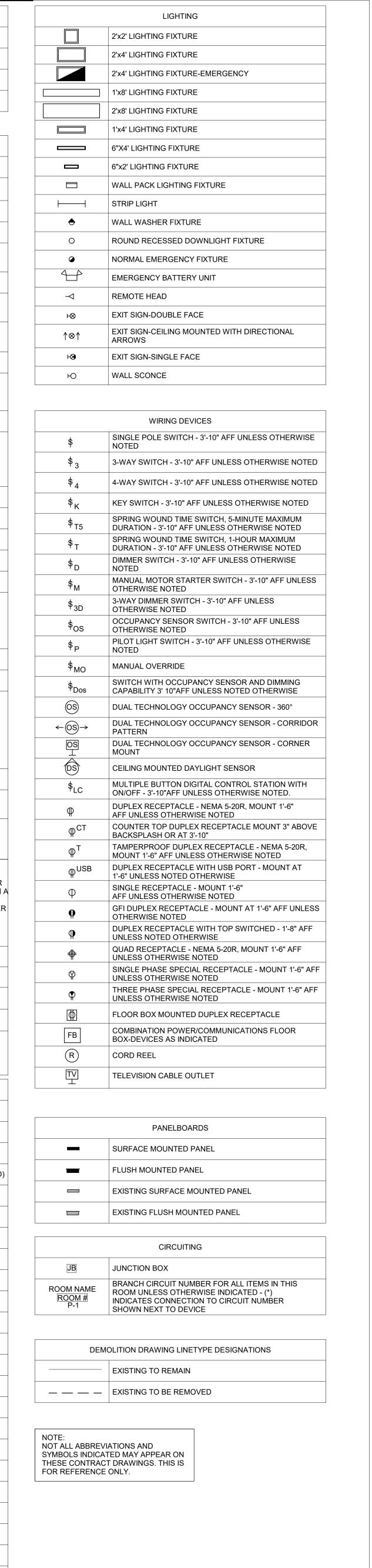
1	2		3	4		5	6
	LIGHTING FIXTURE SCHEDULE		<b>GENERAL NOTES:</b>			CONTROL EQUIPMENT	
Type Mark Manufacturer & Catalog Number  A PROGRESS #P300223-009-30 OR SIMILAR	Mounting Type Descriptions WALL BATHROOM SCONCE	Lamp 22W LED	CONTRACTOR SHALL PROVIDE BRANCH CIRCL REQUIRE ELECTRICAL CONNECTIONS. WHERE	BRANCH CIRCUIT WIRING IS NOT	PM N	MANUAL MOTOR STARTER - OVERLOADS SIZED TO ACCOMMODATE MOTOR - 4'-0" AFF UNLESS OTHERWISE NOTED	Ø U1  ● ★ P0
B PROGRESS #P810015-030-30 OR SIMILAR C PRESCOLITE	SURFACED SURFACE MOUNT LIGHT  RECESSED WATERPROOF 6" RECESSED DOWNLIGHT LED	15W LED	SHOWN, CONTRACTOR SHALL CONNECT ITEM ROUTING OF CONDUITS AND WIRING SHALL BI ACCORDANCE WITH THE NATIONAL ELECTRIC	DETERMINED BY THE CONTRACTOR IN	FVNR/SIZE1/3R F	COMBINATION MOTOR STARTER - TYPE/SIZE/NEMA ENCLOSURE AS NDICATED - MOUNT 4'-6" AFF TO CENTERLINE OF OPERATING HANDLE PROVIDE OVERCURRENT AND OVERLOADS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS FOR MOTOR HP	MH MA
#LC6HL-6LCHL-45L-35K-8  C1 PRESCOLITE #LTR-GRD-H-HL-35L-DMI-TRIM-LTR -GRD-T-HL-35K-8	RECESSED 6" DOWNLIGHT LED	43W LED	<ol> <li>CONTRACTOR SHALL USE ONLY THOSE WIRIN SPECIFICATIONS.</li> <li>A MAXIMUM OF 3 CIRCUITS SHALL BE RUN IN C</li> </ol>		,	MOTOR - HORSEPOWER AS INDICATED	GF
C2 PRESCOLITE #LTR-GRD-H-HL-40L-DMI-TRIM-LTR -GRD-T-HL-35K-8	RECESSED 6" DOWNLIGHT LED	52W LED	SEPARATE PHASES. CIRCUITS SHALL NOT SHA 4. MINIMUM WIRE SIZE SHALL BE #12AWG. MINIM	RE A COMMON NEUTRAL.	30/3/NF/12	DISCONNECT SWITCH - AMPS/POLES/FUSES/NEMA ENCLOSURE AS NDICATED - MOUNT 4'-6" AFF TO CENTERLINE OF OPERATING HANDLE	
C3 PRESCOLITE #LF6ML-6LFML30L-35K-8-1P65-CL D COLUMBIA #CSL4-4040 OR	RECESSED 6" DOWNLIGHT LED  SURFACED INDUSTRIAL LED	32.7W LED 40.2 LED	<ol><li>THE ELECTRICAL CONTRACTOR SHALL CHECK CONDITIONS AT THE SITE.</li></ol>		Т	TRANSFORMER	S SM
SIMILAR  E DUAL LITE #HCXU RW 031 RC12  E1 DUAL LITE #LZ 25 1 03L  E2 DUAL LITE #CPRSB0603L	SURFACED EXIT W/ HEADS  WALL BATTERY  WALL REMOTE	LED Led	<ol> <li>ALLOW CLEAR SPACE IN FRONT OF ALL PANEL EQUIPMENT, ETC., AS REQUIRED BY NEC.</li> <li>COORDINATE EXACT LOCATION OF LIGHTING I</li> </ol>		9" BELOW FINISHED	STANDARD MOUNTING HEIGHTS  WALL-MOUNTED CLOCKS, PROGRAM BELLS, (OR AS SHOWN	© C#
E2 DUAL LITE #CPRSB0603L E3 DUAL LITE #OCR D 0603L F PROGRESS #P350144-020 OR SIMILAR	WALL REMOTE  WALL EXTERIOR REMOTE  SURFACED SURFACED MOUNTED LED	(2) 6W LED E26 BASE	AND EQUIPMENT.  8. ALL LIGHTING FIXTURES TO BE COMPATIBLE V	·	CEILING  6" ABOVE DOOR	ON ARCHITECTURAL DETAIL)  NURSE CALL DOME LIGHT	H HE
G COLUMBIA #LXEM-4-35-HL-RFA-EU-ELL14 H PROGRESS #P4004-74 OR SIMILAR	WALL ELEVATOR PIT LIGHT  SURFACED CHANDELIER	47.3W LED  (8) 20W LED LAMPS	<ol> <li>ELECTRICAL CONTRACTOR TO SUPPLY ALL GR PER NEC.</li> </ol>		6" ABOVE FIRE HOUSE	RED SIGNAL LIGHT	M TH GF EM AL
OA PROGRESS: #P6058-3130K9 OR SIMILAR OB (2 AT EACH LOCATION) PROGRESS #P6342 SERIES	WALL EXTERIOR SCONCE  WALL EXTERIOR FLOOD	9W LED (2) 13W LED	10. IN ALL DWELLING UNITS, DORMITORY UNITS, F MEDICAL AND HOSPITAL UNITS, PROVIDE ARC PROTECTION ON ALL 120V, 15 AND 20A BRANC OR DEVICES INSTALLED IN KITCHENS, FAMILY	FAULT CIRCUIT INTERRUPTER H CIRCUITS SUPPLYING RECEPTACLES	CABINET  10'-0"	BATTERY LIGHTING UNITS AND REMOTE WALL MOUNTED LIGHT HEADS (OR 1'-0" BELOW FINISHED CEILING OF TOP UNIT).	AF AL
GENERAL LIGHTING FIXTURE SCHEDULE NO	TES: RES INSTALLED IN A HARD CEILING OR SPECIALTY CEILING TYPE.		PARLORS, LIBRARIES, DENS, BEDROOMS, SUN HALLWAYS, LAUNDRY AREAS OR SIMILAR ROC 11. IN ALL DWELLING UNITS, GUEST ROOMS AND	MS BY MEANS PROVIDED IN NEC 210.12.	8'-6"	PENDANT-HUNG INDUSTRIAL AND STRIP LIGHTING FIXTURES.	VII F  TH
<ol> <li>PROVIDE ALL APPROPRIATE MOUNTING</li> <li>COORDINATE LOCATION OF ALL EXIT SIGN</li> <li>VISIBILITY FROM AT LEAST HALFWAY TO</li> </ol>	HARDWARE. PROVIDE BACK/MOUNTING BOXES AS RECOMMENDED BY MANUFAG GNS IN THE FIELD WITH OWNER SUPPLIED EQUIPMENT, BULK HEADS AND SIGNAG NEXT SIGN OR TO THE EXIT.		CHILD CARE FACILITIES, AND PEDIATRIC AREA TAMPER-RESISTANT RECEPTACLES. FOR ALL MICROWAVES, HEIGHTS AND PLACEMENT SHA	S IN HEALTHCARE FACILITIES, PROVIDE RECEPTACLES NOTED FOR LL BE COORDINATED BEFORE ROUGH-IN	7'-8"+	TELEVISION OUTLET AND SERVICE RECEPTACLE-FOR SHELF MOUNTED T.V. IN BEDROOMS.	AL
5. ALL FIXTURE FINISHES AND DECORATIVE SELECTED FROM FULL COLOR LINE (BOT	SIGNS AS INDICATED ON THE DRAWINGS. PROVIDE ARROWS AS INDICATED.  DETAILS SHALL BE SELECTED BY THE ARCHITECT PRIOR TO FINAL ORDER. COLITH STANDARD, CUSTOM, AND PREMIUM).  DESIGN AND ARE SUBJECT TO CHANGE BASED ON OWNER'S FINAL SELECTION:		WITH THE ARCHITECT TO ENSURE PROPER LO  12. SEE FIRE PROTECTION SIGNALING SYSTEM RI SPECIFICATIONS FOR INFORMATION ON DUCT	SER DIAGRAM NOTES AND DETECTORS AND SMOKE DAMPERS. SEE	7'-6" <b>EK</b>	OR 6" BELOW FINISHED CEILING, WHICHEVER IS LOWER.	<b>♦</b> AL
	LOWABLE WATTAGE TO COMPLY WITH ENERGY CODE. RSHALL HAVE DRIVER THAT COORDINATES WITH CONTROLLER.		SPECIFICATIONS FOR ITEMS NEEDING ADDRES SUPERVISED INTERFACE. THESE ITEMS MAY I DRAWINGS, BUT SHALL BE COORDINATED WIT CONTRACTOR TO ACCOUNT FOR VOLTAGE DE	NOT BE QUANTIFIED ON THE ELECTRICAL H ALL OTHER TRADES AND DRAWINGS	DOOR OR WINDOW OPENING	WARNING AND SIGNALING FIXTURES/SIGNS.  OR 6" BELOW FINISHED CEILING WHICHEVER IS LOWER.	VI:
			PROVIDED.  13. ELECTRICAL CONTRACTOR TO PROVIDE ALL C	UTTING AND PATCHING IN EXISTING		FIRE ALARM SIGNAL DEVICES AND ILLUMINATED FIRE SIGNALS.  TOP OF FLUSH AND SURFACE MOUNTED ELECTRICAL	DH FI
			BUILDING RELATED TO THE NEW ELECTRICAL  14. ELECTRICAL CONTRACTOR SHALL UNCONDITI MATERIALS EQUIPMENT AND WORKMANSHIP I	ONALLY GUARANTEE IN WRITING ALL	6'-6"	LIGHTING OR POWER PANELBOARDS AND TELEPHONE CABINETS.  TOP OF BACK-MOUNTED WALL EXIT FIXTURES (NOT	FS FL
			OF ACCEPTANCE BY OWNER  15. THE ELECTRICAL CONTRACTOR SHALL SUBMI BUILT DRAWINGS AND OPERATION AND MAINT		6'-0"	MOUNTED ABOVE DOORS).  TOP OF HIGHEST ELECTRICAL SAFETY DISCONNECT SWITCHES, MAGNETIC STARTERS, CONTACTORS.	TS TA
			NAMEPLATE DATA, WIRING DIAGRAMS, MAINTI UPON PROJECT COMPLETION.  16. ELECTRICAL CONTRACTOR SHALL MAINTAIN A	NANCE INSTRUCTIONS AND PARTS LIST	4'-6" └⊠ └	CENTERLINE OF OPERATING HANDLE FOR WALL MOUNTED	PS PF
			TIMES. ALL SAFETY PROCEDURES AND ENFOR	CEMENT IS THE RESPONSIBILITY OF THE	ФСТ \$	LOCATIONS VERIFY EXACT HEIGHT PRIOR TO ROUGH IN)  WALL PHONE, ELECTRICAL DEVICE LIGHTING SWITCHES, MANUAL	KP KE
					\$ <sub>M</sub> ▼ \	W TOILET ROOMS OR FOR SEPARATE SINKS NOT IN CASEWORK.  FIRE ALARM PULL STATIONS	Pl     W     CC     Se
					2'-0" Ф	ELECTRICAL RECEPTACLES WITHIN MECHANICAL SPACES, ELECTRICAL AND ELEVATOR ROOMS.	▼ FL
					1'-6"	▼ ELECTRICAL RECEPTACLES, TELEPHONE OUTLETS, DATA OUTLETS, TELEPHONE/DATA OUTLETS	VC VC
					0"	FINISHED FLOOR	SC AF IN'
					MOUNTING HEIGHT NOTES:	UTED OF OUT ETO UNI FOR OTHERWISE NOTED IN MACCHINA	AF IN FII
					CONSTRUCTION THE ABOVE BLOCK OF BRICK COURSING		□ CA DA OT
					OTHERWISE ON THE DRAWII  3. A '+' BESIDE A DEVICE INDICA	SHTS SHALL BE ADHERED TO UNLESS SPECIFICALLY NOTED OR DETAILED NG OR SPECIFICATIONS.  ATES THAT DEVICE IS MOUNTED ABOVE A COUNTER OR CASEWORK.  ECTURAL ROOM ELEVATIONS, DETAILS AND CASEWORK CONTRACTOR.	▽B TE
					THE ELECTRICAL SYSTEMS F DRAWINGS WERE DESIGNED	PRESENTED ON THE SUBSEQUENT O IN ACCORDANCE WITH THE	∇ TV     EL     SA
					FOLLOWING APPLICABLE CO  ☐ THE NATIONAL ELECTRICA ☐ INTERNATIONAL BUILDING	AL CODE (NEC), 2014	CEILING/ WWW.
					☐ INTERNATIONAL ENERGY ☐ ASHRAE STANDARD 90.1	CONSERVATION CODE (IECC), 2015	WALL/ SF CO
							BULLET PF CAMERA CL
							SP CE
							PA PA
							PA WP PA
							Y CC AR
							AFF AE
							ATS AL
							DC DU
							DF DF
							EF EX
							ERL EX
							ETR EX
							GC GI
							HC HV
							HP HE
EI FOTDIOAL F	DAWING LIST						KES KI
ELECTRICAL INFORMATION E1.0 FIRST FLOOR PLAN - LIGHT							MW MI
E1.1 SECOND FLOOR PLAN - LIG E2.0 FIRST FLOOR PLAN - POWE E2.1 SECOND FLOOR PLAN - POWE	HTING ER						TVSS TF
E3.0 ELECTRICAL DETAILS  E4.0 ELECTRICAL SPECIFICATIO  E4.1 ELECTRICAL SPECIFICATIO	INS						WM W
							WP W
	ea P19 (MED 1070110 000 WoodlandsCrowstoneClubbouse P19 pd						

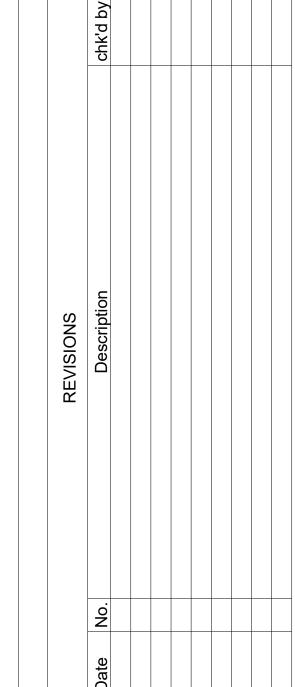
CONTROL EQUIPMENT		SITE WORK	
MOTOR STARTER - OVERLOADS SIZED TO ACCOMMODATE 4'-0" AFF UNLESS OTHERWISE NOTED	Ø	UTILITY POLE	
ATION MOTOR STARTER - TYPE/SIZE/NEMA ENCLOSURE AS ED - MOUNT 4'-6" AFF TO CENTERLINE OF OPERATING HANDLE	•	POLE MOUNTED AREA LIGHTING FIXTURE	
OVERCURRENT AND OVERLOADS IN ACCORDANCE WITH CTURERS RECOMMENDATIONS FOR MOTOR HP	MH	MANHOLE	
HORSEPOWER AS INDICATED	•	GROUND ROD	
IECT SWITCH - AMPS/POLES/FUSES/NEMA ENCLOSURE AS ED - MOUNT 4'-6" AFF TO CENTERLINE OF OPERATING HANDLE		SIGNAL SYSTEM	
DRMER	<u>\$</u>	SMOKE DETECTOR	
	©	DUCT MOUNTED SMOKE DETECTOR	
ANDARD MOUNTING HEIGHTS	©	CARBON MONOXIDE DETECTOR	<del></del>
VALL-MOUNTED CLOCKS, PROGRAM BELLS, (OR AS SHOWN DN ARCHITECTURAL DETAIL)		HEAT DETECTOR	<b>•</b>
IURSE CALL DOME LIGHT	M	MANUAL PULL STATION - SHALL BE MOUNTED SUCH THAT THE HANDLE IS NOT LESS THAN 42" AND NOT	0
RED SIGNAL LIGHT	_	GREATER THAN 54" AFF.  AUDIO ALARM - SHALL BE MOUNTED WITH THEIR TOPS	
ATTERY LIGHTING UNITS AND REMOTE WALL MOUNTED IGHT HEADS (OR 1'-0" BELOW FINISHED CEILING OF TOP		AFF AT HEIGHTS OF NOT LESS 90" AFF AUDIO/VISUAL ALARM - SHALL BE MOUNTED	-<
INIT).	EΚΦ	SUCH THAT ENTIRE LENS IN NOT LESS THAN 80" AND NOT GREATER THAN 96" AFF.  VISUAL ALARM - SHALL BE MOUNTED SUCH	⊦⊗
ENDANT-HUNG INDUSTRIAL AND STRIP LIGHTING FIXTURES.	臣	THAT ENTIRE LENS IS NOT LESS THAN 80" AND NOT GREATER THAN 96" AFF.	↑⊗↑
ELEVISION OUTLET AND SERVICE RECEPTACLE-FOR SHELF MOUNTED T.V. IN BEDROOMS.	8	AUDIO ALARM - CEILING MOUNTED	H⊗
DR 6" BELOW FINISHED CEILING, WHICHEVER IS LOWER.	\$	AUDIO/VISUAL ALARM - CEILING MOUNTED	Ю
VARNING AND SIGNALING FIXTURES/SIGNS.			
DR 6" BELOW FINISHED CEILING WHICHEVER IS LOWER.	<b>&amp;</b>	VISUAL ALARM - CEILING MOUNTED  DOOR HOLDER - PROVIDE CONNECTION TO DOOR	ф.
IRE ALARM SIGNAL DEVICES AND ILLUMINATED FIRE SIGNALS.	DH	HARDWARE PROVIDE POWER FROM CIRCUIT SHOWN FOR DOOR HARDWARE. PROVIDE CONNECTION TO FIRE ALARM SYSTEM AND TO SMOKE DETECTORS.	\$ \$ 3
OP OF FLUSH AND SURFACE MOUNTED ELECTRICAL IGHTING OR POWER PANELBOARDS AND TELEPHONE ABINETS.		PROVIDE CONNECTION TO PANIC BUTTON IN RECEPTION.	\$4
OP OF BACK-MOUNTED WALL EXIT FIXTURES (NOT MOUNTED ABOVE DOORS).	FS	FLOW SWITCH	* <sub>K</sub>
OP OF HIGHEST ELECTRICAL SAFETY DISCONNECT	TS	TAMPER SWITCH	\$ <sub>T5</sub>
ENTERLINE OF OPERATING HANDLE FOR WALL MOUNTED	PS	PRESSURE SWITCH	\$ <sub>T</sub>
OISCONNECT SWITCHES AND MOTOR STARTERS; WALL MOUNTED TELEPHONE AND PAY STATIONS (3'-6" AT HANDICAP OCATIONS VERIFY EXACT HEIGHT PRIOR TO ROUGH IN)	TC	TIME CLOCK	\$ <sub>D</sub>
VALL PHONE, ELECTRICAL DEVICE LIGHTING SWITCHES, MANUAL MOTOR STARTERS, SECURITY CARD, AND GFI RECEPTACLES IN	KP	KEYPAD	\$ <sub>M</sub>
OILET ROOMS OR FOR SEPARATE SINKS NOT IN CASEWORK.	•	PUSHBUTTON - PROVIDE IN CASEWORK AND PROVIDE WIRING TO SECURITY SYSTEM FOR DOOR LOCKDOWN. COORDINATE WITH CASEWORK AND DISTRICT	\$ <sub>3D</sub>
IRE ALARM PULL STATIONS		SECURITY VENDOR	\$ <sub>OS</sub>
ELECTRICAL RECEPTACLES WITHIN MECHANICAL PACES, ELECTRICAL AND ELEVATOR ROOMS.	7	FLOOR BOX MOUNTED DATA/TELEPHONE OUTLET	\$ <sub>MO</sub>
LECTRICAL RECEPTACLES, TELEPHONE OUTLETS, DATA DUTLETS, TELEPHONE/DATA OUTLETS	VC	VOLUME CONTROL	\$ <sub>Dos</sub>
INISHED FLOOR		CARD READER - EXTERIOR LOCATIONS - PROVIDE SQUARE BACK BOX AND EXTEND 1" CONDUIT WITH APPROPRIATE WIRING TO NEAREST DOOR HARDWARE	(OS)
	CR	INTERFACE. INTERIOR LOCATIONS - PROVIDE SINGLE BACK BOX AND EXTEND 1" CONDUIT WITH APPROPRIATE WIRING TO NEAREST DOOR HARDWARE	←(OS)→
OUTLETS UNLESS OTHERWISE NOTED. IN MASONRY		INTERFACE COORDINATE FINAL LOCATION IN THE FIELD. PROVIDE CAT 6E CABLE TO NEAREST DATA	OS L
ING HEIGHTS SHALL BE USED FOR REFERENCE TO NEAREST	∇A	CABINET.  DATA/TELEPHONE OUTLET - MOUNT 1'-6" AFF UNLESS OTHERWISE NOTED	(DS)
ALL BE ADHERED TO UNLESS SPECIFICALLY NOTED OR DETAILED SPECIFICATIONS.	▽B	TELEPHONE OUTLET - MOUNT 1'-6" AFF UNLESS OTHERWISE NOTED	\$ <sub>LC</sub>
AT DEVICE IS MOUNTED ABOVE A COUNTER OR CASEWORK. L ROOM ELEVATIONS, DETAILS AND CASEWORK CONTRACTOR.	▽TV	TELEVISON OUTLET - MOUNT AS PER ARCHITECTURAL	Ф
TED ON THE SUBSEQUENT ORDANCE WITH THE		ELEVATION. ADJACENT RECEPTACLE SHALL BE AT THE SAME HEIGHT.	Фт
D STANDARDS: E(NEC), 2014	CEILING/	CAMERA - PROVIDE BACK BOX ABOVE CEILING WITH 6' WHIP WHERE LOCATED OUTSIDE, PROVIDE	⊕ <sup>USB</sup>
IBC), 2015 RVATION CODE (IECC), 2015	DOME  WALL/	WEATHERTIGHT DOUBLE GANG BACK BOX WITH COVER AS PER OWNER'S REQUIREMENTS. WHERE LOCATED IN A SPACE WITHOUT CEILINGS (OR HIGH CEILINGS).	φ
	DOME BULLET	COORDINATE MOUNTING HEIGHT ON WALL WITH OWNER PRIOR TO ROUGH-IN, BOX MAYBE RECESSED IN WALL. PROVIDE CAT 6E CABLE BACK TO NEAREST DATA	P
	CAMERA	CLOSET. COORDINATE EXACT LOCATION IN THE FIELD WITH THE OWNER.	Ф
	DC	DOOR CONTACTOR - PROVIDE DOUBLE GANG BOX ABOVE ACCESSIBLE CEILING.	<b>+</b>
	(SP)	CEILING MOUNTED SPEAKER	Ψ
	PA	PA HORN SPEAKER	Φ
	PAWP	PA HORN SPEAKER OUTDOOR WEATHER PROOF	FB
	9	WIRELESS CLOCK - WHERE WALL MOUNTED, COORDINATE LOCATION IN THE FIELD WITH THE ARCHITECT AND OWNER.	R
			TV
	AFF	ABBREVIATIONS & SYMBOLS  ABOVE FINISHED FLOOR	
	AFG	ABOVE FINISHED GRADE	
	ATS	AUTOMATIC TRANSFER SWITCH	_
	СТ	COUNTER HEIGHT-44" AFF (UNLESS OTHERWISE NOTED)	-
	DC	DUCT COIL	<i>\( \tau_{1111112} \)</i>
	DF	DRINKING FOUNTAIN	W/////
	EC	ELECTRICAL CONTRACTOR	
	EF	EXHAUST FAN	JB
	ERL	EXISTING TO BE RELOCATED	ROOM NAME
	ETD	EXISTING TO BE DEMOLISHED	ROOM # P-1
	ETR	EXISTING TO REMAIN	
	GC GF	GENERAL CONTRACTOR  GROUND FAULT INTERRUPTER	D
	HC	HVAC CONTRACTOR	
	HP	HEAT PUMP	
	HV	HIGH VOLUME	
	KES	KITCHEN EQUIPMENT SUPPLIER	NOTE: NOT ALL ABBR SYMBOLS INDI
	MW	MICROWAVE	THESE CONTR
	PC	PLUMBING CONTRACTOR	
	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER	
	WM	WALL MOUNTED	
		WEATUEDDOOF	

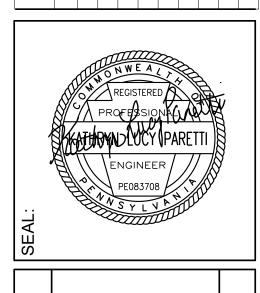
WEATHERPROOF

DRAWING NOTE BY SYMBOL



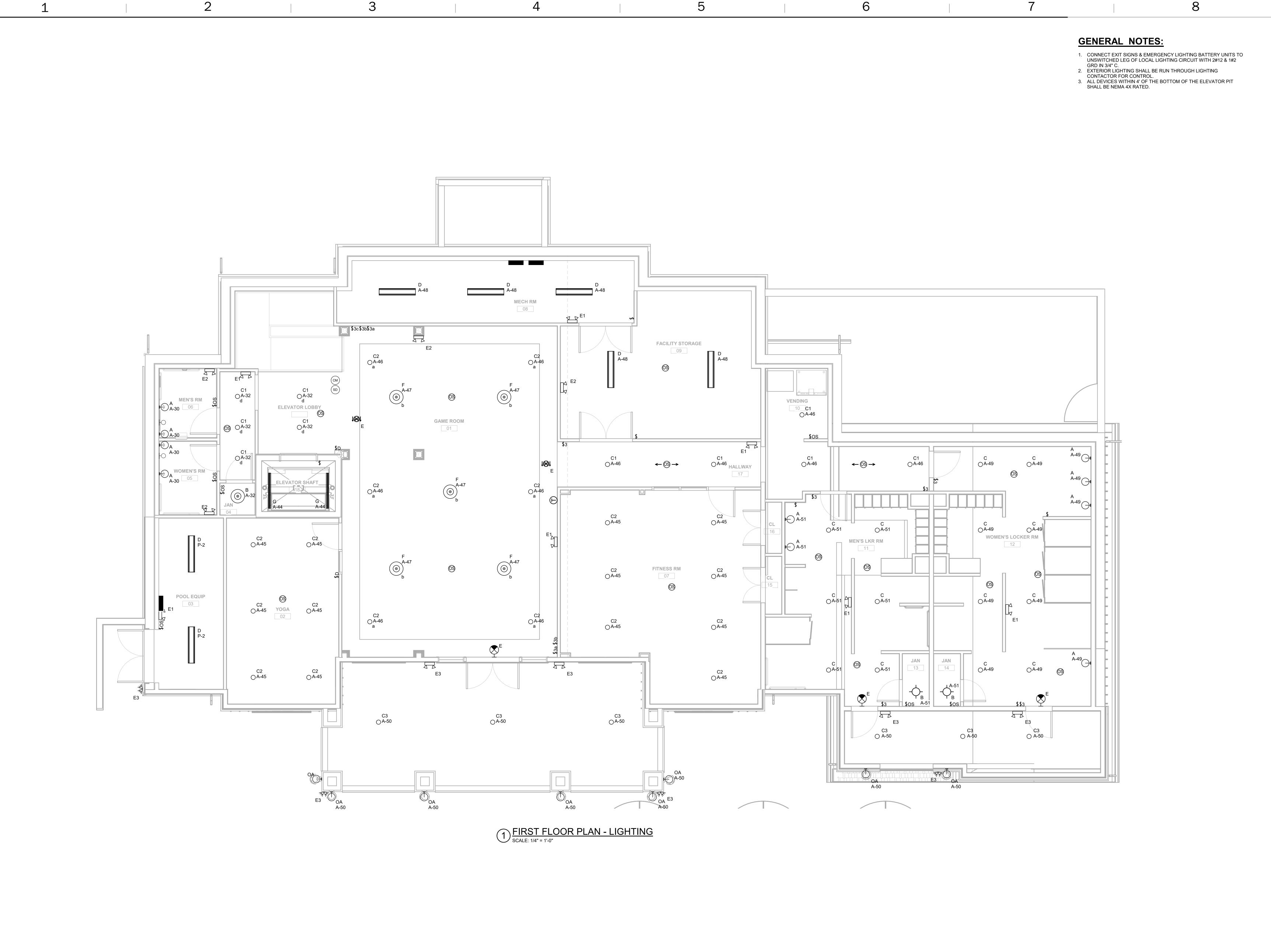






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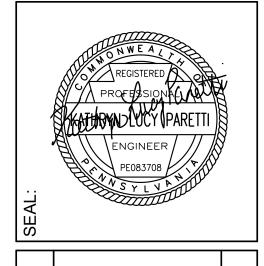
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BARRY ISETT& associates 2 MULTI-DISCIPLINE ENGINEERS AND CONSULTANTS

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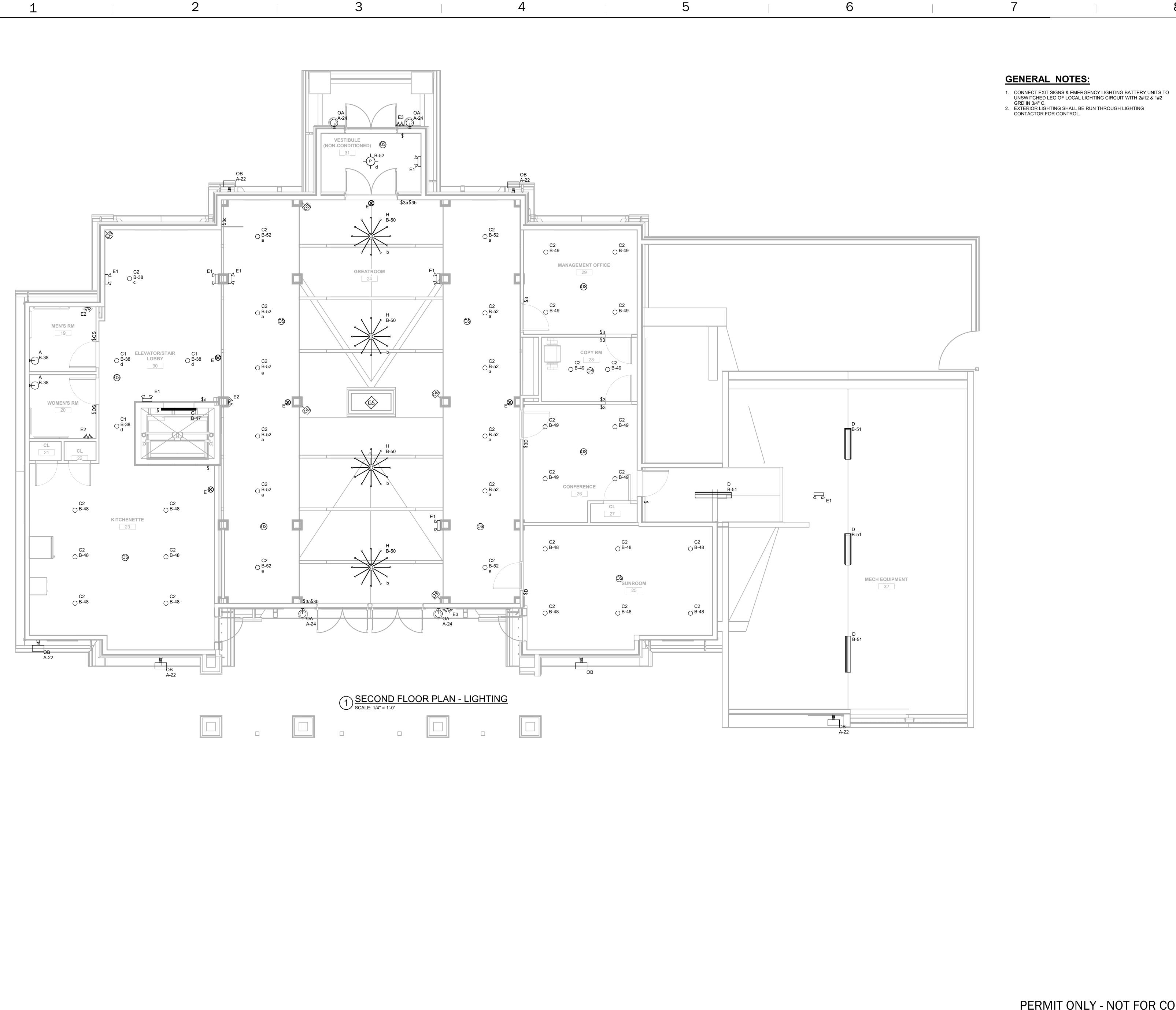
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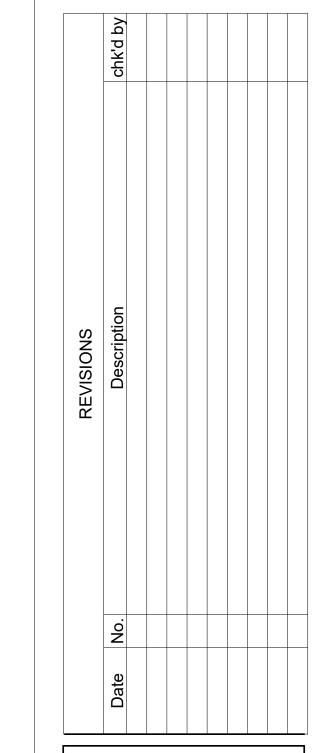
WOODLANDS AT GREYSTONE
SCULTHORPE DR. WEST GOSHEN TOWNSHIP
CHESTER COUNTY, PA

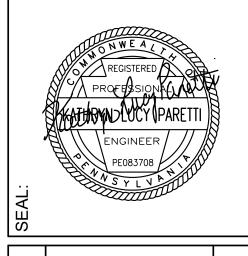
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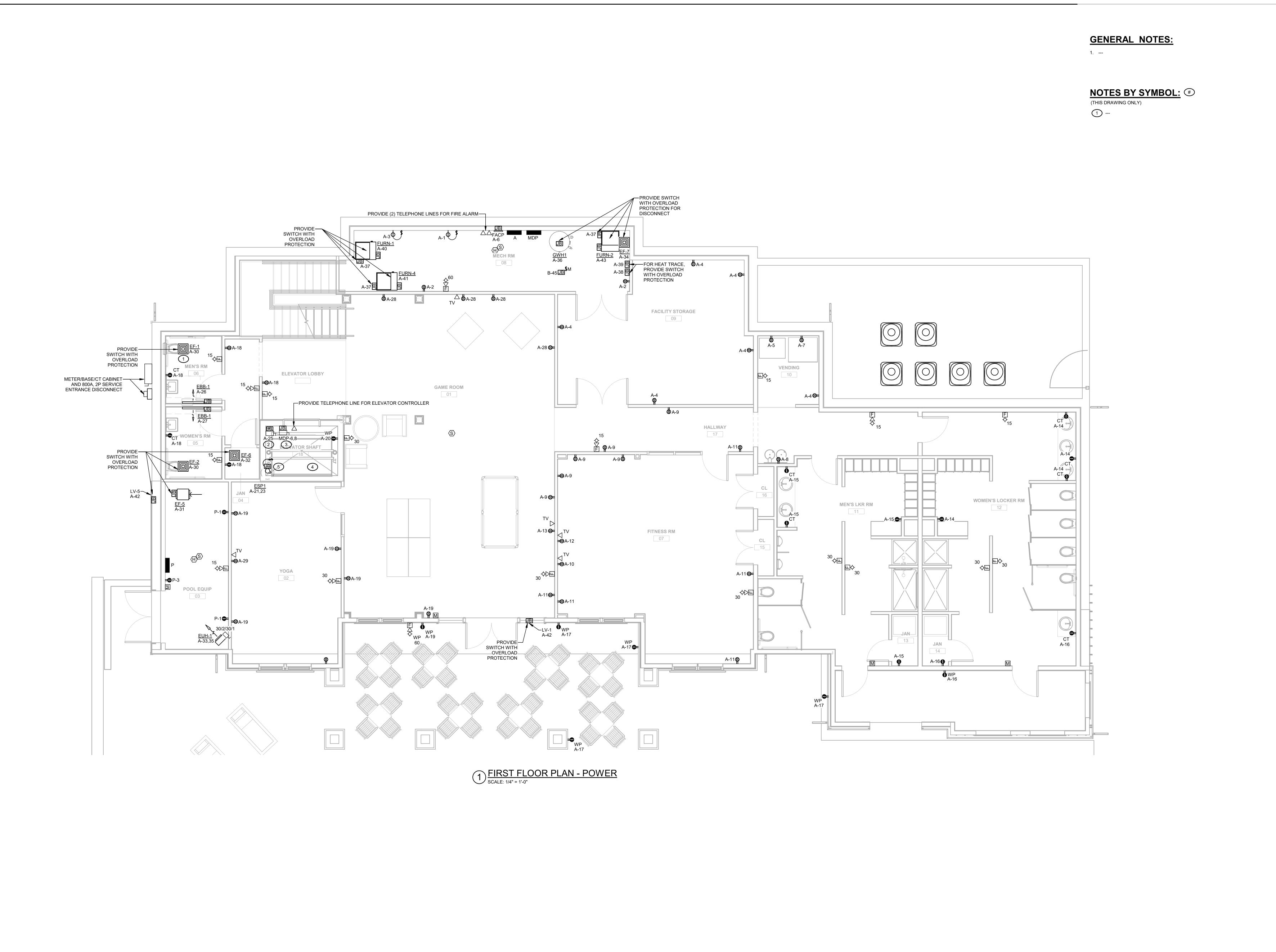






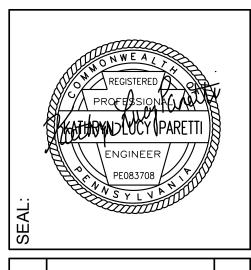


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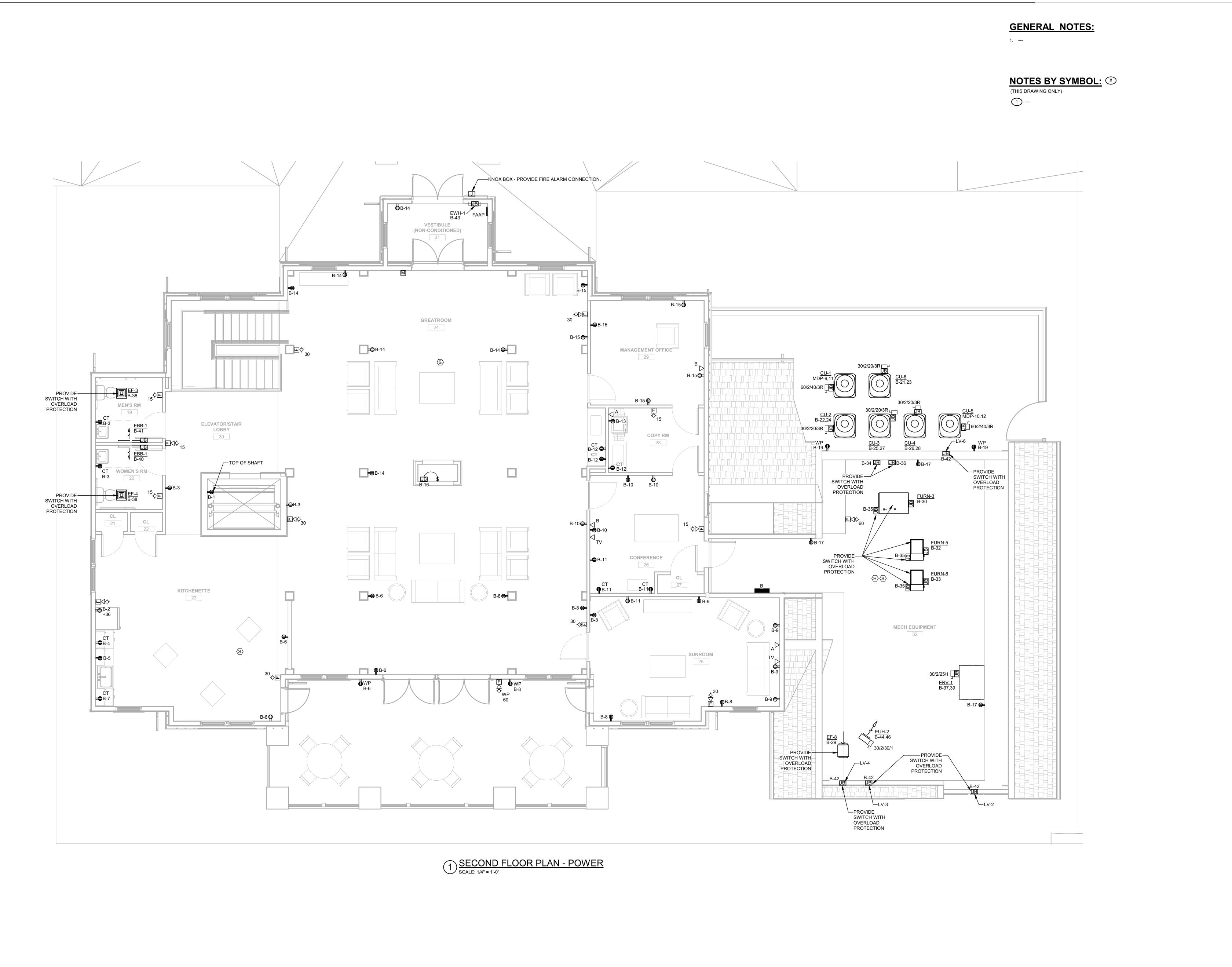
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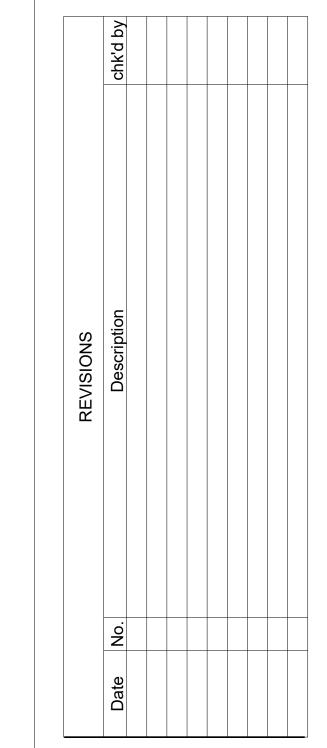
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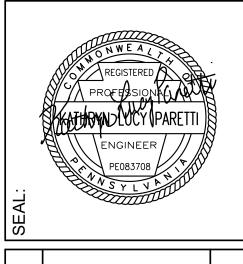
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DRAWING NAME: SECOND FLOOR PLAN - POWER

WOODLANDS AT GREYSTONE
SCULTHORPE DR. WEST GOSHEN TOWNSHIP
CHESTER COUNTY, PA

 Project number:
 drawn by:

 18-053
 KLP

 date:
 chk'd by:

 2020-09-04
 SPL

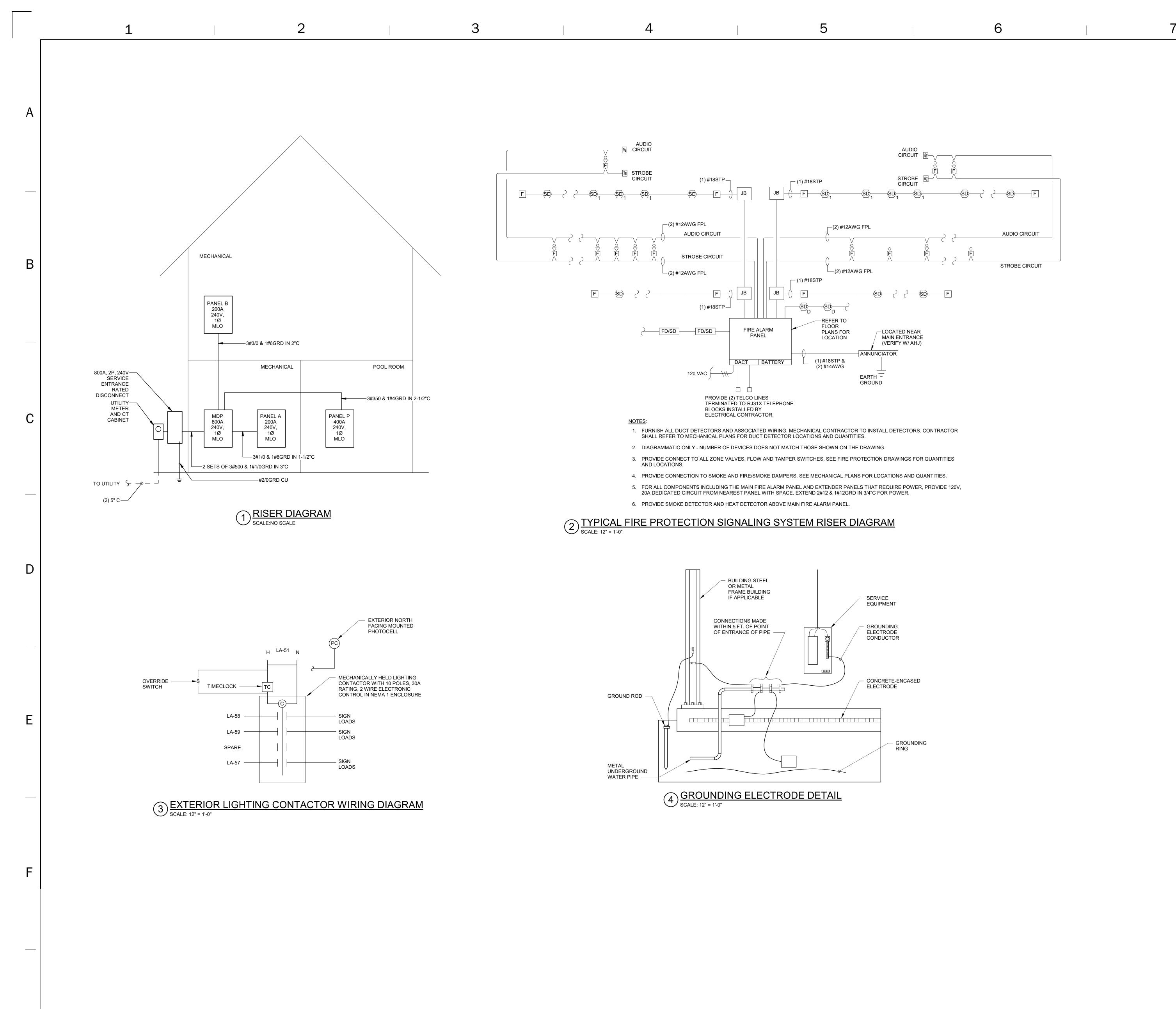
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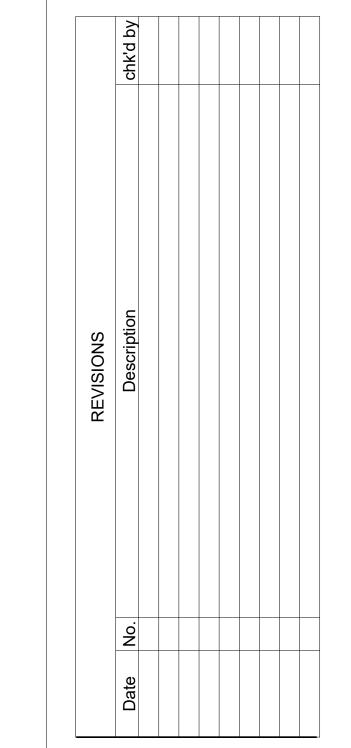
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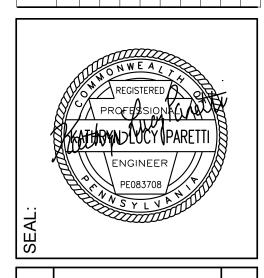
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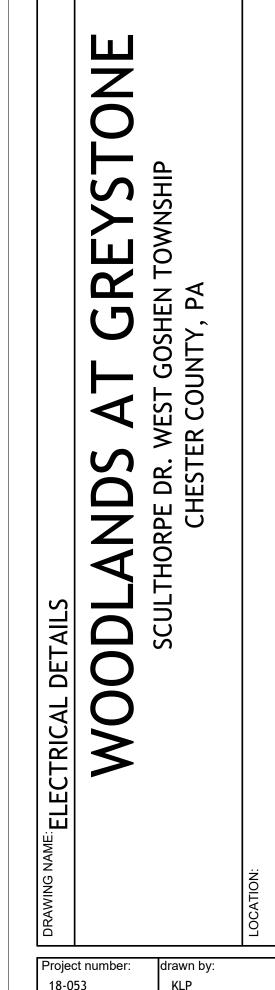
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# PART 1 - GENERAL

# 1.1 SCOPE OF WORK

- A. IT IS THE INTENT OF THESE SPECIFICATIONS AND ACCOMPANYING DRAWINGS TO GENERALLY DESCRIBE THE WORK NECESSARY FOR THE INSTALLATION OF A COMPLETE ELECTRICAL, LIGHTING, AND POWER SYSTEM (INCLUDING FIRE
- B. THESE DRAWINGS AND SPECIFICATIONS ARE NOT INTENDED TO SHOW THE LOCATION OF EVERY WIRE, CONDUIT, FITTING, ETC., BUT IS UNDERSTOOD THAT THE CONTRACTOR SHALL FURNISH AND INSTALL ALL MATERIALS AND LABOR FOR COMPLETE WORKABLE SYSTEMS UNLESS NOTED OTHERWISE IN THIS SPECIFICATION OR ON THE DRAWINGS.
- C. CONTRACTOR SHALL PROVIDE BUT NOT BE LIMITED TO:
- 1. COMPLETE SYSTEM OF WIRING FOR EMERGENCY LIGHTING, LIGHT AND POWER, PLUMBING, HVAC EQUIPMENT, FIRE ALARM ALONG WITH TELEPHONE AND DATA EQUIPMENT INSTALLATION.
- ALL PANELS, SWITCHBOARDS, MOTOR CONTROLLERS, TRANSFORMERS, DISCONNECTS, RECEPTACLES, SWITCHES, OUTLETS AND PLATES FOR SAME, FEEDERS FROM PANELS AND RELATED APPURTNENANCES.
- 3. LIGHTING FIXTURES, LAMPS, BALLASTS AND APPURTENANCES.
- D. DESIGN DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL OFFSETS, BENDS, ELBOWS, FITTINGS OR OTHER SPECIFIC ELEMENTS WHICH MAY BE REQUIRED FOR COMPLETE INSTALLATION OF THE WORK. SUCH WORK MAY BE ACCOMPLISHED AT THE SITE. ADDITIONAL BENDS, OFFSETS AND CONDUIT AS REQUIRED BY VERTICAL AND HORIZONTAL EQUIPMENT LOCATIONS OR OTHER JOB CONDITIONS SHALL BE PROVIDED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
- E. EXCEPT WHERE SHOWN IN DIMENSIONAL DETAIL, THE LOCATIONS OF SWITCHES, RECEPTACLES, LIGHTS AND OTHER EQUIPMENT SHOWN ON PLANS ARE APPROXIMATE. SUCH ITEMS SHALL BE PLACED SO AS TO ELIMINATE INTERFERENCE WITH DUCTS, PIPING AND EQUIPMENT. THE EXACT LOCATION SHALL BE DETERMINED IN THE FIELD. ALL DOOR SWINGS SHALL BE VERIFIED SO THAT LIGHT SWITCHES ARE PROPERLY LOCATED.
- F. FIELD VERIFY EXISTING CONDITIONS AND COORDINATE ALL WORK WITH ALL OTHER TRADES, AND ACTUAL CONDITIONS IN FIELD.
- G. ALL DEBRIS MATERIAL RESULTING FROM NEW WORK SHALL, UNLESS OTHERWISE INDICATED, BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE 1.2 GENERAMONEOU FROME THE PREMISES BY HIM.
- A. PROVIDE (FURNISH AND INSTALL) ALL WORK SPECIFIED OR INDICATED, IN CONFORMANCE WITH THE MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS, COMPLETE WITH ALL APPURTENANCES, ARRANGED TO MEET JOB CONDITIONS, FOR COMPLETE OPERATING SYSTEMS IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC) AND ALL OTHER LOCAL CODES/REGULATIONS. ALL EQUIPMENT AND MATERIALS INSTALLED SHALL BEAR THE LABEL OF THE UNDERWRITER'S LABORATORIES, INC., WHERE SO REQUIRED BY THE NFPA REGULATIONS.
- 1.3 QUALITY ASSURANCE
- A. APPROVAL OF MATERIALS AND EQUIPMENT WILL BE BASED ON THE MANUFACTURER'S PUBLISHED DATA. PROOF THAT THE ITEMS FURNISHED CONFORM TO THE SPECIFIED REQUIREMENTS AS INDICATED BELOW SHALL BE SUBMITTED FOR APPROVAL.
- B. WHERE MATERIAL AND EQUIPMENT ARE SPECIFIED TO CONFORM TO THE STANDARDS OF THE UNDERWRITER'S LABORATORIES (UL), INC., THE UL LABEL OR LISTING WILL BE ACCEPTABLE AS SUFFICIENT EVIDENCE THAT THE ITEMS CONFORM TO REQUIREMENTS.
- C. EQUIPMENT DESIGN, FABRICATION, TESTING, PERFORMANCE AND INSTALLATION SHALL, UNLESS SHOWN OTHERWISE, COMPLY WITH AND MEET ALL THE APPLICABLE REQUIREMENTS OF NFPA 70 (THE NEC), ANSI C2, REFERENCED INDUSTRIAL CODES AND STANDARDS AND LOCAL CODES HAVING JURISDICTION.
- 1.4 MATERIALS AND SUBMITTALS
- A. ALL MATERIALS SHALL BE NEW. THE CONTRACTOR MAY SELECT DEVICES AS INDICATED ON THESE DRAWINGS. SUBSTITUTES MAY BE SUBMITTED AND USED WITH WRITTEN APPROVAL OF OWNER/ARCHITECT/ENGINEER. SUBMIT SHOP DRAWINGS TO OWNER/ARCHITECT/ENGINEER FOR APPROVAL.
- B. SHOP DRAWINGS SHALL INCLUDE BUT ARE NOT LIMITED TO:
- LIGHTING FIXTURES
- 2. RECEPTACLES, BOXES, ENCLOSURES
- 3. SERVICE EQUIPMENT 4. PANELBOARDS
- 5. CONDUIT, WIRING, FITTINGS
- 6. DISCONNECT SWITCHES
- 7. SWITCHES, COVER PLATES
- 8. TIME CLOCKS, PHOTOCELLS AND LIGHTING CONTACTOR
- C. SUBMITTALS SHALL BE MADE FOR THE EQUIPMENT LISTED ABOVE. THE ARCHITECT SHALL MAKE THE ULTIMATE DECISION ON COLOR AND FINISH FOR ALL DEVICES SUCH AS RECEPTACLES, SWITCHES, SWITCH PLATES, AS WELL AS ANY OTHER CONTROL DEVICES. THIS APPROVAL SHALL BE MADE BEFORE ANY ITEMS ARE
- D. PRODUCT REQUIREMENTS: MATERIALS AND EQUIPMENT TO BE PROVIDED SHALL BE THE STANDARD CATALOGED PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN THE MANUFACTURE OF THE PRODUCTS. MATERIALS AND EQUIPMENT SHALL MEET THE SPECIFIED AND DETAILED REQUIREMENTS INDICATED, BE SUITABLE FOR THE INSTALLATION SHOWN AND SHALL REPRESENT PRODUCTS THAT HAVE BEEN IN SATISFACTORY USE AT LEAST TWO YEARS. PRODUCTS NOT MEETING ALL SPECIFIED REQUIREMENTS WILL NOT BE ACCEPTED.
- E. OWNER INSTRUCTION AND OPERATION MANUALS SHALL BE PROVIDED TO INSTRUCT IN THE PROPER OPERATION AND MAINTENANCE OF ALL WORK. PROVIDE A MINIMUM OF (3) THREE OPERATING MANUALS FOR ALL WORK. 1.5 APPROVALS, CODES, ORDINANCES AND REGULATIONS
- A. ALL WORK AND MATERIALS SHALL CONFORM TO ALL CODES, ORDINANCES, REGULATIONS, STANDARDS AND RULES. ALL PERMITS, UTILITY FEES AND COSTS, INSPECTION CERTIFICATES AND APPROVALS SHALL BE SECURED AND PAID BY THE CONTRACTOR.
- B. WORK SHALL NOT BE COVERED UP NOR ENCLOSED UNTIL IT HAS BEEN INSPECTED. TESTED AND APPROVED. ANY WORK THAT IS ENCLOSED OR COVERED UP BEFORE SUCH INSPECTION AND TEST, SHALL BE UNCOVERED. AFTER IT HAS BEEN INSPECTED AND APPROVED, ALL UNCOVERED ITEMS SHALL BE RESTORED TO ITS ORIGINAL COVERED CONDITION AT NO ADDITIONAL COST TO THE OWNER.
- C. SECURE ELECTRICAL INSPECTION CERTIFICATE FROM AUTHORIZED AGENT.
- 1.6 CONTINUITY OF WORK AND COORDINATION
- A. PLAN CONSTRUCTION SCHEDULE TO COORDINATE WITH ALL OTHER TRADES, UNLESS A SCHEDULED CHANGE HAS BEEN ARRANGED WITH THE OWNER/ARCHITECT/ENGINEER.

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B. COORDINATION SHALL INCLUDE ADEQUATE CLEARANCES FOR THE INSTALLATION AND MAINTENANCE OF EQUIPMENT AND PHYSICAL AND ELECTRICAL REQUIREMENTS OF ITEMS OR EQUIPMENT REQUIRING CONNECTIONS.

- 1.7 STORAGE AND PRESERVATION OF MATERIALS
  - A. EQUIPMENT AND MATERIALS STORED AT THE SITE. PRIOR TO FINAL INSTALLATION. SHALL BE FULLY PROTECTED FROM DAMAGE, DIRT, DEBRIS, AND WEATHER. DENTS, MARRED FINISHES AND OTHERWISE DAMAGED EQUIPMENT SHALL BE REPAIRED TO ITS ORIGINAL CONDITION OR REPLACED.
- 1.8 SUPPORTING DEVICES AND HANGERS
- A. SECURE ALL EQUIPMENT, DEVICES AND RACEWAYS.
- B. ELECTRICAL COMPONENTS AND SYSTEMS AND THEIR ATTACHMENTS SHALL BE DESIGNED TO RESTRAIN SEISMIC FORCES AS REQUIRED BY ALL AUTHORITIES AND LOCAL ORDINANCES HAVING JURISDICTION
- C. ALL CONDUITS SHALL BE SECURELY FASTENED WITHIN 3 FEET OF EACH OUTLET BOX, JUNCTION BOX, CABINET, FITTING OR END OF CONDUIT, OR AS SHOWN ON
- D. SUPPORTS SHALL BE HOT-DIPPED GALVANIZED STEEL OR AS INDICATED ON THE
- E. DO NOT FASTEN SUPPORTS TO PIPES, DUCTS, MECHANICAL EQUIPMENT OR

# 1.9 IDENTIFICATION

- A. ALL ELECTRICAL EQUIPMENT SHALL BE IDENTIFIED AS HEREIN SPECIFIED AND INDICATED ON THE DRAWINGS. EQUIPMENT TO BE IDENTIFIED SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
- ELECTRICAL POWER AND BRANCH CIRCUIT CONDUCTORS
- FEEDER CONDUITS
- 3. OUTLET BOXES (COVER PLATES)
- 4. PANELBOARDS
- 5. DISCONNECTS
- 6. FIRE ALARM CONTROL PANELS
- B. NAMEPLATES SHALL GENERALLY BE BLACK TYPED LETTERS WITH WHITE BACKGROUND OR WHITE TYPED LETTERS WITH BLACK BACKGROUND ON LAMINATED PLASTIC WITH BEVELED EDGES. LETTERS SHALL BE A MINIMUM OF 1/8" HIGH. CONDUIT MARKERS SHALL BE STANDARD PRE-PRINTED FLEXIBLE PLASTIC SHEET MATERIAL OR SELF-ADHERING VINYL LABELS. WIRE MARKERS SHALL BE LAMINATED PLASTIC NAMEPLATES, SELF-ADHERING VINYL LABELS OR TAPE. 3
- C. PROVIDE A TYPED DIRECTORY FOR EACH PANELBOARD INDICATING THE ITEM/ITEMS CONTROLLED BY EACH CIRCUIT. THE DIRECTORY SHALL BE LOCATED ON THE INSIDE OF THE HINGED DOOR TO THE PANEL

# PART 2 - PRODUCTS

# 2.1 BUILDING WIRE AND CABLE

- A. WIRE AND CONDUCTORS
- 1. INSULATED CURRENT-CARRYING WIRE AND GROUNDING CONDUCTORS SHALL BE COPPER AND SHALL CONFORM TO NFPA 70 AND ASTM B3 (SOFT OR ANNEALED COPPER WIRE).
- 2. CONDUCTORS NO. 10 AWG AND SMALLER SHALL BE SOLID ROUND COPPER WIRE. CONDUCTORS NO. 8 AWG AND LARGER SHALL BE STRANDED CONCENTRIC COPPER WIRE.
- 3. MULTICONDUCTOR CABLE: COMPLY WITH NEMA WC 70 FOR ARMORED CABLE (TYPE AC) AND METAL-CLAD CABLE (TYPE MC) WITH GROUND WIRE (ONLY ALLOWABLE FOR CIRCUITS 40A OR LESS). WHERE USED IN HEALTH CARE FACILITIES, IT SHALL BE RATED PER NEC REQUIREMENTS. HEALTH CARE FACILITY (HCF) CABLE SHALL BE OF ALUMINUM ARMOR, AND PROVIDED WITH
- ALL NECESSARY CONNECTORS. MEET UL STANDARD 4; NEC ARTICLE 517. 4. THE CONTRACTOR SHALL PROVIDE APPROPRIATELY SIZED FEEDERS, BRANCH, CONTROL AND MISCELLANEOUS CONDUCTORS APPROPRIATELY SIZED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE.
- 5. ALL WIRING SHALL BE INSTALLED IN CONDUIT OR MULTICONDUCTOR CABLE WHERE ALLOWED.
- 6. BUILDING WIRE SHALL BE TYPE THW, THHN/THHW OR XHHW WITH A MINIMUM TEMPERATURE RATING OF 75 DEGREES C.
- 7. A GREEN GROUND WIRE SHALL BE RUN WITH ALL CIRCUITS.
- 8. CONTRACTOR SHALL ACCOUNT FOR VOLTAGE DROP WHEN PROVIDING LONG LEAD LENGTHS OF CONDUCTORS.
- B. INSTALLATION
- 1. RACEWAYS AND WIRING SHALL BE INSTALLED AS INDICATED AND CIRCUITS SHALL NOT BE COMBINED WITHOUT PRIOR APPROVAL.
- 2. CONDUCTORS OF SPECIAL SERVICE SYSTEMS AND POWER SYSTEMS SHALL NOT OCCUPY THE SAME ENCLOSURE WITH LIGHT AND POWER CONDUCTORS OR THE SAME ENCLOSURE WITH EACH OTHER. CONDUCTORS SHALL BE CONTINUOUS WITH SPLICES AND CONNECTIONS MADE IN OUTLET, JUNCTION OR PULL BOXES ONLY.
- 3. ALL FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE COLOR CODED AS

,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
CONDUCTOR	240/120V
PHASE A	BLACK
PHASE B	RED
NEUTRAL	WHITE
GROUND	GREEN

- 4. CONDUCTORS UP TO AND INCLUDING NO.8 AWG SHALL BE MANUFACTURED WITH COLORED INSULATING MATERIALS. CONDUCTORS LARGER THAN NO.8 AWG SHALL HAVE ENDS IDENTIFIED WITH COLORED PLASTIC TAPE IN ALL OUTLET, PULL OR JUNCTION BOXES. ALL CONTROL CIRCUIT CONDUCTORS SHALL BE IDENTIFIED AT EACH CONNECTION POINT.
- 5. CONNECTIONS AND SPLICES SHALL BE MADE IN APPROVED ENCLOSURES UTILIZING SOLDERLESS PRESSURE CONNECTORS AND ADEQUATE INSULATION WITH VINYL-PLASTIC ELECTRICAL INSULATING TAPE. CONDUCTOR IDENTIFICATION SHALL BE PROVIDED WITHIN EACH ENCLOSURE WHERE A TAP, SPLICE OR TERMINATION IS MADE AND AT THE EQUIPMENT TERMINAL OF EACH
- 6. WHERE SEVERAL FEEDERS PASS THROUGH A COMMON PULLBOX, THE FEEDERS SHALL BE TAGGED TO CLEARLY INDICATE THE ELECTRICAL CHARACTERISTICS, CIRCUIT NUMBER AND PANEL DESIGNATION.
- 7. MAXIMUM CABLE PULLING TENSION SHALL NOT EXCEED VALUES
- RECOMMENDED BY CABLE MANUFACTURER. 8. CIRCUIT CONDUCTORS SHALL BE SAME AWG SIZE FROM SOURCE TO LOAD. NEUTRAL WIRES SHALL BE THE SAME SIZE AS PHASE WIRES EXCEPT AS NOTED
- 9. ALL 600V RATED WIRE CONNECTIONS, NO.8 AWG AND LARGER, STUD-TYPE OR FLAT-BAR TYPE EQUIPMENT TERMINALS SHALL BE TERMINATED WITH A COMPRESSION TYPE LUG.
- 10. MULTICONDUCTOR CABLE MAY ONLY BE USED WHERE CONCEALED IN WALLS OR ABOVE ACCESSIBLE CEILINGS IN ACCORDANCE WITH THE NEC. MULTICONDUCTOR CABLE SHALL BE SUPPORTED INDEPENDENT OF CEILING STRUCTURE.
- 11. MULTICONDUCTOR CABLE IN PLENUM SPACES SHALL BE COMPLIANT WITH NEC 300.22 - MC CABLE EMPLOYING A SMOOTH OR CORRUGATED METAL SHEATH WITHOUT AN OVERALL NONMETALLIC COVERING.

## 2.2 GROUNDING

- A. PROVIDE ALL ELECTRICAL SYSTEM GROUNDS AS REQUIRED BY THE NATIONAL ELECTRICAL CODE, AND THE NATIONAL ELECTRICAL SAFETY CODE.
- B. THE FOLLOWING SHALL BE SOLIDLY GROUNDED:
- 1. CONDUIT SYSTEM (NEC ARTICLE 250)
- 2. ALL EQUIPMENT WITH ANY ELECTRICAL CONNECTIONS

CONDUCTOR ENCLOSURES SHALL BE GROUNDED.

3. NEUTRAL LEAD OF LOW TENSION SECONDARY SERVICE

- C. A SEPARATE GROUNDING CONDUCTOR SHALL BE FURNISHED AND INSTALLED FOR ALL ELECTRICAL CIRCUITS. ALL ELECTRICAL EQUIPMENT ENCLOSURES AND
- D. ALL FEEDER DISCONNECTS AND BREAKERS RATED 1000 AMPERES AND ABOVE IN A SOLIDLY GROUNDED WYE SYSTEM WITH GREATER THAN 150 VOLTS TO GROUND, BUT NOT EXCEEDING 600 VOLTS PHASE TO PHASE SHALL BE PROVIDED WITH GROUND FAULT PROTECTION.

### 2.3 RACEWAYS AND BOXES A. RACEWAY

- 1. ELECTRICAL METALLIC TUBING (EMT) SHALL BE METALLIC CONDUIT OF THE THIN WALL TYPE IN STRAIGHT LENGTHS, ELBOWS, OR BENDS AND SHALL CONFORM TO ANSI C80.3 AND THE REQUIREMENTS OF UL 797.
- 2. COUPLINGS AND CONNECTORS FOR EMT SHALL BE HEX-NUT EXPANSION-GLAND, COMPRESSION TYPE, ZINC OR CADMIUM-PLATED. CRIMP SPRING OR SET-SCREW TYPE FITTINGS ARE NOT ACCEPTABLE. WHERE EMT ENTERS OUTLET BOXES, CABINETS OR OTHER ENCLOSURES, CONNECTORS SHALL BE THE INSULATED-THROAT TYPE, WITH LOCKNUTS. FITTINGS SHALL MEET THE REQUIREMENTS OF ANSI/NEMA FBI.
- 3. FLEXIBLE METALLIC CONDUIT (FMC) SHALL MEET THE REQUIREMENTS OF UL 1.
- 4. RIGID GALVANIZED STEEL CONDUIT (RMC) SHALL CONFORM TO UL 6 AND ANSI
- C80.1. CONDUIT FITTINGS SHALL CONFORM TO ANSI/NEMA FBI. 5. INTERMEDIATE METAL CONDUIT (IMC) SHALL MEET THE REQUIREMENTS OF
- 6. FURNISH AND INSTALL BUSHINGS, AS MANUFACTURED BY O.Z. OR T&B COMPANIES FOR ALL POWER SYSTEM CONDUITS AND LIGHTING CIRCUIT CONDUITS 1-1/4" AND LARGER.
- 7. LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT (LTFMC): STEEL, CONSTRUCTED OF SINGLE STRAP, FLEXIBLE CONTINUOUS, INTERLOCKED, AND DOUBLE-WRAPPED METAL WITH A LIQUID-TIGHT JACKET OF FLEXIBLE POLYVINYL CHLORIDE (PVC)
- 8. RIGID NONMETALLIC CONDUIT (RNC) SHALL COMPLY WITH NEMA TC2, SCHEDULE 40 AND SCHEDULE 80 PVC. RNC FITTINGS SHALL COMPLY WITH NEMA TC3, MATCH TO CONDUIT TYPE AND MATERIAL.

ANSI C80.6.

CONFORMING TO NEMA RN1.

1. JUNCTION BOXES AND PULL BOXES SHALL HAVE SUFFICIENT VOLUME TO ACCOMMODATE THE NUMBER OF CONDUCTORS ENTERING THE BOX IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 70 ARTICLE 314. BOXES SHALL BE CADMIUM-PLATED OR ZINC-COATED SHEETMETAL. JUNCTION BOXES AND PULL BOXES FOR USE WITH THE CONDUIT SYSTEMS SHALL NOT BE LESS THAN 1 1/2 " DEEP AND 4" BY 4". PULL AND JUNCTION BOXES SHALL BE FURNISHED WITH HINGED OR SCREW-FASTENED COVERS.

# C. INSTALLATION

- 1. CONDUIT AND FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 70 AND AS SPECIFIED HEREIN.
- INSTALL RACEWAYS SQUARE WITH BUILDING WALLS AND FASTENED TO BUILDING STRUCTURE.
- 3. EMT SHALL BE INSTALLED INDOORS IN DRY LOCATIONS NOT SUBJECT TO MECHANICAL INJURY. ALSO, CONCEALED CIRCUITS AND CIRCUITS LOCATED IN PLENUM SHALL BE EMT UNLESS OTHERWISE NOTED.
- 4. RMC CONDUIT SHALL BE USED IN ALL OPEN SHOP AREAS TO A MINIMUM ELEVATION OF 15'-0" AFF.
- RMC AND IMC WITH THREADED FITTINGS SHALL BE INSTALLED OUTDOORS, WHERE UNDERGROUND, OR IN AREAS SUBJECT TO WEATHER AND/OR MECHANICAL INJURY.
- 6. RNC SHALL BE INSTALLED OUTDOORS, WHERE UNDERGROUND, OR IN AREAS SUBJECT TO WEATHER AND/OR MECHANICAL INJURY. FOR RNC, USE SOLVENT-CEMENTED JOINTS IN DUCTS AND FITTINGS AND MAKE WATERTIGHT ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS. STAGGER COUPLINGS SO THOSE OF ADJACENT DUCTS DO NOT LIE IN THE SAME PLANE
- 7. FMC AND LTFMC WITH SEPARATE GROUND WIRE SHALL BE INSTALLED IN AREAS SUBJECT TO VIBRATION IN MAXIMUM SIX FOOT LENGTHS PROPERLY SUPPORTED.
- WHERE APPLICABLE, CONDUITS SHALL BE FASTENED TO ALL SHEET METAL BOXES, GUTTERS AND CABINETS WITH TWO LOCKNUTS AND A BUSHING.
- 9. THE CONTRACTOR SHALL FURNISH AND INSTALL ABOVE GRADE CONDUIT SYSTEMS AS SPECIFIED, INCLUDING ALL NECESSARY SUPPORTS, HANGERS, AND OTHER HARDWARE. IF THERE ARE ANY MAJOR DISCREPANCIES, CHANGES OR QUESTIONABLE ROUTING, THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE FOR RESOLUTION AND/OR APPROVAL.
- 10. EXPOSED CONDUIT SHALL BE NEATLY AND EVENLY SPACED AND SHALL RUN PARALLEL TO CEILING, FLOORS, WALLS OR OTHER PERMANENT STRUCTURES.
- 11. CONDUIT IN FINISHED AREAS SHALL BE INSTALLED CONCEALED. 12. CONDUIT SHALL BE SECURELY CLAMPED AND SUPPORTED AT LEAST EVERY 10
- 13. CONDUIT AND BOXES SHALL NOT BE SUPPORTED FROM T-BAR CEILING WIRES.

FEET VERTICALLY AND 8 FEET HORIZONTALLY. GALVANIZED PIPE STRAPS

SHALL BE FASTENED TO STRUCTURE WITH BOLTS, SCREWS AND ANCHORS.

14. EXPANSION FITTINGS WITH FLEXIBLE GROUND STRAP SHALL BE PROVIDED IN

CONDUIT RUNS CROSSING BUILDING EXPANSION JOINTS. 15. CONTRACTOR SHALL AVOID MORE THAN THREE 90 DEGREE BENDS, OR

EQUIVALENT. IN A RUN BETWEEN PULL FITTINGS.

16. EMERGENCY LIGHTING SYSTEM WIRING SHALL BE IN RIGID CONDUIT, EMT OR SURFACE RACEWAY.

# 2.4 WIRING DEVICES

A. WALL SWITCHES

- 1. SWITCHES SHALL BE SPECIFICATION GRADE, 120/277 VOLTS, IVORY TOGGLE,
- 20 AMPS, HUBBELL OR APPROVED EQUAL. SWITCH LOCATIONS TO BE CONFIRMED WITH ARCHITECT/OWNER PRIOR TO ROUGHING-IN.

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2. SWITCHES TO BE LOCATED IN THE SAME GANGED PLATE WITH DIMMERS. SWITCHES SHALL MATCH THE SAME STYLE AS THE DIMMERS IN THE GANG.

# B. DIMMER SWITCHES

1. DIMMERS SHALL BE BY LUTRON OR AN APPROVED EQUIVALENT. DIMMERS SHALL MATCH THE HOLE OPENING OF NEARBY NEIGHBORING SWITCHES. THEY SHALL BE SPECIFICATION GRADE, SLIDE TYPE OR BUTTON TYPE FOR RAISE AND LOWER FUNCTIONS. THEY SHALL BE RATED FOR 120 VOLTS OR 277 VOLTS AS APPLICABLE. THE RATED WATTAGE SHALL BE DEPENDENT UPON THE LIGHTING LOAD. DIMMERS TYPE SHALL MATCH THE LOAD TYPE THAT THEY ARE CONTROLLING - FLUORESCENT FOR FLUORESCENT DIMMING, ELECTRONIC LOW VOLTAGE FOR DIMMING ELECTRONIC TRANSFORMERS, VERIFY APPLICATION REQUIREMENTS WITH DIMMER MANUFACTURER. PROVIDE ACCESSORIES AND APPURTENANCES AS NECESSARY TO SUPPORT LARGER LOADS OR THOSE DIMMING APPLICATIONS WHICH REQUIRE INTERFACES. FLUORESCENT DIMMERS SHALL BE COMPATIBLE WITH THE FLUORESCENT DIMMING BALLASTS THEY ARE CONTROLLING. DIMMER LOCATIONS TO BE CONFIRMED WITH OWNER PRIOR TO ROUGHING-IN.

# C. OCCUPANCY SENSORS

- 1. OCCUPANCY SENSORS SHALL BE DUAL TECHNOLOGY TYPE. THEY SHALL BE CEILING MOUNT AS INDICATED ON THE DRAWINGS.
- THE OCCUPANCY SENSOR SHALL BE WHITE.

COMPLETE, OPERABLE SYSTEM.

- 3. PROVIDE OCCUPANCY SENSOR SWITCH APPROPRIATELY COORDINATED WITH THE CEILING MOUNT OCCUPANCY SENSOR.
- 4. PROVIDE RELAYS AND APPURTENANCES AS NECESSARY TO CREATE A
- 5. SENSORS SHALL BE SET TO AUTOMATICALLY TURN OFF LIGHTS WITHIN 30 MINUTES OF ALL OCCUPANTS LEAVING THE SPACE.
- 6. SENSORS SHALL BE SET TO BE MANUAL ON OR CONTROLLED TO AUTOMATICALLY TURN ON THE LIGHTING TO NOT MORE THAN 50% POWER. FULL AUTOMATIC-ON CONTROLS SHALL BE PERMITTED TO CONTROL LIGHTING IN PUBLIC CORRIDORS, STAIRWAYS, RESTROOMS, AND BUILDING ENTERANCE
- 7. COMBINATION WALL BOX 0-10V DIMMER/SWITCH/OCC SENSORS SHALL BE PIR TYPE WITH 180 DEG FIELD OF VIEW AND MINIMUM 1000 SQ FT OF MAJOR MOTION COVERAGE. IT SHALL BE COMPATIBLE WITH 0-10VCD LED/FLR LAMPS
- AND CAPABLE OF FUNCTIONING IN A 3-WAY SWITCHING ARRANGEMENT. a. BASIS OF DESIGN IS EATON OSW-P-010, OR APPROVED EQUAL.
- b. DEVICE COLOR SELECTION SHALL BE FROM MANUFACTURER'S FULL RANGE. FINAL SELECTION SHALL BE BY ARCHITECT. THE FOLLOWING BASE COLOR COMBINATIONS SHALL BE UTILIZED:
- BLACK DEVICE / STAINLESS STEEL PLATE WHITE OUTLET / WHITE PLASTIC PLATE
- GRAY OUTLET / GRAY PLASTIC WALL PLATE D. SAFTEY SWITCHES

1. SAFETY SWITCHES SHALL BE FUSED OR NON-FUSED AS REQUIRED. THEY SHALL BE THE HEAVY-DUTY TYPE AS MANUFACTURED BY SIEMENS, GENERAL ELECTRIC, SQUARE D OR APPROVED EQUAL. THE SAFETY SWITCHES SHALL HAVE A POSITIVE QUICK MAKE AND QUICK BREAK OPERATING MECHANISM

# WITH SAFETY INTERLOCKING COVER AND EXTERNAL OPERATING HANDLE.

- E. RECEPTACLES 1. DUPLEX AND QUADRUPLEX RECEPTACLES SHALL BE FLUSH, HEAVY DUTY, GENERAL USE, 20A, 120V, GROUNDING TYPE, INDUSTRIAL SPECIFICATION GRADE AS MANUFACTURED BY HUBBELL OR APPROVED EQUAL, NEMA 5-20R CONFIGURATION. COLOR SHALL BE IVORY
- 2. GROUND FAULT CIRCUIT INTERRUPTING RECEPTACLES SHALL BE STRAIGHT BLADE, GENERAL USE, SPECIFICATION GRADE AS MANUFACTURED BY HUBBELL OR APPROVED EQUAL, NEMA 5-20 CONFIGURATION, 120V, COMPLYING WITH UL 498 AND UL 943. GFCI UNITS SHALL BE DESIGNED FOR INSTALLATION IN A 2 3/4" DEEP OUTLET BOX WITHOUT AN ADAPTER. COLOR
- SHALL BE IVORY. F. WALL SWITCHES, RECEPTACLE AND OTHER MISCELLANEOUS DEVICE PLATES
- 1. DEVICE PLATES AND RECEPTACLE COVER PLATES SHALL BE LABELED (ON THE INSIDE) SHOWING THE CIRCUIT NUMBER.
- 2. FOR LOCATIONS WHERE THERE ARE MULTIPLE DEVICES, THE COVER PLATE SHALL BE ONE SOLID PIECE TO SUIT THE DEVICES INSTALLED. ALL PLATES SHALL FIT SNUGLY AND TIGHTLY AGAINST THE FINISHED BUILDING'S
- 3. FOR THE CASE OF DIMMERS GANGED TOGETHER, THE CONTRACTOR SHALL
- APPLY THE APPROPRIATE DERATING FACTORS AS THE MULTIPLE DIMMERS ARE GANGED TOGETHER.
- 4. PLATES FOR SURFACE BOXES SHALL BE CADMIUM PLATED OR GALVANIZED. G. BOXES AND FITTINGS

SURFACES.

- 1. COMPLY WITH UL 514B, FITTINGS FOR CONDUIT AND OUTLET BOXES.
- 2. JUNCTION AND PULL BOXES SHALL BE INSTALLED WHERE SHOWN ON THE DRAWINGS, OR AT SUCH LOCATIONS AS MAY BE REQUIRED TO FACILITATE THE PULLING OF CABLES.
- 3. PULL BOXES SHALL BE FURNISHED AND INSTALLED ON CONDUIT RUNS LONGER THAN 100 FEET OR WITH MORE THAN THREE RIGHT-ANGLE BENDS.
- 4. OUTLET BOXES SHALL BE EQUIPPED WITH PLASTER RINGS, EXTENSION RINGS AND FIXTURE STUDS WHERE REQUIRED. ALL UNUSED OPENINGS IN BOXES SHALL BE CLOSED WITH FACTORY MADE KNOCKOUT SEALS.
- ENTERING OR LEAVING THE BOXES.

WORKING AS INTENDED.

H. INSTALLATION 1. WIRING DEVICES SHALL BE INSTALLED AND TESTED TO VERIFY THE UNITS ARE

5. BOXES AND ENCLOSURES SHALL BE SECURELY MOUNTED TO THE BUILDING

STRUCTURE WITH SUPPORTING FACILITIES INDEPENDENT OF THE CONDUIT

- 2. CONTRACTOR SHALL TROUBLESHOOT ANY DEVICES NOT FUNCTIONING PROPERLY OR AS INTENDED. CONTRACTOR SHALL EITHER RESTORE THE PROBLEMATIC DEVICE OR REPLACE IT IN LIKE KIND. RETEST UNTIL DEVICES ARE VERIFIED TO BE IN WORKING CONDITION.
- 3. BARRIERS BETWEEN ADJACENT DEVICES SHALL BE INSTALLED WHERE REQUIRED PER NEC 406.4(G).

- 2.6 ENCLOSED CIRCUIT BREAKERS AND SWITCHES
- A. CONTRACTOR SHALL PROVIDE AND INSTALL ENCLOSED BREAKERS AND SWITCHES WITH TRIP RATINGS, REQUIRED POLES AND VOLTAGES AS INDICATED ON THE
- B. UNITS SHALL BE MANUFACTURED BY SIEMENS, GENERAL ELECTRIC, SQUARE D OR
- C. ENCLOSURES SHALL COMPLY WITH NEMA AB 1 AND NEMA KS 1 TO MEET

- A. MOTOR DISCONNECTING SWITCHES
- 1. SHOULD ANY MOTORS BE LOCATED OUT OF SIGHT OR GREATER THAN 50 FEET FROM THEIR CONTROLLERS, THE CONTRACTOR SHALL FURNISH AND INSTALL A
- 2.10 PANELBOARDS

- 1. PANELBOARDS SHALL UTILIZE BOLT-ON BREAKERS. LOAD CENTERS ARE NOT PERMITTED. VOLTAGE, PHASE, NUMBER OF POLES AND MAIN BREAKER OR LUGS AS SHOWN ON THE CONTRACT DRAWINGS, WITH HINGED COVER,
- a. THE A.I.C. RATING SHALL BE AS INDICATED ON THE DRAWING OR SHALL BE COORDINATED WITH THE UTILITY. THE PANELBOARD SHORT CIRCUIT RATING SHALL BE NO LESS THAN THE SUM OF THE SERVICE ENTRANCE FAULT CURRENT PLUS 3600A FOR MOTOR SHORT CIRCUIT

BOLTED CONNECTIONS TO THE BUS.

- PANELBOARDS SHALL BE EQUIPPED WITH COPPER BUS.
- 4. PROVIDE PANELBOARD WITH HINGED DOOR IN DOOR COVER.
- NEMA AB1 AND COMPATIBLE WITH EXISTING PANELBOARDS. 2. CIRCUIT BREAKERS SHALL HAVE A MINIMUM INTERRUPTING RATING TO MATCH THAT OF THE PANELBOARD. CIRCUIT BREAKERS BE FULLY RATED. CIRCUIT

- 1. CONTRACTOR SHALL ADHERE TO ALL CLEARANCE REQUIREMENTS AS STATED IN THE NEC.
- 2. CONTRACTOR SHALL BALANCE PANELBOARD LOADS TO THE BEST OF THEIR
- ABILITY AND IN ACCORDANCE WITH NEC. 3. THE INSIDE OF THE PANEL SHALL BE EQUIPPED WITH A CARD HOLDER AND A
- 4. LABEL ALL NEUTRAL WIRES WITH ASSOCIATED CIRCUIT NUMBER
- B. EXIT SIGNS AND EMERGENCY BATTERY PACK FIXTURES SHALL BE CIRCUITED TO AN UNSWITCHED LEG OF THE ROOM CIRCUIT LIGHTING. WHERE EMERGENCY BATTERY PACK FIXTURES ARE NOT PROVIDED, BALLAST BATTERY PACKS SHALL BE INSTALLED IN VARIOUS LOCATIONS INDICATED ON THE DRAWINGS. INSTALLATION
- NFPA 70 AND NFPA 72. C. LED LIGHT FIXTURES SHALL BE IN ACCORDANCE WITH IES, NFPA, UL, AS SHOWN ON
- D. LED LIGHT FIXTURES SHALL BE REDUCTION OF HAZARDOUS SUBSTANCES
- E. LED DRIVERS SHALL INCLUDE THE FOLLOWING FEATURES UNLESS OTHERWISE INDICATED:
- 1. MINIMUM EFFICIENCY: 85% AT FULL LOAD. 2. MINIMUM OPERATING AMBIENT TEMPERATURE: -20° C. (-4° F.)
- 3. INPUT VOLTAGE: 120 277V (±10%) AT 60 HZ. 4. INTEGRAL SHORT CIRCUIT, OPEN CIRCUIT, AND OVERLOAD PROTECTION.

7. COMPLY WITH FCC 47 CFR PART 15.

3. MINIMUM RATED LIFE: 50,000 HOURS PER IES L70.

- APPROVED EQUIVALENT.
- ENVIRONMENTAL CONDITIONS OF THE INSTALLED LOCATION. ENCLOSURES SHABIELNEMA 250, TYPE I, UNLESS OTHERWISE INDICATED.
- D. COMPLY WITH APPLICABLE PORTIONS OF NECA 1, NEMA PB 1.1, AND NEMA PB 2.1 FOR INSTALLATION OF ENCLOSED SWITCHES AND CIRCUIT BREAKERS.

# 2.8 MOTOR CONTROLLERS

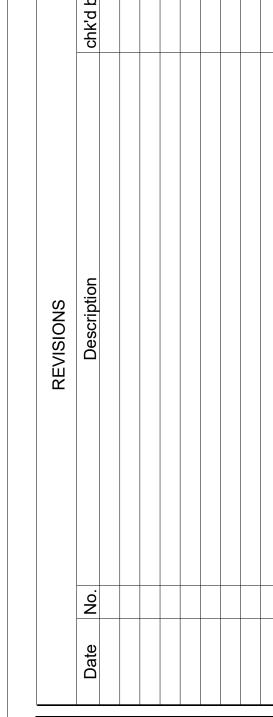
- NON-FUSED SAFETY SWITCH IN CLOSE VICINITY TO THE MOTOR.
- A. PANELBOARDS
- OVERSIZE BACKBOX.
- CONTRIBUTION.
- THE "MDP" SHALL BE SERVICE ENTRANCE RATED.
- B. CIRCUIT BREAKERS
- BREAKERS MAY NOT BE SERIES RATED. CIRCUIT BREAKERS SHALL HAVE

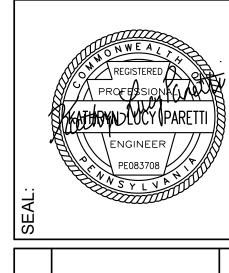
1. MOLDED-CASE THERMAL-MAGNETIC CIRCUIT BREAKERS SHALL CONFORM TO

- TYPED INDEX CARD IDENTIFYING EACH CIRCUIT INSTALLED.
- 2.15 INTERIOR LUMINAIRES A. A FIXTURE SHALL BE INSTALLED AT EACH LOCATION INDICATED ON DRAWINGS.
- OF EXIT SIGNS AND EMERGENCY LIGHT SHALL BE PROVIDED IN ACCORDANCE WITH
- THE DRAWINGS, AND AS SPECIFIED.
- (ROHS)-COMPLIANT.
- POWER FACTOR: ≥ 0.95. 6. TOTAL HARMONIC DISTORTION: ≤ 20%.
- K. LED MODULES SHALL INCLUDE THE FOLLOWING FEATURES UNLESS OTHERWISE
- 1. COMPLY WITH IES LM-79 AND LM-80 REQUIREMENTS. 2. MINIMUM CRI 80 AND COLOR TEMPERATURE 3500° K UNLESS OTHERWISE SPECIFIED IN LIGHTING FIXTURE SCHEDULE.

4. LIGHT OUTPUT LUMENS SHALL MATCH BASIS OF DESIGN FIXTURE.

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# 2.16 EXTERIOR LUMINAIRES

- A. A FIXTURE SHALL BE INSTALLED AT EACH LOCATION INDICATED ON DRAWINGS.
- B. NEW LAMPS OF THE PROPER TYPE AND WATTAGE SHALL BE INSTALLED IMMEDIATELY PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT. CONTRACTOR SHALL REFER TO THE LIGHTING FIXTURE SCHEDULE. LAMPS SHALL BE GENERAL ELECTRIC, OSRAM SYLVANIA, OR VENTURE LIGHTING.
- C. FIXTURE HOUSINGS AND BALLAST ENCLOSURES SHALL BE SUITABLE FOR OUTDOOR USE.
- D. BALLASTS SHALL BE CAPABLE OF FUNCTIONING DESPITE ANY LOW OUTDOOR TEMPERATURES.
- E. LIGHTS SHALL BE CONTROLLED VIA CONTACTOR CONNECTED TO AN AUTOMATIC TIME CLOCK WITH DAYLIGHT SAVINGS AND PHOTOCELL.
- 2.14 SYSTEM COMMISSIONING
- A. PROVIDE COMMISSIONING IN ACCORDANCE WITH IECC REQUIREMENTS.
  B. FUNCTIONAL TESTING SHALL BE COMPLETED FOR THE FOLLOWING:
  1. OCCUPANCY SENSORS CERTIFY LOCATION AND AIMING IS AS PER MANUFACTURER'S
- RECOMMENDATIONS. WHERE THERE ARE SEVEN OR FEWER, EACH SENSOR SHALL BE TESTED.
  ON PROJECTS WHERE SENSOR COUNT EXCEEDS SEVEN, EACH UNIQUE COMBINATION AND
  GEOMETRY SHALL BE TEST, WITH NO LESS THAN 10% TESTED. TESTS SHALL INCLUDE:
- a. VERIFICATION OF STATUS INDICATORS
  b. FIXTURES IN CONTROLLED AREA TURN OFF OR DOWN WITHIN REQUIRED TIMEFRAME
  c. IN AUTO-ON AREAS, FIXTURES TURN ON WHEN OCCUPANT ENTERS SPACE.
- d. IN MANUAL-ON AREAS, FIXTURES ONLY TURN ON WITH MANUAL CONTROL.
   e. FIXTURES ARE NOT TURNED ON DUE TO HVAC SYSTEM OR MOVEMENT OUTSIDE TARGET AREA
- TIME-SWITCH CONTROLS ALL AREAS WITH THIS TYPE OF CONTROL SHALL BE TESTED.
   CERTIFICATION TO INCLUDE:

   VERIFY CONTROLLER IS PROGRAMMED WITH ACCURATE WEEKDAY, WEEKEND, AND HOLIDAY SCHEDULES.
- b. PROVIDE SEQUENCE DOCUMENTATION TO THE OWNER DETAILING PROGRAMMING OF WEEKDAY, WEEKEND, AND HOLIDAY SCHEDULES AS WELL AS SET-UP GUIDE AND PREFERENCE PROGRAM SETTINGS.
- c. VERIFY TIME AND DATE ARE CORRECT IN TIME SWITCH AND DAYLIGHT SAVINGS TIME IS AUTOMATIC.
- d. VERIFY BATTERY BACK-UP IS INSTALLED AND ENERGIZED.
  e. VERIFY OVERRIDE LIMIT IS SET TO NOT EXCEED TWO HOURS.
  f. VERIFY THAT A SIMULATION OF OCCUPIED CONDITION IS CORRECT. THIS INCLUDES THAT
- MANUAL DEVICES WILL TURN FIXTURES ON/OFF DURING THIS PERIOD AND THAT THE ONLY FIXTURES CONTROLLED BY THE TIME-SWITCH ARE WITHIN THE TARGET SPACE.

  g. VERIFY THAT A SIMULATION OF UNOCCUPIED CONDITION IS CORRECT. THIS INCLUDES
- NONEXEMPT LIGHTING TURNING OFF AND MANUAL OVERRIDE SWITCH ONLY CONTROLS LIGHTING WITHIN THE ENCLOSED SPACE THAT CONTAINS THE OVERRIDE.

  3. DAYLIGHT RESPONSIVE CONTROLS ALL AREAS CONTAINING THIS TYPE OF CONTROL SHALL
- BE TESTED. CERTIFICATION TO INCLUDE:

  a. DEVICES ARE LOCATED AS PER MANUFACTURER'S RECOMMENDATIONS AND FIELD CALIBRATED AND SET FOR ACCURATE SET POINTS AND THRESHOLD LIGHT LEVELS.
- b. CONTROLS ADJUST LIGHTING IN DAYLIGHT ZONE IN RESPONSE TO THE AVAILABLE DAYLIGHT.
- DAYLIGHT.
  c. CALIBRATION ADJUSTMENT EQUIPMENT IS READILY ACCESSIBLE AND ONLY AVAILABLE TO
- AUTHORIZED PERSONNEL.

  4. DIMMING CONTROLS CERTIFICATION TO INCLUDE:

  a. DEVICES ARE LOCATED AS PER THE CONTRACT DOCUMENTS.
- b. DRIVERS AND BALLASTS ARE COMPATIBLE WITH INSTALLED DIMMER/DIMMING SYSTEM.c. FIXTURES DO NOT FLICKER UPON DIMMING.
- d. EACH TYPE OF DIMMER AND DIMMING LOAD/FIXTURE TYPE SHALL BE TESTED WITH AT LEAST 50% OF THE DIMMED SPACES BEING TESTED.
- C. DOCUMENTATION SHALL INCLUDE DATE AND TIME OF TESTS, LOCATIONS OF ALL DEVICES TESTED, DESCRIPTION OF EACH TEST AND VERIFICATION AND THEIR OUTCOME, LIST AND LOCATION OF
- DEVICES THAT FAILED, CERTIFICATION OF MEETING IECC REQUIREMENTS AND RECOMMENDATIONS FOR REMEDIATION.

  D. DOCUMENTS CERTIFYING THE INSTALLED LIGHTING CONTROLS MEET DOCUMENTED PERFORMANCE CRITERIA OF IECC SECTION C405 ARE TO BE PROVIDED TO THE BUILDING OWNER
- PERFORMANCE CRITERIA OF IECC SECTION C405 ARE TO BE PROVIDED TO THE BUILDING OWNER WITHIN 90 DAYS OF THE DATE OF RECEIPT OF THE CERTIFICATE OF OCCUPANCY AND COPIED TO THE ENGINEER AND AHJ.

## 2.17 FIRE ALARM SYSTEMS

- A. FIRE ALARM INSTALLATION SHALL BE IN ACCORDANCE WITH NFPA 72.
- B. MANUFACTURER SHALL BE SIMPLEX, EDWARDS SYSTEM TECHNOLOGY (EST) OR APPROVED EQUAL. SYSTEM SHALL2BYEDC OBTAINED FROM 120V AC SERVICE AND A POWER-SUPPLY MODISHECONDARY POWER SHALL BE SUPPLIED VIA 24V DC SUPPLY SYSTEM INCLUDING BATTERIES, AUTOMATIC BATTERY CHARGER AND AN AUTOMATIC TRANSFER SWITCH. BATTERY BACK-UP SHALL COMPLY WITH NFPA 72
- C. FIRE ALARM SIGNAL INITIATION SHALL BE BY ONE OR MORE OF THE APPLICABLE FOLLOWING DEVICES: MANUAL STATIONS; HEAT DETECTORS; SMOKE DETECTORS; SPRINKLER SYSTEM WATER FLOW; FIRE EXTINGUISHING SYSTEM OPERATION; FIRE STANDPIPE SYSTEM.
- D. FIRE ALARM SIGNAL SHALL INITIATE THE ALL OF THE APPLICABLE FOLLOWING ACTIONS: ALARM NOTIFICATION APPLIANCES SHALL OPERATE CONTINUOUSLY; IDENTIFY ALARM AT THE FACP AND REMOTE ANNUNCIATOR; DE-ENERGIZE ELECTROMAGNETIC DOOR HOLDERS; TRANSMIT AN ALARM SIGNAL TO THE REMOTE ALARM RECEIVING STATION; UNLOCK ELECTRIC DOOR LOCKS IN DESIGNATED EGRESS PATHS; RELEASE FIRE AND SMOKE DOORS HELD OPEN BY MAGNETIC DOOR HOLDERS; SWITCH HEATING, VENTILATING, AND AIR-CONDITIONING EQUIPMENT CONTROLS TO FIRE ALARM MODE; CLOSE SMOKE DAMPERS IN AIR DUCTS OF SYSTEM SERVING ZONE WHERE ALARM WAS INITIATED.
- E. SYSTEM TROUBLE SIGNAL INITIATION SHALL BE BY ONE OR MORE OF THE FOLLOWING DEVICES OR ACTIONS: OPEN CIRCUITS, SHORTS AND GROUNDS OF WIRING FOR INITIATING DEVICE, SIGNALING LINE, AND NOTIFICATION-APPLIANCE CIRCUITS; OPENING, TAMPERING, OR REMOVAL OF ALARM-INITIATING AND SUPERVISORY SIGNAL-INITIATING DEVICES; LOSS OF PRIMARY POWER AT THE FACP; GROUND OR A SINGLE BREAK IN FACP INTERNAL CIRCUITS; ABNORMAL AC VOLTAGE AT THE FACP; A BREAK IN STANDBY BATTERY CIRCUITRY; FAILURE OF BATTERY CHARGING; ABNORMAL POSITION OF ANY SWITCH AT THE FACP OR ANNUNCIATOR; FIRE-PUMP POWER FAILURE, INCLUDING A DEAD-PHASE OR PHASE-REVERSAL CONDITION.
- F. SYSTEM TROUBLE AND SUPERVISORY SIGNAL ACTIONS: RING TROUBLE BELL AND ANNUNCIATE AT THE FACP AND REMOTE ANNUNCIATORS.
- G. MANUAL PULL STATIONS SHALL BE ADDRESSABLE, DOUBLE ACTION, SURFACE MOUNTED WITH MANUFACTURER'S STANDARD BACKBOX.
- H. HORN/STROBE UNITS SHALL BE WALL MOUNTED WHERE SHOWN AND WHERE REQUIRED IN ACCORDANCE WITH NFPA 72.
- SMOKE DETECTORS SHALL BE PHOTOELECTRIC TYPE, SOUND BASED, CEILING MOUNT SMOKE DETECTORS WITH ADJUSTABLE SENSITIVITY, AUXILIARY RELAY CONTACT, INTEGRAL THERMAL ELEMENT RATED 135 DEGREES F AND VISUAL INDICATION OF DETECTOR ACTIVATION.
- J. ELECTRICAL CONTRACTOR SHALL PROVIDE DUCT TYPE SMOKE DETECTORS. THEY SHALL BE PHOTOELECTRIC TYPE, WITH AUXILIARY SPDT RELAY CONTACT, KEY-OPERATED NORMAL-RESET-TEST SWITCH, DUCT SAMPLING TUBES EXTENDING WIDTH OF DUCT AND VISUAL INDICATION OF DETECTOR ACTIVATION AND DUCT MOUNTED HOUSING. INSTALLATION OF DEVICE SHALL BE BY HVAC CONTRACTOR. WIRING SHALL BE BY ELECTRICAL CONTRACTOR.
- K. STROBES, HORNS AND HORN/STROBE UNITS SHALL BE PROVIDED AS SHOWN ON DRAWINGS AND IN ACCORDANCE WITH NFPA 72 WITH RATINGS OF 15 OR 75 CANDELA (AS INDICATED ON DRAWINGS). THE STROBES SHALL MEET THE PROVISIONS ALLOWED UNDER THE AMERICANS WITH DISABILITIES ACT.
- L. ADDRESSABLE RELAYS SHALL BE PROVIDED FOR EACH FLOW AND TAMPER SWITCH.
- M. HEAT DETECTOR FIXED TEMPERATURE SENSING SHALL BE INDEPENDENT OF RATE-OF-RISE SENSING AND PROGRAMMABLE TO OPERATE AT 135-DEG F OR 155-DEG F. SENSOR RATE-OF-RISE TEMPERATURE DETECTION SHALL BE SELECTABLE AT THE FACP FOR EITHER 15-DEG F OR 20-DEG F PER MINUTE.
- N. THE ELEVATOR SHAFT HEAT DETECTOR SHALL BE PROGRAMMABLE TO OPERATE AT 15 DEGREES FAHRENHEIT LESS THAN THE SPRINKLER HEAD RATING.
- O. THE KITCHEN HEAT DETECTORS SHALL BE PROGRAMMABLE TO OPERATE AT 200 DEGREES
- P. ALL WIRING SHALL BE AS RECOMMENDED BY THE FIRE ALARM SYSTEM MANUFACTURER, PER NFPA AND UL LISTED. ALL WIRING SHALL BE PROVIDED AND INSTALLED BY

FAHRENHEIT FIXED.

- Q. CABLING SHALL BE PLENUM RATED FIRE ALARM TYPE "FPLP" IN COMPLIANCE WITH NEC ARTICLE 760. PROVIDE DEDICATED WALL SLEEVES, MINIMUM 3/4" EMT CONDUIT, WITH UL APPROVED PLIABLE FIRE STOPPING.
- R. CONTRACTOR SHALL SUBCONTRACT TO SYSTEM MANUFACTURER FOR PROGRAMMING AND FINAL SYSTEM CHECKOUT AND TEST.

# PART 3 - EXECUTION

SCHEDULE FOR EACH PANEL.

- 3.1 EXECUTION
- A. MATERIALS AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS INDICATED, THE APPROVED RECOMMENDATIONS OF THE MANUFACTURERS AND NFPA 70. THE INSTALLATION SHALL BE ACCOMPLISHED BY WORKERS SKILLED IN THIS TYPE OF WORK AND SHALL BE DONE IN ACCORDANCE WITH THE BEST PRACTICE OF THE TRADES.
- B. INSTALLATION SHALL CONFORM TO ALL LOCAL CODES AND INDUSTRY STANDARDS. THE CODE OR STANDARD THAT IS MORE STRINGENT SHALL APPLY.
- C. CONTRACTOR SHALL DELIVER A COMPLETE AND OPERATIONAL SYSTEM. THE CONTRACTOR SHALL EXAMINE THE DESIGN DOCUMENTS AND PROJECT SITE THOROUGHLY. ANY WORK NOT INCLUDED ON THE DRAWINGS, BUT NECESSARY TO DELIVER A COMPLETE SYSTEM SHALL BE PROVIDED BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO OWNER.
- D. CHANGES TO THE ELECTRICAL INSTALLATION SHALL BE APPROVED BY THE FACILITY ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING ARCHITECTURAL AND MECHANICAL DRAWINGS FOR IMPACT ON ELECTRICAL INSTALLATIONS.
- E. CONTRACTOR SHALL DELIVER AN "AS-BUILT" ELECTRICAL DRAWING TO THE FACILITY ENGINEER SHOWING DEVIATIONS FROM ORIGINAL ELECTRICAL DRAWINGS. CONTRACTOR SHALL PROVIDE TO FACILITY ENGINEER A TYPED PANEL
- F. ALL WIRING FOR THE CONNECTION OF MOTORS AND CONTROL EQUIPMENT AS INDICATED ON THE ELECTRICAL DRAWINGS SHALL BE FURNISHED AND INSTALLED
- UNDER THIS SECTION OF THE SPECIFICATIONS.

  G. CONTRACTOR SHALL COMPLY WITH OSHA 191.150 "LOCKOUT AND TAGOUT
- H. INSTALLATIONS ARE NOT COMPLETE UNTIL TESTED AND OPERATIONAL. GREEN CARDS, WHEN REQUIRED, MUST BE SIGNED AND APPROVED.
- I. FIELD TESTING
- 1. PHASE-ROTATION TESTS SHALL BE CONDUCTED ON ALL THREE-PHASE CIRCUITS USING A PHASE-ROTATION INDICATING INSTRUMENT. THE PHASE ROTATION OF ELECTRICAL CONNECTIONS TO ALL CONNECTED EQUIPMENT SHALL BE CLOCKWISE.
- 2. ELECTRICAL PROTECTIVE DEVICES SHALL BE TESTED TO DEMONSTRATE PROPER CHARACTERISTICS.
- 3. UPON COMPLETION OF THE ELECTRICAL WORK, AND AT SUCH TIME AS THE OWNER'S REPRESENTATIVE MAY DIRECT, AN OPERATING TEST OF THE ELECTRICAL SYSTEMS SHALL BE CONDUCTED. ALL ELECTRICAL EQUIPMENT SHALL BE DEMONSTRATED TO OPERATE IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED AND INDICATED.

	PANEL: MDP		В	US AMP: 800 A			A۱	MPS M	AIN E	BREAK	ER:	800 A								
	MOUNTING: Surface			PHASE: 1	WIF	RE: <u>3</u>				٧	/OLTA	GE: _	120/240	)		AIC:	24,000		-	
CKT CIRCUIT DESCRIPTION		BREAKER WIRE		WIRE	GND	COND-				VA/PH			COND	WIRE		GND	BREAKE			С
CKI	CIRCUIT DESCRIPTION	Р	P AMP NO SZ NO SZ I				А		Е	В				NO SZ	NO SZ	NO SZ	AMP	Р	CIRCUIT DESCRIPTION	
1	-A	2	150	2-#1/0, 1-#1/0, 1	1-#6	1-1/2"	13.0	0.5	13.4	0.2			2-1/2"	2-#350	, 1-#35	0, 1-#4	300	2	P	
5 7	В	2	200	2-#3/0, 1-#3/0, 1	1-#6	2"	20.4	3.4	21.4	3.4			3/4"	2-#8	1-#8, 1	-#10	40	2	ELEVATOR (5HP)	
9 11	-CU-1	2	40	2-#8, 1-#8, 1-#	10	3/4"	2.9	2.9	2.9	2.9			3/4"	2-#8	1-#8, 1	-#10	40	2	CU-5	
13	PREPARED SPACE	-					0.0	0.0											PREPARED SPACE	
15	PREPARED SPACE	<b>-</b>				-			0.0	0.0			-						PREPARED SPACE	
17	PREPARED SPACE	-					0.0	0.0											PREPARED SPACE	
		•	•			PHASE PANEL	42	2.9	44 87		0.0	)	PROVI	DE WITH	INTEG	RAL TV	SS			

	MOUNTING: Surface			PHASE: 1	WII	RE: <u>3</u>				١	/OLTAG	SE: 120/	240	<u></u>	AIC:			-	
CKT	CIRCUIT DESCRIPTION	BR	EAKER	WIRE	GND	COND			KVA	/PH		CON		WIRE	GND	BREAK	ŒR	- CIRCUIT DESCRIPTION	Cł
	CIRCUIT DESCRIPTION	Р	AMP	NO SZ NO SZ	NO SZ	COND		4	В	3	С	CON		NO SZ NO SZ	NO SZ	AMP	Р		Cr
1	RECEPTACLE	1	20	1-#12, 1-#12,	1-#12	3/4"	0.2	0.4			Т	3/4'		1-#12, 1-#12, 1	I <i>-</i> #12	20	1	RECEPTACLE	2
	RECEPTACLE	1	20	1-#12, 1-#12,		3/4"			0.2	1.1		3/4'	+	1-#12, 1-#12, 1		20	1	RECEPTACLE	4
	RECEPTACLE	1	20	1-#12, 1-#12,		3/4"	0.2	0.0				3/4'	+	1-#12, 1-#12, 1		20	+	FACP	
	RECEPTACLE	1	20	1-#12, 1-#12,		3/4"		0.0	0.2	0.2		3/4	+	1-#12, 1-#12, 1		20	+	RECEPTACLE	
	RECEPTACLE	1	20	1-#12, 1-#12,		3/4"	1.1	0.2				3/4	+	1-#12, 1-#12, 1		20	+	RECEPTACLE	1
	RECEPTACLE	1	20	1-#12, 1-#12,		3/4"	1	0.2	0.9	0.2		3/4	+	1-#12, 1-#12, 1		20	+	RECEPTACLE	1
	RECEPTACLE	1	20	1-#12, 1-#12,		3/4"	0.2	0.7	0.9	0.2		3/4	+	1-#12, 1-#12, 1		20	+	RECEPTACLE	1
	RECEPTACLE	1					0.2	0.7	0.7	0.5			+				+	RECEPTACLE	
		1	20	1-#12, 1-#12,		3/4"	0.7	0.0	0.7	0.5		3/4	+	1-#12, 1-#12, 1		20	+		1
	RECEPTACLE	1	20	1-#12, 1-#12,		3/4"	0.7	0.9	4.4			3/4	+	1-#12, 1-#12, 1		20	+	RECEPTACLE	1
	RECEPTACLE	1	20	1-#12, 1-#12,	1-#12	3/4"			1.1	0.2		3/4	+	1-#12, 1-#12, 1		20	+	RECEPTACLE	2
21	- ESP1	2	15	2-#12, 1-#12,	1-#12	3/4"	0.0	0.0				3/4	+	1-#12, 1-#12, 1		20	+	LIGHTING	2
23									0.0	0.4		3/4	+	1-#12, 1-#12, 1		20	+	LIGHTING	2
	ELEVATOR CAB	1	15	1-#12, 1-#12,	1-#12	3/4"	0.5	8.0				3/4	"	1-#12, 1-#12, 1	I <i>-</i> #12	20	+	EBB-1	2
27	EBB-1	1	20	1-#12, 1-#12,	1-#12	3/4"			0.8	0.7		3/4	"	1-#12, 1-#12, 1	I <b>-</b> #12	20	1	RECEPTACLE	2
29	RECEPTACLE	1	20	1-#12, 1-#12,	1-#12	3/4"	0.2	0.6				3/4	"	1-#12, 1-#12, 1	I <i>-</i> #12	20	1	LIGHTING	3
31	EF-5	1	15	1-#12, 1-#12,	1-#12	3/4"			0.1	0.3		3/4	"	1-#12, 1-#12, 1	I <b>-</b> #12	20	1	COOLING	3
33	   EUH-1	2	30	2-#10, 1-#10,	1 #10	3/4"	2.5	0.1				3/4	"	1-#12, 1-#12, 1	I <i>-</i> #12	15	1	EF-7	3
35	- EUN-1		30	2-#10, 1-#10,	1-#10	3/4			2.5	0.2		3/4	"	1-#12, 1-#12, 1	I <i>-</i> #12	20	1	GWH-1	3
37	CONDENSATE PUMPS	1	20	1-#12, 1-#12,	1-#12	3/4"	0.5	0.9				3/4	"	1-#12, 1-#12, 1	I <i>-</i> #12	20	1	HEAT TRACE	3
39	HEAT TRACE	1	20	1-#12, 1-#12,	1-#12	3/4"			0.9	0.5		3/4	"	1-#12, 1-#12, 1	I <i>-</i> #12	20	1	FURN-1	4
41	FURN-4	1	20	1-#12, 1-#12,	1-#12	3/4"	0.5	0.1				3/4	"	1-#12, 1-#12, 1	I <i>-</i> #12	15	1	LOUVERS	4
43	FURN-2	1	20	1-#12, 1-#12,	1-#12	3/4"			0.5	0.1		3/4	•	1-#12, 1-#12, 1	I <i>-</i> #12	20	+	LIGHTING	4
45	LIGHTING	1	20	1-#12, 1-#12,	1-#12	3/4"	0.3	0.2				3/4		1-#12, 1-#12, 1	12	20	1	LIGHTING	4
47	LIGHTING - DWELLING UNIT	1	20	1-#12, 1-#12,	1-#12	3/4"			0.5	0.3		3/4	-	1-#12, 1-#12, 1	I <i>-</i> #12	20	1	OTHER	4
	LIGHTING	1	20	1-#12, 1-#12,		3/4"	0.6	0.8				3/4		1-#12, 1-#12, 1		20	+	POWER	5
	POWER	1	20	1-#12, 1-#12,		3/4"	0.0	0.0	0.3	0.0							-	PREPARED SPACE	5
	SPARE	1	20		17712	3/4	0.0	0.0	0.5	0.0				<u></u>			+	PREPARED SPACE	5
	SPARE	1	20				0.0	0.0	0.0	0.0		-					+	PREPARED SPACE	5
		1					0.0	0.0	0.0	0.0							<del>  -</del>		-
57	SPARE	1	20				0.0	0.0	0.0								<del> </del>	PREPARED SPACE	5
	SPARE	1	20				0.0	0.0	0.0	0.0						-	+	PREPARED SPACE	6
	SPARE	1	20				0.0	0.0									-	PREPARED SPACE	6
	SPARE	1	20						0.0	0.0								PREPARED SPACE	6
65	SPARE	1	20				0.0	0.0								-		PREPARED SPACE	6
67	SPARE	1	20						0.0	0.0				-				PREPARED SPACE	6
69	SPARE	1	20				0.0	0.0									-	PREPARED SPACE	7
71	SPARE	1	20						0.0	0.0								PREPARED SPACE	7
73	PREPARED SPACE						0.0	0.0									_	PREPARED SPACE	7
75	PREPARED SPACE					-			0.0	0.0								PREPARED SPACE	7
77	PREPARED SPACE						0.0	0.0						-				PREPARED SPACE	7
79	PREPARED SPACE								0.0	0.0							-	PREPARED SPACE	8
81	PREPARED SPACE						0.0	0.0									1	PREPARED SPACE	8
83	PREPARED SPACE								0.0	0.0			$\top$	_			<b> </b>	PREPARED SPACE	8
	1		l	TOTA	AL KVA/F	L——— PHASE	13	3.0	13	.4	0.0					1	1	I	
				ТОТ	AL KVA	PANEL			26	.3									

	PANEL: B		Вι	JS AMP: 200 A				Al	MPS M	IAIN	BREAKE	ER:	MLO						
	MOUNTING: Surface			PHASE: 1	WII	RE: <u>3</u>					VOLTAC	GE: <u>12</u>	20/240	)	AIC:	10,000	-	-	
СКТ	CIRCUIT DESCRIPTION	BR	EAKER	WIRE	GND	COND			KVA	/PH			OND	WIRE	GND	BREAK	KER	CIRCUIT DESCRIPTION	СК
CICI	CINCOTT BESCHII TION	Р	AMP	NO SZ NO SZ			A	4	В	3	С			NO SZ NO SZ	NO SZ	AMP	Р	CINCOTT BESCHI TION	
4	DECEDIA OLE	4	20	4 #40 4 #40 4	1 #40	2/4"	0.0	0.0					2/4"	4 #40 4 #40	1 #40	20	1	DEEDICEDATOR	
	RECEPTACLE	1	20	1-#12, 1-#12, 1		3/4"	0.2	0.2	0.7	0.2			3/4"	1-#12, 1-#12, 1		20		REFRIGERATOR	2
3	RECEPTACLE	1	20	1-#12, 1-#12, 1		3/4"	0.0	0.0	0.7	0.2			3/4"	1-#12, 1-#12, 1		20		RECEPTACLE	4
5	DISHWASHER	1	20	1-#12, 1-#12, 1		3/4"	0.2	0.9	0.0	4.4			3/4"	1-#12, 1-#12, 1		20	-	RECEPTACLE	6
7	RECEPTACLE	1	20	1-#12, 1-#12, 1		3/4"	0.7	0.7	0.2	1.1			3/4"	1-#12, 1-#12,		20	+	RECEPTACLE	8
	RECEPTACLE	1	20	1-#12, 1-#12, 1		3/4"	0.7	0.7	0.7	0.5			3/4"	1-#12, 1-#12,		20		RECEPTACLE	10
	RECEPTACLE	1	20	1-#12, 1-#12, 1		3/4"	0.0	4.4	0.7	0.5			3/4"	1-#12, 1-#12,		20	+	RECEPTACLE	12
13	RECEPTACLE	1	20	1-#12, 1-#12, 1		3/4"	0.2	1.1	4.4				3/4"	1-#12, 1-#12,		20		RECEPTACLE	14
	RECEPTACLE	1	20	1-#12, 1-#12, 1		3/4"	0.5	0.0	1.1	0.5		3	3/4"	1-#12, 1-#12, 1	1-#12	20	+	FIRE PLACE	16
	RECEPTACLE	1	20	1-#12, 1-#12, 1		3/4"	0.5	0.0						-		20	-	SPARE	18
	RECEPTACLE	1	20	1-#12, 1-#12, 1	1-#12	3/4"			0.4	0.0						20	1	SPARE	20
21	CU-6	2	20	2-#12, 1-#12, 1	1-#12	3/4"	1.6	1.6				— з	3/4"	2-#12, 1-#12, <sup>2</sup>	1-#12	20	2	CU-2	22
23									1.6	1.6									24
25	CU-3	2	20	2-#12, 1-#12, 1	1-#12	3/4"	1.6	1.6				з	3/4"	2-#12, 1-#12, <sup>2</sup>	1-#12	20	2	CU-4	26
27									1.6	1.6									28
	HVAC	1	20	1-#12, 1-#12, 1	1-#12		0.0	0.6				3	3/4"	1-#12, 1-#12,	1-#12	15	-	FURN-3	30
	SPARE	1	20						0.0	0.5		3	3/4"	1-#12, 1-#12,		15		FURN-5	32
33	FURN-6	1	15	1-#12, 1-#12, 1	1-#12	3/4"	0.5	0.9				3	3/4"	1-#12, 1-#12, <i>1</i>	1-#12	20		HEAT TRACE	34
35	CONDENSATE PUMPS	1	20	1-#12, 1-#12, 1	1-#12	3/4"			0.5	0.9		3	3/4"	1-#12, 1-#12,	1-#12	20	1	HEAT TRACE	36
37	ERV-1	2	25	2-#10, 1-#10, 1	1-#10	3/4"	2.4	0.5				3	3/4"	1-#12, 1-#12,	1-#12	20	1	LIGHTING	38
39				2 // 10, 1 // 10,	. ,, 10	0, 1			2.4	8.0		3	3/4"	1-#12, 1-#12,	1-#12	20	1	EBB-1	40
41	EBB-1	1	20	1-#12, 1-#12, 1	1-#12	3/4"	0.8	0.4				3	3/4"	1-#12, 1-#12,	1-#12	20	1	LOUVERS	42
43	EWH-1	1	20	1-#12, 1-#12, 1	1-#12	3/4"			1.5	2.5			3/4"	2-#10, 1-#10, <sup>2</sup>	1_#10	30	2	EUH-2	44
45	RECIRC PUMP	1	15	1-#12, 1-#12, 1	1-#12	3/4"	0.1	2.5				J	5/4	2-#10, 1-#10,	1-#10	30		LOTT-2	46
47	LIGHTING	1	20	1-#12, 1-#12, 1	1-#12	3/4"			0.0	0.2		3	3/4"	1-#12, 1-#12,	1-#12	20	1	LIGHTING	48
49	LIGHTING	1	20	1-#12, 1-#12, 1	1-#12	3/4"	0.2	0.6				3	3/4"	1-#12, 1-#12,	1-#12	20	1	OTHER	50
51	OTHER	1	20	1-#12, 1-#12, 1	1-#12	3/4"			0.3	0.2		3	3/4"	1-#12, 1-#12,	1-#12	20	1	LIGHTING	52
53	PREPARED SPACE						0.0	0.0										PREPARED SPACE	54
55	PREPARED SPACE								0.0	0.0							-	PREPARED SPACE	56
57	PREPARED SPACE						0.0	0.0										PREPARED SPACE	58
59	PREPARED SPACE								0.0	0.0							1	PREPARED SPACE	60
	ı	1 1		TOTA	L KVA/I	PHASE	20	.4	21.	.4	0.0					1	1		
				TOTA	AL KVA	PANEL			41.		,								
				TOTAL	AMPS	PANEL			17	4									

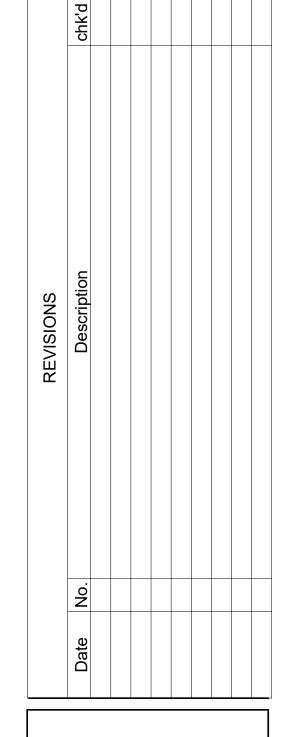
	PANEL: P  MOUNTING: Surface			JS AMP: <u>400 A</u> PHASE: 1	WIF	RE: 3							120/24	.0	AIC:	10,000			
							-											•	
CKT	CIRCUIT DESCRIPTION	BREAKER		WIRE	GND	COND				KVA/PH				WIRE	GND	BREAK	ŒR	CIRCUIT DESCRIPTION	СКТ
	SINGSIN BESSIM TIGHT	Р	AMP	NO SZ NO SZ				Α	E	В	C	<u> </u>	COND	NO SZ NO SZ	NO SZ	AMP	Р	511 (5511 ) 2551 til 11511	
1	RECEPTACLE	1	20	1-#12, 1-#12,	1-#12	3/4"	0.4	0.1						1-#12, 1-#12,	1-#12	20	1	OTHER	2
3	RECEPTACLE	1	20	1-#12, 1-#12,		3/4"	-		0.2	0.0						20	-	SPARE	4
5	SPARE	1	20	-			0.0	0.0								20	1	SPARE	6
7	SPARE	1	20						0.0	0.0						20	1	SPARE	8
9	SPARE	1	20				0.0	0.0								20	1	SPARE	10
11	SPARE	1	20						0.0	0.0						20	1	SPARE	12
13	PREPARED SPACE						0.0	0.0										PREPARED SPACE	14
15	PREPARED SPACE	-							0.0	0.0								PREPARED SPACE	16
17	PREPARED SPACE						0.0	0.0										PREPARED SPACE	18
19	PREPARED SPACE								0.0	0.0								PREPARED SPACE	20
21	PREPARED SPACE						0.0	0.0										PREPARED SPACE	22
23	PREPARED SPACE			-					0.0	0.0								PREPARED SPACE	24
25	PREPARED SPACE						0.0	0.0										PREPARED SPACE	26
27	PREPARED SPACE								0.0	0.0								PREPARED SPACE	28
29	PREPARED SPACE					-	0.0	0.0										PREPARED SPACE	30
31	PREPARED SPACE								0.0	0.0								PREPARED SPACE	32
33	PREPARED SPACE						0.0	0.0										PREPARED SPACE	34
35	PREPARED SPACE								0.0	0.0								PREPARED SPACE	36
37	PREPARED SPACE						0.0	0.0									_	PREPARED SPACE	38
39	PREPARED SPACE								0.0	0.0								PREPARED SPACE	40
41	PREPARED SPACE					-	0.0	0.0										PREPARED SPACE	42

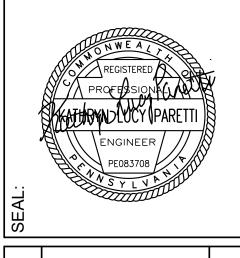
BARRY
ISETT&
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MULTI-DISCIPLINE ENGINEERS AND CONSULTANTS

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barryisett.com





# WOODLANDS AT GREYSTOI SCULTHORPE DR. WEST GOSHEN TOWNSHIP CHESTER COUNTY, PA

date: chk'd by:
2020-09-04 SPL
scale: approv. by:
12" = 1'-0" KLP
sheet no.

F4.1