



GENERAL ELECTRICAL NOTES	
1. DRAWINGS ARE DIAGRAMMATIC ONLY AND REPRESENT THE GENERAL SCOPE OF THE WORK. REVIEW ALL GENERAL NOTES, SPECIFICATIONS AND PLANS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS.	
2. SPECIAL ATTENTION SHALL BE GIVEN TO ALL RACEWAYS WITHIN FINISHED AREAS WITHOUT CEILINGS AND EXPOSED TO STRUCTURE. IN GENERAL, ALL RACEWAYS SHALL BE CONCEALED WITHIN WALLS, ABOVE STRUCTURE FINISH, OR BELOW FLOOR SLABS WHEN SPECIFIED. WHERE EXPOSED CONDITIONS ARE NECESSARY OR UNAVOIDABLE DUE TO OTHER CONDITIONS, THE BID SHALL INCLUDE ANY REASONABLE MEANS TO MINIMIZE THE AMOUNT OF SURFACE MOUNTED EQUIPMENT. PRIOR TO ROUGH-IN, COORDINATE ALL EXPOSED RACEWAY AND BOX CONDITIONS WITH ARCHITECT PRIOR TO CONSTRUCTION OF WALLS, ROOF DECK, OR FLOOR SLABS. ATTACHMENT TO ROOF DECK OR JOIST WEBBINGS IS NOT ALLOWED, MAINTAIN A MINIMUM SPACING OF 1'-1/2" FROM CONDUIT TO ROOF DECK. IN AREAS WHERE EXPOSED RACEWAYS ARE REQUIRED, INSTALL SYSTEMS SQUARE AND TIGHT TO STRUCTURE AND PAINT TO MATCH THE STRUCTURE PER ARCHITECT AND/OR OWNER SPECIFICATIONS. FAILURE TO PROPERLY COORDINATE THE ROUTING OF EXPOSED RACEWAYS MAY RESULT IN RELOCATION OF SUCH RACEWAYS AT NO ADDITIONAL COST TO THE OWNER.	
3. OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE-RESISTANT-RATED WALLS, PARTITIONS, FLOORS OR CEILINGS SHALL BE FIRESTOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANCE RATING. PROVIDE PENETRATION FIRE STOPPING WITH RATINGS DETERMINED PER ASTM E 814 OR UL 1479. FIRE STOPPING SHALL NOT BE LESS THAN FIRE RESISTANCE RATING OF CONSTRUCTED PENETRATIONS.	
4. FIELD MOUNTED DEVICES SUCH AS SWITCHES, MOTOR STARTERS, RECEPTACLES, ETC., ARE SHOWN IN THEIR APPROXIMATE LOCATION. SWITCH MOUNTING HEIGHT SHALL BE 48" ABOVE FINISHED FLOOR AND RECEPTACLE MOUNTING HEIGHT SHALL BE 18" ABOVE FINISHED FLOOR UON. REFER TO THE TYPICAL MOUNTING HEIGHT DETAIL.	
5. INSTALL EQUIPMENT IN A MANNER TO REMAIN ACCESSIBLE WITH REASONABLE MEANS BY THE OWNER FOLLOWING COMPLETION OF WORK. SPECIAL ATTENTION AND ADDITIONAL COORDINATION IS EXPECTED IN AREAS OF THE BUILDING WHERE THE CEILING AND STRUCTURE HEIGHTS HAVE SIGNIFICANT DIFFERENT ELEVATIONS. EQUIPMENT REQUIRING POSSIBLE FUTURE ACCESS SHALL BE INSTALLED SUCH THAT IT MAY BE SAFELY ACCESSED FROM A STANDARD STEP LADDER OR PERSONNEL LIFT SUITABLE FOR THE LOCATION AND CEILING HEIGHT, WITHOUT REMOVING OR DAMAGING THE CEILING GRID STRUCTURE.	
6. ALL WIRING DEVICE COVERPLATES SHALL INDICATE PANELBOARD AND CIRCUIT SERVING THE DEVICE. UTILIZE CLEAR VINYL (BLACK LETTERING) IDENTIFICATION LABELS MANUFACTURED BY 3M COMPANY (OR APPROVED EQUIVALENT).	
7. JUNCTION BOXES LOCATED ABOVE CEILING SHALL BE LOCATED NO GREATER THAN 4- FEET ABOVE THE CEILING VINYL (BLACK LETTERING) IDENTIFICATION LABELS MANUFACTURED BY 3M COMPANY (OR APPROVED EQUIVALENT).	
8. ROOM NAMES/NUMBERS SHOWN IN PANELBOARD SCHEDULES ARE PER ARCHITECTURAL FLOOR PLANS. CONTRACTOR SHALL PROVIDE FINALIZED PANELBOARD SCHEDULES AT COMPLETION OF PROJECT WITH OWNER PROVIDED ROOM NAMES/NUMBERS.	
9. PROVIDE A MINIMUM OF (3) SPARE 1" CONDUITS FROM RECESSED PANELBOARD, UP TO ACCESSIBLE CEILING SPACE.	
10. ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE, STATE LAWS, AND ALL OTHER REGULATIONS GOVERNING WORK OF THIS NATURE.	
11. THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIAL, AND LABOR TO SATISFY A COMPLETE AND WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.	
12. CONTRACTOR TO CONFIRM EXACT LOCATIONS OF EXISTING AND NEW EQUIPMENT AT THE START OF THE PROJECT AND NOTIFY THE ENGINEER AND ARCHITECT OF ANY ISSUES.	
13. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL GROUNDING SYSTEMS (AS REQUIRED) IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.	
14. ALL ELECTRIC MATERIALS AND EQUIPMENT FOR THE PROJECT SHALL BE NEW AND U.L. OR EQUALLY LISTED.	
15. SUBMIT TO THE OWNER CERTIFICATES OF INSPECTIONS IN DUPLICATE FROM AN APPROVED INSPECTION AGENCY UPON COMPLETION.	
16. THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES AS REQUIRED.	
17. THE CONTRACTOR SHALL FURNISH ALL INSTRUMENTS AND QUALIFIED PERSONNEL OR FIRM TO PERFORM ALL REQUIRED TESTS.	
18. NO EQUIPMENT SHALL BE ENERGIZED UNTIL ALL TEST AND ADJUSTMENTS HAVE BEEN MADE. THREE COPIES OF ALL TEST RESULTS SHALL BE DELIVERED TO THE OWNER.	
19. ALL ELECTRICAL WORK SHALL BE COORDINATED WITH THE MECHANICAL WORK AS CALLED FOR IN MECHANICAL SPECIFICATIONS AND PLANS.	
20. COORDINATE ALL CEILING MOUNTED ELECTRICAL ITEMS WITH OTHER DISCIPLINES, WITH CEILING, AND STRUCTURE. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN.	
21. FIELD VERIFY LOCATIONS OF EXISTING ELECTRICAL EQUIPMENT, INCLUDING POWER POLES, TELEPHONE PEDESTALS, OVERHEAD AND UNDERGROUND FEEDERS, METERS, PANELS, DEVICES, ETC. PROVIDE FOR COORDINATION WITH EXISTING EQUIPMENT.	
22. CONDUCTORS FOR BRANCH CIRCUITS AS DEFINED IN ARTICLE 100, SHALL BE SIZED TO PREVENT A VOLTAGE DROP EXCEEDING 3% AT THE FARTHEST LOAD, AND WHERE THE MAXIMUM TOTAL VOLTAGE DROP ON BOTH FEEDERS AND BRANCH CIRCUITS TO THE FARTHEST LOAD DOES NOT EXCEED 3%.	
23. UNDERGROUND UTILITIES/FEEDERS/BRANCH CIRCUITS/ETC. SHALL NOT BE ROUTED THROUGH OR WITHIN 25 FEET OF ANY AREAS DEDICATED FOR FUTURE BUILDING ADDITION UNLESS NOTED OTHERWISE PROVIDE MINIMUM #8 AWG CONDUCTORS IN 1" CONDUIT(S) FOR ALL UNDERGROUND SITE POWER AND LIGHTING CIRCUITS. INCREASE CONDUCTOR AND RELATED CONDUIT SIZE AS NOTED OR OTHERWISE REQUIRED TO LIMIT VOLTAGE DROP TO LESS THAN 5% FOR THE ENTIRE LENGTH OF SYSTEM.	
24. UNLESS NOTED OTHERWISE PROVIDE MINIMUM #8 AWG CONDUCTORS IN 1" CONDUIT(S) FOR ALL UNDERGROUND SITE POWER AND LIGHTING CIRCUITS. INCREASE CONDUCTOR AND RELATED CONDUIT SIZE AS NOTED OR OTHERWISE REQUIRED TO LIMIT VOLTAGE DROP TO LESS THAN 5% FOR THE ENTIRE LENGTH OF SYSTEM.	
25. THE TYPE OF CONDUIT SHALL BE AS FOLLOWS FOR ALL FEEDERS AND DISTRIBUTION CIRCUITS, UNLESS OTHERWISE SPECIFIED. A. BURIED IN CONCRETE OR OUTDOORS - PVC WITH RIGID GALVANIZED STEEL ELBOWS B. SERVICE ENTRANCE - GALVANIZED RIGID STEEL OR SERVICE UTILITY SPECIFICATIONS.	
26. SEISMIC PROTECTION FOR SEISMIC CONCERNS OF ALL BUILDING SYSTEMS INCLUDING BUT NOT LIMITED TO MECHANICAL, PLUMBING, AND ELECTRICAL MUST MEET MINIMUM REQUIREMENTS OF ALL APPLICABLE CODES FOR BUILDINGS' CLASSIFIED SEISMIC USE GROUP AND SEISMIC DESIGN CATEGORY. ANY REQUIREMENTS FOR SEISMIC PROTECTION MEASURES TO BE APPLIED SHALL BE INSTALLED IN STRICT ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND/OR FEDERAL CODES AND WITH MANUFACTURER'S REQUIREMENTS, THE MOST STRINGENT SHALL APPLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE TYPE AND LOCATION OF SEISMIC RESTRAINTS REQUIRED FOR THE VARIOUS SYSTEMS' ELEMENTS CONTAINED IN THE CONSTRUCTION DOCUMENTS BASED ON THE RELATED SEISMIC CODE CRITERIA; THE SIZE AND WEIGHT OF THE SUPPORTED ELEMENT AND THE DISTANCE FROM STRUCTURE THAT THE ELEMENT WILL BE INSTALLED. IF REQUIRED BY LOCAL, STATE, FEDERAL CODES AND/OR OTHER AUTHORITY HAVING JURISDICTION (AHJ) THE CONTRACTOR SHALL SUBMIT DESCRIPTIVE CATALOG DATA OF SEISMIC RESTRAINTS, SHOP DRAWINGS SHOWING THE TYPES, LOCATIONS AND INSTALLATION DETAILS OF SEISMIC RESTRAINTS AND CALCULATIONS SHOWING THAT THE SEISMIC RESTRAINTS MEET THE SEISMIC REQUIREMENTS TO THE LOCAL AHJ FOR REVIEW AND APPROVAL. CALCULATIONS SHALL BE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER, LICENSED IN THE STATE OF THE PROJECT LOCATION AND EMPLOYED BY THE MANUFACTURER OF THE SEISMIC RESTRAINT PRODUCTS. CALCULATIONS SHALL INCLUDE DEAD LOADS, STATIC SEISMIC LOADS AND CAPACITY OF MATERIALS UTILIZED FOR CONNECTIONS TO EQUIPMENT AND STRUCTURE.	
27. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING COVER PLATES AT ANY UNUSED OPENINGS OR JUNCTION BOXES FOR ELECTRICAL AND LOW VOLTAGE BACK BOXES.	
28. CONTRACTOR SHALL REFER TO PLANS IN THIS SET FOR ALL NECESSARY CONTROLS, LOCATIONS, BREAKER SIZES, AND OTHER INFORMATION PRIOR TO BID AND PURCHASE OF EQUIPMENT TO ENSURE CONNECTIONS ARE CORRECT. CONTRACTOR SHALL PROVIDE AND INSTALL BOXES, CONDUIT, CONDUCTORS, COORDS, CONTROLS, AND OTHER NECESSARY APPURTENANCES REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM. INCLUDE ALL COSTS IN BASE BID.	
29. WHERE RECESSED LIGHTING FIXTURES ARE INDICATED IN A FIRE RATED CEILING, PROVIDE A ONE-HOUR RATED "TENT" FOR FIXTURE.	
30. PROVIDE ALL MOUNTING AND SUPPORT HARDWARE FOR LIGHT FIXTURES TO MEET SPECIFIED MOUNTING HEIGHTS, REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT MOUNTING HEIGHTS OF FIXTURES.	
31. CONNECT "UN-SWITCHED" HOT CONDUCTOR FROM CIRCUIT SERVING SPACE LIGHTING TO EACH EXIT SIGN, EMERGENCY LIGHT, AND ANY FIXTURE DESIGNATED AS NIGHT LIGHT SERVING THE SPACE.	
32. COORDINATE ALL DEVICES AND WALL-MOUNTED LIGHT FIXTURE LOCATIONS WITH THE ARCHITECTURAL WALL FINISHES AND ELEVATIONS. SPECIAL ATTENTION AND COORDINATION OF WALL TYPES AND FINISHES IS REQUIRED PRIOR TO ROUGH-IN. EXACT LOCATION OF DEVICES SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN TO AVOID INSTALLATION ON SPECIAL ARCHITECTURAL WALL FINISHES. DEVICES NOT PROPERLY COORDINATED WITH THE SPECIAL WALL FINISHES INDICATED IN THE CONSTRUCTION DOCUMENTS PRIOR TO ROUGH-IN SHALL BE RELOCATED AT NO ADDITIONAL COST TO THE OWNER.	
33. ELECTRICAL CONTRACTOR SHALL VERIFY CHEVRON DIRECTIONS OF ALL EXIT SIGNS PRIOR TO ORDERING.	
34. FOR BATTERY FED EMERGENCY LIGHTS, PROVIDE EMERGENCY BALLAST. PROVIDE "HOT" WIRE TO EMERGENCY BALLAST. SWITCH FIXTURE AS INDICATED ON PLANS.	
35. ALL CIRCUIT BREAKERS SERVING BRANCH CIRCUITS TO BE REMOVED SHALL REMAIN IN RESPECTIVE PANELBOARD FOR FUTURE USE UNLESS NOTED OTHERWISE.	
36. COORDINATE AND PROVIDE DIMMER SWITCHES RATED FOR AND COMPATIBLE WITH INTENDED LIGHT FIXTURE(S) TO BE CONTROLLED. CIRCUITS CONTROLLED WITH LINE-VOLTAGE DIMMER SWITCHES SHALL NOT SHARE NEUTRAL CONDUCTORS.	
37. ALL RECEPTACLES SHALL BE GROUNDING TYPE.	
38. ALL RECEPTACLES INSTALLED IN BATHROOMS, OUTDOORS AND KITCHENS SHALL HAVE GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION AS REQUIRED BY THE NATIONAL ELECTRIC CODE.	
39. COORDINATE MECHANICAL EQUIPMENT CONNECTION REQUIREMENTS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. LOCATE FEEDERS, DISCONNECTS AND MAINTENANCE RECEPTACLES SO THAT THEY WILL NOT INTERFERE WITH OPERATION OR MAINTENANCE OF MECHANICAL EQUIPMENT.	
40. COORDINATE EXACT MOUNTING HEIGHT OF EACH ABOVE COUNTER RECEPTACLE WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.	
41. ALL OUTLETS IN AREAS REQUIRING GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION PER NEC-210 SHALL CONSIST OF A GFCI PROTECTED DEVICE, EVEN IF NOT SPECIFICALLY INDICATED IN THE DRAWINGS. THE GROUND-FAULT CIRCUIT INTERRUPTER SHALL BE INSTALLED IN A READILY ACCESSIBLE LOCATION AS DEFINED IN THE NEC. ALL RECEPTACLES SUPPLIED THROUGH A GROUND-FAULT CIRCUIT INTERRUPTER SHALL BE MARKED "GFCI PROTECTED".	
42. DO NOT USE MULTI-CONDUCTOR CIRCUITS, WITH A SHARED NEUTRAL, FOR ANY GFCI CIRCUIT BREAKER OR RECEPTACLE CIRCUIT.	
43. CONTRACTOR SHALL INTERCONNECT MINI SPLIT FAN UNITS AS REQUIRED WITH ASSOCIATED CONDENSING UNIT(S). CONTRACTOR SHALL PROVIDE AND INSTALL DISCONNECT SWITCH, CONDUIT, CONDUCTORS, AND OTHER NECESSARY APPURTENANCES REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM PER MANUFACTURER'S RECOMMENDATIONS.	
44. CONTRACTOR SHALL NOT SHARE NEUTRALS.	
45. CONTRACTOR SHALL PROVIDE AND INSTALL TAMPER RESISTANT RECEPTACLES AS REQUIRED PER NEC 406.12.	

GENERAL FIRE ALARM NOTES

1	VOICE ACTIVE FIRE ALARM SYSTEM DESIGN, INSTALLATION AND MATERIALS SHALL BE IN ACCORDANCE WITH NFPA 70 AND NFPA 72. SYSTEM SHALL ALSO MEET ALL APPLICABLE BUILDING CODES, FIRE CODES AND THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER. VERIFY ALL REQUIREMENTS SUBMITTAL ALL EXISTING FIRE ALARM SYSTEMS IN THE EXISTING BUILDING SHALL BE BROUGHT UP TO THE LATEST CODE COMPLIANCE.
2	INFORMATION ON CONTRACT DOCUMENTS IS GENERAL INFORMATION AND FOR BID PURPOSES ONLY. PERFORM REQUIRED CALCULATIONS AND COORDINATE WITH OTHER TRADES. DEVIATIONS FROM ENGINEERS LAYOUT WORK NOT BE CONSIDERED UNLESS A FORMALLY SUBMITTED RFI IS RECEIVED AND APPROVED.
3	PROVIDE ADDITIONAL MATERIALS AND LABOR REQUIRED DUE TO LACK OF COORDINATION OR TO MEET AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER
4	PROVIDE ALL EQUIPMENT AND LABOR REQUIRED FOR A COMPLETE AND OPERATIONAL FIRE ALARM SYSTEM
5	AUDIBLE NOTIFICATION DEVICES SHALL SOUND UNTIL SILENCED AT THE CONTROL PANEL OR REMOTE ANNUNCIATOR AS REQUIRED. VISUAL ALARM IS DISPLAYED UNTIL DEVICE IS RETURNED TO ITS NORMAL POSITION OR SUPERVISORY CONDITION IS CLEARED
6	FORWARD COMPLETED FIRE ALARM CERTIFICATE OF COMPLETION TO THE OWNER
7	REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
8	PROVIDE CONNECTION TO EXTERIOR WATERFLOW ALARM BELL AS REQUIRED
9	PROVIDE NOTIFICATION, INITIATING AND MONITORING DEVICES AS INDICATED ON THE DRAWINGS. FIRE ALARM DEVICES SHALL BE OF ONE MANUFACTURER AND SHALL BE LISTED FOR USE WITH THE FIRE ALARM CONTROL PANEL
10	PROVIDE NOTIFICATION APPLIANCE CIRCUIT PANEL(S) TO POWER NOTIFICATION DEVICES AS REQUIRED. CONNECT TO FIRE ALARM SYSTEM
11	THE FIRE ALARM CONTROL PANEL AND REMOTE ANNUNCIATOR LOCATIONS SHOWN SHALL BE COORDINATED WITH THE FIRE DEPARTMENT AND AHJ PRIOR TO INSTALLATION
12	PROVIDE DEDICATED CONNECTION OF THE FIRE ALARM SYSTEM TO A UL LISTED CENTRAL STATION
13	PROVIDE KNOX BOX FOR FIRE DEPARTMENT ACCESS. CONNECT TAMPER SWITCH TO FIRE ALARM SYSTEM AS REQUIRED
14	AIR HANDLING SYSTEMS THAT ARE MONITORED SHALL SHUTDOWN AND REMAIN DOWN UNTIL MANUALLY RESET
15	ROOF TOP AIR DISTRIBUTION SYSTEMS EXCEEDING 2,000 CFM: PROVIDE DUCT MOUNTED SMOKE DETECTORS FOR AIR HANDLING UNIT SHUTDOWN AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE MONITOR MODULE FOR SUPPLY AIR DUCT DETECTOR AND RELAY/MONITOR MODULE FOR RETURN AIR DUCT DETECTOR. REFER TO MECHANICAL SHEETS FOR AIR HANDLING UNIT AND DUCTWORK LAYOUT AND DETAILS
16	DUCT SMOKE DETECTION SHALL TRANSMIT A SUPERVISORY SIGNAL TO THE FACP

FIRE ALARM INSTALLATION NOTES

1	SYSTEM SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 72 AND LOCAL CODES AND REGULATIONS. ALL EQUIPMENT AND MATERIALS SHALL BE UL LISTED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION
2	INTERFACE WITH AND MONITOR ALL FIRE SUPPRESSION SYSTEM DEVICES INCLUDING (BUT NOT LIMITED TO) SPRINKLER FLOW AND TAMPER SWITCHES
3	WIRE AND CABLE SHALL BE UL LISTED AND LABELED AS COMPLYING WITH NFPA 70, ARTICLE 760. SIGNALING LINE CIRCUITS TO BE TWISTED, SHIELDED PAIR, SIZED AS RECOMMENDED BY SYSTEM MANUFACTURER. NON-POWER-LIMITED CIRCUITS TO BE SOLID-COPPER CONDUCTORS WITH 600-V RATED, 75 DEG C, COLOR-CODED INSULATION. 9-1 LOW-VOLTAGE CIRCUITS: NO. 16 AWG, MINIMUM 9-2 LINE-VOLTAGE CIRCUITS: NO. 12 AWG, MINIMUM
4	INSTALL AND TEST SYSTEMS ACCORDING TO NFPA 72. COMPLY WITH NECA 1
5	TEST ALL SYSTEM DEVICES FOR PROPER OPERATION IN THE PRESENCE OF THE AHJ AND OTHER OFFICIALS INSPECTING THE FIRE ALARM SYSTEM
6	IF REQUIRED BY THE LOCAL AHJ, EQUIPMENT DATA SHEETS AND BATTERY CALCULATIONS IN ACCEPTANCE WITH NFPA 72 SHALL BE PERFORMED BY THE FIRE ALARM SYSTEM MANUFACTURER/INSTALLER TO MATCH EQUIPMENT TO BE INSTALLED
7	SYSTEM INSTALLER SHALL BE A LICENSED FIRE ALARM CONTRACTOR IN THE RESPECTIVE STATE OF THIS PROJECT
8	FIRE ALARM CONTROL PANEL SHALL BE MODULAR, POWER-LIMITED DESIGN WITH ELECTRONIC MODULES, UL 864 LISTED, AND DESIGNED TO TRANSMIT ALARM, TROUBLE, AND SUPERVISORY SIGNALS TO A UL LISTED CENTRAL STATION THROUGH A DIGITAL ALARM COMMUNICATOR TRANSMITTER WITH (1) ETHERNET PORT CONNECTION AND (1) DEDICATED TELEPHONE LINE
9	PROVIDE 120VAC POWER THROUGH DEDICATED LOCKING BREAKER AT POWER PANEL
10	GROUND THE FACP AND ALL ASSOCIATED CIRCUITS
11	INSTALL A #6 AWG GROUND WIRE FROM THE TELE-COMMUNICATIONS EQUIPMENT GROUNDING POINT TO THE FACP
12	SYSTEM SHALL INCLUDE 24V DC POWER SYSTEM WITH SEALED LEAD CALCIUM BATTERIES AND AUTOMATIC BATTERY CHARGER IN ACCORDANCE WITH NFPA 72
13	PROVIDE (1) IP CONNECTION TO CUSTOMERS INTERNET NETWORK AND (1) DEDICATED TELEPHONE LINE TERMINATED WITH (1) RJ-31X MODULAR OUTLET AT DACT LOCATION

FIRE ALARM LEGEND

C	CARBON MONOXIDE DETECTOR
S	SMOKE DETECTOR
H	HEAT DETECTOR
ST	WALL/CEILING MOUNT VOICE STROBE
SV	WALL/CEILING MOUNT VISUAL STROBE
F	PULL STATION
ANN	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FS	SPRINKLER FLOW SWITCH
TS	SPRINKLER TAMPER SWITCH
MM	FIRE ALARM MONITOR MODULE
CM	FIRE ALARM CONTROL MODULE

ELECTRICAL LEGEND

WIRING		LOW VOLTAGE / SECURITY (cont.)	
	WIRING CONCEALED IN CEILING OR WALLS UNO. ALL WIRE IS NUMBER #12 AWG MINIMUM.		PHONE/DATA: PROVIDE 4"x4", 30-1/4 CUBIC INCH OUTLET BOX IN CEILING. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. WIRING BY OTHERS.
	EXPOSED RACEWAY		TELEVISION: PROVIDE 4"x4" JUNCTION BOX WITH (2) 1" CONDUITS (WITH PULL STRINGS) ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. CONFIRM HEIGHTS WITH ARCHITECT PRIOR TO ROUGH-IN.
	UNDERGROUND RACEWAY, FOR TYPE, SIZE, CONDUCTORS, AND ARRANGEMENT REFER TO NOTES OR SCHEDULE.		CARD READER: REFER TO SYSTEM PLANS AND SPECIFICATIONS. AT EACH DOOR WITH A CARD READER PROVIDE ALL ELECTRICAL CONNECTIONS FOR DOOR HARDWARE SYSTEMS AS REQUIRED TO MAKE A COMPLETE OPERATIONAL SYSTEM. WHERE REQUIRED, BACK TO BACK 2"x4" BOXES ARE ALLOWED FOR CARD READER AND PUSH TO EXIT SWITCH. PROVIDE POWER TO THE LOCK SYSTEM IN THE I.T. ROOM WHERE NEEDED BY CONTRACTOR INSTALLING SYSTEM.
SWITCHES			
	SWITCH MOUNTED AT +48": SINGLE POLE UNO, LOWER CASE LETTER, WHEN PRESENT, INDICATES FIXTURES CONTROLLED.		
	CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR WITH SPARE DRY CONTACTS. LUTRON LOS C SERIES OR EQUAL.		
	DOUBLE POLE SWITCH		
	3-WAY SWITCH		
	4-WAY SWITCH		
	DIMMER SWITCH. DIMMER SHALL BE COMPATIBLE WITH FIXTURE DIMMING TECHNOLOGY.		
	FAN SPEED CONTROL WITH INTEGRAL DIMMER SWITCH		
	KEYED SWITCH		
	MOTOR RATED SWITCH. COORDINATE MOTOR WITH DRAWINGS AND ADJUST AS REQUIRED.		
	OCCUPANCY SENSOR SWITCH WITH DUAL TECHNOLOGY		
RECEPTACLES			
	DUPLEX RECEPTACLE (NEMA 5-20R)		
	DUPLEX RECEPTACLE (NEMA 5-20R) MOUNTED 8" ABOVE THE COUNTERTOP.		
	RECEPTACLE (NEMA 5-20R) WITH US CHARGING PORTS (DUPLEX OR QUADRUPEX)		
	GFI DUPLEX RECEPTACLE (NEMA 5-20R)		
	GFI DUPLEX RECEPTACLE (NEMA 5-20R) MOUNTED 8" ABOVE COUNTERTOP.		
	QUADRUPEX RECEPTACLE (TWO NEMA 5-20R)		
	SPECIAL RECEPTACLE. REFER TO MANUFACTURER FOR NEMA TYPE, RECEPTACLE TYPE, AND CONFIGURATION.		
	FLOOR BOX WITH DATA: LEGRAND WIREMOLD SERIES RF84E-OG OR RF86E-OG WITH EVOLUTION COVER. ROUTE QUANTITY (2) - 1" CONDUITS FOR DATA FROM FLOOR BOX TO NEAREST ACCESSIBLE WALL SPACE STUBBED ABOVE ACCESSIBLE CEILING. ON FLOOR LEVELS WITH ACCESSIBLE SPACE BELOW, USE POKE-THRU STYLE FLOOR BOXES. LEGRAND 6AT SERIES. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS UNO.		
	FLOOR BOX: HUBBEL 3SFBSS WITH 3SFBG COVER. EC SHALL ROUTE A 1" FOR FLOOR BOX TO NEAREST ACCESSIBLE CEILING SPACE. ON FLOOR LEVELS WITH ACCESSIBLE SPACE BELOW, USE POKE-THRU STYLE FLOOR BOXES. HUBBEL PT2X2 SERIES. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS UNO.		
	SIMPLEX RECEPTACLE (NEMA 5-20R)		
	CEILING MOUNTED RECEPTACLE(NEMA 5-20R)		
	DIRECT EQUIPMENT CONNECTION. VERIFY CONNECTION DETAILS WITH MANUFACTURER		
POWER			
	POWER PANEL: REFER TO RISER DIAGRAM AND PANEL SCHEDULES FOR ADDITIONAL INFORMATION.		
	4"x4" JUNCTION BOX: ADJUST FINAL LOCATIONS AS REQUIRED		
	EMERGENCY POWER OFF SWITCH: CONTRACTOR SHALL PROVIDE AND INSTALL EMERGENCY POWER OFF SWITCH CONNECTED TO AN ASSOCIATED SHUNT-TRIP BREAKER. CONTRACTOR SHALL PROVIDE AND INSTALL SWITCH, CONTROL WIRING, AND OTHER ASSOCIATED APPURTENANCES REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.		
	EQUIPMENT DISCONNECT. PROVIDE NEMA RATING PER INSTALLED CONDITIONS AS REQUIRED PER NEC.		
LOW VOLTAGE / SECURITY			
	PHONE/DATA: PROVIDE 4"x4", 30-1/4 CUBIC INCH OUTLET BOX AT 8" ABOVE COUNTER (UNO) WITH (1) 1" CONDUIT (WITH PULL STRING) ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. PROVIDE PLASTIC BUSHINGS ON EXPOSED CONDUIT ENDS. WIRING BY OTHERS.		
	PHONE/DATA: PROVIDE 4"x4", 30-1/4 CUBIC INCH OUTLET BOX AT +18" (UNO) WITH (1) 1" CONDUIT (WITH PULL STRING) ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. PROVIDE PLASTIC BUSHINGS ON EXPOSED CONDUIT ENDS. WIRING BY OTHERS.		

A	AMPERE
AC	ABOVE COUNTER
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
ARCH	ARCHITECT
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
COMM	COMMUNICATIONS
CR	CARD READER
CU	COPPER
DEMO	DEMOLITION / DEMOLISH
DISC	DISCONNECT
E	EXISTING
ELEC	ELECTRICAL
ELEV	ELEVATOR
EM	EMERGENCY
ENT	ELECTRICAL METALLIC TUBING
ENT	ELECTRICAL NONMETALLIC TUBING
EC	ELECTRICAL CONTRACTOR
EP	EXPLOSION PROOF
FT	FEET / FOOT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
G	GROUND
GC	GENERAL CONTRACTOR
GRC	GALVANIZED RIGID CONDUIT
HP	HORSE POWER
HVAC	HEATING / VENTILATING / AIR CONDITIONING
IG	ISOLATED GROUND
J	JUNCTION BOX
JBOX	KILOVOLT AMPERE
KVA	KILOVATT
KW	LIGHTING
LTG	MAXIMUM
MAX	MAIN CIRCUIT BREAKER
MCB	MINIMUM
MIN	MAIN LUGS ONLY
MLO	MECHANICAL CONTRACTOR
MC	MOTOR CONTROL CENTER
MCC	NATIONAL ELECTRICAL CODE
NEC	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NEMA	NOT IN CONTRACT
NIC	NIGHT LIGHT
NL	NOT TO SCALE
NTS	OVER CURRENT PROTECTION DEVICE
OCPD	POLE
P	PHASE
PH	PANEL
PNL	POWER
PWR	QUANTITY
QTY	SWITCHBOARD
SWBD	TELEPHONE TERMINAL BACKBOARD
TTB	TAMPER RESISTANT
TR	TYPICAL
UG	UNDERGROUND
UNO	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UT	UTILITY TRANSFORMER
V	VOLT OR VOLTAGE
VA	VOLT AMPERE
W	WATT
WP	UL LISTED WEATHERPROOF NEMA RATED
WR	WEATHER RESISTANT
XFMR	TRANSFORMER



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OVERALL POWER PLAN

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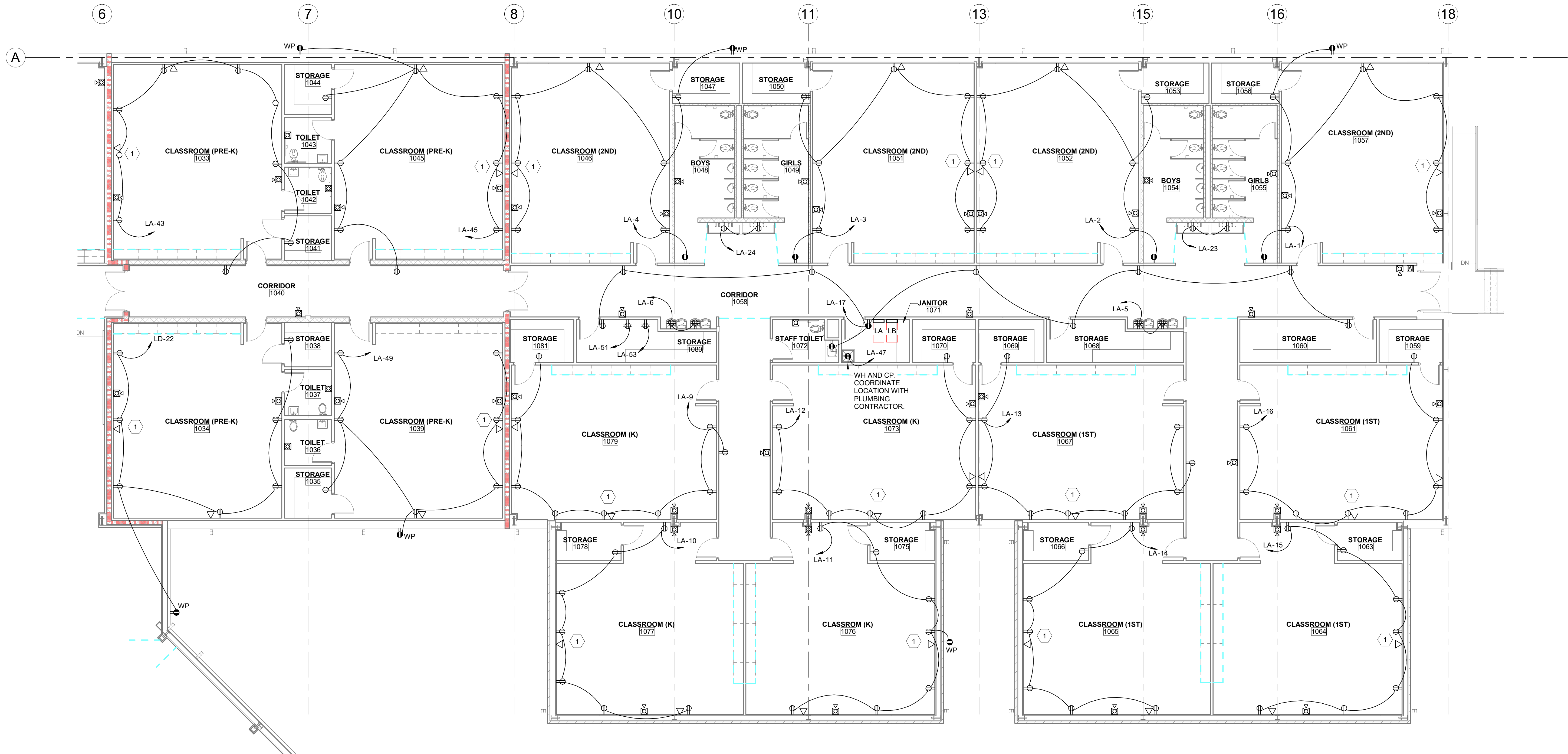
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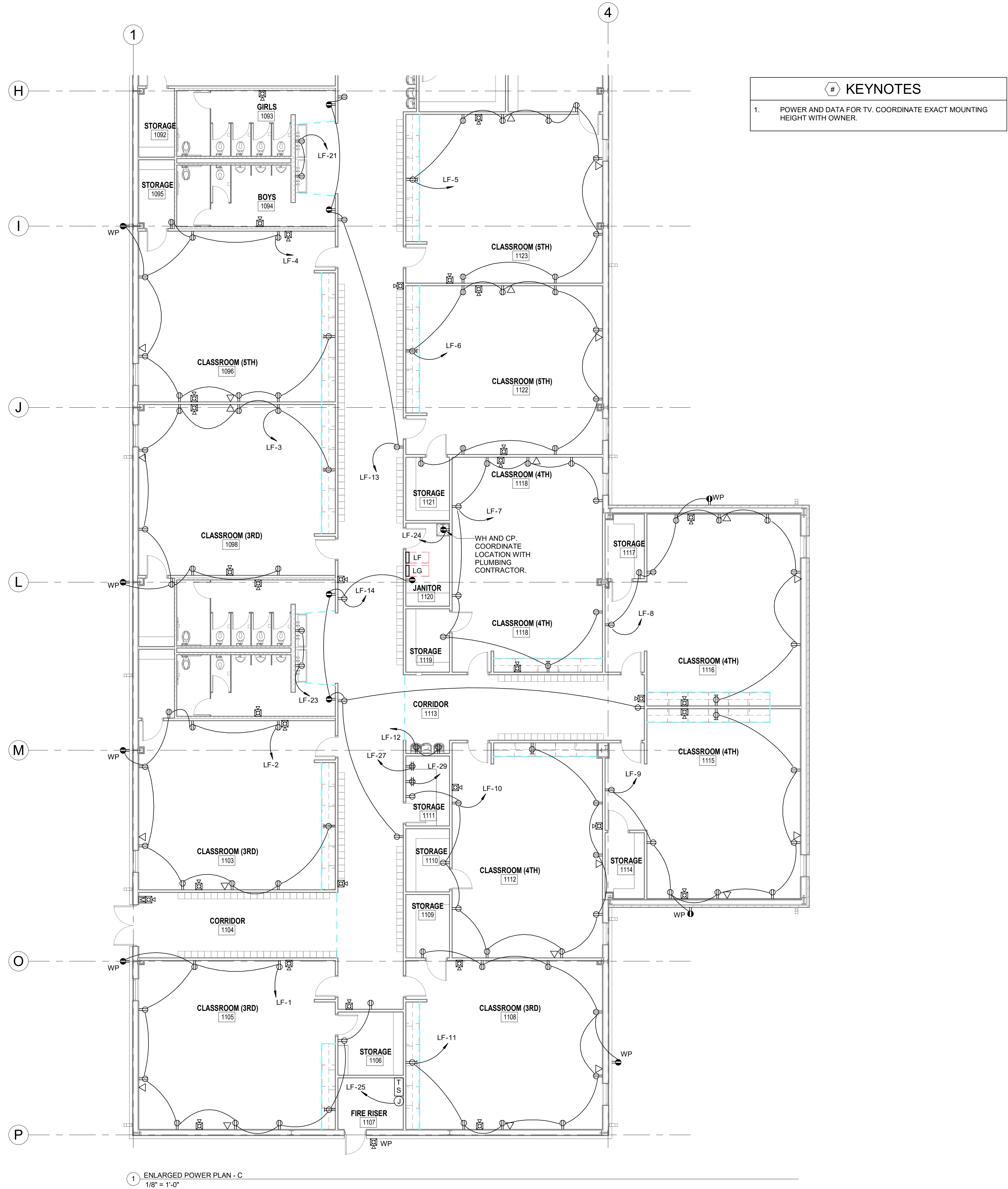
ENLARGED POWER PLAN

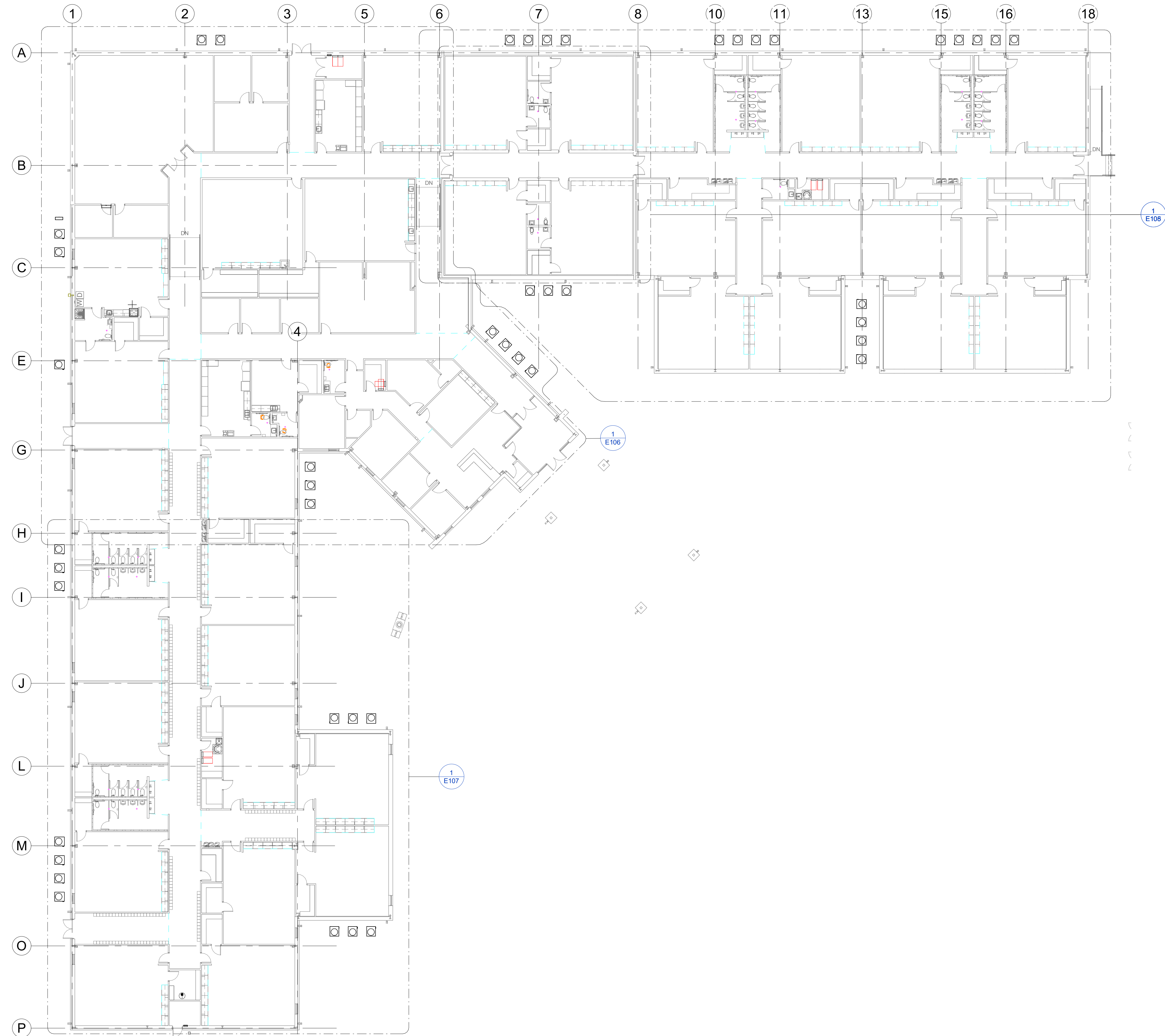
E101

#	KEYNOTES
1.	POWER AND DATA FOR TV. COORDINATE TV BOX LOCATION WITH FINAL TV MOUNTING BRACKET AND ADJUST AS REQUIRED. TV BOX TO BE TYPE LEGRAND TV3WTVSSW OR EQUAL.
2.	PROVIDE 1" UNDERGROUND CONDUIT FROM GENERATOR CONTROLS TO GENERATOR ANNUNCIATOR PANEL IN WORK ROOM 1031. VERIFY EXACT LOCATION OF ANNUNCIATOR PANEL WITH OWNER PRIOR TO ROUGH-IN.









1 OVERALL MECHANICAL POWER PLAN
1/16" = 1'-0"

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OVERALL MECHANICAL
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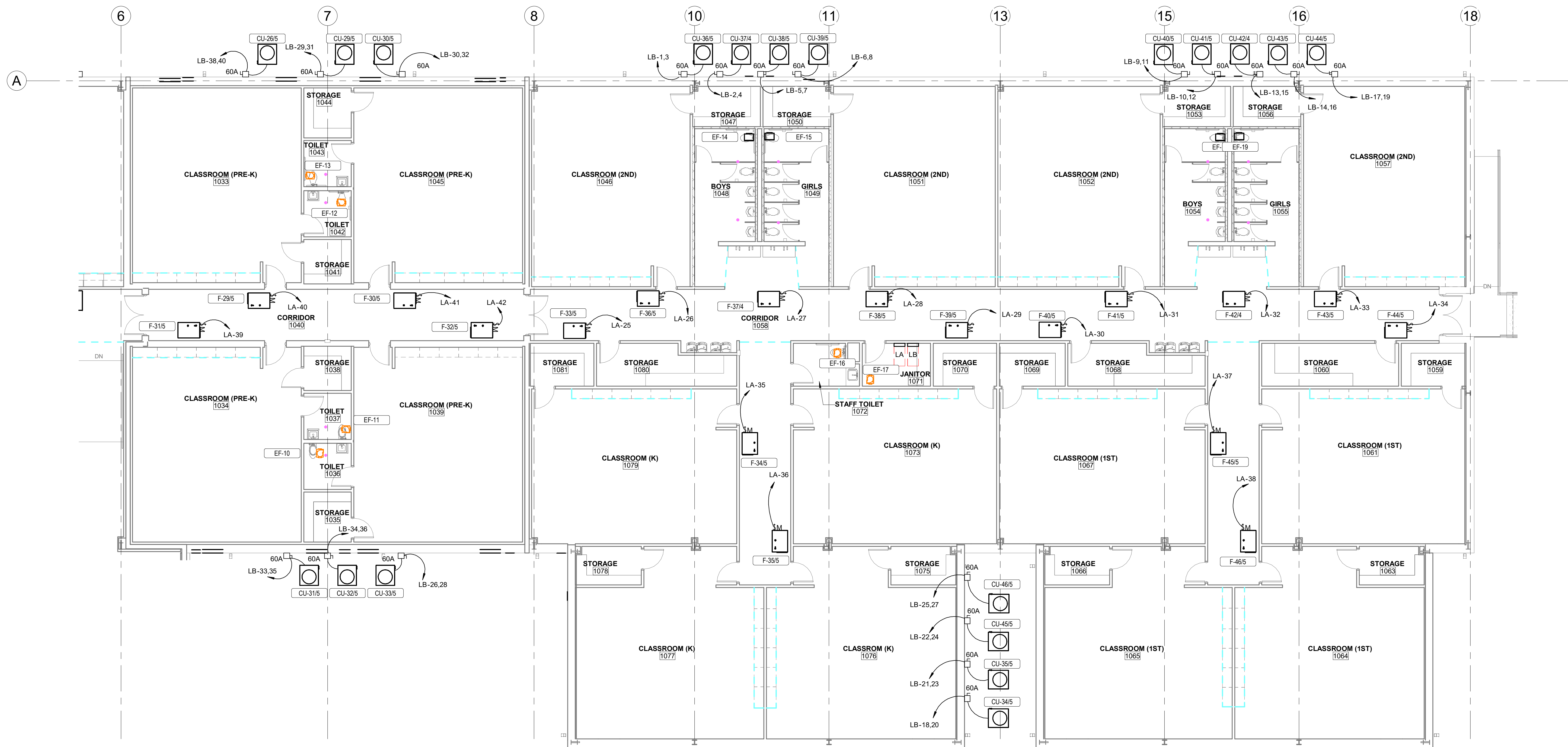
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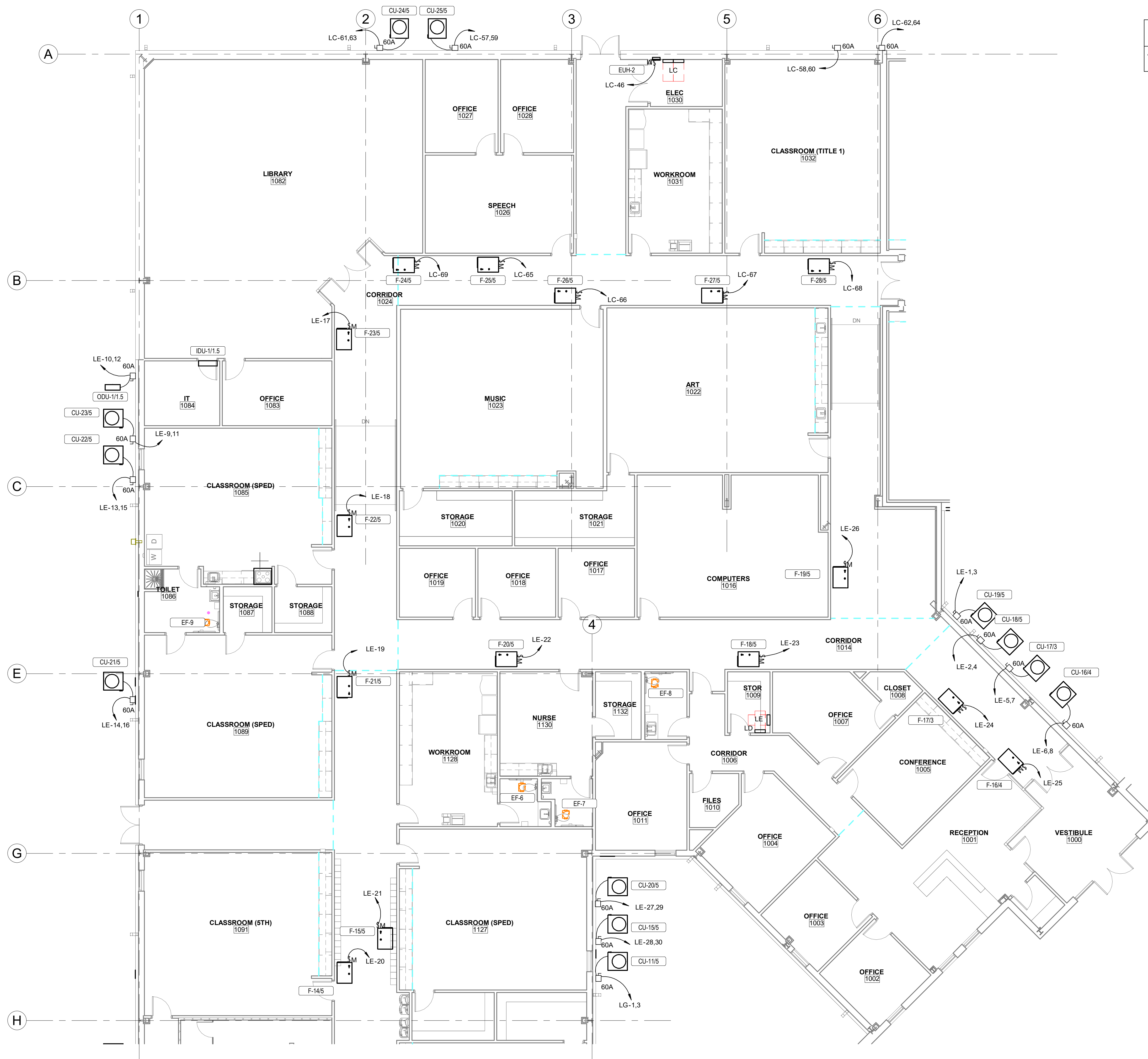
ENLARGED MECHANICAL
POWER PLAN

E105

GENERAL NOTES

- A. EXHAUST FAN SHALL BE CIRCUITED WITH LIGHTS SERVING AREA. SEE MECHANICAL SHEETS FOR CONTROL TYPE.





GENERAL NOTES	
A.	EXHAUST FAN SHALL BE CIRCUITED WITH LIGHTS SERVING AREA. SEE MECHANICAL SHEETS FOR CONTROL TYPE.

1 ENLARGED MECHANICAL POWER PLAN - B
1/8" = 1'-0"



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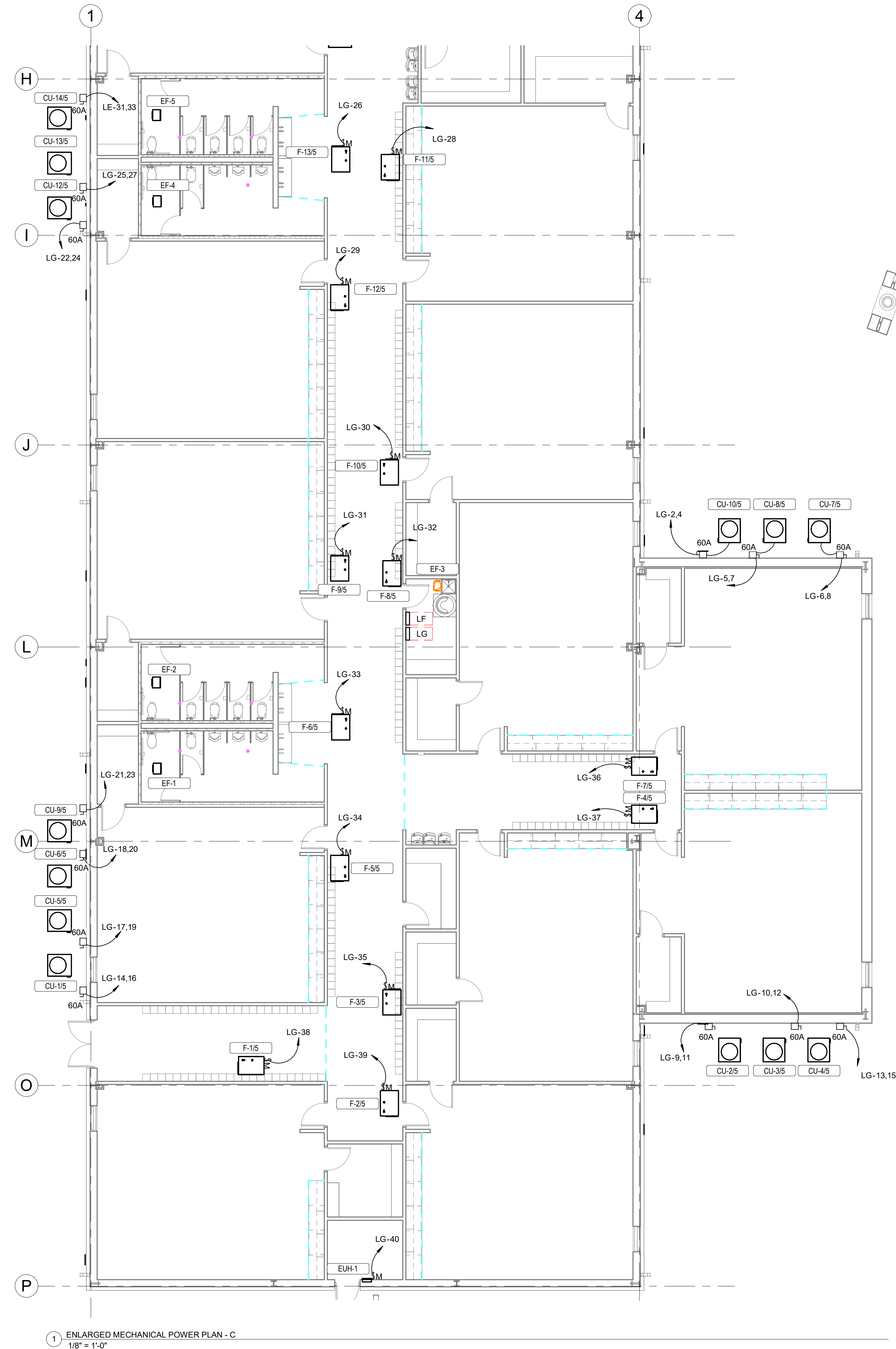
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ENLARGED MECHANICAL
POWER PLAN

E106



GENERAL NOTES	
A.	EXHAUST FAN SHALL BE CIRCUITED WITH LIGHTS SERVING AREA. SEE MECHANICAL SHEETS FOR CONTROL TYPE.

1 ENLARGED MECHANICAL POWER PLAN - C
1/8" = 1'-0"

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ENLARGED MECHANICAL
POWER PLAN

E107



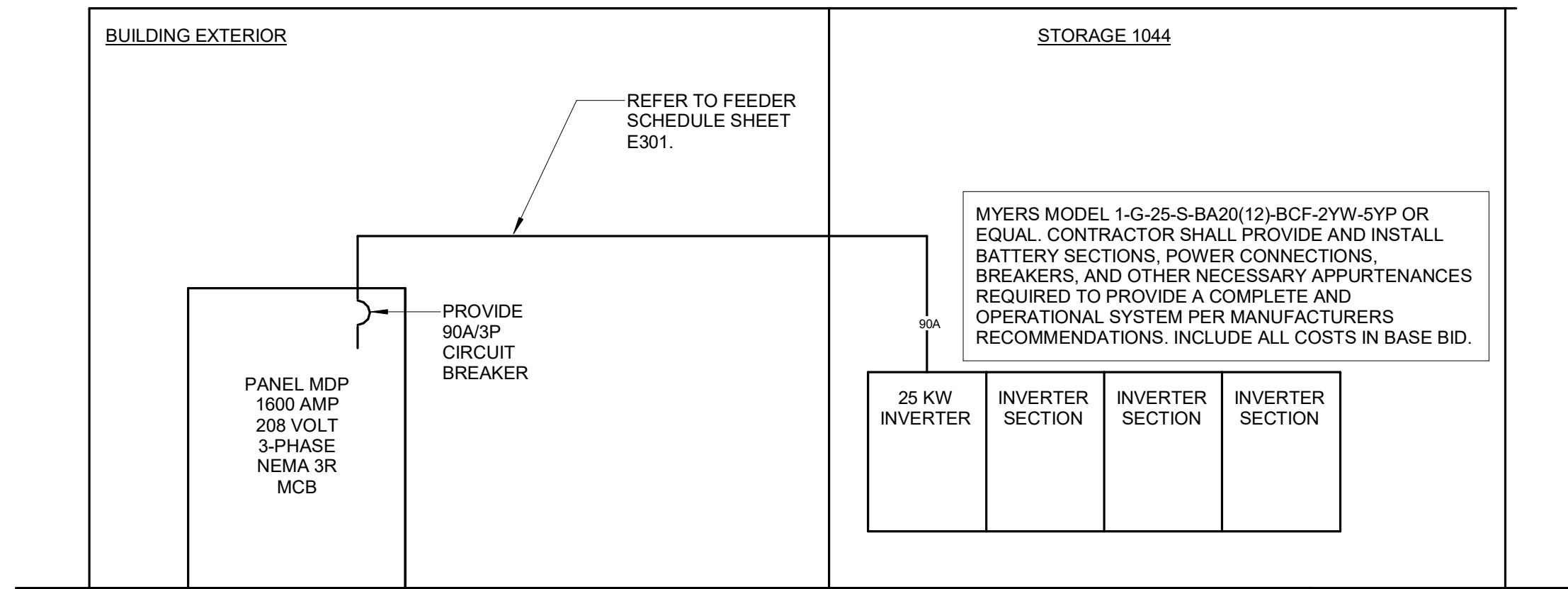
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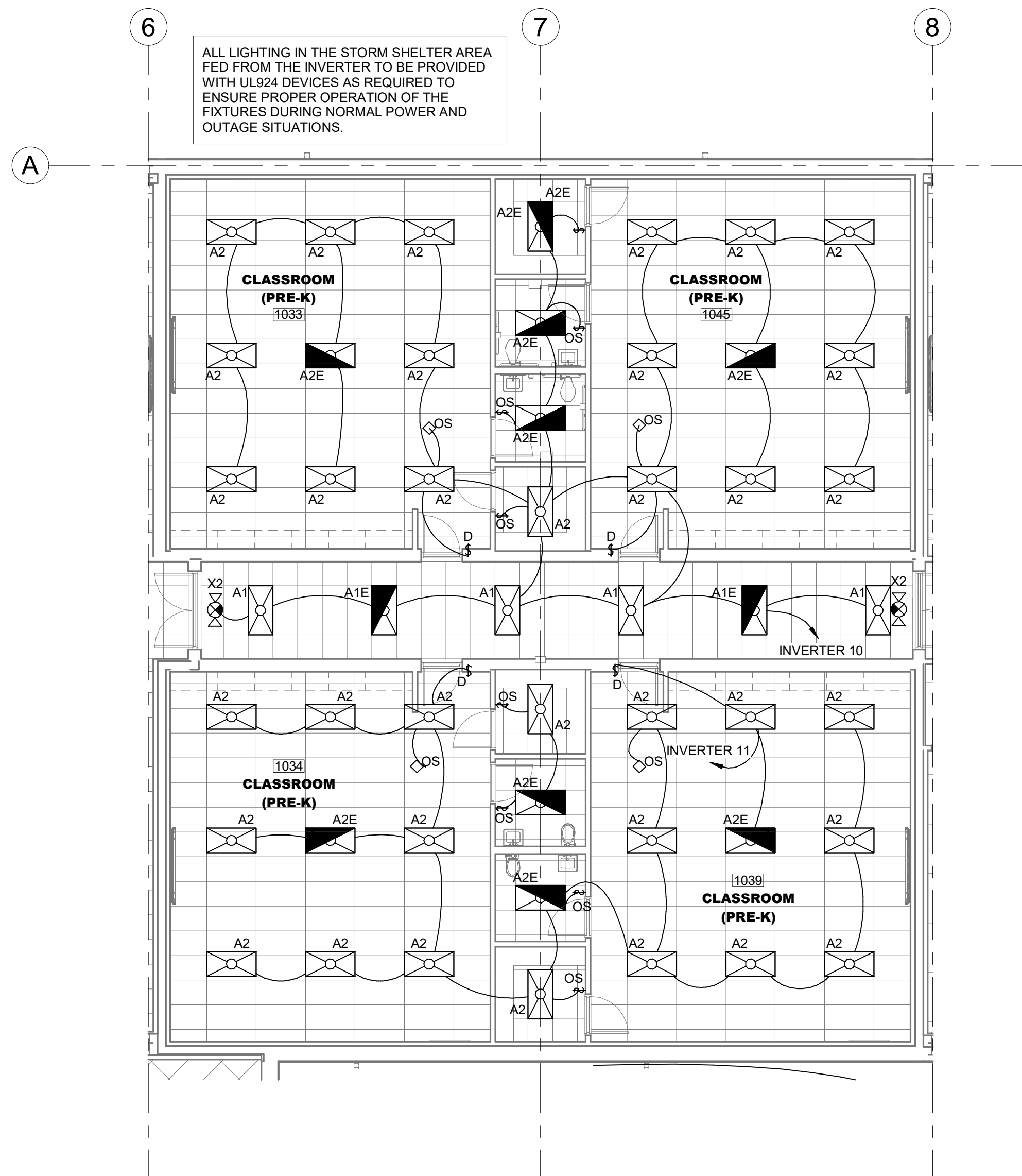
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ELETRICAL BID ALT #1

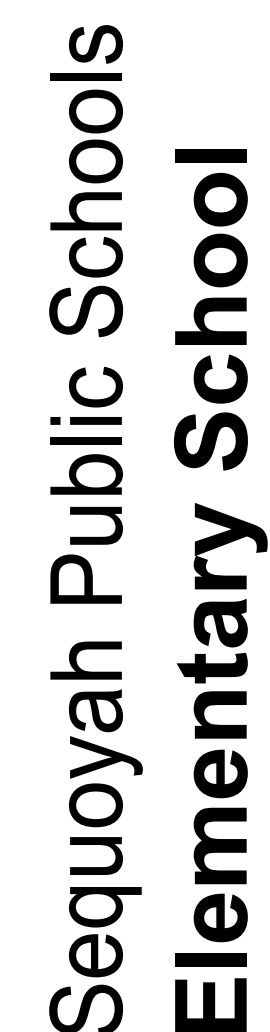


3 ELECTRICAL RISER
NTS



2 BID ALT #1 - ENLARGED LIGHTING PLAN
1/8" = 1'-0"

Branch Panel: INVERTER NEW													
Location: STORAGE 1044					Volts: 120/208 WYE								
Supply From: MDP					Phases: 3								
Mounting: SURFACE					Wires: 4								
Enclosure: NEMA 1													
Notes:													
CKT	Load Name	CB	P	Wire	A	B	C	Wire	P	CB	Load Name	CKT	
1	SF-1	20	1		864	864			1	20	SF-2	2	
3	SF-3	20	1			864	864		1	20	SF-4	4	
5	EF-20	20	1				864	864	1	20	EF-21	6	
7	EF-22	20	1		864	864			1	20	EF-22	8	
9	EF-24	20	1			864	1056		--	1	20	CLASS ROOM LIGHTING	10
11	CLASS ROOM LIGHTING	20	1	--			1344	480		1	20	OAD-1,2,3,4	12
Total Load:					3456 VA		3648 VA		3552 VA				
Total Amps:					29 A		31 A		30 A				
Load Classification		Connected Load		Demand Factor		Estimated Demand		Panel Totals					
Power		6912 VA		100.00%		6912 VA		Total Conn. Load: 10656 VA					
Receptacle		1344 VA		100.00%		1344 VA		Total Est. Demand: 10656 VA					
								Total Conn. Current: 30 A					
								Total Est. Demand... 30 A					



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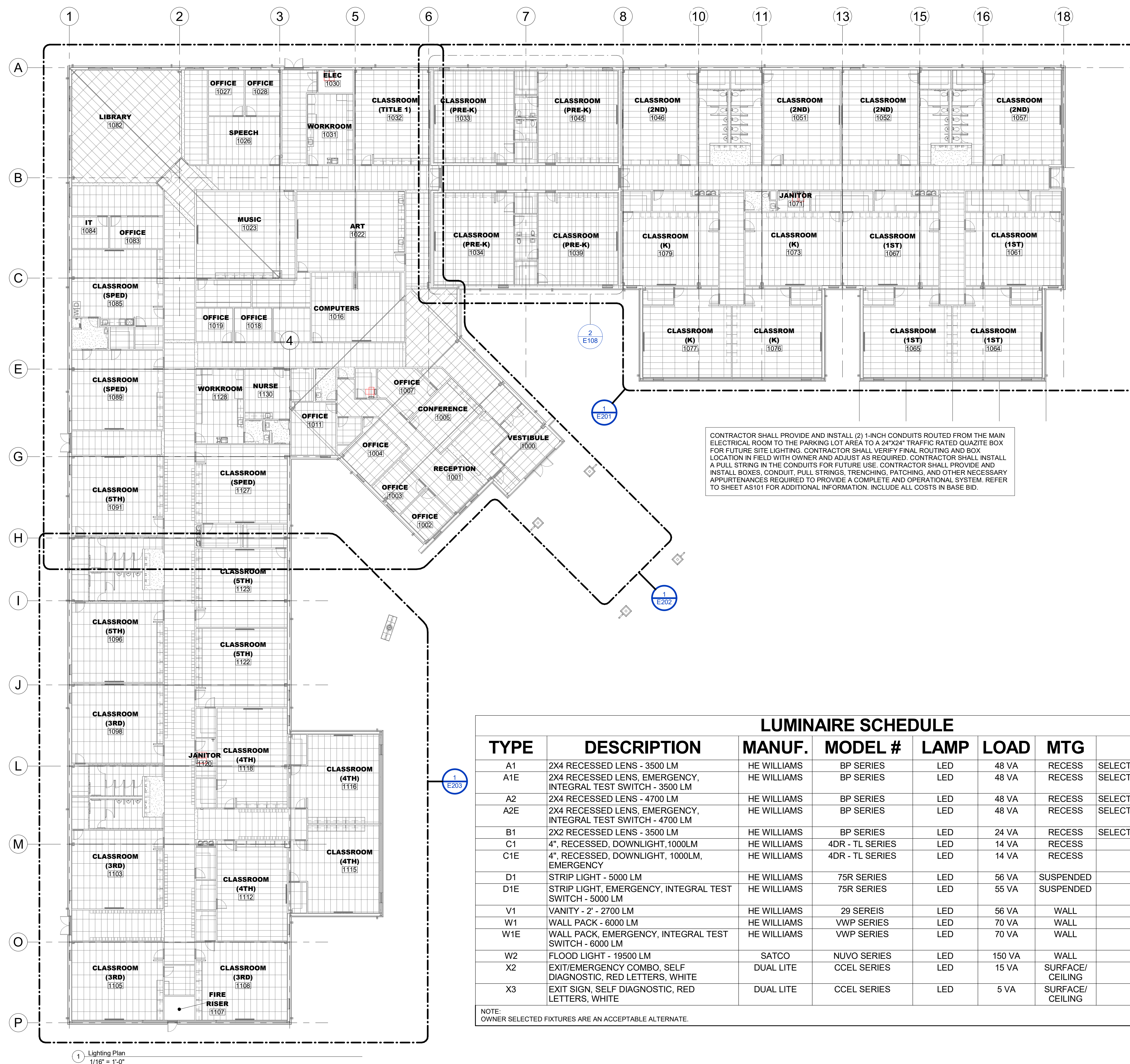
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REVISIONS:

OVERALL LIGHTING PLAN

E200



LUMINAIRE SCHEDULE							
TYPE	DESCRIPTION	MANUF.	MODEL #	LAMP	LOAD	MTG	NOTES
A1	2X4 RECESSED LENS - 3500 LM	HE WILLIAMS	BP SERIES	LED	48 VA	RECESS	SELECTABLE LUMENS AND CCT
A1E	2X4 RECESSED LENS, EMERGENCY, INTEGRAL TEST SWITCH - 3500 LM	HE WILLIAMS	BP SERIES	LED	48 VA	RECESS	SELECTABLE LUMENS AND CCT
A2	2X4 RECESSED LENS - 4700 LM	HE WILLIAMS	BP SERIES	LED	48 VA	RECESS	SELECTABLE LUMENS AND CCT
A2E	2X4 RECESSED LENS, EMERGENCY, INTEGRAL TEST SWITCH - 4700 LM	HE WILLIAMS	BP SERIES	LED	48 VA	RECESS	SELECTABLE LUMENS AND CCT
B1	2X2 RECESSED LENS - 3500 LM	HE WILLIAMS	BP SERIES	LED	24 VA	RECESS	SELECTABLE LUMENS AND CCT
C1	4", RECESSED, DOWNLIGHT,1000LM	HE WILLIAMS	4DR - TL SERIES	LED	14 VA	RECESS	
C1E	4", RECESSED, DOWNLIGHT, 1000LM, EMERGENCY	HE WILLIAMS	4DR - TL SERIES	LED	14 VA	RECESS	
D1	STRIP LIGHT - 5000 LM	HE WILLIAMS	75R SERIES	LED	56 VA	SUSPENDED	
D1E	STRIP LIGHT, EMERGENCY, INTEGRAL TEST SWITCH - 5000 LM	HE WILLIAMS	75R SERIES	LED	55 VA	SUSPENDED	
V1	VANITY - 2' - 2700 LM	HE WILLIAMS	29 SEREIS	LED	56 VA	WALL	
W1	WALL PACK - 6000 LM	HE WILLIAMS	VWP SERIES	LED	70 VA	WALL	
W1E	WALL PACK, EMERGENCY, INTEGRAL TEST SWITCH - 6000 LM	HE WILLIAMS	VWP SERIES	LED	70 VA	WALL	
W2	FLOOD LIGHT - 19500 LM	SATCO	NUVO SERIES	LED	150 VA	WALL	
X2	EXIT/EMERGENCY COMBO, SELF DIAGNOSTIC, RED LETTERS, WHITE	DUAL LITE	CCEL SERIES	LED	15 VA	SURFACE/ CEILING	
X3	EXIT SIGN, SELF DIAGNOSTIC, RED LETTERS, WHITE	DUAL LITE	CCEL SERIES	LED	5 VA	SURFACE/ CEILING	
NOTE: OWNER SELECTED FIXTURES ARE AN ACCEPTABLE ALTERNATE.							

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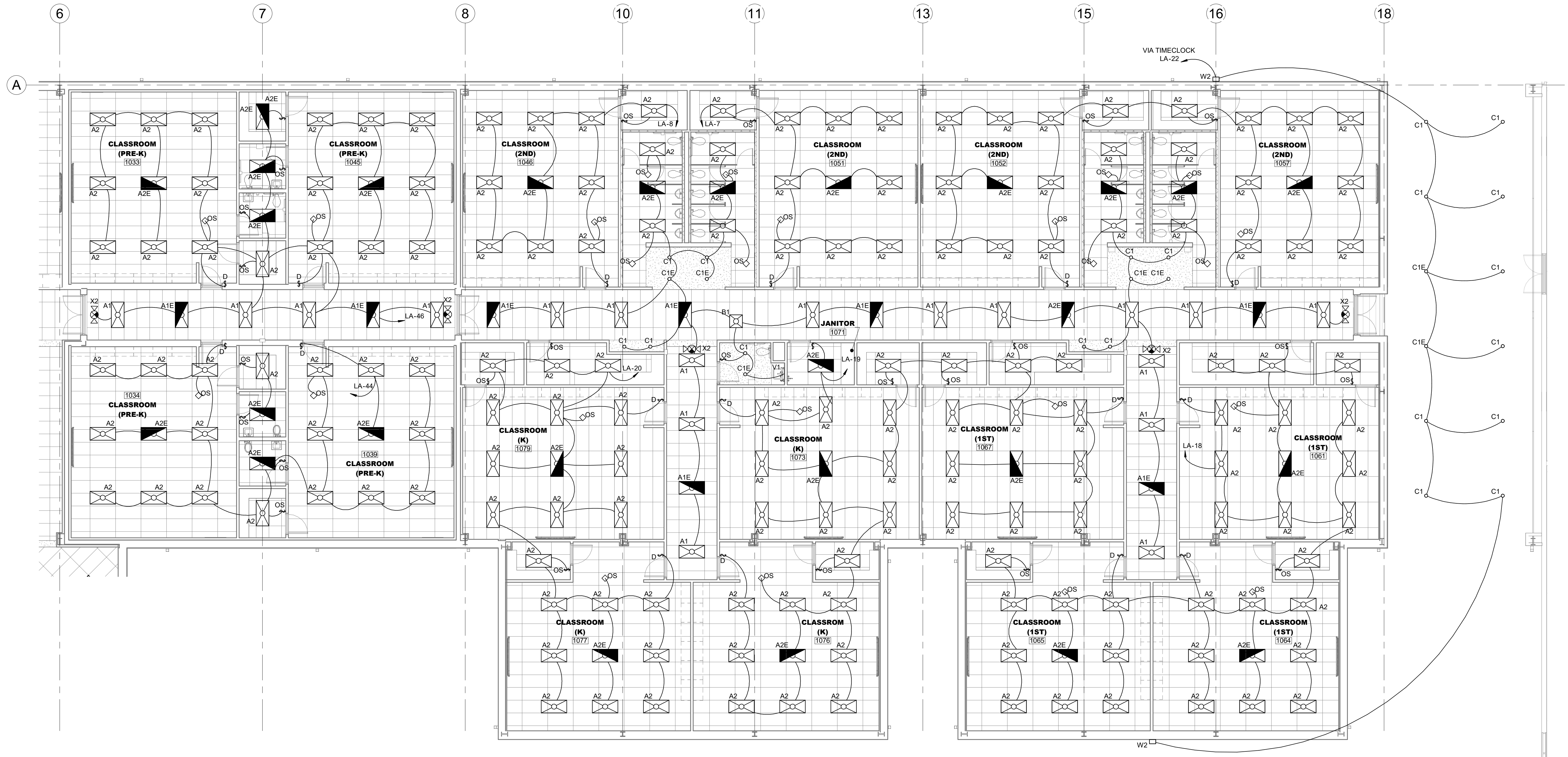
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ENLARGED LIGHTING PLAN

E201





1 ENLARGED LIGHTING PLAN - B
1/8" = 1'-0"

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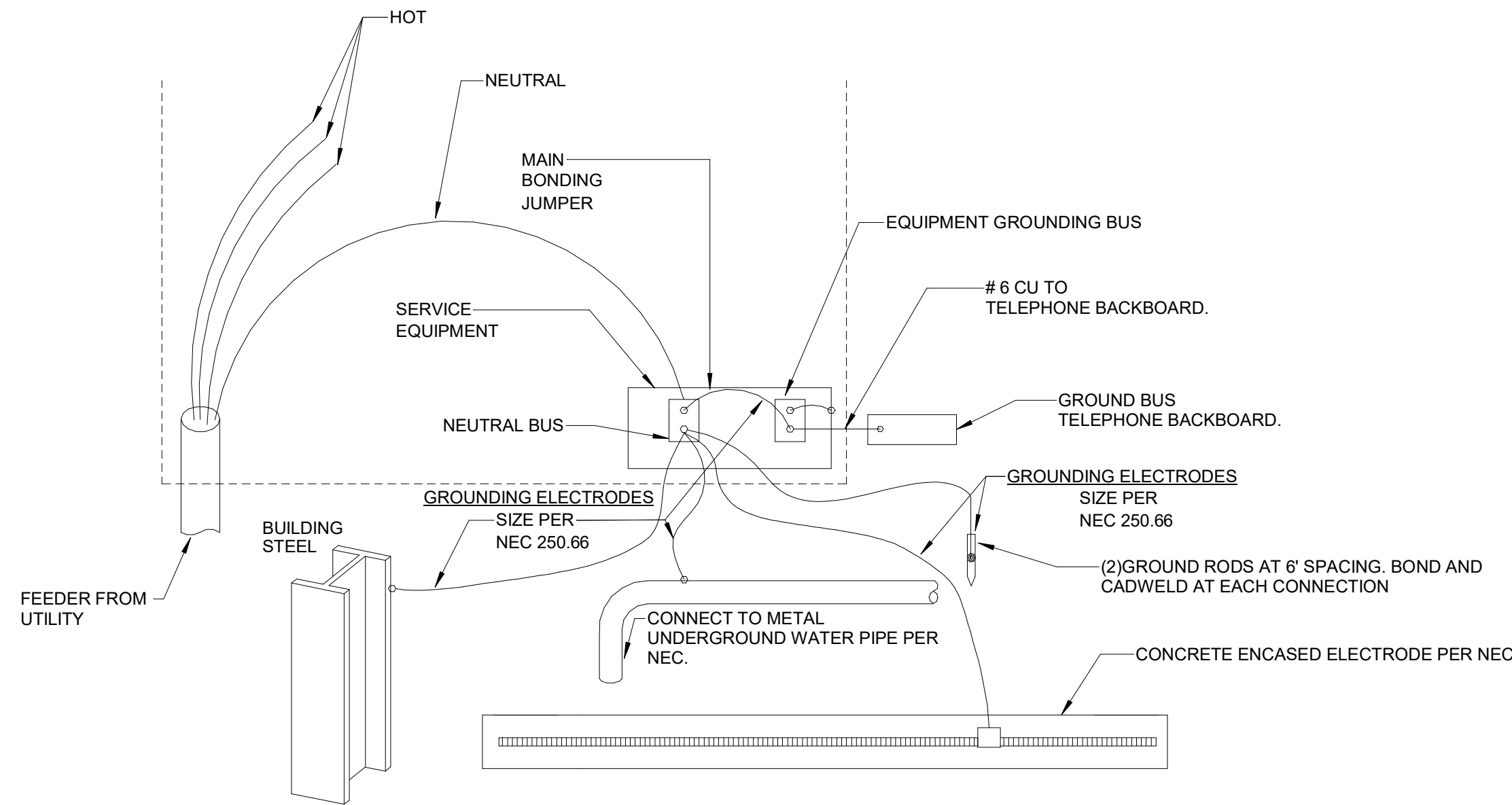
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REVISIONS:

ENLARGED LIGHTING PLAN

E202

1 ENLARGED LIGHTING PLAN - C
1/8" = 1'-0"



2 TYPICAL GROUNDING DETAIL
12" = 1'-0"

Branch Panel: MDP

Location:
Supply From:
Mounting: SURFACE
Enclosure: NEMA 3R

Notes:
100% RATED MCB, INTERNAL SPD UNIT

NEW

Volts: 120/208 WYE
Phases: 3
Wires: 4

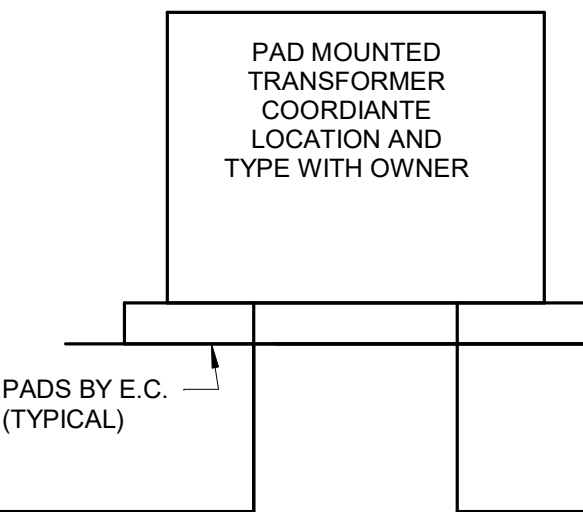
A.I.C. Rating: FULLY RATED
Mains Type: MCB
Mains Rating: 1600 A

CKT	Load Name	CB	P	Wire	A	B	C	Wire	P	CB	Load Name	CKT
1	LA(8)	300	3		22104	33236			3	400	LB(8)	2
3												4
5												6
7	LC(8)	400	3		28191	7484			3	200	LD(8)	8
9												10
11												12
13	LE(8)	300	3		23798	11199			3	200	LF(8)	14
15												16
17												18
19												20
21	LG(8)	400	3		30840	3456			#3	90	INVERTER(BID ALT #1)	22
23												24
25	SPACE	--	3	--	--	--	--	--	--	3	SPACE	26
27												28
29												30
31	SPACE	--	3	--	--	--	--	--	--	3	SPACE	32
33												34
35												36
37	SPACE	--	3	--	--	--	--	--	--	3	SPACE	38
39												40
41												42
Total Load:					160306 VA	169008 VA	143705 VA					
Total Amps:					1357 A	1430 A	1198 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Lighting	30566 VA	125.00%	38207 VA	
Power	338599 VA	100.00%	338599 VA	Total Conn. Load: 473109 VA
Receptacle	101544 VA	54.92%	55772 VA	Total Est. Demand: 434978 VA
				Total Conn. Current: 1313 A
				Total Est. Demand... 1207 A

THE SCHOOL CAMPUS IS PRIMARILY METERED. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE LOCATION AND REQUIREMENTS OF THE ELECTRICAL SERVICE WITH THE OWNER PRIOR TO THE ROUGH AND PURCHASING OF EQUIPMENT.

CONTRACTOR SHALL ROUTE CONDUIT AS REQUIRED. CONTRACTOR SHALL PROVIDE TRENCHING, BACKFILL, COMPACTION, AND OTHER NECESSARY APPURTENANCES REQUIRED PER OWNER REQUIREMENTS. INCLUDE COSTS IN BASE BID.



1 ELECTRICAL RISER
NTS

FEEDER SCHEDULE

AMPERAGE	SETS OF CONDUIT	CONDUIT SIZE	CONDUCTOR QTY/SIZE	SELECT ONE		AMPERAGE	SETS OF CONDUIT	CONDUIT SIZE	CONDUCTOR QTY/SIZE	SELECT ONE	
				EQUIPMENT GROUND QTY/SIZE	SUSE RATED GROUND QTY/SIZE					EQUIPMENT GROUND QTY/SIZE	SUSE RATED GROUND QTY/SIZE
15A	(1)	3/4"	(4) #12	(1) #12	(1) #8	225A	(1)	2 1/2"	(4) #4/0	(1) #4	(1) #2
20A	(1)	3/4"	(4) #12	(1) #12	(1) #8	250A	(1)	3"	(4) #250 KCMIL	(1) #4	(1) #2
25A	(1)	3/4"	(4) #10	(1) #10	(1) #8	300A	(2)	2"	(4) #1/0	(1) #4	(1) #2
30A	(1)	3/4"	(4) #10	(1) #10	(1) #8	400A	(2)	2 1/2"	(4) #3/0	(1) #3	(1) #1/0
40A	(1)	3/4"	(4) #8	(1) #10	(1) #8	450A	(2)	2 1/2"	(4) #4/0	(1) #2	(1) #2/0
45A	(1)	1"	(4) #6	(1) #10	(1) #8	500A	(2)	3"	(4) #250 KCMIL	(1) #2	(1) #2/0
50A	(1)	1"	(4) #6	(1) #10	(1) #8	600A	(2)	3"	(4) #350 KCMIL	(1) #1	(1) #3/0
60A	(1)	1 1/4"	(4) #4	(1) #10	(1) #8	800A	(3)	3"	(4) #300 KCMIL	(1) #1/0	(1) #3/0
70A	(1)	1 1/4"	(4) #4	(1) #8	(1) #8	1000A	(3)	3 1/2"	(4) #400 KCMIL	(1) #2/0	(1) #3/0
80A	(1)	1 1/2"	(4) #3	(1) #8	(1) #8	1200A	(4)	3 1/2"	(4) #350 KCMIL	(1) #3/0	(1) #3/0
90A	(1)	1 1/2"	(4) #2	(1) #8	(1) #8	1600A	(5)	3 1/2"	(4) #400 KCMIL	(1) #4/0	(1) #3/0
100A	(1)	2"	(4) #1	(1) #8	(1) #6	2000A	(6)	3 1/2"	(4) #400 KCMIL	(1) #250 KCMIL	(1) #3/0
125A	(1)	2"	(4) #1	(1) #6	(1) #6	2500A	(7)	3 1/2"	(4) #500 KCMIL	(1) #350 KCMIL	(1) #3/0
150A	(1)	2"	(4) #1/0	(1) #6	(1) #6	3000A	(8)	3 1/2"	(4) #500 KCMIL	(1) #400 KCMIL	(1) #3/0
175A	(1)	2"	(4) #2/0	(1) #6	(1) #4	3500A	(10)	3 1/2"	(4) #500 KCMIL	(1) #500 KCMIL	(1) #3/0
200A	(1)	2 1/2"	(4) #3/0	(1) #6	(1) #4	4000A	(10)	4"	(4) #600 KCMIL	(1) #500 KCMIL	(1) #3/0

FEEDER SIZE GENERAL NOTES:

- CONDUCTOR QUANTITY BASED ON 3-PHASE, 4-WIRE; FOR EQUIPMENT THAT DOES NOT REQUIRE A NEUTRAL OR IS SINGLE PHASE DEDUCT FROM QUANTITY AS REQUIRED.
- CONDUCTOR SIZES BASED ON NEC TABLE 310.16 - COPPER
60°C UP TO 100A, 75°C GREATER THAN 100A.
- GROUND SIZES: EQUIPMENT GROUND BASED ON NEC TABLE 250.122 - COPPER, SUSE RATED GROUND BASED ON NEC TABLE 250.66 - COPPER
- CONDUIT FILL BASED ON NEC ANNEX C - THW CONDUCTOR INSULATION

PANELBOARD NOTES (#)

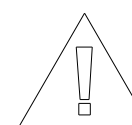
- TERMINATE GROUND ON ISOLATED GROUND BUS.
- INSTALL LOCKING DEVICE FURNISHED WITH PANELBOARD (LOCK-OFF FOR MAINTENANCE).
- INSTALL LOCKING DEVICE FURNISHED WITH PANELBOARD (LOCK-ON FOR CRITICAL LOAD).
- GFI BREAKER FOR PERSONNEL PROTECTION (5 mA).
- GFI BREAKER FOR EQUIPMENT PROTECTION (30 mA).
- CONDUCTOR SIZE SHOWN IN PANEL SCHEDULE HAS BEEN INCREASED FOR VOLTAGE DROP. SIZE EQUIPMENT GROUND PROPORTIONALLY PER NEC. REFERENCE GROUND WIRE SIZING CHART.
- REFER TO ONE-LINE DIAGRAM FOR AVAILABLE FAULT CURRENT FOR INTERRUPT RATINGS.
- REFER TO ONE-LINE DIAGRAM FOR WIRE SIZES.
- FACTORY WIRE TO LOAD.
- THRU CONTROLLER. REFER TO LIGHTING CONTROLLER DETAIL.
- ADD CIRCUIT BREAKER TO EXISTING PANEL.

EQUIPMENT GROUNDING CONDUCTOR SIZING CHART

BRKR AMPS		WIRE SIZE					
		12	10	8	6	4	
15-20	PHASE GROUND	12	10	8	6	4	
25-30	PHASE GROUND	10	8	6	4	3	
35-50	PHASE GROUND	8	6	4	3	2	
60	PHASE GROUND	10	8	4	4	4	
70	PHASE GROUND	6	4	3	2	1	
80-90	PHASE GROUND	8	4	4	3	2	
100	PHASE GROUND	4	3	2	1	1/0	
	PHASE GROUND	8	6	4	4	3	
PER NEC 250.122(B)							

EQUIPMENT LABELS

ALL SWITCHBOARDS AND PANELBOARDS SHALL HAVE A LABEL APPLIED TO WARN OF POTENTIAL ARC FLASH HAZARDS

**WARNING**

ARC FLASH AND SHOCK HAZARD.
APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIRED.

NOTES:

A. ALL SWITCHBOARDS AND PANELBOARDS SHALL HAVE A COMMERCIALY PRODUCED PERMANENT LABEL APPLIED, SIMILAR TO THE ABOVE, TO WARN OF POTENTIAL ARC FLASH HAZARDS, IN ACCORDANCE WITH NEC 110.16 AND NFPA 70E.

B. LABELING MAY BE COMPLETED BY EQUIPMENT MANUFACTURER, EQUIPMENT VENDOR/SUPPLIER, OR THE CONTRACTOR. THE CONTRACTOR SHALL VERIFY THAT ALL SWITCHBOARDS AND PANELBOARDS ARE PROPERLY LABELED IN THE FIELD.

ELECTRICAL SERVICE NOTES

- THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL SERVICE AND METERING REQUIREMENTS WITH THE UTILITY COMPANY PRIOR TO BID AND SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MATERIAL AS REQUIRED BY THE SERVING UTILITY AS WELL AS COST INCURRED BY SERVING UTILITY.
- THE ELECTRICAL CONTRACTOR SHALL VERIFY THE FAULT CURRENT AT THE SECONDARY OF THE TRANSFORMER WITH THE UTILITY COMPANY AND ADJUST THE ELECTRICAL PANEL AIC RATINGS TO THE NEXT HIGHER STANDARD RATING.
- ALUMINUM SERVICE CONDUCTORS ARE NOT RECOMMENDED AND SHOULD ONLY BE USED WHERE ABSOLUTELY NECESSARY OR REQUIRED BY THE OWNER. CONTRACTOR TO CONTACT ENGINEER FOR SIZING. WHERE ALUMINUM CONDUCTORS ARE USED, THE OWNER SHALL PROVIDE ANNUAL MAINTENANCE OF ALL TERMINATIONS TO ENSURE SECURE CONNECTIONS. ALUMINUM WIRE WILL EXPAND AND CONTRACT AND OVER TIME MAY BECOME BRITTLE. THE OWNER SHALL ASSUME RESPONSIBILITY FOR USING ALUMINUM CONDUCTORS WITHOUT PROPER INSTALLATION, CARE, AND MAINTENANCE.
- COORDINATE ALL SERVICE AND METERING DETAILS INCLUDING ANY RELOCATION OF EXISTING UTILITY LINES WITH POWER COMPANY.
- CONTRACTOR TO CONFIRM EXACT LOCATION OF METERS WITH ELECTRIC UTILITY.
- PAY ANY POWER COMPANY FEES CHARGED TO OWNER FOR SERVICE AND UTILITY LINE WORK ASSOCIATED WITH THIS PROJECT. THESE COSTS SHALL BE INCLUDED IN BIDS.
- FURNISH AND INSTALL MATERIALS FOR A TEMPORARY CONSTRUCTION SERVICE AS REQUIRED.
- FURNISH AND/OR INSTALL ALL REQUIRED MATERIAL AND LABOR IN COMPLIANCE WITH POWER COMPANY REQUIREMENTS TO PROVIDE A COMPLETE ELECTRICAL SERVICE, INCLUDING TRENCHING AND BACK FILLING, PRIMARY CONDUIT, CONCRETE TRANSFORMER PAD, SECONDARY CONDUITS AND CABLES, C.T. CABINET, METERING AND GROUNDING SYSTEM.



Branch Panel: LC										NEW																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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7	WORKROOM REC 1031										20	1		540	1080							1	20	OFFICE REC 1028										8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
9	OFFICE REC 1027										20	1				720	1080					1	20	OFFICE REC 1026										10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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17	IT EQUIPMENT										20	1						1000	1000			1	20	IT EQUIPMENT										18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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21	CLASS ROOM REC										20	1				1080	2500			#10	2	30	DRYER										22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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Branch Panel: LD										NEW																																							
Location: OFFICE 1007										Volts: 120/208 WYE										A.I.C. Rating: FULLY RATED																													
Supply From: MDP										Phases: 3										Mains Type: MLO																													
Mounting: SURFACE										Wires: 4																																							
Enclosure: NEMA 1																																																	
Notes:																																																	
CKT	Load Name										CB	P	Wire	A		B		C		Wire	P	CB	Load Name										CKT																
1	OFFICE REC 1002										20	1		720	720						1	20	OFFICE REC 1003										2																
3	OFFICE REC 1004										20	1				720	540				1	20	RECEPTION REC 1001										4																
5	CONF REC 1005										20	1						540	900		1	20	OFFICE REC 1007										6																
7	OFFICE REC 1011										20	1		720	1260						1	20	NURSE REC 1130										8																
9	WORKROOM REC 1128										20	1				540	360				1	20	WORKROOM REC 1128										10																
11	WORKROOM PRINTER 1128										20	1						500	1000		1	20	WORKROOM 1128 - VENDING(4)										12																
13	WORKROOM 1128 - VENDING(4)										20	1		1000	1000						1	20	WORKROOM REF 1128										14																
15	WORKROOM REC COUNTER 1128										20	1				180	1440				1	20	CLASS ROOM REC										16																
17	CLASS ROOM LIGHTING										20	1						1344	1441		1	20	CLASS ROOM LIGHTING										18																
19	CLASS ROOM LIGHTING										20	1		1704	360						1	20	BUZZER/DOOR										20																
21	DRINKING FOUNTAIN(4)										20	1				360	2340				1	20	REC/VEST REC 1000/1001										22																
23	WORKROOM REC COUNTER 1128										20	1						180	1080		1	20	CONF REC 1005										24																
25	SPACE										--	1	--	--	--					--	1	--	SPACE										26																
27	SPACE										--	1	--	--	--	--	--			--	1	--	SPACE										28																
29	SPACE										--	1	--	--	--			--	--	1	--	SPACE										30																	
31	SPACE										--	1	--	--	0					--	1	20	SPARE										32																
33	SPACE										--	1	--	--	--	--	0			--	1	20	SPARE										34																
35	SPACE										--	1	--	--	--		--	--	0	--	1	20	SPARE										36																
37	SPACE										--	1	--	--	--	0				--	1	20	SPARE										38																
39	SPACE										--	1	--	--	--	--	0			--	1	20	SPARE										40																
41	SPACE										--	1	--	--	--			--	--	0	--	1	20	SPARE										42															
Total Load:										7454 VA										6450 VA										6955 VA																			
Total Amps:										63 A										54 A										59 A																			
Load Classification										Connected Load										Demand Factor										Estimated Demand										Panel Totals									
Lighting										4489 VA										125.00%										5612 VA										Total Conn. Load: 20949 VA									
Power										360 VA										100.00%										360 VA										Total Est. Demand: 19022 VA									
Receptacle										16100 VA										81.06%										13050 VA										Total Conn. Current: 58 A									
																																								Total Est. Demand: 53 A									



Branch Panel: LF										NEW												
Location: JANITOR 1120										Volts: 120/208 WYE												
Supply From: MDP										Phases: 3												
Mounting: SURFACE										Wires: 4												
Enclosure: NEMA 1										A.I.C. Rating: FULLY RATED												
										Mains Type: MLO												
Notes:																						
CKT	Load Name				CB	P	Wire	A		B		C		Wire	P	CB	Load Name				CKT	
1	CLASS ROOM REC				20	1		1800	1620							1	20	CLASS ROOM REC				2
3	CLASS ROOM REC				20	1				1620	1440					1	20	CLASS ROOM REC				4
5	CLASS ROOM REC				20	1						1620	1620			1	20	CLASS ROOM REC				6
7	CLASS ROOM REC				20	1		1620	1800							1	20	CLASS ROOM REC				8
9	CLASS ROOM REC				20	1				1440	1620					1	20	CLASS ROOM REC				10
11	CLASS ROOM REC				20	1						1620	720			1	20	DRINKING FOUNTAIN(4)				12
13	CLASS ROOM REC				20	1		900	1260							1	20	CLASS ROOM REC				14
15	CLASS ROOM LIGHTING				20	1				1551	1344					1	20	CLASS ROOM LIGHTING				16
17	CLASS ROOM LIGHTING				20	1						1440	1536			1	20	CLASS ROOM LIGHTING				18
19	CLASS ROOM LIGHTING				20	1		1023	816							1	20	CLASS ROOM LIGHTING				20
21	SINKS(4)				20	1				180	440					1	20	CLASS ROOM LIGHTING				22
23	SINKS(4)				20	1						360	500			1	20	WH AND CP				24
25	FIRE RISER EQUIPMENT				20	1		360	--				--	--	1	--	SPACE					26
27	SERVER EQUIPMENT				20	1				1000	--		--	--	1	--	SPACE					28
29	SERVER EQUIPMENT				20	1						1000	--	--	1	--	SPACE					30
31	SPACE				--	1	--	--	0				--	--	1	20	SPARE					32
33	SPACE				--	1	--			--	0		--	--	1	20	SPARE					34
35	SPACE				--	1	--					--	0	--	1	20	SPARE					36
37	SPACE				--	1	--	--	0				--	--	1	20	SPARE					38
39	SPACE				--	1	--			--	0		--	--	1	20	SPARE					40
41	SPACE				--	1	--					--	0	--	1	20	SPARE					42
Total Load:								11199 VA		10635 VA		10416 VA										
Total Amps:								94 A		89 A		87 A										
Load Classification					Connected Load			Demand Factor			Estimated Demand			Panel Totals								
Lighting					8150 VA			125.00%			10188 VA											
Power					860 VA			100.00%			860 VA			Total Conn. Load: 32250 VA								
Receptacle					23240 VA			71.51%			16620 VA			Total Est. Demand: 27668 VA								
														Total Conn. Current: 90 A								
														Total Est. Demand... 77 A								

Branch Panel: LE							NEW																				
Location: STOR 1009							Volts: 120/208 WYE							A.I.C. Rating: FULLY RATED													
Supply From: MDP							Phases: 3							Mains Type: MLO													
Mounting: SURFACE							Wires: 4																				
Enclosure: NEMA 1																											
Notes:																											
CKT	Load Name						CB	P	Wire	A		B		C		Wire	P	CB	Load Name						CKT		
1	CU-19						50	2	#6	2785	2785						#6	2	50	CU-18						2	
3										2785	2785																
5	CU-17						30	2	#10	1693	2226			1693	2226		#8	2	40	CU-16						6	
7																											
9	CU-23						50	2	#6			2785	2785			2785	2785		2	20	ODU-1						10
11																											
13	CU-22						50	2	#6	2785	2785						#6	2	50	CU-21						14	
15																2785										2785	
17	F-23						25	1	#10					1488	1488		#10	1	25	F-22						18	
19	F-21						25	1	#10	1488	1488							#10	1	25	F-14						20
21	F-15						25	1	#10			1488	1488					#10	1	25	F-20						22
23	F-18						25	1	#10					1488	1488			1	15	F-17						24	
25	F-16						25	1	#10	1488	1488							#10	1	25	F-19						26
27	CU-20						50	2	#6			2785	2785				#6	2	50	CU-15						28	
29																2785										2785	
31	CU-14						50	2	#6	2785	--						--	1	--	SPACE						32	
33															2785	--						--	1	--	SPACE		
35	SPARE						20	1	--					0	--		--	1	--	SPACE						36	
37	SPARE						20	1	--	0	--						--	1	--	SPACE						38	
39	SPARE						20	1	--			0	--				--	1	--	SPACE						40	
41	SPARE						20	1	--						0	--		--	1	--	SPACE						42
Total Load:									23796 VA		28041 VA		21011 VA														
Total Amps:									202 A		237 A		175 A														
Load Classification							Connected Load			Demand Factor			Estimated Demand			Panel Totals											
Power							72847 VA			100.00%			72847 VA														
																Total Conn. Load: 72847 VA											
																Total Est. Demand: 72847 VA											
																Total Conn. Current: 202 A											
																Total Est. Demand... 202 A											

