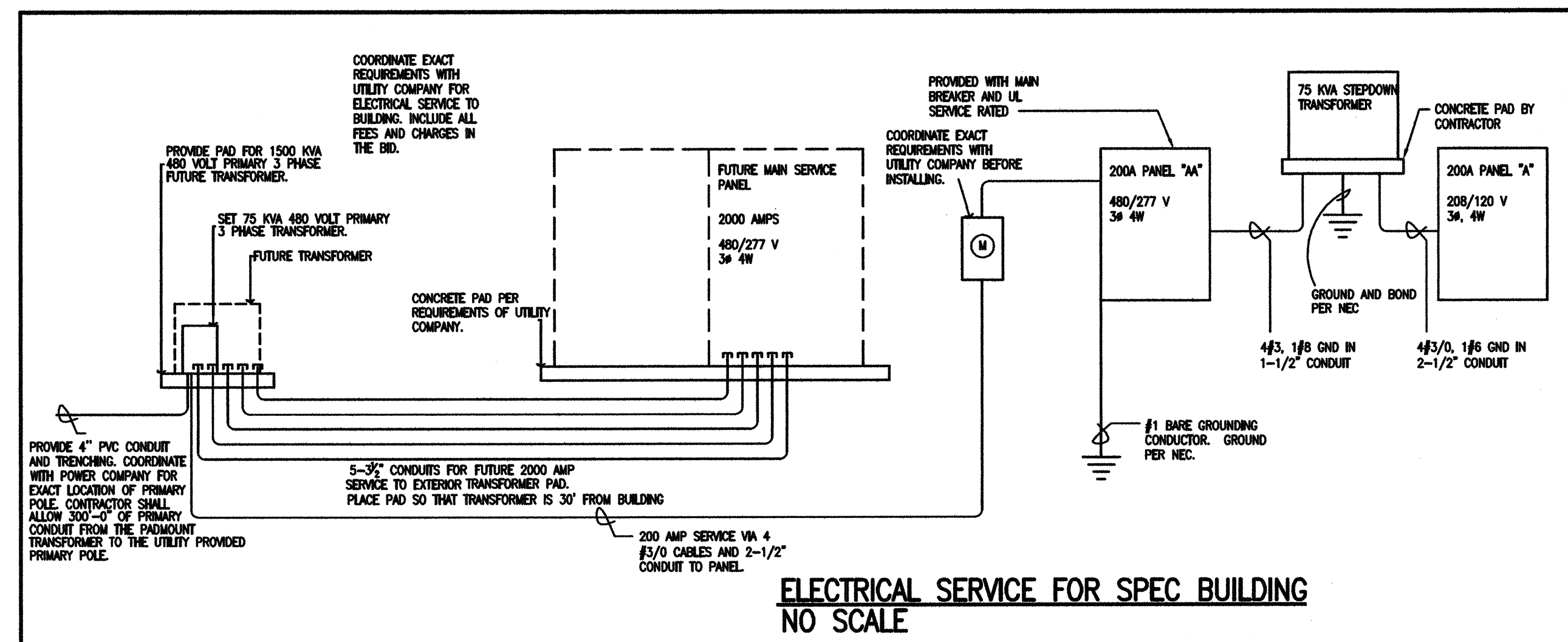
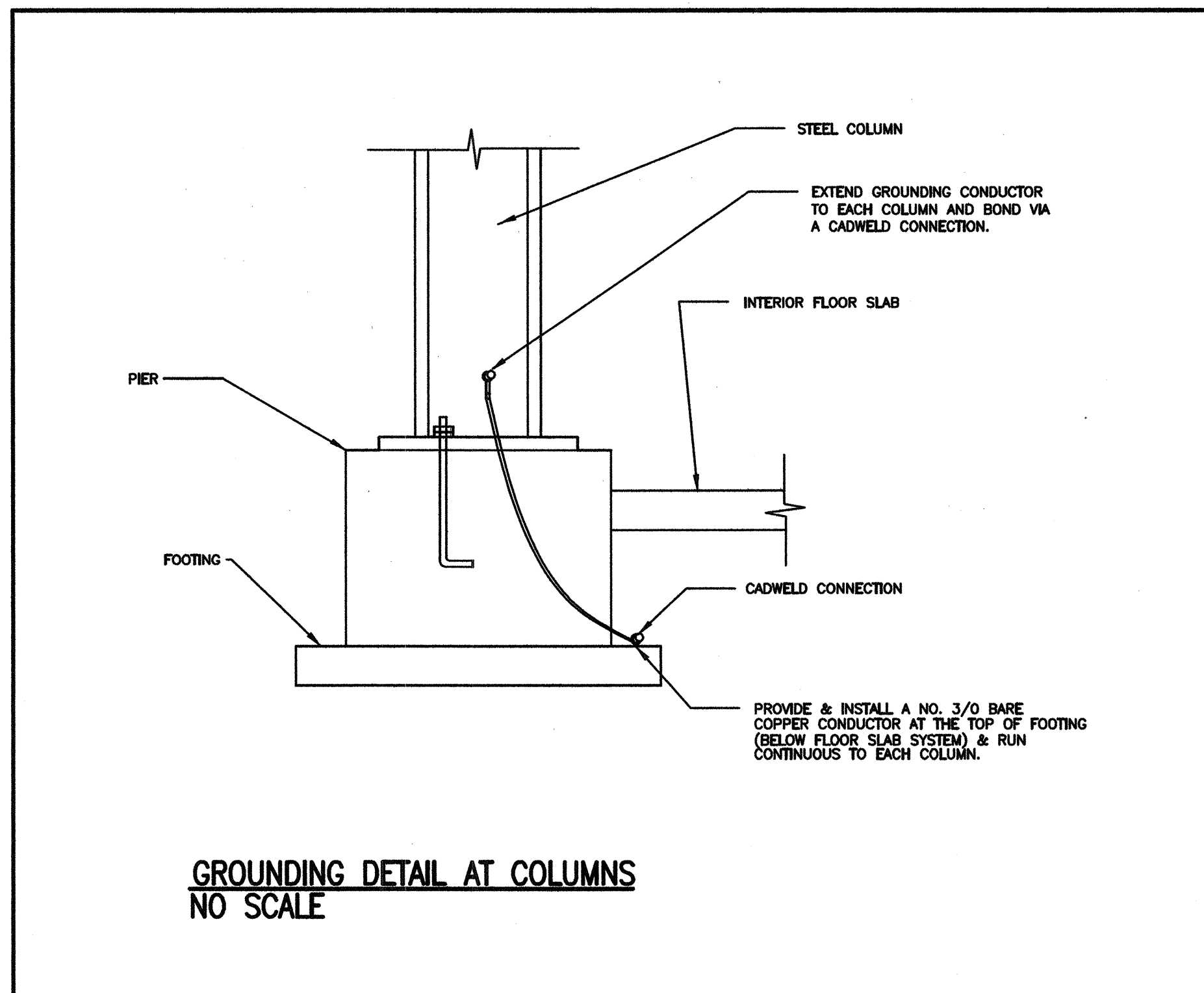
**PANELBOARD SCHEDULE**

CKT NO	CKT BRKR TRIP/POLE	LOAD DESCRIPTION & LOCATION	LOAD (W/PHASE)			LOAD (W/PHASE)			LOAD DESCRIPTION & LOCATION	CKT BRKR TRIP/POLE	CKT NO
			AØ	BØ	CØ	AØ	BØ	CØ			
1	20/1	LIGHTING	1800			1800			LIGHTING	20/1	2
3	20/1	LIGHTING	1800			1800			LIGHTING	20/1	4
5	20/1	LIGHTING			3100			500	LIGHTING	20/1	6
7	20/1	LIGHTING	300			0		0	SPARE	20/1	8
9	20/1	LIGHTING	300			0		0	SPARE	20/1	10
11	20/1	SPARE	0		0	0		0	SPARE	20/1	12
13	20/1	SPARE	0		0	0		0	SPARE	20/1	14
15	20/1	SPARE	0		0	0		0	SPARE	20/1	16
17	20/1	SPARE	0		0	0		0	SPARE	20/1	18
19	20/1	SPARE	0		0	0		0	SPARE	20/1	20
21	20/1	SPARE	0		0	0		0	SPARE	20/1	22
23	20/1	SPARE	0		0	0		0	SPARE	20/1	24
25	20/1	SPARE	0		0	0		0	SPARE	20/1	26
27	20/1	SPARE	0		0	0		0	SPARE	20/1	28
29	20/1	SPARE	0		0	0		0	SPARE	20/1	30
31	90/3	75 KVA STEPODOWN TRANSFORMER	5100			0		0	SPACE		32
33			5100			0		0	SPACE		34
35					5100			0	SPACE		36
37	20/1	SPARE	1500			0		0	SPACE		38
39	20/1	SPARE	1500			0		0	SPACE		40
41	20/1	SPARE			1500			0	SPACE		42

\*NOTE: BREAKER SHALL REMAIN ON AT ALL TIMES.  
NOTE: ALL BREAKERS IN THIS PANELBOARD SHALL BE SWITCH RATED.

**PANELBOARD SCHEDULE**

CKT NO	CKT BRKR TRIP/POLE	LOAD DESCRIPTION & LOCATION	LOAD (W/PHASE)			LOAD (W/PHASE)			LOAD DESCRIPTION & LOCATION	CKT BRKR TRIP/POLE	CKT NO
			AØ	BØ	CØ	AØ	BØ	CØ			
1	20/1	RECEPTACLES	400			400			RECEPTACLES	20/1	2
3	20/1	LOUVER OPERATOR	100			100			LOUVER OPERATOR	20/1	4
5	20/2	GARAGE DOOR MOTOR OPERATOR	1176			1176		1500	RECEPTACLES	20/1	6
7						200			THERMOSTAT	20/1	8
9	20/1	SPARE	0			0		1000	TELEPHONE BACKBOARD	20/1	10
11	20/1	SPARE	0		0	0		300	TIMELOCK	20/1	12
13	20/1	SPARE	0		0	0		0	SPARE	20/1	14
15	20/1	SPARE	0		0	0		0	SPARE	20/1	16
17	20/1	SPARE	0		0	0		0	SPARE	20/1	18
19	20/1	SPARE	0		0	0		0	SPARE	20/1	20
21	20/1	SPARE	0		0	0		0	SPARE	20/1	22
23	20/1	SPARE	0		0	0		0	SPARE	20/1	24
25	20/1	SPARE	0		0	0		0	SPARE	20/1	26
27	20/1	SPARE	0		0	0		0	SPARE	20/1	28
29	20/1	SPARE	0		0	0		0	SPARE	20/1	30
31	20/1	SPARE	0		0	3036		0	FN	50/3	32
33	20/1	SPARE	0		0	3036		0	FN	50/3	34
35	20/1	SPARE	0		0	3036		3036	FN	50/3	36
37	20/1	SPARE	0		0	3036		3036	FN	50/3	38
39	20/1	SPARE	0		0	3036		3036	FN	50/3	40
41	20/1	SPARE	0		0	3036		3036	FN	50/3	42



**AAA**  
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**SPECULATIVE BUILDING**  
**MMRC**  
**DEVELOPMENT AUTHORITY**

DATE: \_\_\_\_\_ BY: \_\_\_\_\_  
REVISION: \_\_\_\_\_

DESIGN DOCUMENTS: \_\_\_\_\_  
TO: \_\_\_\_\_  
FROM: \_\_\_\_\_  
DATE: \_\_\_\_\_

PROJECT NO. \_\_\_\_\_  
DESIGNED BY: S.H.T.  
DRAWN BY: J.V.B.  
CHECKED BY: T.B.W.  
REVIEWED BY: \_\_\_\_\_  
DATE: OCT. 2011  
SCALE: NONE

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DRAWING NO. \_\_\_\_\_  
**ME-3**  
SHEET 3 OF 3