

HVAC Upgrades

for

Payne Recreation Center

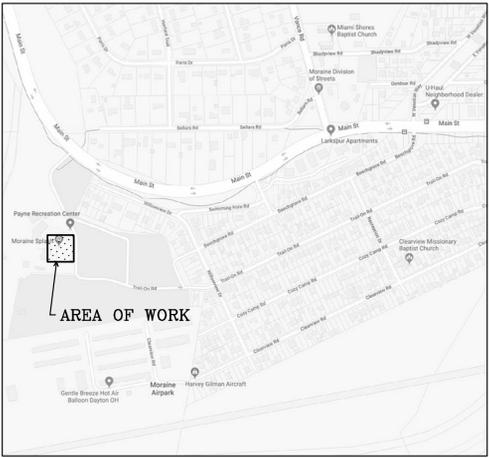
City of Moraine

3800 Main Street
Moraine, Ohio 45439

June 12, 2019

Helmig Lienesch LLC
Consulting Engineers

410 South Jefferson Street (937) 228-4007
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VICINITY MAP
NO SCALE

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AIR HANDLING UNIT SCHEDULE

DESIGN CONDITIONS:		ACCESSORIES:																																			
COOLING: RETURN AIR: 76°F DB / 64°F WB SUPPLY AIR: 55.6°F DB / 55.1°F WB OUTSIDE AIR: 90°F DB		1...14" ROOF CURB		2...SS HEAT EXCHANGER		3...ANTI-CYCLE CONTROL		4...ENTH. ECONOMIZER/ BAR. RELIEF		5...TWO STAGE HEATING		6...TWO STAGE COOLING		7...RA SMOKE DETECTOR		8...2" DISPOSABLE FARR 30/30 FILTERS		9...460-3-60 W/ NON-FUSED DISC.		10...HAIL GUARDS		11...ENERGY RECOVERY VENTILATION PACKAGE		12...TWO SPEED FAN CONTROLLER (VFD) / SAV		13...HINGED PANELS		14...THRU BASE PIPING & ELEC. CONN.		15...COMPRESSOR WARRANTIES TO 5 YEARS		16...FACTORY STARTUP, 1ST YEAR SERVICE		17...UNPOWERED CONVENIENCE OUTLET		18...ROOF CURB ADAPTOR	
MARK	NOM. TONS.	CFM AT WG ESP	ARI ER	COOLING CAPACITY (MBH)		HEATING CAPACITY (MBH)		MOTOR HP	MIN. OA (CFM)	SERVING AREA	CARRIER MODEL No.	ACCESSORIES (SEE ABOVE)																									
RTU-4	8.5	3,400 @ 0.50	12.0	102	77	120 / 180	98 / 148	2	340	CARDIO RM. 2ND FL.	48HCRD09	2, 4, 5, 8, 9, 10, 12, 15, 16, 17																									
RTU-6	17.5	7,000 @ 0.75	12.0	209	155	320 / 400	259 / 324	5	2,100	MEETING RM. 1ST FL.	48HCTD20	2, 4, 5, 8, 9, 10, 11, 12, 15, 16, 17, 18																									
RTU-7	8.5	3,400 @ 0.75	12.0	102	77	180 / 224	148 / 184	3	1,000	COR/EAST RM. 1ST FL.	48HCTD09	2, 4, 5, 8, 9, 10, 11, 12, 15, 16, 17																									
RTU-8	7.5	3,400 @ 0.75	12.0	92	69	120 / 180	98 / 148	2	300	CHILDREN RM. 1FL.	48HCRD08	2, 4, 5, 8, 9, 10, 12, 15, 16, 17																									
RTU-9	7.5	3,400 @ 0.75	12.0	92	69	120 / 180	98 / 148	2	300	MULTI-USE RM. 1ST FL.	48HCRD08	2, 4, 5, 8, 9, 10, 12, 15, 16, 17																									

NOTE: ROOFTOP UNITS HAVE BEEN PRE-PURCHASED BY THE OWNER AND ARE NOW IN STORAGE AT HABEGGER.

EQUIPMENT DATA

AIR CONDITIONING UNIT

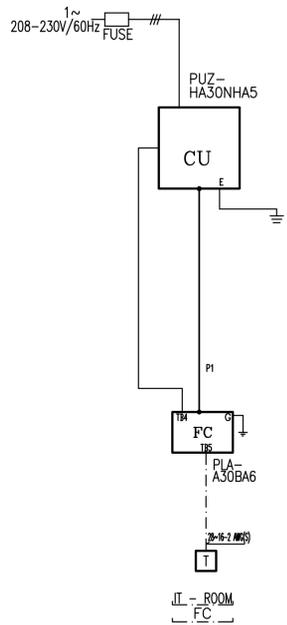
MARK (INDOOR UNIT) FC
 MARK (COND. UNIT) CU
 TYPE CEILING CASSETTE HEAT-PUMP
 COOLING CAPACITY 30 MBH TOTAL
 CFM (Lo-M1-M2-Hi) 460-530-600-710
 ELECTRICAL SEE ELECTRICAL DRAWINGS
 ACCESSORIES WALL MOUNTED THERMOSTAT, CONDENSATE PUMP, AND LOW AMBIENT ACCESSORIES (AIR OUTLET GUIDE, WIND BAFFLE)
 MFR. & MODEL # MITSUBISHI "PLA-A30BA6" (INDOOR UNIT)
 MITSUBISHI "PUZ-HA30NHA5" (OUTDOOR UNIT)
 OR APPROVED EQUAL BY CARRIER

Payne Recreation Center - City of Moraine

DIAGRAM SYMBOL LEGEND	(CONT.No) 6522	PAGE
DISPLAY DESCRIPTION	CITY MULTI SYSTEM SCHEMATIC	
---//--- POWER WIRE		
--- --- CONTROL WIRE		
--- REF. PIPE		

Additional refrigerant charge is needed depending on the size and length of extended piping. Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.
 1.25mm(1/8 AWG) : 1.25mm(1/8 AWG) or more. 0.75mm(20 AWG) : between 0.5mm(24 AWG) and 0.75mm(20 AWG).

PIPING LIST	
SYMBOL	LIQUID PIPE/GAS PIPE SIZE
P1	3/8 / 5/8



THE SYSTEM SCHEMATIC FOR PIPING AND WIRING ARE FOR REFERENCE ONLY; CONTRACTOR SHALL VERIFY VOLTAGE, CONTROL WIRING, EXACT PIPING SIZES AND LENGTHS WITH EQUIPMENT MANUFACTURER.

1 REFRIGERANT SYSTEM SCHEMATIC NO SCALE

HVAC GENERAL NOTES

- WHERE REFERENCE IS MADE TO AN EXISTING PIPE, DUCT, OR PIECE OF EQUIPMENT, CONTRACTOR SHALL FIELD VERIFY EXACT SIZE, MODEL NUMBER, SERIAL NUMBER, AND LOCATION PRIOR TO FABRICATION AND/OR ORDERING MATERIALS.
- THE EXISTING MECHANICAL EQUIPMENT AND PIPING SHOWN ON THESE DRAWINGS ARE SHOWN IN THEIR APPROXIMATE LOCATION AND MUST BE FIELD VERIFIED.
- CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL PIPES, DUCTS, TERMINAL AIR UNITS, ETC. WITH THE OTHER TRADES AND SHIFT LOCATION OR OFF-SET WHERE NECESSARY. WORK BY OTHER TRADES IS NOT RESTRICTED TO NEW WORK BUT ALSO INCLUDES EXISTING ITEMS SUCH AS ELECTRICAL CONDUITS, STORM PIPING, ETC.
- ALL PIPING SHALL BE INSTALLED IN A MANNER THAT WILL ACCOMMODATE THERMAL EXPANSION.
- UNLESS OTHERWISE INDICATED, ALL NEW RECTANGULAR SUPPLY AND RETURN DUCTWORK SHALL BE ACOUSTICALLY LINED SHEET METAL WITH 1" DUCT LINER.
- ALL EQUIPMENT, PIPING, DUCTWORK, CONTROLS, VALVES, ETC. NOTED TO BE REMOVED SHOULD ALSO BE DISPOSED OF UNDER THIS SECTION OF THE WORK UNLESS THE OWNER WISHES TO RETAIN POSSESSION OF SPECIFIC ITEMS. SEE HVAC SPECIFICATIONS ITEM DESCRIPTION WORK.
- CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING OF ALL EXISTING GAS, AND WATER SYSTEMS WHEN NEW EQUIPMENT ARE INSTALLED ON EXISTING SYSTEMS. TESTING SHALL BE PER CODE AND LOCAL INSPECTION AGENCY REQUIREMENTS.
- ALL ROOF WORK INCLUDING FLASHING AND PATCHING SHALL BE COMPLETED BY THE OWNER'S ROOFING CONTRACTOR TO MAINTAIN WARRANTY. FOR SUBCONTRACTOR PRICING, CONTACT COTTERMAN ROOFING AT 800-713-3190.
- TEMPERATURE CONTROLS CONTRACTOR SHALL PROVIDE ALL LOW AND HIGH VOLTAGE WIRING TO CONTROL PANELS, RTUs, DAMPERS, SPLIT SYSTEMS, THERMOSTATS, ETC. SEE ELECTRICAL DRAWINGS FOR POWER WIRING AND SERVICE RECEPTACLES SHOWN NEAR CONTROL PANELS.
- ROOFTOP UNITS WILL NEED TO BE REMOVED AND REPLACED ON AN INDIVIDUAL BASIS. INCLUDE ALL ADDITIONAL COSTS FOR RIGGING AND ROOF REPAIRS.

HVAC NOTES

- AFTER ELECTRICAL CONTRACTOR REMOVES ELECTRICAL POWER AND CONTROL WIRING; DISCONNECT GAS PIPING AND REMOVE EXISTING ROOFTOP UNIT. EXISTING ROOF CURB SHALL REMAIN. ROOFING CONTRACTOR SHALL FLASH AND SEAL AS REQUIRED.
- EXISTING ROOFTOP UNIT TO REMAIN AND IS SHOWN FOR REFERENCE ONLY
- REMOVE EXISTING ROOF CURB DOWN TO ROOF DECK. OWNER'S ROOFING CONTRACTOR SHALL INFILL INSULATION AND PATCH MEMBRANE AS REQUIRED.
- REMOVE GAS PIPING AND ASSOCIATED GAS VALVE UP TO THIS POINT.
- ROOFING SUBCONTRACTOR SHALL RE-FLASH AND SEAL CURBS.
- PROVIDE CONDENSATE TRAP PER MANUFACTURER RECOMMENDATIONS, WITH HAND-TIGHT PLUGS, AND EXTEND COPPER PIPE DOWN TO EXISTING ROOF. ROOFING SUBCONTRACTOR SHALL FLASH AND SEAL ALL NEW ROOF PENETRATIONS.
- EXISTING ROOF CURB TO REMAIN. CONTRACTOR SHALL VERIFY EXACT SIZE BEFORE ORDERING ROOFTOP UNIT CURB ADAPTER.
- SERVICE CLEARANCE (TYPICAL).
- NEW CONNECTION TO EXISTING SUPPLY AND RETURN DUCTWORK, FIELD MEASURE AND PROVIDE DUCTWORK TRANSITION AS REQUIRED.
- EXISTING GAS PIPING ON ROOF TO REMAIN, SHOWN FOR REFERENCE ONLY.
- MAKE GAS PIPING CONNECTION TO EQUIPMENT, AND PROVIDE GAS VALVE ON RISER AND DIRT LEG AT BASE OF DROP. VERIFY EXACT CONNECTION REQUIREMENTS AT JOB SITE.
- PROVIDE PATE® "MULTIPLE PIPE CURB" AT ROOF PENETRATION, FOR REFRIGERANT LINES AND ELECTRICAL CONDUITS, COORDINATE WITH ELECTRICAL CONTRACTOR.
- PROVIDE EQUIPMENT SUPPORT AS MANUFACTURED BY PATE® MODEL "ES-5", OR APPROVED EQUAL BY RPS CORPORATION.
- FOR THE CONDENSING UNIT SYSTEM EXTEND SUCTION AND LIQUID REFRIGERATION LINES AS RECOMMENDED BY EQUIPMENT SUPPLIER. ALL PIPE SIZING SHALL BE BY AS REQUIRED BY EQUIPMENT MANUFACTURER RECOMMENDATIONS. SEE PIPE SCHEMATIC FOR REFERENCE.
- FAN COIL UNIT SHALL BE MOUNTED ON THREADED ROD AND VIBRATION ISOLATING GROMMETS.
- EXTEND SUCTION AND LIQUID REFRIGERATION LINES FROM OUTDOOR UNIT TO FAN COIL UNIT, PER MANUFACTURER'S INSTRUCTIONS. REFER TO PIPING SCHEMATIC DIAGRAM FOR PIPE SIZES.
- CONNECT CONDENSATE PIPING TO FAN COIL UNIT. VERIFY CONDENSATE PIPE SIZE AND TRAP REQUIREMENTS WITH EQUIPMENT SUPPLIER AT JOB SITE.
- THIS PIPING LOCATED ABOVE CEILING AND/R UNDERSIDE OF STRUCTURE ABOVE.
- EXTEND CONDENSATE PIPING DOWN TO EXISTING SINK AND TERMINATE INDIRECT CONDENSATE PIPING WITH MINIMUM 2" AIR GAP.
- REMOVE EXISTING THERMOSTATS AND ASSOCIATED CONTROL WIRING BACK TO SOURCE. PATCH WALL OPENING, PRIME AND PROVIDE TWO FINISH COATS OF PAINT TO MATCH EXISTING COLOR. PAINTING SHALL BE CORNER TO CORNER (TYPICAL). TCC SHALL PROVIDE NEW TEMPERATURE SENSOR.
- TEMPERATURE CONTROLS CONTRACTOR SHALL INTEGRATE NEW FAN COIL WITH NEW i-Vu BUILDING AUTOMATION SYSTEM.
- CAREFULLY REMOVE EXISTING TILES AND PARTIAL CEILING SYSTEM TO ACCOMMODATE NEW FAN COIL UNIT.
- REMOVE VENT CAP, AND EXTEND VENT PIPE 24 INCHES ABOVE ROOFTOP UNIT AIR INTAKE AND REINSTATE VENT CAP.
- NEW TEMPERATURE SENSOR WITH LCD DISPLAY, ADJUSTABLE SET POINT AND OCCUPANCY OVERRIDE.

HVAC LEGEND

PIPING:

- G — GAS LINE
- CND — CONDENSATE WASTE PIPING
- BALL VALVE
- GATE VALVE
- GLOBE VALVE
- PITCH OF PIPE
- UNION
- HOSE END CONNECTION
- CAP PIPING
- PIPE DROP
- PIPE RISE
- CO CLEANOUT

MISCELLANEOUS:

- ELECTRONIC ROOM THERMOSTAT
- DISCHARGE AIR
- ↻ EXHAUST OR INTAKE AIR
- △ REVISION SYMBOL
- NEW CONNECTION TO EXISTING
- [123] ROOM NUMBER
- ◇ NOTE SYMBOL
- E EXISTING TO REMAIN
- ER EXISTING TO BE REMOVED
- ER EXISTING TO BE RELOCATED
- ER EXISTING RELOCATED
- ① REFERENCE TO DETAIL
- - - - CONTRACT LIMIT
- TCC TEMPERATURE CONTROLS CONTRACTOR
- BAC BUILDING AUTOMATION CONTRACTOR

TEMPERATURE CONTROL SYSTEM NOTES

- ALL TEMPERATURE CONTROL WORK CALLED FOR SHALL BE FURNISHED AND INSTALLED BY THE OWNER'S TEMPERATURE CONTROLS VENDOR (CARRIER COMMERCIAL SERVICES - 513-759-1500). TEMPERATURE CONTROLS CONTRACTOR (TCC) SHALL PROVIDE ALL LOW AND HIGH VOLTAGE WIRING TO CONTROL PANELS, DAMPERS, THERMOSTATS, CONTROLLERS, ETC.
- THE FOLLOWING CARRIER "i-Vu OPEN" COMPATIBLE COMPONENTS SHALL BE INCLUDED IN THE TEMPERATURE CONTROLS SUBCONTRACT:
 - CU/FC: ONE (1) UC OPEN CONTROLLER, ONE (1) ZONE SENSOR.
 - RTU-4: ONE (1) ZONE SENSOR, ONE (1) SUPPLY AIR SENSOR.
 - RTU-8: ONE (1) ZONE SENSOR, ONE (1) SUPPLY AIR SENSOR.
 - RTU-8: ONE (1) ZONE SENSOR, ONE (1) SUPPLY AIR SENSOR.
 - RTU-6 & ERV: TWO (2) OPEN-UPC INTERFACE MODULES, ONE (1) POWER SUPPLY.
 - RTU-7 & ERV: TWO (2) OPEN-UPC INTERFACE MODULES, ONE (1) POWER SUPPLY.
- ADDITIONAL COMPONENTS & EQUIPMENT: i-Vu STANDARD SERVER, ONE (1) CCN ADAPTOR, ONE (1) XT-RB ROUTER, CONTROL POWER SUPPLIES AND INTERLOCK WIRING
- NOTE THAT RTU-4, RTU-8, & RTU-9 WILL HAVE FACTORY FURNISHED RTU OPEN CONTROLS. RTU-6 & RTU-7 AND THEIR ERVs WILL HAVE FACTORY FURNISHED COMFORT LINK CONTROLS.
- TCC SCOPE SHALL INCLUDE ALL PROGRAMMING, CHECK, TEST, STARTUP AND WARRANTIES.
- TCC SHALL PROVIDE ALL COMMUNICATION AND INTERLOCK WIRING, SOFTWARE AND PROGRAMMING REQUIRED TO CONFIGURE NEW i-Vu SERVER TO ALLOW OWNER REMOTE ACCESS.
- "DEDUCT ALTERNATE H-1": TCC SUBCONTRACTOR PROPOSAL SHALL STATE THE AMOUNT TO BE DEDUCTED FROM HIS BASE BID PROPOSAL FOR THE DELETION OF THE WORK SHOWN ABOVE FOR RTU-4, RTU-8 & RTU-9.

HVAC - SHEET INDEX

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REVISIONS

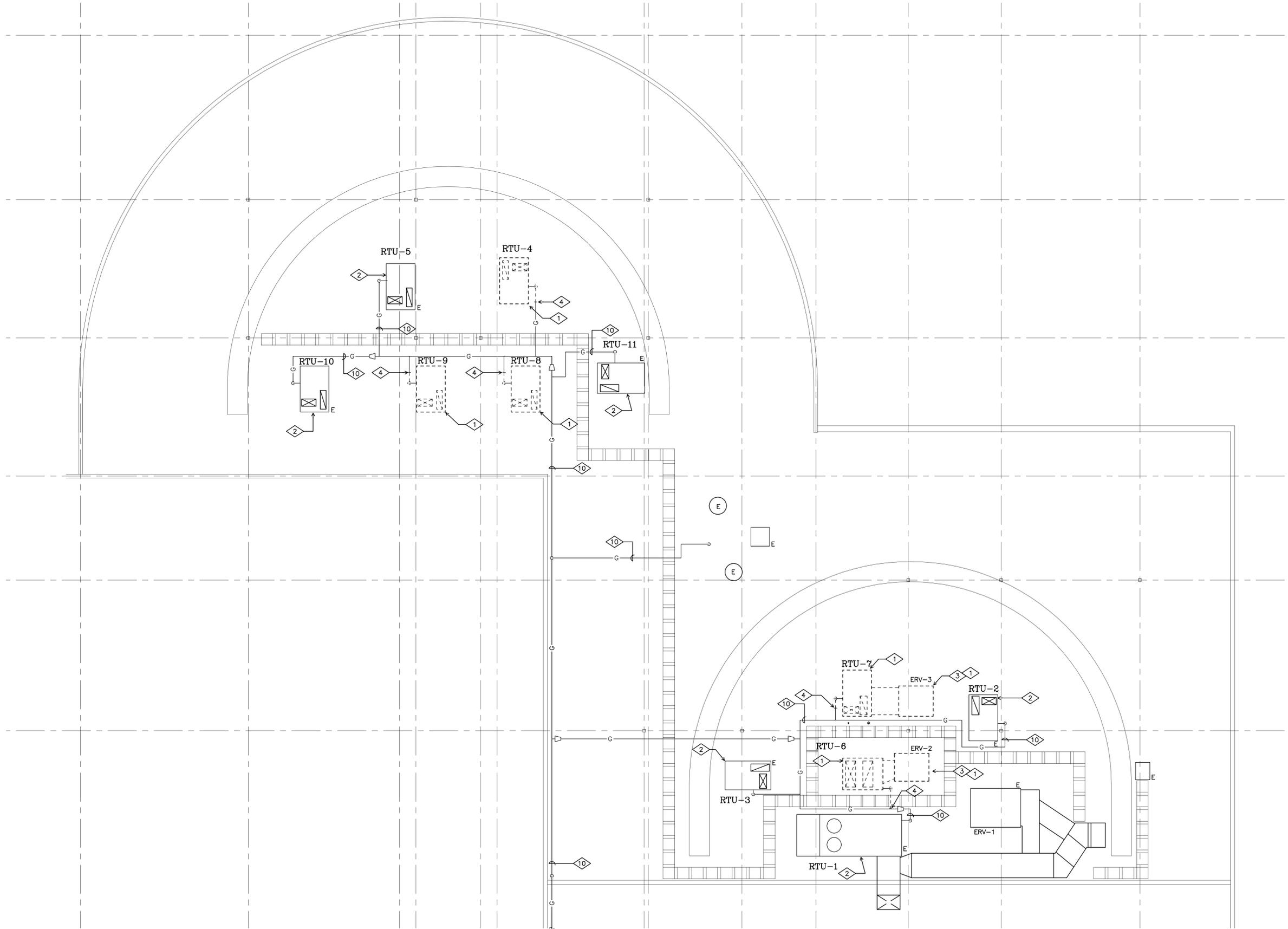
Hvac Upgrades
 for
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HVAC - DEMOLITION
PARTIAL ROOF PLAN
 SCALE: 1/8" = 1'-0"



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HVAC Upgrades
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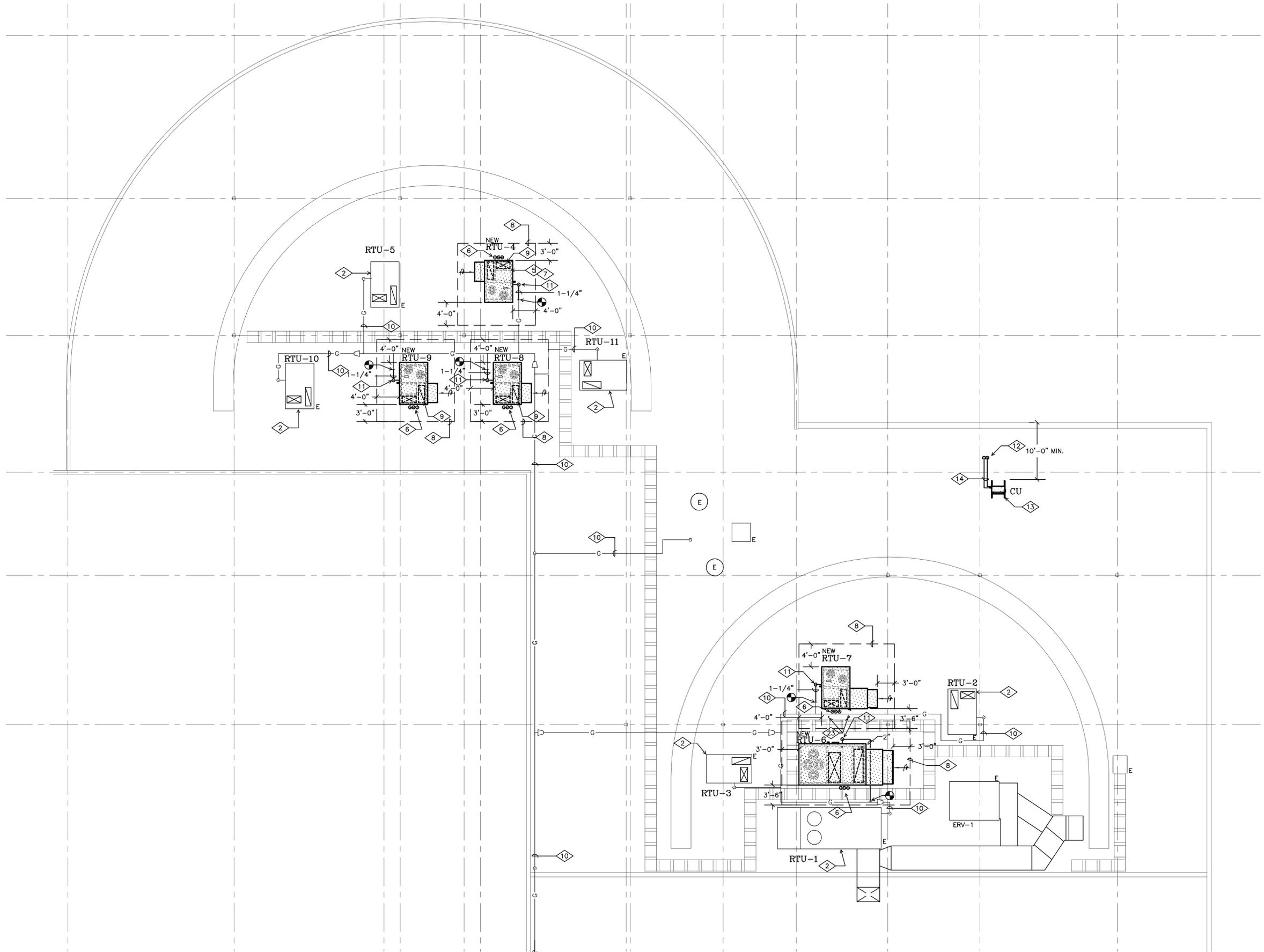
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M1-1

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HVAC - REVISED
PARTIAL ROOF PLAN
 SCALE: 1/8" = 1'-0"



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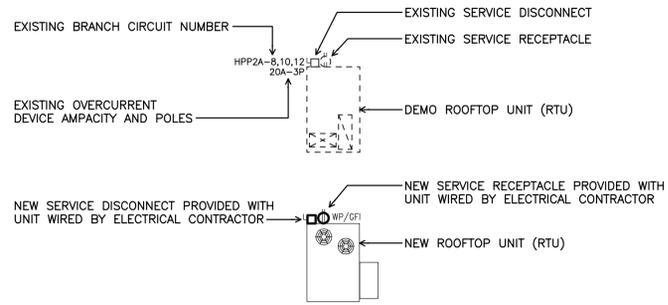
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M2-3

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ELECTRICAL LEGEND



ELECTRICAL NOTES

- 1 DISCONNECT POWER TO EXISTING RTU AND RETAIN BRANCH CIRCUIT FOR RECONNECTION TO NEW REPLACEMENT UNIT.
- 2 UTILIZE EXISTING SERVICE RECEPTACLE BRANCH CIRCUIT TO SERVE RECEPTACLES ON NEW REPLACEMENT UNITS RTU-4, RTU-8 AND RTU-9.
- 3 DISCONNECT EXISTING SERVICE RECEPTACLE BRANCH CIRCUIT AND RETAIN TO SERVE REPLACEMENT UNITS RTU-6 AND RTU-7 SERVICE RECEPTACLES.
- 4 DISCONNECT POWER TO EXISTING RTU AND REPLACE #12 CONDUCTORS WITH NEW #10 CONDUCTORS (#10 GROUND) TO SERVE NEW REPLACEMENT UNIT RTU-7.
- 5 DISCONNECT AND REMOVE EXISTING BRANCH CIRCUIT BACK TO PANEL AND BREAKER POSITION INDICATED. THIS CIRCUIT IS NO LONGER NEEDED.
- 6 DISCONNECT POWER TO EXISTING RTU AND REPLACE #8 CONDUCTORS WITH NEW #6 CONDUCTORS (#10 GROUND) TO SERVE NEW REPLACEMENT UNIT RTU-6.
- 7 PROVIDE NEW INTERLOCK WIRING BETWEEN EXISTING FIRE ALARM DUCT DETECTOR BASE AND NEW RTU CONTROL PANEL FOR SHUT-DOWN INTERFACE.
- 8 INDOOR "FC" UNIT TO RECEIVE POWER FROM OUTDOOR "CU". PROVIDE 3#12,#12GRD,1/2" C. BETWEEN UNITS AND MAKE ALL REQUIRED CONNECTIONS PER MANUFACTURERS DIAGRAMS.
- 9 SERVICE DISCONNECT PROVIDED WITH UNIT. PROVIDE NEW BRANCH CIRCUIT, CONSISTING OF 3#10,#10GRD,.3/4" C., TO EXISTING SUB-PANEL "PP2A", PROVIDE 40A-2P HACR BREAKER IN PANEL SPACE, AND CONNECT.



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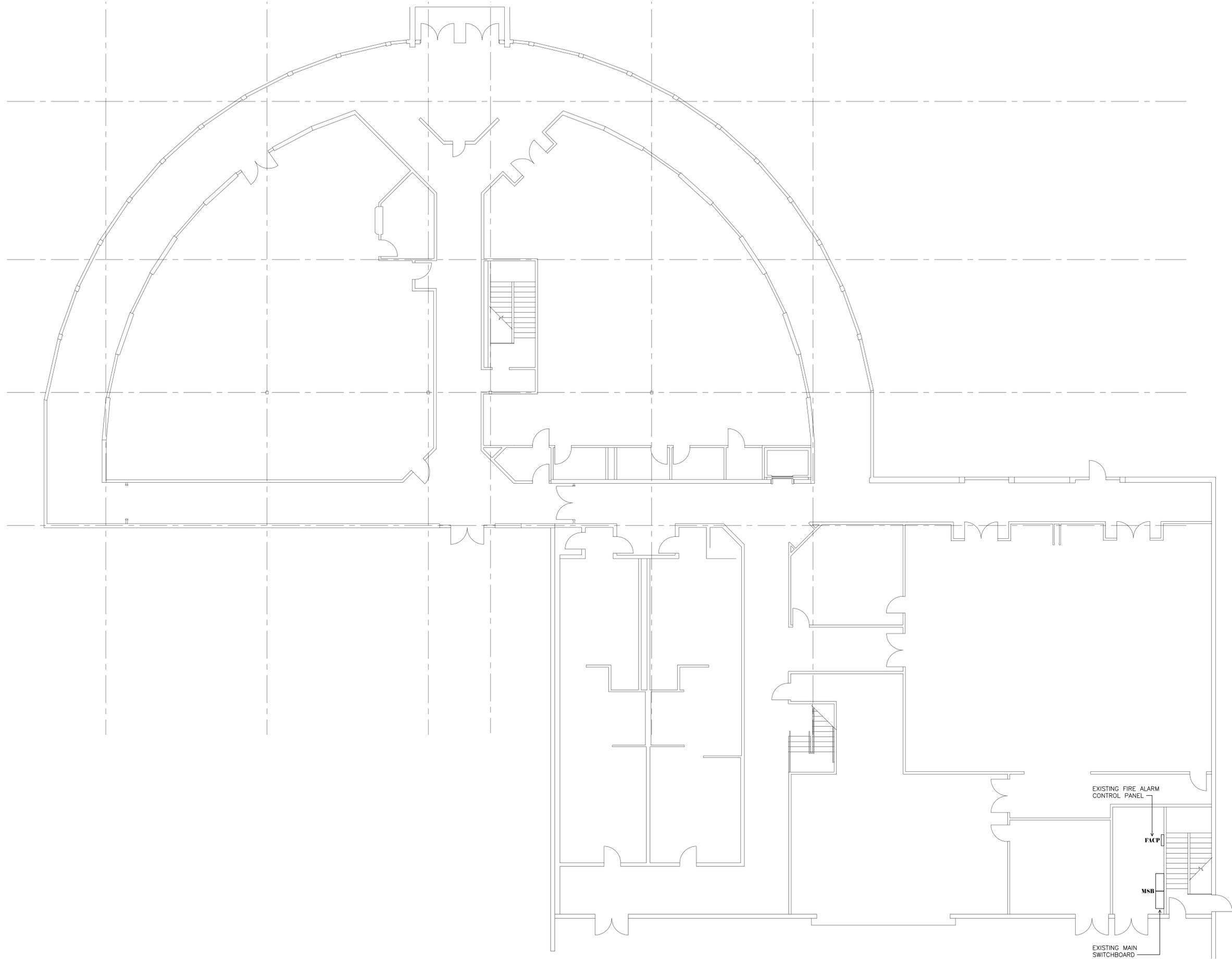
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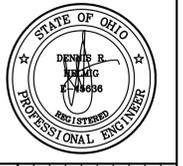
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E1-1



ELECTRICAL - REVISED
PARTIAL FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"



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NO.	DESCRIPTION

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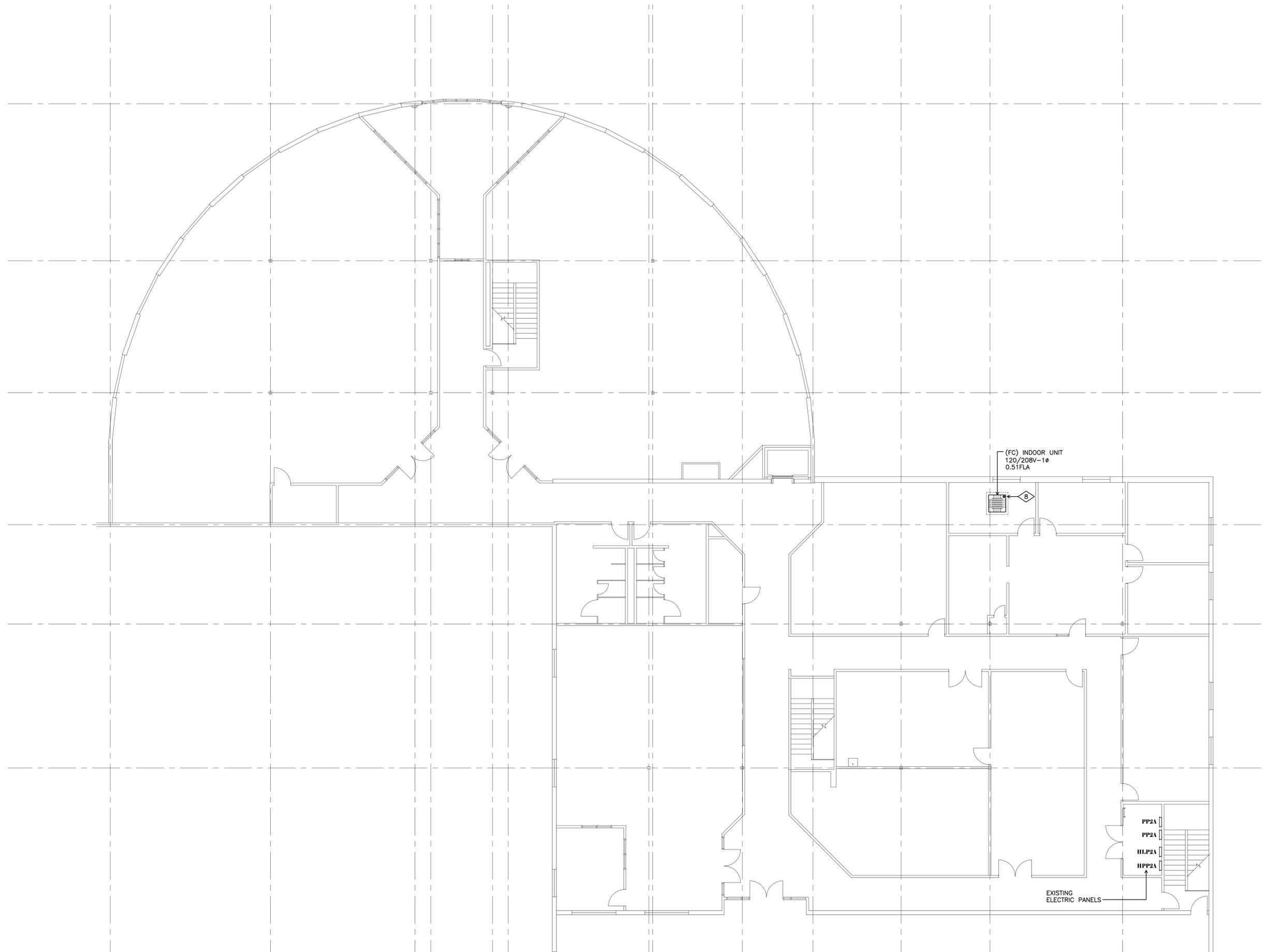
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ELECTRICAL - REVISED
PARTIAL SECOND FLOOR PLAN
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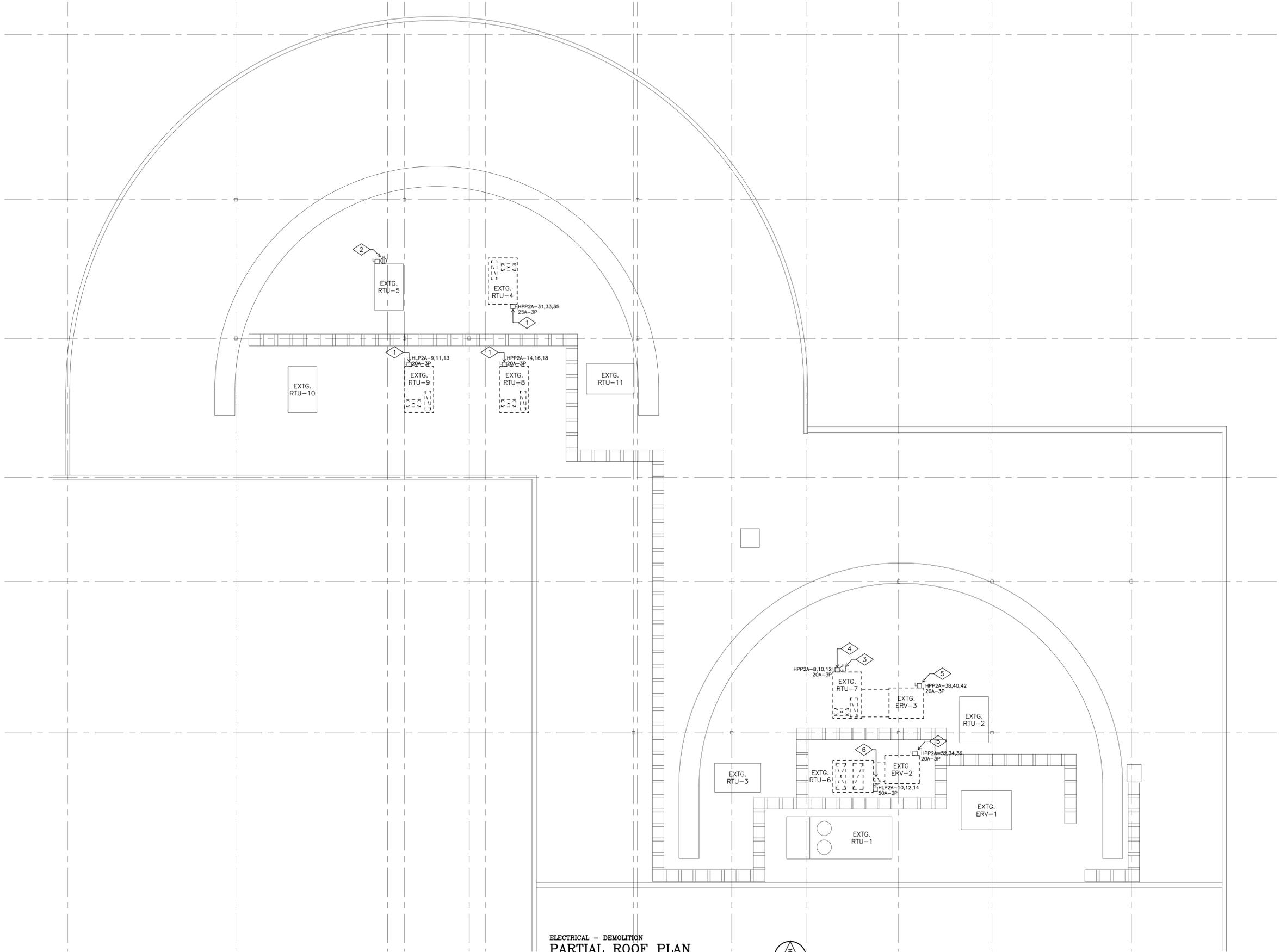
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ELECTRICAL - DEMOLITION
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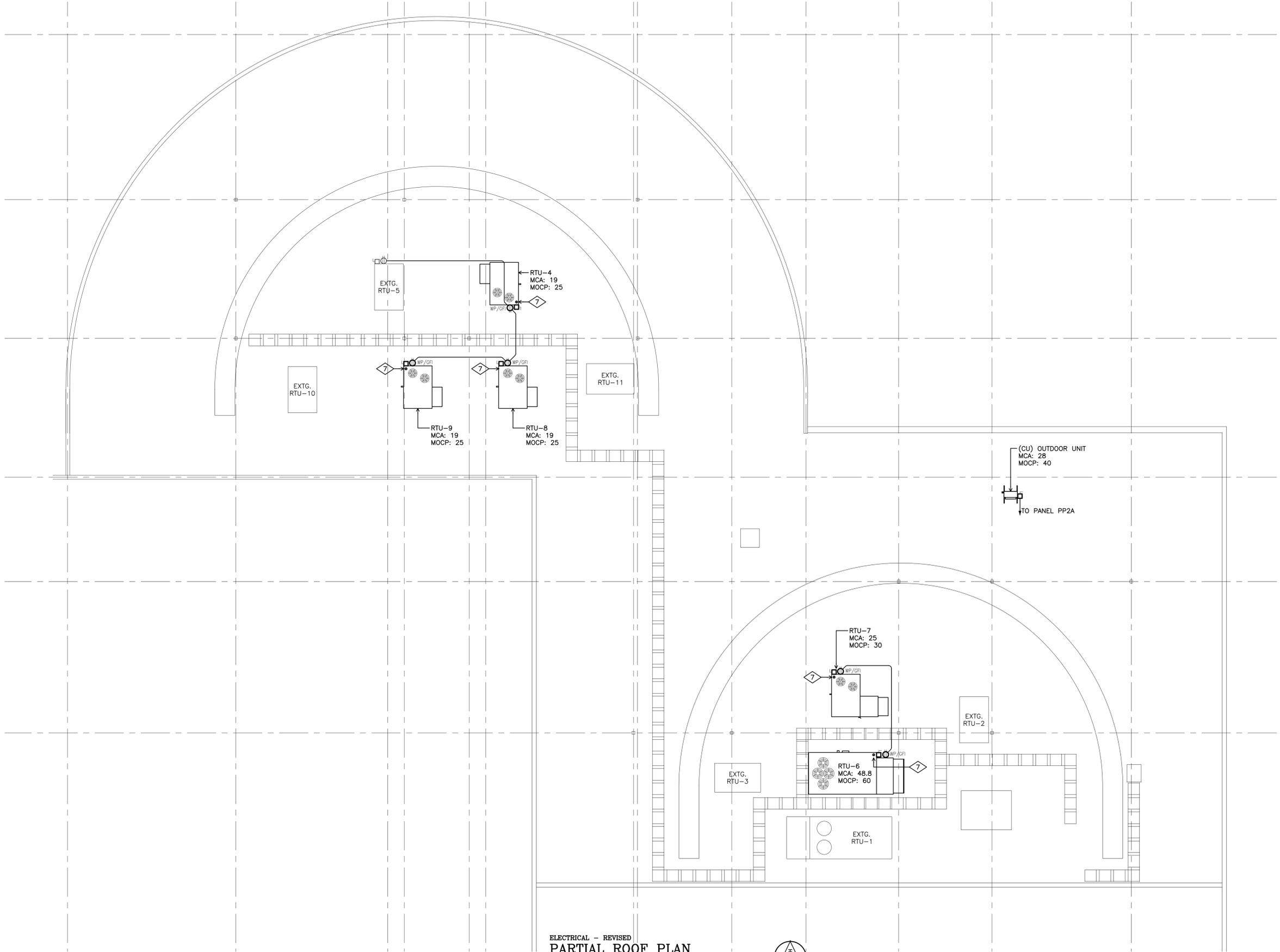
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ELECTRICAL - REVISED
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