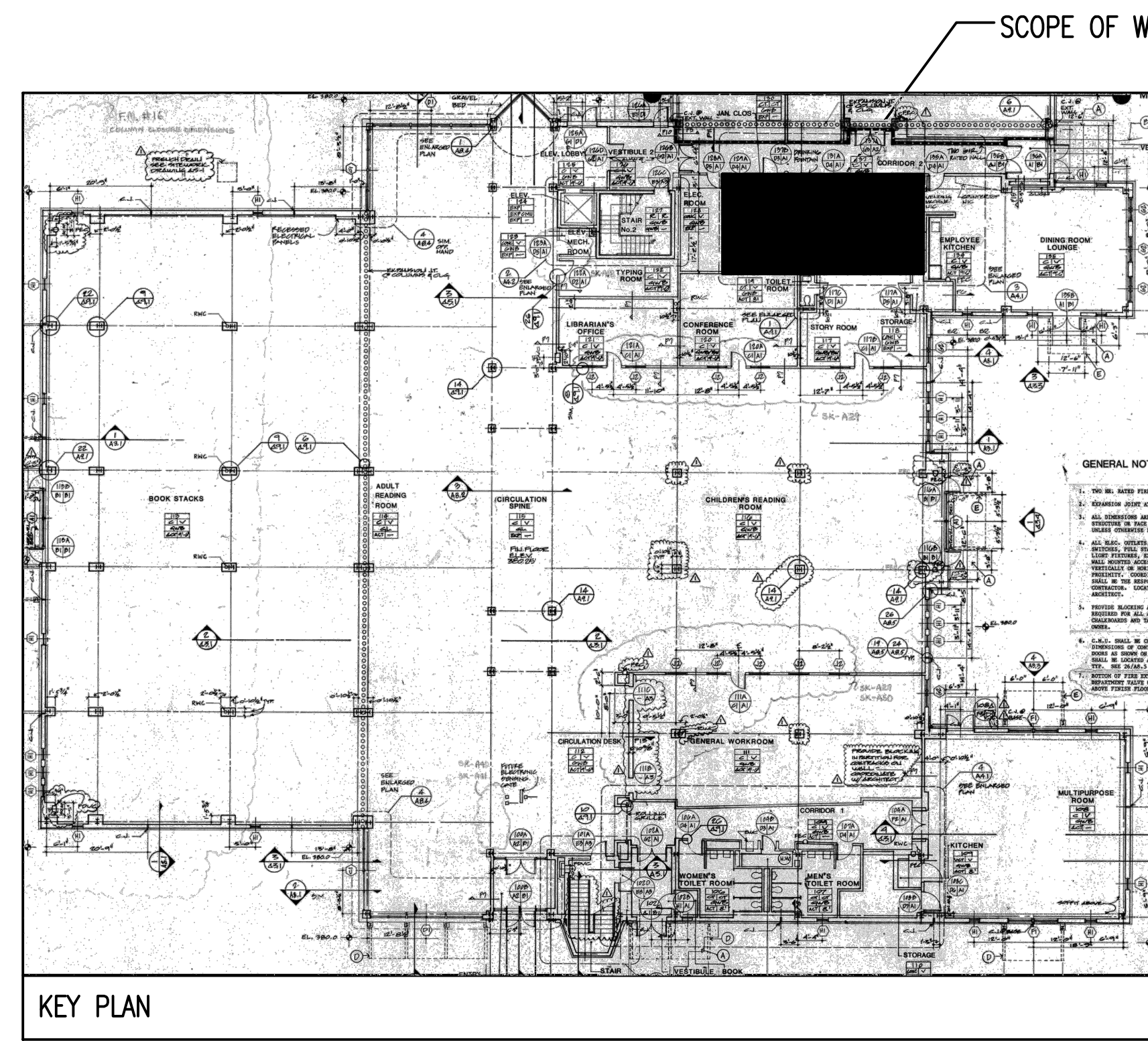


LOCATION MAP



AERIAL VIEW



KEY PLAN

DOYLESTOWN BOROUGH BUILDING CODES
 PA UCC - ADOPTED
 2009 INTERNATIONAL EXISTING BUILDING CODE (IEBC) LEVEL 2 ALTERATION
 2015 INTERNATIONAL BUILDING CODE (IBC) LEVEL 2 ALTERATION (LIMITED TO §406.3 & ALL ACCESSIBILITY PROVISIONS AS ADOPTED BY THE PA UCC)
 2015 INTERNATIONAL BUILDING CODE (IBC), CHAPTER 11 - ACCESSIBILITY REFERENCE STANDARD: 2009 ICC/ANSI 117.1

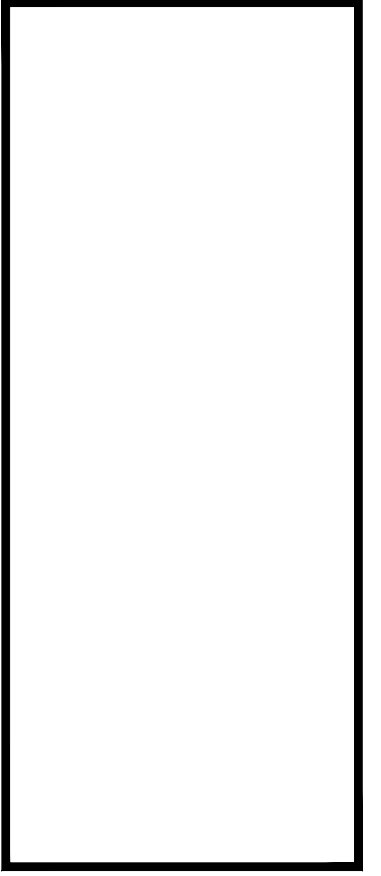
PROJECT DESCRIPTION:
 LEVEL 2 - TENANT IMPROVEMENT
 SCOPE OF WORK AREA: ±786 S.F.
 OCCUPANT LOAD: 8 PERSONS (1 PER 200 GROSS S.F.)
 USE: "B" - BUSINESS
 EXISTING CONSTRUCTION TYPE: 2B NONCOMBUSTIBLE UNPROTECTED
 HEIGHT: EXISTING 2-STORY BUILDING
 FIRE PROTECTION: EXISTING AUTOMATIC SPRINKLER SYSTEM TO REMAIN. RELOCATE SPRINKLER HEADS TO ACCOMMODATE THE NEW LAYOUT.

CODE SUMMARY

DRAWING ENUMERATION
MECHANICAL, PLUMBING, ELECTRICAL
MARTARANO ENGINEERING INC.

- CONTACT: ANGELO MARTARANO 484.706.9779
- MPFP.1 - MECHANICAL DEMOLITION PLAN, MECHANICAL NEW WORK PLAN, NOTES, LEGEND
 - MPFP.2 - MECHANICAL SPECIFICATIONS, SCHEDULES
 - E.1 - ELECTRICAL DEMOLITION PLAN, SPECIFICATION, LEGEND
 - E.2 - ELECTRICAL LIGHTING PLAN, POWER PLAN, LIGHTING FIXTURE SCHEDULE
 - E.3 - ELECTRICAL SPECIFICATIONS, NOTES

PROPOSED IMPROVEMENTS FOR:
BUCKS COUNTY LIBRARY
 DOYLESTOWN BRANCH
 150 SOUTH PINE STREET
 DOYLESTOWN, BUCKS COUNTY, PENNSYLVANIA



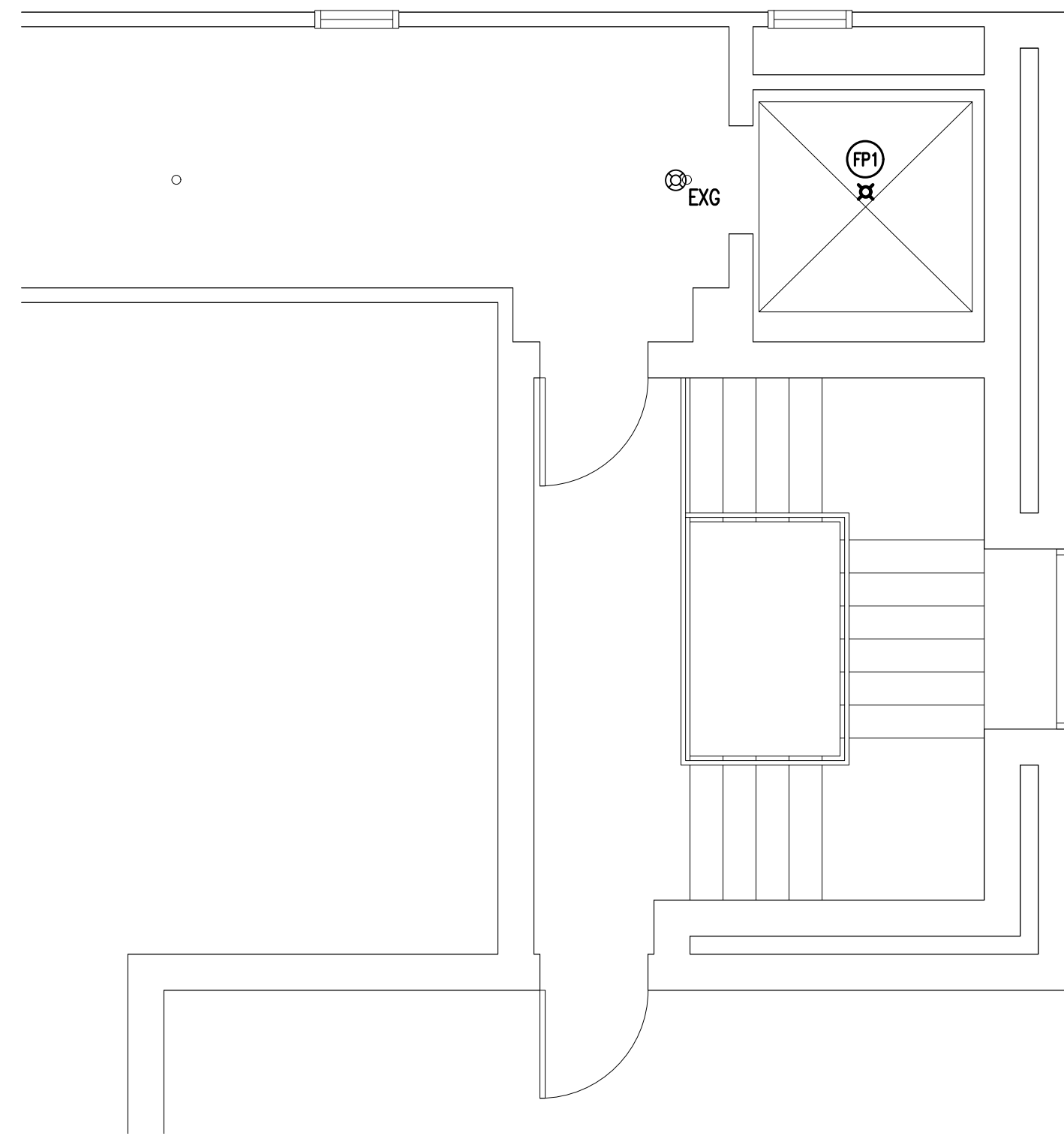
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 KING OF PRUSSIA, PA 19406
 610 337 4855
 www.rhjassoc.com

DATE: APRIL 19, 2019	
REVISIONS	

ISSUE INFORMATION
 2019-04-19 BID SET

CS
 2019-0134



FIRE PROTECTION – NEW WORK PLAN – SECOND FLOOR
SCALE: 1/4" = 1'-0"

MECHANICAL WORK NOTES:

- M1 INSTALL SSAC-1 ON 2 8" HIGH EQUIPMENT CURBS RUN THE LONG DIRECTION OF THE UNIT AND INSTALLED IN ACCORDANCE WITH THE ROOF MANUFACTURER'S REQUIREMENTS TO MAINTAIN ROOF WARRANTY (IF APPLICABLE). EQUIPMENT CURBS AND INSULATED REFRIGERANT PIPE PORTAL SHALL BE MANUFACTURED BY PATE OR APPROVED EQUAL.
- M2 PIPE 3/4" CONDENSATE ABV CEILING IN INSULATED TYPE 1" COPPER PIPING AND TERMINATE WITH ELBOW TURNING DOWN APPROXIMATELY 6" ABOVE MOP SINK. COORDINATE FINAL ROUTING LOCATION IN THE FIELD.
- M3 EXISTING EXHAUST FAN TO REMAIN.

PLUMBING WORK NOTES:

- P1 DISCONNECT AND REMOVE EXISTING ELEVATOR SUMP PUMP AND ACCESSORIES WITHIN THE PIT. FIELD VERIFY DISCHARGE PIPING SIZE, CONDITION, SLOPE, AND ROUTING. IF EXISTING SIZE MEETS THE MINIMUM SIZE SHOWN ON THE DRAWING AND DISCHARGES TO A LOCATION APPROVED BY THE LOCAL AUTHORITY, EXISTING DISCHARGE PIPING MAY BE REUSED. IF NOT, ROUTE PIPING IN MANNER SHOWN ON THE PLANS, DROP AND CONNECT TO EXISTING SANITARY PIPING IN PLUMBING CHASE. COORDINATE ELECTRICAL REQUIREMENTS AND WIRING BACK TO EXISTING CIRCUIT WITH THE ELECTRICAL CONTRACTOR.

FIRE PROTECTION WORK NOTES:

- P1 FIELD VERIFY EXISTING SPRINKLER HEAD AT THE TOP OF THE ELEVATOR SHAFT AND THE SIDE WALL SPRINKLER HEAD IN THE ELEVATOR SHAFT ON THE FIRST FLOOR. IF THESE SPRINKLERS DO NOT EXIST, PROVIDE NEW SPRINKLER HEADS PIPING. PROVIDE SPRINKLER PIPING MODIFICATIONS TO ACCOMMODATE NEW SPRINKLER HEADS AND ARRANGE LOCATIONS TO COORDINATE WITH EXISTING CONDITIONS.

MECHANICAL GENERAL NOTES:

- ALL MECHANICAL WORK SHALL BE DONE IN ACCORDANCE WITH ALL STATE AND LOCAL LAWS AND ORDINANCES AND IN A MANNER SATISFACTORY TO THE OWNER AND AUTHORITY HAVING JURISDICTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL REQUIRED PERMITS, INSPECTIONS AND PAY ALL APPLICABLE FEES. COMPLY WITH LATEST EDITIONS OF THE EXISTING BUILDING CODE, INTERNATIONAL MECHANICAL CODE, AND IECC-2015 ENERGY CODE.
- FIELD VERIFY EXISTING CONDITIONS AND COORDINATE ALL WORK, THE SITE SURVEY WAS PERFORMED BY VISUAL EVALUATION OF EXISTING EQUIPMENT, SOME MANUFACTURE SPECIFICATION PLATES WERE NOT ACCESSIBLE.
- CONTRACTOR SHALL LOCATE ALL NEW PIPING AS HIGH AS POSSIBLE. COORDINATE ALL WORK WITH EXISTING CONDITIONS, OTHER TRADES, AND CONFORM WITH ALL LOCAL CODES.
- ALL HVAC EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS WRITTEN INSTALLATION GUIDE.

PLUMBING GENERAL NOTES:

- ALL PLUMBING WORK SHALL CONFORM TO THE LATEST PENNSYLVANIA UNIFORM CONSTRUCTION CODE AND 2015 INTERNATIONAL PLUMBING CODE AND SUBSEQUENT CODE ORDINANCE AMENDMENTS THERETO.
- DRAWINGS ARE DIAGRAMMATIC. COORDINATE ALL EQUIPMENT LOCATIONS AND PIPE ROUTING WITH OTHER TRADES AND ARCHITECTURAL DETAILS PRIOR TO INSTALLATION.
- ALL MATERIALS NOT REUSED OR CLAIMED BY THE OWNER SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE REMOVED PROMPTLY FROM THE PREMISES BY THE CONTRACTOR.
- CONCEAL ALL PIPING IN WALLS/CHASE SPACE, BELOW FLOORS, AND ABOVE CEILINGS UNLESS OTHERWISE NOTED.

FIRE PROTECTION GENERAL NOTES:

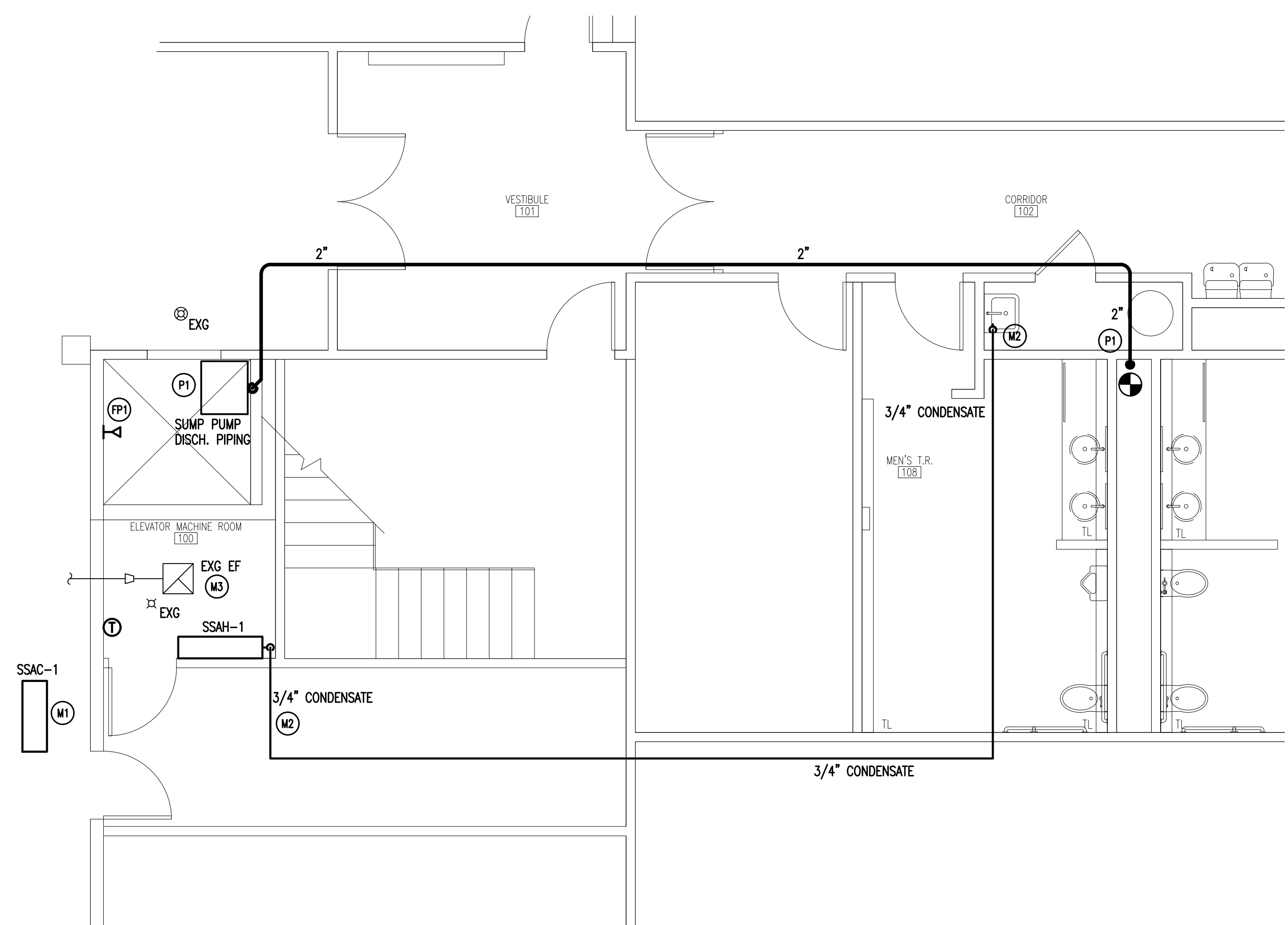
- ALL FIRE PROTECTION SYSTEM WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF NFPA PAMPHLET #13, THE 2015 INTERNATIONAL BUILDING CODES, THE OWNER'S INSURANCE CARRIER AND THE PHILADELPHIA FIRE DEPARTMENT.
- THE INTENT OF FIRE PROTECTION DRAWINGS IS FOR APPROVAL PURPOSES ONLY AND TO AID THE FIRE PROTECTION CONTRACTOR IN SYSTEM LAYOUT AND MODIFICATIONS REQUIRED FOR BIDDING PURPOSES. THE DRAWINGS IDENTIFY BASIC ELEMENTS OF THE FIRE PROTECTION SYSTEM, AREAS OF COVERAGE AND DEVICE TYPES AND AREAS WHICH REQUIRE SPECIAL ATTENTION AND/OR DEVICES. THE SUCCESSFUL FIRE PROTECTION CONTRACTOR IS RESPONSIBLE FOR PROVIDING APPROVED AND COMPLETE PIPING LAYOUT DRAWINGS AND HYDRAULIC CALCULATIONS.
- COORDINATE ALL SPRINKLER LOCATIONS WITH LIGHTS AND CONDUITS. FINAL SPRINKLER LOCATIONS SHALL BE IN ACCORDANCE WITH NFPA 13 SPACING REQUIREMENTS.
- ENSURE ALL CODE REQUIREMENTS ARE MET. ANY MODIFICATIONS TO THE SYSTEM IN AN EFFORT TO BRING THE SYSTEM TO CODE REQUIREMENTS AS A RESULT OF THESE RENOVATIONS ARE THE RESPONSIBILITY OF THIS CONTRACTOR. THIS SHALL INCLUDE, BUT IS NOT LIMITED TO ADDITION OF SPRINKLER HEADS, AND HYDRAULIC CALCULATIONS.

DEVICES AND ACCESSORIES

	WORK BY THIS CONTRACTOR
	EXISTING WORK OR WORK DONE BY OTHERS
	SANITARY PIPING (SAN)
	PIPE TURNING UP
	PIPE TURNING DOWN
	SPRINKLER HEAD SIDE WALL NEW
	SPRINKLER HEAD UPRIGHT NEW
	SPRINKLER HEAD CONCEALED NEW
	THERMOSTAT
	REFER TO INDICATED NEW WORK NOTE
	CONNECT NEW TO EXISTING

ABBREVIATIONS

ABV	ABOVE
AFF	ABOVE FINISHED FLOOR
AFR	ABOVE FINISHED ROOF
APPROX	APPROXIMATELY
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
DN	DOWN
EC	ELECTRICAL CONTRACTOR
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EXG	EXISTING
FLA	FULL LOAD AMPS
HP	HORSEPOWER
MAX	MAXIMUM
MBH	THOUSAND BRITISH THERMAL UNITS
MC	MECHANICAL CONTRACTOR
MIN	MINIMUM
O.A.	OUTDOOR AIR
PMP	PUMP
RL	REFRIGERANT LIQUID PIPING
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION PIPING
SSAC	SPLIT SYSTEM AIR CONDITIONER
SSAH	SPLIT SYSTEM AIR HANDLER
TYP	TYPICAL
W/	WITH



MECHANICAL, PLUMBING, & FIRE PROTECTION – NEW WORK PLAN – FIRST FLOOR
SCALE: 1/4" = 1'-0"

REF NO	MANUFACTURER	MODEL NO INDOOR UNIT/ OUTDOOR UNIT	AIR FLOW (CFM)	MIN OA (CFM)	INDOOR FAN MOTOR (WATTS)	NON-DUCTED SPLIT SYSTEM AIR CONDITIONING SCHEDULE										REMARKS
						COOLING					OUTDOOR SECTION					
						TOT CAP (MBH)	MIN SEER	FANS	COMPRESSOR	ELEC CHARACTERISTICS						
NO	FLA	NO	VOLTS	PHASE	HERTZ	MCA	MOCP									
SSAH-1/SSAC-1	MITSUBISHI	PKA-A36KA6 / PUY-A36NHA6	800	-	56	34.2	14	1	.75	1	208	1	60		40	PROVIDE WITH HARD WIRED THERMOSTAT, ADVANCED WIND BAFFLE FOR LOW AMBIENT COOLING DOWN TO -20°F; PROVIDE WITH CONDENSATE PUMP

*Cooling loads are "NET" based on combination ratings at 80°F DB/67°F WB entering temperature and 95°F at the condenser.

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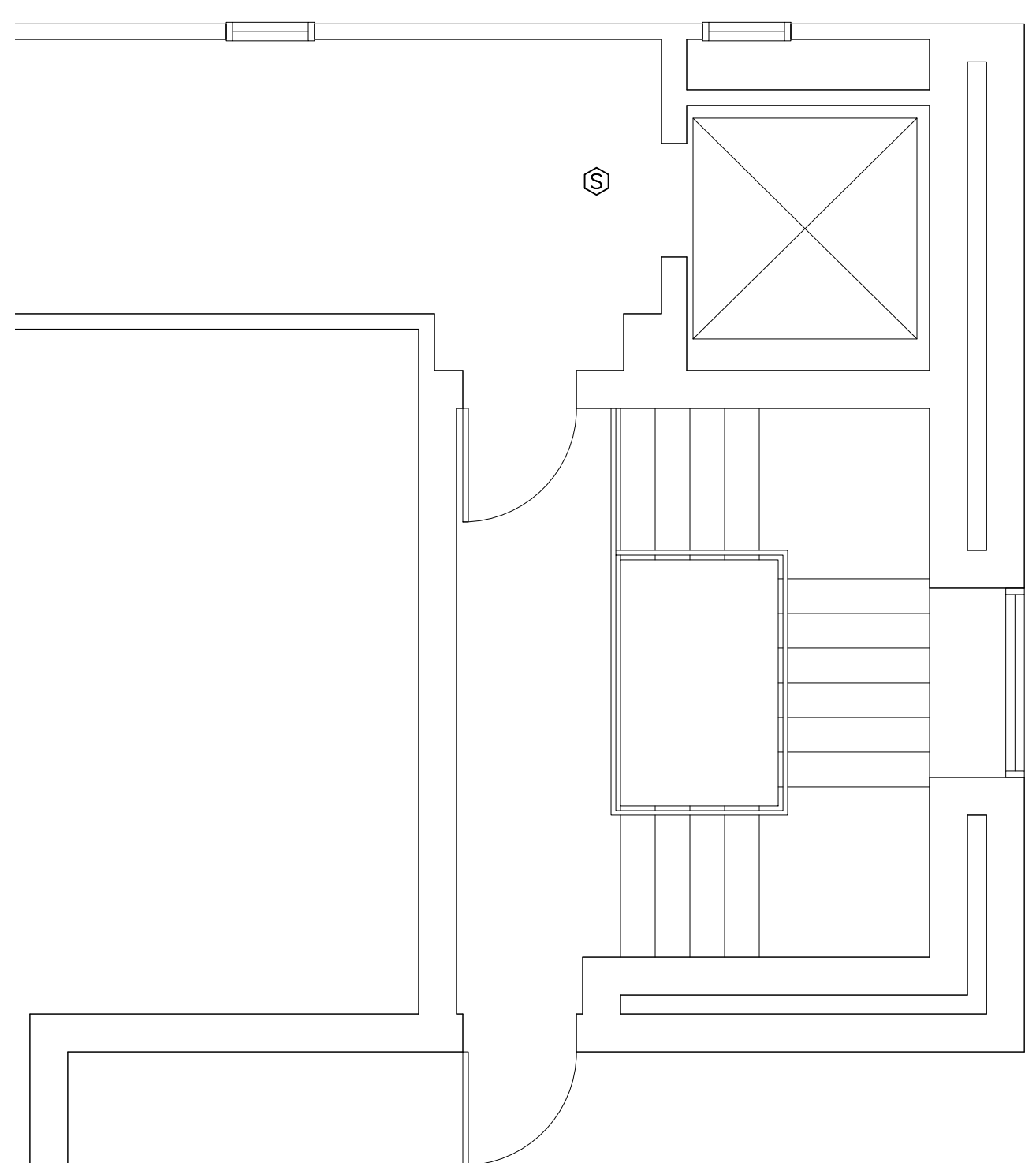
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ELECTRICAL – DEMOLITION PLAN – SECOND FLOOR
SCALE: 1/4" = 1'-0"

DRAWING DEMOLITION NOTES:

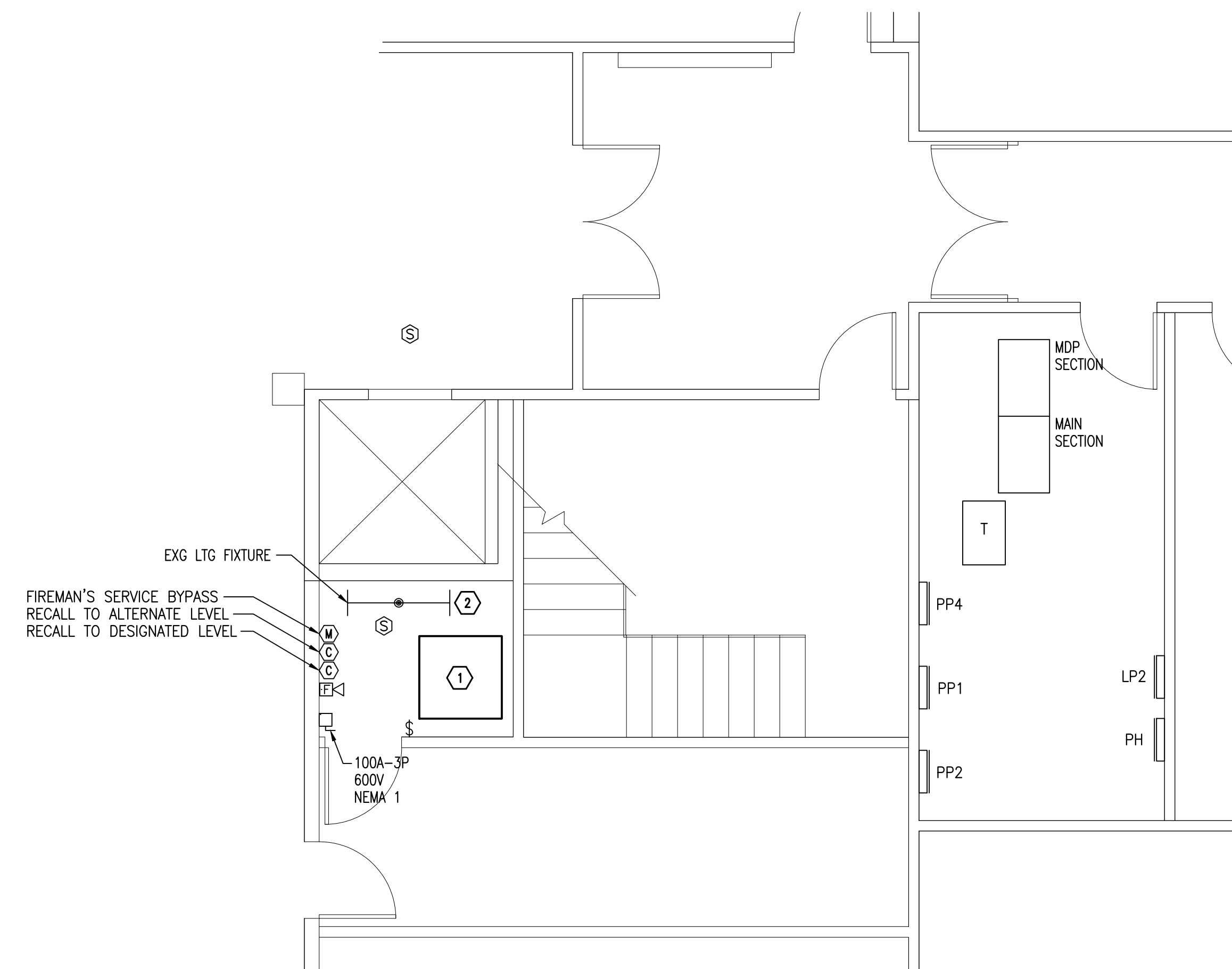
- ① REMOVE IN THEIR ENTIRETY ALL CIRCUITS AND CONTROLS FOR ELEVATORS TO ALLOW REMOVAL OF THE ELEVATORS. COORDINATE WITH ELEVATOR VENDOR.
- ② CLEAN AND RE-LAMP EXISTING LIGHT FIXTURE.

POWER	
	1 CIRCUIT HOME RUN TO PANEL 2 #12 & 1 #12G, 3/4" CND, UNLESS OTHERWISE NOTED
	BRANCH CIRCUIT RUN CONCEALED – 2 #12 & 1 #12G, 3/4" CND, UNLESS OTHERWISE NOTED PROVIDE ADDITIONAL SWITCHED CONDUCTORS AS REQUIRED
	PANELBOARD – SURFACE MOUNTED MOUNT 6'-0" TO TOP OF HIGHEST BREAKER RATINGS AS INDICATED ON DRAWINGS
	MOTOR OR MOTORIZED EQUIPMENT SIZE AS INDICATED ON DRAWINGS
	DISCONNECT SWITCH. NUMBER OF POLES, AMPERE RATING, VOLTAGE, NEMA TYPE ENCLOSURE AS INDICATED. MOUNT 4'-0" AFF TO CENTERLINE OF HANDLE.
	FUSED DISCONNECT SWITCH. NUMBER OF POLES, AMPERE RATING, FUSE SIZE AND NEMA TYPE ENCLOSURE AS INDICATED. MOUNT 4'-0" AFF TO CENTERLINE OF HANDLE.

DEVICES	
	SINGLE RECEPTACLE – 2 POLE, 3 WIRE GROUNDING, 20 AMP, 125 VOLT, NEMA 5-20R MOUNT @ 1'-8" AFF UNLESS OTHERWISE NOTED
	GROUND FAULT CIRCUIT INTERRUPTING DUPLEX RECEPTACLE 2 POLE, 3 WIRE GROUNDING, 20 AMP, 125 VOLT, NEMA 5-20R MOUNT @ 1'-8" AFF UNLESS OTHERWISE NOTED
	UL LISTED WEATHERPROOF ENCLOSURE WITH GROUND FAULT CIRCUIT INTERRUPTING WEATHER RESISTANT TYPE DUPLEX RECEPTACLE MOUNT 2'-0" AFF/AFG, UNLESS OTHERWISE NOTED
	LIGHTING FIXTURE, LETTER SUBSCRIPT INDICATES SCHEDULED FIXTURE TYPE. LOWERCASE LETTER INDICATES SWITCH CIRCUIT.
	SINGLE POLE TOGGLE TYPE A/C SWITCH 20 AMP, 120/277 VOLT MOUNT @ 3'-10" AFF, UNLESS OTHERWISE NOTED

FIRE ALARM	
	COMBINATION FIXED TEMPERATURE RATE-OF-RISE THERMAL DETECTOR – CEILING MOUNT
	PHOTOELECTRIC SMOKE DETECTOR – CEILING MOUNT
	FIRE ALARM CONTROL MODULE
	FIRE ALARM MONITORING MODULE
	FIRE ALARM HORN WITH VISUAL INDICATING LIGHT MOUNT @ 7'-6" AFF # = CANDELA RATING WHEN HIGHER THAN 15

GENERAL	
	REFER TO INDICATED DEMOLITION NOTE
	REFER TO INDICATED NEW WORK NOTE



ELECTRICAL – DEMOLITION PLAN – FIRST FLOOR
SCALE: 1/4" = 1'-0"

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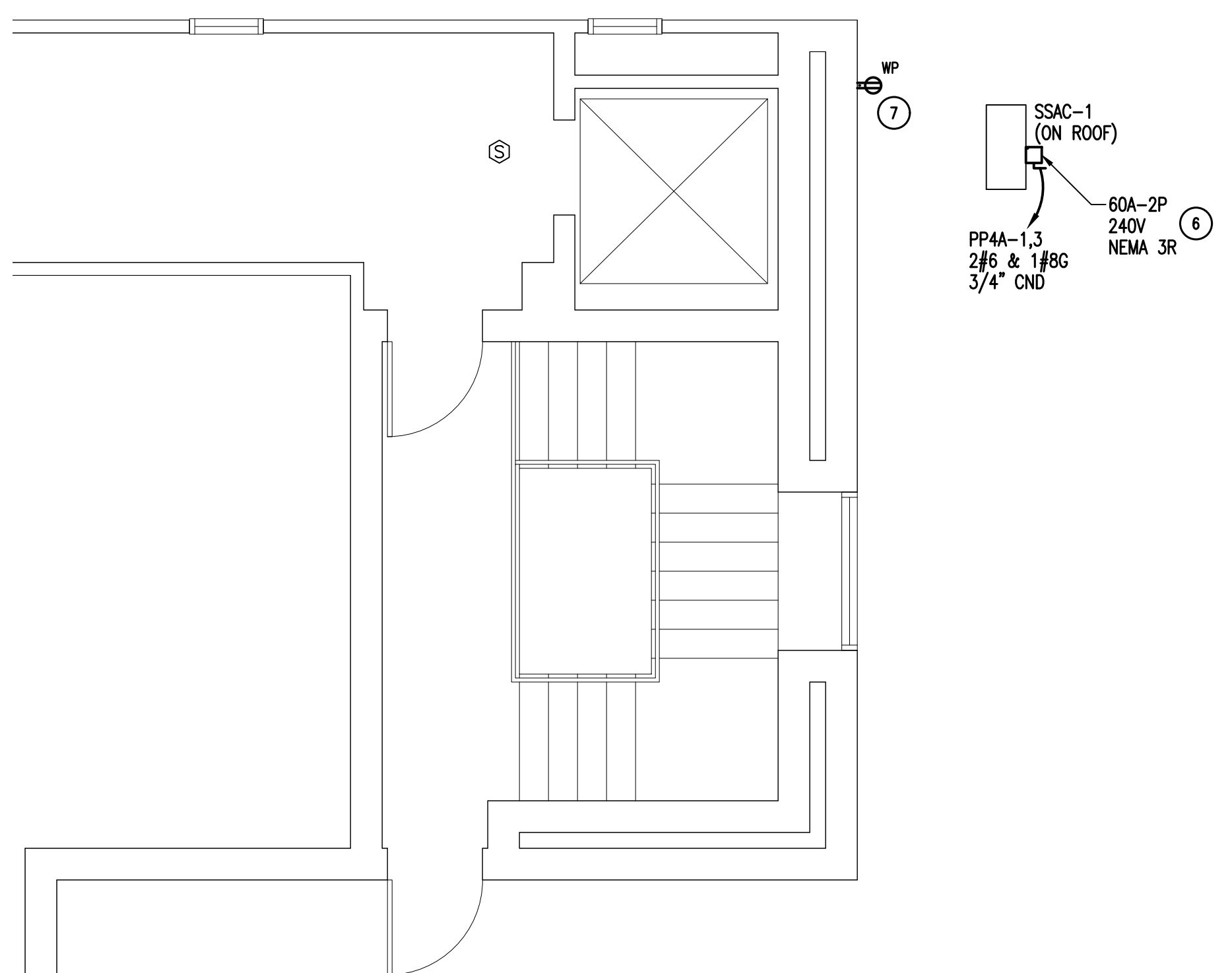
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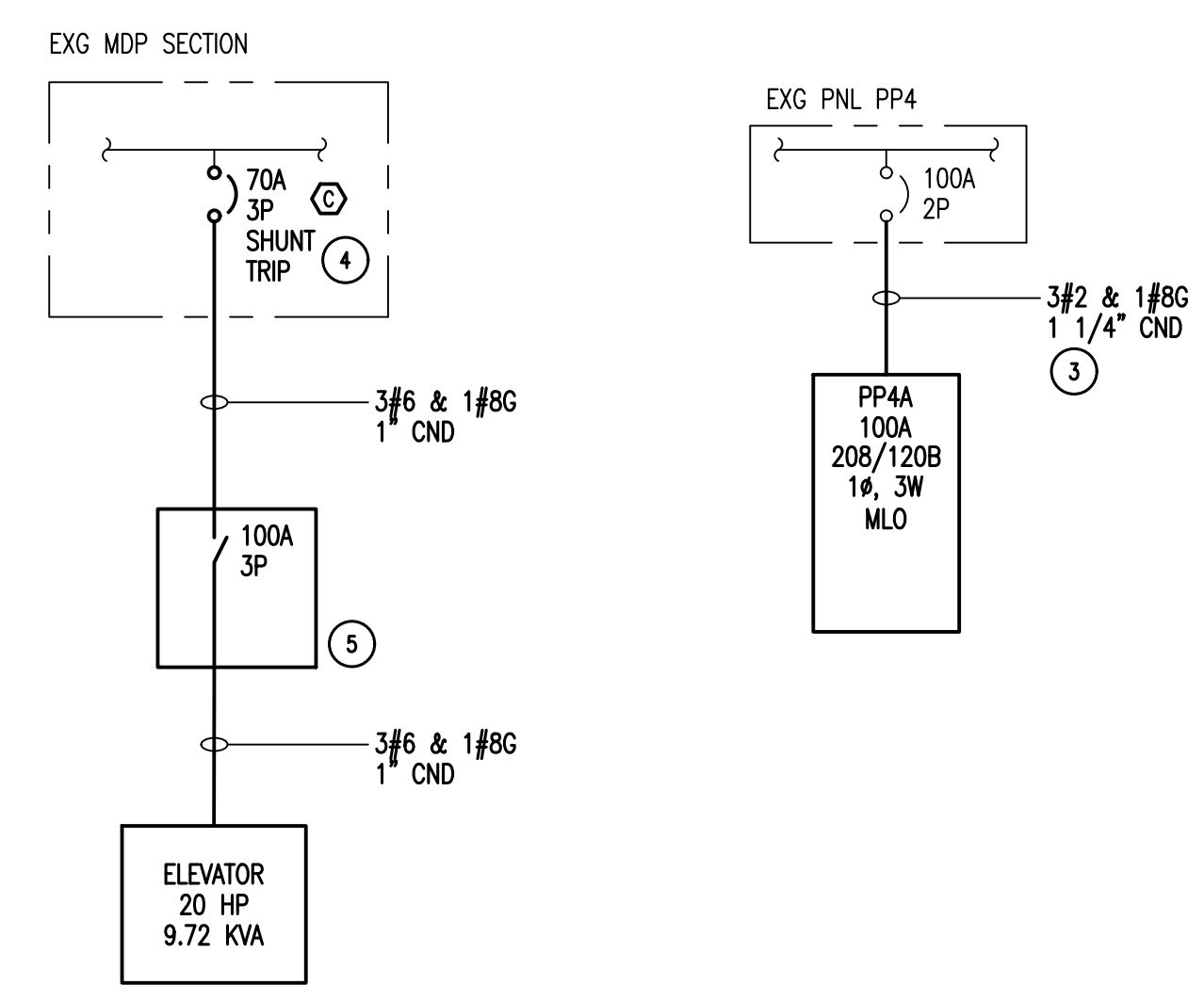
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NEW WORK NOTES:

- 1 PROVIDE FIRE ALARM DEVICES TO MATCH BASE BUILDING MANUFACTURER. CONNECT TO EXISTING SYSTEM MATCHING BASE BUILDING WIRING METHODS. PROVIDE ADDITIONAL BATTERIES, TERMINAL CABINETS, ETC FOR A FULLY FUNCTIONAL FIRE ALARM SYSTEM. CONTRACTOR SHALL PROVIDE UPDATED BUILDING RISER DIAGRAM, PLANS, BATTERY CALCULATIONS, VOLTAGE DROP CALCULATIONS, ETC. AS REQUIRED BY LOCAL AND STATE CODES.
- 2 EXISTING PIT WAS NOT ACCESSIBLE DURING ENGINEER'S SITE VISIT. CONTRACTOR SHALL CARRY IN THE BID THE COST TO PROVIDE NEW DEVICES AS SHOWN. EXISTING DEVICES MAY BE REUSED IF IN GOOD CONDITION AND APPROVED BY THE OWNER.
- 3 CONNECT TO SPARE CIRCUIT BREAKER IN PANEL.
- 4 PROVIDE A NEW SHUNT TRIP CIRCUIT BREAKER IN EXISTING MDP SECTION MATCHING EXISTING MANUFACTURER, TYPE AND SHORT CIRCUIT RATING.
- 5 CONTRACTOR SHALL COORDINATE DISCONNECT REQUIREMENTS WITH ELEVATOR VENDOR. CONTRACTOR SHALL CARRY IN THE BID THE COST TO PROVIDE A NEW DISCONNECT PER THE ELEVATOR VENDOR'S REQUIREMENTS. EXISTING DISCONNECT MAY BE REUSED IF IT CONTAINS THE REQUIRED AUXILIARY CONTACTS AND ACCESSORIES.
- 6 MOUNT DISCONNECT SWITCH ON NON-REMOVABLE PANEL OF UNIT OR ON NEARBY WALL. DO NOT COVER ANY LABELING.
- 7 PROVIDE A NEW WEATHER RESISTANT RECEPTACLE IN WEATHERPROOF ENCLOSURE WITHIN 25 FEET OF NEW UNIT. CONNECT TO EXISTING ROOF RECEPTACLE CIRCUIT.
- 8 COORDINATE EXACT LOCATION OF NEW PANEL IN THE FIELD.
- 9 PROVIDE AND INSTALL POWER AND CONTROL WIRING BETWEEN INTERIOR AND EXTERIOR UNIT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.



PARTIAL SINGLE LINE DIAGRAM
SCALE: NONE

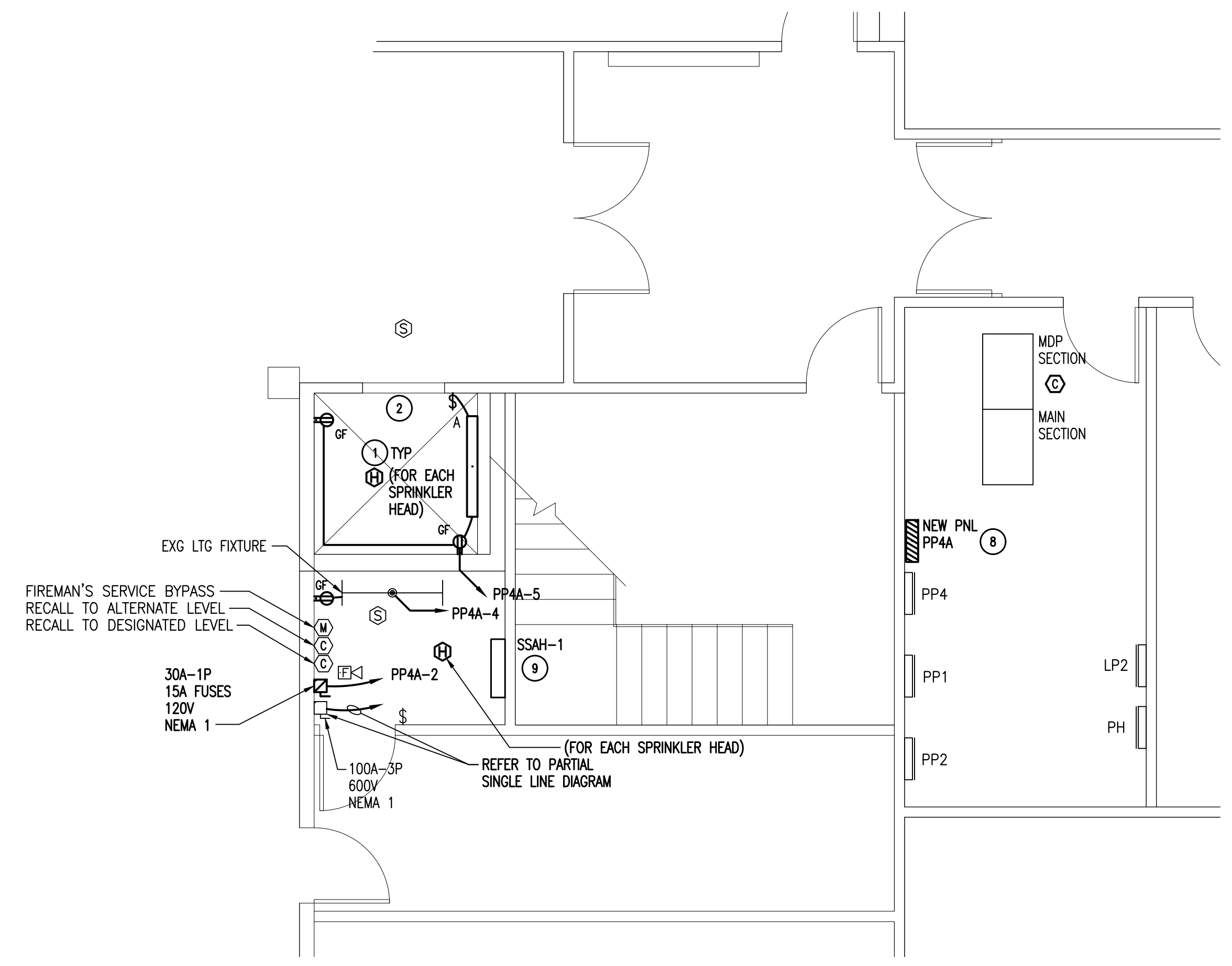
ELECTRICAL - NEW WORK PLAN - SECOND FLOOR
SCALE: 1/4" = 1'-0"

PANEL		PP4A									
VOLTAGE (L-N):		120									
VOLTAGE (L-L):		208									
PHASES, WIRES:		1 φ, 3 W									
MINIMUM BUS CAPACITY (A):		100 A									
ENCLOSURE TYPE:		DOOR IN DOOR									
MOUNTING:		SURFACE									
AIC RATING:		10000									
NOTES:		----									
CKT NO	DESCRIPTION	TRIP AMPS	POLE	PHASE LOADS (VA)				POLE	TRIP AMPS	DESCRIPTION	CKT NO
				A	B	C	N				
1,3	SSAC-1	40***	2	2600	1000	2600	240	1	15	ELEVATOR LIGHTS	2
5	LTG, RECP - ELEV PIT	20	1	397	0	0	0	1	20	LTG, RECP - ELEV MACH RM	4
7	SPACE	0	1	0	0	0	0	1	0	SPACE	6
9	SPACE	0	1	0	0	0	0	1	0	SPACE	8
11	SPACE	0	1	0	0	0	0	1	0	SPACE	10
				CONNECTED LOAD PHASE TOTALS (VA)							
				3997		2840					
Receptacles (0 - 10 KVA)				0.5	1.00	0.5		DEMAND LOAD		7.1KVA	
Lighting				0.1	1.25	0.1		DEMAND LOAD		13.7 KVA	
Cooling				5.2	1.00	5.2		SPARE CAPACITY		65.8 AMPS	
Lighting - Exterior				1.0	1.25	1.3		SPARE CAPACITY		66 %	
TOTAL:				6.8		7.1					
LOAD (AMPS):				32.9		34.2					

* BREAKER LOCK ON DEVICE
** SHUNT TRIP BREAKER
*** HACR RATED BREAKER

LIGHT FIXTURE SCHEDULE											
MOUNTING LOCATION: CEILING - CLG; FLOOR - FLR; GROUND - GND; POLE - PL; SUSPENDED - SUS; WALL - WL											
MOUNTING TYPE: FLUSH - FLS; PENDANT - PEN; PEDESTAL - PED; SURFACE - SUR; TRACK - TRK; CH-CHAIN HUNG; CEILING HEIGHT - CLG-HT											
TYPE	MANUFACTURER	CAT NO	DESCRIPTION	VOLTS	LOAD WATTS	NO	LAMPS TYPE	LOCATION	MOUNTING TYPE	HEIGHT	REMARKS
A	COLUMBIA LIGHTING	LXENF-35LW-RFA-EU	PIT LIGHT	120	37	-	LED	-	-	-	

*See REMARKS section.
NOTES:



ELECTRICAL - NEW WORK PLAN - FIRST FLOOR
SCALE: 1/4" = 1'-0"

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M:\Current\2019\19-051 BCFL Elevator Renovation - Doylestown PA\Drawings\19-051 Electrical.dwg



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Project: 19-051

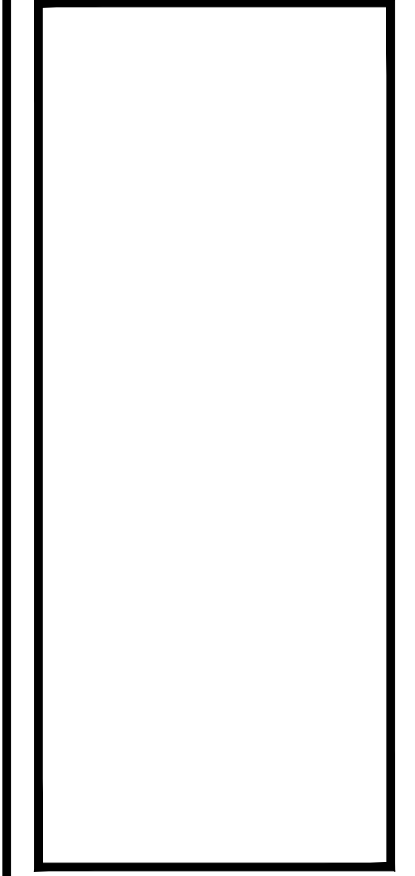
ELECTRICAL SPECIFICATIONS

1. THE ARCHITECTURAL GENERAL CONDITIONS SHALL APPLY TO AND FORM A PART OF THE ELECTRICAL SECTION OF THESE SPECIFICATIONS.
2. PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, AND TOOLS NECESSARY FOR A COMPLETE AND WORKABLE ELECTRICAL SYSTEM AS INDICATED ON THE DRAWINGS. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), LOCAL AND STATE CODES HAVING JURISDICTION, AND APPLICABLE MANUFACTURER'S RECOMMENDATIONS.
3. UNLESS NOTED OTHERWISE, THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL CONTROL DEVICES TOGETHER WITH CONTROL WIRING, CONDUIT, AND ALL APPURTENANCES AND ACCESSORIES NECESSARY TO PERFORM THE OPERATING FUNCTIONS AS SPECIFIED. CONTROL DEVICES SHALL INCLUDE, BUT NOT BE LIMITED TO, MOTOR STARTERS, THERMOSTATS, SWITCHING RELAYS, CONTROL RELAYS, AND TRANSFORMERS. WIRING MATERIALS AND INSTALLATION SHALL CONFORM TO THE NATIONAL ELECTRIC CODE. ALL CONTROL SYSTEM WIRING SHALL BE 14 AWG MINIMUM INSTALLED IN 1/2-INCH DIAMETER MINIMUM CONDUIT. FLEXIBLE METAL CONDUIT SHALL BE PERMITTED TO MAKE RUNS OF THREE FEET OR LESS FOR FINAL EQUIPMENT CONNECTIONS.
4. THE CONTRACTOR SHALL VISIT THE SITE, EXAMINE ALL CONDITIONS, AND MAKE ALLOWANCES FOR DIFFICULTIES AND CONTINGENCIES AFFECTING THE PROPER EXECUTION OF THIS CONTRACT.
5. THE CONTRACTOR SHALL OBTAIN AND PAY ALL FEES NECESSARY FOR PERMITS AND INSPECTIONS REQUIRED WITH HIS WORK. ALL ELECTRICAL WORK SHALL BE INSPECTED AND CERTIFIED BY AN INDEPENDENT INSPECTION AGENCY SUCH AS THE MIDDLE DEPARTMENT INSPECTION AGENCY (MDIA).
6. VERIFY ALL ELECTRICAL SERVICE INFORMATION SHOWN ON THE DRAWINGS WITH THE LOCAL POWER COMPANY PRIOR TO SUBMITTING A BID. ANY CHANGES OR SERVICE CHARGES IMPOSED BY THE POWER COMPANY SHALL BE QUALIFIED AND INCLUDED IN THE BID.
7. ALL MATERIALS SHALL BE MANUFACTURED WITHIN THE SCOPE OF THE UNDERWRITERS LABORATORIES, SHALL CONFORM TO UL STANDARDS, CARRY UL APPROVAL, AND SHALL BE USED FOR THE PURPOSE FOR WHICH THEY ARE APPROVED.
8. ALL EQUIPMENT, MATERIALS, AND WORKMANSHIP SHALL BE GUARANTEED FOR A MINIMUM OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER.
9. WHERE PRODUCTS ARE SPECIFIED BY BRAND NAME, CATALOG NUMBERS, OR BY NAMES OF MANUFACTURERS, THE REFERENCE IS INTENDED TO BE DESCRIPTIVE AND NOT RESTRICTIVE AND IS SOLELY FOR THE PURPOSE OF INDICATING THE TYPE OF QUALITY OF ITEM THAT WILL BE ACCEPTABLE. AN APPROVED EQUAL WILL BE ACCEPTED UNLESS INDICATED OTHERWISE.
10. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH ALL OTHER TRADES.
11. ALL CONTRACTORS/BIDDERS SHALL HAVE RECEIVED A COMPLETE SET OF CONSTRUCTION DOCUMENTS FOR REVIEW AND REFERENCE TO WORK INDICATED. CONDUIT LOCATE SERVICES SHALL BE REQUESTED AND COMPLETED BEFORE DISTURBANCE OF ANY EXISTING GRADE OR ON-GRADE CONSTRUCTION, SLAB DEMOLITION, OR OTHER ACTIVITIES THAT MAY IMPACT BURIED UTILITIES OR COMMUNICATION CONDUITS. THE CONTRACTOR SHALL CONFIRM THAT CONDUIT LOCATE SERVICES HAVE BEEN COMPLETED AND THAT NO POTENTIAL CONFLICTS EXIST BEFORE EXISTING GRADE IS EXCAVATED OR EXISTING FLOORING DEMOLISHED, REGARDLESS OF THE LOCATION ON THE PROPERTY. THIS SHALL BE REVIEWED WITH THE OWNER'S PROJECT REPRESENTATIVE.
12. ALL CUTTING AND PATCHING OF EVERY NATURE REQUIRED IN CONNECTION WITH THIS CONTRACT SHALL BE DONE BY THE CONTRACTOR WITH MECHANICS EXPERIENCED IN THEIR RESPECTIVE TRADES. ALL PATCHING SHALL MATCH ADJACENT FINISHES.
13. WHERE CONDUITS PASS THROUGH FIRE RESISTING PORTIONS OF THE STRUCTURE, AN APPROVED FIRE-STOPPING DEVICE SHALL BE INSTALLED TO MAINTAIN THE FIRE RATING OF THAT PORTION OF THE STRUCTURE. ALL FIRE STOPPING DEVICES USED SHALL BE LISTED INTUMESCENT MATERIALS SUCH AS A CAULK, SEALANT, PUTTY, WRAP STRIPS, ETC. AS REQUIRED TO PROPERLY FIRE STOP ALL VOIDS. FIRE STOPPING MATERIAL SHALL BE AS MANUFACTURED BY 3M, HILTI, PRO-SET SYSTEMS OR EQUAL.
14. CONDUIT SHALL BE 3/4-INCH MINIMUM, UNLESS NOTED OTHERWISE, AND SHALL BE IN ACCORDANCE WITH THE FOLLOWING TYPES OF USAGE:
 - 14.1. EMT - USE FOR INTERIOR EXPOSED AND CONCEALED WORK NOT SUBJECT TO DAMPNESS OR SEVERE PHYSICAL DAMAGE. USE FOR EXTERIOR WORK NOT SUBJECT TO PHYSICAL DAMAGE. DO NOT USE WHEN IN CONTACT WITH CINDER FILL UNLESS PROTECTED BY AT LEAST TWO INCHES OF CONCRETE OR UNLESS TUBING IS AT LEAST 18 INCHES UNDER THE FILL. DO NOT USE EMT IN HAZARDOUS LOCATIONS. USE WITH COMPRESSION FITTINGS FOR EXTERIOR WORK. USE WITH SET SCREW FITTINGS FOR INTERIOR WORK.
 - 14.2. RIGID METAL CONDUIT - USE FOR INTERIOR WORK SUBJECT TO CORROSIVE INFLUENCES, DAMPNESS AND/OR SEVERE PHYSICAL DAMAGE. USE FOR EXTERIOR WORK SUBJECT TO PHYSICAL DAMAGE.
 - 14.3. ALL CONCEALED BRANCH CIRCUIT WIRING ABOVE GRADE IN NON-HAZARDOUS LOCATIONS MAY BE METAL CLAD CABLE, TYPE MC, MINIMUM SIZE #12 AWG, MAXIMUM SIZE #8 AWG, UNLESS NOTED OTHERWISE. UNIVERSAL TYPE FASTENING DEVICES SHALL BE USED TO PROPERLY SECURE THE MC CABLES PARALLEL TO THE WOOD OR METAL FRAMING MEMBER. DEVICE SHALL BE INSTALLED IN CENTER OF MEMBER ON INTERVALS NO GREATER THAN FOUR FEET SIX INCHES.
15. INSTALL FLEXIBLE METALLIC CONDUIT AT ALL MOTOR CONNECTIONS INSIDE THE BUILDING AND LIQUID-TIGHT FLEXIBLE METAL CONDUIT AT MOTOR CONNECTIONS OUTSIDE THE BUILDING. CONDUIT SHALL NOT EXCEED 18 INCHES IN LENGTH.
16. UNLESS OTHERWISE NOTED, ALL WIRE SHALL BE OF SOFT DRAWN COPPER, SOLID OR STRANDED OF 98 PERCENT CONDUCTIVITY WITH INSULATION RATED 600 VOLTS. ALL SIZES SHOWN ON THE DRAWINGS ARE BASED ON COPPER. ALUMINUM CONDUCTORS SHALL NOT BE PERMITTED. CONDUCTORS SHALL BE AS FOLLOWS:
 - 16.1. #8 AND LARGER SHALL BE STRANDED WITH TYPE THHN/THWN INSULATION.
 - 16.2. #10 AND SMALLER SHALL BE SOLID WITH TYPE THHN/THWN INSULATION.
 - 16.3. #12 SHALL BE MINIMUM SIZE CONDUCTOR EXCEPT #14 MAY BE USED FOR CONTROL CIRCUIT WIRING AND #10 SHALL BE THE MINIMUM SIZE FOR CIRCUITS OVER 100 FEET LONG.
 17. ANY EMPTY CONDUIT INSTALLED FOR FUTURE USE SHALL HAVE A 200 POUND TEST NYLON PULL LINE.
 18. WIRE CONNECTIONS FOR SPLICING #8 AWG AND SMALLER SHALL BE MADE WITH PRESSURE CONNECTORS CONSISTING OF CONE-SHAPED COIL SPRINGS WITH INSULATED COVERS. SPLICING OF CONDUCTORS LARGER THAN #8 SHALL BE MADE USING MECHANICAL SPLICING OR COMPRESSION TYPE DEVICES.
 19. OUTLET BOXES OF PROPER TYPE AND NOT LESS THAN FOUR INCHES SQUARE SHALL BE USED AT ALL LIGHTING, RECEPTACLE AND SWITCH LOCATIONS. PLASTER RINGS SHALL BE USED AT EACH BOX LOCATION WHERE NECESSARY. SURFACE MOUNTED WIRING DEVICES SHALL BE INSTALLED IN "HANDY BOX" TYPE OUTLET BOXES WITH CORRESPONDING COVER PLATES. OUTLET BOXES SHALL BE AS MANUFACTURED BY AMERICAN ELECTRIC, RACO, CARLON, OR APPROVED EQUAL.
 20. JUNCTION BOXES OF AMPLE SIZE SHALL BE PROVIDED AS REQUIRED BY CONSTRUCTION IN ACCORDANCE WITH THE NEC. BOXES SHALL BE CONSTRUCTED OF CAST RUST-RESISTING METAL OR OF 14 GAUGE GALVANIZED STEEL WITH RIVETED OR WELDED JOINTS AND PROVIDED WITH COVERS OF THE SAME MATERIAL WHICH SHALL BE SCREWED OR HINGED TO THE BOX. BOXES SHALL BE FLANGED AND TAPPED TO RECEIVE MACHINE SCREWS. HOLES IN COVERS SHALL BE IN ALIGNMENT WITH TAPPED HOLES IN BOX. WHERE NO SIZES ARE GIVEN ON THE DRAWINGS, BOXES SHALL BE NO SMALLER THAN THE MINIMUM SIZE ALLOWED BY NEC. WHERE FEEDERS OF DIFFERENT SYSTEMS OR VOLTAGES PASS THROUGH THE SAME BOX, BARRIERS SHALL BE PROVIDED FOR PROPER SEPARATION.
 21. SWITCHES SHALL BE SPECIFICATION GRADE, 120/277 VOLTS AC, TOGGLE TYPE RATED 20 AMPERES. SWITCH TYPE AND NUMBER OF POLES SHALL BE AS INDICATED ON THE DRAWINGS. SWITCHES SHALL BE AS MANUFACTURED BY LEVITON, HUBBELL, EATON, OR APPROVED EQUAL.
 22. DUPLEX RECEPTACLES SHALL BE SPECIFICATION GRADE, POLARIZED, GROUNDED, NEMA 5-20R, 20 AMPERE, 125 VOLTS AC. RECEPTACLES SHALL BE AS MANUFACTURED BY LEVITON, HUBBELL, EATON, OR APPROVED EQUAL. RECEPTACLES WITH INTEGRAL GROUND FAULT CIRCUIT INTERRUPTING CAPACITY SHALL BE PROVIDED AS INDICATED ON THE DRAWINGS. WEATHERPROOF DUPLEX RECEPTACLES SHALL BE WEATHER AND TAMPER RESISTANT GROUND FAULT CIRCUIT INTERRUPTING TYPE MOUNTED IN A WEATHERPROOF ENCLOSURE.

23. WIRING DEVICES AND COVER PLATES ARE TO BE COLOR COORDINATED WITH THE OWNER'S REPRESENTATIVE. ONE-PIECE DEVICE COVER PLATES SHALL BE PROVIDED FOR ALL OUTLETS. PLATES SHALL BE SMOOTH THERMOPLASTIC TYPE AS MANUFACTURED BY LEVITON, HUBBELL, GENERAL ELECTRIC, OR APPROVED EQUAL.
24. SAFETY SWITCHES SHALL BE THE SIZE AND TYPE AS SHOWN ON THE DRAWINGS. FUSE SIZE, IF REQUIRED, SHALL BE AS SHOWN ON THE DRAWINGS. SWITCHES SHALL BE HEAVY DUTY WITH QUICK-MAKE, QUICK-BREAK OPERATING MECHANISM. THE HANDLE AND MECHANISM SHALL BE AN INTEGRAL PART OF THE BOX AND NOT THE COVER WITH POSITIVE PAD LOCKING PROVISIONS IN THE "OFF" POSITION. SWITCHES SHALL BE NEMA 1 (INTERIOR) AND NEMA 3R (EXTERIOR) AND SHALL BE AS MANUFACTURED BY SQUARE D, SIEMENS, GENERAL ELECTRIC, OR APPROVED EQUAL.
25. PROVIDE FOR EVERY FUSE CLIP TO WHICH A CIRCUIT HAS BEEN CONNECTED, A NONRENEWABLE CARTRIDGE FUSE OF THE SIZE INDICATED ON THE DRAWINGS OR AS REQUIRED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. ALL FUSES SHALL BE DUAL ELEMENT TIME DELAY UNLESS NOTED OTHERWISE.
26. PANELBOARDS SHALL BE DEAD FRONT, SURFACE OR FLUSH MOUNT, AS INDICATED ON THE DRAWINGS, WITH CAPACITY AND VOLTAGE CHARACTERISTICS AS SHOWN ON THE PANEL SCHEDULES. PANELBOARDS SHALL BE COMPLETE WITH COVERS, KEY LOCKED DOORS, COPPER BUS, COPPER GROUNDING BAR, AND SOLID NEUTRAL BAR, WITH NEUTRAL BAR INSULATED FROM THE CABINET. PANELBOARDS SHALL BE AS MANUFACTURED BY SQUARE D, GENERAL ELECTRIC, SIEMENS, OR APPROVED EQUAL.
27. CIRCUIT BREAKERS SHALL BE ENCLOSED MOLDED CASE, BOLT-ON, WITH QUICK-MAKE, QUICK-BREAK TOGGLE MECHANISM, NON-FUSIBLE CONTACTS, AND INVERSE TIME SHORT CIRCUIT CHARACTERISTICS. BREAKERS SHALL BE TRIP-FREE ON OVERLOAD AND SHALL INDICATE CLEARLY WHETHER THEY ARE OPENED, CLOSED, OR TRIPPED. MULTI-POLE UNITS SHALL HAVE THERMAL ELEMENT IN EACH POLE AND SHALL HAVE A SINGLE HANDLE. CIRCUIT BREAKER SHORT CIRCUIT RATINGS SHALL BE 120 PERCENT OF THE AVAILABLE SHORT CIRCUIT CURRENT ON THE EXISTING ELECTRICAL SYSTEM; 10,000 AMPERES SYMMETRICAL MINIMUM FOR 208/120 VOLT SYSTEM. CIRCUIT BREAKER SHALL BE FULLY RATED. CONTRACTOR SHALL OBTAIN SYSTEM SHORT CIRCUIT CURRENTS FROM THE POWER COMPANY AND SHALL INCLUDE THIS INFORMATION IN HIS SHOP DRAWING SUBMITTAL TO THE OWNER'S REPRESENTATIVE. BREAKERS SHALL BE COMPATIBLE WITH PANELBOARDS PROVIDED. ALL 20 AMPERE, SINGLE POLE CIRCUIT BREAKERS FOR LIGHTING CIRCUITS SHALL BE "SWD" RATED. CIRCUIT BREAKERS FOR DWELLING UNIT BEDROOMS SHALL BE AFCI RATED AND CIRCUIT BREAKERS FOR AIR CONDITIONING AND REFRIDGERATION UNITS SHALL BE HACR RATED.
28. SURFACE MOUNTED PANELBOARDS SHALL BE MOUNTED ON 3/4-INCH PLYWOOD BACKBOARD.
29. ALL PANELBOARDS IN WHICH WORK OCCURS PER THESE DOCUMENTS, SHALL BE PROVIDED WITH UPDATED-TYPED DIRECTORIES. GIVEN ONLY FOR CLARITY AND QUANTITY, CIRCUIT NUMBERS SHOWN IN THE PLANS MAY NOT NECESSARILY REPRESENT ACTUAL CIRCUIT NUMBERS IN PANELBOARD. FROM FLUSH-MOUNTED PANELBOARDS, STUB-OUT ONE 3/4" CONDUIT INTO THE CEILING CAVITY FOR EACH SET OF 3 SPARES AND/OR SPACES OR FRACTION THEREOF.
30. LIGHTING FIXTURES AND LAMPS SHALL BE AS SCHEDULED ON THE DRAWINGS OR APPROVED EQUAL.
31. THE ELECTRICAL CONTRACTOR SHALL CONSULT THE ROOM FINISH SCHEDULE AS TO THE TYPE OF CEILING CONSTRUCTION. HE SHALL BE RESPONSIBLE FOR ORDERING THE PROPER FIXTURES WITH HARDWARE FOR INSTALLATION IN OR ON THE TYPE OF CEILING SPECIFIED.
32. FIRE ALARM SYSTEM
 - 32.1. THIS SECTION OF THE SPECIFICATIONS COVERS THE FURNISHING OF ALL LABOR, MATERIALS, AND ACCESSORIES NECESSARY FOR, BUT NOT NECESSARILY LIMITED TO, THE INSTALLATION OF A FIRE ALARM SYSTEM AS AN EXTENSION OF THE EXISTING FIRE ALARM SYSTEM, AS LISTED HEREIN AND AS SHOWN ON THE DRAWINGS. ALL DEVICES SHALL HAVE A SIMILAR PHYSICAL APPEARANCE OF EXISTING SYSTEM EQUIPMENT AND HAVE ELECTRICAL CHARACTERISTICS COMPATIBLE WITH THE EXISTING SYSTEM.
 - 32.2. THE FIRE ALARM SYSTEM SHALL BE A SUPERVISED, ADDRESSABLE AND ANNUNCIATED, NON-CODED LOCAL ALARM SYSTEM AS DESCRIBED HEREIN AND AS SHOWN ON THE PLANS. THE SYSTEM SHALL BE UL APPROVED AND MEET ALL STATE AND LOCAL FIRE ALARM CODES.
 - 32.3. THE SYSTEM SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF NFPA 70, 72, 99, AND 101.
 - 32.4. THE SYSTEM SHALL BE OF ONE MANUFACTURER MATCHING EXISTING BUILDING MANUFACTURER.
 - 32.5. THE ACTUATION OF ANY MANUAL OR AUTOMATIC DEVICE SHALL CAUSE ALL ALARM BELLS/HORNS/SPEAKERS TO SOUND THROUGHOUT THE BUILDING, ELECTRO-MAGNETIC DOOR HOLDERS TO DE-ENERGIZE, LIGHT THE APPROPRIATE ZONE IN ALARM ON THE CONTROL PANEL AND CAUSE THE CONTROL PANEL TO TRANSMIT A SIGNAL TO AN OFF-SITE MONITORING SERVICE. TIE-IN TO OFF-SITE MONITORING SERVICE SHALL BE BY OTHERS.
 - 32.6. THE SYSTEM SHALL OPERATE FROM 120 VOLTS, 60 HZ POWER AND SHALL INCLUDE ALL FIRE ALARM BELLS/HORNS, PANELS, BATTERIES, ANNUNCIATORS, CONDUIT, WIRE, OUTLET BOXES, AND ANY OTHER APPURTENANCES NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM INCLUDING PROVISION OF 20 AMPERE, 120 VOLTS CIRCUITS FROM THE NEAREST PANELBOARDS WITH SPARE CAPACITY AS REQUIRED.
 - 32.7. AUXILIARY POWER FOR SYSTEM SHALL BE WET CELL LEAD CALCIUM BATTERIES SIZED TO OPERATE SYSTEM UNDER SUPERVISORY CONDITIONS FOR 24 HOURS AND THEN SUBSEQUENTLY OPERATE ALL ALARM SIGNAL DEVICES UNDER ALARM CONDITIONS FOR FIVE MINUTES. FOR EXTENSION OF EXISTING SYSTEMS PROVIDE ADDITIONAL BATTERIES AND CHARGERS AS REQUIRED TO MAINTAIN THE ABOVE OPERATION FOR ADDITIONAL INITIATION AND INDICATING DEVICES.
 - 32.8. PROVIDE ADDITIONAL CONTROL EQUIPMENT AND/OR POWER SUPPLIES HOUSED IN A SURFACE MOUNTED CABINET AS REQUIRED WITH A 20 AMPERE, 120 VOLTS CIRCUIT TO THE NEAREST PANELBOARDS WITH SPARE CAPACITY.
 - 32.9. SYSTEM SHALL BE PROVIDED WITH A MINIMUM OF ONE SPARE ZONE IN CONTROL PANEL.
 - 32.10. HEAT DETECTORS SHALL BE 135 DEGREES F RATE-OF-RISE/FIXED TEMPERATURE TYPE SUITABLE FOR MOUNTING ON STANDARD OUTLET BOX.
 - 32.11. SMOKE DETECTORS SHALL BE PHOTOELECTRIC TYPE. DETECTOR CIRCUITS SHALL BE OF THE TWO-WIRE TYPE WHEREBY THE DETECTOR OPERATING POWER IS TRANSMITTED OVER THE SAME CONDUCTORS AS THE INITIATING CIRCUIT. DETECTORS SHALL BE COMPATIBLE WITH THE CONTROL PANEL AND SHALL BE SUITABLE FOR USE IN A SUPERVISED CIRCUIT.
 - 32.12. ADDRESSABLE DEVICE MONITORING MODULES CONNECTED TO THE SYSTEM VIA SUPERVISED WIRING SHALL BE PROVIDED AT ELEVATOR CONTROL PANELS, FIRE SUPPRESSION SYSTEM CONTROL PANELS, FLOW AND TAMPER SWITCHES, FIRE PUMP CONTROLLERS, AND ANY NON-ADDRESSABLE DEVICES BEING CONNECTED TO THE SYSTEM.
 - 32.13. ADDRESSABLE DEVICE CONTROL MODULES CONNECTED TO THE SYSTEM VIA SUPERVISED WIRING SHALL BE PROVIDED AT ELEVATOR CONTROL PANELS, SHUNT TRIP CIRCUIT BREAKERS, SMOKE DOOR OPERATORS, MECHANICAL UNIT VENTILATORS, DAMPER OPERATORS, AND ANY OTHER DEVICES TO BE CONTROLLED BY THE SYSTEM.
 - 32.14. THE CONTRACTOR AND EQUIPMENT MANUFACTURER SHALL JOINTLY GUARANTEE ALL WIRING AND EQUIPMENT FOR THIS SYSTEM TO BE FREE OF DEFECT IN WORKMANSHIP AND MATERIAL FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.
 - 32.15. THE CONTRACTOR AND EQUIPMENT MANUFACTURER SHALL PROVIDE ALL SHOP DRAWING INFORMATION INCLUDING BUT NOT LIMITED TO VOLTAGE DROP CALCULATIONS, BATTERY CALCULATIONS, COMPLETE RISE DIAGRAM, ETC. AS REQUIRED BY APPLICABLE CODES. CAD DRAWINGS SHOWING DEVICE LOCATIONS WILL BE AVAILABLE AT THE REQUEST OF THE CONTRACTOR.
 - 32.16. THE ENTIRE FIRE ALARM SYSTEM INCLUDING ANY PREVIOUSLY EXISTING PORTIONS SHALL BE TESTED IN THE PRESENCE OF THE OWNER AND LOCAL AUTHORITIES. THE CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT, AND MATERIAL NEEDED FOR THE TEST WITHOUT ADDITIONAL CHARGE.

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PROPOSED IMPROVEMENTS FOR:
BUCKS COUNTY LIBRARY
DOYLESTOWN BRANCH
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APRIL 15, 2019