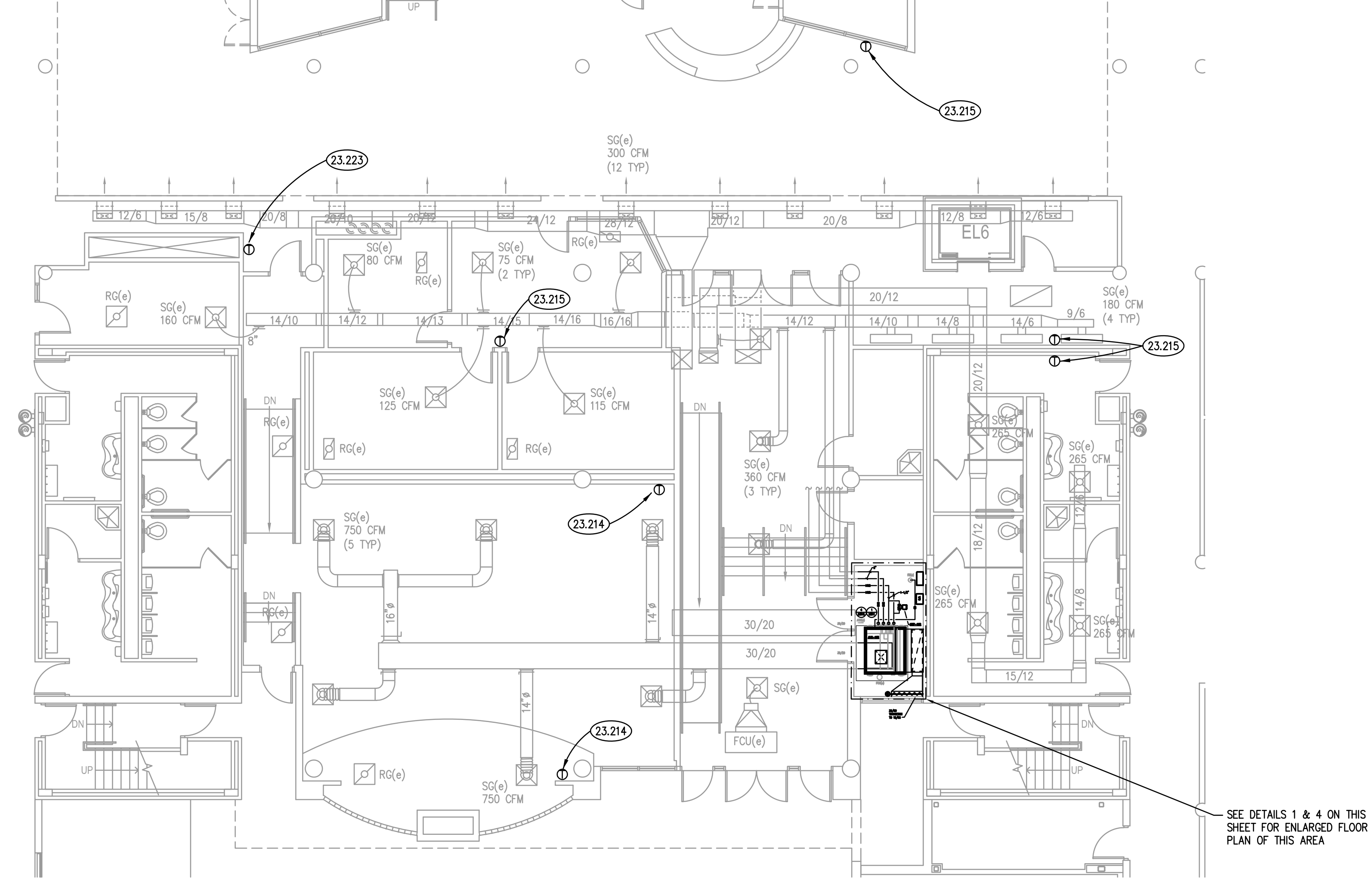
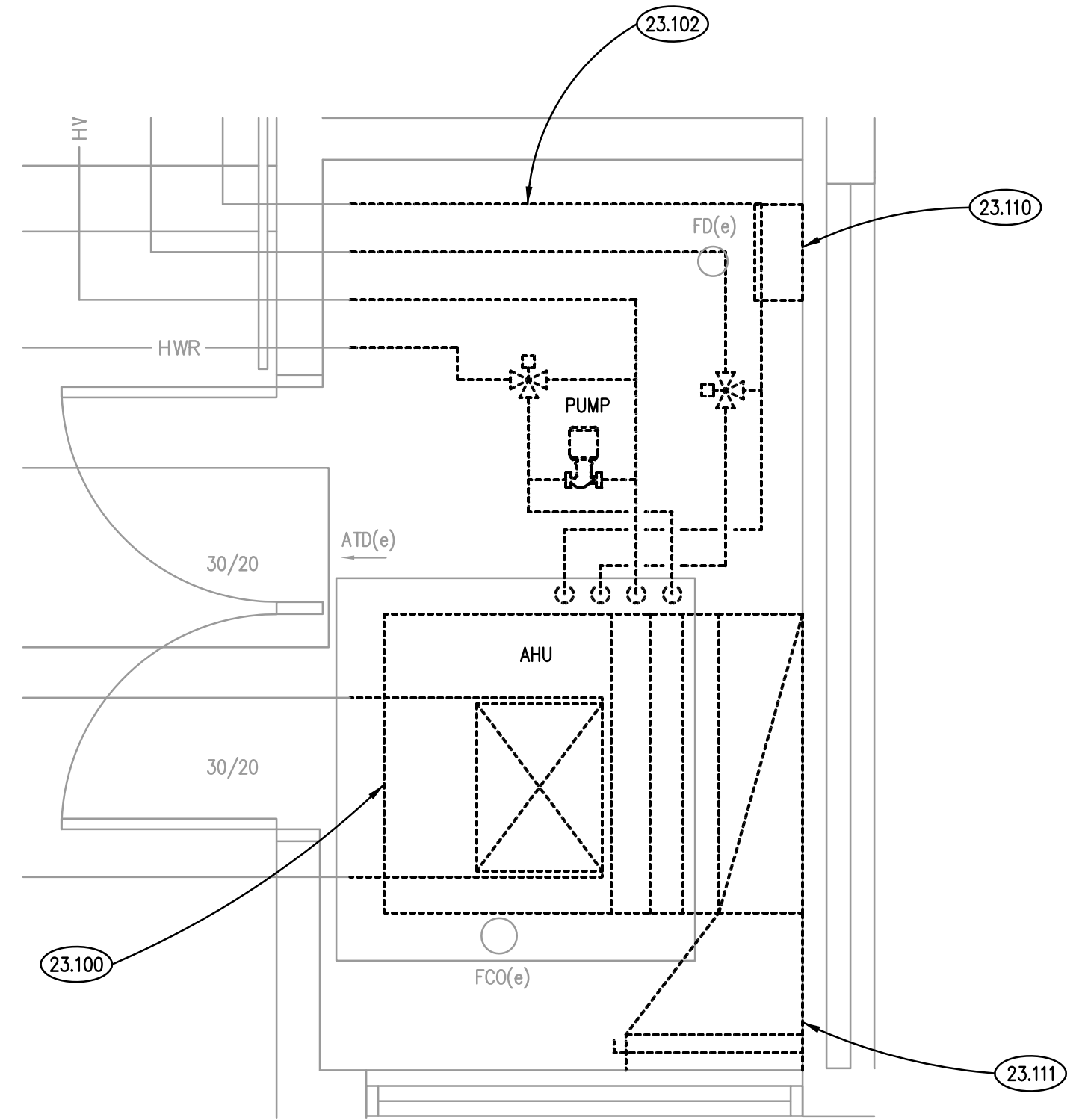


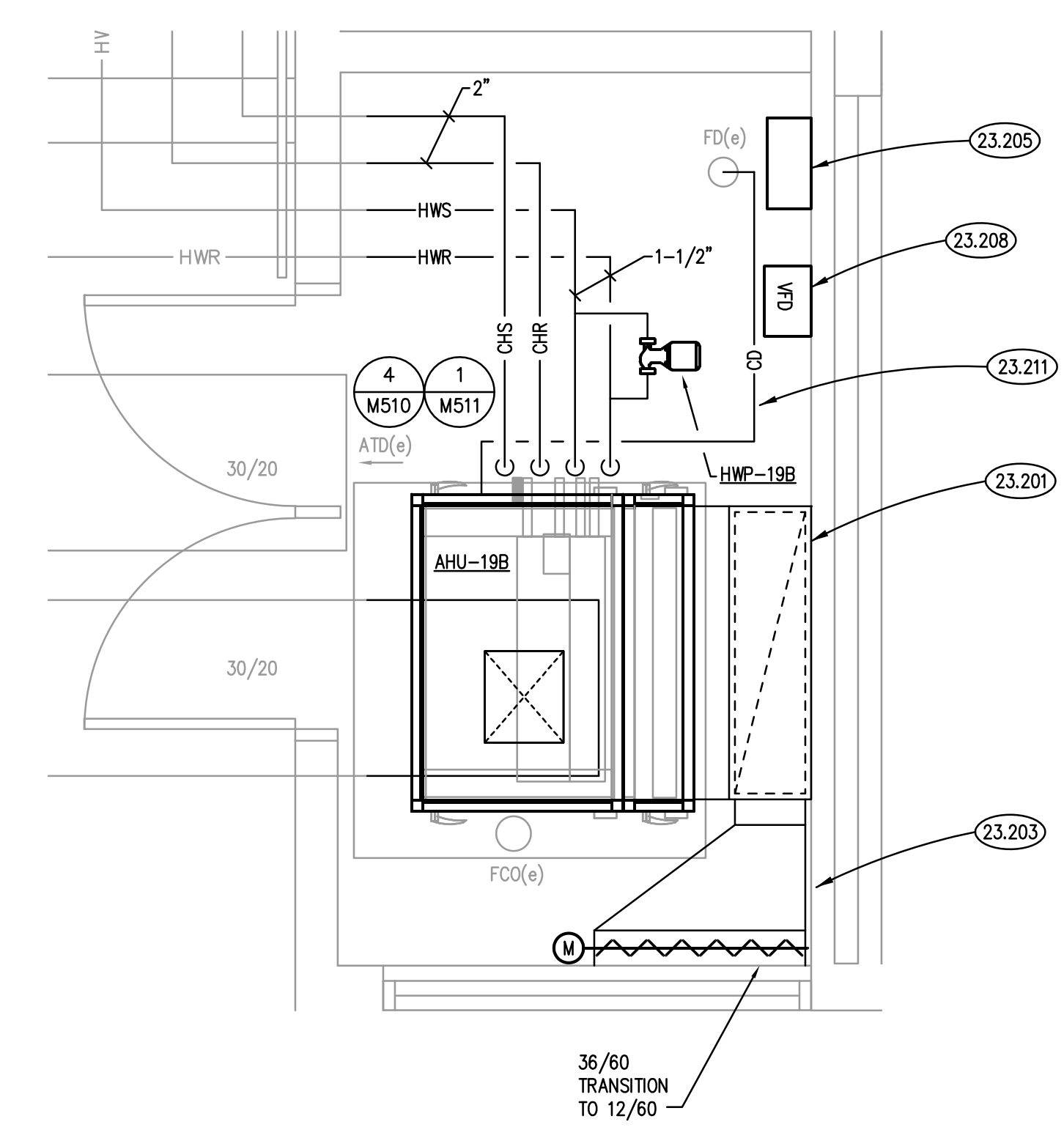
BUILDING 'D' SECOND FLOOR MECHANICAL PLAN
SCALE: 1/8" = 1'-0" 3



BUILDING 'D' FIRST FLOOR MECHANICAL PLAN
SCALE: 1/8" = 1'-0" 2



MECHANICAL ROOM D1001 DEMOLITION PLAN
SCALE: 1/2" = 1'-0" 4



MECHANICAL ROOM D1001 NEW WORK PLAN
SCALE: 1/2" = 1'-0" 1

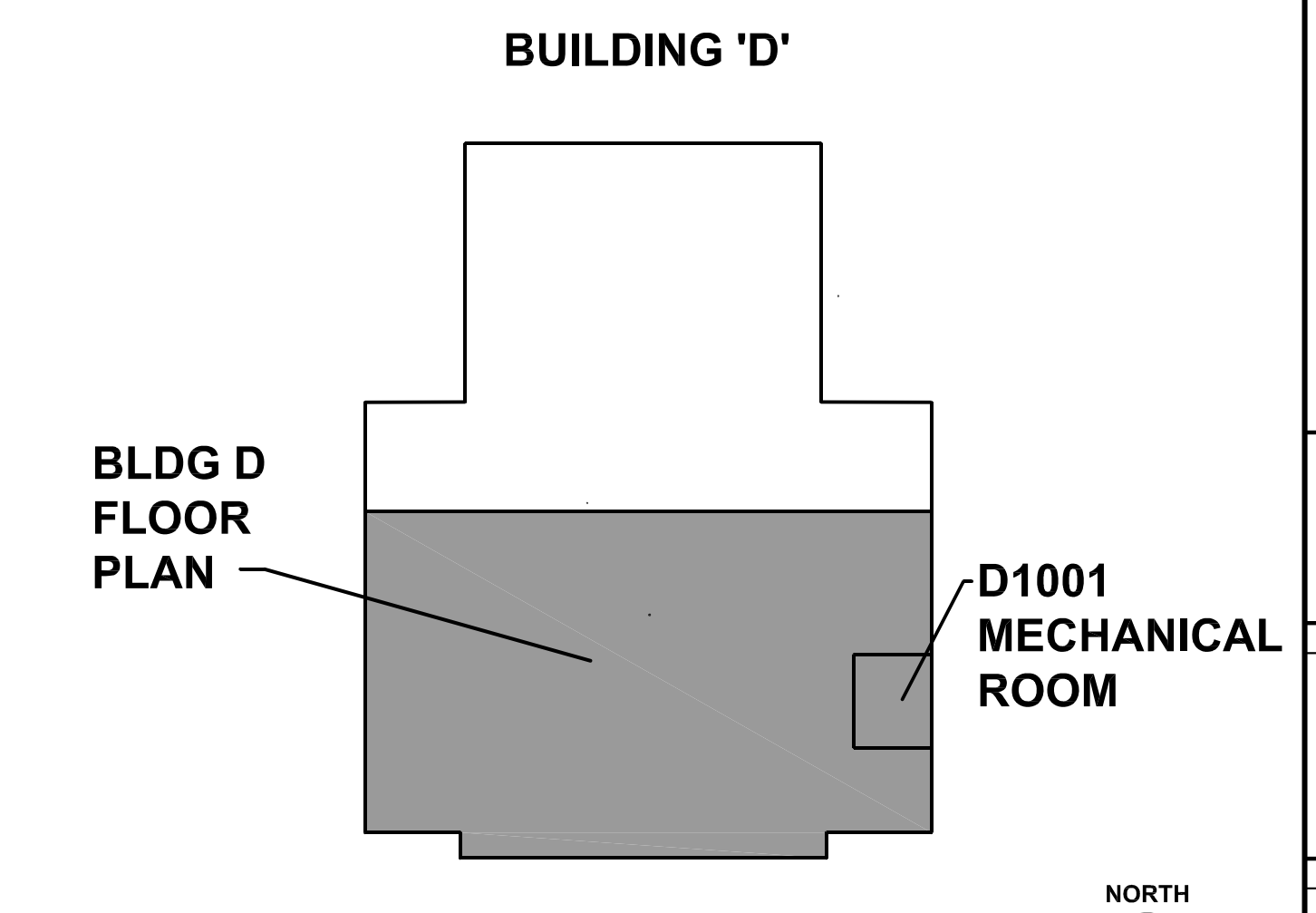
MECHANICAL GENERAL NOTES

- REFER TO DRAWING G100 FOR PROJECT GENERAL NOTES.
- ALL PIPING AND DUCTWORK IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL REQUIRED FITTINGS, OFFSETS, DROPS AND RISES. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL MATERIAL AND LABOR FOR A COMPLETE AND WORKING SYSTEM. COORDINATE WITH OTHER TRADES FOR SPACE AVAILABLE AND RELATIVE LOCATIONS OF EQUIPMENT, PIPING, DUCTWORK, ETC.
- ALL TAPES AND MASTICS USED TO SEAL DUCTWORK LISTED AND LABELED IN ACCORDANCE WITH UL 181A SHALL BE MARKED ACCORDINGLY. ALL TAPES AND MASTICS USED TO SEAL FLEXIBLE DUCTS AND AIR CONNECTORS SHALL COMPLY WITH UL 181B AND MARKED ACCORDINGLY.
- THERMOSTATIC CONTROLS OF EQUIPMENT SHALL HAVE A 5' F DEADBAND.
- GENERALLY, SMALL DIAMETER PIPE RUNS FROM DRIPS, CONDENSATE PANS AND OTHER SERVICES ARE NOT SHOWN BUT MUST BE PROVIDED.
- SPACE ALLOCATION, COORDINATION WITH ELECTRICAL, ARCHITECTURAL & OTHER MECHANICAL COMPONENTS HAVE BEEN MADE WITH RESPECT TO ALL EQUIPMENT SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS OF THE FIRST NAMED MANUFACTURER ONLY. OTHER MANUFACTURERS ARE ACCEPTABLE PROVIDED THEY MEET PERFORMANCE REQUIREMENTS AND AFOREMENTIONED COORDINATION.
- DO NOT CUT THROUGH THE MASONRY BOND BEAMS OR OTHER STRUCTURAL ELEMENT WHEN INSTALLING OPENINGS REQUIRED FOR ALL DUCTWORK, PIPING, CONDUITS OR OTHER WORK. CONTRACTOR CUTTING THROUGH OR OTHERWISE DAMAGING THESE ELEMENTS WILL BE RESPONSIBLE FOR ALL ASSOCIATED ENGINEERING FEES AND SUBSEQUENT RETRO-FIT/REINFORCING DEEMED NECESSARY TO REINSTATE THE CONTINUITY OF THE DISRUPTED ELEMENTS.
- HEATING AND COOLING DESIGN LOADS FOR THE BUILDING HAVE BEEN CALCULATED WITH ELITE SOFTWARE, COMMERCIAL HVAC LOADS PROGRAM, VERSION 8.02.34, IN ACCORDANCE WITH ASHRAE STANDARDS. INTERIOR DESIGN TEMPERATURES ARE MAXIMUM 72 DEGREES F FOR HEATING AND A MINIMUM OF 75 DEGREES F FOR COOLING.
- OBTAIN AND PAY ALL COSTS FOR PERMITS, LICENSES, CERTIFICATE FILING AND ALL INSPECTIONS BY AUTHORITIES HAVING JURISDICTION.

KEYNOTES

- KEYNOTES ARE TYPICALLY NOT DUPLICATED WITHIN A GIVEN DETAIL. AN UN-KEYNOTED ITEM IN A DETAIL IS THE SAME AS A KEYNOTED ITEM HAVING THE SAME APPEARANCE WITHIN THE SAME DETAIL.
- 23.100 REMOVE AIR HANDLING UNIT AND ASSOCIATED DUCTWORK AS SHOWN.
 - 23.102 REMOVE HWS/R AND CHS/R PIPING AND COIL SPECIALTIES BACK TO MAINS. PROVIDE TEMPORARY CAP FOR NEW CONNECTION.
 - 23.110 REMOVE HWS/R AND CHS/R PIPING, PUMP AND COIL SPECIALTIES BACK TO MAINS. PROVIDE TEMPORARY CAP FOR NEW CONNECTION.
 - 23.111 REMOVE OUTSIDE AIR DUCTWORK AND ASSOCIATED DAMPER AT LOUVER. PROVIDE TEMPORARY CAP ON LOUVER FOR NEW CONNECTION.
 - 23.201 PROVIDE LINED RETURN AIR DUCTWORK FROM FILTER SECTION AND UP WALL APPROXIMATELY 12 FEET OPEN TO ROOM WITH DAMPER.
 - 23.203 PROVIDE CONNECTION BETWEEN OUTSIDE AIR LOUVER AND RETURN AIR DUCTWORK. PROVIDE MOTORIZED DAMPER AT LOUVER. BLANK OFF ANY UNUSED PORTIONS OF LOUVER WITH INSULATED PANEL.
 - 23.205 PROVIDE NEW DDC CONTROLLER FOR AHU. PROVIDE GRAPHICS AND INTERFACE INTO DELTA CONTROLS CAMPUS SYSTEM.
 - 23.208 PROVIDE VARIABLE FREQUENCY DRIVE FOR NEW AHU IN PLACE OF LOCAL DISCONNECT.
 - 23.211 PROPOSED ROUTE OF CONDENSATE PIPING. DISCHARGE IN NEAREST FLOOR DRAIN.
 - 23.214 REMOVE OLD THERMOSTAT AND PROVIDE NEW THERMOSTAT FOR AIR HANDLING UNIT. MULTIPLE THERMOSTATS IN A SINGLE ZONE SHALL AVERAGE THE ZONE TEMPERATURE.
 - 23.215 REMOVE OLD THERMOSTAT AND PROVIDE NEW THERMOSTAT FOR VAV BOX. MULTIPLE THERMOSTATS IN A SINGLE ZONE SHALL AVERAGE THE ZONE TEMPERATURE.
 - 23.221 INVESTIGATE USE OF MULTIPLE THERMOSTATS IN CLASSROOM AND REPORT BACK TO ENGINEER. THERMOSTATS ASSOCIATED WITH AHU-11 TO BE REMOVED AND REPLACED.
 - 23.222 INVESTIGATE USE OF MULTIPLE THERMOSTATS IN CLASSROOM AND REPORT BACK TO ENGINEER. THERMOSTATS ASSOCIATED WITH AHU-12 TO BE REMOVED AND REPLACED.
 - 23.223 REMOVE OLD ZONE AND NIGHT THERMOSTAT FOR AIR HANDLING UNIT. PROVIDE NEW THERMOSTAT FOR VAV BOX. MULTIPLE THERMOSTATS IN A SINGLE ZONE SHALL AVERAGE THE TEMPERATURE.

KEY PLAN

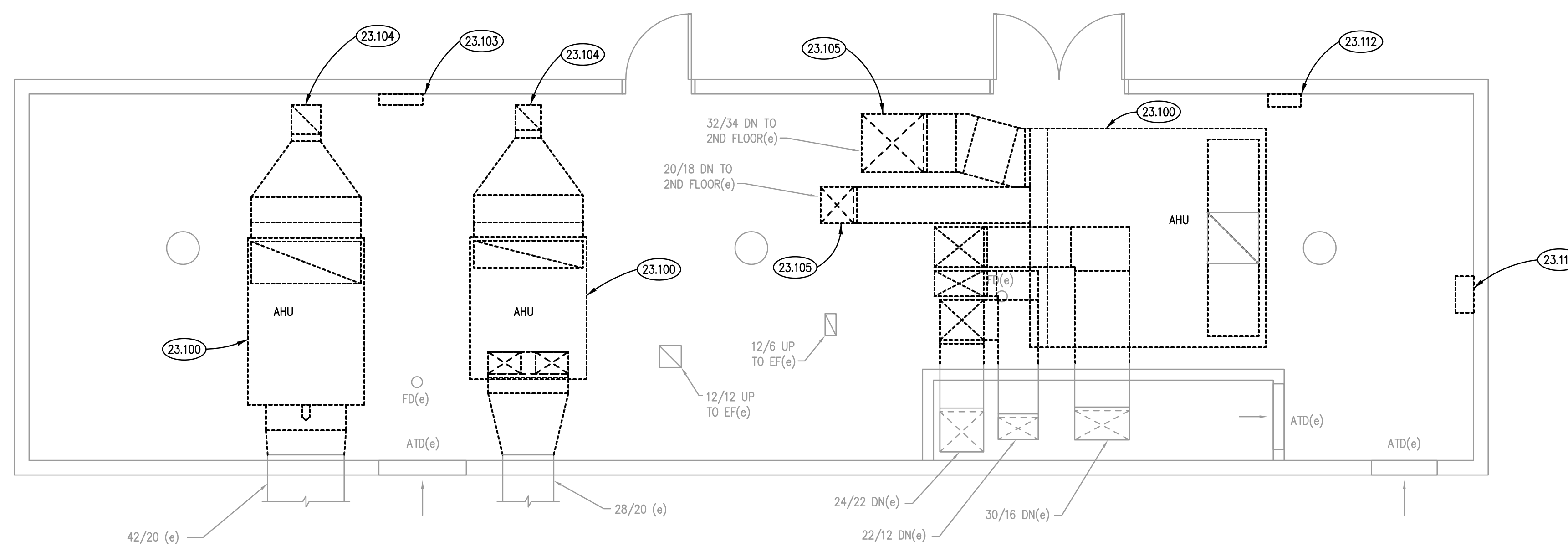


ISSUED	
1/13/17	BID DOCUMENTS

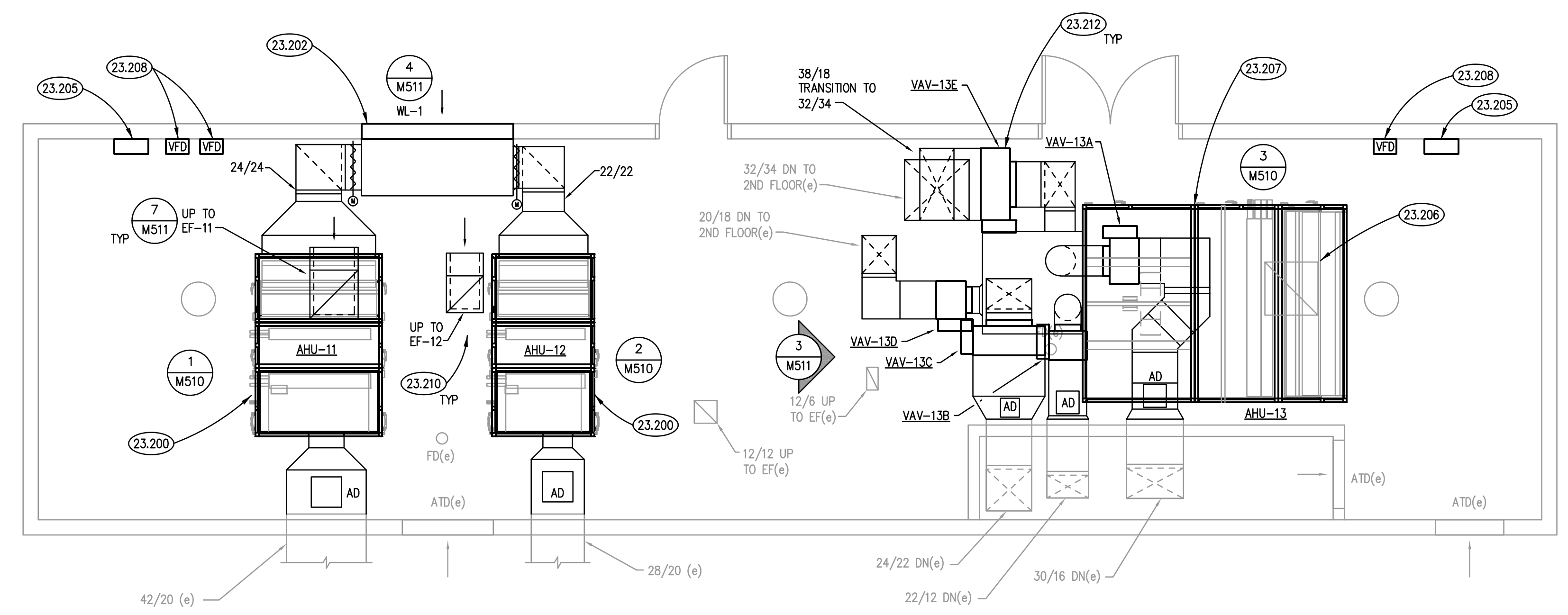
JOB NO.	17-292-1139
DRAWN	BWG
CHECKED	DDW
APPROVED	DDW

SHEET TITLE	BUILDING D MECHANICAL FLOOR PLANS
-------------	-----------------------------------

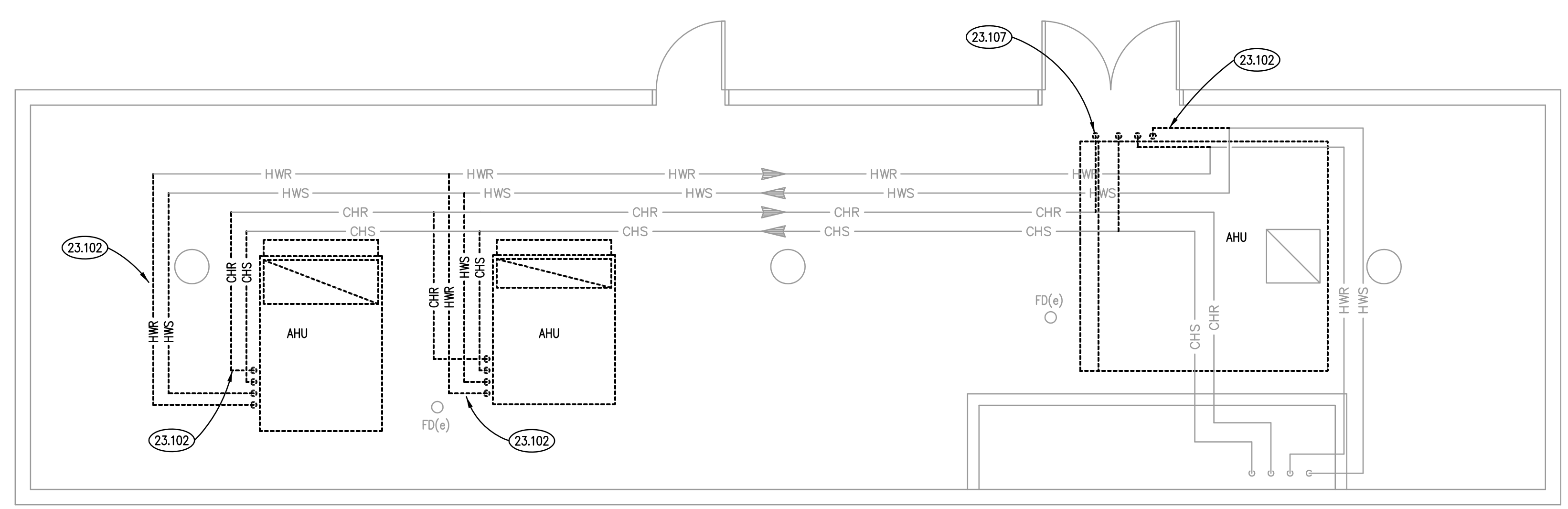
SHEET NUMBER	M310
--------------	------



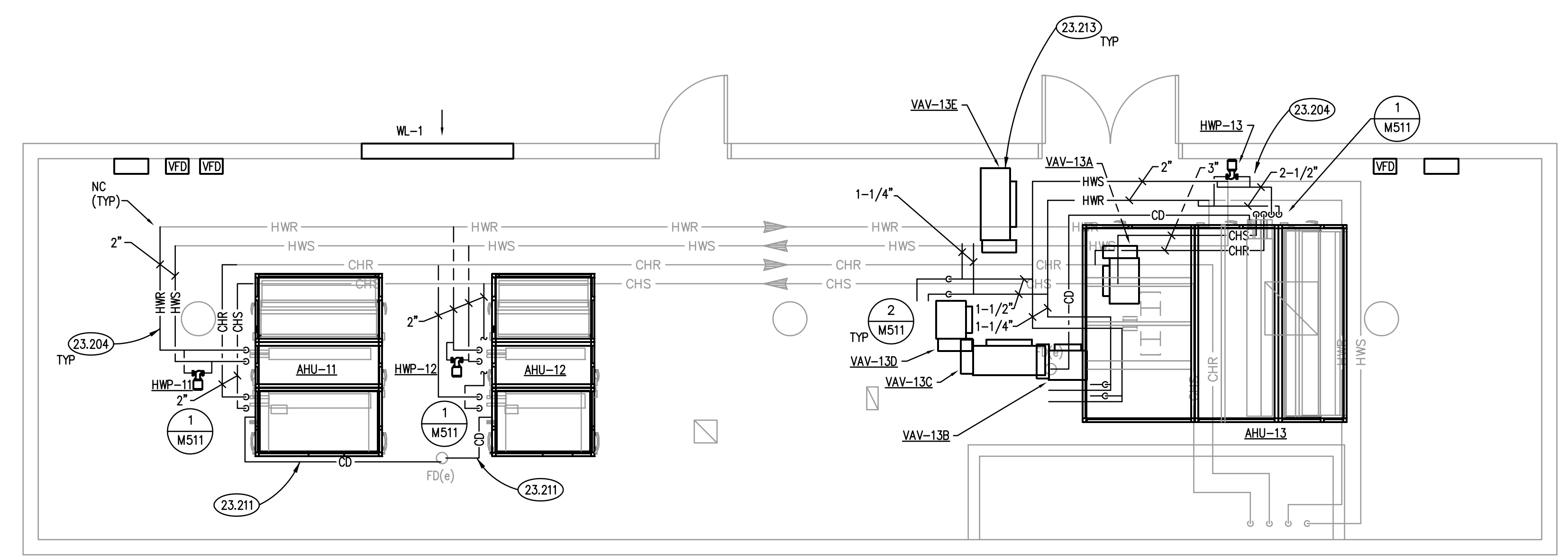
MECHANICAL PENTHOUSE VENTILATION DEMOLITION PLAN ③
SCALE: 1/4" = 1'-0"



MECHANICAL PENTHOUSE VENTILATION PLAN ②
SCALE: 1/4" = 1'-0"



MECHANICAL PENTHOUSE PIPING DEMOLITION PLAN ④
SCALE: 1/4" = 1'-0"



MECHANICAL PENTHOUSE PIPING PLAN ①
SCALE: 1/4" = 1'-0"

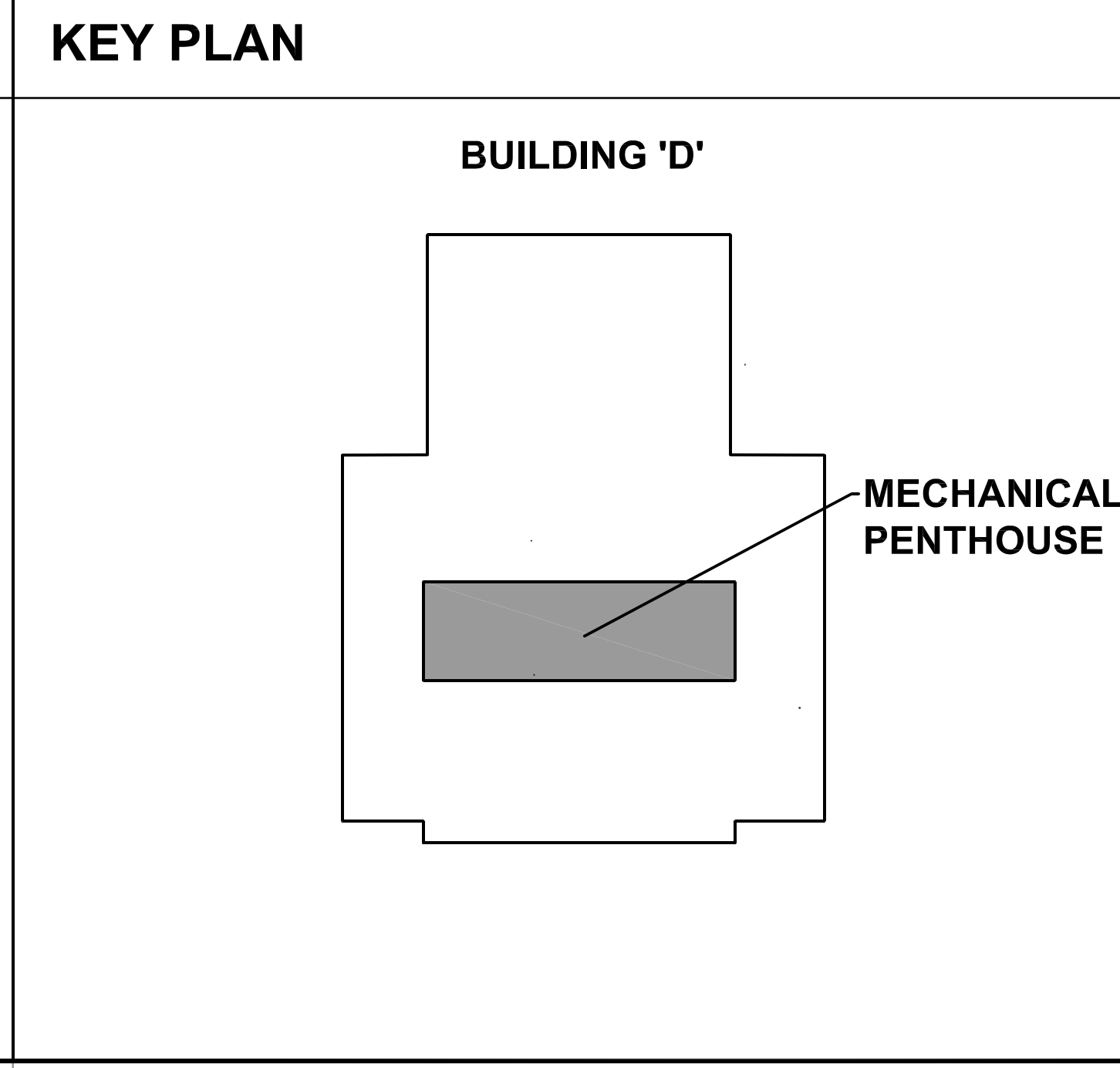
MECHANICAL GENERAL NOTES

- REFER TO DRAWING G100 FOR PROJECT GENERAL NOTES.
- ALL PIPING AND DUCTWORK IS SHOWN DIAGMATICALLY AND DOES NOT SHOW ALL REQUIRED FITTINGS, OFFSETS, DROPS AND RISES. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL MATERIAL AND LABOR FOR A COMPLETE AND WORKING SYSTEM. COORDINATE WITH OTHER TRADES FOR SPACE AVAILABLE AND RELATIVE LOCATIONS OF EQUIPMENT, PIPING, DUCTWORK, ETC.
- ALL TAPES AND MASTICS USED TO SEAL DUCTWORK LISTED AND LABELED IN ACCORDANCE WITH UL 181A SHALL BE MARKED ACCORDINGLY. ALL TAPES AND MASTICS USED TO SEAL FLEXIBLE DUCTS AND AIR CONNECTORS SHALL COMPLY WITH UL 181B AND MARKED ACCORDINGLY.
- THERMOSTATIC CONTROLS OF EQUIPMENT SHALL HAVE A 5' F DEADBAND.
- GENERALLY, SMALL DIAMETER PIPE RUNS FROM DRIPS, CONDENSATE PANS AND OTHER SERVICES ARE NOT SHOWN BUT MUST BE PROVIDED.
- SPACE ALLOCATION, COORDINATION WITH ELECTRICAL, ARCHITECTURAL & OTHER MECHANICAL COMPONENTS HAVE BEEN MADE WITH RESPECT TO ALL EQUIPMENT SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS OF THE FIRST NAMED MANUFACTURER ONLY. OTHER MANUFACTURERS ARE ACCEPTABLE PROVIDED THEY MEET PERFORMANCE REQUIREMENTS AND AFOREMENTIONED COORDINATION.
- DO NOT CUT THROUGH THE MASONRY BOND BEAMS OR OTHER STRUCTURAL ELEMENT WHEN INSTALLING OPENINGS REQUIRED FOR ALL DUCTWORK, PIPING, CONDUITS OR OTHER WORK. CONTRACTOR CUTTING THROUGH OR OTHERWISE DAMAGING THESE ELEMENTS WILL BE RESPONSIBLE FOR ALL ASSOCIATED ENGINEERING FEES AND SUBSEQUENT RETRO-FIT/REINFORCING DEEMED NECESSARY TO REINSTATE THE CONTINUITY OF THE DISRUPTED ELEMENTS.
- HEATING AND COOLING DESIGN LOADS FOR THE BUILDING HAVE BEEN CALCULATED WITH ELITE SOFTWARE, COMMERCIAL HVAC LOADS PROGRAM, VERSION 8.02.34, IN ACCORDANCE WITH ASHRAE STANDARDS. INTERIOR DESIGN TEMPERATURES ARE MAXIMUM 72 DEGREES F FOR HEATING AND A MINIMUM OF 75 DEGREES F FOR COOLING.
- OBTAIN AND PAY ALL COSTS FOR PERMITS, LICENSES, CERTIFICATE FILING AND ALL INSPECTIONS BY AUTHORITIES HAVING JURISDICTION.

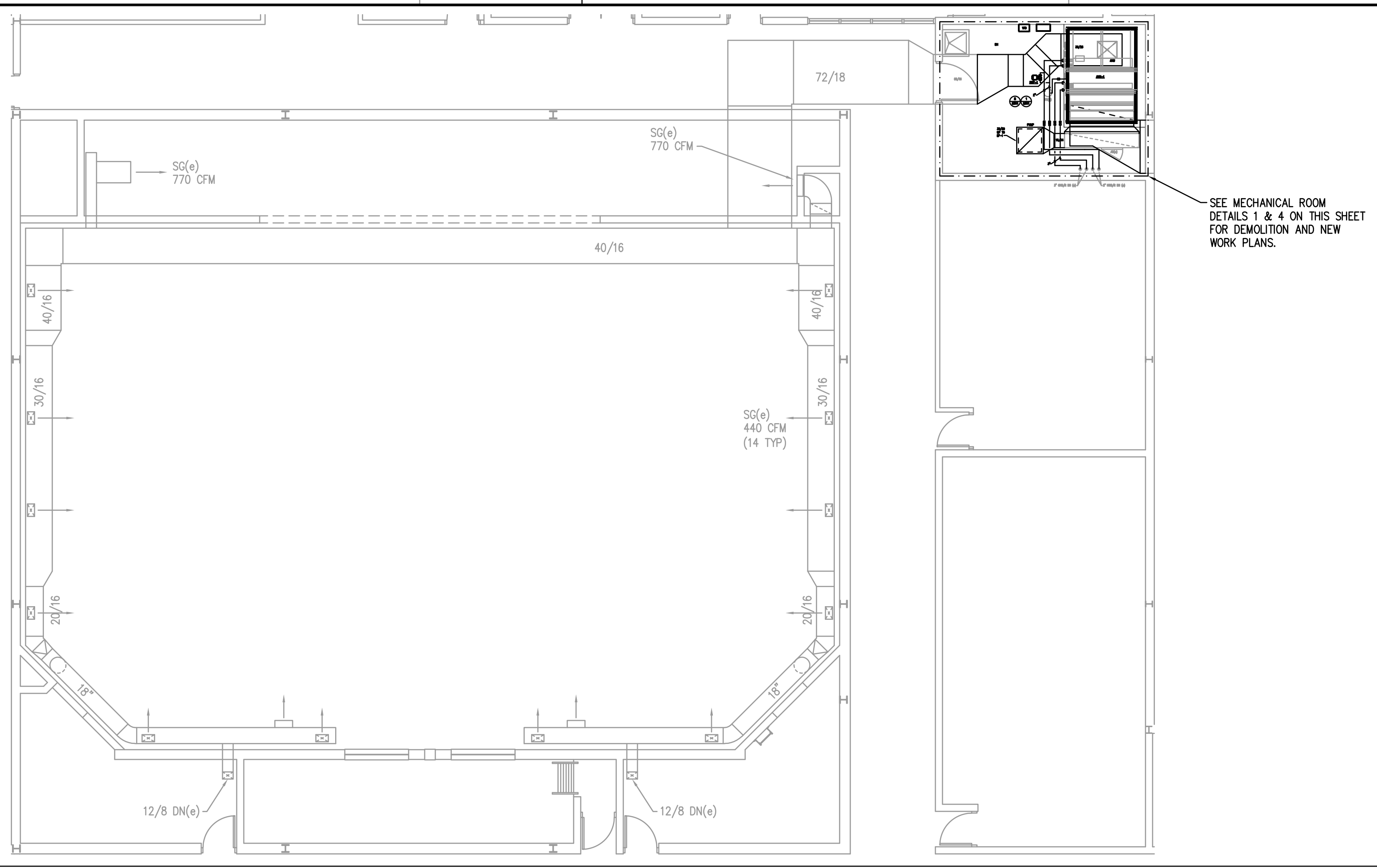
KEYNOTES

KEYNOTES ARE TYPICALLY NOT DUPLICATED WITHIN A GIVEN DETAIL. AN UN-KEYNOTED ITEM IN A DETAIL IS THE SAME AS A KEYNOTED ITEM HAVING THE SAME APPEARANCE WITHIN THE SAME DETAIL.

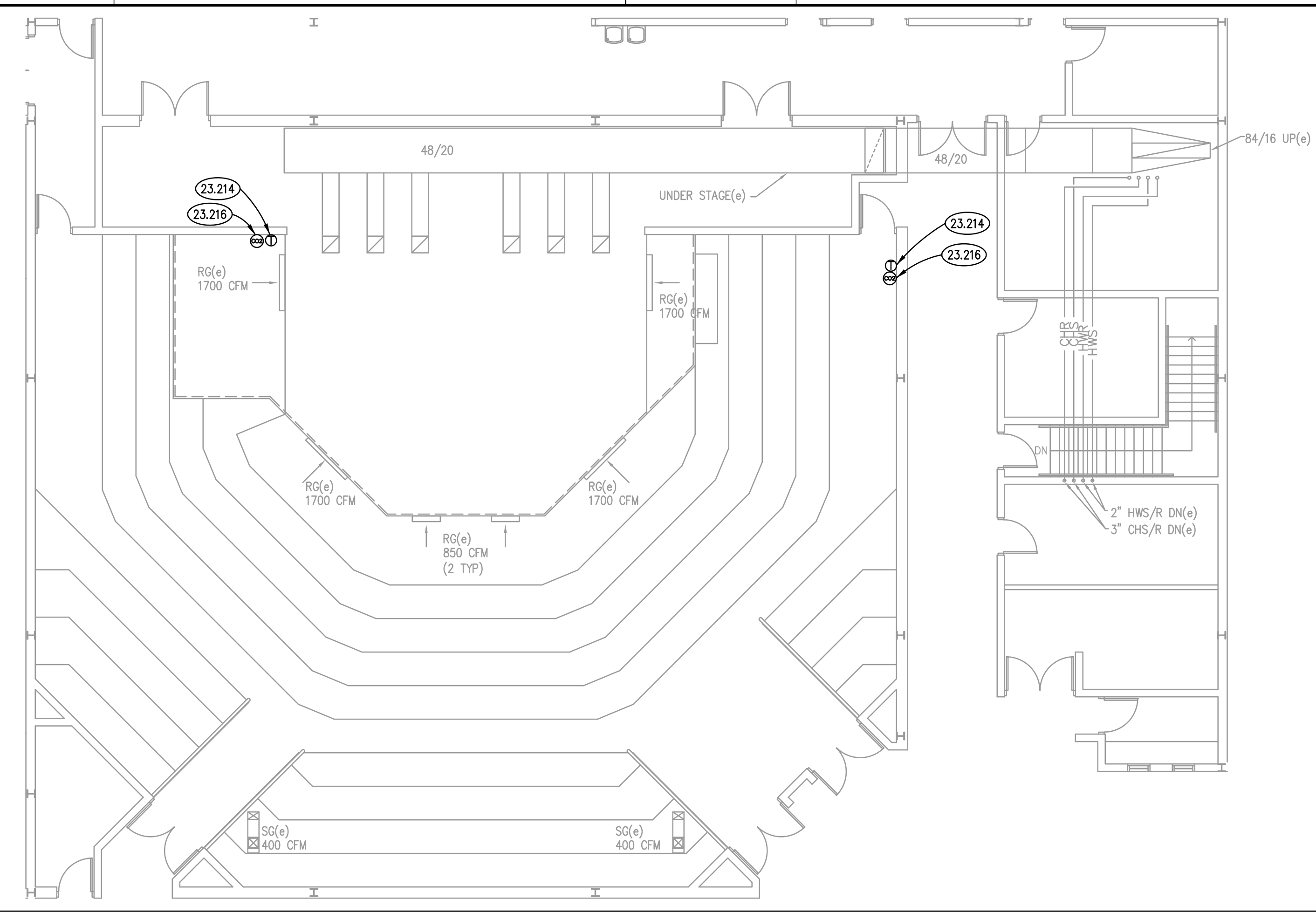
- 23.100 REMOVE AIR HANDLING UNIT AND ASSOCIATED DUCTWORK AS SHOWN.
- 23.102 REMOVE HWS/R AND CHS/R PIPING AND COIL SPECIALTIES BACK TO MAINS. PROVIDE TEMPORARY CAP FOR NEW CONNECTION.
- 23.103 REMOVE PNEUMATIC CONTROL PANEL AND ALL ASSOCIATED END DEVICES. VERIFY ONLY POINTS IN PANEL ARE ASSOCIATED WITH AHU-11/AHU-12. IF OTHER CONTROLS ARE IN PANEL AFFECTING OTHER EQUIPMENT NOTIFY OWNER. COORDINATE WITH OWNER FOR REMOVAL OF ANY GRAPHICS IN JCI SYSTEM.
- 23.104 REMOVE OUTSIDE AIR DUCTWORK UP THROUGH ROOF. PROVIDE TEMPORARY CAP ON ROOF.
- 23.105 REMOVE SUPPLY AIR DUCTWORK DOWN TO ACCESS DOOR. PROVIDE TEMPORARY CAP FOR NEW CONNECTION. NEW DUCTWORK TO BE CONNECTED ABOVE EXISTING DUCT ACCESS DOOR.
- 23.107 REMOVE CHS/R PIPING BACK TO MAIN. PROVIDE PERMANENT CAP AND RELOCATE CHILLED WATER TAKEOFFS AS REQUIRED FOR CLEARANCE OF NEW VAV BOXES.
- 23.112 REMOVE PNEUMATIC CONTROL PANEL AND ALL ASSOCIATED END DEVICES. VERIFY ONLY POINTS IN PANEL ARE ASSOCIATED WITH AHU-13. IF OTHER CONTROLS ARE IN PANEL AFFECTING OTHER EQUIPMENT NOTIFY OWNER. COORDINATE WITH OWNER FOR REMOVAL OF ANY GRAPHICS IN JCI SYSTEM.
- 23.113 REMOVE ALL CONTROLS ASSOCIATED WITH AIR HANDLING UNITS IN MECHANICAL PENTHOUSE. INCORPORATE INTO NEW DDC CONTROLLER.
- 23.200 PROVIDE NEW AIR HANDLING UNIT. PROVIDE ALL ASSOCIATED TRANSITIONS AND FITTINGS TO CONNECT TO EXISTING SUPPLY DUCT.
- 23.202 PROVIDE NEW WALL LOUVER. PROVIDE 30" PLENUM BOX AND CONNECT OUTSIDE AIR DUCTWORK TO AIR HANDLING UNITS AS SHOWN. PROVIDE MOTORIZED DAMPER AT EACH DUCT CONNECTION.
- 23.204 PROVIDE NEW HWS/R AND CHS/R PIPING AND COIL SPECIALTIES TO AHU.
- 23.205 PROVIDE NEW DDC CONTROLLER FOR AHU. PROVIDE GRAPHICS AND INTERFACE INTO DELTA CONTROLS CAMPUS SYSTEM.
- 23.206 PROVIDE OUTSIDE AIR DUCTWORK BETWEEN EXISTING GRAVITY VENTILATOR AND AIR HANDLING UNIT. PROVIDE ALL REQUIRED TRANSITIONS AND FITTINGS TO MAKE THIS CONNECTION.
- 23.207 PROVIDE NEW AIR HANDLING UNIT. NEW AIR HANDLING UNIT TO BE PROVIDED WITH A PLENUM FAN. PROVIDE 54" X 38" X 52" PLENUM BOX FOR AIR HANDLING UNIT.
- 23.208 PROVIDE VARIABLE FREQUENCY DRIVE FOR NEW AHU IN PLACE OF LOCAL DISCONNECT.
- 23.210 PROVIDE LINED SOUND BOOT FOR INTAKE OF EXHAUST FAN.
- 23.211 PROPOSED ROUTE OF CONDENSATE PIPING. DISCHARGE IN NEAREST FLOOR DRAIN.
- 23.212 PROVIDE NEW VAV BOXES AND ASSOCIATED DUCTWORK AS SHOWN.
- 23.213 PROVIDE NEW HWS/R PIPING AND ASSOCIATED SPECIALTIES FOR VAV BOXES.



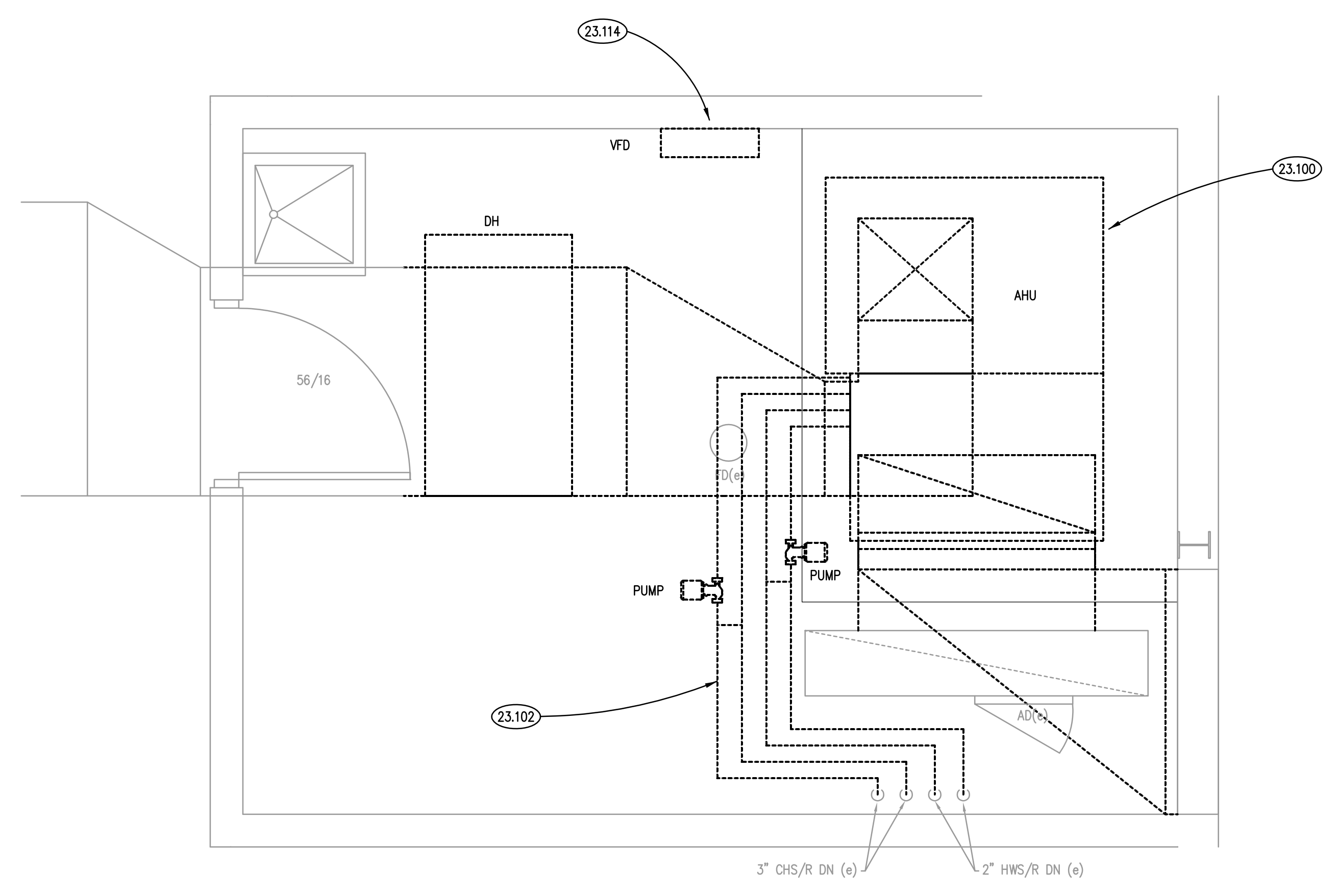
ISSUED	
1/13/17	BID DOCUMENTS
JOB NO.	17-292-1139
DRAWN	BWG
CHECKED	DDW
APPROVED	DDW
SHEET TITLE	
BUILDING D PENTHOUSE MECHANICAL FLOOR PLANS	
SHEET NUMBER	
M311	



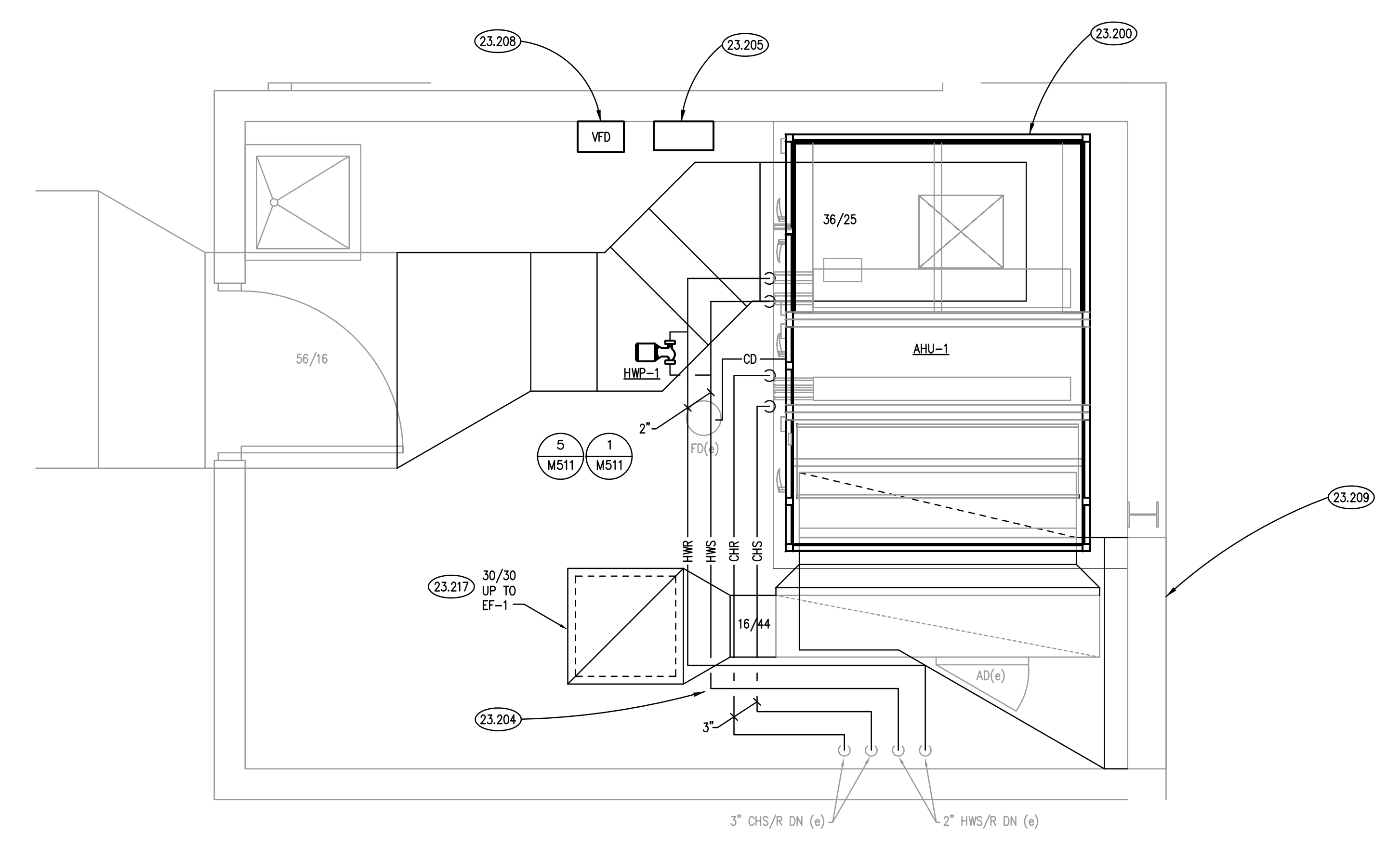
ALTERNATE NO. 1: BUILDING 'K' SECOND FLOOR MECHANICAL PLAN ③
SCALE: 1/8" = 1'-0"



ALTERNATE NO. 1: BUILDING 'K' FIRST FLOOR MECHANICAL PLAN ②
SCALE: 1/8" = 1'-0"



ALTERNATE NO. 1: MECHANICAL ROOM K2019 DEMOLITION PLAN ④
SCALE: 1/2" = 1'-0"



ALTERNATE NO. 1: MECHANICAL ROOM K2019 NEW WORK PLAN ①
SCALE: 1/2" = 1'-0"

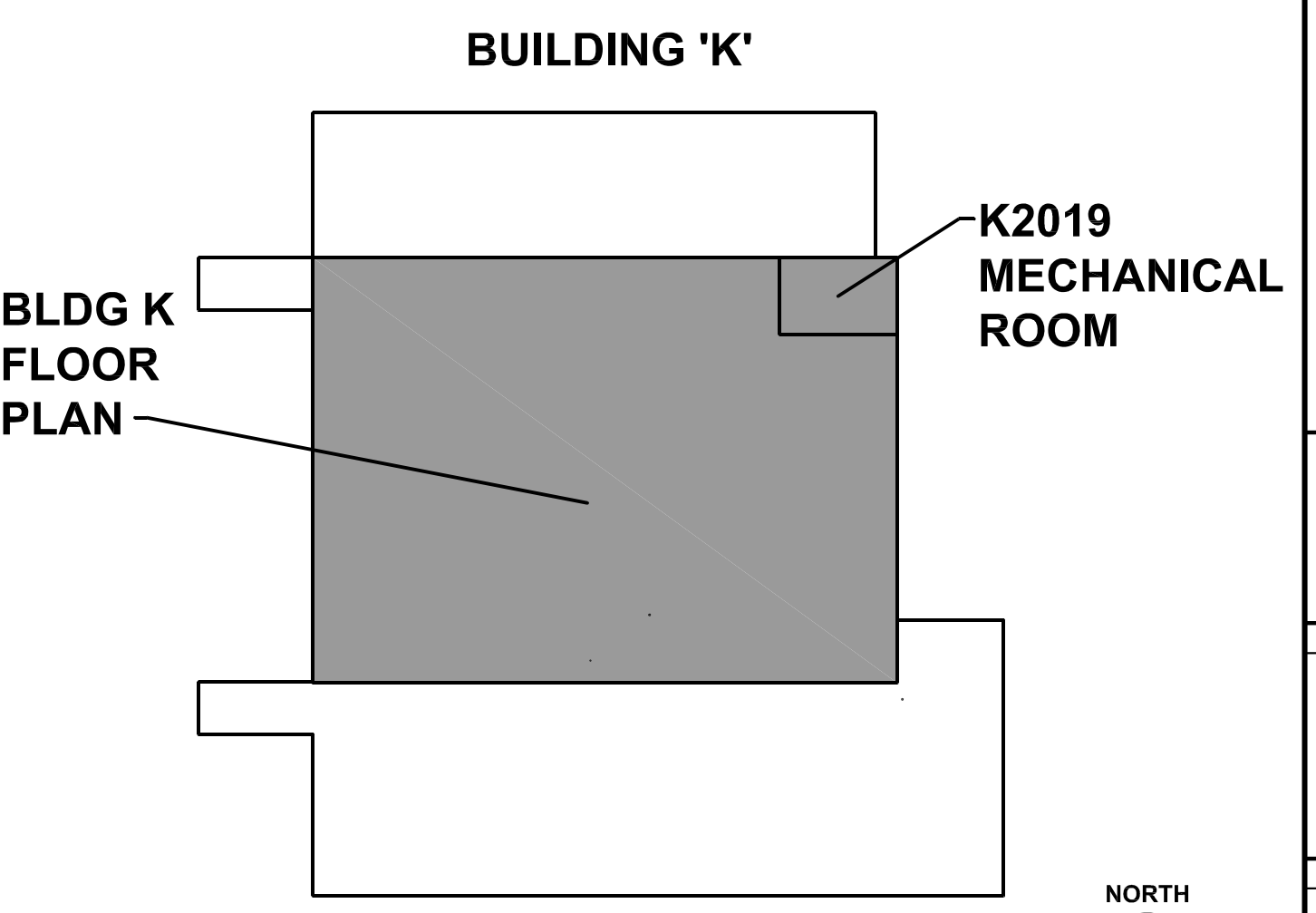
MECHANICAL GENERAL NOTES

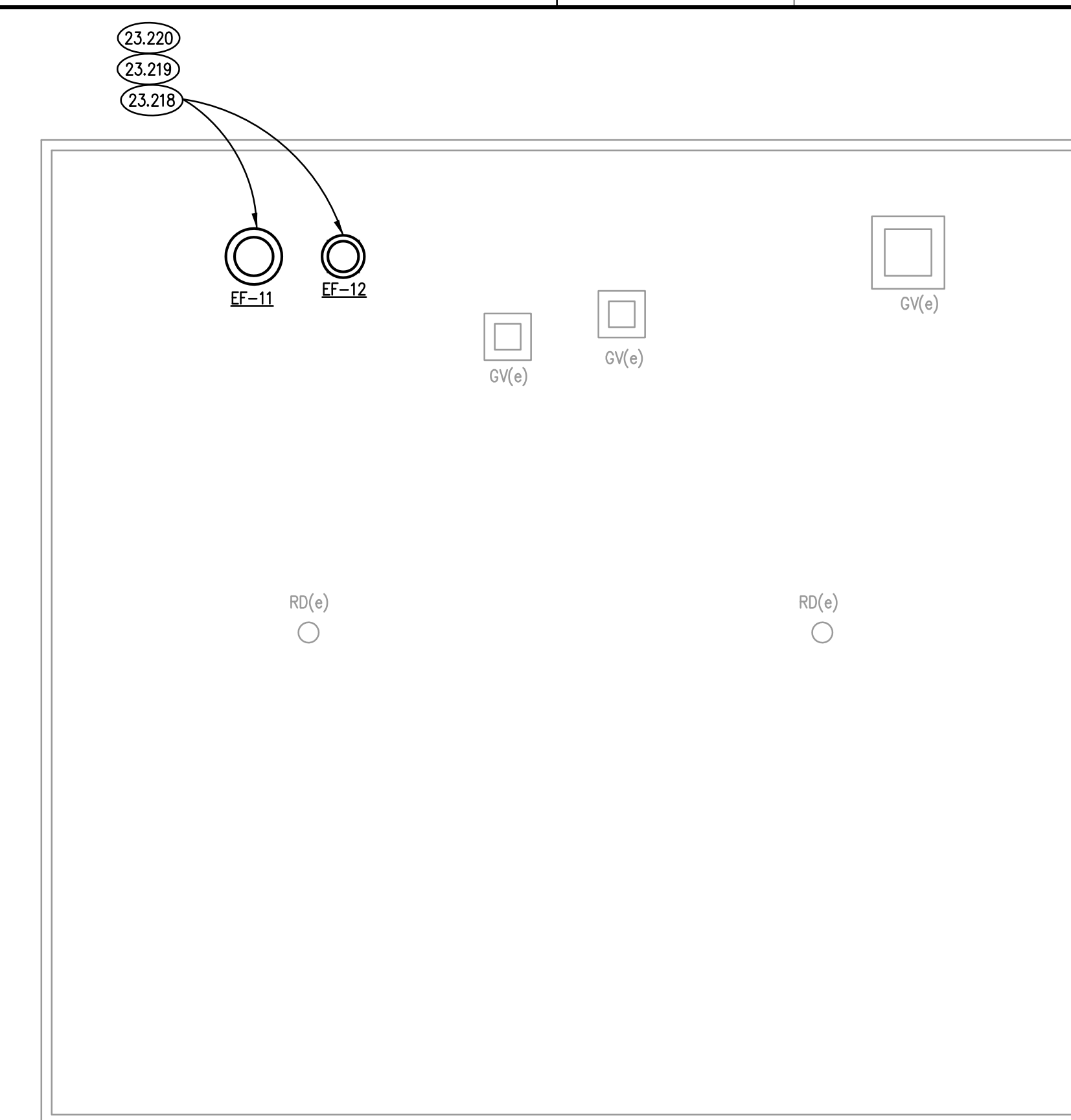
- REFER TO DRAWING G100 FOR PROJECT GENERAL NOTES.
- ALL PIPING AND DUCTWORK IS SHOWN DIAGMATICALLY AND DOES NOT SHOW ALL REQUIRED FITTINGS, OFFSETS, DROPS AND RISES. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL MATERIAL AND LABOR FOR A COMPLETE AND WORKING SYSTEM. COORDINATE WITH OTHER TRADES FOR SPACE AVAILABLE AND RELATIVE LOCATIONS OF EQUIPMENT, PIPING, DUCTWORK, ETC.
- ALL TAPES AND MASTICS USED TO SEAL DUCTWORK LISTED AND LABELED IN ACCORDANCE WITH UL 181A SHALL BE MARKED ACCORDINGLY. ALL TAPES AND MASTICS USED TO SEAL FLEXIBLE DUCTS AND AIR CONNECTORS SHALL COMPLY WITH UL 181B AND MARKED ACCORDINGLY.
- THERMOSTATIC CONTROLS OF EQUIPMENT SHALL HAVE A 5' F DEADBAND.
- GENERALLY, SMALL DIAMETER PIPE RUNS FROM DRIPS, CONDENSATE PANS AND OTHER SERVICES ARE NOT SHOWN BUT MUST BE PROVIDED.
- SPACE ALLOCATION, COORDINATION WITH ELECTRICAL, ARCHITECTURAL & OTHER MECHANICAL COMPONENTS HAVE BEEN MADE WITH RESPECT TO ALL EQUIPMENT SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS OF THE FIRST NAMED MANUFACTURER ONLY. OTHER MANUFACTURERS ARE ACCEPTABLE PROVIDED THEY MEET PERFORMANCE REQUIREMENTS AND AFOREMENTIONED COORDINATION.
- DO NOT CUT THROUGH THE MASONRY BOND BEAMS OR OTHER STRUCTURAL ELEMENT WHEN INSTALLING OPENINGS REQUIRED FOR ALL DUCTWORK, PIPING, CONDUITS OR OTHER WORK. CONTRACTOR CUTTING THROUGH OR OTHERWISE DAMAGING THESE ELEMENTS WILL BE RESPONSIBLE FOR ALL ASSOCIATED ENGINEERING FEES AND SUBSEQUENT RETRO-FIT/REINFORCING DEEMED NECESSARY TO REINSTATE THE CONTINUITY OF THE DISRUPTED ELEMENTS.
- HEATING AND COOLING DESIGN LOADS FOR THE BUILDING HAVE BEEN CALCULATED WITH ELITE SOFTWARE, COMMERCIAL HVAC LOADS PROGRAM, VERSION 8.02.34, IN ACCORDANCE WITH ASHRAE STANDARDS. INTERIOR DESIGN TEMPERATURES ARE MAXIMUM 72 DEGREES F FOR HEATING AND A MINIMUM OF 75 DEGREES F FOR COOLING.
- OBTAIN AND PAY ALL COSTS FOR PERMITS, LICENSES, CERTIFICATE FILING AND ALL INSPECTIONS BY AUTHORITIES HAVING JURISDICTION.

KEYNOTES

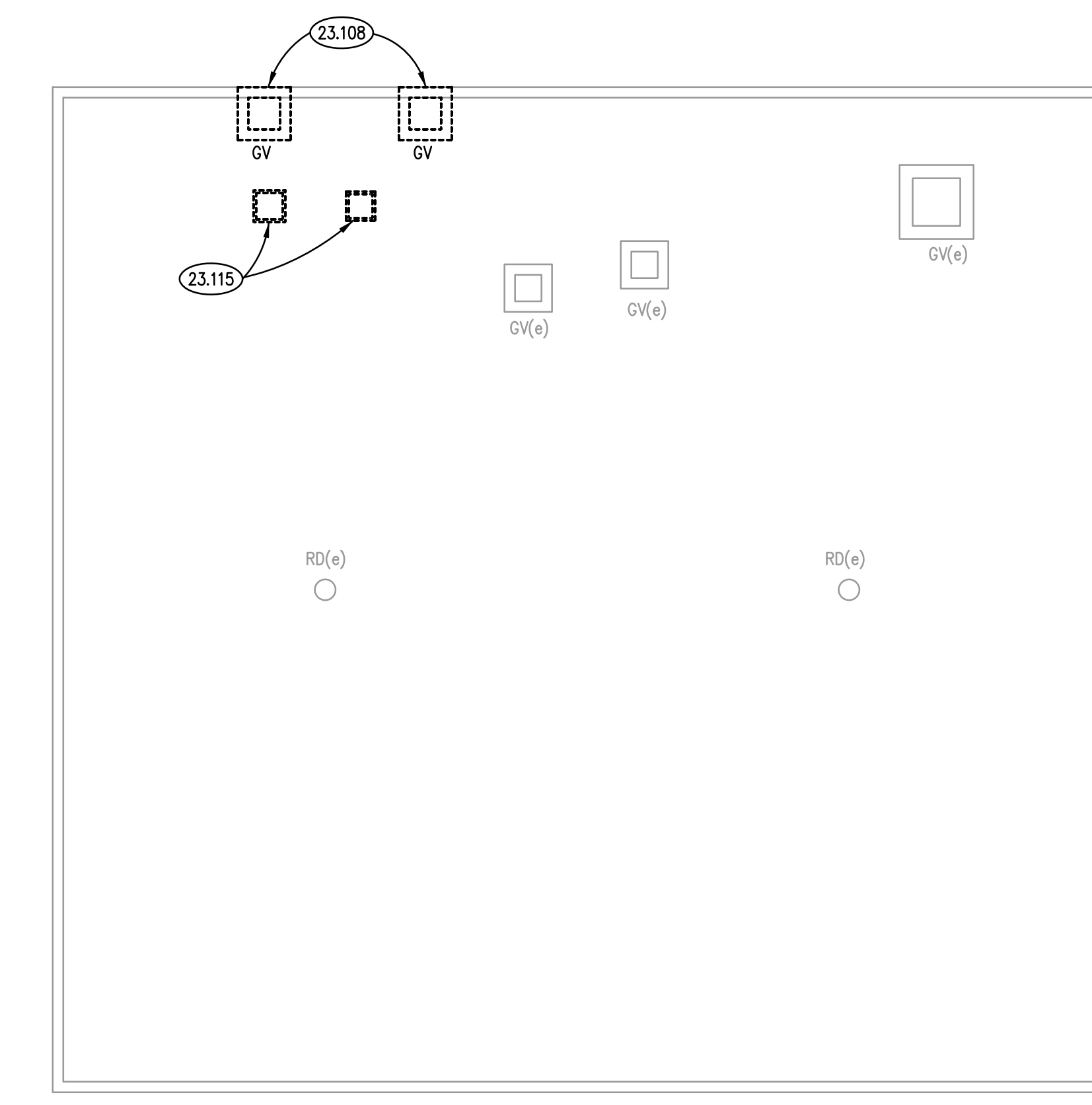
- KEYNOTES ARE TYPICALLY NOT DUPLICATED WITHIN A GIVEN DETAIL. AN UN-KEYNOTED ITEM IN A DETAIL IS THE SAME AS A KEYNOTED ITEM HAVING THE SAME APPEARANCE WITHIN THE SAME DETAIL.
- 23.100 REMOVE AIR HANDLING UNIT AND ASSOCIATED DUCTWORK AS SHOWN.
 - 23.102 REMOVE HWS/R AND CHS/R PIPING AND COIL SPECIALTIES BACK TO MAINS. PROVIDE TEMPORARY CAP FOR NEW CONNECTION.
 - 23.114 REMOVE PNEUMATIC CONTROL PANEL AND ALL ASSOCIATED END DEVICES. VERIFY ONLY POINTS IN PANEL ARE ASSOCIATED WITH AHU-1. IF OTHER CONTROLS ARE IN PANEL AFFECTING OTHER EQUIPMENT NOTIFY OWNER. COORDINATE WITH OWNER FOR REMOVAL OF ANY GRAPHICS IN JCI SYSTEM.
 - 23.200 PROVIDE NEW AIR HANDLING UNIT. PROVIDE ALL ASSOCIATED TRANSITIONS AND FITTINGS TO CONNECT TO EXISTING SUPPLY DUCT.
 - 23.204 PROVIDE NEW HWS/R AND CHS/R PIPING AND COIL SPECIALTIES TO AHU.
 - 23.205 PROVIDE NEW DDC CONTROLLER FOR AHU. PROVIDE GRAPHICS AND INTERFACE INTO DELTA CONTROLS CAMPUS SYSTEM.
 - 23.208 PROVIDE VARIABLE FREQUENCY DRIVE FOR NEW AHU IN PLACE OF LOCAL DISCONNECT.
 - 23.209 PROVIDE CONNECTION BETWEEN OUTSIDE AIR LOUVER AND AIR HANDLING UNIT.
 - 23.214 REMOVE OLD THERMOSTAT AND PROVIDE NEW THERMOSTAT FOR AIR HANDLING UNIT. MULTIPLE THERMOSTATS IN A SINGLE ZONE SHALL AVERAGE THE ZONE TEMPERATURE.
 - 23.216 PROVIDE NEW CO2 SENSOR. ESTABLISH OUTSIDE AIR CO2 LEVELS FOR USE IN SEQUENCE OF OPERATIONS FOR AHU OUTSIDE AIR.
 - 23.217 PROVIDE EXHAUST FAN FOR AHU-1. PROVIDE EXHAUST DUCTWORK WITH A 1" DUCT LINER AND CONNECT TO THE RETURN DUCT OF AHU-1. EXHAUST FAN TO BE LOCATED ON THE ROOF. FLASH NEW EXHAUST FAN CURB INTO EXISTING ROOFING SYSTEM IN ACCORDANCE WITH ROOFING MANUFACTURER'S REQUIREMENTS, APPLICABLE NRCA DETAILS AND SO AS NOT TO VOID ANY EXISTING ROOFING WARRANTIES.

KEY PLAN





BUILDING D HIGH ROOF PLAN ②
SCALE: 1/8" = 1'-0"



BUILDING D HIGH ROOF DEMOLITION PLAN ①
SCALE: 1/8" = 1'-0"

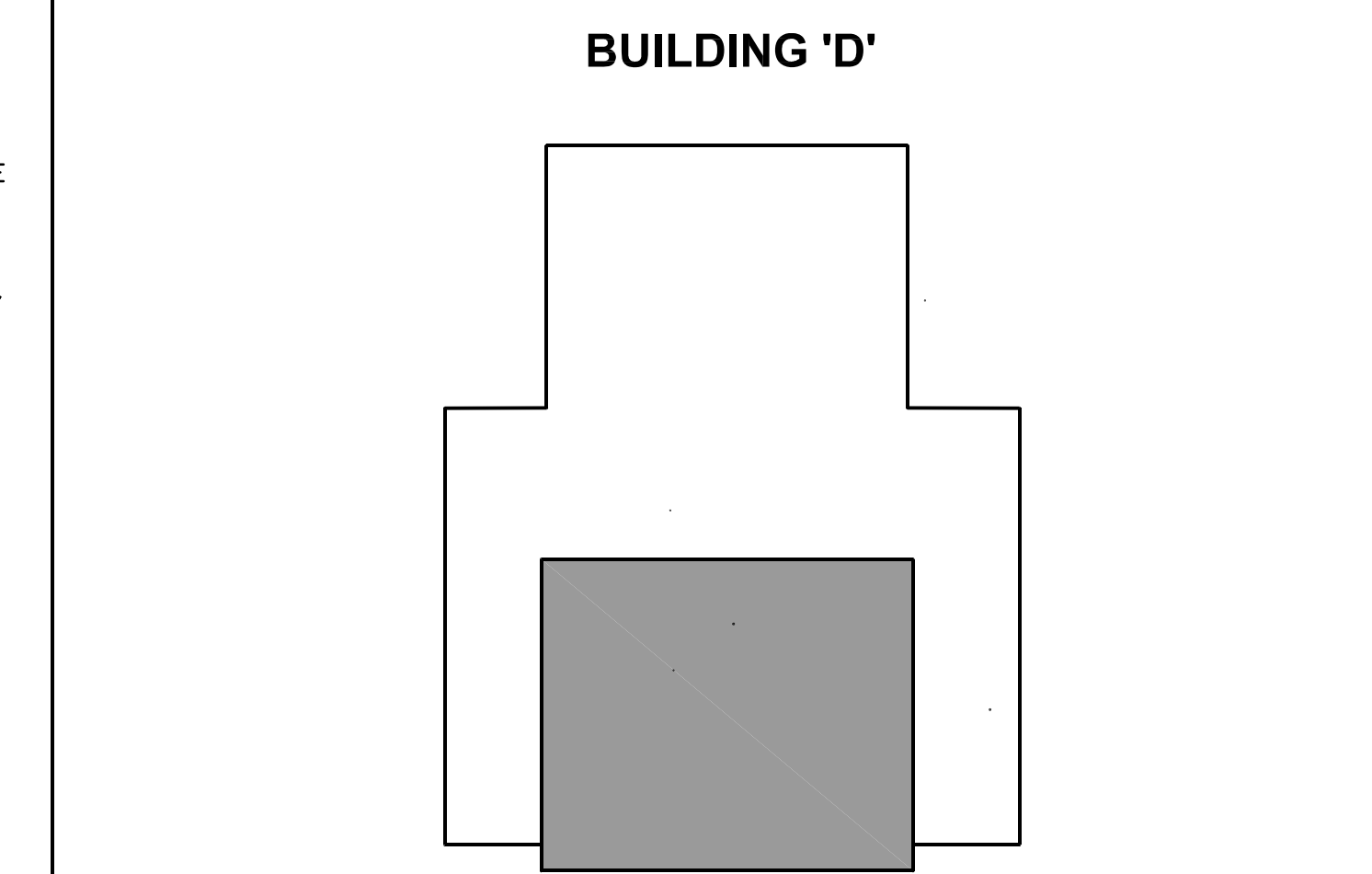
MECHANICAL GENERAL NOTES

- REFER TO DRAWING G100 FOR PROJECT GENERAL NOTES.
- ALL PIPING AND DUCTWORK IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL REQUIRED FITTINGS, OFFSETS, DROPS AND RISES. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL MATERIAL AND LABOR FOR A COMPLETE AND WORKING SYSTEM. COORDINATE WITH OTHER TRADES FOR SPACE AVAILABLE AND RELATIVE LOCATIONS OF EQUIPMENT, PIPING, DUCTWORK, ETC.
- ALL TAPES AND MASTICS USED TO SEAL DUCTWORK LISTED AND LABELED IN ACCORDANCE WITH UL 181A SHALL BE MARKED ACCORDINGLY. ALL TAPES AND MASTICS USED TO SEAL FLEXIBLE DUCTS AND AIR CONNECTORS SHALL COMPLY WITH UL 181B AND MARKED ACCORDINGLY.
- THERMOSTATIC CONTROLS OF EQUIPMENT SHALL HAVE A 5' F DEADBAND.
- GENERALLY, SMALL DIAMETER PIPE RUNS FROM DRIPS, CONDENSATE PANS AND OTHER SERVICES ARE NOT SHOWN BUT MUST BE PROVIDED.
- SPACE ALLOCATION, COORDINATION WITH ELECTRICAL, ARCHITECTURAL & OTHER MECHANICAL COMPONENTS HAVE BEEN MADE WITH RESPECT TO ALL EQUIPMENT SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS OF THE FIRST NAMED MANUFACTURER ONLY. OTHER MANUFACTURERS ARE ACCEPTABLE PROVIDED THEY MEET PERFORMANCE REQUIREMENTS AND AFOREMENTIONED COORDINATION.
- DO NOT CUT THROUGH THE MASONRY BOND BEAMS OR OTHER STRUCTURAL ELEMENT WHEN INSTALLING OPENINGS REQUIRED FOR ALL DUCTWORK, PIPING, CONDUITS OR OTHER WORK. CONTRACTOR CUTTING THROUGH OR OTHERWISE DAMAGING THESE ELEMENTS WILL BE RESPONSIBLE FOR ALL ASSOCIATED ENGINEERING FEES AND SUBSEQUENT RETRO-FIT/REINFORCING DEEMED NECESSARY TO REINSTATE THE CONTINUITY OF THE DISRUPTED ELEMENTS.
- HEATING AND COOLING DESIGN LOADS FOR THE BUILDING HAVE BEEN CALCULATED WITH ELITE SOFTWARE, COMMERCIAL HVAC LOADS PROGRAM, VERSION 8.02.34, IN ACCORDANCE WITH ASHRAE STANDARDS. INTERIOR DESIGN TEMPERATURES ARE MAXIMUM 72 DEGREES F FOR HEATING AND A MINIMUM OF 75 DEGREES F FOR COOLING.
- OBTAIN AND PAY ALL COSTS FOR PERMITS, LICENSES, CERTIFICATE FILING AND ALL INSPECTIONS BY AUTHORITIES HAVING JURISDICTION.

KEYNOTES

- KEYNOTES ARE TYPICALLY NOT DUPLICATED WITHIN A GIVEN DETAIL. AN UN-KEYNOTED ITEM IN A DETAIL IS THE SAME AS A KEYNOTED ITEM HAVING THE SAME APPEARANCE WITHIN THE SAME DETAIL.
- 23.108 REMOVE GRAVITY VENTILATOR. PROVIDE PERMANENT WEATHER TIGHT CAP ON ROOF OPENING.
 - 23.115 REMOVE EXISTING ROOF CURB. PROVIDE TEMPORARY CAP UNTIL NEW EXHAUST FANS ARE INSTALLED IN ENLARGED OPENING.
 - 23.218 PROVIDE NEW EXHAUST FAN. FLASH NEW EXHAUST FAN CURB INTO EXISTING ROOFING SYSTEM IN ACCORDANCE WITH ROOFING MANUFACTURER'S REQUIREMENTS, APPLICABLE NRCA DETAILS AND SO AS NOT TO VOID ANY EXISTING ROOFING WARRANTIES.
 - 23.219 CONTRACTOR TO ENLARGE EXISTING OPENING THROUGH POST-TENSIONED CONCRETE ROOF SLAB BY DEMOLITION TECHNIQUES THAT DO NOT CUT OR DAMAGE EXISTING TENDONS. CONTRACTOR TO LOCATE STRANDS BY X-RAY OR OTHER MEANS THAT WILL ACCURATELY LOCATE. IF STRANDS ARE WITHIN REQUIRED OPENING, STRANDS TO REMAIN AND PASS THROUGH OPENING. DO NOT CUT OR DAMAGE EXISTING STRANDS.
 - 23.220 IF ROOF STRANDS ARE LOCATED IN ENLARGED ROOF OPENING, SEAL DUCT TO BOTTOM OF ROOF DECK IN MECHANICAL PENTHOUSE.

KEY PLAN

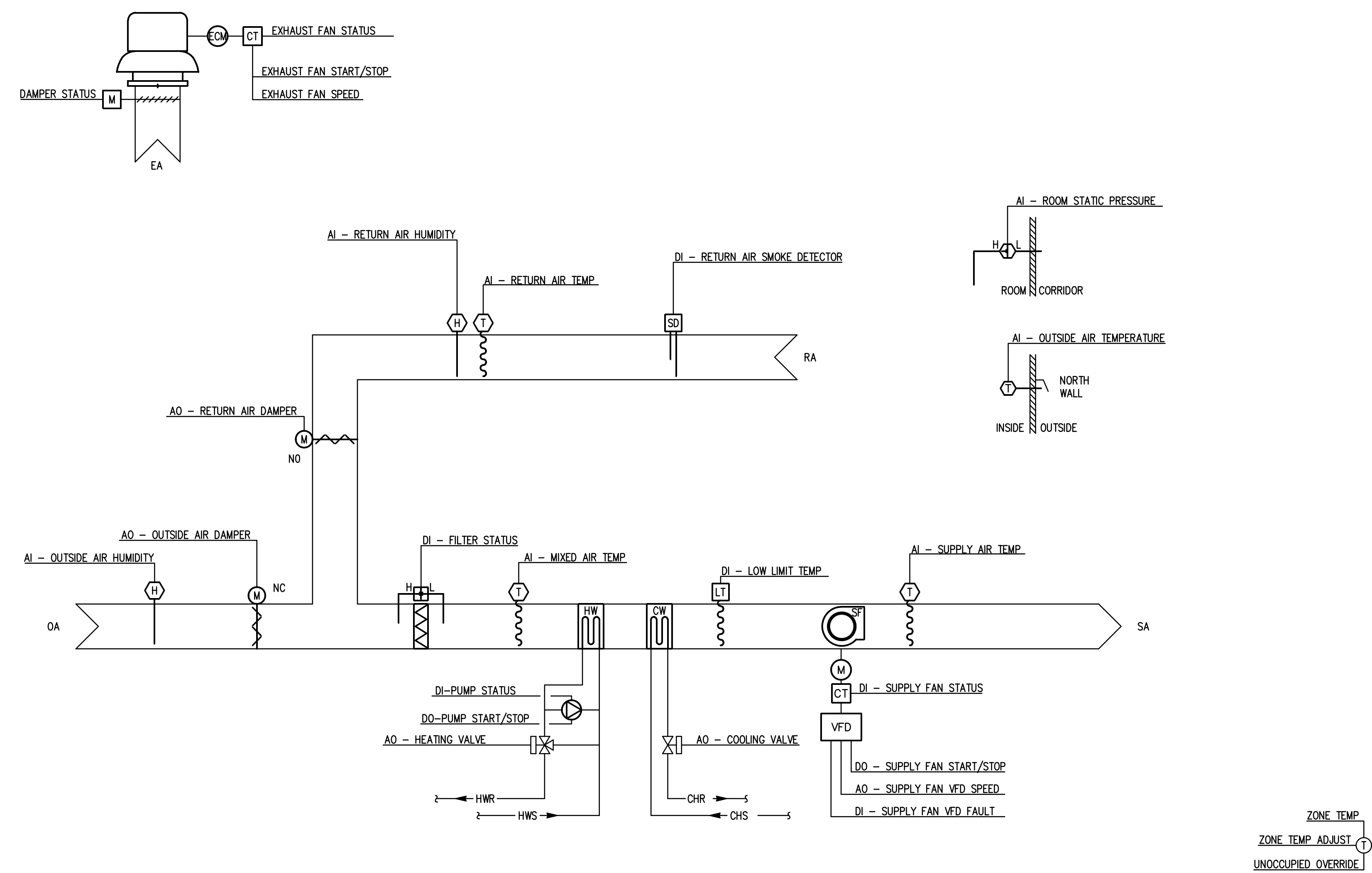


ISSUED	
1/13/17	BID DOCUMENTS

JOB NO.	17-292-1139
DRAWN	BWG
CHECKED	DDW
APPROVED	DDW
SHEET TITLE	
BUILDING D PENTHOUSE MECHANICAL ROOF PLAN	
SHEET NUMBER	

M320

AHU TEMPERATURE CONTROL SCHEMATIC



- NOTES:**
- COMPONENTS AND INTERCONNECTIONS SHOWN ARE SCHEMATIC ONLY.
 - CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPONENTS, SENSORS, RELAYS, ETC. TO ENSURE A COMPLETE OPERATING SYSTEM.
 - SMOKE DETECTORS EXISTING TO BE REUSED.

POINTS LIST

AIR HANDLING UNIT (AHU-11, 12, 19B)	HARDWARE				SOFTWARE			
	AI	AO	DI	DO	SCHED	TREND	ALARM	GRAPHIC
OCCUPIED/UNOCCUPIED MODE		X			X			X
SUPPLY FAN START/STOP					X	X		
SUPPLY FAN STATUS			X				X	X
SUPPLY FAN VFD SPEED			X			X		X
SUPPLY FAN VFD FAULT			X				X	
OUTSIDE AIR TEMPERATURE	X					X		X
SUPPLY AIR TEMPERATURE	X					X		X
RETURN AIR TEMPERATURE	X					X		X
MIXED AIR TEMPERATURE	X					X		X
OUTSIDE AIR HUMIDITY	X					X		X
RETURN AIR HUMIDITY	X					X		X
ZONE TEMPERATURE	X					X		X
ZONE TEMPERATURE SETPOINT	X					X		X
LOW LIMIT TEMPERATURE			X				X	X
OUTSIDE AIR DAMPER		X				X	X	X
RETURN AIR DAMPER		X				X	X	X
EXHAUST AIR DAMPER		X				X	X	X
HOT WATER COIL CONTROL VALVE		X				X		X
CHILLED WATER COIL CONTROL VALVE		X				X		X
FILTER STATUS			X			X		X
RETURN AIR SMOKE DETECTOR STATUS			X			X		X
PUMP STATUS			X			X		X
PUMP START/STOP			X			X		X
ECONOMIZER STATUS			X			X		X
EXHAUST FAN STATUS (AHU-11, AHU-12)			X			X		X
EXHAUST FAN START/STOP (AHU-11, AHU-12)			X			X		X
EXHAUST FAN SPEED (AHU-11, AHU-12)			X			X		X
ROOM STATIC PRESSURE (AHU-11, AHU-12)	X					X		X

- NOTES:**
- HEATING CONTROL VALVE SHALL HAVE SPRING RETURN ACTUATORS TO FAIL OPEN DURING LOSS OF POWER.
 - OUTSIDE AIR DAMPERS SHALL HAVE SPRING RETURN ACTUATORS TO FAIL IN CLOSE POSITION DURING LOSS OF POWER.

SEQUENCE OF OPERATIONS

AIR HANDLING UNIT (AHU-11, 12, 19B):

THE OCCUPIED/UNOCCUPIED MODE SCHEDULING SHALL BE MADE AT THE BUILDING AUTOMATION SYSTEM. PROVISIONS SHALL BE MADE FOR MANUAL SHUTDOWN OF EQUIPMENT. ALL SETPOINTS SHALL BE ADJUSTABLE. UNOCCUPIED SPACE TEMPERATURE SETPOINTS SHALL BE 80 DEGREES F COOLING AND 65 DEGREES F HEATING.

SUPPLY FAN - DURING THE OCCUPIED MODE THE SUPPLY FAN SHALL RUN CONTINUOUSLY. THE OUTSIDE AIR DAMPERS SHALL MODULATE TO A MINIMUM OUTSIDE AIR SETPOINT. DURING THE UNOCCUPIED MODE, THE SUPPLY FAN WILL CYCLE INTERMITTENTLY TO MAINTAIN A NIGHT SETPOINT. THE OUTSIDE AIR DAMPERS SHALL REMAIN CLOSED. IN HEATING MODE THE VALVE SHALL BE FULLY OPEN.

OA/RA DAMPERS - THE OUTSIDE AIR DAMPERS SHALL OPEN TO A MINIMUM POSITION WHEN THE UNIT IS IN OCCUPIED MODE. AN ECONOMIZER SHALL MODULATE THE DAMPERS BASED ON DIFFERENTIAL ENTHALPY OF THE RETURN AIR AND OUTSIDE AIR TO MAINTAIN A SUPPLY AIR TEMPERATURE OF 55 DEGREES F WHEN IN COOLING MODE. IN UNOCCUPIED MODE THE OUTSIDE AIR DAMPER SHALL BE FULLY CLOSED. THE ECONOMIZER SHALL HAVE FAULT AND DETECTION DIAGNOSTICS (FDD). THE FDD SHALL ALARM IF THERE IS AIR TEMPERATURE SENSOR FAILURE, NO ECONOMIZING WHEN ENABLED, ECONOMIZING WHEN DISABLED, DAMPERS NOT MODULATING AND EXCESS OUTDOOR AIR.

THE AIR HANDLING UNIT SHALL HAVE TWO MODES OF OPERATION; 1. SINGLE ZONE VARIABLE AIR AND 2. CONSTANT VOLUME ZONE CONTROL. THE MODE SHALL BE SELECTED AT THE BAS.

SINGLE ZONE VARIABLE AIR:

- COOLING MODE - DURING THE COOLING MODE OF OPERATION THE SUPPLY FAN SPEED SHALL VARY BETWEEN MINIMUM SPEED AND 100% SPEED AS NEEDED TO MAINTAIN THE SPACE TEMPERATURE. THE COOLING VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 55 DEGREES.
- HEATING MODE - DURING THE HEATING MODE OF OPERATION THE SUPPLY FAN SHALL MODULATE BETWEEN 50% AND 100% AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE. THE HEATING VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 90 DEGREES.

CONSTANT VOLUME ZONE CONTROL:

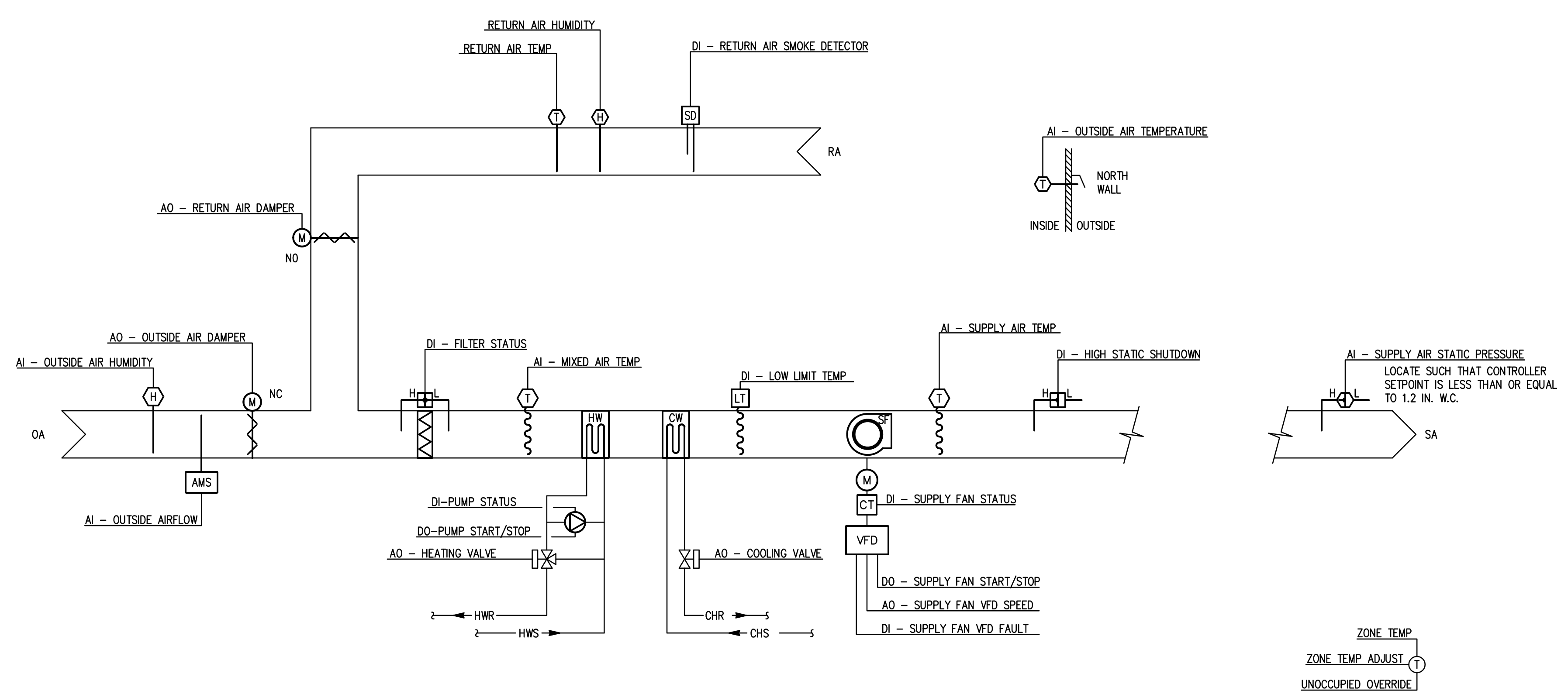
- COOLING MODE - DURING THE COOLING MODE OF OPERATION THE COOLING VALVE SHALL MODULATE TO MAINTAIN THE ZONE TEMPERATURE SETPOINT.
- HEATING MODE - DURING THE HEATING MODE OF OPERATION THE HEATING VALVE SHALL MODULATE TO MAINTAIN THE ZONE TEMPERATURE SETPOINT.

HWP-1, PUMP CONTROL - THE PUMP SHALL RUN CONTINUOUSLY WHEN THE OUTSIDE AIR IS BELOW 40 DEG F. ABOVE 40 DEG F OUTSIDE AIR THE PUMP SHALL BE OFF.

OPTIMIZED START - THE AHU SHALL BEGIN A MORNING WARM-UP/COOL DOWN BEFORE OCCUPIED MODE AS CALCULATED BY THE BAS. AFTER SPACE TEMPERATURE REACHES THE OCCUPIED SETPOINT THE AHU SHALL OPERATE IN OCCUPIED MODE.

(AHU-11-12 ONLY) THE EXHAUST FAN DAMPER SHALL BE ENERGIZED WHEN THE AIR HANDLING UNIT IS IN ECONOMIZER MODE. THE EXHAUST FAN ECM MOTOR SHALL MODULATE TO MAINTAIN A ROOM POSITIVE PRESSURE OF 0.05 IN WG IN THE ROOM IN RELATION TO THE CORRIDOR.

AHU-13 TEMPERATURE CONTROL SCHEMATIC



- NOTES:**
- COMPONENTS AND INTERCONNECTIONS SHOWN ARE SCHEMATIC ONLY.
 - CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPONENTS, SENSORS, RELAYS, ETC. TO ENSURE A COMPLETE OPERATING SYSTEM.
 - SMOKE DETECTORS EXISTING TO BE REUSED.

POINTS LIST

AIR HANDLING UNIT (AHU-13)	HARDWARE				SOFTWARE			
	AI	AO	DI	DO	SCHED	TREND	ALARM	GRAPHIC
OCCUPIED/UNOCCUPIED MODE			X		X			X
SUPPLY FAN START/STOP					X	X		
SUPPLY FAN STATUS			X				X	X
SUPPLY FAN VFD SPEED			X			X		X
SUPPLY FAN VFD FAULT			X				X	
OUTSIDE AIR TEMPERATURE	X					X		X
SUPPLY AIR TEMPERATURE	X					X		X
RETURN AIR TEMPERATURE	X					X		X
MIXED AIR TEMPERATURE	X					X		X
OUTSIDE AIR HUMIDITY	X					X		X
RETURN AIR HUMIDITY	X					X		X
ZONE TEMPERATURE	X					X		X
ZONE TEMPERATURE SETPOINT	X					X		X
LOW LIMIT TEMPERATURE			X				X	X
OUTSIDE AIR DAMPER		X				X	X	X
RETURN AIR DAMPER		X				X	X	X
EXHAUST AIR DAMPER		X				X	X	X
HOT WATER COIL CONTROL VALVE		X				X		X
CHILLED WATER COIL CONTROL VALVE		X				X		X
FILTER STATUS			X			X		X
RETURN AIR SMOKE DETECTOR STATUS			X			X		X
PUMP STATUS			X			X		X
PUMP START/STOP			X			X		X
ECONOMIZER STATUS			X			X		X
DUCT STATIC PRESSURE	X					X		X
DUCT STATIC PRESSURE SETPOINT	X					X		X
HIGH STATIC PRESSURE SHUTDOWN			X			X		X

- NOTES:**
- HEATING CONTROL VALVE SHALL HAVE SPRING RETURN ACTUATORS TO FAIL OPEN DURING LOSS OF POWER. LOCATE SUCH THAT CONTROLLER SETPOINT IS LESS THAN OR EQUAL TO 1.2 IN. W.C.
 - OUTSIDE AIR DAMPERS SHALL HAVE SPRING RETURN ACTUATORS TO FAIL IN CLOSE POSITION DURING LOSS OF POWER.

SEQUENCE OF OPERATIONS

AIR HANDLING UNIT (AHU-13):

THE OCCUPIED/UNOCCUPIED MODE SCHEDULING SHALL BE MADE AT THE BUILDING AUTOMATION SYSTEM. PROVISIONS SHALL BE MADE FOR MANUAL SHUTDOWN OF EQUIPMENT. ALL SETPOINTS SHALL BE ADJUSTABLE. UNOCCUPIED SPACE TEMPERATURE SETPOINTS SHALL BE 80 DEGREES F COOLING AND 65 DEGREES F HEATING.

SUPPLY FAN - THE SUPPLY FAN SHALL RUN CONTINUOUSLY DURING OCCUPIED MODE AND INTERMITTENTLY DURING UNOCCUPIED MODE. THE SUPPLY FAN VARIABLE FREQUENCY DRIVE SHALL MODULATE THE SPEED OF THE FAN TO MAINTAIN THE DUCT STATIC PRESSURE SETPOINT. IF AIRFLOW IS NOT DETECTED WITHIN TWO MINUTES AFTER A START COMMAND THE FAN MOTOR SHALL BE DE-ENERGIZED AND AN AUDIBLE ALARM SHALL BE ACTIVATED. IF A HIGH STATIC PRESSURE IS SENSED IN THE SUPPLY AIR THE SUPPLY FAN SHALL BE DE-ENERGIZED AND SIGNAL AN ALARM CONDITION.

SMOKE DETECTORS - UPON DETECTION OF SMOKE THE FANS SHALL BE DE-ENERGIZED, CLOSE OUTSIDE AIR DAMPER, AND SIGNAL ALARM LOCALLY AND AT FIRE ALARM PANEL.

OA/RA DAMPERS - AN AIRFLOW MEASURING STATION/DAMPER SENSOR SHALL MODULATE THE OUTSIDE AIR DAMPERS TO MAINTAIN THE MINIMUM OUTSIDE AIR CFM SETPOINT. AN ECONOMIZER SHALL MODULATE THE DAMPERS BASED ON DIFFERENTIAL ENTHALPY OF THE RETURN AIR AND OUTSIDE AIR TO MAINTAIN A SUPPLY AIR TEMPERATURE OF 55 DEGREES F. THE ECONOMIZER SHALL HAVE A MAXIMUM OUTSIDE AIR INTAKE OF 5,000 CFM. IN UNOCCUPIED MODE THE OUTSIDE AIR DAMPER SHALL BE FULLY CLOSED.

ECONOMIZER - AN ECONOMIZER SHALL MODULATE THE DAMPERS BASED ON DIFFERENTIAL ENTHALPY OF THE RETURN AIR AND THE OUTSIDE AIR TO MAINTAIN A SUPPLY AIR TEMPERATURE 55 DEGREES F. THE ECONOMIZER SHALL HAVE FAULT AND DETECTION DIAGNOSTICS (FDD). THE FDD SHALL ALARM IF IS AIR TEMPERATURE SENSOR FAILURE, NO ECONOMIZER WHEN ENABLED, ECONOMIZING WHEN DISABLED, DAMPERS NOT MODULATING AND EXCESS OUTDOOR AIR. THE FDD SHALL ALARM WITH ANY OF THE FOLLOWING FAULTS:

- AIR TEMPERATURE SENSOR FAILURE/FAULT
- NOT ECONOMIZING WHEN THE UNIT SHOULD BE ECONOMIZING
- ECONOMIZING WHEN THE UNIT SHOULD NOT BE ECONOMIZING
- DAMPER NOT MODULATING
- EXCESS OUTDOOR AIR

COOLING MODE - THE COOLING COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN A DISCHARGE TEMPERATURE SETPOINT OF 55 DEGREES F WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 60 DEGREES F. THE AHU SHALL BEGIN A MORNING COOL-DOWN AT LEAST ONE HOUR BEFORE OCCUPIED MODE.

HEATING MODE - THE HOT WATER COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN A DISCHARGE TEMPERATURE SETPOINT OF 65 DEGREES F WHEN IN THE OCCUPIED MODE. THE AHU SHALL BEGIN A MORNING WARM-UP AT LEAST ONE HOUR BEFORE OCCUPIED MODE. AFTER SPACE TEMPERATURE REACHES 70 DEGREES F IN ALL ZONES THE AHU SHALL OPERATE IN OCCUPIED MODE.

HWP-1, PUMP CONTROL - THE PUMP SHALL RUN CONTINUOUSLY WHEN THE OUTSIDE AIR IS BELOW 40 DEG F. ABOVE 40 DEG F OUTSIDE AIR TO THE PUMP SHALL BE OFF.

OPTIMIZED START - THE AHU SHALL BEGIN A MORNING WARM-UP/COOL DOWN BEFORE OCCUPIED MODE AS CALCULATED BY THE BAS. AFTER SPACE TEMPERATURE REACHES THE OCCUPIED SETPOINT THE AHU SHALL OPERATE IN OCCUPIED MODE.

PH1139 - JAC - Building D & K HVAC Unit Replacement3D_Design-Design-04-02-2017_11132017 3:18:48 PM, RWG

KLUBER
Architects + Engineers

KLUBER, INC.
BATAVIA, ILLINOIS 60103
TEL: 630.406.1210
GURNEE, ILLINOIS 60031
TEL: 847.236.4428
WWW.KLUBERTHC.COM

BUILDING D & K HVAC UNIT REPLACEMENT

JOLIET JUNIOR COLLEGE
12115 HOUBOLT ROAD
JOLIET, ILLINOIS 60431

ISSUED	DATE	BY	REVISION

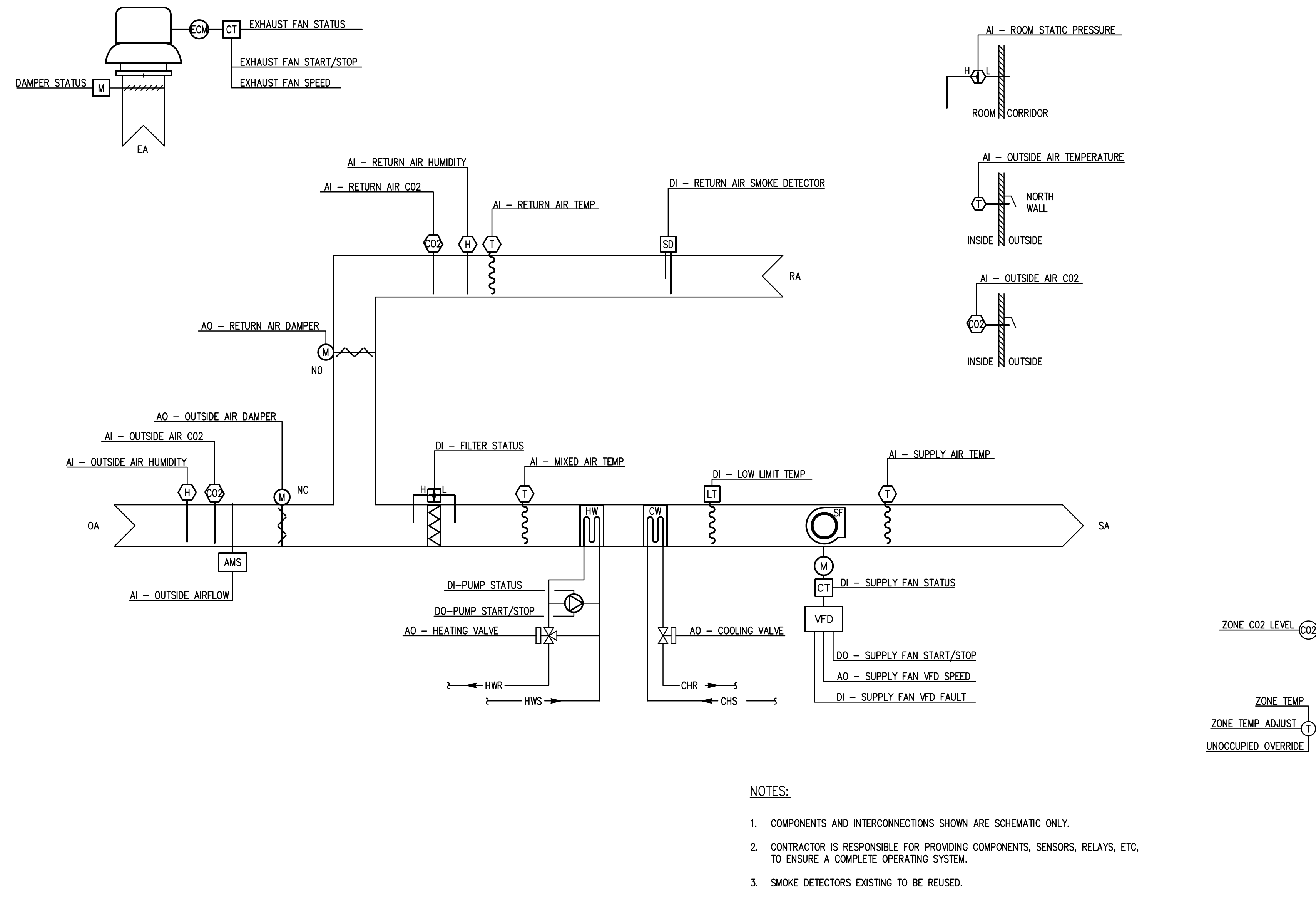
JOB NO. 17-292-1139
DRAWN BWG
CHECKED DDW
APPROVED DDW

SHEET TITLE
TEMPERATURE CONTROLS

SHEET NUMBER

M410

ALTERNATE NO. 1: AHU TEMPERATURE CONTROL SCHEMATIC



POINTS LIST

AIR HANDLING UNIT (AHU-1)	HARDWARE				SOFTWARE		
	AI	AO	DI	DO	SCHED	TREND	ALARM GRAPHIC
OCCUPIED/UNOCCUPIED MODE			X		X	X	X
SUPPLY FAN START/STOP				X	X		
SUPPLY FAN STATUS			X			X	X
SUPPLY FAN VFD SPEED			X			X	X
SUPPLY FAN VFD FAULT			X			X	X
OUTSIDE AIR TEMPERATURE	X				X	X	X
SUPPLY AIR TEMPERATURE	X				X	X	X
RETURN AIR TEMPERATURE	X				X	X	X
MIXED AIR TEMPERATURE	X				X	X	X
OUTSIDE AIR HUMIDITY	X				X	X	X
OUTSIDE AIR CO2	X				X	X	X
RETURN AIR HUMIDITY	X				X	X	X
RETURN AIR CO2	X				X	X	X
ZONE TEMPERATURE	X				X	X	X
ZONE TEMPERATURE SETPOINT	X				X	X	X
ZONE CO2	X				X	X	X
ZONE CO2 SETPOINT	X				X	X	X
LOW LIMIT TEMPERATURE			X	X		X	X
OUTSIDE AIR DAMPER		X				X	X
OUTSIDE AIR CFM		X				X	X
RETURN AIR DAMPER		X				X	X
EXHAUST AIR DAMPER		X				X	X
HOT WATER COIL CONTROL VALVE		X				X	X
CHILLED WATER COIL CONTROL VALVE		X				X	X
FILTER STATUS			X			X	X
RETURN AIR SMOKE DETECTOR STATUS			X			X	X
HWP PUMP STATUS			X			X	X
HWP PUMP START/STOP				X		X	X
ECONOMIZER STATUS			X			X	X
EXHAUST FAN STATUS			X	X		X	X
EXHAUST FAN START/STOP			X	X		X	X
EXHAUST FAN SPEED		X				X	X
ROOM STATIC PRESSURE	X					X	X

NOTES:

- HEATING CONTROL VALVE SHALL HAVE SPRING RETURN ACTUATORS TO FAIL OPEN DURING LOSS OF POWER.
- OUTSIDE AIR DAMPERS SHALL HAVE SPRING RETURN ACTUATORS TO FAIL IN CLOSE POSITION DURING LOSS OF POWER.

SEQUENCE OF OPERATIONS

AIR HANDLING UNIT (AHU-1):

THE OCCUPIED/UNOCCUPIED MODE SCHEDULING SHALL BE MADE AT THE BUILDING AUTOMATION SYSTEM. PROVISIONS SHALL BE MADE FOR MANUAL SHUTDOWN OF EQUIPMENT. ALL SETPOINTS SHALL BE ADJUSTABLE. UNOCCUPIED SPACE TEMPERATURE SETPOINTS SHALL BE 80 DEGREES F COOLING AND 65 DEGREES F HEATING.

SUPPLY FAN - DURING THE OCCUPIED MODE THE SUPPLY FAN SHALL RUN CONTINUOUSLY. THE OUTSIDE AIR DAMPERS SHALL MODULATE TO A MINIMUM OUTSIDE AIR SETPOINT. DURING THE UNOCCUPIED MODE, THE SUPPLY FAN WILL CYCLE INTERMITTENTLY TO MAINTAIN A NIGHT SETPOINT. THE OUTSIDE AIR DAMPERS SHALL REMAIN CLOSED. IN HEATING MODE THE VALVE SHALL BE FULLY OPEN.

DEMAND CONTROLLED VENTILATION - THE ZONE CO2 CONCENTRATION SHALL BE MONITORED BY TWO CO2 SENSORS LOCATED IN THE SPACE. IF THE ZONE CO2 RISES ABOVE 1000 (ADJ.) PPM THE OA QUANTITY SHALL BE INCREASED 500 CFM EVERY 15 MINUTES UNTIL THE VALUE IS BELOW 800 PPM (ADJ.). AN AIRFLOW MEASURING STATION/DAMPER SENSOR SHALL MODULATE THE OUTSIDE AIR DAMPERS TO MAINTAIN AN OUTSIDE AIR FLOW BETWEEN 200 CFM AND 2,440 CFM DURING OCCUPIED MODE. IN UNOCCUPIED MODE, THE OUTSIDE AIR DAMPERS SHALL BE FULLY CLOSED.

ECONOMIZER - AN ECONOMIZER SHALL MODULATE THE RETURN AIR AND OUTSIDE AIR DAMPERS BASED ON DIFFERENTIAL ENTHALPY OF THE RETURN AIR AND OUTSIDE AIR TO MAINTAIN A SUPPLY AIR TEMPERATURE OF 55 DEGREES F WHEN IN COOLING MODE. IN UNOCCUPIED MODE THE OUTSIDE AIR DAMPER SHALL BE FULLY CLOSED. THE ECONOMIZER SHALL HAVE FAULT AND DETECTION DIAGNOSTICS (FDD). THE FDD SHALL ALARM IF THERE IS AIR TEMPERATURE SENSOR FAILURE, NO ECONOMIZING WHEN ENABLED, ECONOMIZING WHEN DISABLED, DAMPERS NOT MODULATING AND EXCESS OUTDOOR AIR.

THE AIR HANDLING UNIT SHALL HAVE TWO MODES OF OPERATION; 1. SINGLE ZONE VARIABLE AIR AND 2. CONSTANT VOLUME ZONE CONTROL. THE MODE SHALL BE SELECTED AT THE BAS.

SINGLE ZONE VARIABLE AIR:

- COOLING MODE - DURING THE COOLING MODE OF OPERATION THE SUPPLY FAN SPEED SHALL VARY BETWEEN MINIMUM SPEED AND 100% SPEED AS NEEDED TO MAINTAIN THE SPACE TEMPERATURE. THE COOLING VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 55 DEGREES.
- HEATING MODE - DURING THE HEATING MODE OF OPERATION THE SUPPLY FAN SHALL MODULATE BETWEEN 50% AND 100% AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE. THE HEATING VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 90 DEGREES.

CONSTANT VOLUME ZONE CONTROL:

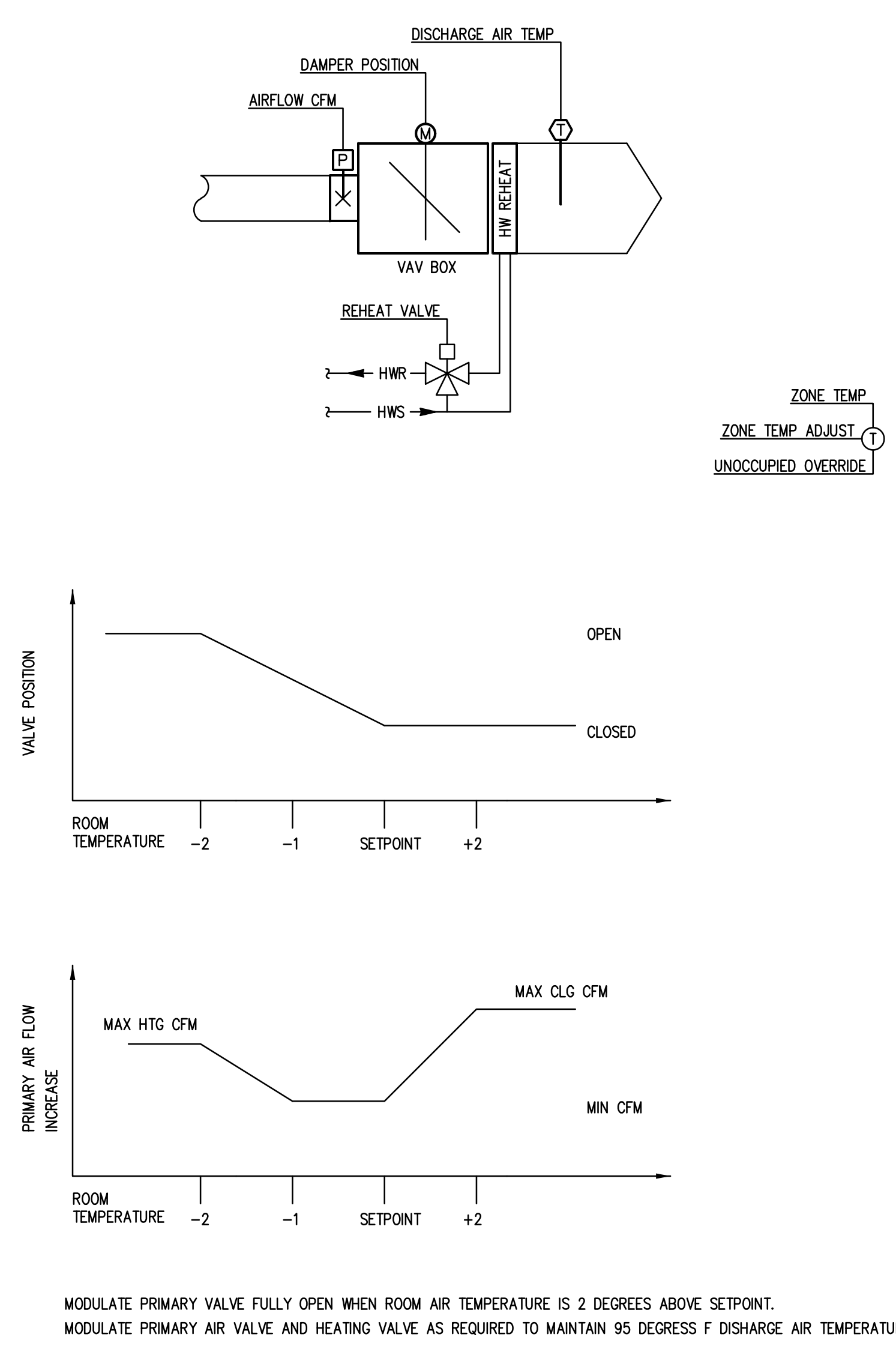
- COOLING MODE - DURING THE COOLING MODE OF OPERATION THE COOLING VALVE SHALL MODULATE TO MAINTAIN THE ZONE TEMPERATURE SETPOINT.
- HEATING MODE - DURING THE HEATING MODE OF OPERATION THE HEATING VALVE SHALL MODULATE TO MAINTAIN THE ZONE TEMPERATURE SETPOINT.

HWP-1, PUMP CONTROL - THE PUMP SHALL RUN CONTINUOUSLY WHEN THE OUTSIDE AIR IS BELOW 40 DEG F. ABOVE 40 DEG F OUTSIDE AIR THE PUMP SHALL BE OFF.

OPTIMIZED START - THE AHU SHALL BEGIN A MORNING WARM-UP/COOL DOWN BEFORE OCCUPIED MODE AS CALCULATED BY THE BAS. AFTER SPACE TEMPERATURE REACHES THE OCCUPIED SETPOINT THE AHU SHALL OPERATE IN OCCUPIED MODE.

THE EXHAUST AIR DAMPER SHALL OPEN AND THE EXHAUST FAN SHALL BE ENERGIZED WHEN THE AIR HANDLING UNIT IS IN ECONOMIZER MODE. THE EXHAUST FAN ECM MOTOR SHALL MODULATE TO MAINTAIN A ROOM POSITIVE PRESSURE OF 0.05 IN WG IN THE ROOM IN RELATION TO THE CORRIDOR.

VARIABLE AIR VOLUME BOX CONTROL SCHEMATIC



SEQUENCE OF OPERATIONS

PRESSURE INDEPENDENT AIR TERMINAL SHALL MAINTAIN ZONE TEMPERATURE HEAT/COOL SETPOINTS OF 72/75 DEGREES F (ADJ) AND UNOCCUPIED COOL/HEAT SETPOINTS OF 80/65 DEGREES F. ALL SETPOINTS SHALL BE ADJUSTABLE.

OCCUPIED MODE:

COOLING - THE TERMINAL UNIT DAMPER SHALL MODULATE TO MAINTAIN THE ZONE COOLING TEMPERATURE SETPOINT BY MODULATING SUPPLY AIR FLOW. WHEN THE ZONE TEMPERATURE IS ABOVE SETPOINT THE DAMPER SHALL MODULATE TO THE MAXIMUM COOLING CFM POSITION. WHEN THE ZONE TEMPERATURE IS BELOW SETPOINT THE DAMPER SHALL MODULATE TO THE MINIMUM CFM POSITION.

HEATING - WHEN THE TERMINAL UNIT DAMPER HAS REACHED THE MINIMUM CFM POSITION AND THE ZONE TEMPERATURE IS BELOW SETPOINT THE VALVE SHALL MODULATE OPEN TO PROVIDE A DISCHARGE AIR TEMPERATURE OF 95 DEGREES F. IF THE ZONE CONTINUES TO REMAIN BELOW SETPOINT THE TERMINAL UNIT DAMPER SHALL MODULATE OPEN TO THE HEATING CFM MAXIMUM CFM. THE VALVE SHALL MODULATE IN UNISON WITH THE DAMPER TO MAINTAIN A 95° F DISCHARGE AIR TEMPERATURE. AS THE ZONE TEMPERATURE INCREASES THE DAMPER AND VALVE SHALL REACT IN A REVERSE MANNER.

UNOCCUPIED MODE:

THE TERMINAL UNIT DAMPER AND REHEAT SHALL OPERATE AS DESCRIBED ABOVE WHEN THE ASSOCIATED AIR HANDLING UNIT IS ENERGIZED. THE UNIT SHALL OPERATE TO MAINTAIN THE UNOCCUPIED HEATING/COOLING SETPOINTS.

ZONE THERMOSTAT SHALL HAVE PLUS/MINUS 2° F TEMPERATURE SETPOINT ADJUSTMENT OF THE SETPOINT SET AT THE BAS AND TIMED UNOCCUPIED OVERRIDE BUTTON.

POINTS LIST

VARIABLE AIR VOLUME BOX	HARDWARE				SOFTWARE		
	AI	AO	BI	BO	SCHED	TREND	ALARM GRAPHIC
DISCHARGE AIR TEMPERATURE	X					X	
ZONE AIR TEMPERATURE	X					X	
ZONE TEMPERATURE ADJUSTMENT	X					X	
HEATING SETPOINT		X					
COOLING SETPOINT		X					
DAMPER POSITION		X					
AIRFLOW CFM		X				X	
MINIMUM AIRFLOW SETPOINT		X					
MAXIMUM COOLING AIRFLOW SETPOINT		X					
MAXIMUM HEATING AIRFLOW SETPOINT		X					
ZONE HIGH TEMPERATURE ALARM			X				X
ZONE LOW TEMPERATURE ALARM			X				X
REHEAT COIL 3-WAY VALVE		X				X	
UNOCCUPIED MODE OVERRIDE				X			

ISSUED	DATE	BY	REVISION
1/13/17			BID DOCUMENTS

JOB NO.	17-292-1139
DRAWN	BWG
CHECKED	DDW
APPROVED	DDW

SHEET TITLE

TEMPERATURE CONTROLS

SHEET NUMBER

M411

ISSUED	BID DOCUMENTS

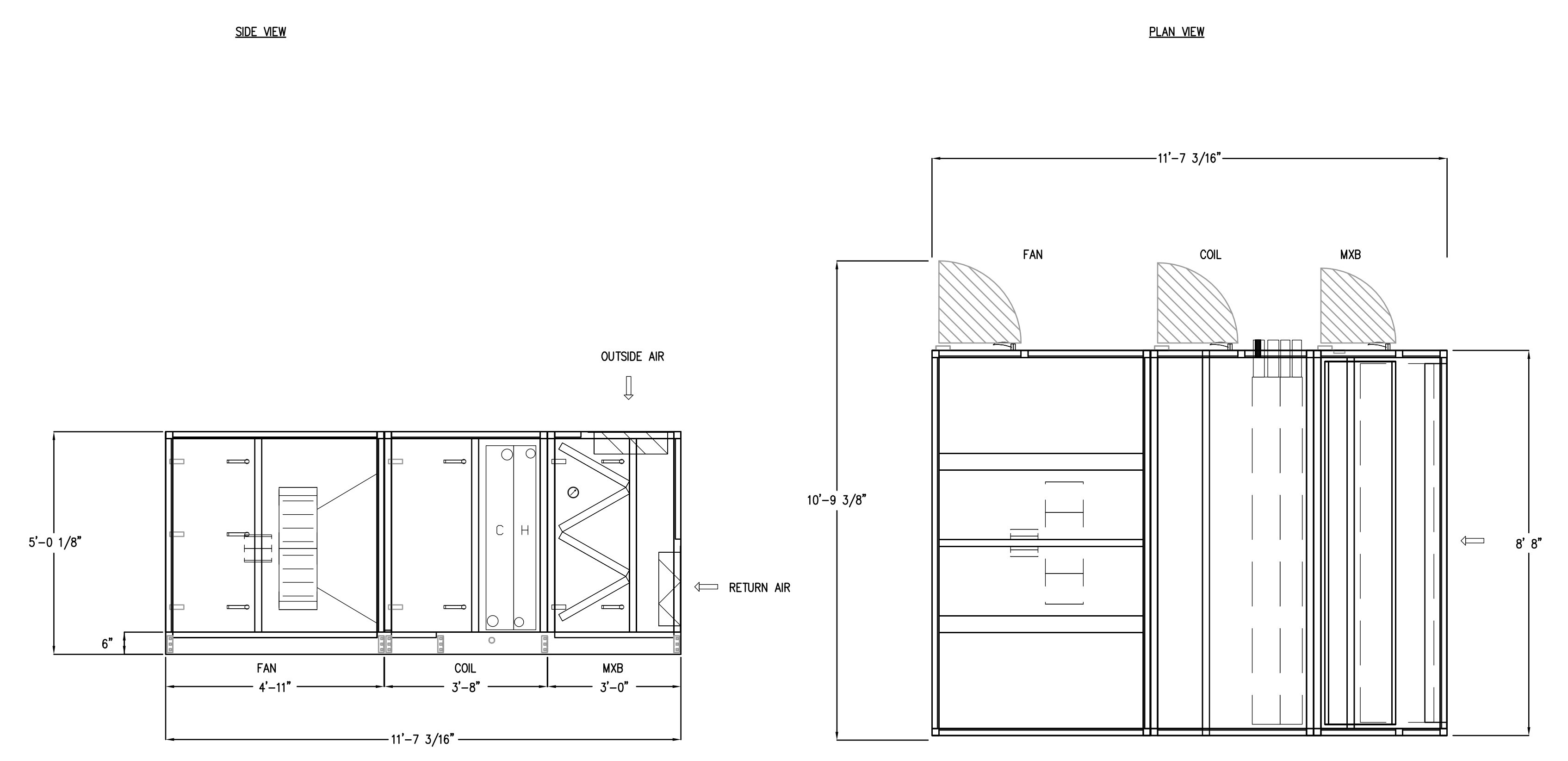
JOB NO.	17-292-1139
DRAWN	BWG
CHECKED	DDW
APPROVED	DDW

SHEET TITLE

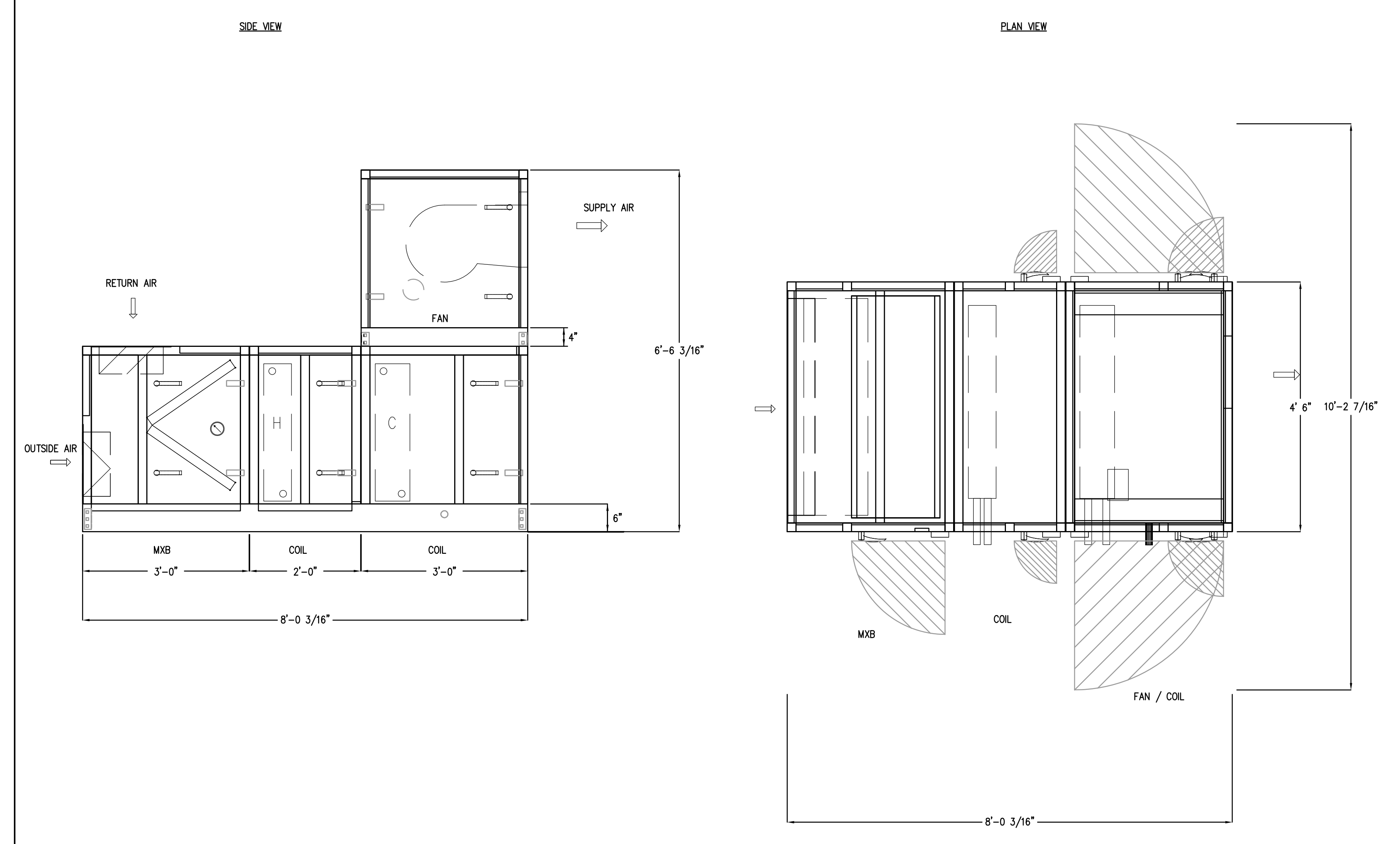
MECHANICAL DETAILS

SHEET NUMBER

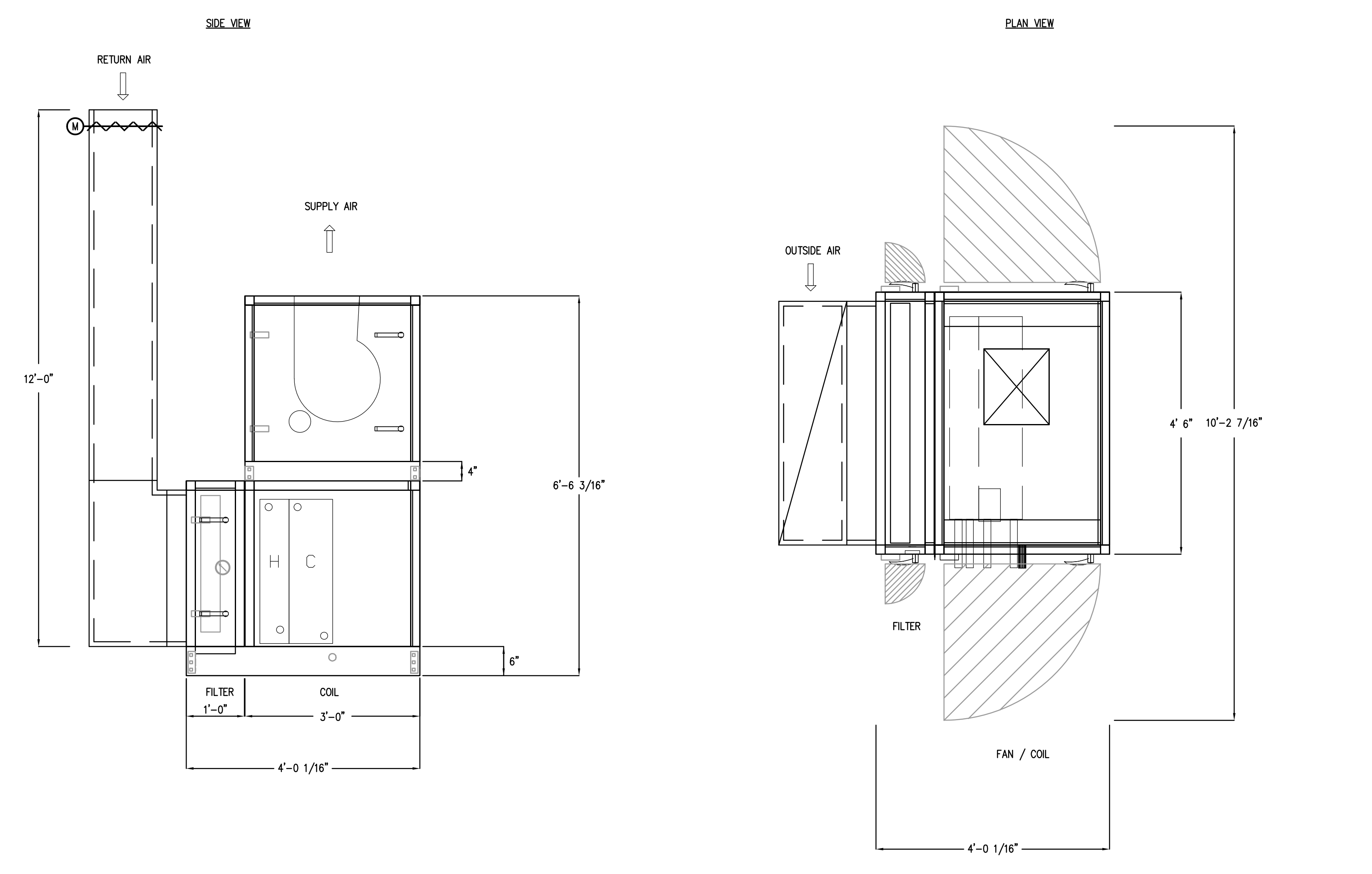
M510



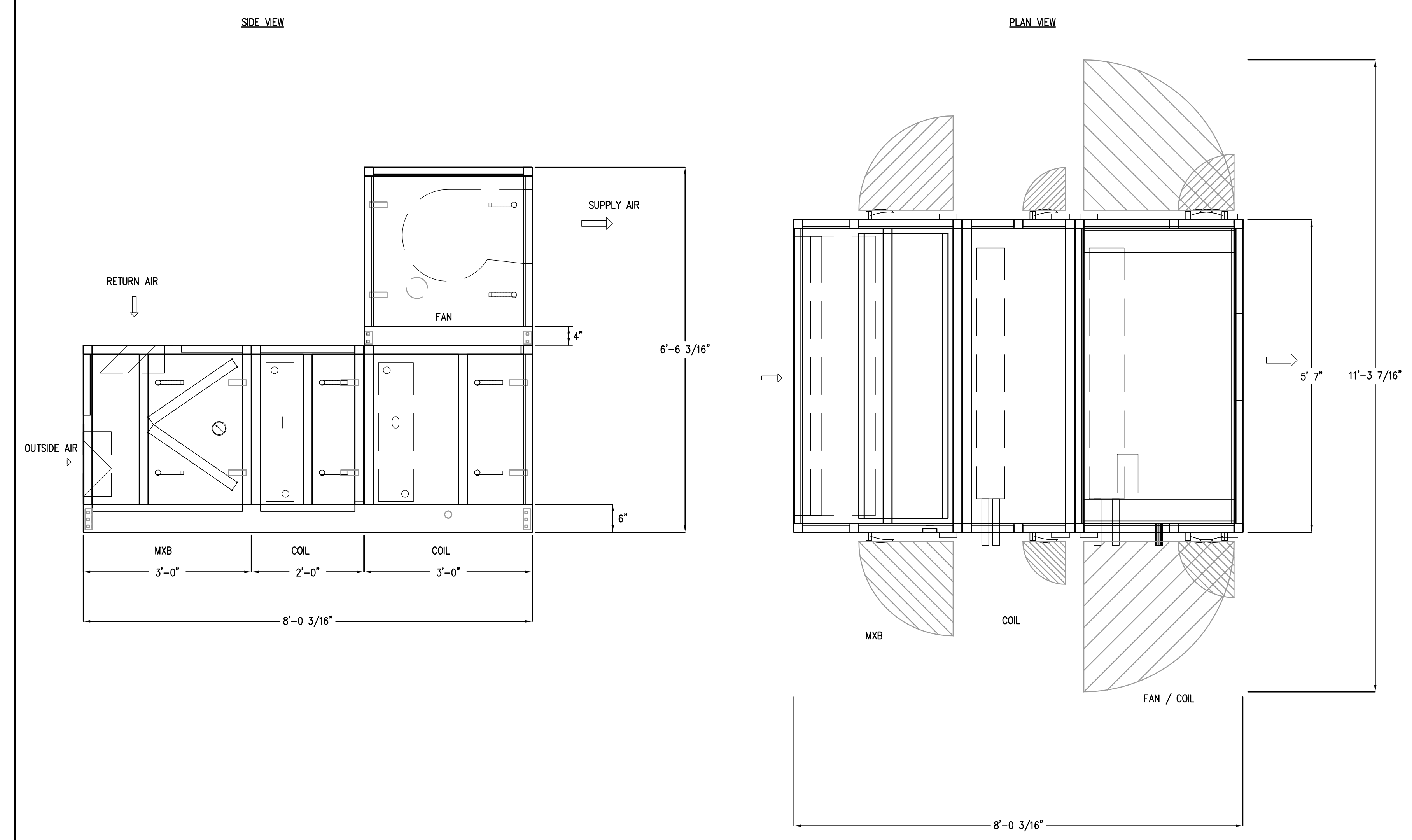
AIR HANDLING UNIT (AHU-13) DETAIL
SCALE: NTS **3**



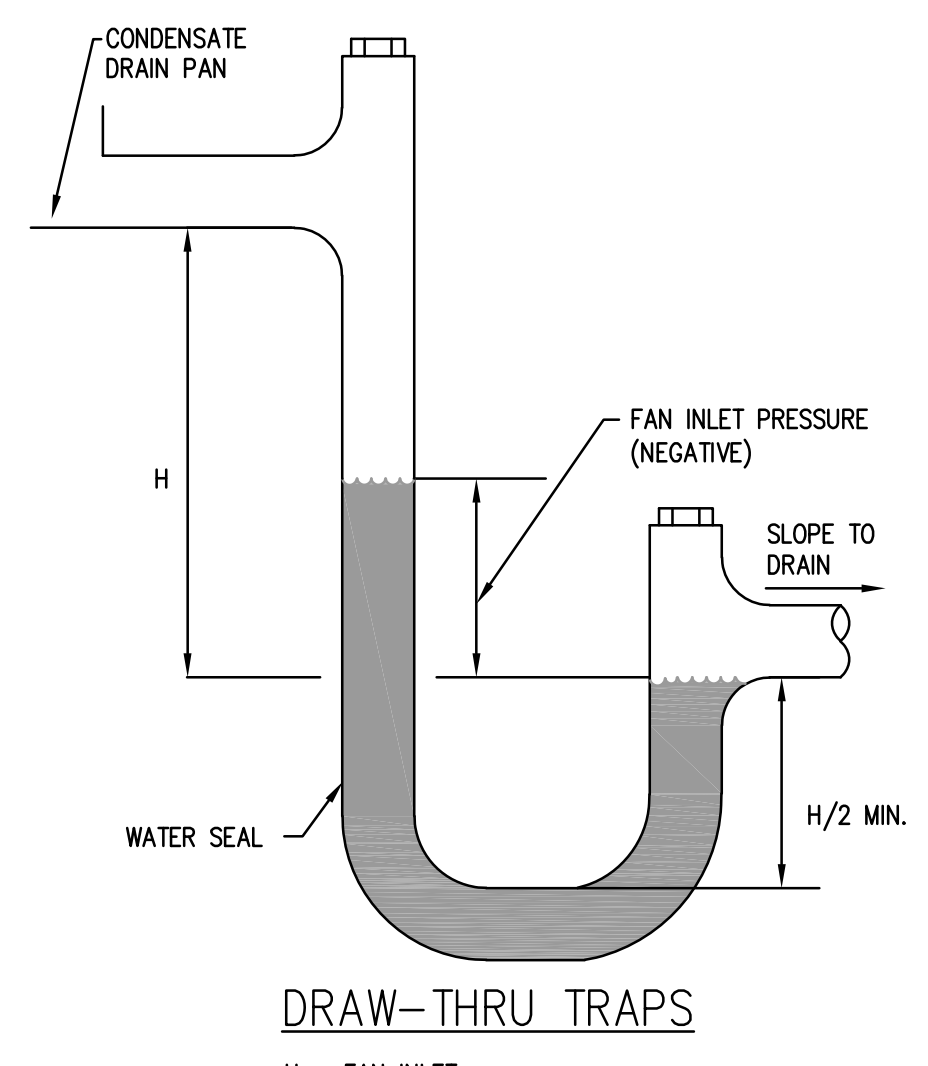
AIR HANDLING UNIT (AHU-12) DETAIL
SCALE: NTS **2**



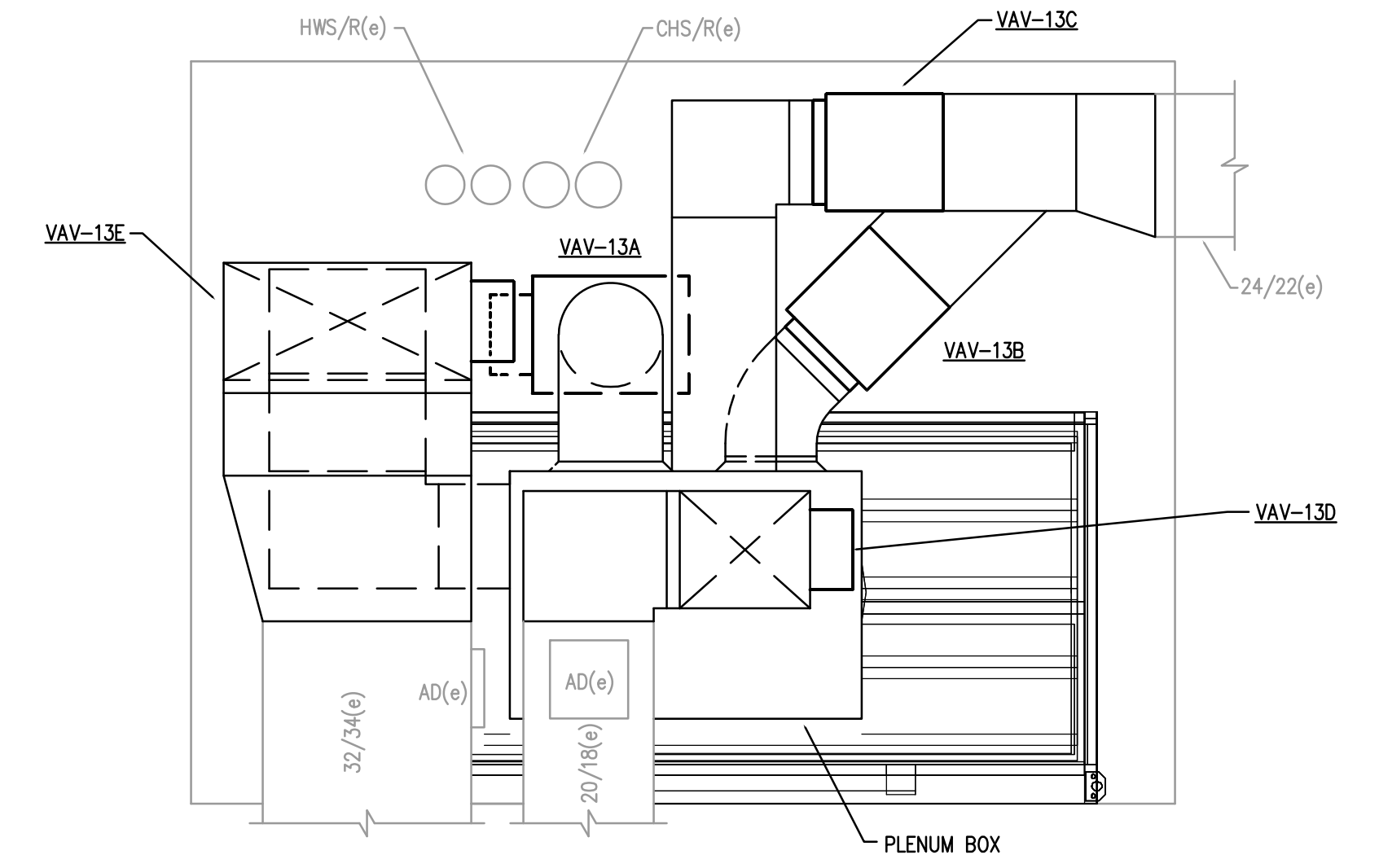
AIR HANDLING UNIT (AHU-19B) DETAIL
SCALE: NTS **4**



AIR HANDLING UNIT (AHU-11) DETAIL
SCALE: NTS **1**



COOLING COIL CONDENSATE TRAP DETAILS
SCALE: NTS 6



PENTHOUSE MECHANICAL ROOM SECTION
SCALE: 1/2" = 1'-0" 3

AIR HANDLING UNIT SCHEDULE

MARK	AIR FLOW (CFM)	MINIMUM OA (CFM)	COOLING				HEATING				SUPPLY FAN (HP)	EXTERNAL STATIC PRESS (IN WG)	ELECTRICAL V/PH/Hz	MCA	MODEL	NOTES		
			ENT AIR TEMP (db/wb °F)	LVG AIR TEMP (db/wb °F)	SENS CAP (MBH)	TOTAL CAP (MBH)	WATER FLOW RATE (GPM)	WATER PRES DROP (FT)	EWT/LWT (°F)	EAT/LAT (°F)							WATER FLOW RATE (GPM)	WATER PRES DROP (FT)
AHU-11	5,180	1000	80 / 67	56.6 / 56.4	128.7	165.8	34	6.3	180 / 158	61.4 / 107.3	25	2	5	0.5	460/3/60	8.3	39MN	1
AHU-12	3,540	680	79.4 / 67.5	54.4 / 54.4	93.8	137.7	29	4.7	180 / 158	60.0 / 106.8	17	0.9	3	0.5	460/3/60	5.3	39MN	1
AHU-13	13,430	3,700	82.4 / 68.5	56.4 / 56.3	368.6	499.4	91	5.9	180 / 160	30.0 / 70.1	64	11.3	10	1.5	460/3/60	17.9	39MN	1
AHU-19B	4,500	230	75.7 / 63.1	55.1 / 54.6	99.2	109.7	24	3.2	180 / 160	63.8 / 96.1	17	2.1	5	1.0	460/3/60	8.3	39MN	1
AHU-1	8,500	2,440	79.3 / 66.0	50.6 / 50.6	258.4	369.2	91	7.9	180 / 160	53.5 / 93.2	38	5.6	10	1.5	460/3/60	15.6	39MN	1, 2

NOTES:
1. MODEL BASED ON CARRIER.
2. ALTERNATE NO. 1

VARIABLE AIR VOLUME BOX SCHEDULE

MARK	AIR FLOW (CFM)	MIN AIR FLOW (CFM)	INLET SIZE (IN)	REHEAT COIL				MODEL	NOTES			
				AIR FLOW (CFM)	MAX APD (IN WG)	EAT/LAT (°F)	WATER (GPM)			EWT/LWT (°F)	MAX WPD (FT)	CAPACITY (MBH)
VAV-13A	4880	1625	24 / 16	3600	0.6	55 / 95	9.9	180 / 148	3.6	156.2	DESV	1
VAV-13B	1460	1460	14	1460	0.17	55 / 105	7.9	180 / 159	2.4	80.3	DESV	1
VAV-13C	3600	1200	24 / 16	3600	0.36	55 / 92	7.1	180 / 139	3.2	142.1	DESV	1
VAV-13D	1420	475	14	1420	0.16	55 / 106	7.7	180 / 159	2.3	79.0	DESV	1
VAV-13E	1970	1970	16	1970	0.29	55 / 101	9.3	180 / 159	2.62	95.4	DESV	1

NOTES:
1. MODEL BASED ON TITUS.

FAN SCHEDULE

MARK	AIR FLOW RATE (CFM)	EXTERNAL S.P. (IN WG)	TYPE	MOTOR (HP)	ELECTRICAL (V/PH/Hz)	AREA SERVED	LOCATION	MODEL	NOTES
EF-11	5,180	0.25	CENTRIFUGAL	2	208/3/60	AHU-11	PENTHOUSE	ACE-D VF	1, 2, 3
EF-12	3,540	0.25	CENTRIFUGAL	1	208/1/60	AHU-12	PENTHOUSE	ACE-D VF	1, 2, 3
EF-1	8,500	0.75	CENTRIFUGAL	5	460/3/60	AHU-1	BLDG K	ACRU-D VF	1, 3, 4, 5

NOTES:
1. MODEL BASED ON COOK.
2. PROVIDE WITH SPACE STATIC PRESSURE SPEED CONTROL BETWEEN CLASSROOM AND CORRIDOR.
3. COLOR TO BE SELECTED BY THE ARCHITECT.
4. ALTERNATE NO. 1.
5. PROVIDE WITH SPACE STATIC PRESSURE SPEED CONTROL BETWEEN THEATER AND CORRIDOR.

PUMP SCHEDULE

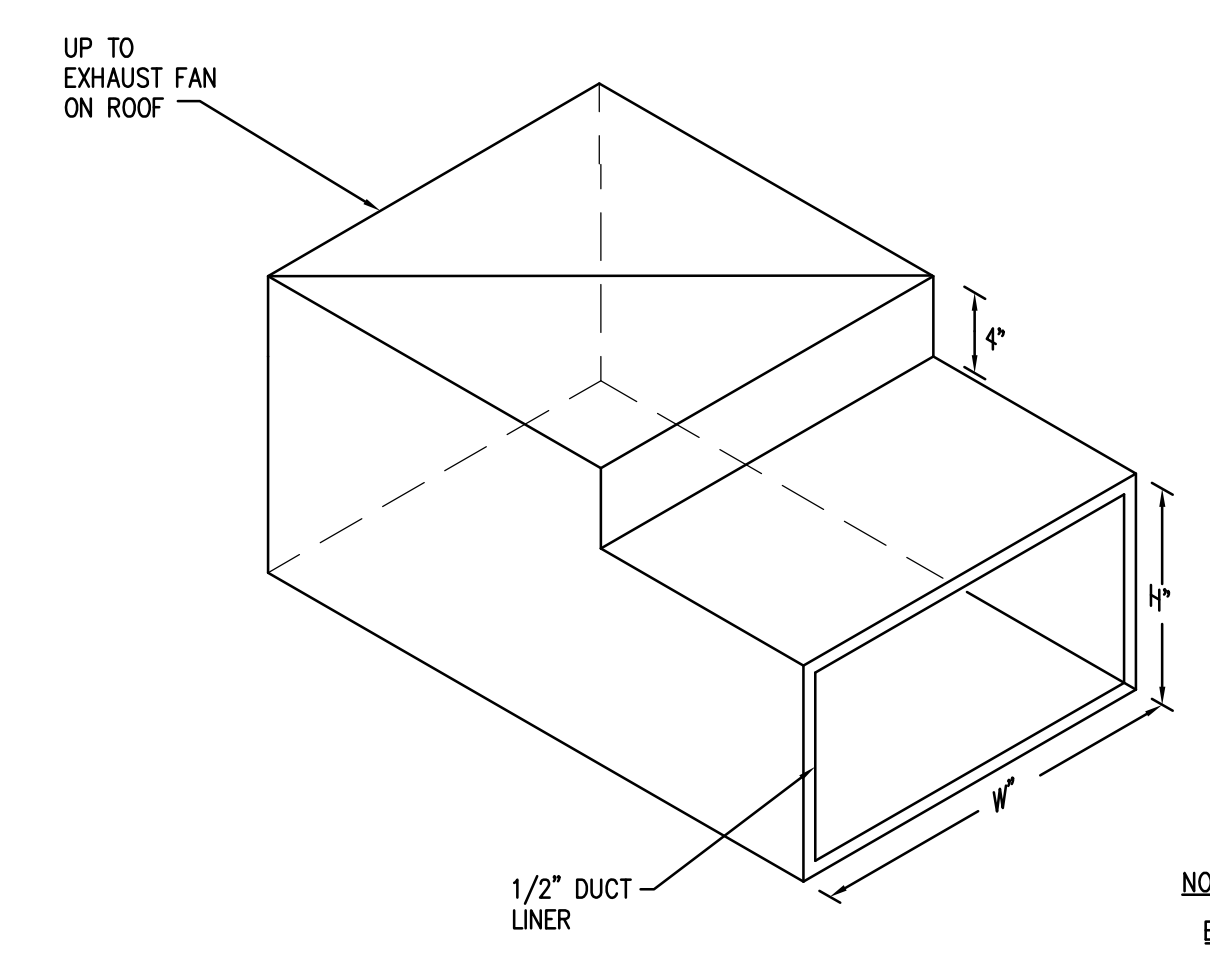
MARK	WATER FLOW RATE (GPM)	HEAD (FT)	TYPE	MOTOR POWER (HP)	ELECTRICAL (V/PH/Hz)	MOTOR SPEED (RPM)	SERVICE	MODEL	NOTES
HWP-19B	10	10	INLINE	1/6	115/1/60	2393	AHU-19B	ECCOIRC-XL	1
HWP-11	10	10	INLINE	1/6	115/1/60	2393	AHU-11	ECCOIRC-XL	1
HWP-12	10	10	INLINE	1/6	115/1/60	2393	AHU-12	ECCOIRC-XL	1
HWP-13	30	10	INLINE	1/6	115/1/60	3203	AHU-13	ECCOIRC-XL	1
HWP-1	15	10	INLINE	1/6	115/1/60	2393	AHU-1	ECCOIRC-XL	1, 2

NOTES:
1. MODEL BASED ON BELL & COSSETT.
2. ALTERNATE NO. 1

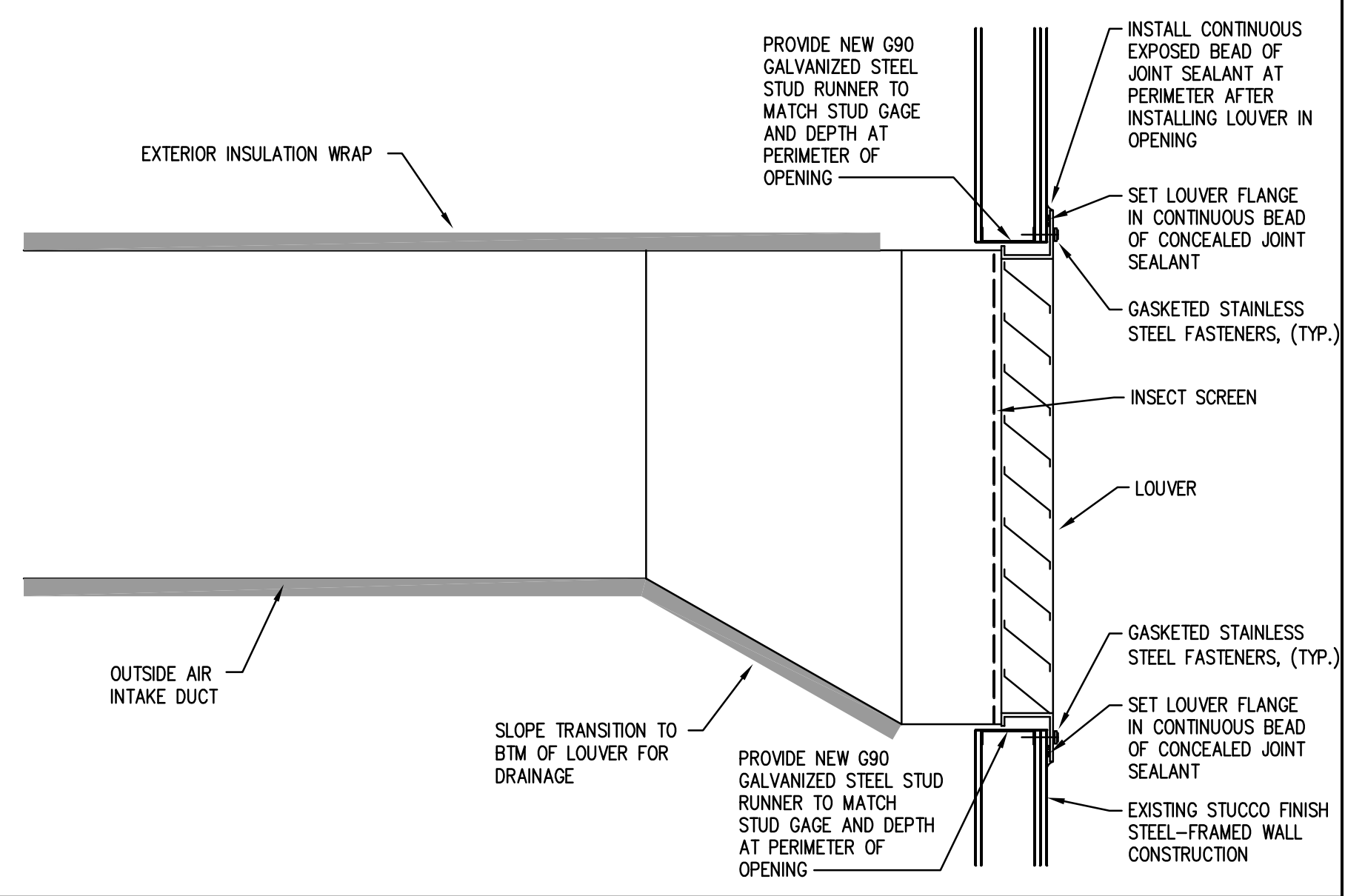
WALL LOUVER SCHEDULE

MARK	AIR FLOW RATE (CFM)	SIZE H x L (IN x IN)	VELOCITY (FPM)	PRESSURE DROP (IN WG)	APPLICATION	SERVED BY	LOCATION	MODEL	NOTES
WL-1	8720	48 x 80	566	0.05	INTAKE	AHU-11/12	PENTHOUSE	ELF63750X	1, 2, 3

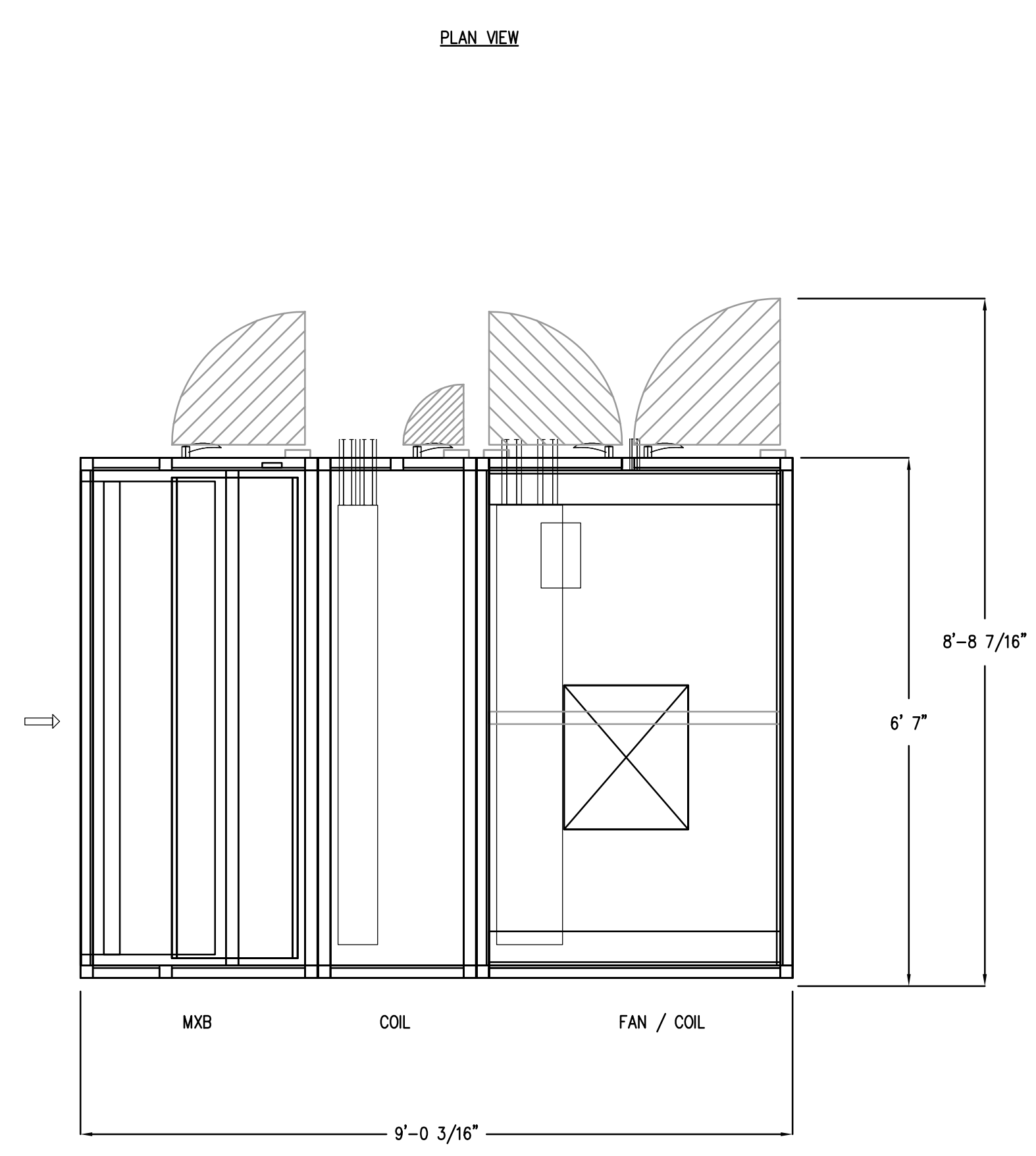
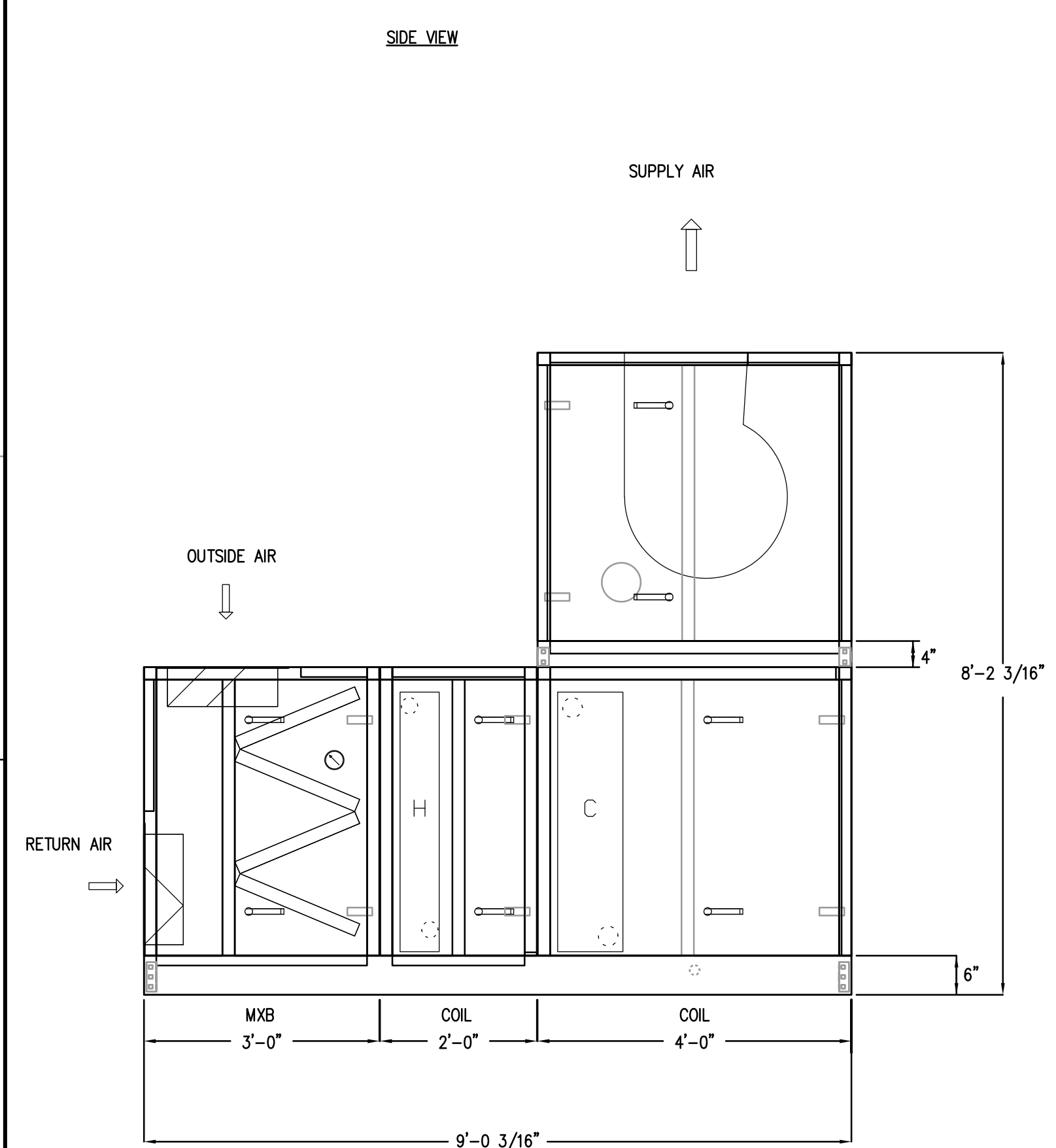
NOTES:
1. MODEL BASED ON RUSKIN.
2. PROVIDE INSECT SCREEN.
3. COLOR TO BE SELECTED BY THE ARCHITECT.



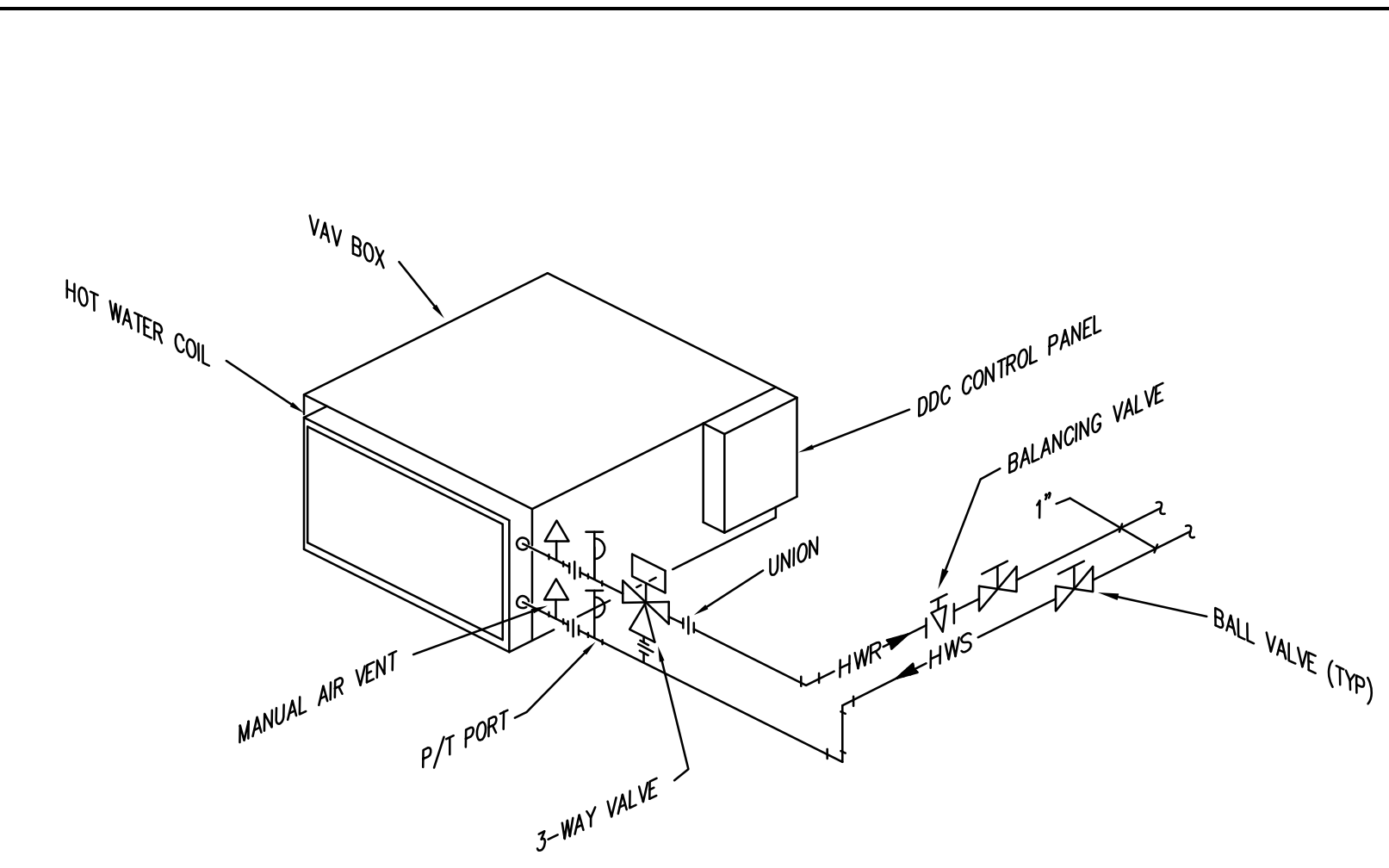
EXHAUST FAN BOOT DETAIL
SCALE: NTS 7



WALL LOUVER IN STUD WALL DETAIL
SCALE: NTS 4

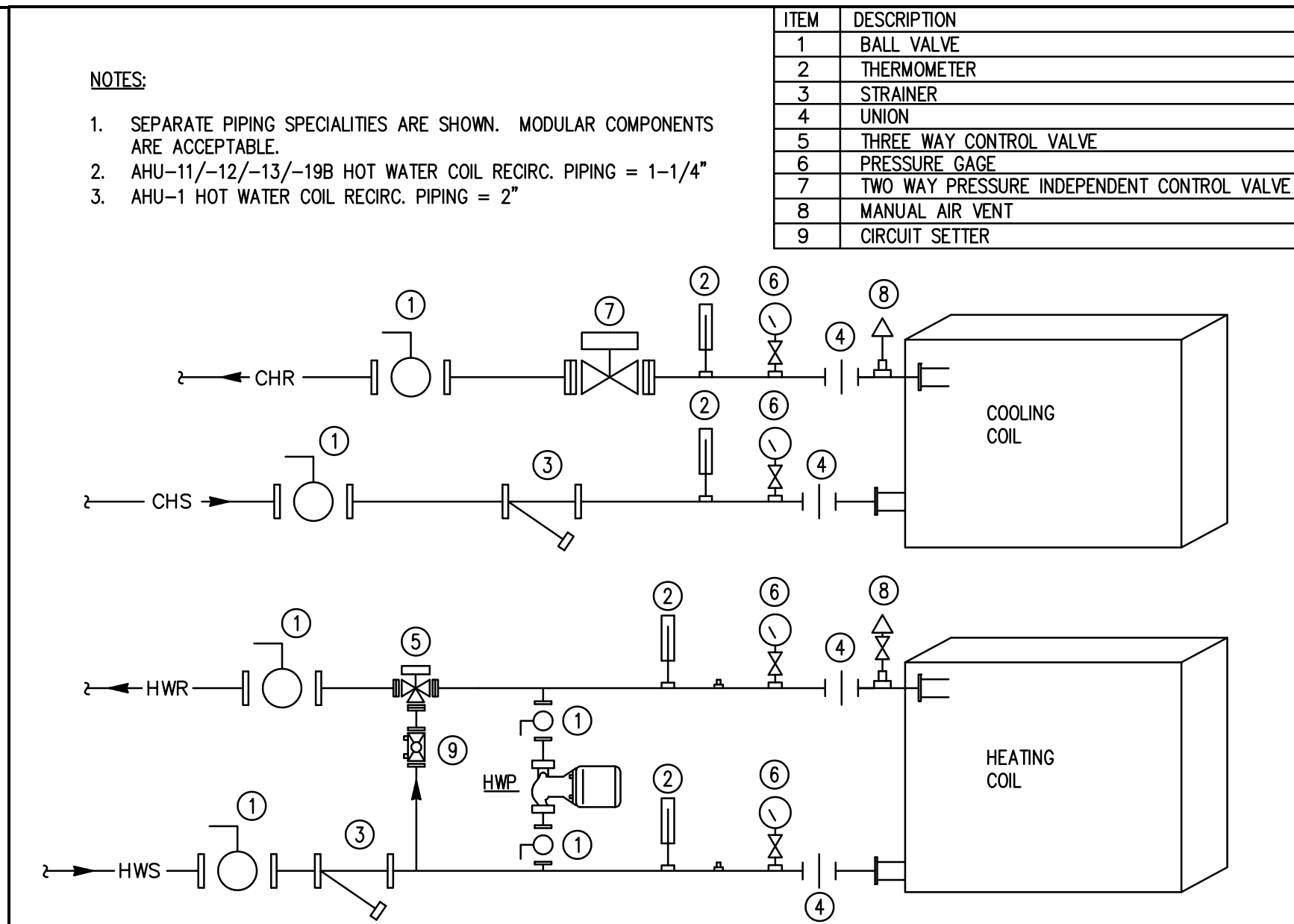


ALTERNATE NO. 1: AIR HANDLING UNIT (AHU-1) DETAIL
SCALE: NTS 5



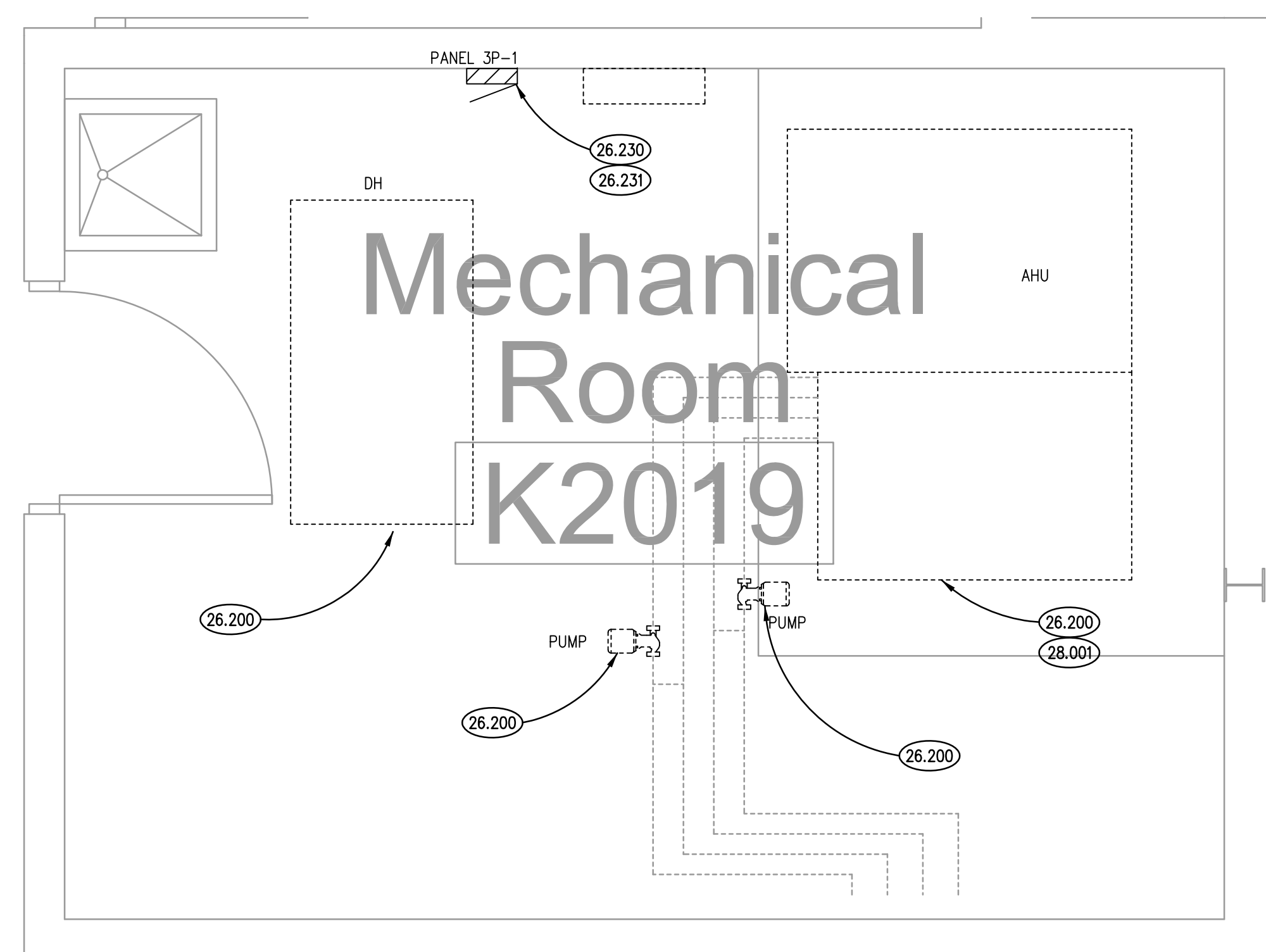
NOTES:
1. SEPARATE PIPING SPECIALTIES ARE SHOWN. MODULAR COMPONENTS ARE ACCEPTABLE.

REHEAT COIL PIPING DETAIL
SCALE: NTS 2

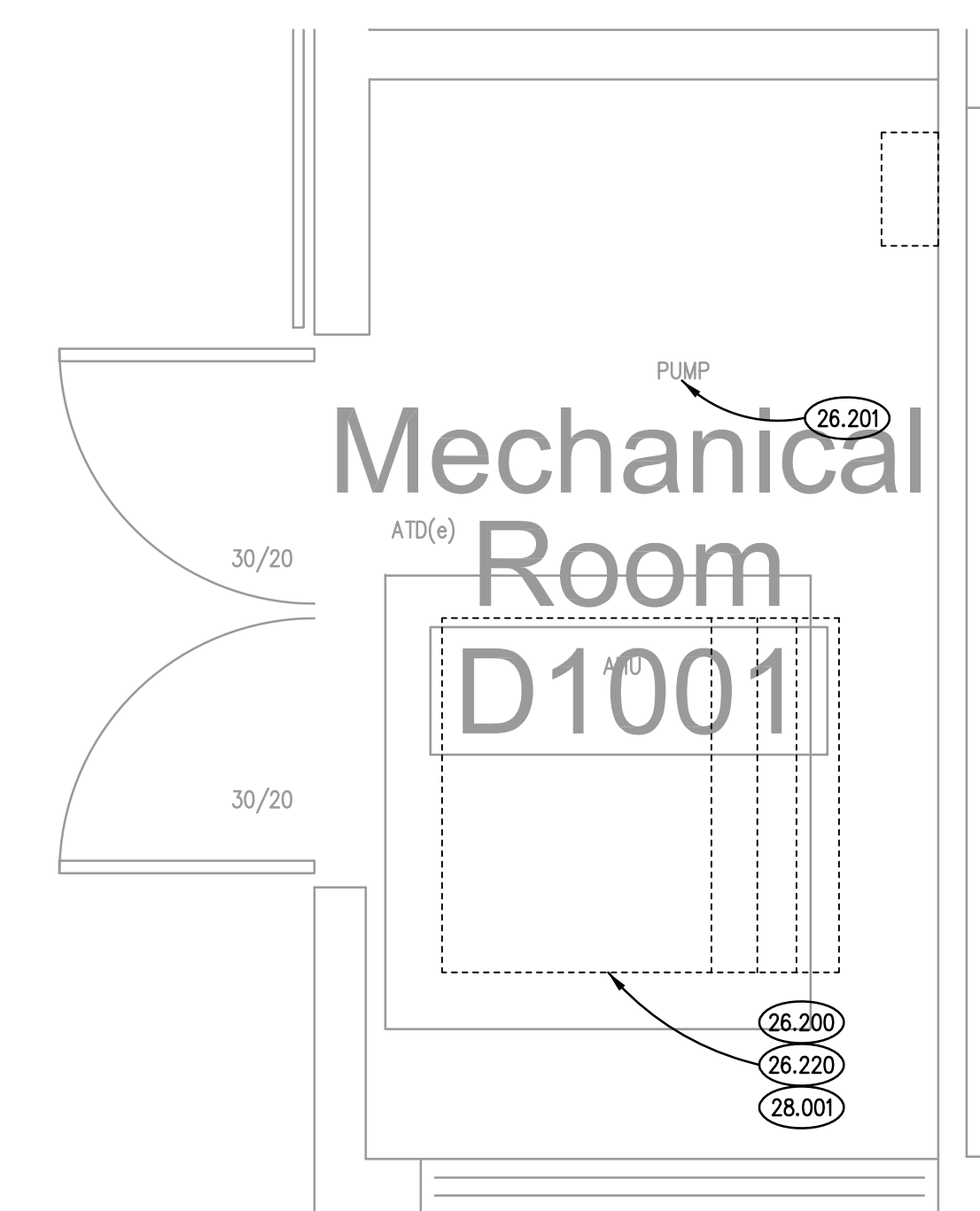


NOTES:
1. SEPARATE PIPING SPECIALTIES ARE SHOWN. MODULAR COMPONENTS ARE ACCEPTABLE.
2. AHU-11/-12/-13/-19B HOT WATER COIL RECR. PIPING = 1-1/4"
3. AHU-1 HOT WATER COIL RECR. PIPING = 2"

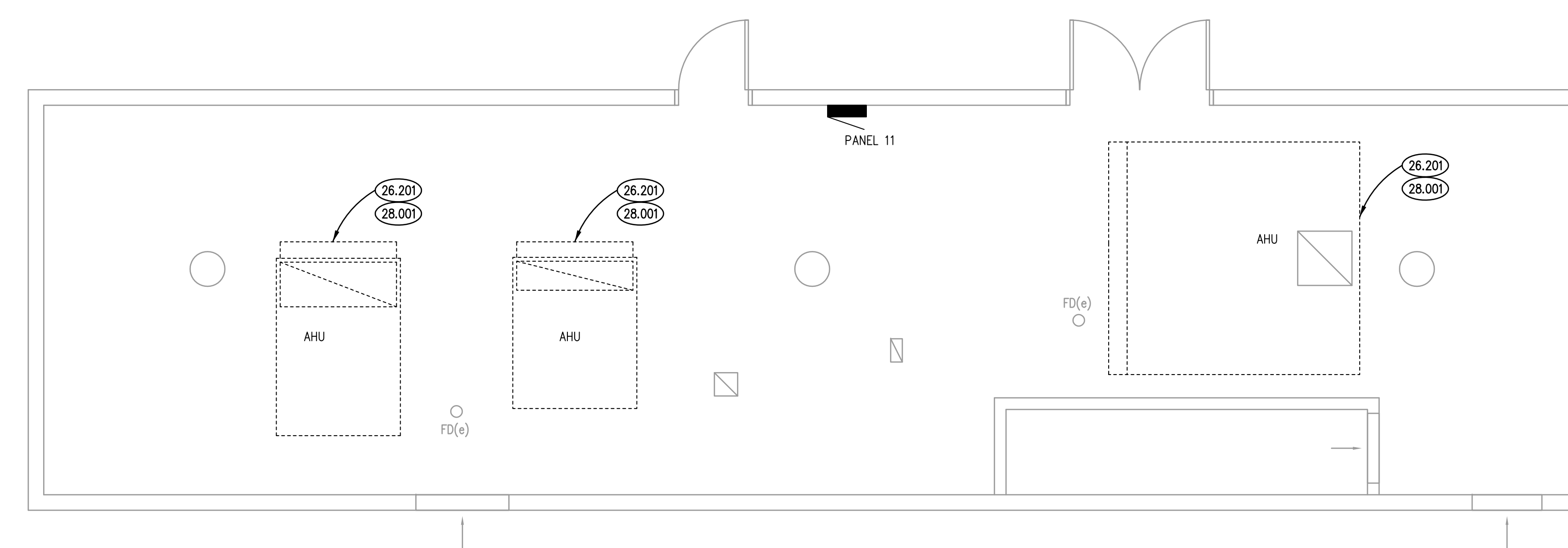
COIL PIPING DETAIL
SCALE: NTS 1



ALTERNATE NO. 1: ELECTRICAL ROOM K2019 DEMOLITION PLAN ③
SCALE: 1/2" = 1'-0"



ELECTRICAL BUILDING D FIRST FLOOR DEMOLITION PLAN ②
SCALE: 1/2" = 1'-0"



ELECTRICAL BUILDING D PENTHOUSE DEMOLITION PLAN ①
SCALE: 1/4" = 1'-0"

KEYNOTES

KEYNOTES ARE TYPICALLY NOT DUPLICATED WITHIN A GIVEN DETAIL. AN UN-KEYNOTED ITEM IN A DETAIL IS THE SAME AS A KEYNOTED ITEM HAVING THE SAME APPEARANCE WITHIN THE SAME DETAIL.

- 26.200 DEMOLISH EXISTING ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT TO BE REMOVED. REMOVE ALL ABANDONED IN PLACE BRANCH CIRCUITRY.
- 26.201 DISCONNECT, PRESERVE, AND PROTECT EXISTING ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. RECONNECT EXISTING TO NEWLY INSTALLED MECHANICAL EQUIPMENT AS NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.
- 26.220 DEMOLISH THREE EXISTING 20 AMPERE, SINGLE POLE CIRCUIT BREAKERS IN PANEL LP3 LOCATED IN STORAGE ROOM D1002. PROVIDE NEW 15 AMPERE, 3 POLE CIRCUIT BREAKER IN PANEL LP3 FOR NEW AHU TO BE INSTALLED.
- 26.230 DEMOLISH EXISTING 30 AMPERE, 3 POLE CIRCUIT BREAKER IN PANEL 3P-1 FOR AHU-1 TO BE REMOVED AND REPLACED.
- 26.231 DEMOLISH EXISTING ABANDONED CIRCUIT BREAKER IN PANEL 3P-1 AND REPLACE FOR NEW EXHAUST FAN.
- 28.001 LOCATE, DISCONNECT, PRESERVE, AND PROTECT EXISTING WIRING FOR DUCT DETECTION AND SAFETY FAN SHUTDOWN IN AIR HANDLING UNITS TO BE REMOVED. DISCONNECT, PRESERVE AND PROTECT EXISTING DUCT SMOKE DETECTOR. REINSTALL EXISTING DUCT DETECTOR IN NEW AIR HANDLING UNIT. CONNECT EXISTING FIRE ALARM WIRING TO NEW DEVICES AND EQUIPMENT.

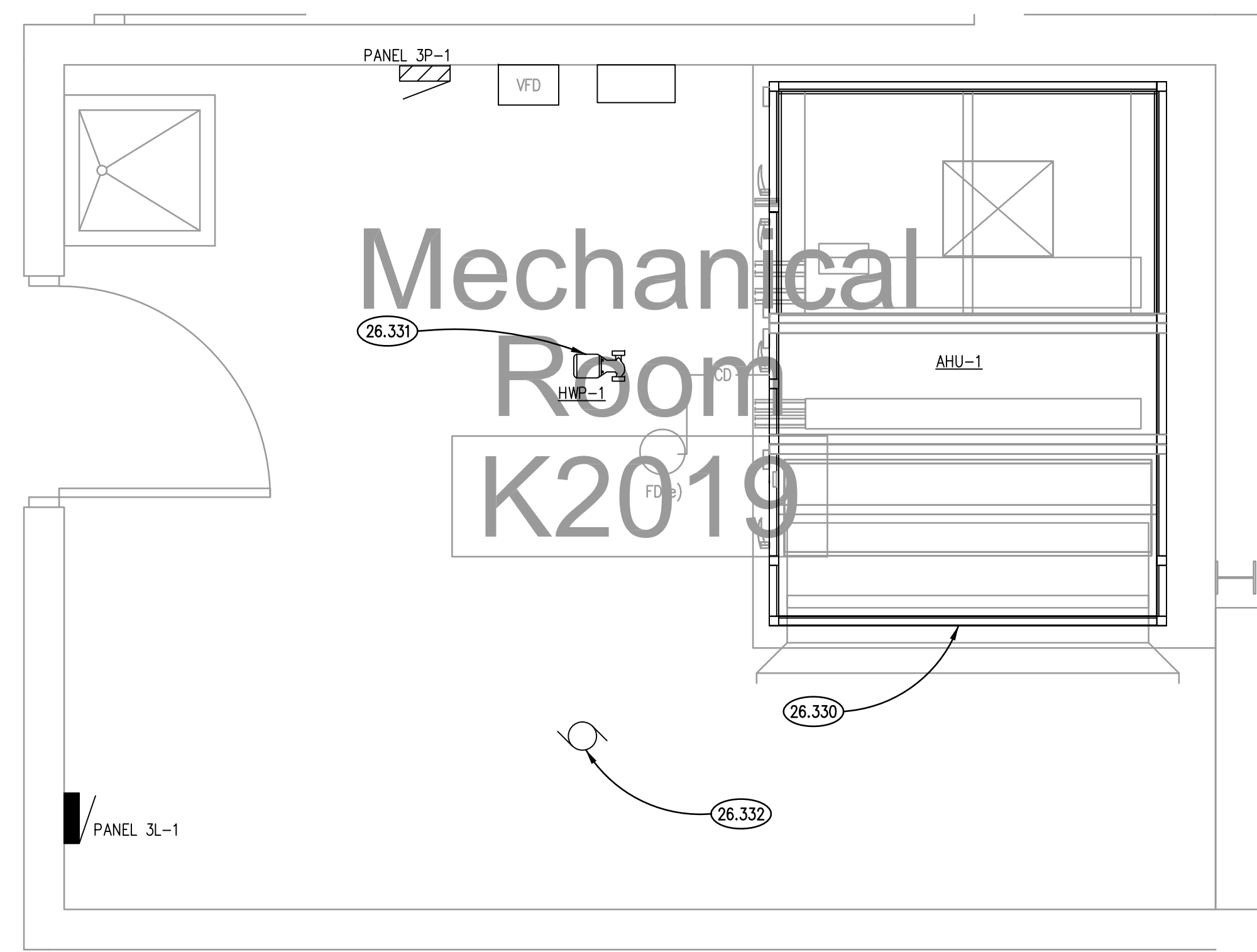
ISSUED	
11/13/17	BID DOCUMENTS

JOB NO.	17-292-1139
DRAWN	ATR
CHECKED	MTK
APPROVED	MTK

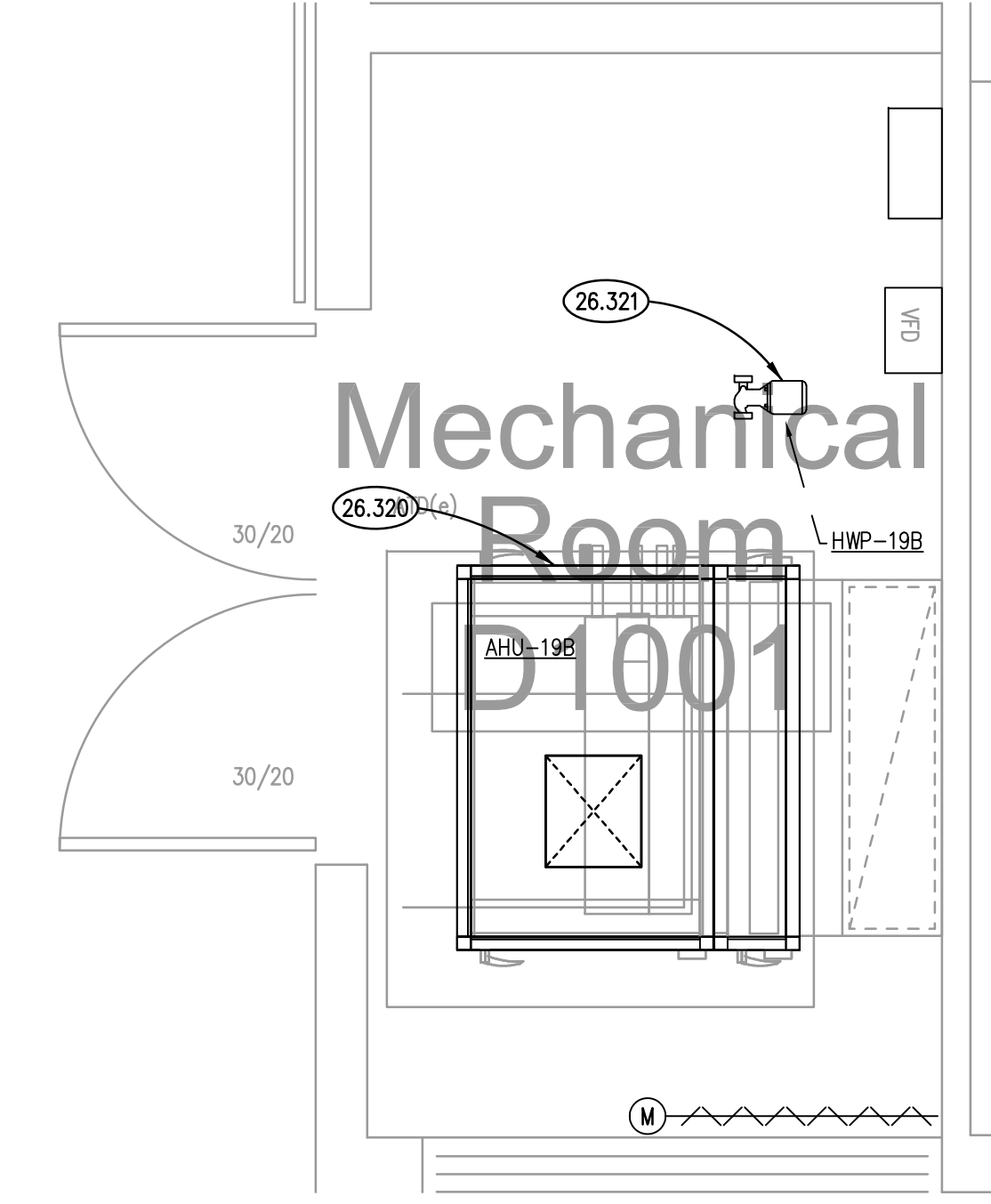
SHEET TITLE
**ELECTRICAL
BUILDING D & K HVAC
UNIT DEMOLITION
PLANS**

SHEET NUMBER

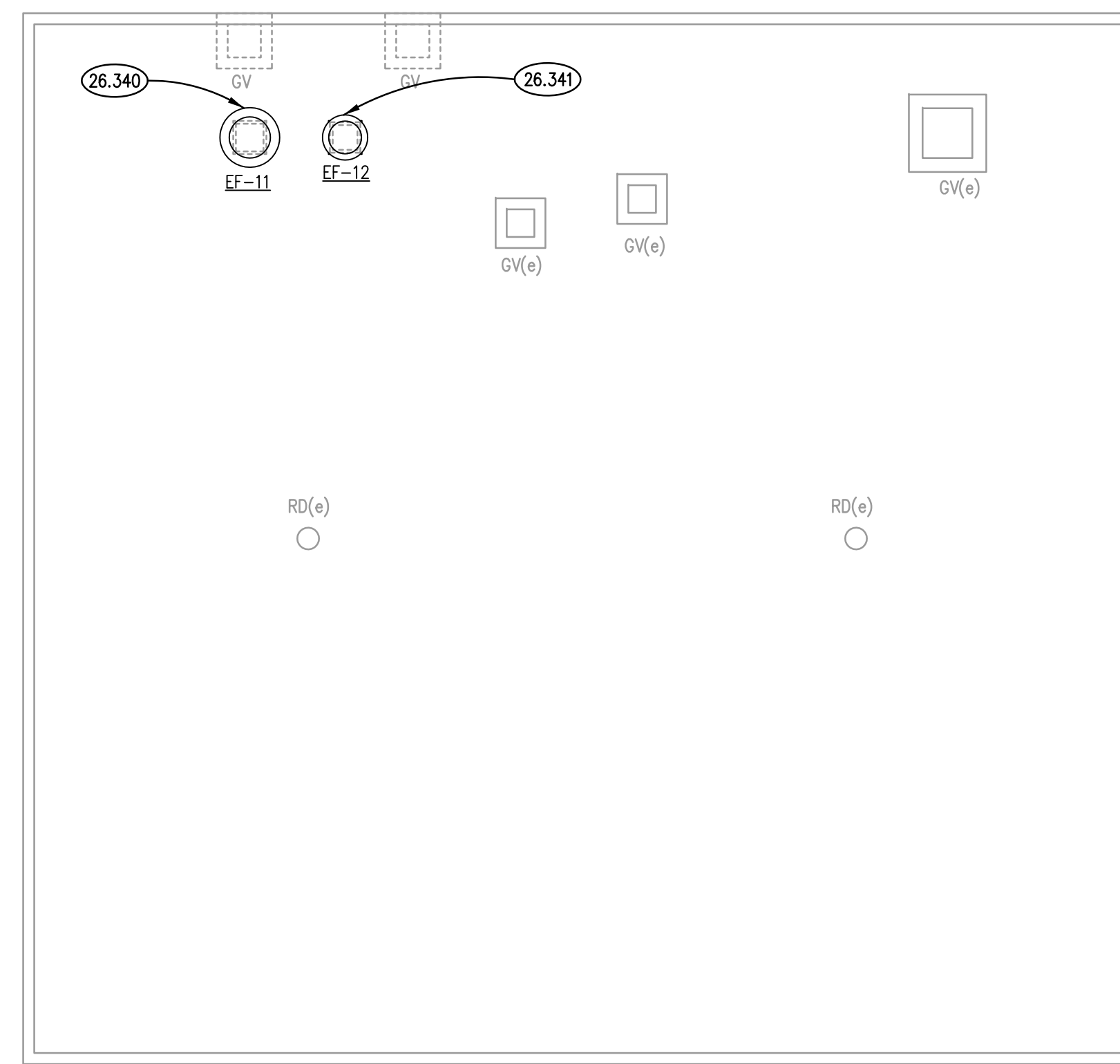
E200



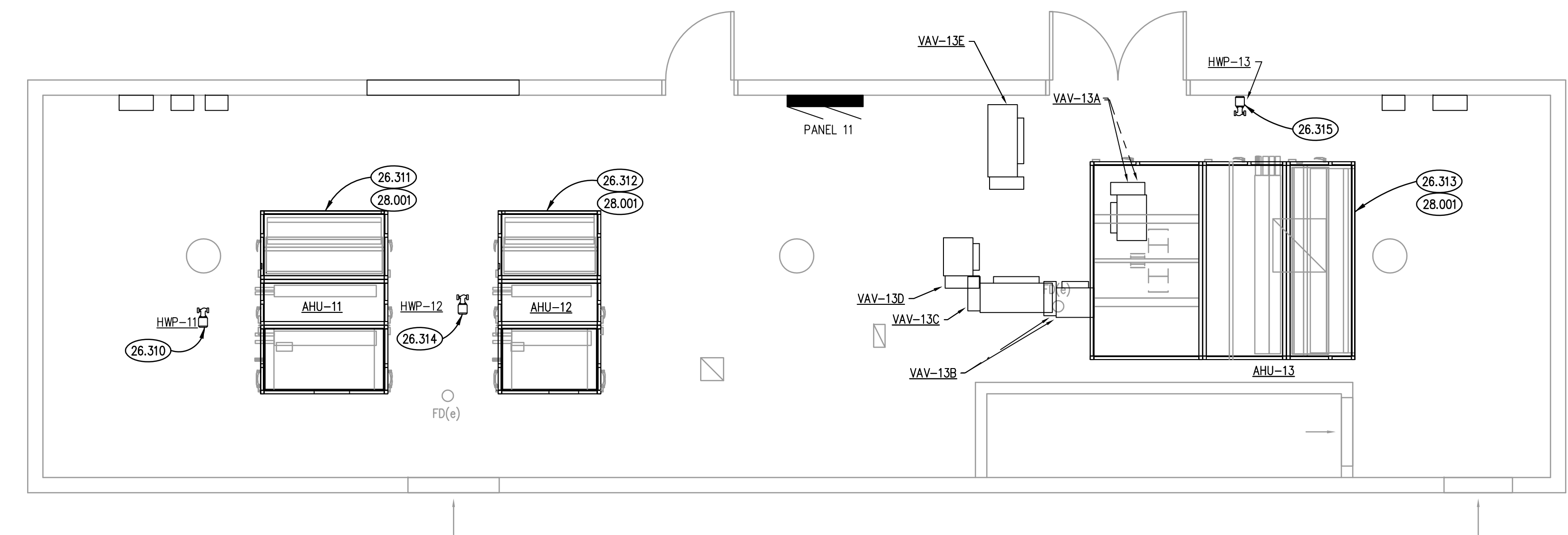
ALTERNATE NO. 1: ELECTRICAL ROOM K2019 NEW WORK PLAN ③
SCALE: 1/2" = 1'-0"



ELECTRICAL BUILDING D FIRST FLOOR PLAN ②
SCALE: 1/2" = 1'-0"



ELECTRICAL BUILDING D PENTHOUSE ROOF PLAN ④
SCALE: 1/8" = 1'-0"



ELECTRICAL BUILDING D PENTHOUSE PLAN ①
SCALE: 1/4" = 1'-0"

MECHANICAL EQUIPMENT SCHEDULE

MECHANICAL EQUIPMENT SCHEDULE											
NO.	DESCRIPTION	FLA	KW	HP	VOL	PH	CCT NO.	DESC. FURN BY	CONNECTION/RECEPTACLE	CIRCUIT WIRING	NOTE
AHU-11	AIR HANDLING UNIT	6.64		480	3		EXISTING PDP-2	MC	VFD	3#12,#12G,1/2"C	
AHU-12	AIR HANDLING UNIT	4.24		480	3		EXISTING PDP-2	MC	VFD	3#12,#12G,1/2"C	
AHU-13	AIR HANDLING UNIT	14.32		480	3		EXISTING PDP-2	MC	VFD	3#12,#12G,1/2"C	
AHU-19B	AIR HANDLING UNIT	6.64		480	3		PANEL LP-2, CKT 37/39/41	MC	VFD	3#12,#12G,1/2"C	
AHU-1	AIR HANDLING UNIT	12.5		480	3		PANEL 3P-1, CKT 2	MC	VFD	3#12,#12G,1/2"C	1
EF-11	EXHAUST FAN			2	208	3	PANEL 11	EC	HARD-WIRED	3#12,#12G,1/2"C	
EF-12	EXHAUST FAN			1	208	1	PANEL 11	EC	HARD-WIRED	3#12,#12G,1/2"C	
EF-12	EXHAUST FAN			5	480	3	PANEL 3P-1	EC	HARD-WIRED	3#12,#12G,1/2"C	1
HWP-19B	PUMP			1/6	120	1	EXISTING	EC	HARD-WIRED	EXISTING	
HWP-11	PUMP			1/6	120	1	PANEL 11	EC	HARD-WIRED	2#12,#12G,1/2"C	
HWP-12	PUMP			1/6	120	1	PANEL 11	EC	HARD-WIRED	2#12,#12G,1/2"C	
HWP-13	PUMP			1/6	120	1	PANEL 11	EC	HARD-WIRED	2#12,#12G,1/2"C	
HWP-1	PUMP			1/6	120	1	PANEL 3L-1, CKT	EC	HARD-WIRED	2#12,#12G,1/2"C	1

NOTES:
1. ALTERNATE NO. 1.

KEYNOTES

- KEYNOTES ARE TYPICALLY NOT DUPLICATED WITHIN A GIVEN DETAIL. AN UN-KENOTED ITEM IN A DETAIL IS THE SAME AS A KENOTED ITEM HAVING THE SAME APPEARANCE WITHIN THE SAME DETAIL.
- 26.310 PROVIDE ELECTRICAL CONNECTION TO NEW HWP-11. HOMERUN 2#12,#12G,1/2"C TO EXISTING SPARE 20 AMPERE, SINGLE POLE BREAKER IN PANEL 11 LOCATED IN MECHANICAL PENTHOUSE(THIS ROOM).
 - 26.311 PROVIDE ELECTRICAL CONNECTION TO NEW AHU-11. EXTEND EXISTING BRANCH CIRCUITRY TO NEW AIR HANDLING UNIT AS NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.
 - 26.312 PROVIDE ELECTRICAL CONNECTION TO NEW AHU-12. EXTEND EXISTING BRANCH CIRCUITRY TO NEW AIR HANDLING UNIT AS NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.
 - 26.313 PROVIDE ELECTRICAL CONNECTION TO NEW AHU-13. EXTEND EXISTING BRANCH CIRCUITRY TO NEW AIR HANDLING UNIT AS NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.
 - 26.314 PROVIDE ELECTRICAL CONNECTION TO NEW HWP-12. HOMERUN 2#12,#12G,1/2"C TO EXISTING SPARE 20 AMPERE, SINGLE POLE BREAKER IN PANEL 11 LOCATED IN MECHANICAL PENTHOUSE(THIS ROOM).
 - 26.315 PROVIDE ELECTRICAL CONNECTION TO NEW HWP-13. HOMERUN 2#12,#12G,1/2"C TO EXISTING SPARE 20 AMPERE, SINGLE POLE BREAKER IN PANEL 11 LOCATED IN MECHANICAL PENTHOUSE(THIS ROOM).
 - 26.320 PROVIDE ELECTRICAL CONNECTION TO NEW AHU-19B. HOMERUN 3#12,#12G,1/2"C TO PANEL LP2 LOCATED IN STORAGE ROOM D1002. PROVIDE NEW 15 AMPERE, 3 POLE CIRCUIT BREAKER IN PANEL LP3 FOR NEW AHU.
 - 26.321 PROVIDE ELECTRICAL CONNECTION TO NEW HWP-19B. EXTEND EXISTING BRANCH CIRCUITRY TO NEW PUMP LOCATION AS NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.
 - 26.330 PROVIDE ELECTRICAL CONNECTION TO NEW AHU-1. HOMERUN 3#12,#12G,1/2"C TO PANEL 3P-1 LOCATED IN MECHANICAL ROOM K2019. PROVIDE NEW 25 AMPERE, 3 POLE CIRCUIT BREAKER IN PANEL 3P-1 FOR NEW AHU.
 - 26.331 PROVIDE ELECTRICAL CONNECTION TO NEW HWP-1. HOMERUN 2#12,#12G,1/2"C TO EXISTING SPARE 20 AMPERE, SINGLE POLE BREAKER IN PANEL 3L-1 LOCATED IN MECHANICAL ROOM K2019.
 - 26.332 PROVIDE ELECTRICAL CONNECTION FOR EXHAUST FAN EF-11 LOCATED ON ROOF. HOMERUN 3#12,#12G,1/2"C TO PANEL 3P-1 LOCATED IN MECHANICAL ROOM K2019. PROVIDE NEW 15 AMPERE, 3 POLE CIRCUIT BREAKER IN PANEL 3P-1 FOR NEW EXHAUST FAN.
 - 26.340 PROVIDE ELECTRICAL CONNECTION FOR NEW EXHAUST FAN EF-11 LOCATED ON PENTHOUSE ROOM. HOMERUN 3#12,#12G,1/2"C TO PANEL 11 LOCATED IN MECHANICAL PENTHOUSE. PROVIDE NEW 15 AMPERE, 3 POLE CIRCUIT BREAKER IN PANEL 11.
 - 26.341 PROVIDE ELECTRICAL CONNECTION FOR NEW EXHAUST FAN EF-12 LOCATED ON PENTHOUSE ROOM. HOMERUN 3#12,#12G,1/2"C TO PANEL 11 LOCATED IN MECHANICAL PENTHOUSE. PROVIDE NEW 15 AMPERE, 2 POLE CIRCUIT BREAKER IN PANEL 11.
 - 28.001 LOCATE, DISCONNECT, PRESERVE AND PROTECT EXISTING WIRING FOR DUCT DETECTION AND SAFETY FAN SHUTDOWN IN AIR HANDLING UNITS TO BE REMOVED. DISCONNECT, PRESERVE AND PROTECT EXISTING DUCT SMOKE DETECTOR. REINSTALL EXISTING DUCT DETECTOR IN NEW AIR HANDLING UNIT. CONNECT EXISTING FIRE ALARM WIRING TO NEW DEVICES AND EQUIPMENT.

ISSUED	
11/13/17	BID DOCUMENTS

JOB NO.	17-292-1139
DRAWN	ATR
CHECKED	MTK
APPROVED	MTK

SHEET TITLE

ELECTRICAL BUILDING D & K HVAC UNIT REPLACEMENT PLANS

SHEET NUMBER

E300