ABBREVIATIONS

(E)	EXISTING ITEM
(ED)	EXISTING ITEM TO BE DEMOLISHED
(ER)	EXISTING ITEM TO BE RELOCATED
(F)	FUTURE
(N)	NEW
(RL)	RELOCATED ITEM
AAV	AUTOMATIC AIR VENT
AC	AIR CONDITIONING UNIT
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
ACD	AUTOMATIC CONTROL DAMPER
ACLC	AIR COOLED LIQUID CHILLER
AD	ACCESS DOOR
AF	AIR FILTER
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
ARCH	ARCHITECT
AS	AIR SEPARATOR
ASC	APPLICABLE SECTION CONTRACTOR
ATC	AUTOMATIC TEMPERATURE CONTROL
B	BOILER
BDD	BACKDRAFT DAMPER
BE	BATHROOM EXHAUST
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STEEL
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR
BVC	BOILER VENT AND COMBUSTION AIR
CA	COMBUSTION AIR
CAP	CAPACITY
CC	COOLING COIL
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CM	CONSTRUCTION MANAGER
CO	CLEAN OUT
CONN	CONNECT
CP	CONDENSATE PUMP
CT	COOLING TOWER
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
CV	CONVECTOR
CVB	CONSTANT VOLUME BOX
D	CONDENSATE DRAIN
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DE	DRYER EXHAUST
DF	DESTRATIFICATION FAN
DHW	DOMESTIC HOT WATER
DIA or Ø	DIAMETER
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DWG	DRAWING
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECU	EVAPORATIVE CONDENSING UNIT
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EMS	EMERGENCY MANAGEMENT SYSTEM
ER	EXHAUST REGISTER
ERV	EXHAUST ROOF VENT
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
F	FAN
F&TT	FLOAT & THERMOSTATIC TRAP
FA	FREE AREA
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FLR	FLOOR
FM	FLOW METER
FMS	FLOW MEASUREING STATION
FO	FUEL OIL
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FP	FAN POWERED
FPB	FAN POWERED BOX
FPI	FINS PER INCH
FPM	FEET PER MINUTE
FSD	FIRE SMOKE DAMPER
FT	FEET
FTR	FIN-TUBE RADIATION
FTU	FAN TERMINAL UNIT

ABBREVIATIONS

GAL	GALLONS
GC	GENERAL CONTRACTOR
GE	GENERAL EXHAUST
GPM	GALLONS PER MINUTE
H	HUMIDIFIER
HC	HEATING COIL
HE	HOOD EXHAUST
HF	HEPA FILTER
HP	HORSE POWER
HP	HEAT PUMP
HRB	HEAT RECOVERY BOX
HRC	HEAT RECOVERY COIL
HV	HEATING AND VENTILATING UNIT
HVAC	HEATING VENTILATION AND AIR CONDITIONING
HX	HEAT EXCHANGER
HZ	HERTZ
ID	INSIDE DIAMETER
IN	INCHES
IRV	INTAKE ROOF VENT
KE	KITCHEN EXHAUST
KW	KILOWATTS
LAT	LEAVING AIR TEMPERATURE
LBG	LINEAR BAR GRILLE
LD	LINEAR DIFFUSER, LOUVERED DOOR
LS	LOOSE STARTER
LWT	LEAVING WATER TEMPERATURE
MAT	MIXED AIR TEMPERATURE
MBH	THOUSAND BTU'S PER HOUR
MC	MECHANICAL CONTRACTOR
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MOD	MOTOR OPERATED DAMPER
MUA	MAKE-UP AIR
MUAU	MAKE-UP AIR UNIT
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAT	OUTSIDE AIR TEMPERATURE
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OD	OUTSIDE DIAMETER
P	PUMP
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PRV	PRESSURE REDUCING VALVE
PS	PACKAGE STARTER
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
RA	RETURN AIR
RD	RETURN DIFFUSER
RF	RETURN FAN
RG	RETURN GRILLE
RIC	RETURN IN COVER
RPM	REVOLUTIONS PER MINUTE
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SAT	SUPPLY AIR TEMPERATURE
SCT	SATURATED CONDENSING TEMPERATURE
SD	SMOKE DAMPER
SDA	SOUND ATTENUATOR
SDC	STAND ALONE DIGITAL CONTROLLER
SF	SQUARE FEET
SF	SUPPLY AIR FAN
SG	SUPPLY GRILLE
SP	STATIC PRESSURE
SPD	SPEED
SR	SUPPLY REGISTER
SST	STATIC SUCTION TEMPERATURE
TA	TRANSFER AIR
TD	TRANSFER DUCT
TE	TOILET EXHAUST
TF	TRANSFER FAN
TG	TRANSFER GRILLE
TOS	TOP OF STEEL
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UC	UNDERCUT DOOR
UF	UNDERFLOOR
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UV	UNIT VENTILATOR
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VI	VIBRATION ISOLATOR
VIF	VERIFY IN FIELD
VRF	VARIABLE REFRIGERANT FLOW
VSD	VARIABLE SPEED DRIVE
WB	WET BULB TEMPERATURE
WMS	WIRE MESH SCREEN
WSHP	WATER SOURCE HEAT PUMP

MECHANICAL VALVES AND ACCESSORIES

	ISOLATION VALVE SEE SPECIFICATIONS FOR TYPE
	2-WAY CONTROL VALVE (DDC OR PNEUMATIC)
	2-WAY CONTROL VALVE (MOTORIZED)
	3-WAY CONTROL VALVE (DDC OR PNEUMATIC)
	3-WAY CONTROL VALVE (MOTORIZED)
TCV	THERMOSTIC CONTROL VALVE
	SOLENOID VALVE
	DIFFERENTIAL PRESSURE VALVE
	GATE VALVE
	GLOBE VALVE
	OSY VALVE
	PRESSURE REDUCING VALVE
	SAFETY RELIEF VALVE
	ANGLE VALVE
	BALL VALVE
	BALL VALVE WITH MEMORY STOP
	BUTTERFLY VALVE
	BALANCING VALVE WITH TEST PORTS
	CHECK VALVE (Left & Right)
	PRESSURE GAUGE
	PRESSURE GAUGE WITH COCK
	PRESSURE GAUGE WITH SYPHON AND COCK
	PRESSURE GAUGE WITH SNUBBER & COCK AND WELL
P/T	PRESSURE TEMPERATURE GAUGE PORT
	FLOAT & THERMOSTATIC TRAP
	THERMOSTATIC TRAP
	STEAM TRAP SEE SPECIFICATION FOR TYPE
	SITE GLASS
	THERMOMETER
	THERMOMETER WITH WELL
	CONCENTRIC PIPE REDUCER
	ECCENTRIC PIPE REDUCER
A	AUTOMATIC AIR VENT
M	MANUAL AIR VENT
T	THERMOSTATIC AIR VENT
VB	VACUUM BREAKER
	PIPE CAP
	CONCENTRIC PIPE REDUCER PIPE RISING / OR RISING AND DROPPING
	PIPE CONNECTION TOP OF MAIN
	PIPE TURNING DOWN
	TEE CONNECTION
	UNION
	PIPE CONNECTION BOTTOM OF MAIN
	PIPE ANCHOR
	FLANGED CONNECTION
	PIPE GUIDE
	PIPE UP TO RADIATION
	STRAINER
	STRAINER AND DRAIN VALVE W HOSE END CONN AND CAP.
	FLEXIBLE CONNECTOR
	DIRECTION OF FLOW
	FLOW MEASURING DEVICE
	EXPANSION COMPENSATOR
	PIPE HEAT TRACE ELEMENT

MECHANICAL PIPING LEGEND

BD	(BD) BLOW DOWN
BF	(BF) BOILER FEED
CA	(CA) COMPRESSED AIR
CD	(CD) CONDENSATE DRAIN
CF	(CF) CHEMICAL FEED
CHWR	(CHWR) CHILLED WATER RETURN
CHWS	(CHWS) CHILLED WATER SUPPLY
CLD	(CLD) CONDUIT TANK LEAK
COND	(COND) CONDENSATE
CTR	(CTR) COOLING TOWER RETURN
CTS	(CTS) COOLING TOWER SUPPLY
CW	(CW) COLD WATER CITY WATER MAKE UP
CWR	(CWR) CONDENSER WATER RETURN
CWS	(CWS) CONDENSER WATER SUPPLY
D	(D) DRAIN
DTR	(DTR) DUAL TEMP RETURN
DTS	(DTS) DUAL TEMP SUPPLY
(ED)	PIPING TO BE REMOVED
(E)	EXISTING PIPING
FOG	(FOG) FUEL OIL GAUGE
FOR	(FOR) FUEL OIL RETURN
FOS	(FOS) FUEL OIL SUPPLY
FOV	(FOV) FUEL OIL VENT
GR	(GR) GLYCOL WATER RETURN
GS	(GS) GLYCOL WATER SUPPLY
HG	(HG) REFRIG HOT GAS
HPR	(HPR) HIGH PRESS. STEAM COND RETURN
HPS	(HPS) HIGH PRESS STEAM SUPPLY
HPWR	(HPWR) HEAT PUMP WATER RETURN
HPWS	(HPWS) HEAT PUMP WATER SUPPLY
HWR	(HWR) HOT WATER RETURN
HWS	(HWS) HOT WATER SUPPLY
LPR	(LPR) LOW PRESS COND RETURN
LPS	(LPS) LOW PRESS STEAM SUPPLY
MPR	(MPR) MED PRESS COND RETURN
MPS	(MPS) MED PRESS STEAM SUPPLY
NPW	(NPW) NON POTABLE WATER
PC	(PC) PUMPED CONDENSATE
PSC	(PSC) PUMPED STEAM CONDENSATE
PHWR	(PHWR) PRIMARY HOT WATER RETURN
PHWS	(PHWS) PRIMARY HOT WATER SUPPLY
RL	(RL) REFRIG LIQUID
RS	(RS) REFRIG SUCTION
SCHWR	(SCHWR) SECONDARY CHILLED WATER RETURN
SCHWS	(SCHWS) SECONDARY CHILLED WATER SUPPLY
SHWR	(SHWR) SECONDARY HOT WATER RETURN
SHWS	(SHWS) SECONDARY HOT WATER SUPPLY
TSTAT	(TSTAT) THERMOSTAT
V	(V) VENT

DUCTWORK SYMBOLS DOUBLE LINE

24 X 8	RECTANGULAR DUCTWORK - FIRST DIMENSION IS SIZE SHOWN (IN)
24 Ø	ROUND DUCTWORK DIAMETER (IN)
24 X 8 Ø	FLAT OVAL DUCT
24 X 8	CAPPED DUCT
24 X 8	EXISTING DUCTWORK
	EXISTING DUCTWORK TO BE REMOVED
24X 8	CAPPED ACOUSTICALLY LINED DUCTWORK
24X 8	DOUBLE-WALL DUCTWORK
	SUPPLY/OUTSIDE AIR DUCTWORK UP
	SUPPLY/OUTSIDE AIR DUCTWORK DOWN
	RETURN AIR DUCTWORK UP
	RETURN AIR DUCTWORK DOWN
	EXHAUST AIR DUCTWORK UP
	EXHAUST AIR DUCTWORK DOWN
	FLEXIBLE EQUIPMENT CONNECTION
	FLEXIBLE DUCT
R D	CHANGE OF ELEVATION IN DIRECTION OF AIR FLOW R=RISE & D=DROP
24X 8 18X 8	RECTANGULAR TO RECTANGULAR TRANSITION
24X 8 12 Ø	RECTANGULAR TO ROUND TRANSITION
	MITERED ELBOW W/TURNING VANES
	MITERED ELBOW
	RADIUSED ELBOW
	SPIN COLLAR
	90° SPLIT TEE WITH TURNING VANES
	BELL MOUTH BRANCH DUCT TAKE OFF
	BELL MOUTH BRANCH DUCT TAKE OFF WITH DAMPER
	BRANCH DUCT TAKE OFF
BDD	BACK DRAFT DAMPER
FSD DS	COMBINATION FIRE SMOKE DAMPER WITH SMOKE DETECTOR
FD	FIRE DAMPER
M	MOTORIZED DAMPER
SD DS	SMOKE DAMPER WITH SMOKE DETECTOR
	VOLUME DAMPER
DS	DUCT MOUNTED SMOKE DETECTOR
	SIDE WALL MOUNTED SUPPLY REGISTER
	SIDE WALL MOUNTED RETURN / EXHAUST REGISTER / GRILLE
	ELEVATION VIEW SIDE WALL MOUNTED EXHAUST REGISTER / GRILLE
	ELEVATION VIEW SIDE WALL MOUNTED RETURN REGISTER / GRILLE
	ELEVATION VIEW SIDE WALL MOUNTED SUPPLY REGISTER
	TRANSFER DUCT WITH ACOUSTICAL LINING
	SUPPLY / INTAKE OR DOOR UNDERCUT PRESSURIZATION
	EXHAUST / RETURN / TRANSFER
LD	LOUVERED DOOR PRESSURIZATION
	SUPPLY DIFFUSER 4 - WAY THROW
	SUPPLY DIFFUSER 3 - WAY THROW
	SUPPLY DIFFUSER 2 - WAY THROW
	SUPPLY DIFFUSER 2 - WAY THROW 90 °
	SUPPLY DIFFUSER 1 - WAY THROW
	RETURN REGISTER \ GRILLE
	EXHAUST REGISTER \ GRILLE
	SUPPLY AIR DIFFUSER BELOW DUCT
	RETURN AIR DIFFUSER BELOW DUCT
	EXHAUST AIR DIFFUSER BELOW DUCT
	LINEAR DIFFUSER
	ACCESS DOOR IN CEILING
AD AP	DUCT MOUNTED ACCESS DOOR - ACCESS PANEL

INSTRUMENTATION SYMBOLS

CO2	CARBON DIOXIDE SENSOR
CO2	CARBON DIOXIDE SENSOR DUCT MOUNTED
CO	CARBON MONOXIDE SENSOR
CO	CARBON MONOXIDE SENSOR DUCT MOUNTED
TC2	COMBINATION TEMPERATURE AND CARBON DIOXIDE SENSOR
T	VRF MANUFACTURER TEMPERATURE SENSOR/CONTROLLER
CS	CURRENT SENSOR
FS	FLOW SENSOR
FZ	FREEZE STAT
LD	LEAK DETECTOR
H	HUMIDITY SENSOR
H	HUMIDITY SENSOR DUCT MOUNTED
H2	HYDROGEN SENSOR
R	REFRIGERANT LEAK SENSOR
R	REFRIGERANT LEAK SENSOR DUCT MOUNTED
DS	SMOKE DETECTOR
DS	SMOKE DETECTOR DUCT MOUNTED
SP	STATIC PRESSURE SENSOR
T	TEMPERATURE SENSOR
T	TEMPERATURE SENSOR DUCT MOUNTED
T/H	COMBINATION TEMPERATURE RELATIVE HUMIDITY SENSOR
T/H	COMBINATION TEMPERATURE RELATIVE HUMIDITY SENSOR DUCT MOUNTED
E	EMERGENCY POWER REQUIRED
S	SWITCH
PS	PACKAGED STARTER BY MECHANICAL
LS	LOOSE STARTER BY ELECTRICAL
VFD	VARIABLE FREQUENCY DRIVE
FM	FLOW MEASURING STATION

MISC. LEGEND / TAGS

2-A / 12X12 / 500	DIFFUSER, REGISTER, GRILLE DESIGNATION NECK SIZE OR LENGTH IF LINEAR DIFFUSER AIR QUANTITY - CFM
VAV / NO	SCHEDULED EQUIPMENT TYPE (WITHOUT MOTOR) SCHEDULED REFERENCE NUMBER
AC / 1	SCHEDULED EQUIPMENT TYPE (WITH MOTOR) SCHEDULED REFERENCE NUMBER
	EQUIPMENT TYPE
FTR-1 / 7'-0" / 63.0	EQUIPMENT TYPE EQUIPMENT LENGTH EQUIPMENT CAPACITY - MBH/kW
	SECTION SYMBOL
A / M-1	SECTION DESIGNATION DRAWING NUMBER LOCATION
	DETAIL SYMBOL
1 / M-1	DETAIL NUMBER DRAWING NUMBER LOCATION
	POWERED DAMPER
FSD / HV-1-S / NO	DAMPER TYPE (FSD OR SD). ASSOCIATED FAN SYSTEM NORMAL DAMPER (NON-ENERGIZED) POSITION
	CONNECT NEW TO EXISTING
	LIMIT OF REMOVAL
44	DISTANCE TO FINISH FLOOR (FEET & INCHES) FROM BOTTOM OF DUCT OR PIPE
TE / #	RISER DESIGNATION TYPE NUMBER
X	DEMOLITION SHEET NOTE NUMBER X
X	NEW WORK SHEET NOTE NUMBER X
X	REVISION NUMBER X

DESIGN CONDITIONS

TEMPERATURES AND HUMIDITIES	TEMPERATURES AND HUMIDITIES
WINTER: OUTDOOR AIR TEMPERATURE: 8°F (99.6%) INDOOR AIR TEMPERATURES: 70°F GENERAL SPACES 65°F EXTERIOR STORAGE/MECHANICAL SPACES	CITY, STATE BOSTON, MA SUB-LOCATION ..... ELEVATION, AMSL .....
SUMMER: OUTDOOR AIR TEMPERATURE: 91°F db; 73°F wb*(0.4%) INDOOR AIR TEMPERATURES: 75°F; 50%RH** GENERAL SPACES	
* MEAN COINCIDENT WET BULB ** INCIDENTAL RELATIVE HUMIDITY, UNLESS SPECIFIC HIGH-LIMIT HUMIDITY CONTROL IS REQUIRED.	WEATHER DATA BASED ON 2017 ASHRAE FUNDAMENTALS HANDBOOK, CHAPTER 14, APPENDIX AND IECC 2018, CLIMATE ZONE 5A.

REVISION LEGEND

❍	NEW ISSUE	●	REVISED ISSUE	♦	REVISED, NOT ISSUED
⊠	REMOVED FROM DRAWING SET			◻	ISSUED, NOT REVISED

DRAWING LIST - MECHANICAL

DRAWING NUMBER	DRAWING TITLE	05-26-2021 - SD	06-23-2022 DD COST EST	08-04-2022 MSBA SD	11-16-2022 60% CD COST EST					
M0-0-1	MECHANICAL LEGENDS AND ABBREVIATIONS	❍	♦	♦	♦					
M0-0-2	MECHANICAL GENERAL NOTES	❍	♦	♦	♦					
M0-0-3	MECHANICAL SCOPE OF WORK				❍					
M1-1-0C	MECHANICAL DUCTWORK LOWER LEVEL FLOOR PLAN - AREA C		❍	●	●					
M1-1-0D	MECHANICAL DUCTWORK LOWER LEVEL FLOOR PLAN - AREA D		❍	●	●					
M1-1-1A	MECHANICAL DUCTWORK FIRST FLOOR PLAN - AREA A		❍	●	●					
M1-1-1B	MECHANICAL DUCTWORK FIRST FLOOR PLAN - AREA B		❍	●	●					
M1-1-1C	MECHANICAL DUCTWORK FIRST FLOOR PLAN - AREA C		❍	●	●					
M1-1-1D	MECHANICAL DUCTWORK FIRST FLOOR PLAN - AREA D		❍	●	●					
M1-1-2A	MECHANICAL DUCTWORK SECOND FLOOR PLAN - AREA A		❍	●	●					
M1-1-2B	MECHANICAL DUCTWORK SECOND FLOOR PLAN - AREA B		❍	●	●					
M1-1-2C	MECHANICAL DUCTWORK SECOND FLOOR PLAN - AREA C		❍	●	●					
M1-1-2D	MECHANICAL DUCTWORK SECOND FLOOR PLAN - AREA D		❍	●	●					
M1-1-3A	MECHANICAL DUCTWORK THIRD FLOOR PLAN - AREA A		❍	●	●					
M1-1-3B	MECHANICAL DUCTWORK THIRD FLOOR PLAN - AREA B		❍	●	●					
M1-1-3C	MECHANICAL DUCTWORK THIRD FLOOR PLAN - AREA C		❍	●	●					
M1-1-3D	MECHANICAL DUCTWORK THIRD FLOOR PLAN - AREA D		❍	●	●					
M1-1-4A	MECHANICAL DUCTWORK FOURTH FLOOR PLAN - AREA A		❍	●	●					
M1-1-4B	MECHANICAL DUCTWORK FOURTH FLOOR PLAN - AREA B		❍	●	●					
M1-1-CB	MECHANICAL CONCESSION BUILDING PLAN		❍	●	●					
M1-1-LB	MECHANICAL LOCKER BUILDING PLAN		❍	●	●					
M1-1-MB	MECHANICAL MAINTENANANCE BUILDING PLAN		❍	●	●					
M1-2-1A	MECHANICAL ROOF PLAN - AREA A		❍	●	●					
M1-2-1B	MECHANICAL ROOF PLAN - AREA B		❍	●	●					
M1-2-1C	MECHANICAL ROOF PLAN - AREA C		❍	●	●					
M1-2-1D	MECHANICAL ROOF PLAN - AREA D		❍	●	●					
M1-3-0C	MECHANICAL PIPING LOWER LEVEL FLOOR PLAN - AREA C				❍					
M1-3-0D	MECHANICAL PIPING LOWER LEVEL FLOOR PLAN - AREA D				❍					
M1-3-1A	MECHANICAL PIPING FIRST FLOOR PLAN - AREA A				❍					
M1-3-1B	MECHANICAL PIPING FIRST FLOOR PLAN - AREA B				❍					
M1-3-1C	MECHANICAL PIPING FIRST FLOOR PLAN - AREA C				❍					
M1-3-1D	MECHANICAL PIPING FIRST FLOOR PLAN - AREA D				❍					
M1-3-2A	MECHANICAL PIPING SECOND FLOOR PLAN - AREA A				❍					
M1-3-2B	MECHANICAL PIPING SECOND FLOOR PLAN - AREA B				❍					
M1-3-2C	MECHANICAL PIPING SECOND FLOOR PLAN - AREA C				❍					
M1-3-2D	MECHANICAL PIPING SECOND FLOOR PLAN - AREA D				❍					
M1-3-3A	MECHANICAL PIPING THIRD FLOOR PLAN - AREA A				❍					
M1-3-3B	MECHANICAL PIPING THIRD FLOOR PLAN - AREA B				❍					
M1-3-3C	MECHANICAL PIPING THIRD FLOOR PLAN - AREA C				❍					
M1-3-3D	MECHANICAL PIPING THIRD FLOOR PLAN - AREA D				❍					
M1-3-4A	MECHANICAL PIPING FOURTH FLOOR PLAN - AREA A				❍					
M1-3-4B	MECHANICAL PIPING FOURTH FLOOR PLAN - AREA B				❍					
M2-0-1	MECHANICAL ENLARGED PLANS				❍					
M2-0-2	MECHANICAL ENLARGED PLANS				❍					
M2-0-3	MECHANICAL ENLARGED PLANS				❍					
M3-0-1	MECHANICAL VRF SYSTEM DIAGRAMS SHEET #1		❍	●	●					
M3-0-2	MECHANICAL VRF SYSTEM DIAGRAMS SHEET #2		❍	●	●					
M3-0-3	MECHANICAL VRF SYSTEM DIAGRAMS SHEET #3		❍	●	●					
M3-0-4	MECHANICAL AIR RISER DIAGRAMS		❍	●	●					
M4-0-1	MECHANICAL DETAILS SHEET #1		❍	●	●					
M4-0-2	MECHANICAL DETAILS SHEET #2		❍	●	●					
M5-0-1	MECHANICAL SCHEDULES SHEET #1		❍	●	●					
M5-0-2	MECHANICAL SCHEDULES SHEET #2		❍	●	●					
M5-0-3	MECHANICAL SCHEDULE SHEET #3				❍					

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Drummey Rosane Anderson, Inc.
225 Oakland Road
Studio 205
South Windsor, CT
06074
260 Charles Street
Studio 300
Waltham, MA
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Wakefield, MA 01880

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MSBA 60% CD SUBMISSION

January 13, 2023

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL LEGENDS AND ABBREVIATIONS

Scale: NTS
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M0-0-1

GENERAL NOTES

1. THE WORK TO BE DONE UNDER THESE SPECIFICATIONS AND THE DRAWINGS CONSISTS OF PROVIDING ALL EQUIPMENT, MATERIALS, LABOR AND SERVICES AND PERFORMING ALL OPERATIONS TO COMPLETE THE CONSTRUCTION WORK FOR THIS PROJECT. ANY WORK NOT SPECIFICALLY COVERED BY THESE SPECIFICATIONS OR INDICATED ON THE CONTRACT DRAWINGS, BUT NECESSARY TO COMPLETE OR PERFECT ANY PART OF THIS INSTALLATION IN A SUBSTANTIAL MANNER, SHALL BE PROVIDED WITHOUT EXTRA COST TO THE OWNER.

2. THE WORK SHALL CONFORM TO THE MORE STRINGENT OF ALL APPLICABLE CODES & REGULATIONS, UL [AND FM] GUIDELINES, [LEED REQUIREMENTS], MANUFACTURER'S LITERATURE AND RECOMMENDATIONS, [BUILDING OPERATOR'S REQUIREMENTS], AND TO THE REQUIREMENTS OF FEDERAL, STATE AND LOCAL REGULATORY AGENCIES AND AUTHORITIES HAVING JURISDICTION.

3. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND INDICATE THE EXTENT, GENERAL CHARACTER, LOCATION AND ARRANGEMENT OF THE WORK UNDER THIS CONTRACT. [EXACT LOCATIONS OF ALL COMPONENTS ARE TO BE DETERMINED IN THE FIELD AND BY THE ACTUAL BUILDING CONDITIONS.] WHERE JOB CONDITIONS REQUIRE MINOR CHANGES OR ADJUSTMENTS IN THE INDICATED LOCATIONS OR ARRANGEMENT OF THE WORK, SUCH CHANGES SHALL BE PROVIDED WITHOUT EXTRA COST. THE CONTRACTOR SHALL RE-INSTALL EQUIPMENT THAT HAS INADEQUATE OR UNSAFE ACCESSIBILITY.

4. INSTALLATION OF WORK SHALL PROVIDE REASONABLE ACCESSIBILITY FOR OPERATION, INSPECTION AND MAINTENANCE OF EQUIPMENT AND ACCESSORIES. PROVIDE CLEARANCES REQUIRED BY MANUFACTURERS AND APPLICABLE CODES. ALL CEILING MOUNTED EQUIPMENT SHALL BE INSTALLED IN SUCH A MANNER THAT LIGHTS, PIPING, AND DUCTWORK DO NOT BLOCK ACCESS TO EQUIPMENT AND RELATED ACCESSORIES.

5. THE TERM "FURNISH" SHALL MEAN TO OBTAIN AND SUPPLY TO THE JOB SITE. THE TERM "INSTALL" SHALL MEAN TO FIX IN POSITION AND CONNECT FOR USE. THE TERM "PROVIDE" SHALL MEAN TO FURNISH AND INSTALL. THE TERM "MECHANICAL WORK", "ELECTRICAL WORK", "PLUMBING WORK", ETC. SHALL MEAN ALL LABOR, MATERIAL, EQUIPMENT, SCAFFOLDING, RIGGING, TOOLS, SUPERVISION, SERVICES AND OTHER INCIDENTALS NECESSARY FOR COMPLETE AND OPERABLE INSTALLATION.

6. THE CM/GC SHALL MAKE SETS OF THE BID DOCUMENTS CONSISTING OF COMPLETE SETS OF DRAWINGS AND SPECIFICATIONS, AND ISSUE THEM TO EACH OF THE PRIME AND SUB-CONTRACTORS. EVERY PRIME AND SUB-CONTRACTOR ON EACH BIDDING TEAM SHALL RECEIVE COMPLETE SETS OF DRAWINGS AND SPECIFICATIONS. THERE ARE NOTES AND CROSS REFERENCES FOR VARIOUS TRADE CONTRACTORS IN MULTIPLE TRADE OR DISCIPLINE DRAWINGS AND SPECIFICATIONS. THUS, EACH CONTRACTOR IS TO RECEIVE COMPLETE SETS OF THE BID DOCUMENTS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THESE DRAWINGS FROM CM/GC. EACH CONTRACTOR IS RESPONSIBLE FOR THEIR WORK, AS NOTED ON THE OTHER DISCIPLINE DOCUMENTS. BIDDERS ARE RESPONSIBLE FOR ALL COSTS FOR EACH SET OF BID DOCUMENTS REQUESTED.

7. CONTRACTOR IS RESPONSIBLE FOR PROVIDING A FULL COORDINATION EFFORT IN ORDER TO CREATE A FINALIZED COORDINATED LAYOUT OF ALL EQUIPMENT, SYSTEMS, DUCTWORK, PIPING AND ALL OTHER ITEMS WITHIN THEIR RESPECTIVE SCOPE. THE CONTRACTOR'S COORDINATION EFFORT SHALL INCLUDE COORDINATED INFORMATION FROM ALL OTHER TRADE CONTRACTORS INVOLVED IN THE PROJECT SCOPE IN ORDER TO PROVIDE COORDINATION BETWEEN TRADES AND ALL EXISTING CONDITIONS. ALL ERRORS MADE AS A RESULT OF A LACK OF COORDINATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND CORRECTED AT NO ADDITIONAL COST TO THE PROJECT. MINOR RELOCATIONS AND SHIFTS OF EQUIPMENT, DUCTWORK, AND PIPING WHICH DO NOT CHANGE THE DESIGN INTENT INDICATED ON THE CONTRACT DOCUMENTS, REQUIRED TO ACCOMMODATE FIELD CONDITIONS ARE AT THE CONTRACTORS DISCRETION AND DO NOT REQUIRE ENGINEER APPROVAL.

8. CONTRACTOR SHALL ARRANGE AND OBTAIN ALL PERMITS, INSPECTIONS AND APPROVALS, AND PAY ALL RELATED FEES.

9. THE DRAWINGS INDICATE APPROXIMATE LOCATIONS BASED UPON INFORMATION OBTAINED WITHOUT REMOVING CEILING TILES OR WALLS. THEREFORE, THE CONTRACTOR SHALL INCLUDE IN THEIR BID CONTINGENCY COSTS TO ADDRESS CONFLICTS BETWEEN DESIGN AND EXISTING CONDITIONS. ANY CHANGES AND/OR MODIFICATIONS MUST BE REVIEWED AND APPROVED BY THE ENGINEER AND/OR OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.

10. FOR ANY DISCREPANCY BETWEEN DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL BASE THEIR BID UPON THE MOST STRINGENT REQUIREMENT (QUALITY, QUANTITY, SIZE, ETC.). THE CONTRACTOR SHALL IDENTIFY DISCREPANCIES AS PART OF THEIR BID.

11. PRIOR TO DEMOLITION, THE CONTRACTOR SHALL LOG ALL EXISTING EQUIPMENT AND TRACE ELECTRICAL, FIRE ALARM, AND CONTROL CIRCUITS THAT SERVE SUCH EQUIPMENT.

12. ALL SERVICES TO EXISTING BUILDINGS SHALL BE MAINTAINED DURING CONSTRUCTION UNLESS OTHERWISE INDICATED. CONTRACTOR SHALL COORDINATE ALL SYSTEM SHUT DOWNS AND TIMING WITH OWNER.

13. THE CONTRACTOR SHALL EFFECTIVELY PROTECT ALL MATERIALS AND EQUIPMENT FROM ENVIRONMENTAL AND PHYSICAL DAMAGE UNTIL FINAL ACCEPTANCE. CLOSE AND PROTECT ALL OPENINGS DURING CONSTRUCTION. PROVIDE NEW MATERIALS AND EQUIPMENT TO REPLACE ITEMS DAMAGED.

14. EXISTING EQUIPMENT THAT INTERFERES WITH NEW ARRANGEMENT SHALL BE REMOVED, REINSTALLED, RELOCATED, REROUTED, EXTENDED OR ABANDONED AS REQUIRED, TO SUIT THE NEW ARRANGEMENT.

15. WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK AND/OR PIPING, CAREFULLY COORDINATE SIZES AND LOCATIONS OF THE ELEMENTS BEFORE FABRICATION. COORDINATE WITH FINAL LOCATION OF BEAM PENETRATIONS AND SHEAR WALL PENETRATIONS.

16. CONTRACTOR SHALL COORDINATE LOCATION OF ALL WALL, FLOOR AND ROOF OPENINGS WITH STRUCTURAL AND OTHER TRADES.

17. PROVIDE CUTTING AND PATCHING AS REQUIRED AND WHERE NECESSARY TO ACCOMMODATE NEW WORK AND THE REPAIR OF EXISTING WORK.

18. WHEN WORK INVOLVES CONTACT WITH MATERIALS CONTAINING ASBESTOS, PCB, OR OTHER TOXIC MATERIALS, NOTIFY OWNER, WHO WILL ESTABLISH PROCEDURES FOR REMEDIATION AND REMOVAL.

19. CONTRACTOR SHALL SCHEDULE THE WORK UNDER THIS CONTRACT WITH WORK OF OTHER TRADES AS NOT TO DELAY THE OVERALL PROGRESS OF THE PROJECT.

20. CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER OF ANY CONFLICTS PRIOR TO PURCHASING EQUIPMENT AND PRIOR TO CUTTING OPENINGS.

21. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS PER SPECIFICATIONS PRIOR TO PURCHASING OR INSTALLING EQUIPMENT AND SYSTEMS INDICATED ON CONTRACT DOCUMENTS. PRIOR TO SUBMITTAL, CONTRACTOR SHALL VERIFY THAT ADEQUATE SPACE EXISTS FOR THE SUBMITTED EQUIPMENT. SHOP DRAWINGS MUST BE REVIEWED BY ARCHITECT/ENGINEER.

22. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS INCURRED BY OTHER TRADES DUE TO SUBSTITUTION OF OTHER THAN SCHEDULED EQUIPMENT. WHEN EQUIPMENT FURNISHED IS DIFFERENT THAN INDICATED, THE COST OF ADDITIONAL ELECTRICAL SERVICE, STRUCTURAL AND RELATED WORK SHALL BE PAID BY THIS CONTRACTOR.

23. ALL WORK SHALL BE EXECUTED IN A NEAT AND WORKMANLIKE MANNER AND SHALL BE DONE IN ACCORDANCE WITH GOOD TRADE PRACTICE AND IN CONFORMANCE WITH APPLICABLE MANUFACTURERS' RECOMMENDATIONS.

24. CONTRACTOR SHALL REMOVE ALL TRASH, DEBRIS AND DEMOLITION MATERIAL FROM PREMISES AT THE END OF EACH DAY.

25. RESTORE ALL SURFACES (WALLS, CEILINGS, FLOORS AND ROOFS) THAT ARE DAMAGED BY THE WORK OF THIS CONTRACT TO THEIR ORIGINAL CONDITION AT NO EXTRA COST TO THE OWNER.

26. PRIOR TO EQUIPMENT STARTUP, CONTRACTOR SHALL PERFORM THE SPECIFIED STARTUP AND COMMISSIONING PROCEDURES.

27. IN THE ABSENCE OF OTHER SPECIFIC INSTRUCTIONS, ALL WORK AND MATERIALS SUPPLIED SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF THEIR ACCEPTANCE BY THE OWNER.

28. BALA CONSULTING ENGINEERS, INC. (BALA) WILL PROVIDE CONTRACTOR WITH ELECTRONIC CADD FILES OF THE ENGINEERING DESIGNS, AT A COST OF [$95.00] PER DRAWING/SHEET/FILE. FOR THE SOLE USE IN EXPEDITING SHOP DRAWINGS. BALA'S FILES SHALL NOT BE DIRECTLY COPIED AND ISSUED AS SHOP DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD COORDINATION, DIMENSIONING AND ADHERENCE TO THE SHOP DRAWING REQUIREMENTS AS NOTED IN THE SPECIFICATIONS. SHOULD THE SHOP DRAWINGS SUBMITTED PROVE TO BE A DIRECT COPY OF OUR FILES WITHOUT THE NECESSARY FIELD COORDINATION, DIMENSIONING AND ADHERENCE TO THE SHOP DRAWING REQUIREMENTS AS NOTED IN THE SPECIFICATIONS, THESE SHOP DRAWINGS WILL BE RETURNED AS REJECTED.BALA CONSULTING ENGINEERS, INC. (BALA) WILL PROVIDE CONTRACTOR WITH ELECTRONIC CADD FILES OF THE ENGINEERING DESIGNS, AT A COST OF [$95.00] PER DRAWING/SHEET/FILE. FOR THE SOLE USE IN EXPEDITING SHOP DRAWINGS. BALA'S FILES SHALL NOT BE DIRECTLY COPIED AND ISSUED AS SHOP DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD COORDINATION, DIMENSIONING AND ADHERENCE TO THE SHOP DRAWING REQUIREMENTS AS NOTED IN THE SPECIFICATIONS. SHOULD THE SHOP DRAWINGS SUBMITTED PROVE TO BE A DIRECT COPY OF OUR FILES WITHOUT THE NECESSARY FIELD COORDINATION, DIMENSIONING AND ADHERENCE TO THE SHOP DRAWING REQUIREMENTS AS NOTED IN THE SPECIFICATIONS, THESE SHOP DRAWINGS WILL BE RETURNED AS REJECTED.
BALA'S ELECTRONIC FILES ARE SAVED IN VERSION [REVIT, AUTOCAD][2016, 2017, 2018] AND ARE COMPATIBLE WITH ALL VERSIONS AFTER THAT. BALA MAKES NO REPRESENTATION AS TO THE COMPATIBILITY OF THESE FILES WITH THE CONTRACTOR'S HARDWARE OR THEIR SOFTWARE.
DATA CONTAINED ON THESE ELECTRONIC FILES ARE PART OF BALA'S "INSTRUMENTS OF SERVICE" AND ARE COPYRIGHTED. CONTRACTOR'S USE OF FILES IS FOR THE SOLE PURPOSE AS A CONVENIENCE IN THE PREPARATION OF DRAWINGS FOR THE REFERENCED PROJECT. ANY OTHER USE OR REUSE BY CONTRACTOR IS UNLAWFUL.

MECHANICAL GENERAL NOTES

1. MECHANICAL CONTRACTOR SHALL EXAMINE THE DRAWINGS OF ALL TRADES AND COORDINATE THEIR WORK PRIOR TO ANY INSTALLATIONS TO AVOID INTERFERENCE WITH STRUCTURE, AND ALL EQUIPMENT ABOVE AND BELOW THE CEILING.THE MECHANICAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND FIELD CONDITIONS AT THE SITE PRIOR TO BID AND PURCHASE OF EQUIPMENT/MATERIALS. THE CONTRACTOR SHALL PROVIDE VALUE FOR SAME IN THEIR BID. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY FIELD CONDITIONS AT THE SITE AND NOTIFY THE OWNER, ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCING WITH THE WORK.

2. FOR ANY DISCREPANCY BETWEEN DRAWINGS AND/OR SPECIFICATIONS, THE MECHANICAL, CONTRACTOR SHALL BASE THEIR BID UPON THE MOST STRINGENT REQUIREMENT (QUALITY, QUANTITY, SIZE, ETC.). THE CONTRACTOR SHALL IDENTIFY DISCREPANCIES AS PART OF THEIR BID.

3. THE MECHANICAL CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING OF EXISTING CONSTRUCTION REQUIRED BY THEIR WORK. ALL FINISHES SHALL MATCH EXISTING. STRUCTURAL MEMBERS SHALL NOT BE CUT UNLESS APPROVED BY OWNER'S REPRESENTATIVE. PAINTING SHALL BE BY GENERAL CONTRACTOR. WHERE EQUIPMENT IS REMOVED, CONTRACTOR TO REFINISH AREA TO MATCH EXISTING. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING INTEGRITY OF ALL STRUCTURAL ELEMENTS.

4. THE MECHANICAL CONTRACTOR SHALL EFFECTIVELY PROTECT ALL MATERIALS AND EQUIPMENT FROM ENVIRONMENTAL AND PHYSICAL DAMAGE UNTIL FINAL ACCEPTANCE. CLOSE AND PROTECT ALL OPENINGS DURING CONSTRUCTION. PROVIDE NEW MATERIALS AND EQUIPMENT TO REPLACE ITEMS DAMAGED.

5. EXISTING MECHANICAL EQUIPMENT THAT INTERFERES WITH NEW ARRANGEMENT SHALL BE REMOVED, REINSTALLED, RELOCATED, REROUTED, EXTENDED OR ABANDONED AS REQUIRED, TO SUIT THE NEW ARRANGEMENT.

6. ALL MATERIALS, EQUIPMENT AND INSTALLATIONS SHALL BE IN STRICT ACCORDANCE WITH SMACNA AND ASHARE GUIDELINES, UNLESS OTHERWISE NOTED.

7. EQUIPMENT INDICATED ON THE DRAWINGS, TOGETHER WITH ITS BASE AND/OR SUPPORT, DUCTWORK CONNECTIONS, SERVICE CLEARANCES, WALL, FLOOR AND ROOF PENETRATIONS, AND ELECTRICAL REQUIREMENTS IS BASED ON THE MODEL INDICATED IN THE SCHEDULES. IF CONTRACTOR FURNISHES AN EQUIVALENT SUBSTITUTION, THE CONTRACTOR SHALL MAKE THE REQUIRED MODIFICATIONS IN THE WORK WITHOUT CHANGE IN CONTRACT AMOUNT.

8. THE CONTRACTOR SHALL INCLUDE IN HIS BID ALL COSTS RELATED TO REMOVING AND REPLACING ALL CEILINGS AS REQUIRED FOR THE MECHANICAL WORK ON THIS PROJECT. PROVIDE SELECTIVE CEILING DEMOLITION TO PLACE NEW DUCTWORK AND DIFFUSERS. REPLACE DAMAGED CEILING TILES AND GRIDS RESULTING FROM DEMOLITION. NEW CEILING TILES SHALL MATCH WITH EXISTING.

9. COORDINATE MECHANICAL SYSTEM INSTALLATION WITH EXISTING CONDITIONS. VISIT SITE PRIOR TO BID AND INVESTIGATE REQUIREMENTS FOR MECHANICAL SYSTEM INSTALLATION. SEE THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

10. COORDINATE LOCATION OF ALL WALL, FLOOR AND ROOF OPENINGS WITH STRUCTURAL AND OTHER TRADES

11. COORDINATE LOCATION OF NEW DUCTWORK, AIR DEVICES AND EQUIPMENT WITH LIGHT FIXTURES, SPRINKLER PIPING AND HYDRONIC PIPING.

12. COORDINATE THE LOCATIONS OF ALL EQUIPMENT AND REGISTERS WITH THE LATEST ARCHITECTURAL DRAWINGS PRIOR TO PERFORMING AND ROUGH-IN WORK FOR THE UTILITIES.

13. COORDINATE THERMOSTATS WITH FINAL DIFFUSER LOCATIONS. THERMOSTATS SHALL NOT BE MOUNTED IN THE THROW PATTERN OF DIFFUSERS.

14. FIELD VERIFY THE ACTUAL LOCATIONS AND EXACT DIMENSIONS OF ALL EQUIPMENT, CASEWORK, DEVICES, FIXTURES, SWITCHES, SENSORS, STRUCTURAL ELEMENTS, ETC. DURING FIELD VISITS AND PRIOR TO PERFORMING ANY ROUGH-IN WORK FOR DUCTWORK, PIPING AND OTHER AND UTILITIES/SCOPE. MINOR CHANGES TO EQUIPMENT LOCATIONS OR DUCTWORK AND PIPING ROUTING AND DUCTWORK ASPECT RATIO, BASED ON THE FINAL COORDINATION EFFORT, ARE TO BE COMPLETED BY THE CONTRACTOR. REPORT DISCREPANCIES IMMEDIATELY TO ARCHITECT AND/OR ENGINEER.

15. PROVIDE TEMPORARY CONSTRUCTION FILTERS ON ALL RECIRCULATING HVAC EQUIPMENT USED FOR HEATING, COOLING, EXHAUST OR VENTILATION DURING CONSTRUCTION. PROVIDE REGULARLY SCHEDULE FILTER CHANGES DURING CONSTURCTION. PROVIDE FRESH FILTERS PRIOR TO BALANCING. PRIOR TO TURN OVER TO OWNER PROVIDE FRESH FILTERS IN ALL EQUIPMENT.

16. EFFECTIVELY PROTECT ALL MATERIALS AND EQUIPMENT FROM DUST, DIRT AND DAMAGE UNTIL FINAL ACCEPTANCE. CLOSE ALL DUCT AND EQUIPMENT OPENINGS DURING CONSTRUCTION WITH SUITABLE PROTECTIVE COVERING BEFORE, DURING AND FOLLOWING INSTALLATION

17. UNLESS OTHERWISE NOTED, INSTALL DUCTWORK AND PIPING OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE OR SLAB, WITH ADEQUATE SPACE FOR INSULATION AND GAP TO PREVENT TRANSMISSION OF VIBRATION TO STRUCTURE.

18. WHERE CONNECTING TO EXISTING DUCTWORK AND PIPING SYSTEMS, INSPECT FOR DEFECTS. NOTIFY OWNER IF EXISTING DUCTWORK, PIPING AND INSULATION IS FOUND TO HAVE DAMAGE/DEFECTS AND TO DETERMINE IF REPLACEMENT IS REQUIRED.

19. MECHANICAL WORK THAT IS TO REMAIN WHEN STRUCTURE ON WHICH IT IS INSTALLED IS TO BE MODIFIED OR REMOVED SHALL BE PROPERLY SUPPORTED IN PLACE UNTIL WORK OF ALL TRADES IS COMPLETED. REINSTALL MECHANICAL WORK ON NEW STRUCTURE.

20. ALL MATERIALS AND EQUIPMENT INSTALLED IN RETURN AIR PLENUMS SHALL BE NON-COMBUSTIBLE AND UL APPROVED FOR USE IN A RETURN AIR PLENUM SPACE. ALL WIRING SHALL BE NON-COMBUSTIBLE OR SHALL BE ENCLOSED IN METAL CONDUIT OR PROTECTED BY A SHEET METAL COVER SECURED WITH METAL FASTENERS.

21. PROVIDE ALL OFFSETS, FITTINGS, DOUBLE ELBOWS, RISES, DROPS, DUCTWORK, PIPING, INSULATION AND ALL DUCTWORK OR PIPING AROUND EXISTING CONDITIONS, DUCTWORK, PIPING, EXISTING STEEL, NEW CONSTRUCTION AND ALL OTHER TRADE WORK. COORDINATE WORK WITH ALL OTHER WORK AND ALL OTHER TRADE CONTRACTORS TO VERIFY LOCATIONS REQUIRING CHANGES IN ELEVATION.

22. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT AND PIPE TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION.

23. INSTALL PIPING SUCH THAT ALL VALVES, STRAINERS, UNIONS, TRAPS, AND OTHER ACCESSORIES ARE ACCESSIBLE.

24. PROVIDE ACCESS PANELS AS REQUIRED FOR ALL VALVES, DAMPERS, CONTROLS, OR OTHER EQUIPMENT. PROVIDE ACCESS PANELS IN NON-LAY-IN-CEILINGS FOR SERVICE AND MAINTENANCE OF ALL CONCEALED EQUIPMENT AND DEVICES, SUCH AS HEAT PUMPS, ELECTRIC DUCT HEATERS, COILS, SMOKE DETECTORS, BALANCING DAMPERS AND FIRE DAMPERS.

25. [CLEAN EXISTING AND RELOCATED AIR DEVICES THOROUGHLY WITH WARM SOAPY WATER. REPAIR AND RE-PAINT ALL DAMAGED AIR DEVICES TO BE REUSED. CLEAN ALL AIR DEVICES AFTER CONSTRUCTION IS COMPLETED.]

26. CONTRACTOR SHALL NOT CONCEAL ANY WORK UNTIL INSPECTED BY MECHANICAL INSPECTOR AND/OR ARCHITECT/ENGINEER. CONTRACTOR SHALL NOTIFY A/E OF A SCHEDULED INSPECTION TIME WITHIN 72 HOURS. GENERAL CONTRACTOR SHALL NOT CONCEAL WORK UNTIL APPROVED, REGARDLESS OF SCHEDULE.

27. REMOVE ALL TRASH, DEBRIS AND DEMOLITION MATERIAL FROM PREMISES AT THE END OF EACH DAY.

28. PROVIDE ALL ROOFING OPENINGS, FLASHING, CURBS, COUNTER FLASHING, ETC. REQUIRED FOR THE INSTALLATION OF ROOF MOUNTED EQUIPMENT OR CURBS. COORDINATE OPENING WITH ROOFING CONTRACTOR AND CM/GC. ALL ROOFING WORK SHALL BE PERFORMED BY AUTHORIZED ROOFING CONTRACTOR TO MAINTAIN ROOF WARRANTY.

29. ALL DUCT DIMENSIONS ARE INSIDE CLEAR DIMENSIONS.

30. SHEETMETAL FITTINGS SHOWN SHALL BE PROVIDED. NO SUBSTITUTES WILL BE ALLOWED WITHOUT PRIOR CONSENT FROM ENGINEER.

31. PROVIDE BALANCING DAMPERS IN ALL DUCT BRANCHES AND TO AIR DEVICES.

32. PROVIDE COMBINATION FIRE/SMOKE DAMPERS AND SMOKE DAMPERS IN DUCTS PASSING THROUGH FIRE OR SMOKE RATED ASSEMBLIES AS INDICATED ON THE ARCHITECTURAL DRAWINGS.

33. DUCTWORK SHALL NOT BE ROUTED ABOVE ELECTRICAL PANELS. COORDINATE WITH ELECTRICAL CONTRACTOR. DUCTWORK SHALL NOT COVER OR LIMIT ACCESS TO EXISTING J-BOXES.

34. PROVIDE HEAVY DUTY FLEXIBLE CONNECTIONS AT ALL FANS INLET AND OUTLET CONNECTIONS.

MECHANICAL GENERAL NOTES

36. PROVIDE ACOUSTICALLY LINED DUCTWORK 15 FEET DOWNSTREAM OF ALL FANS, FAN COIL UNITS, FAN POWERED BOXES AND VAV BOXES. [PROVIDE DOUBLE WALLED DUCTWORK 20 FEET DOWNSTREAM OF ALL AIR HANDLING UNITS.]

37. [MECHANICAL CONTRACTOR SHALL BLANK OFF ALL UNUSED SECTIONS OF LOUVER AREA WITH 16 GAGE GALVANIZED STEEL PANELS AND INSULATE WITH 1" THICK FIBERGLASS BOARD INSULATION.]

38. [PROVIDE MINIMUM 2 INCH DRAIN IN EACH OUTSIDE AIR INTAKE PLENUM. PITCH BOTTOM OF PLENUM TOWARDS DRAIN. ROUTE DRAIN TO NEAREST FLOOR DRAIN.]

39. ALL OPEN-ENDED DUCTS IN CEILING PLENUMS OR EXPOSED SHALL BE UNOBSTRUCTED FOR A MINIMUM DISTANCE OF 24 INCHES FROM THE OPENING TO ALLOW FREE FLOW OF AIR. UNLESS OTHERSIES NOTED, EACH OPENING SHALL TERMINATE WITH ½" WIRE MESH SCREEN.

40. LOCATE CEILING DIFFUSERS, GRILLES AND REGISTERS AS SHOWN ON THE ARCHITECURAL REFLECTED CEILING PLANS.

41. UNLESS OTHERWISE NOTED, ALL HYDRONIC PIPING RUNOUTS AND CONDENSATE DRAIN PIPING SHALL BE ¾". ALL STEAM AND STEAM CONDENSATE PIPING RUNOUTS SHALL BE 1 ½".

42. PROVIDE ISOLATION VALVES AT EACH FLOOR TAKEOFF AND EACH TERMINAL EQUIPMENT. FOR HYDRONIC, STEAM AND STEAM CONDENSATE PIPING. PROVIDE SHUTOFF VALVE ON HYDRONIC SUPPLY, STEAM, AND STEAM CONDENSATE PIPING. PROVIDE COMBINATION BALANCING AND SHUTOFF VALVE ON HYDRONIC RETURN PIPING.

43. [PRIOR TO OPENING NATURAL GAS PIPING SYSTEM, THE ENTIRE SECTION OF NATURAL GAS PIPING SYSTEM AFFECTED BY SCOPE SHALL BE ISOLATED AND PURGED IN ACCORDANCE WITH THE APPLICABLE FUEL GAS CODE. UPON COMPLETION OF NATURAL GAS PIPING SYSTEM SCOPE WORK, PLACE SYSTEM INTO OPERATION IN ACCORDANCE WITH APPLICABLE FUEL GAS CODE.]

44. CONTRACTOR SHALL PROVIDE FIRE STOPPING WHERE EQUIPMENT, DUCTWORK AND PIPING PENETRATE FIRE AND SMOKE RATED BARRIERS/PARTITIONS. INSTALL FIRE STOPPING IN ACCORDANCE WITH UL RATED ASSEMBLY REQUIREMENTS AFTER EQUIPMENT, DUCTWORK AND PIPING HAVE BEEN INSTALLED.

45. PROVIDE ALL MISCELLANEOUS STEEL, THREADED RODS, REINFORCEMENT, VIBRATION ISOLATORS, TURNBUCKLES, ETC. TO SUPPORT MECHANICAL EQUIPMENT ON OR FROM BUILDING STRUCTURE. ALL SUPPORTS AND ASSOCIATED ANCHORS SHALL BE SIZED BASED ON THE WEIGHT OF THE RESPECTIVE EQUIPMENT BEING SUPPORTED.

46. SUPPORT ALL EQUIPMENT, PIPING AND DUCTWORK FROM BUILDING STRUCTURE TO PROVIDE A VIBRATION FREE INSTALLATION. OTHERWISE ADHERE TO THE DETAILS IN THE CONTRACT DOCUMENTS. NOTIFY ARCHITECT AND/OR STRUCTURAL ENGINEER OF ALL WEIGHTS AND METHODS OF SUPPORT. PROVIDE DETAILS TO COORDINATE CONCRETE PADS AND STEEL PLATFORMS REQUIRED FOR MECHANICAL WORK.

47. PROVIDE VIBRATION ISOLATION FOR ROTATING, REVOLVING OR RECIPROCATING EQUIPMENT, INCLUDING DUCTWORK CONNECTIONS TO THIS EQUIPMENT TO PREVENT TRANSMISSION OF NOISE AND VIBRATION TO BUILDING STRUCTURE AND OCCUPIED SPACES. VIBRATION ISOLATION DEVICES SHALL INCLUDE SPRING VIBRATION ISOLATORS, NEOPRENE PADDING AND DUCT/PIPE FLEXIBLE CONNECTIONS.

48. CONTROL WIRE AND CONDUIT SHALL COMPLY WITH NEC, INTERNATIONAL BUILDING CODES AND ELECTRICAL SPECIFICATIONS. PLENUM RATED CABLE SHALL BE PROVIDED IN ALL PLENUM CEILINGS. CONTRACTOR TO COORDINATE LOCATION OF ALL PLENUM CEILINGS.

49. ALL WALL MOUNTED CONTROL DEVICES SHOWN ON DRAWINGS ARE DIAGRAMMATIC IN LOCATION AND SHOWN FOR GENERAL WIRING PURPOSES ONLY. ALL DEVICES SHALL BE MOUNTED 46" ABOVE FINISHED FLOOR. DEVICES INDICATED TO BE INSTALLED IN THE SAME LOCATIONS WITH DIFFERENT ELEVATIONS SHALL BE ALIGNED VERTICALLY AND HORIZONTALLY. REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING DETAILS OF SWITCHES, OUTLETS, FIRE ALARM STROBES, AUDIBLE AND VISUAL DEVICES, FIRE ALARM PULL STATION, CLOCKS, SECURITY DEVICES, CARD READERS, THERMOSTATS, SENSORS, ETC. COORDINATE FINAL LOCATIONS WITH EQUIPMENT, FURNITURE, TENANT, AND ARCHITECT PRIOR TO INSTALLATION.

50. REMOVE TEMPORARY AIR FILTERS AND PROVIDE NEW FILTERS IN ALL AIR CONDITIONING EQUIPMENT WITHIN THE SCOPE OF WORK UPON COMPLETION OF CONSTRUCTION AND BEFORE BALANCING.

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Drummey Rosane Anderson, Inc.

225 Oakland Road
Studio 205
South Windsor, CT
06074

260 Charles Street
Studio 300
Waltham, MA
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www.draws.com

Northeast Metropolitan Regional Vocational High School

Wakefield, MA 01880

BALA CONSULTING ENGINEERS, INC.
31 TEMPLE PLACE
BOSTON, MA 02111-1305
617.426.9292 FAX 617.357.5168
WWW.BALA.COM

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MSBA 60% CD SUBMISSION

January 13, 2023

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL GENERAL NOTES

Scale: 12" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M0-0-2

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MECHANICAL SCOPE OF WORK

SCOPE OF WORK	SCOPE OF WORK INCLUDED BUT NOT SHOWN, OR UNRESOLVED ISSUES
GENERAL: DESIGN AND INSTALLATION OF THE MECHANICAL SYSTEMS SHALL BE GOVERNED BY AND COMPLY WITH THE REQUIREMENTS OF THE MASSACHUSETTS STATE BUILDING CODE 9TH EDITION, 2020 MASSACHUSETTS ENERGY CODE, LEED RATING SYSTEM, AMERICANS WITH DISABILITIES ACT (ADA), AND ALL LOCAL LAWS HAVING JURISDICTION. REFER TO ARCHITECTURAL DRAWING'S CODE COMPLIANCE SHEETS FOR ALL APPLICABLE CODES.	
AIR HANDLING UNITS (ROOFTOP AND INDOOR): 1. REFER TO PLANS, NARRATIVE, AND SPECIFICATIONS FOR AIR HANDLING UNIT REQUIREMENTS AND LOCATIONS.	1. RETURN AIR DUCT SMOKE DETECTORS REMAIN TO BE INDICATED ON PLANS AND WILL BE INCLUDED FOR EACH AIR HANDLING UNIT IN A FUTURE SUBMISSION. 2. DUCT STATIC PRESSURE SENSORS REMAIN TO BE INDICATED ON THE PLANS FOR MULTI-ZONE VAV AIR HANDLING UNITS AND WILL BE INLCUDED FOR EACH MULTI-ZONE AIRHANDLING UNIT IN A FUTURE SUBMISSION.
TERMINAL UNITS: 1. REFER TO PLANS, NARRATIVE, AND SPECIFICATIONS FOR TERMINAL UNIT REQUIREMENTS AND LOCATIONS.	1. EACH VRF FAN COIL UNIT AND SPLIT AC UNIT SHALL BE PROVIDED WITH MANUFACTURER'S WIRED THERMOSTAT/CONTROLLER. ALL THERMOSTATS HAVE YET TO BE INDICATED ON THE FLOOR PLANS. ALL THERMOSTATS WILL BE INDICATED ON THE PALNS IN THE NEXT SUBMISSION. 2. EACH SUPPLY VAV TERMINAL UNIT SERVING SPACES SERVED BY VRF FAN COIL UNITS SHALL BE PROVIDED WITH A DDC SPACE CO2 SENSOR FOR VENTILATION AIRFLOW CONTROL. ALL CO2 SENSORS HAVE YET TO BE INDICATED ON THE FLOOR PLANS. ALL CO2 SENSORS WILL BE INDICATED ON THE PLANS IN THE NEXT SUBMISSION. 3. EACH SUPPLY VAV TERMINAL UNIT SERVICE SPACES NOT ALSO SERVED BY VRF FAN COIL UNITS SHALL BE PROVIDED WITH A DDC SPACE CO2 AND TEMPERATURE SENSOR.
PIPING: 1. REFRIGERANT PIPING SHALL BE PROVIDED BEWTEEN INDOOR AND OUTDOOR VRF UNITS AND SPLIT AC UNITS AND BEWTEEEN AIR HANDLING UNITS AND THEIR CORRESPONDING CONDENSING UNITS. 2. CONDENSATE DRAIN PIPING SHALL BE PROVIDED FROM EACH INDOOR AIR HANDLER, VRF FAN COIL UNIT, AND SPLIT AC AND ROUTED TO THE NEAREST CONDENSATE RECEPTOR.	. 1. VRF SYSTEM REFRIGERANT PIPING IS NOT YET SHOWN ON THE FLOOR PLANS. REFER TO VRF DIAGRAMS FOR ESTIMATED REFRIGERANT PIPE LENGTHS AND SIZES FOR THE VRF SYSTEMS. REFRIGERANT PIPING WILL BE SHOWN IN THE 60%CD MSBA SUBMISSION. 2. SPLIT AC REFRIGERANT PIPING IS NOT YET SHOWN ON THE FLOOR PLANS. REFRIGERANT PIPING SHALL BE PROVIDED BETWEEN OUTDOOR UNITS AND THE ASSOCIATED INDOOR UNITS. REFRIGERANT PIPING WILL BE SHOWN IN THE 60%CD MSBA SUBMISSION. 3. CONDENSATE DRAIN PIPING IS INDICATED AT A 60% LEVEL. CONDENSATE DRAIN PIPING SHALL BE PROVIDED FROM ALL VRF FAN COIL UNITS, SPLIT AC UNITS, AND INDOOR AIR HANDLING UNITS TO THE NEAREST CONDENSATE DRAIN PIPE OR RECEPTOR. CONDENSATE PUMPS SHALL BE PROVIDED AT EACH PIECE OF EQUIPMENT. 4. CONDENSATE DRAIN PIPING SHALL BE PROVIED FROM ALL ROOFTOP HRUS AND RTUS TO THE NEAREST ROOF DRAIN.
DUCTWORK: 1. PROVIDE DUCTWORK THROUGHOUT THE BUILDING AS INDICATED ON THE PLANS. REFER TO SPECIFICATIONS FOR REQUIREMENTS.	1. COMBINATION FIRE SMOKE DAMPERS HAVE YET TO BE SHOWN ON THE FLOOR PLANS. PROVIDE AT EACH SHAFT PENETRATION. CONBINATION FIRE SMOKE DAMPERS WILL BE INDICATED IN THE 60%CD MSBA SUBMISSION. 2. VOLUME DAMPERS ARE INDICATED AT A 60% LEVEL. PROVIDE VOLUME DAMPERS ON ALL BRANCH DUCTWORK. 3. SOUND ATTENUATORS REMAIN TO BE SHOWN ON THE DISCHARGE AND INLET OF ALL AIR HANDLING UNITS (HRUS, RTUS, AND AHUS). 5'-0" SOUND ATTENUATORS WILL BE INDICATED IN THE 90%CD PRICING SUBMISSION.
CONTROLS: 1. REFER TO SPECIFICATIONS FOR DDC CONTROL SYSTEM REQUIREMENTS.	1. SENSORS AND CONTROLS ARE HAVE YET TO BE SHOWN THROUGHOUT. EACH SPACE SERVED BY A VRF FAN COIL UNIT SHALL BE PROVIDED WITH A VRF MANUFACTURER TEMPERATURE SENSOR/CONTROLLER AND A DDC CO2 SENSOR. PROVIDE DDC SPACE TEMPERATURE AND CO2 SENSORS IN EACH ZONE FOR SINGLE ZONE AND MULTIZONE AIR HANDLING UNITS. FUTURE SUBMISSIONS WILL INCLUDE ALL SENSORS, SEQUENCES OF OPERATION, AND CONTROL DIAGRAMS. 2. SPECIFIC SEQUENCES FOR VOCATIONAL SHOP AIR HANDLING UNITS AND EQUIPMENT HAVE YET TO BE PROVIDED AND WILL BE PROVIDED IN THE 90% CD SET.

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South Windsor, CT
06074

260 Charles Street
Studio 300
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MSBA 60% CD SUBMISSION

January 13, 2023

PROJECT NORTH

MAGNETIC NORTH

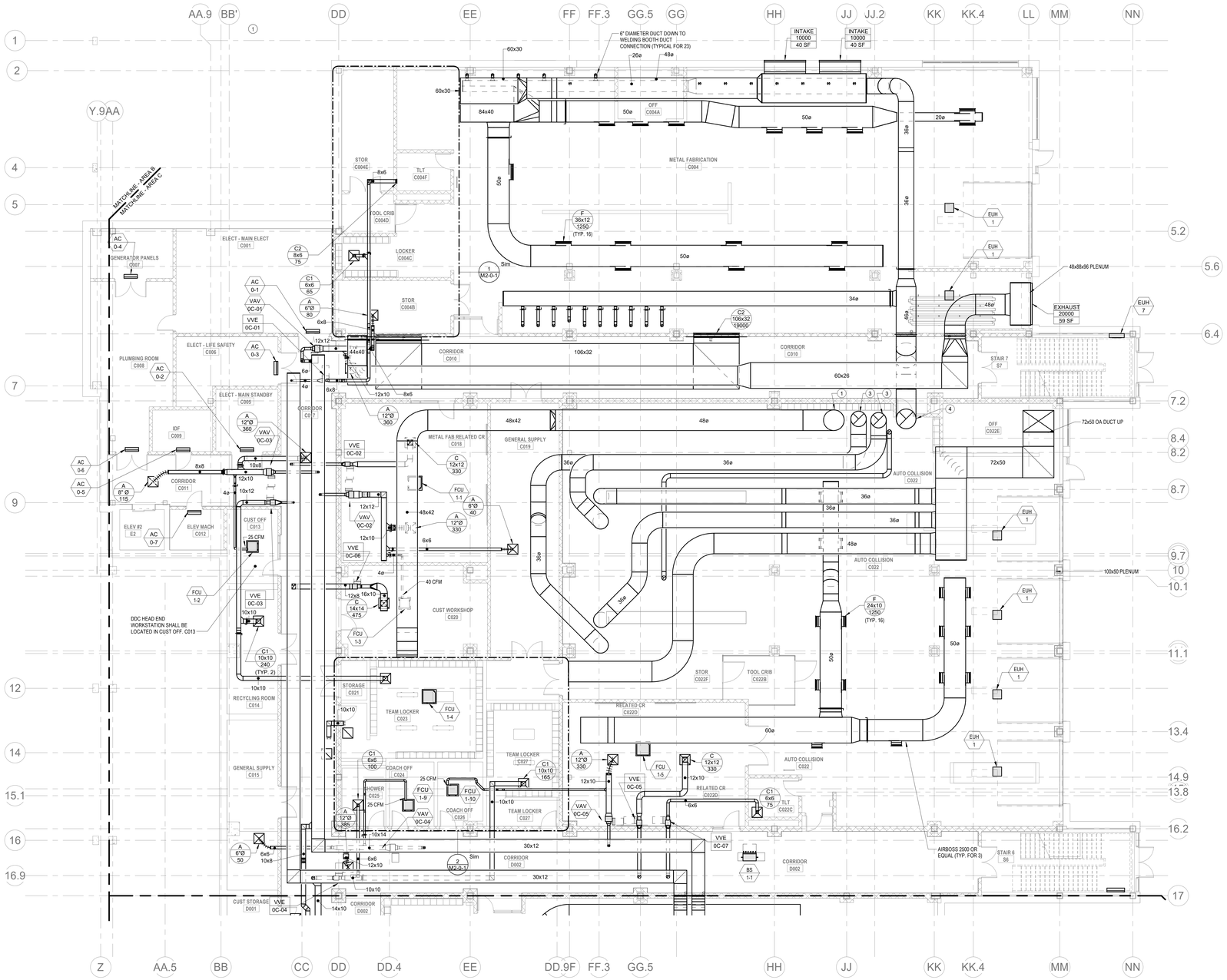
MECHANICAL SCOPE OF WORK

Scale: 12" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M0-0-3

HVAC DRAWING NOTES

1. 48"Ø EA DUCT UP TO ROOF VENT.
2. 10"Ø PAINT MIXING BOOTH EXHAUST DUCT UP TO FAN ON ROOF.
3. 36"Ø SPRAY BOOTH EXHAUST DUCT UP TO FAN ON ROOF.
4. 46"Ø WELDING EXHAUST DUCT UP TO FAN ON ROOF.



M1-1-0C VARIABLE AIR VOLUME EXHAUST AIR TERMINAL SCHEDULE (VVE)

UNIT NO	TYPE	INLET DIAMETER (IN)	MAX AIRFLOW (CFM)	MIN. TURNDOWN (CFM)	MANUFACTURER	MODEL	REMARKS
VVE-0C-01	SINGLE DUCT EXHAUST	4	140	140	TITUS	DESV	SEE NOTES
VVE-0C-02	SINGLE DUCT EXHAUST	6	330	50	TITUS	DESV	SEE NOTES
VVE-0C-03	SINGLE DUCT EXHAUST	8	480	480	TITUS	DESV	SEE NOTES
VVE-0C-04	SINGLE DUCT EXHAUST	6	265	40	TITUS	DESV	SEE NOTES
VVE-0C-05	SINGLE DUCT EXHAUST	6	330	50	TITUS	DESV	SEE NOTES
VVE-0C-06	SINGLE DUCT EXHAUST	8	475	75	TITUS	DESV	SEE NOTES
VVE-0C-07	SINGLE DUCT EXHAUST	6	75	75	TITUS	DESV	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
4. PROVIDE INLET VELOCITY SENSOR.
5. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
6. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
7. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

M1-1-0C - VARIABLE AIR VOLUME TERMINAL (VAV)

UNIT NO	SYSTEM	ROOM SERVED	PRIMARY AIR VALVE		PRIMARY AIR VALVE			SOUND DATA - MAX PWL IN 3RD OCTAVE @ 1.0" INLET PRESSURE		MANUFACTURER	MODEL	NOTES
			PRIMARY INLET DIA (IN)	Air Terminal Air Flow	MIN FLOW OCCUPIED (CFM)	MINIMUM FLOW UNOCCUPIED (CFM)	TOTAL PRESS DROP (IN WG)	DISCH	RAD			
VAV-0C-01	HRU-1	C010 CORRIDOR	8	440	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-0C-02	HRU-2	C018 METAL FAB CR	8	395	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-0C-03	HRU-2	C011 CORRIDOR	8	495	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-0C-04	HRU-2	C011 CORRIDOR	8	460	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-0C-05	HRU-2	C011 CORRIDOR	8	355	125	0	1.00			TITUS	DESV	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. REFER TO FLOOR PLANS. VAV TERMINALS ARE PROVIDED WITH AND WITHOUT ELECTRIC RE-HEAT COILS.
4. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
5. PROVIDE INLET VELOCITY SENSOR.
6. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
7. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
8. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

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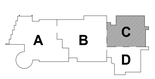
January 13, 2023



KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL DUCTWORK LOWER LEVEL FLOOR PLAN - AREA C

Scale: 1/8" = 1'-0"

Job No.: 20202

Drawn By: DRA

Date: January 13, 2023

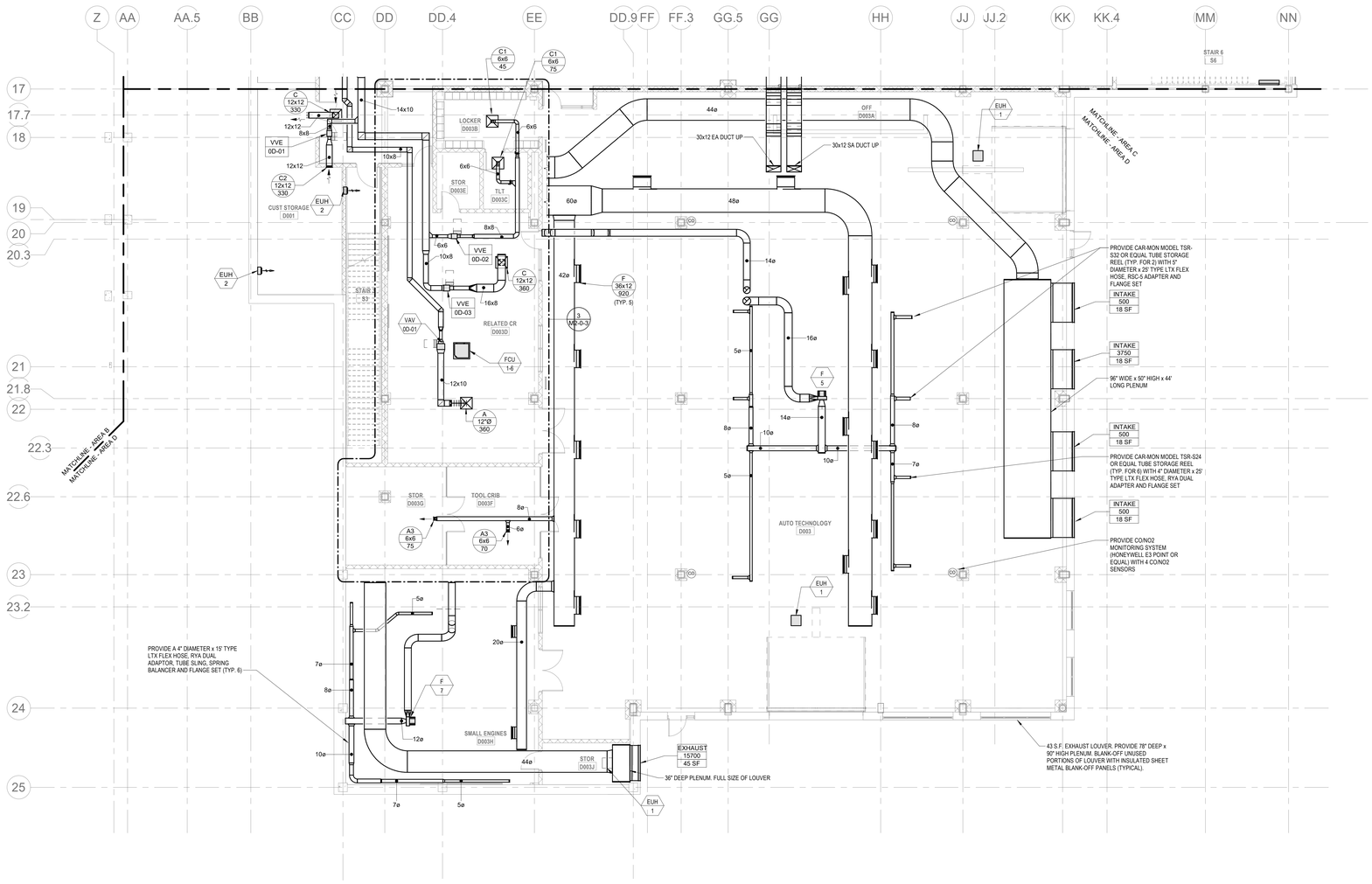
M1-1-0C

HVAC DRAWING NOTES

1. REFER TO VRF PIPING DIAGRAMS ON THE M2 SERIES DRAWINGS FOR REFRIGERANT PIPING DISTRIBUTION. PROVIDE A CONDENSATE DRAIN FROM THE FAN COIL UNT TO THE NEAREST CONDENSATE RECEPTOR. CONDENSATE RECEPTOR BY DIV. 22.

2. PROVIDE AN EXHAUST TERMINAL UNIT TO SERVE SPACE(S). PROVIDE AN EXHAUST GRILLE IN SPACE(S) WITH DUCT DISTRUBTION FROM TERMINAL UNIT. PROVIDE MEDIUM PRESSURE DUCTWORK FROM TERMINAL UNIT TO HRU-4 EXHAUST MAIN.

3. PROVIDE EXHAUST DUCT FROM FAN UP TO GRAVITY EXHAUST VENT ON ROOF NEAR LOCATED NEAR F-6. EXHAUST DUCT FROM FAN DISCHARGE CONNECTION SHALL BE EQUIVALENT IN SIZE TO DUCT ON INLET SIDE OF FAN.



M1-1-0D VARIABLE AIR VOLUME EXHAUST AIR TERMINAL SCHEDULE (VVE)

UNIT NO	TYPE	INLET DIAMETER (IN)	MAX AIRFLOW (CFM)	MIN. TURNDOWN (CFM)	MANUFACTURER	MODEL	REMARKS
VVE-0D-01	SINGLE DUCT EXHAUST	6	330	330	TITUS	DESV	SEE NOTES
VVE-0D-02	SINGLE DUCT EXHAUST	6	120	120	TITUS	DESV	SEE NOTES
VVE-0D-03	SINGLE DUCT EXHAUST	8	360	50	TITUS	DESV	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
4. PROVIDE INLET VELOCITY SENSOR.
5. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
6. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
7. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

M1-1-0D - VARIABLE AIR VOLUME TERMINAL (VAV)

			PRIMARY AIR VALVE			PRIMARY AIR VALVE		SOUND DATA - MAX PWL IN 3RD OCTAVE @ 1.0" INLET PRESSURE				
UNIT NO	SYSTEM	ROOM SERVED	PRIMARY INLET DIA (IN)	MIN FLOW OCCUPIED (CFM)	AIR TERMINAL AIR FLOW	MINIMUM FLOW UNOCCUPIED (CFM)	TOTAL PRESS DROP (IN.WG)	DISCH	RAD	MANUFACTURER	MODEL	NOTES
VAV-0D-01	HRU-1	D003 RELATED CR	8	125	360	0	0.00			TITUS	DESV	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. REFER TO FLOOR PLANS. VAV TERMINALS ARE PROVIDED WITH AND WITHOUT ELECTRIC RE-HEAT COILS.
4. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
5. PROVIDE INLET VELOCITY SENSOR.
6. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
7. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
8. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

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January 13, 2023

KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL DUCTWORK LOWER LEVEL FLOOR PLAN - AREA D

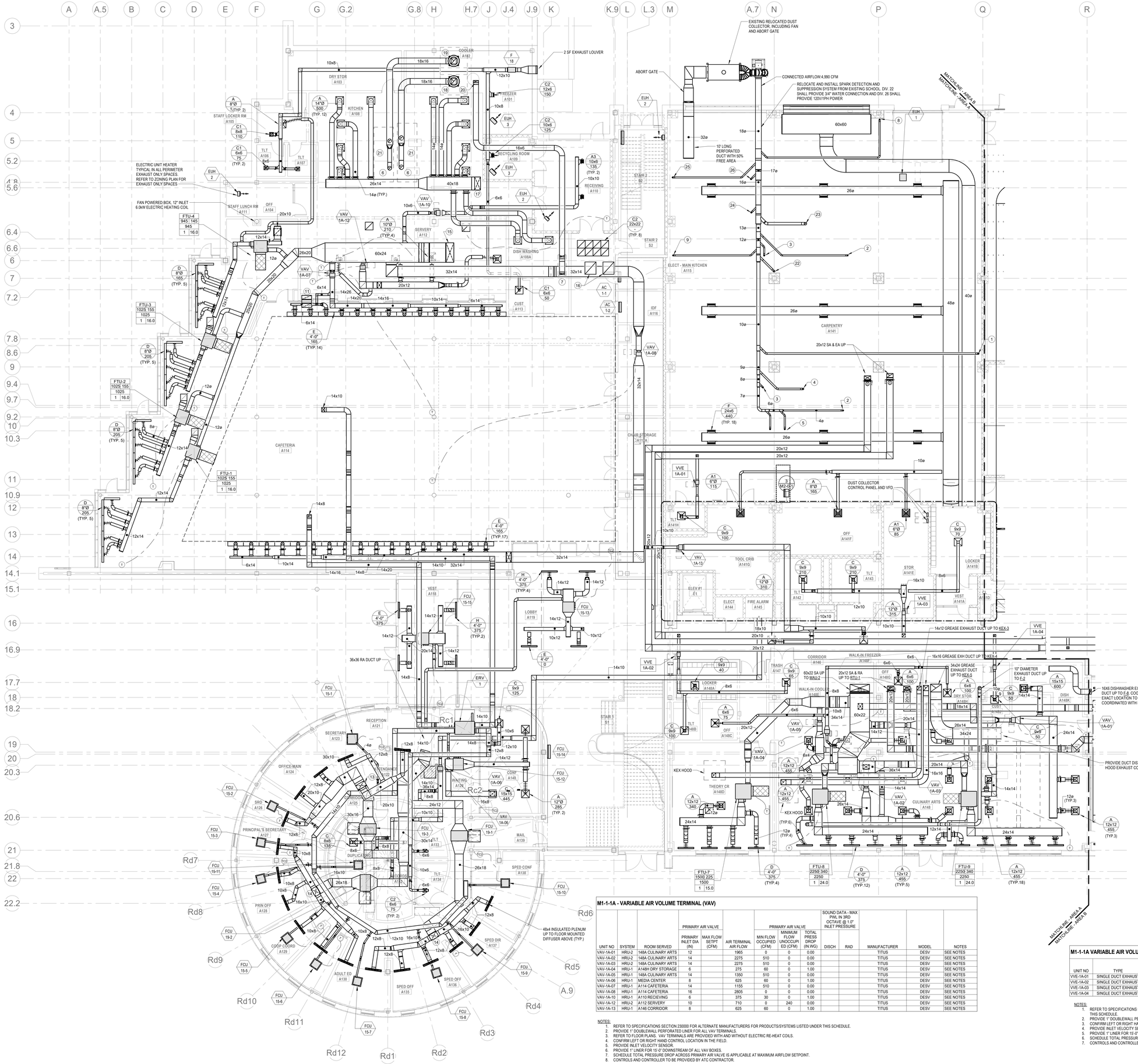
Scale: 1/8" = 1'-0"

Job No.: 20202

Drawn By: DRA

Date: January 13, 2023

M1-1-0D



HVAC DRAWING NOTES

1. 5" DIAMETER DUCT DOWN TO PANEL SAW (CP04) DUCT CONNECTION (500 CFM). PROVIDE REDUCTION TO 4" DIAMETER DUCT AT CONNECTION TO EQUIPMENT.
2. 4" DIAMETER DUCT DOWN TO CABINET SAW (CP03) DUCT CONNECTION (350 CFM).
3. 4" DIAMETER DUCT DOWN TO JOINTER (CP09) DUCT CONNECTION (350 CFM).
4. 5" DIAMETER DUCT DOWN TO TABLE SAW (CP05) DUCT CONNECTION (350 CFM).
5. (2) 4" DIAMETER DUCTS DOWN TO PLANER (CP11) DUCT CONNECTION (350 CFM EA).
6. 18x16 KITCHEN EXHAUST TO KITCHEN EXHAUST HOOD.
7. 16x6 EXHAUST TO DISHWASHER.
8. 4" DIAMETER DUCT DOWN TO INVERTED ROUTER (CP07) DUCT CONNECTION (350 CFM).
9. 4" DIAMETER DUCTS DOWN TO VERTICAL BAND SAW (CP13) DUCT CONNECTION (350 CFM).
10. 42x12 ACOUSTICALLY LINED TRANSFER DUCT.
11. 30x12 ACOUSTICALLY LINED TRANSFER DUCT.
12. 12x10 ACOUSTICALLY LINED TRANSFER DUCT.
13. 30x16 SA DUCT UP INTO INTERSITIAL SPACE. PROVIDE FIRE DAMPER IN VERTICAL WHERE DUCT PENETRATES SLAB.
14. 26x18 SA DUCT UP INTO INTERSITIAL SPACE. PROVIDE FIRE DAMPER IN VERTICAL WHERE DUCT PENETRATES SLAB.
15. 60x24 SUPPLY UP TO AHU-8 ON SECOND FLOOR.
16. 36x38 RA OPENING UP TO AHU-8 ON SECOND FLOOR.. PROVIDE W/ WMS OPENING.
17. 40x18 SUPPLY UP TO MAU-1
18. 18x16 KITCHEN EXHAUST UP TO KEF-2.
19. 18x16 KITCHEN EXHAUST UP TO KEF-1.
20. 16x6 KITCHEN EXHAUST UP TO F-1 ON THE ROOF.
21. KITCHEN EXHAUST HOOD.
22. 5" DIAMETER DUCT DOWN TO FLOOR SWEEP (550 CFM).
23. 8" DIAMETER DUCT DOWN TO PLANER (CP08) DUCT CONNECTION (1500 CFM).
24. 4" DIAMETER DUCT DOWN TO DRUM SANDER (CP12) DUCT CONNECTION (350 CFM).
25. 4" DIAMETER DUCT DOWN TO LARGE CNC (CP02) DUCT CONNECTION (350 CFM).
26. 4" DIAMETER DUCT DOWN TO OSCILLATING UNIVERSAL EDGE SANDER (CP10) DUCT CONNECTIONS (350 CFM).

M1-1-1A - VARIABLE AIR VOLUME TERMINAL (VAV)

			PRIMARY AIR VALVE			PRIMARY AIR VALVE			SOUND DATA - MAX PWL IN 3RD OCTAVE @ 1.0" INLET PRESSURE				
UNIT NO	SYSTEM	ROOM SERVED	PRIMARY INLET DIA (IN)	MAX FLOW SETPT (CFM)	AIR TERMINAL AIR FLOW	MIN FLOW OCCUPIED (CFM)	MINIMUM FLOW UNOCCUPIED (CFM)	TOTAL PRESS DROP (IN.WG)	DISCH	RAD	MANUFACTURER	MODEL	NOTES
VAV-1A-01	HRU-2	148A CULINARY ARTS	12		1965	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-1A-02	HRU-2	148A CULINARY ARTS	14		2275	510	0	0.00			TITUS	DESV	SEE NOTES
VAV-1A-03	HRU-2	148A CULINARY ARTS	14		2275	510	0	0.00			TITUS	DESV	SEE NOTES
VAV-1A-04	HRU-1	A148H DRY STORAGE	6		275	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-1A-05	HRU-1	148A CULINARY ARTS	14		1350	510	0	0.00			TITUS	DESV	SEE NOTES
VAV-1A-06	HRU-1	MEDIA CENTER	8		625	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-1A-07	HRU-1	A114 CAFETERIA	14		1155	510	0	0.00			TITUS	DESV	SEE NOTES
VAV-1A-08	HRU-1	A114 CAFETERIA	16		2805	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-1A-10	HRU-1	A110 RECIEVING	6		375	30	0	1.00			TITUS	DESV	SEE NOTES
VAV-1A-12	HRU-2	A112 SERVERY	10		710	0	240	0.00			TITUS	DESV	SEE NOTES
VAV-1A-13	HRU-1	A146 CORRIDOR	8		625	60	0	1.00			TITUS	DESV	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. REFER TO FLOOR PLANS. VAV TERMINALS ARE PROVIDED WITH AND WITHOUT ELECTRIC RE-HEAT COILS.
4. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
5. PROVIDE INLET VELOCITY SENSOR.
6. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
7. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
8. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

M1-1-1A VARIABLE AIR VOLUME EXHAUST AIR TERMINAL SCHEDULE (VVE)

UNIT NO	TYPE	INLET DIAMETER (IN)	MAX AIRFLOW (CFM)	MIN. TURNDOWN (CFM)	MANUFACTURER	MODEL	REMARKS
VVE-1A-01	SINGLE DUCT EXHAUST	6	75	75	TITUS	DESV	SEE NOTES
VVE-1A-02	SINGLE DUCT EXHAUST	6	205	205	TITUS	DESV	SEE NOTES
VVE-1A-03	SINGLE DUCT EXHAUST	6	490	490	TITUS	DESV	SEE NOTES
VVE-1A-04	SINGLE DUCT EXHAUST	6	50	50	TITUS	DESV	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
4. PROVIDE INLET VELOCITY SENSOR.
5. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
6. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
7. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

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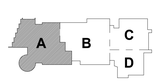
MSBA 60% CD SUBMISSION

January 13, 2023



KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL DUCTWORK FIRST FLOOR PLAN - AREA A

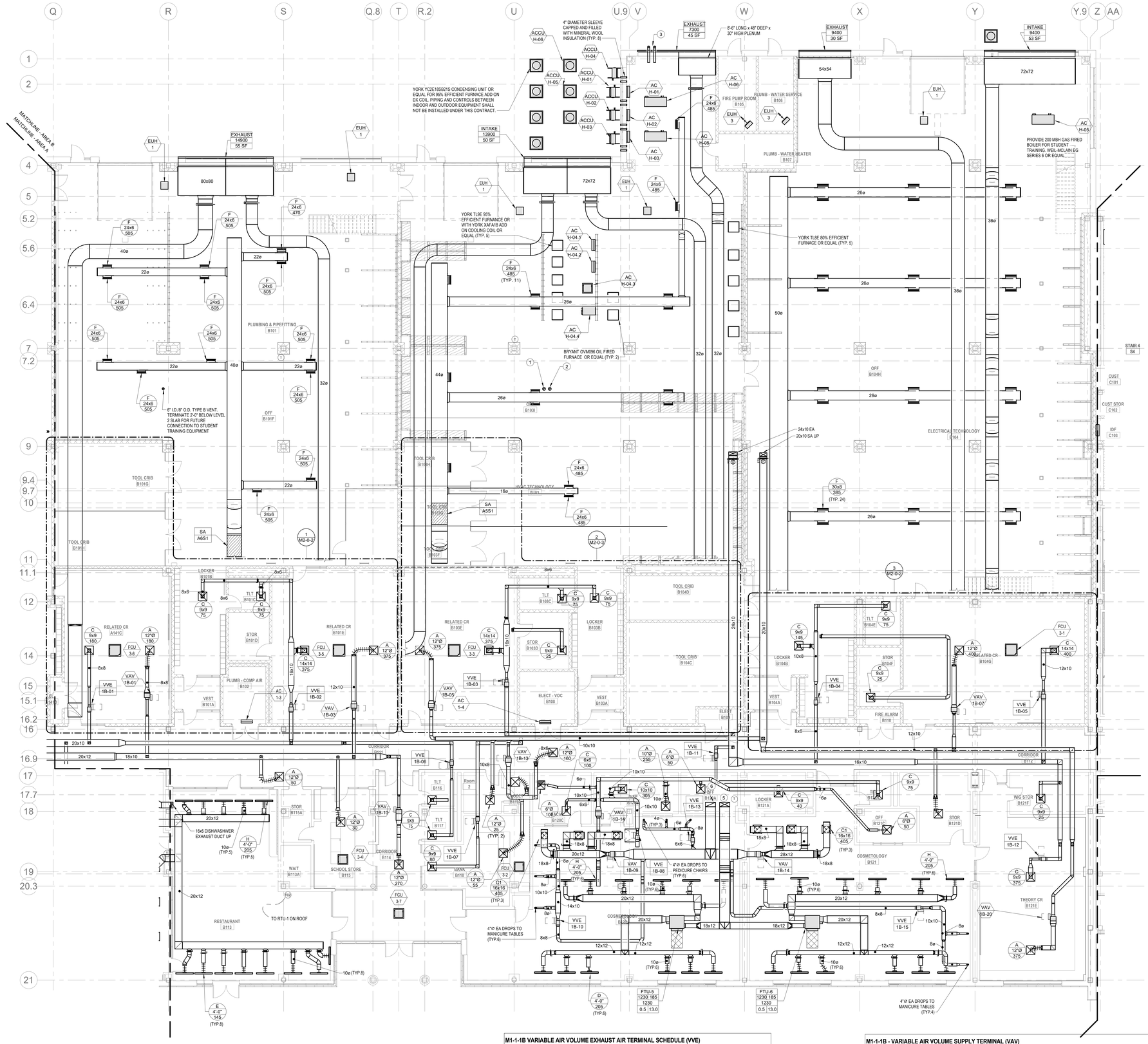
Scale: 1/8" = 1'-0"

Job No.: 20202

Drawn By: DRA

Date: January 13, 2023

M1-1-1A



HVAC DRAWING NOTES

1. 6" DIAMETER TYPE L VENT UP THROUGH ROOF. TERMINATE 1'-0" BELOW FLOOR.
2. 6" DIAMETER TYPE B VENT UP THROUGH ROOF. TERMINATE 1'-0" BELOW FLOOR.
3. 6" DIAMETER VENT AND INTAKE THROUGH WALL FOR HIGH EFFICIENCY FURNACES.
4. 36x14 SUPPLY AIR DUCT UP.
5. 24x12 EXHAUST AIR DUCT UP.

M1-1-1B VARIABLE AIR VOLUME EXHAUST AIR TERMINAL SCHEDULE (VVE)

UNIT NO	TYPE	INLET DIAMETER (IN)	MAX AIRFLOW (CFM)	MIN TURNDOWN (CFM)	MANUFACTURER	MODEL	REMARKS
VVE-1B-01	SINGLE DUCT EXHAUST	6	180	30	TITUS	DESV	SEE NOTES
VVE-1B-02	SINGLE DUCT EXHAUST	8	525	80	TITUS	DESV	SEE NOTES
VVE-1B-03	SINGLE DUCT EXHAUST	8	80	80	TITUS	DESV	SEE NOTES
VVE-1B-04	SINGLE DUCT EXHAUST	6	245	40	TITUS	DESV	SEE NOTES
VVE-1B-05	SINGLE DUCT EXHAUST	8	400	60	TITUS	DESV	SEE NOTES
VVE-1B-06	SINGLE DUCT EXHAUST	6	150	150	TITUS	DESV	SEE NOTES
VVE-1B-07	SINGLE DUCT EXHAUST	6	80	15	TITUS	DESV	SEE NOTES
VVE-1B-08	SINGLE DUCT EXHAUST	6	405	60	TITUS	DESV	SEE NOTES
VVE-1B-09	SINGLE DUCT EXHAUST	10	1220	185	TITUS	DESV	SEE NOTES
VVE-1B-10	SINGLE DUCT EXHAUST	6	300	45	TITUS	DESV	SEE NOTES
VVE-1B-11	SINGLE DUCT EXHAUST	6	115	20	TITUS	DESV	SEE NOTES
VVE-1B-12	SINGLE DUCT EXHAUST	6	375	60	TITUS	DESV	SEE NOTES
VVE-1B-13	SINGLE DUCT EXHAUST	6	150	25	TITUS	DESV	SEE NOTES
VVE-1B-14	SINGLE DUCT EXHAUST	10	1220	185	TITUS	DESV	SEE NOTES
VVE-1B-15	SINGLE DUCT EXHAUST	6	300	45	TITUS	DESV	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
4. PROVIDE INLET VELOCITY SENSOR.
5. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
6. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
7. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

M1-1-1B - VARIABLE AIR VOLUME SUPPLY TERMINAL (VAV)

UNIT NO	SYSTEM	ROOM SERVED	PRIMARY AIR VALVE: PRIMARY INLET DIA (IN)	AIR TERMINAL AIR FLOW	PRIMARY AIR VALVE: MIN FLOW OCCUPIED (CFM)	PRIMARY AIR VALVE: MINIMUM FLOW UNOCCUPIED (CFM)	PRIMARY AIR VALVE: TOTAL PRESS DROP (IN WG)	SOUND DATA - MAX PWL IN 3RD OCTAVE @ 1.0" INLET PRESSURE: DISCH	SOUND DATA - MAX PWL IN 3RD OCTAVE @ 1.0" INLET PRESSURE: RAD	MANUFACTURER	MODEL	NOTES
VAV-1B-01	HRU-1	A141C RELATED CR	6	180	30	0	1.00			TITUS	DESV	SEE NOTES
VAV-1B-02	HRU-1	B101E RELATED CR	8	375	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-1B-05	HRU-1	B103E RELATED CR	8	375	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-1B-07	HRU-1	B101E RELATED CR	8	400	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-1B-11	HRU-1	B101E RELATED CR	6	375	30	0	1.00			TITUS	DESV	SEE NOTES
VAV-1B-13	HRU-1	B101E RELATED CR	6	210	30	0	1.00			TITUS	DESV	SEE NOTES
VAV-1B-14	HRU-1	B101E RELATED CR	8	455	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-1B-20	HRU-1	B101E RELATED CR	8	375	60	0	1.00			TITUS	DESV	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. REFER TO FLOOR PLANS. VAV TERMINALS ARE PROVIDED WITH AND WITHOUT ELECTRIC RE-HEAT COILS.
4. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
5. PROVIDE INLET VELOCITY SENSOR.
6. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
7. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
8. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

DRA

Drummey Rosane Anderson, Inc.

225 Oakland Road
Studio 205
South Windsor, CT
06074

260 Charles Street
Studio 300
Waltham, MA
02453

Planning | Architecture | Interior Design

Tel: 617.964.1700
www.draws.com

Northeast Metropolitan Regional Vocational High School

Wakefield, MA 01880

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BALA CONSULTING ENGINEERS, INC.
32 TEMPLE PLACE
BOSTON, MA 02111-1328
TEL: 617.357.9800 FAX: 617.357.5180
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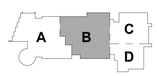
January 13, 2023



KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL DUCTWORK FIRST FLOOR PLAN - AREA B

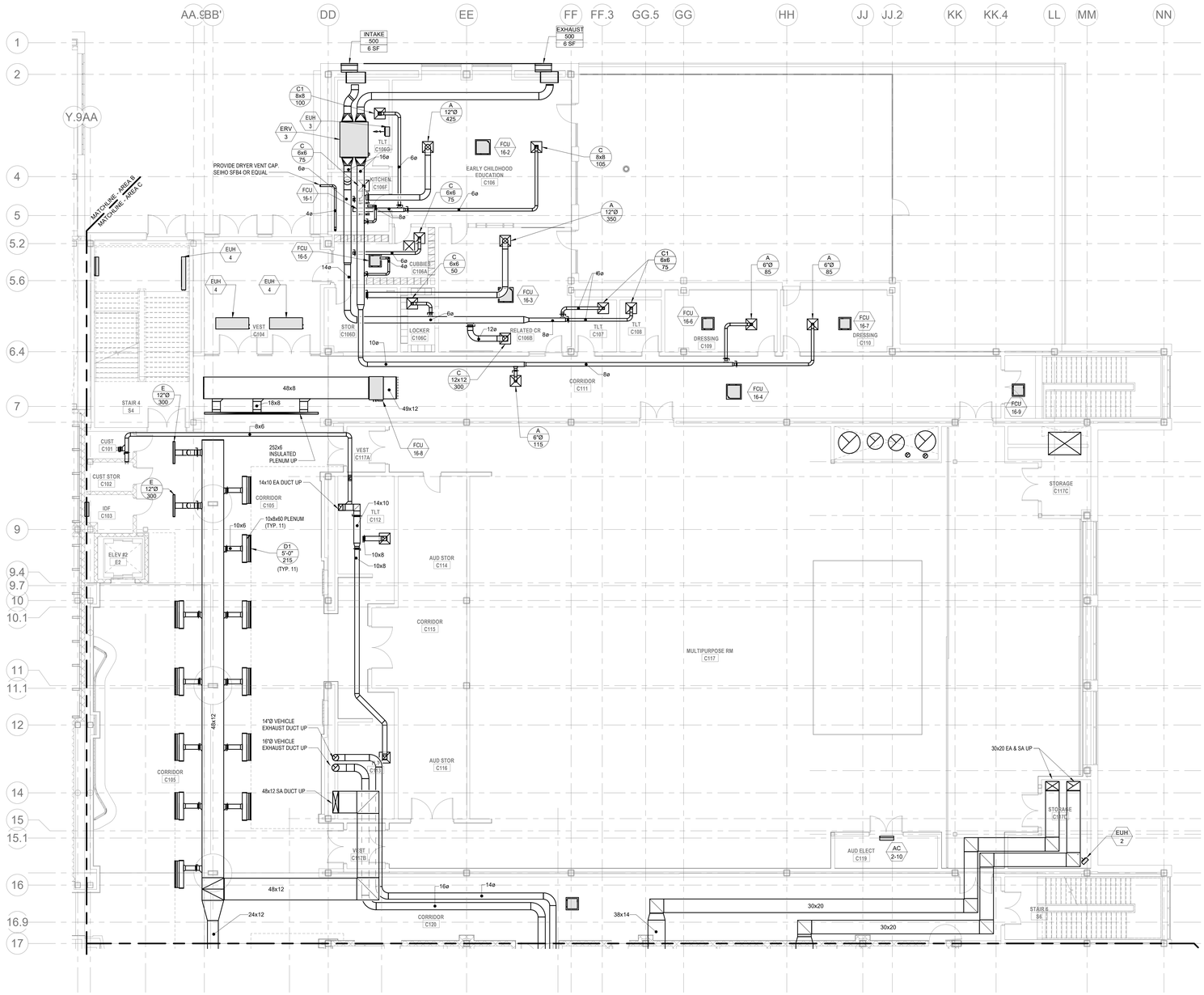
Scale: 1/8" = 1'-0"

Job No.: 20202

Drawn By: DRA

Date: January 13, 2023

M1-1-1B



HVAC DRAWING NOTES

1.

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Studio 205
South Windsor, CT
06074

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Studio 300
Waltham, MA
02453

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January 13, 2023

KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

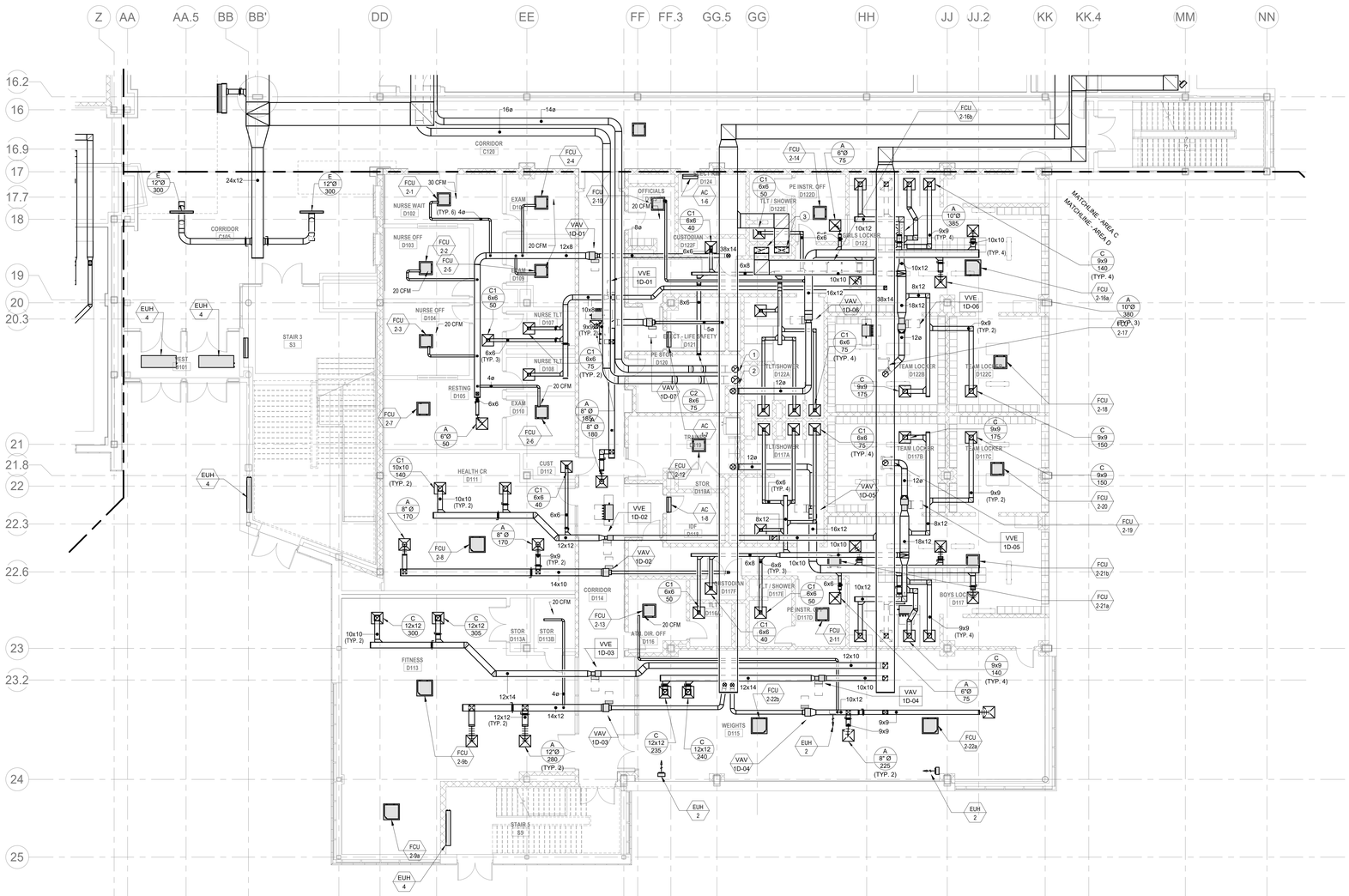
MECHANICAL DUCTWORK FIRST FLOOR PLAN - AREA C

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-1-1C

HVAC DRAWING NOTES

1. 14"Ø VEHICLE EXHAUST DUCT DN.
2. 16"Ø VEHICLE EXHAUST DUCT DN.
3. 30x12 EA AND SA DUCT DN.



M1-1-1D VARIABLE AIR VOLUME EXHAUST AIR TERMINAL SCHEDULE (VVE)

UNIT NO	TYPE	INLET DIAMETER (IN)	MAX AIRFLOW (CFM)	MIN. TURNDOWN (CFM)	MANUFACTURER	MODEL	REMARKS
VVE-1D-01	SINGLE DUCT EXHAUST	5	0	60	TITUS	DESV	
VVE-1D-02	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-1D-03	SINGLE DUCT EXHAUST	8	0	105	TITUS	DESV	
VVE-1D-04	SINGLE DUCT EXHAUST	8	0	105	TITUS	DESV	
VVE-1D-05	SINGLE DUCT EXHAUST	12	0	650	TITUS	DESV	
VVE-1D-06	SINGLE DUCT EXHAUST	12	0	650	TITUS	DESV	

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
4. PROVIDE INLET VELOCITY SENSOR.
5. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
6. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
7. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

M1-1-1D - VARIABLE AIR VOLUME TERMINAL (VAV)

			PRIMARY AIR VALVE					SOUND DATA - MAX PWL IN 3RD OCTAVE @ 1.0" INLET PRESSURE		ELECTRIC REHEAT COIL							
UNIT NO	SYSTEM	ROOM SERVED	PRIMARY INLET DIA (IN)	MAX FLOW SETPT (CFM)	MIN FLOW OCCUPIED (CFM)	MINIMUM FLOW UNOCCUPIED (CFM)	TOTAL PRESS DROP (IN WG)	DISCH	RAD	HEATING AIRFLOW (CFM)	EAT (°F)	LAT (°F)	kW	V	PH	MANUFACTURER	MODEL	NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. REFER TO FLOOR PLANS. VAV TERMINALS ARE PROVIDED WITH AND WITHOUT ELECTRIC RE-HEAT COILS.
4. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
5. PROVIDE INLET VELOCITY SENSOR.
6. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
7. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
8. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

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Northeast Metropolitan Regional Vocational High School

Wakefield, MA 01880

BALA CONSULTING ENGINEERS, INC.
1 BOWDOIN SQUARE
BOSTON, MA 02111-1105
TEL: 617.367.6600 FAX: 617.367.0160
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January 13, 2023

KEY PLAN

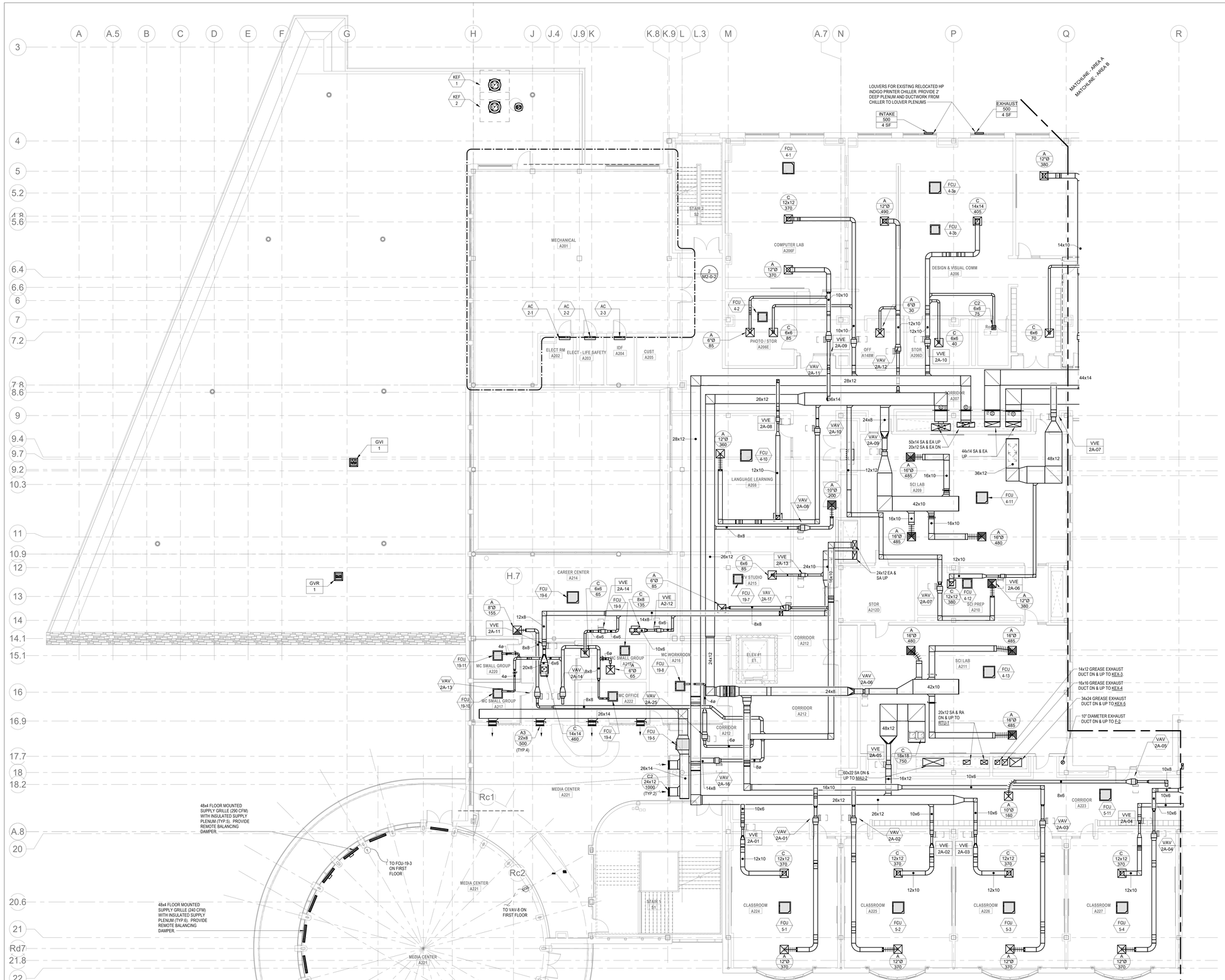
PROJECT NORTH

MAGNETIC NORTH

MECHANICAL DUCTWORK FIRST FLOOR PLAN - AREA D

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-1-1D



M1-1-2A - VARIABLE AIR VOLUME TERMINAL (VAV)

UNIT NO	SYSTEM	ROOM SERVED	PRIMARY AIR VALVE: PRIMARY INLET DIA (IN)	Air Terminal Air Flow	PRIMARY AIR VALVE: MAX FLOW SETPT (CFM)	MIN FLOW OCCUPIED (CFM)	MINIMUM FLOW UNOCCUPIED (CFM)	TOTAL PRESS DROP (IN WG)	SOUND DATA - MAX PWL IN 3RD OCTAVE @ 1.0" INLET PRESSURE: DISCH	RAD	ELECTRIC REHEAT COIL: HEATING AIRFLOW (CFM)	EAT (°F)	LAT (°F)	kW	V	PH	MANUFACTURER	MODEL	NOTES
VAV-2A-01	HRU-2	A224 CR	8	370		125	0	1.00						0	V	1	TITUS	DESV	SEE NOTES
VAV-2A-02	HRU-2	A225 CR	8	370		125	0	1.00						0	V	1	TITUS	DESV	SEE NOTES
VAV-2A-03	HRU-2	A226 CR	8	370		125	0	1.00						0	V	1	TITUS	DESV	SEE NOTES
VAV-2A-04	HRU-2	A227 CR	8	370		125	0	1.00						0	V	1	TITUS	DESV	SEE NOTES
VAV-2A-05	HRU-1	A322 CR	6	160		30	0	1.00						0	V	1	TITUS	DESV	SEE NOTES
VAV-2A-06	HRU-2	A223 CORR.	0	1500		510	0	0.00						0	V	1	TITUS	DESV	SEE NOTES
VAV-2A-07	HRU-1	A210 SCI PREP	8	375		60	0	1.00						0	V	1	TITUS	DESV	SEE NOTES
VAV-2A-08		A212 CORR.	0	200		0	0	0.00						0	V	1			
VAV-2A-09	HRU-2	A209 SCI LAB	0	1500		510	0	0.00						0	V	1	TITUS	DESV	SEE NOTES
VAV-2A-10	HRU-2	A208 LANGU	8	370		125	0	1.00						0	V	1	TITUS	DESV	SEE NOTES
VAV-2A-11	HRU-1	A206F COMPU	8	375		60	0	1.00						0	V	1	TITUS	DESV	SEE NOTES
VAV-2A-12	HRU-1	A148M OFF	8	375		60	0	1.00						0	V	1	TITUS	DESV	SEE NOTES
VAV-2A-13		A214 CARRER	0	200		0	0	0.00						0	V	1			
VAV-2A-14		A222 AC OFF	0	200		0	0	0.00						0	V	1			
VAV-2A-15		A216 MC	0	200		0	0	0.00						0	V	1			
VAV-2A-16	HRU-1	A212 CORR.	8	375		60	0	1.00						0	V	1	TITUS	DESV	SEE NOTES
VAV-2A-17	HRU-2	A215 TV	4	35		35	35	1.00						0	V	1	TITUS	DESV	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. REFER TO FLOOR PLANS. VAV TERMINALS ARE PROVIDED WITH AND WITHOUT ELECTRIC RE-HEAT COILS.
4. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
5. PROVIDE INLET VELOCITY SENSOR.
6. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
7. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
8. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

M1-1-2A VARIABLE AIR VOLUME EXHAUST AIR TERMINAL SCHEDULE (VVE)

UNIT NO	TYPE	INLET DIAMETER (IN)	MAX AIRFLOW (CFM)	MIN. TURNDOWN (CFM)	MANUFACTURER	MODEL	REMARKS
VVE-2A-01	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-2A-02	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-2A-03	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-2A-04	SINGLE DUCT EXHAUST	6	370	370	TITUS	DESV	
VVE-2A-05	SINGLE DUCT EXHAUST	12	1500	1500	TITUS	DESV	
VVE-2A-06	SINGLE DUCT EXHAUST	6	380	380	TITUS	DESV	
VVE-2A-07	SINGLE DUCT EXHAUST	12	1500	1500	TITUS	DESV	
VVE-2A-08	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-2A-09	SINGLE DUCT EXHAUST	10	0	240	TITUS	DESV	
VVE-2A-10	SINGLE DUCT EXHAUST	10	0	240	TITUS	DESV	
VVE-2A-11	SINGLE DUCT EXHAUST	8	0	1400	TITUS	DESV	
VVE-2A-12	SINGLE DUCT EXHAUST	6	0	30	TITUS	DESV	
VVE-2A-13	SINGLE DUCT EXHAUST	6	0	30	TITUS	DESV	
VVE-2A-14	SINGLE DUCT EXHAUST	6	0	30	TITUS	DESV	

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
4. PROVIDE INLET VELOCITY SENSOR.
5. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
6. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
7. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

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225 Oakland Road
Studio 205
South Windsor, CT
06074
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02453
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TEL 617.367.0808 FAX 617.227.5195
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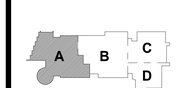
January 13, 2023



KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL DUCTWORK SECOND FLOOR PLAN - AREA A

Scale: 1/8" = 1'-0"

Job No.: 20202

Drawn By: DRA

Date: January 13, 2023

M1-1-2A

M1-1-2B - VARIABLE AIR VOLUME TERMINAL (VAV)

UNIT NO	SYSTEM	ROOM SERVED	PRIMARY AIR VALVE PRIMARY INLET DIA (IN)	Air Terminal Air Flow	PRIMARY AIR VALVE MIN FLOW OCCUPIED (CFM)	MINIMUM FLOW UNOCCUPIED (CFM)	TOTAL PRESS DROP (IN WG)	SOUND DATA - MAX PWL IN 3RD OCTAVE @ 1.0" INLET PRESSURE DISCH	RAD	MANUFACTURER	MODEL	NOTES
VAV-2B-01	HRU-2	B234B HUDDLE	8	370	125	0	0.00			TITUS	DESV	SEE NOTES
VAV-2B-02		B230 COLLAB	0	200	0	0	0.00					
VAV-2B-03	HRU-2	B234 TEACHERS PLAN	4	200	35	35	1.00			TITUS	DESV	SEE NOTES
VAV-2B-04	HRU-2	B234B HUDDLE	4	35	35	35	1.00			TITUS	DESV	SEE NOTES
VAV-2B-05	HRU-2	B235 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-2B-06	HRU-2	B236 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-2B-07	HRU-2	B237 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-2B-08	HRU-2	B238 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-2B-09	HRU-2	B239 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-2B-10	HRU-2	B213 SPED	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-2B-11	HRU-2	B212 CR	8	370	125	0	0.00			TITUS	DESV	SEE NOTES
VAV-2B-12	HRU-2	B211 CR	8	370	125	0	0.00			TITUS	DESV	SEE NOTES
VAV-2B-13	HRU-2	B215 SPED	4	160	35	160	1.00			TITUS	DESV	SEE NOTES
VAV-2B-14	HRU-2	B216 SUSPEN	4	140	35	140	1.00			TITUS	DESV	SEE NOTES
VAV-2B-15	HRU-2	A307 SPED	6	210	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-2B-16	HRU-1	B231 CORRIDOR	8	375	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-2B-17	HRU-2	B203B RELATED CR	8	535	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-2B-18	HRU-2	B203 MARKETING	8	360	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-2B-19	HRU-2	B202A RELATED CR	8	540	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-2B-20	HRU-2	B202 BUSI OFFICE TECH	8	540	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-2B-21	HRU-2	B201D COMP LAB	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-2B-22	HRU-2	B201 DRAFTING AND DESIGN	10	810	0	275	0.00			TITUS	DESV	SEE NOTES
VAV-2B-23	HRU-2	B201G COMP LAB	10	700	0	235	0.00			TITUS	DESV	SEE NOTES
VAV-2B-24	HRU-2	A206B COMP LAB	10	710	0	240	0.00			TITUS	DESV	SEE NOTES
VAV-2B-25		A307 SPED	0	200	0	0	0.00					

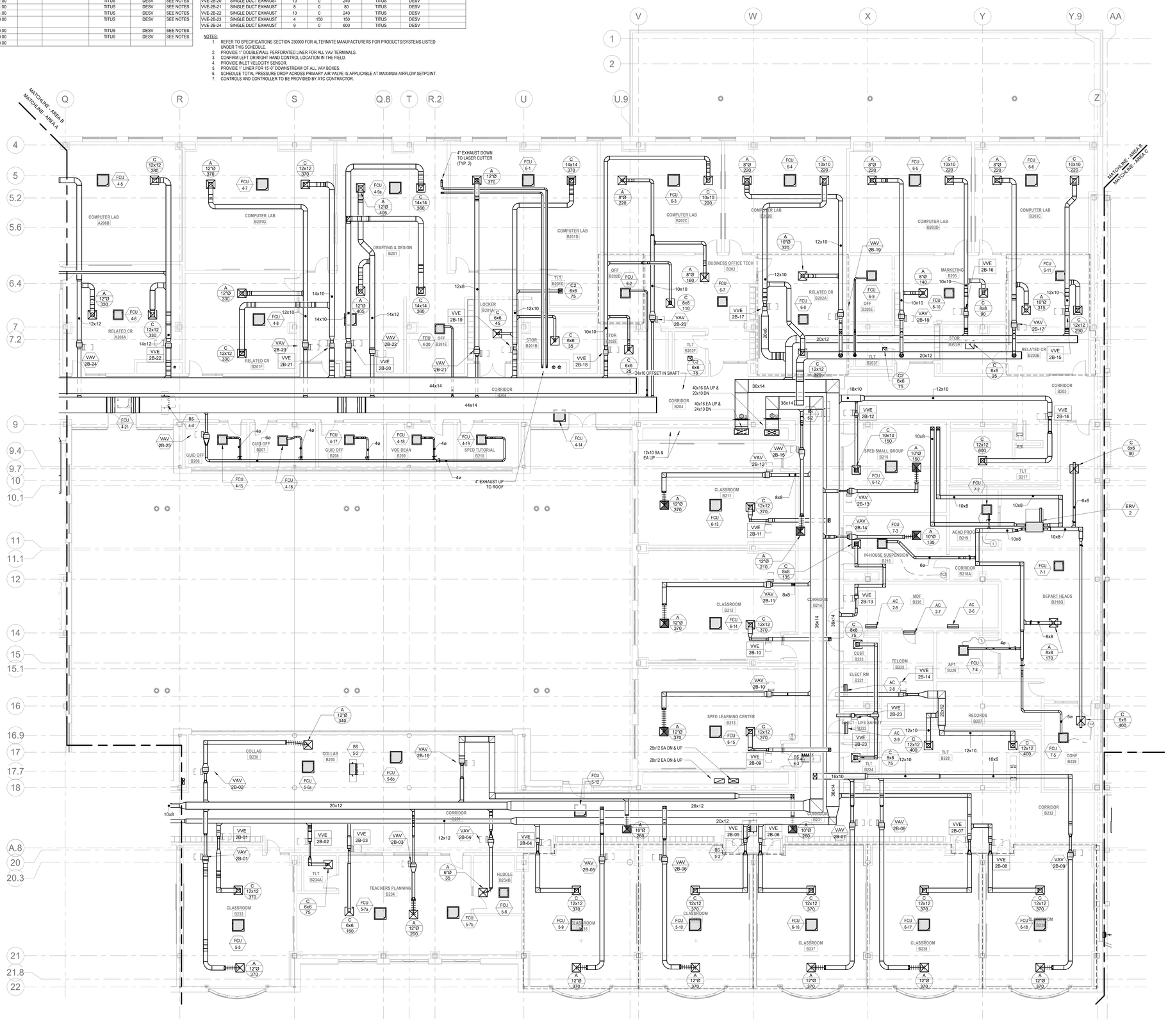
NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. REFER TO FLOOR PLANS. VAV TERMINALS ARE PROVIDED WITH AND WITHOUT ELECTRIC RE-HEAT COILS.
4. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
5. PROVIDE INLET VELOCITY SENSOR.
6. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
7. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
8. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

M1-1-2B VARIABLE AIR VOLUME EXHAUST AIR TERMINAL SCHEDULE (VVE)

UNIT NO	TYPE	INLET DIAMETER (IN)	MAX AIRFLOW (CFM)	MIN TURNDOWN (CFM)	MANUFACTURER	MODEL	REMARKS
VVE-2B-01	SINGLE DUCT EXHAUST	6	370	370	TITUS	DESV	
VVE-2B-02	SINGLE DUCT EXHAUST	4	0	75	TITUS	DESV	
VVE-2B-03	SINGLE DUCT EXHAUST	5	0	125	TITUS	DESV	
VVE-2B-04	SINGLE DUCT EXHAUST	6	370	370	TITUS	DESV	
VVE-2B-05	SINGLE DUCT EXHAUST	6	370	370	TITUS	DESV	
VVE-2B-06	SINGLE DUCT EXHAUST	6	370	370	TITUS	DESV	
VVE-2B-07	SINGLE DUCT EXHAUST	6	370	370	TITUS	DESV	
VVE-2B-08	SINGLE DUCT EXHAUST	6	370	370	TITUS	DESV	
VVE-2B-09	SINGLE DUCT EXHAUST	6	370	370	TITUS	DESV	
VVE-2B-10	SINGLE DUCT EXHAUST	6	370	370	TITUS	DESV	
VVE-2B-11	SINGLE DUCT EXHAUST	6	370	370	TITUS	DESV	
VVE-2B-12	SINGLE DUCT EXHAUST	5	0	125	TITUS	DESV	
VVE-2B-13	SINGLE DUCT EXHAUST	4	140	140	TITUS	DESV	
VVE-2B-14	SINGLE DUCT EXHAUST	9	800	800	TITUS	DESV	
VVE-2B-15	SINGLE DUCT EXHAUST	8	0	80	TITUS	DESV	
VVE-2B-16	SINGLE DUCT EXHAUST	8	0	80	TITUS	DESV	
VVE-2B-17	SINGLE DUCT EXHAUST	8	0	80	TITUS	DESV	
VVE-2B-18	SINGLE DUCT EXHAUST	8	0	80	TITUS	DESV	
VVE-2B-19	SINGLE DUCT EXHAUST	8	0	80	TITUS	DESV	
VVE-2B-20	SINGLE DUCT EXHAUST	10	0	240	TITUS	DESV	
VVE-2B-21	SINGLE DUCT EXHAUST	8	0	80	TITUS	DESV	
VVE-2B-22	SINGLE DUCT EXHAUST	10	0	240	TITUS	DESV	
VVE-2B-23	SINGLE DUCT EXHAUST	4	150	150	TITUS	DESV	
VVE-2B-24	SINGLE DUCT EXHAUST	9	0	600	TITUS	DESV	

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
4. PROVIDE INLET VELOCITY SENSOR.
5. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
6. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
7. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

HVAC DRAWING NOTES



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January 13, 2023

KEY PLAN

PROJECT NORTH | MAGNETIC NORTH

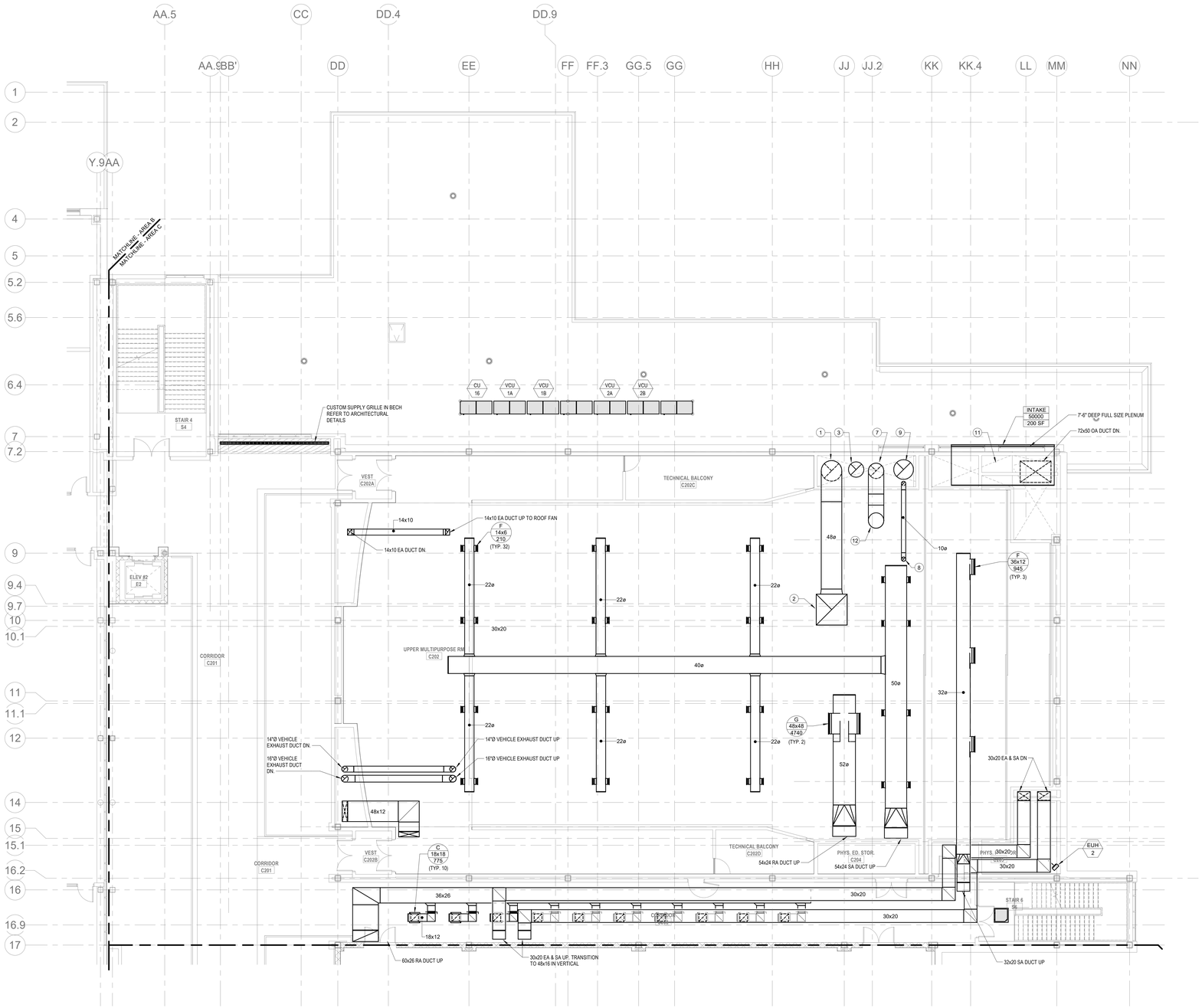
MECHANICAL DUCTWORK SECOND FLOOR PLAN - AREA B

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-1-2B

HVAC DRAWING NOTES

1. 48"Ø DIAMETER EA DUCT DOWN.
2. 72x72 EA DUCT UP TO ROOF VENT.
3. 30"Ø DIAMETER EA DUCT DOWN.
4. NOT USED.
5. NOT USED.
6. NOT USED.
7. 10"Ø DIAMETER EA DUCT DOWN.
8. 10"Ø DIAMETER EA DUCT UP TO FAN ON ROOF.
9. 40"Ø DIAMETER EA DUCT UP TO FAN ON ROOF AND DN.
10. NOT USED.
11. 30"Ø DIAMETER EA DUCT DOWN.
12. 38"Ø DIAMETER EA DUCT UP TO FAN ON ROOF.



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225 Oakland Road
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South Windsor, CT
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260 Charles Street
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31 TRAFFIC PLACE
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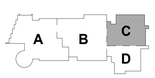
January 13, 2023



KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL DUCTWORK SECOND FLOOR PLAN - AREA C

Scale: 1/8" = 1'-0"

Job No.: 20202

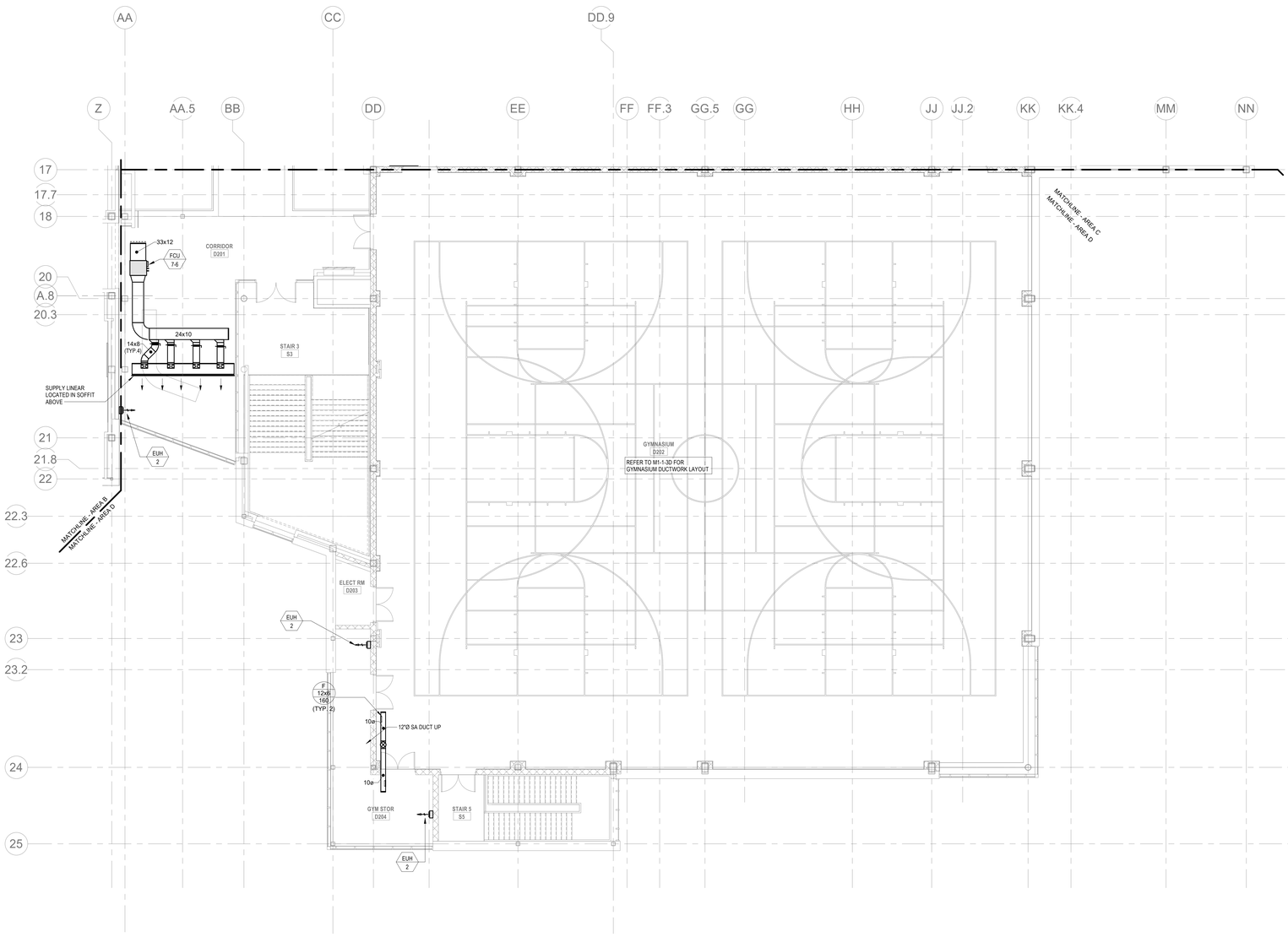
Drawn By: DRA

Date: January 13, 2023

M1-1-2C

HVAC DRAWING NOTES

1.



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225 Oakland Road
Studio 205
South Windsor, CT
06074

260 Charles Street
Studio 300
Waltham, MA
02453

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January 13, 2023

KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL DUCTWORK SECOND FLOOR PLAN - AREA D

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-1-2D

M1-1-3A - VARIABLE AIR VOLUME TERMINAL (VAV)

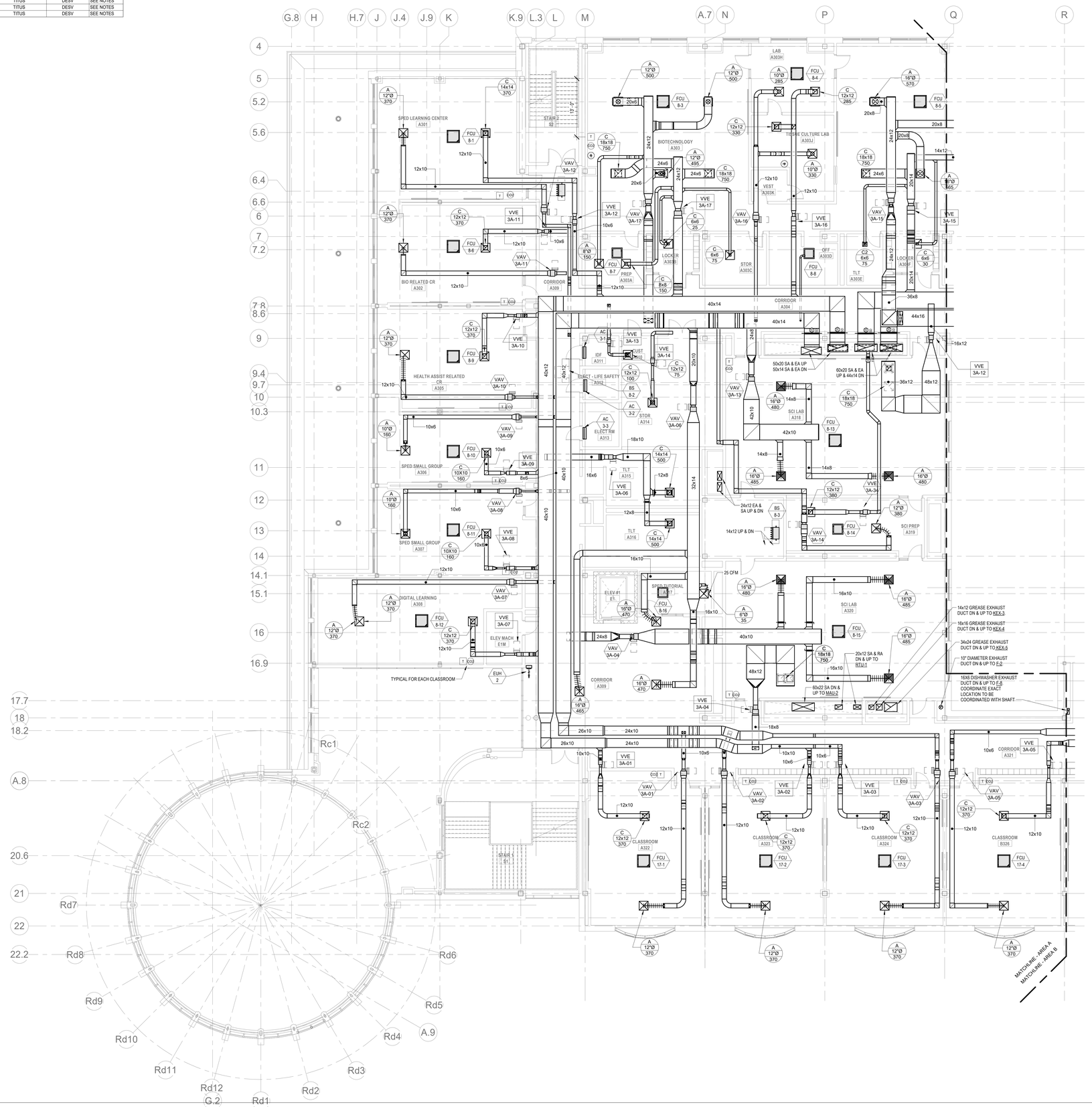
UNIT NO	SYSTEM	ROOM SERVED	PRIMARY AIR VALVE: PRIMARY INLET DIA (IN)	Air Terminal Air Flow	PRIMARY AIR VALVE: MIN FLOW OCCUPIED (CFM)	PRIMARY AIR VALVE: MINIMUM FLOW UNOCCUPIED (CFM)	TOTAL PRESS DROP (IN.WG)	SOUND DATA - MAX PWL IN 3RD OCTAVE @ 1.0" INLET PRESSURE: DISCH	SOUND DATA: RAD	MANUFACTURER	MODEL	NOTES
VAV-3A-01	HRU-1	A323 CR	8	370	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-3A-02	HRU-1	A323 CR	8	370	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-3A-03	HRU-1	A324 CR	8	370	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-3A-04	HRU-1	A320 SCI LAB	14	1350	510	0	0.00			TITUS	DESV	SEE NOTES
VAV-3A-05	HRU-1	A324 CR	8	370	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-3A-06	HRU-2	A309 CORR.	14	1430	510	0	0.00			TITUS	DESV	SEE NOTES
VAV-3A-07	HRU-1	A308 DIG. LRNG.	8	370	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-3A-08	HRU-1	A307 SPED	4	160	35	35	1.00			TITUS	DESV	SEE NOTES
VAV-3A-09	HRU-1	A308 SPED	4	160	35	35	1.00			TITUS	DESV	SEE NOTES
VAV-3A-10	HRU-1	A305 HEALTH CR	8	370	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-3A-11	HRU-1	A302 BIO CR	8	370	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-3A-12	HRU-1	A302 BIO CR	8	370	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-3A-13	HRU-2	A309 CORR.	14	1445	510	0	0.00			TITUS	DESV	SEE NOTES
VAV-3A-14	HRU-2	A320 SCI LAB	14	1445	510	0	0.00			TITUS	DESV	SEE NOTES
VAV-3A-15	HRU-2	A322 CR	14	1450	510	0	0.00			TITUS	DESV	SEE NOTES
VAV-3A-16	HRU-2	A322 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-3A-17	HRU-2	A322 CR	14	1645	510	0	0.00			TITUS	DESV	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. REFER TO FLOOR PLANS. VAV TERMINALS ARE PROVIDED WITH AND WITHOUT ELECTRIC RE-HEAT COILS.
4. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
5. PROVIDE INLET VELOCITY SENSOR.
6. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
7. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
8. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

M1-1-3A VARIABLE AIR VOLUME EXHAUST AIR TERMINAL SCHEDULE (VVE)

UNIT NO	TYPE	INLET DIAMETER (IN)	MAX AIRFLOW (CFM)	MIN TURNDOWN (CFM)	MANUFACTURER	MODEL	REMARKS
VVE-3A-01	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3A-02	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3A-03	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3A-04	SINGLE DUCT EXHAUST	12	0	1400	TITUS	DESV	
VVE-3A-05	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3A-06	SINGLE DUCT EXHAUST	8	0	600	TITUS	DESV	
VVE-3A-07	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3A-08	SINGLE DUCT EXHAUST	4	0	70	TITUS	DESV	
VVE-3A-09	SINGLE DUCT EXHAUST	4	0	70	TITUS	DESV	
VVE-3A-10	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3A-11	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3A-12	SINGLE DUCT EXHAUST	8	0	125	TITUS	DESV	
VVE-3A-13	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3A-14	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3A-15	SINGLE DUCT EXHAUST	7	0	335			
VVE-3A-16	SINGLE DUCT EXHAUST	8	0	80	TITUS	DESV	
VVE-3A-17	SINGLE DUCT EXHAUST	7	0	335			
VVE-3A-34	SINGLE DUCT EXHAUST	8	0	125	TITUS	DESV	

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
4. PROVIDE INLET VELOCITY SENSOR.
5. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
6. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
7. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.



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225 Oakland Road Studio 205 South Windsor, CT 06074
260 Charles Street Studio 300 Waltham, MA 02453
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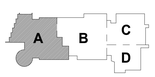


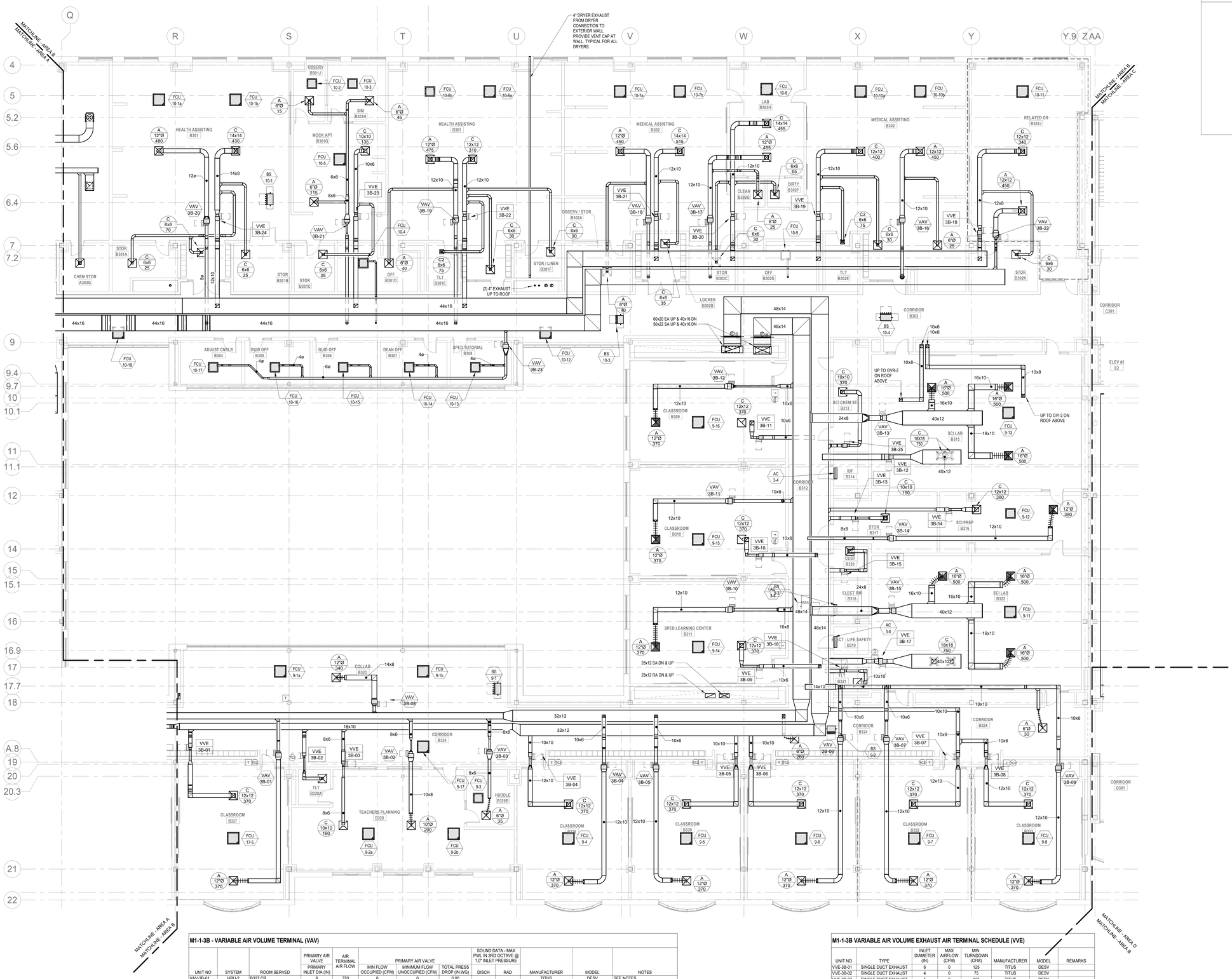
KEY PLAN

PROJECT NORTH | MAGNETIC NORTH

MECHANICAL DUCTWORK THIRD FLOOR PLAN - AREA A

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-1-3A



M1-1-3B - VARIABLE AIR VOLUME TERMINAL (VAV)

UNIT NO	SYSTEM	ROOM SERVED	PRIMARY AIR VALVE: PRIMARY INLET DIA (IN)	AIR TERMINAL: AIR FLOW	PRIMARY AIR VALVE: MIN FLOW OCCUPIED (CFM)	PRIMARY AIR VALVE: MINIMUM FLOW UNOCCUPIED (CFM)	PRIMARY AIR VALVE: TOTAL PRESS DROP (IN WG)	SOUND DATA - MAX PWL IN 3RD OCTAVE @ 1.0" INLET PRESSURE: DISCH	SOUND DATA: RAD	MANUFACTURER	MODEL	NOTES
VAV-3B-01	HRU-2	B327 CR	8	370	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-3B-02	HRU-1	B328 TEACHERS PLAN	6	200	30	70	1.00			TITUS	DESV	SEE NOTES
VAV-3B-03	HRU-2	B328B HUDDLE	4	35	35	140	1.00			TITUS	DESV	SEE NOTES
VAV-3B-04	HRU-2	B329 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-05	HRU-1	B330 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-06	HRU-2	B331 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-07	HRU-2	B332 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-08	HRU-2	B323 COLLAB	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-09	HRU-2	B333 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-10	HRU-2	B311 SPED	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-11	HRU-2	B310 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-12	HRU-2	B309 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-13	HRU-2	B315 SCI LAB	0	1500	510	0	0.00			TITUS	DESV	SEE NOTES
VAV-3B-14	HRU-2	B316 SCI PREP	8	380	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-15	HRU-2	B322 SCI LAB	0	1500	510	0	0.00			TITUS	DESV	SEE NOTES
VAV-3B-16	HRU-2	B302 MEDICAL ASSIST	8	475	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-3B-17	HRU-1	B302H LAB	8	370	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-18	HRU-1	B302 MEDICAL ASSIST	8	490	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-19	HRU-1	B301 HEALTH ASSIST	8	515	60	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-20	HRU-2	A322 CR	8	480	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-21	HRU-2	B301G MOCK APT	4	175	35	140	1.00			TITUS	DESV	SEE NOTES
VAV-3B-22	HRU-2	B302J RELA CR	8	480	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-3B-23	HRU-1	A322 CR	6	180	30	0	1.00			TITUS	DESV	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. REFER TO FLOOR PLANS. VAV TERMINALS ARE PROVIDED WITH AND WITHOUT ELECTRIC RE-HEAT COILS.
4. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
5. PROVIDE INLET VELOCITY SENSOR.
6. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
7. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
8. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

M1-1-3B VARIABLE AIR VOLUME EXHAUST AIR TERMINAL SCHEDULE (VVE)

UNIT NO	TYPE	INLET DIAMETER (IN)	MAX AIRFLOW (CFM)	MIN TURNDOWN (CFM)	MANUFACTURER	MODEL	REMARKS
VVE-3B-01	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3B-02	SINGLE DUCT EXHAUST	4	0	75	TITUS	DESV	
VVE-3B-03	SINGLE DUCT EXHAUST	5	0	125	TITUS	DESV	
VVE-3B-04	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3B-05	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3B-06	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3B-07	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3B-08	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3B-09	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3B-10	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3B-11	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3B-12	SINGLE DUCT EXHAUST	12	0	125	TITUS	DESV	
VVE-3B-13	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3B-14	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3B-15	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3B-16	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-3B-17	SINGLE DUCT EXHAUST	12	0	125	TITUS	DESV	
VVE-3B-18	SINGLE DUCT EXHAUST	8	0	105	TITUS	DESV	
VVE-3B-19	SINGLE DUCT EXHAUST	8	0	105	TITUS	DESV	
VVE-3B-20	SINGLE DUCT EXHAUST	8	0	105	TITUS	DESV	
VVE-3B-21	SINGLE DUCT EXHAUST	8	0	105	TITUS	DESV	
VVE-3B-22	SINGLE DUCT EXHAUST	8	0	105	TITUS	DESV	
VVE-3B-23	SINGLE DUCT EXHAUST	8	0	105	TITUS	DESV	
VVE-3B-24	SINGLE DUCT EXHAUST	8	0	105	TITUS	DESV	
VVE-3B-25	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
4. PROVIDE INLET VELOCITY SENSOR.
5. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
6. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
7. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

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57 THAYER PLACE
BOSTON, MA 02115-1339
TEL: 617.247.9696 FAX: 617.357.5168
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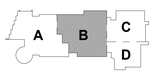


KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL DUCTWORK THIRD FLOOR PLAN - AREA B

Scale: 1/8" = 1'-0"

Job No.: 20202

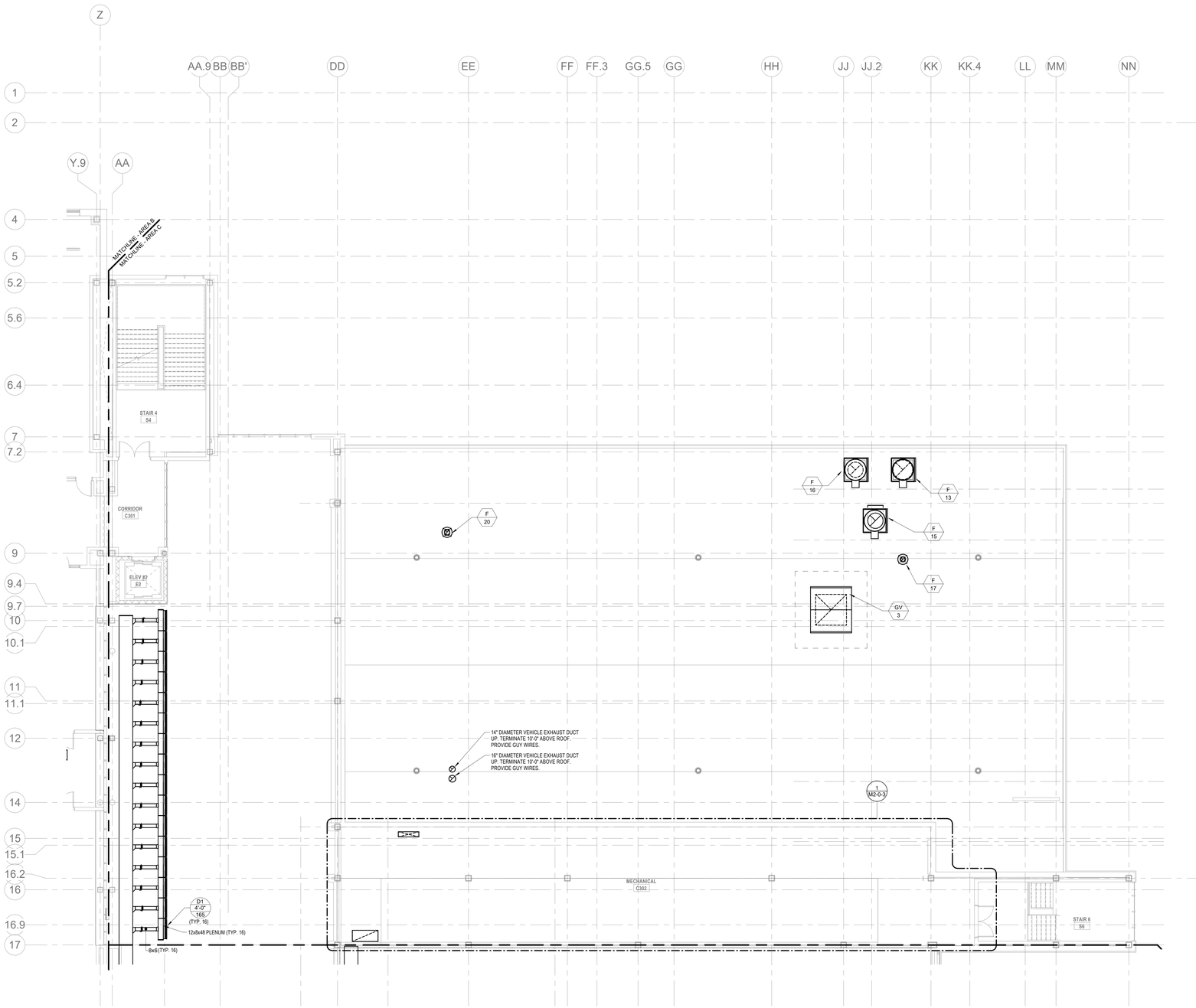
Drawn By: DRA

Date: January 13, 2023

M1-1-3B

HVAC DRAWING NOTES

1. PROVIDE REMOTE OPERATED BALANCING DAMPER. REFER TO DETAIL XX ON DWG XX.



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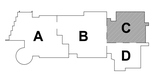
January 13, 2023



KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

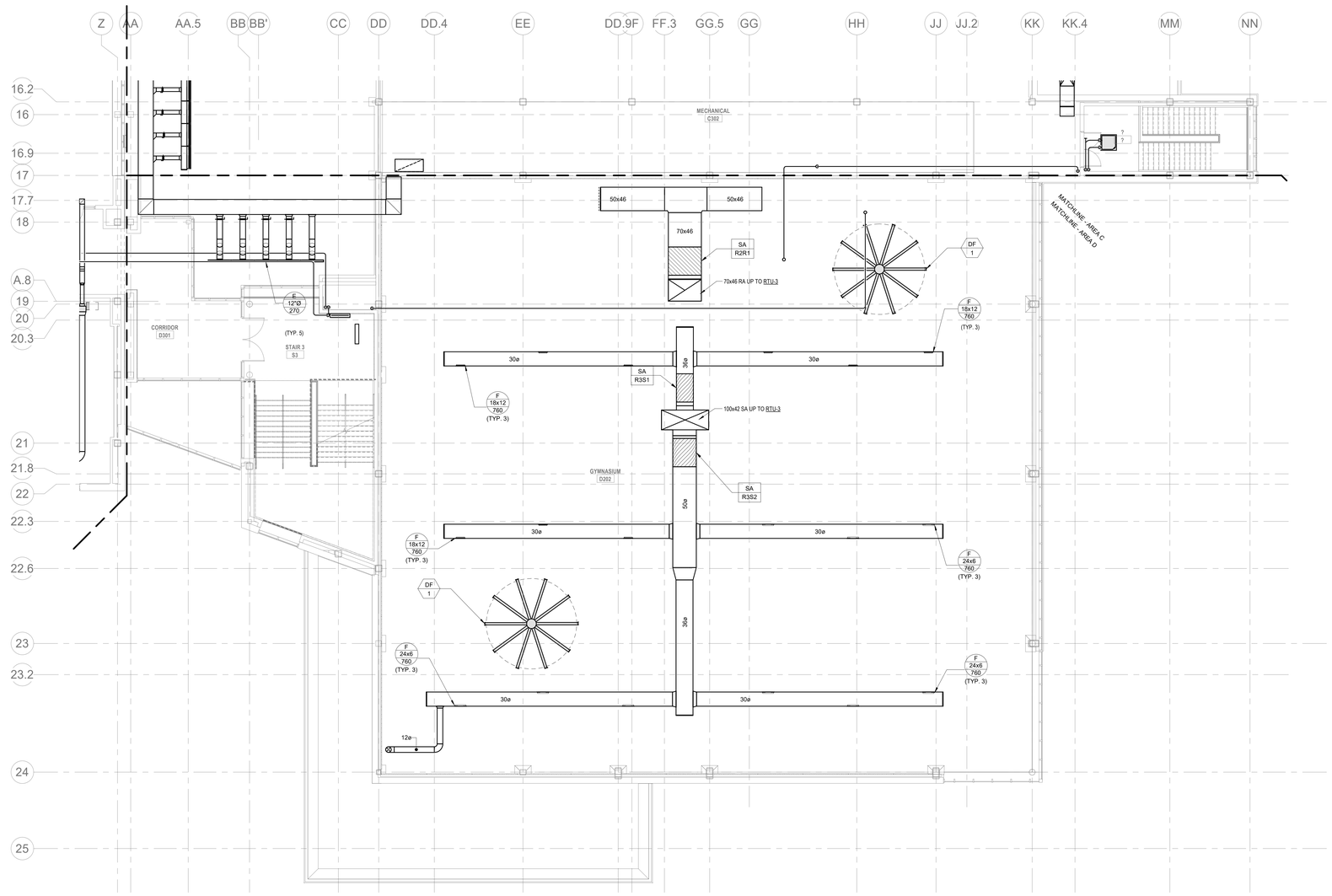
MECHANICAL DUCTWORK THIRD FLOOR PLAN - AREA C

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-1-3C

HVAC DRAWING NOTES

1.



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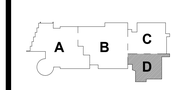


KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL DUCTWORK THIRD FLOOR PLAN - AREA D

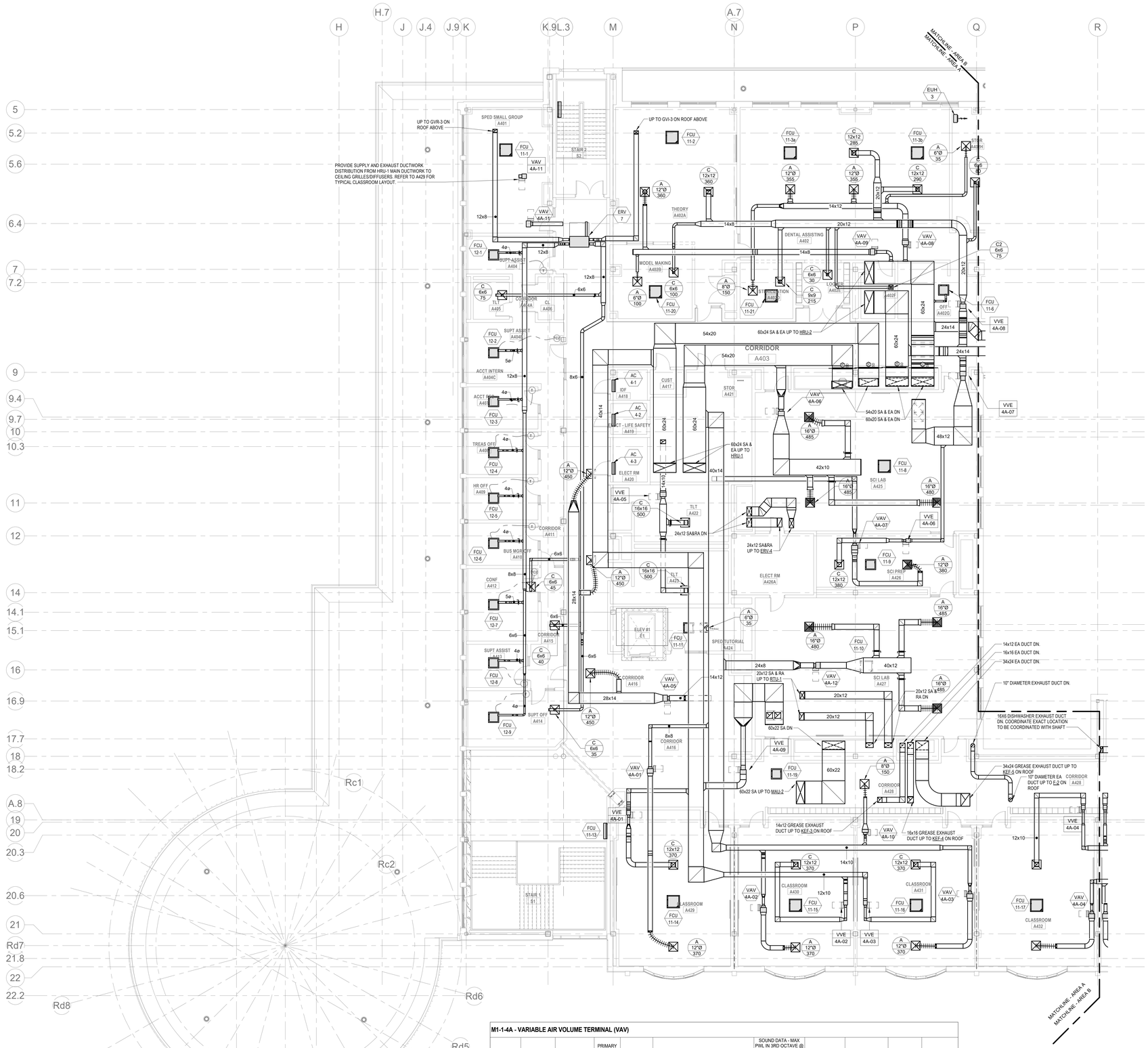
Scale: 1/8" = 1'-0"

Job No.: 20202

Drawn By: DRA

Date: January 13, 2023

M1-1-3D



M1-1-4A - VARIABLE AIR VOLUME TERMINAL (VAV)

UNIT NO	SYSTEM	ROOM SERVED	PRIMARY AIR VALVE PRIMARY INLET DIA (IN)	AIR TERMINAL AIR FLOW	PRIMARY AIR VALVE MIN FLOW OCCUPIED (CFM)	PRIMARY AIR VALVE MINIMUM FLOW UNOCCUPIED (CFM)	PRIMARY AIR VALVE TOTAL PRESS DROP (IN WG)	SOUND DATA - MAX PWL IN 3RD OCTAVE @ 1.0" INLET PRESSURE DISCH	SOUND DATA - MAX PWL IN 3RD OCTAVE @ 1.0" INLET PRESSURE RAD	MANUFACTURER	MODEL	NOTES	Description
VAV-4A-01	HRU-1	A429 CR	8	370	125	0	0.00			TITUS	DESV	SEE NOTES	
VAV-4A-02	HRU-2	A430 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES	
VAV-4A-03	HRU-1	A431 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES	
VAV-4A-04	HRU-3	B422 CR	8	370	0	0	0.00			TITUS	DESV	SEE NOTES	
VAV-4A-05	HRU-1	A416 CORRIDOR	14	1350	510	0	0.00			TITUS	DESV	SEE NOTES	
VAV-4A-06	HRU-1	A416 CORRIDOR	14	1450	510	0	0.00			TITUS	DESV	SEE NOTES	
VAV-4A-07	HRU-1	A426 SCI PREP	8	380	125	0	1.00			TITUS	DESV	SEE NOTES	
VAV-4A-08	HRU-2	A402A THEORY	10	895	0	0	0.00			TITUS	DESV	SEE NOTES	
VAV-4A-09	HRU-2	A402 DENTAL	8	460	60	0	1.00			TITUS	DESV	SEE NOTES	
VAV-4A-10	HRU-1	A428 CORRIDOR	4	150	35	35	1.00			TITUS	DESV	SEE NOTES	
VAV-4A-11	HRU-2	A425 SCI LAB	10	895	0	0	0.00			TITUS	DESV	SEE NOTES	
VAV-4A-12	HRU-1	A427 SCI LAB	14	1450	510	0	0.00			TITUS	DESV	SEE NOTES	

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. REFER TO FLOOR PLANS. VAV TERMINALS ARE PROVIDED WITH AND WITHOUT ELECTRIC RE-HEAT COILS.
4. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
5. PROVIDE INLET VELOCITY SENSOR.
6. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
7. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
8. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

M1-1-4A VARIABLE AIR VOLUME EXHAUST AIR TERMINAL SCHEDULE (VVE)

UNIT NO	TYPE	INLET DIAMETER (IN)	MAX AIRFLOW (CFM)	MIN. TURNDOWN (CFM)	MANUFACTURER	MODEL	REMARKS
VVE-4A-01	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4A-02	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4A-03	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4A-04	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4A-05	SINGLE DUCT EXHAUST	10	0	600	TITUS	DESV	
VVE-4A-06	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4A-07	SINGLE DUCT EXHAUST	12	0	125	TITUS	DESV	
VVE-4A-08	SINGLE DUCT EXHAUST	10	0	240	TITUS	DESV	
VVE-4A-09	SINGLE DUCT EXHAUST	12	0	1400	TITUS	DESV	
VVE-4A-10	SINGLE DUCT EXHAUST	8	0	125	TITUS	DESV	

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
4. PROVIDE INLET VELOCITY SENSOR.
5. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
6. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
7. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

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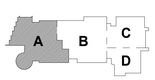


KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL DUCTWORK FOURTH FLOOR PLAN - AREA A

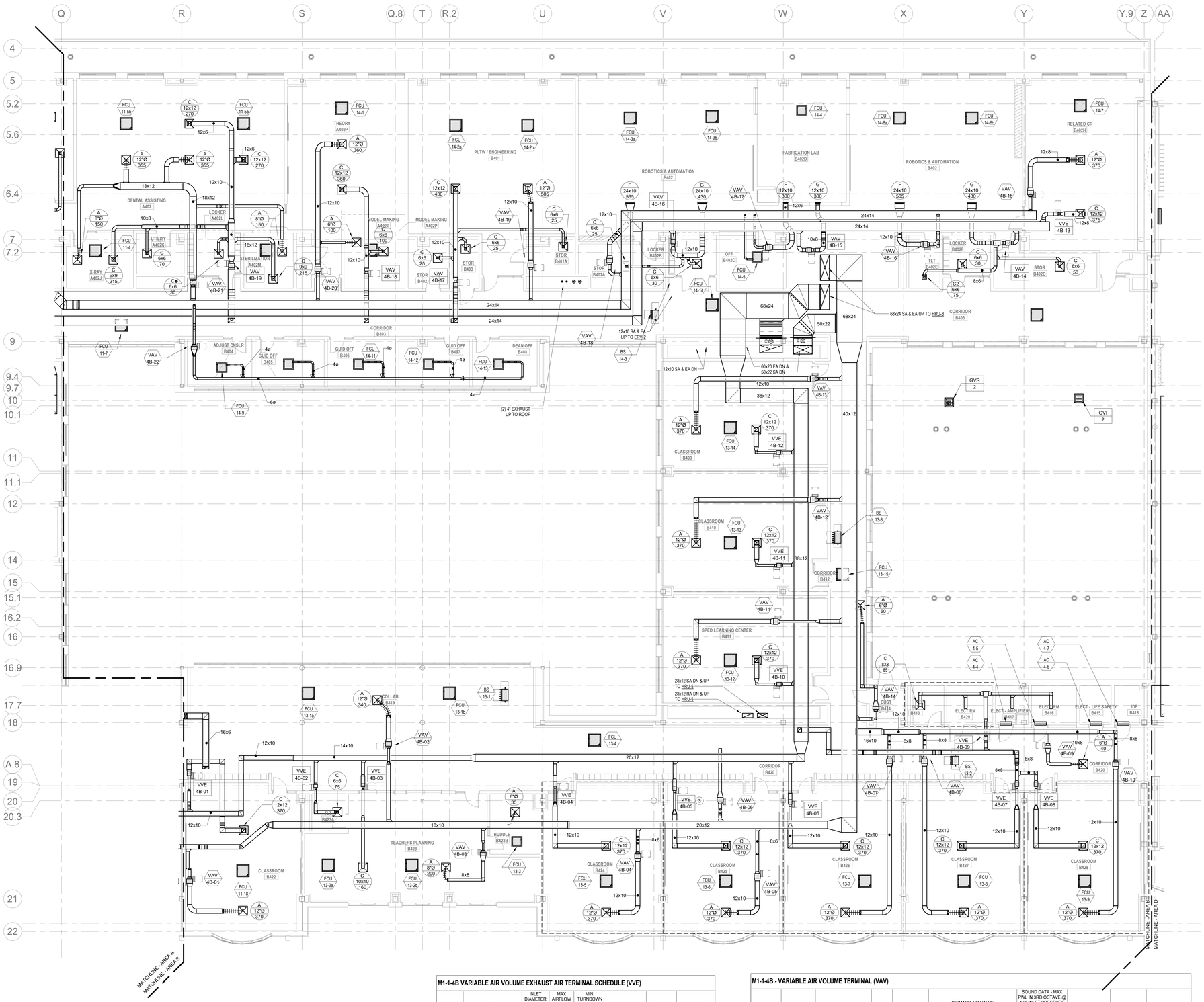
Scale: 1/8" = 1'-0"

Job No.: 20202

Drawn By: DRA

Date: January 13, 2023

M1-1-4A



HVAC DRAWING NOTES

M1-1-4B VARIABLE AIR VOLUME EXHAUST AIR TERMINAL SCHEDULE (VVE)

UNIT NO	TYPE	INLET DIAMETER (IN)	MAX AIRFLOW (CFM)	MIN. TURNDOWN (CFM)	MANUFACTURER	MODEL	REMARKS
VVE-4B-01	SINGLE DUCT EXHAUST	6	0	370	TITUS	DESV	
VVE-4B-02	SINGLE DUCT EXHAUST	4	0	75	TITUS	DESV	
VVE-4B-03	SINGLE DUCT EXHAUST	5	0	125	TITUS	DESV	
VVE-4B-04	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4B-05	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4B-06	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4B-07	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4B-08	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4B-09	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4B-10	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4B-11	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4B-12	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4B-13	SINGLE DUCT EXHAUST	6	0	125	TITUS	DESV	
VVE-4B-14	SINGLE DUCT EXHAUST	8	0	105	TITUS	DESV	
VVE-4B-15	SINGLE DUCT EXHAUST	8	0	105	TITUS	DESV	
VVE-4B-16	SINGLE DUCT EXHAUST	8	0	105	TITUS	DESV	
VVE-4B-17	SINGLE DUCT EXHAUST	8	0	105	TITUS	DESV	
VVE-4B-18	SINGLE DUCT EXHAUST	8	0	105	TITUS	DESV	
VVE-4B-19	SINGLE DUCT EXHAUST	5	0	240	TITUS	DESV	

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. CONFIRM LEFT OR RIGHT HAND CONTROL LOCATION IN THE FIELD.
4. PROVIDE INLET VELOCITY SENSOR.
5. PROVIDE 1" LINER FOR 15'-0" DOWNSTREAM OF ALL VAV BOXES.
6. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
7. CONTROLS AND CONTROLLER TO BE PROVIDED BY ATC CONTRACTOR.

M1-1-4B - VARIABLE AIR VOLUME TERMINAL (VAV)

UNIT NO	SYSTEM	ROOM SERVED	INLET DIA (IN)	Air Terminal Air Flow	PRIMARY AIR VALVE: MIN FLOW OCCUPIED (CFM)	PRIMARY AIR VALVE: MINIMUM FLOW UNOCCUPIED (CFM)	PRIMARY AIR VALVE: TOTAL PRESS DROP (IN.WG)	SOUND DATA - MAX PWL IN 3RD OCTAVE @ 1.0" INLET PRESSURE: DISCH	SOUND DATA - MAX PWL IN 3RD OCTAVE @ 1.0" INLET PRESSURE: RAD	MANUFACTURER	MODEL	NOTES
VAV-4B-01	HRU-3	B422 CR	8	370	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-02	HRU-3	B419 COLLAB	6	340	30	70	1.00			TITUS	DESV	SEE NOTES
VAV-4B-03	HRU-3	B423 PLANNING	4	200	35	35	1.00			TITUS	DESV	SEE NOTES
VAV-4B-04	HRU-3	B425 CR	8	370	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-05	HRU-3	B425 CR	8	370	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-06	HRU-3	B426 CR	8	370	125	0	1.00			TITUS	DESV	SEE NOTES
VAV-4B-07	HRU-3	B426 CR	8	370	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-08	HRU-3	B427 CR	8	370	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-09	HRU-3	B420 CORRIDOR	4	200	35	35	1.00			TITUS	DESV	SEE NOTES
VAV-4B-10	HRU-3	B428 CR	8	370	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-11	HRU-3	B411 SLC	8	370	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-12	HRU-2	B410 CR	8	370	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-13	HRU-3	B409 CR	8	370	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-14	HRU-3	B414 CUST	4	60	35	35	1.00			TITUS	DESV	SEE NOTES
VAV-4B-15	HRU-2	B402H	8	370	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-16	HRU-2	B402 ROBOTICS	8	565	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-17	HRU-2	B402D FAB LAB	8	300	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-18	HRU-2	B402 ROBOTICS	8	565	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-19	HRU-2	B401 PLTW ENG	8	505	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-20	HRU-2	B401 PLTW ENG	8	460	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-21	HRU-2	A402, A402J	0	1010	0	0	0.00			TITUS	DESV	SEE NOTES
VAV-4B-22	HRU-1	B402	6	200	60	0	1.00			TITUS	DESV	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 1" DOUBLEWALL PERFORATED LINER FOR ALL VAV TERMINALS.
3. REFER TO FLOOR PLANS. VAV TERMINALS ARE PROVIDED WITH AND WITHOUT ELECTRIC RE-HEAT COILS.
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7. SCHEDULE TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
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January 13, 2023

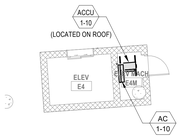
KEY PLAN

PROJECT NORTH | MAGNETIC NORTH

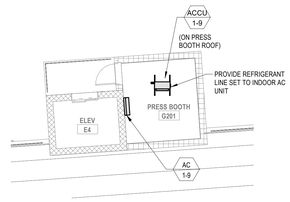
MECHANICAL DUCTWORK FOURTH FLOOR PLAN - AREA B

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

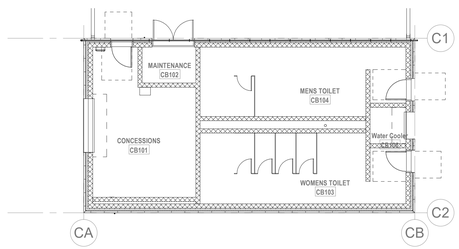
M1-1-4B



2 MECHANICAL Stadium Elevator (ADD ALTERNATE)
1/8" = 1'-0"



3 MECHANICAL Stadium Press Box (ADD ALTERNATE)
1/8" = 1'-0"



1 MECHANICAL Concessions Building (ADD ALTERNATE)
1/8" = 1'-0"

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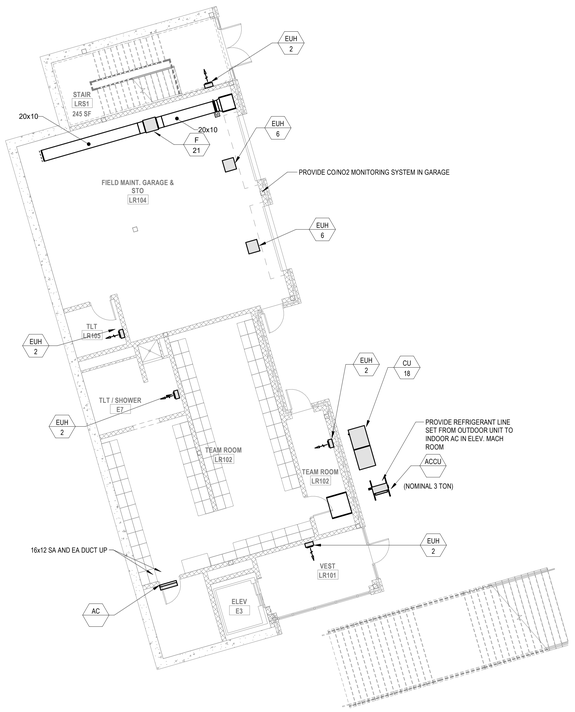
PROJECT NORTH

MAGNETIC NORTH

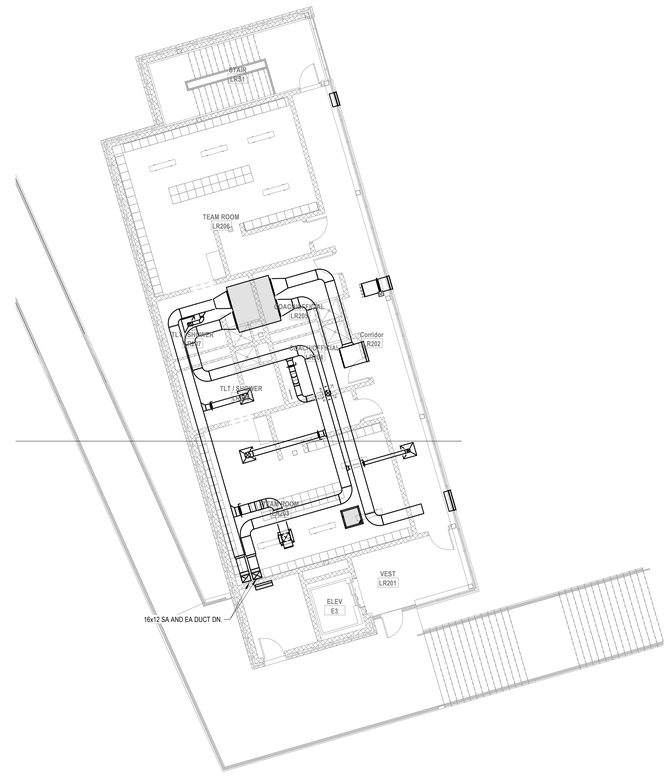
MECHANICAL CONCESSION BUILDING PLAN

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-1-CB



1 M1-1-LB **MECHANICAL Locker Building First Floor (ADD ALTERNATE)**
1/8" = 1'-0"



2 M1-1-LB **MECHANICAL Locker Building Second Level (ADD ALTERNATE)**
1/8" = 1'-0"

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BOSTON, MA 02111-1328
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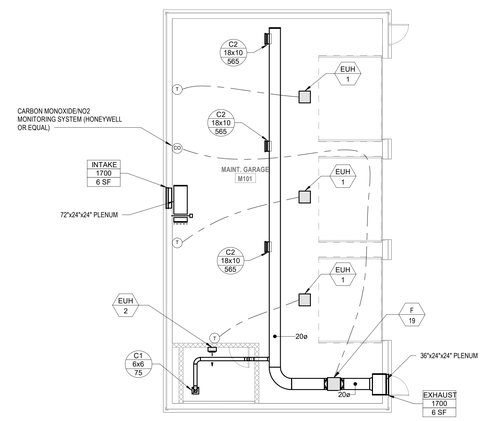
PROJECT NORTH

MAGNETIC NORTH

MECHANICAL LOCKER BUILDING PLAN

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-1-LB



2 MECHANICAL Maintenance Building Plan
1/8" = 1'-0"

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January 13, 2023

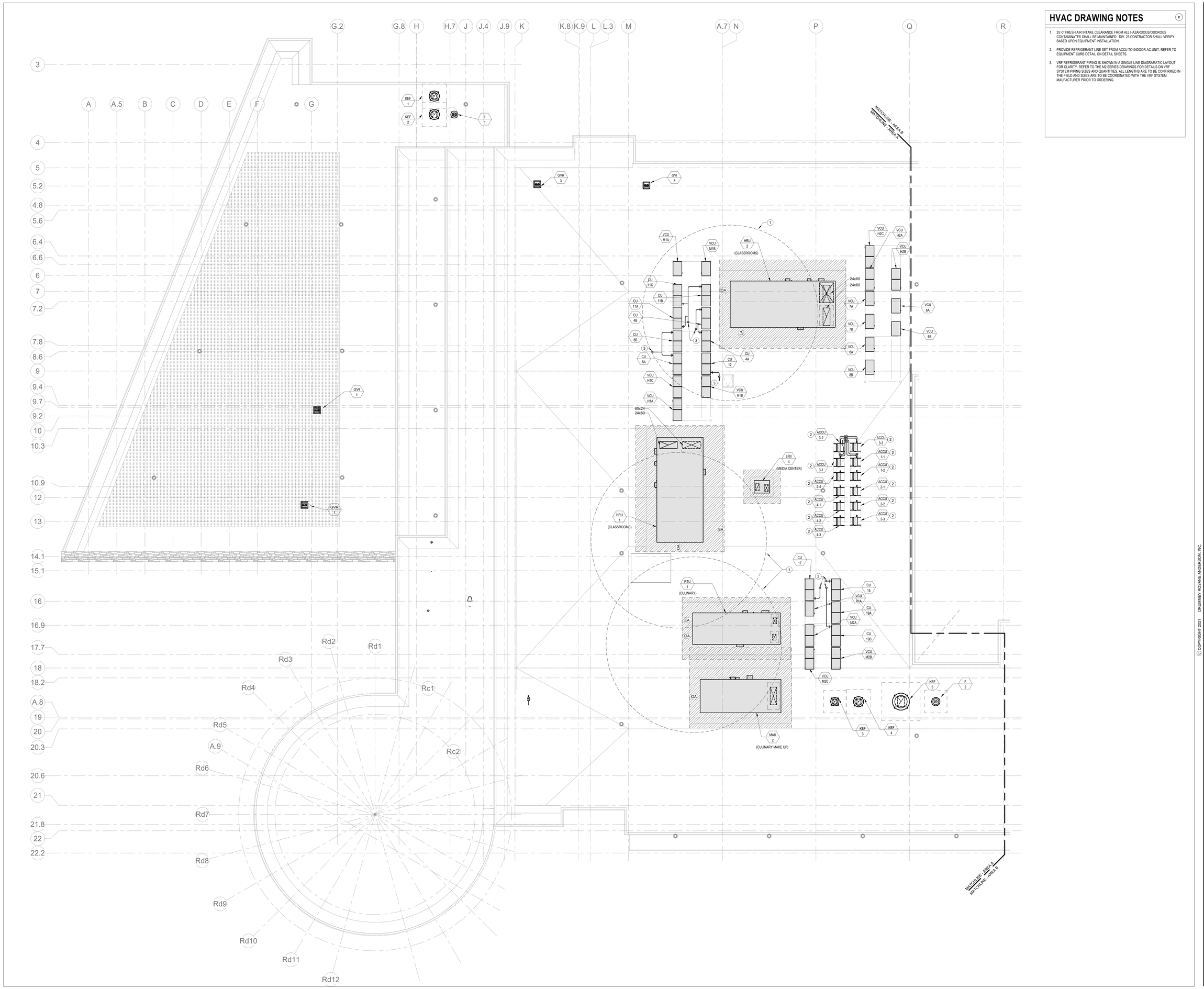
PROJECT NORTH

MAGNETIC NORTH

MECHANICAL MAINTENANANCE BUILDING PLAN

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-1-MB



HVAC DRAWING NOTES

1. 25'-0" FRESH AIR INTAKE CLEARANCE FROM ALL HAZARDOUS/ODOROUS CONTAMINATES SHALL BE MAINTAINED. DIV. 23 CONTRACTOR SHALL VERIFY BASED UPON EQUIPMENT INSTALLATION.
2. PROVIDE REFRIGERANT LINE SET FROM ACCU TO INDOOR AC UNIT. REFER TO EQUIPMENT CURB DETAIL ON DETAIL SHEETS.
3. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.

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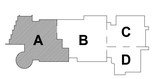


KEY PLAN

PROJECT NORTH | MAGNETIC NORTH

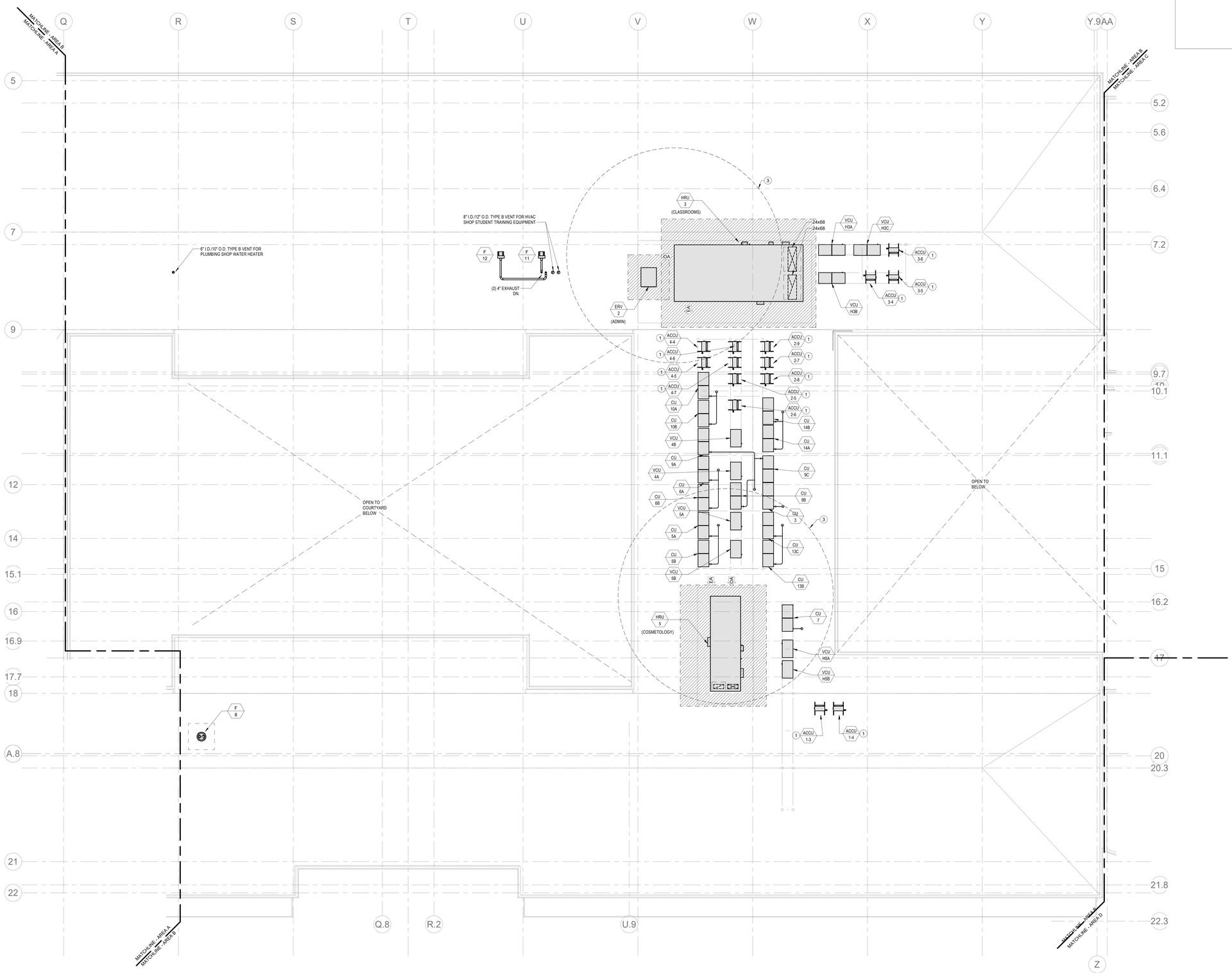
MECHANICAL ROOF PLAN - AREA A

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-2-1A

HVAC DRAWING NOTES

1. PROVIDE REFRIGERANT LINE SET FROM ACCU TO INDOOR AC UNIT. REFER TO EQUIPMENT CURB DETAIL TO DETAIL SHEETS.
2. REFER TO VRF PIPING DIAGRAMS ON THE M2 SERIES DRAWINGS FOR REFRIGERANT PIPING DISTRIBUTION. PROVIDE A CONDENSATE DRAIN FROM THE FAN COIL UNIT TO THE NEAREST CONDENSATE RECEPTOR. CONDENSATE RECEPTOR BY DIV. 22.
3. 25'-0" FRESH AIR INTAKE CLEARANCE FROM ALL HAZARDOUS/ODOROUS CONTAMINATES SHALL BE MAINTAINED. DIV. 23 CONTRACTOR SHALL VERIFY BASED UPON EQUIPMENT INSTALLATION.



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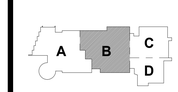
January 13, 2023



KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

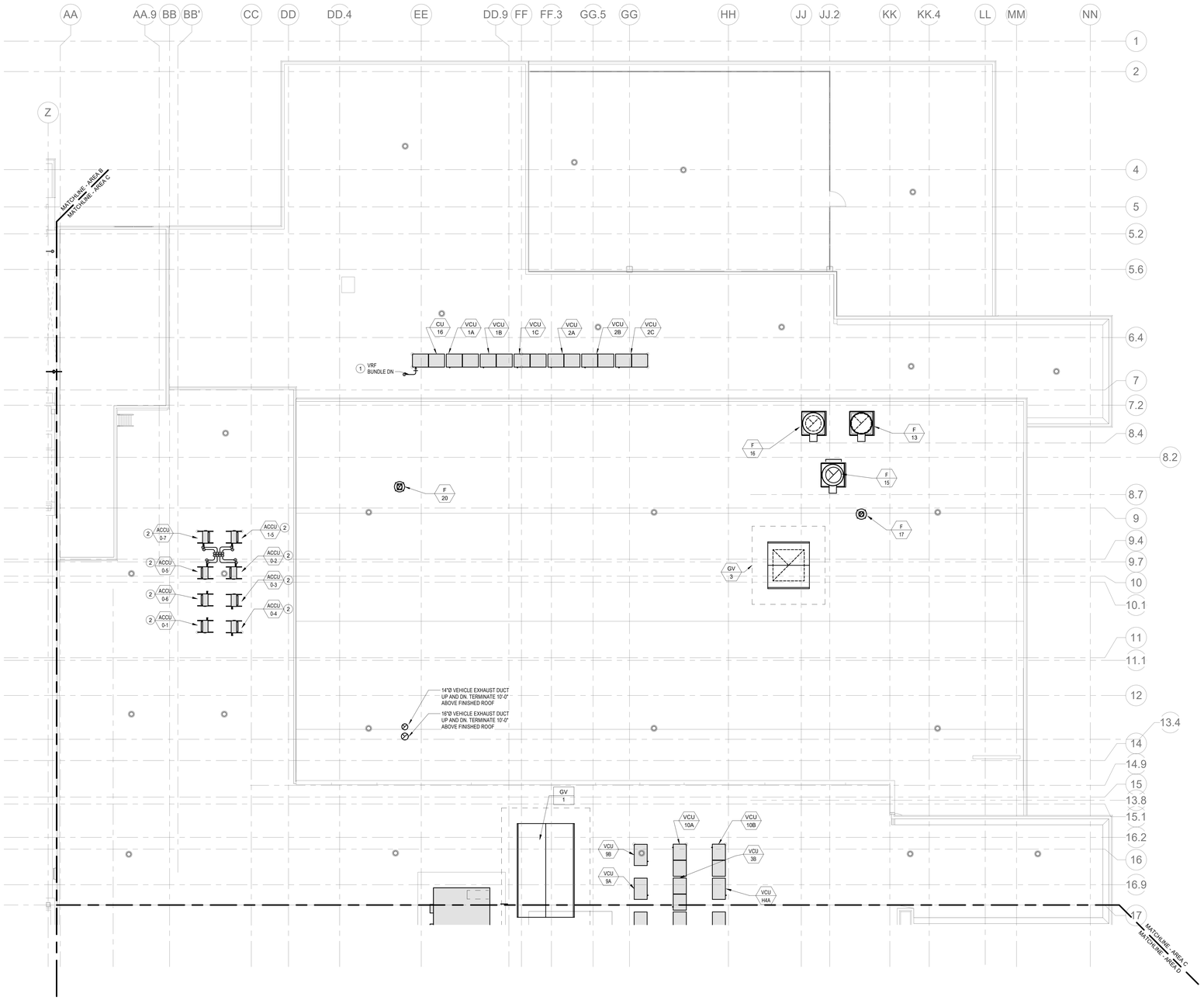
MECHANICAL ROOF PLAN - AREA B

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-2-1B

HVAC DRAWING NOTES

1. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.
2. PROVIDE REFRIGERANT LINE SET FROM ACCU TO INDOOR AC UNIT. REFER TO EQUIPMENT CURB DETAIL ON DETAIL SHEETS.



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January 13, 2023

KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

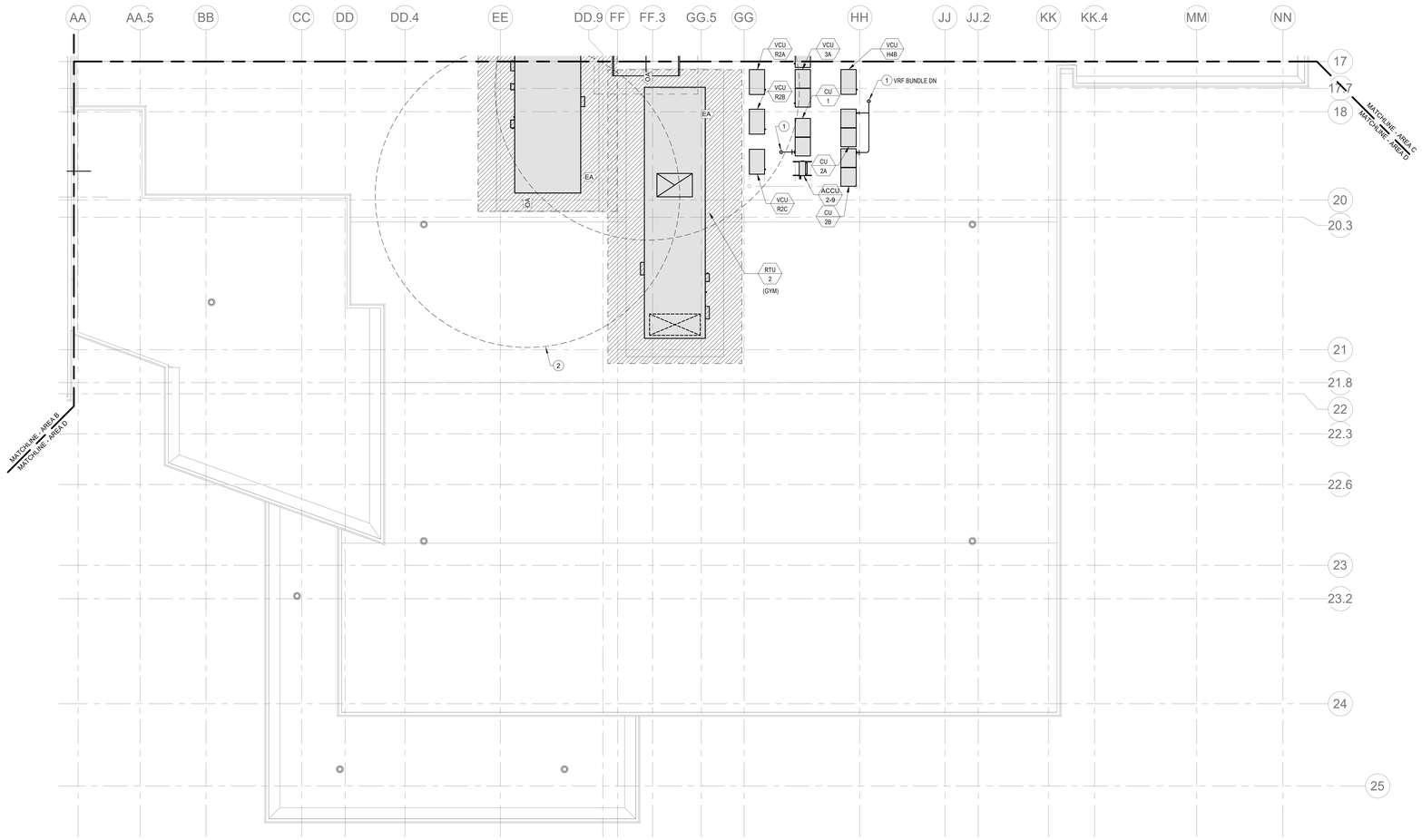
MECHANICAL ROOF PLAN - AREA C

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-2-1C

HVAC DRAWING NOTES

1. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.
2. 25'-0" FRESH AIR INTAKE CLEARANCE FROM ALL HAZARDOUS/ODOROUS CONTAMINATES SHALL BE MAINTAINED. DIV. 23 CONTRACTOR SHALL VERIFY BASED UPON EQUIPMENT INSTALLATION.



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January 13, 2023

KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

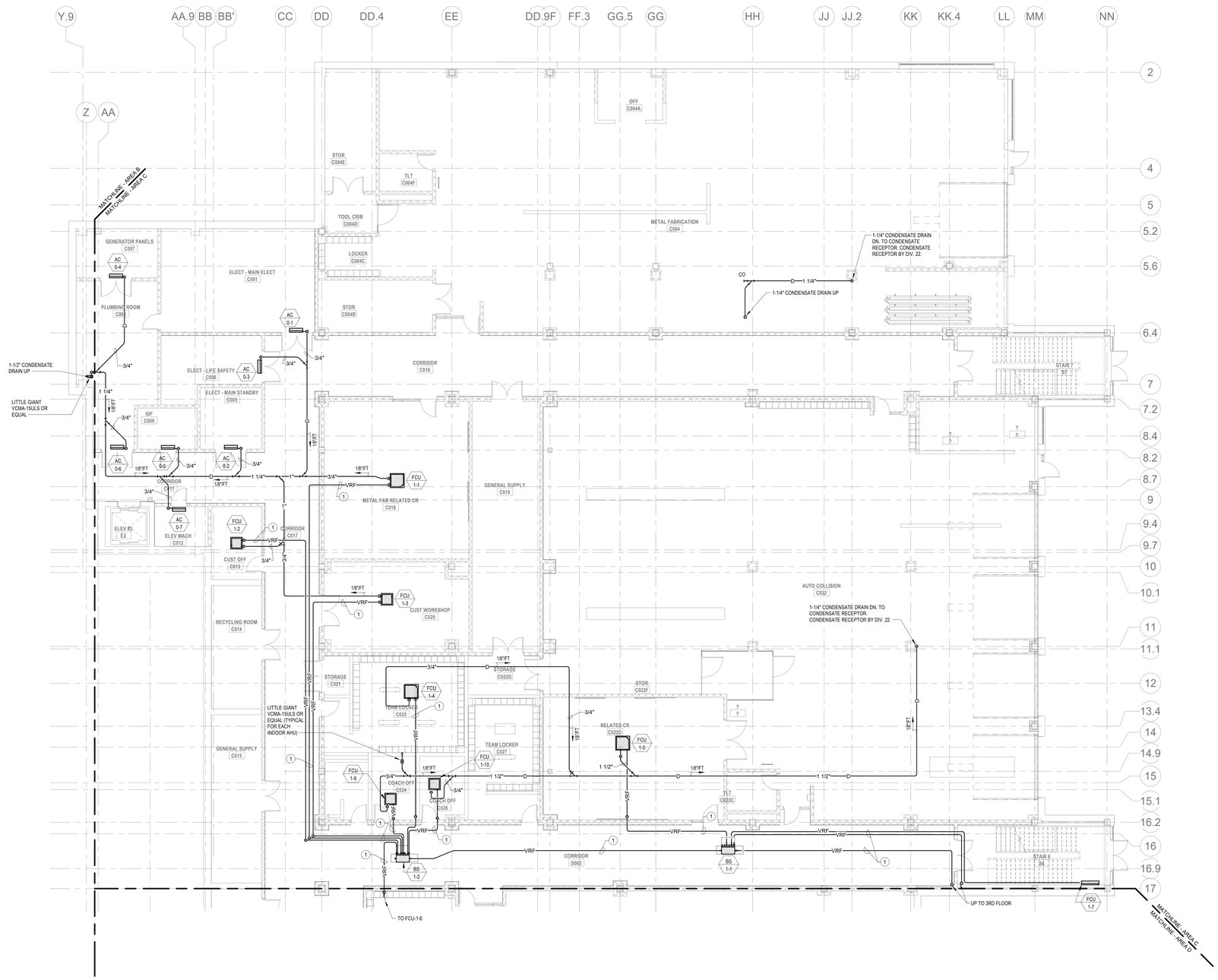
MECHANICAL ROOF PLAN - AREA D

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-2-1D

HVAC DRAWING NOTES

1. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.
2. PROVIDE REFRIGERANT LINE SET FROM EACH AC UNIT TO ASSOCIATED CONDENSING UNIT ON ROOF. INTEGRAL CONDENSATE PUMP. AND CONDENSATE DRAIN PIPING TO NEAREST CONDENSATE RECEPTOR. CONDENSATE RECEPTOR BY DIV. 22.



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January 13, 2023

KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL PIPING LOWER LEVEL FLOOR PLAN - AREA C

Scale: 1/8" = 1'-0"

Job No.: 20202

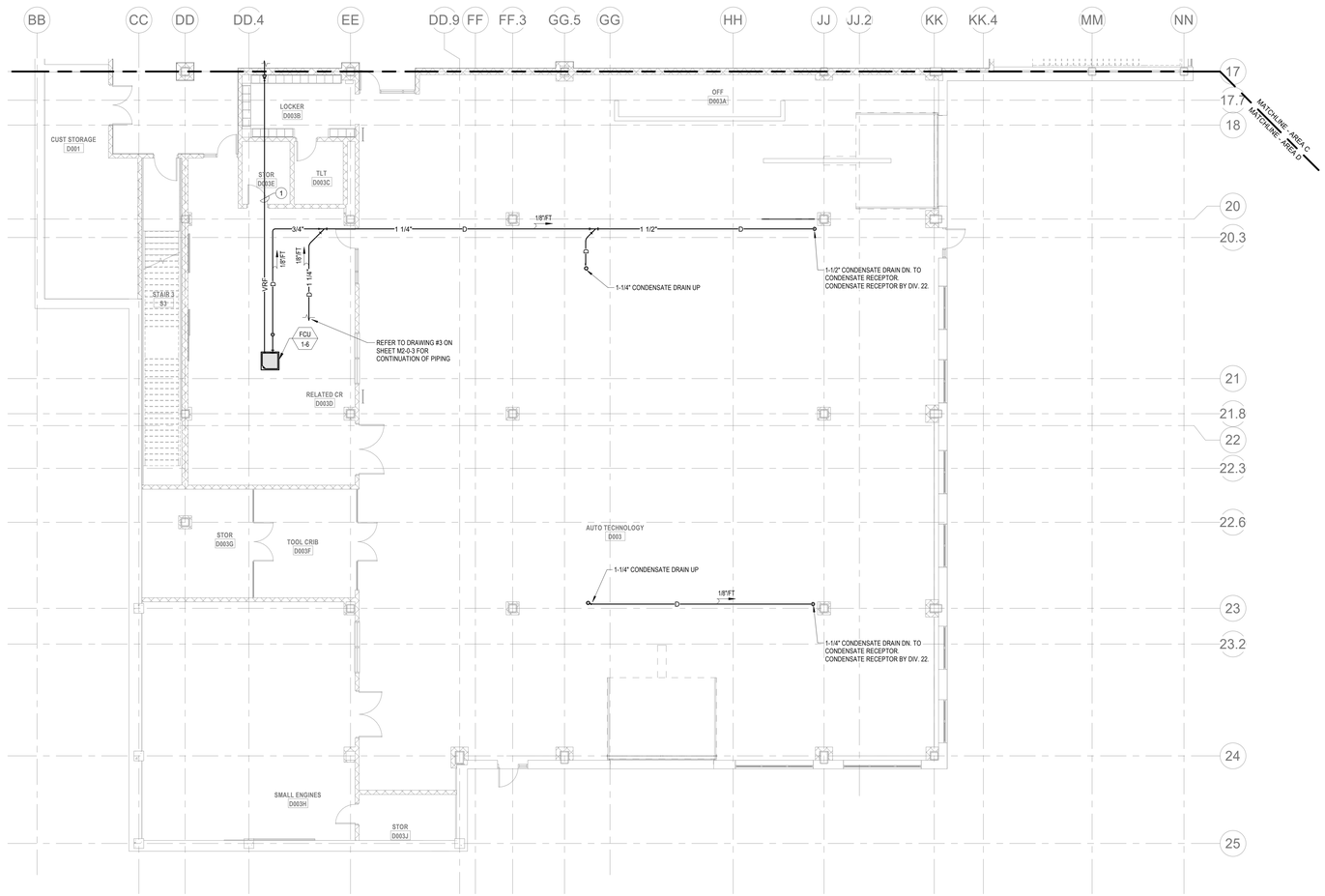
Drawn By: DRA

Date: January 13, 2023

M1-3-0C

HVAC DRAWING NOTES

1. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.
2. PROVIDE REFRIGERANT LINE SET FROM AC UNIT TO ASSOCIATED CONDENSING UNIT ON ROOF, INTEGRAL CONDENSATE PUMP, AND CONDENSATE DRAIN PIPING TO NEAREST CONDENSATE RECEPTOR. CONDENSATE RECEPTOR BY DIV. 22.



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January 13, 2023

KEY PLAN

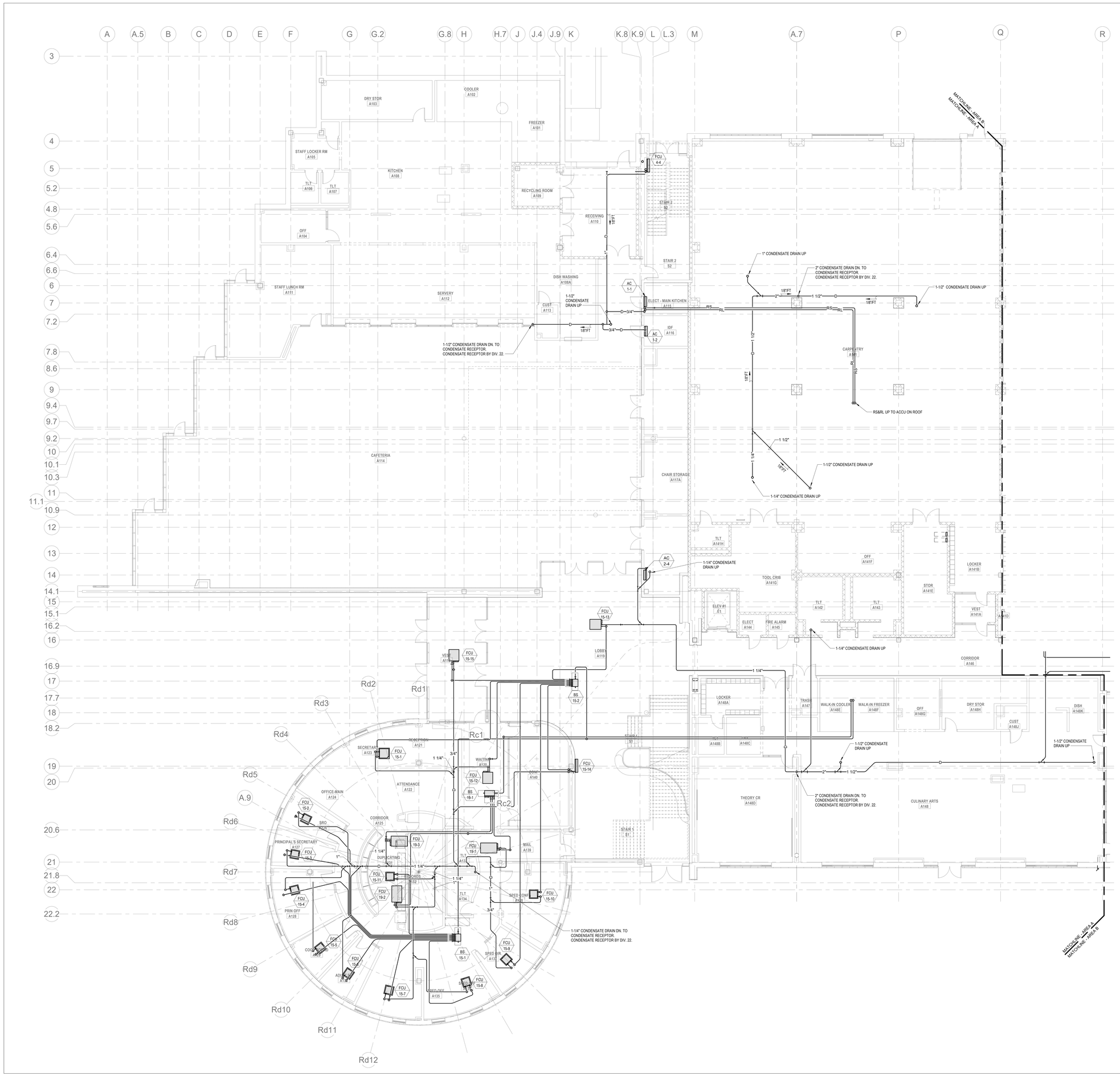
PROJECT NORTH

MAGNETIC NORTH

MECHANICAL PIPING LOWER LEVEL FLOOR PLAN - AREA D

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-3-0D



HVAC GENERAL NOTES

1. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.
2. PROVIDE REFRIGERANT LINE SET FROM EACH AC UNIT TO ASSOCIATED CONDENSING UNIT ON ROOF. INTEGRAL CONDENSATE PUMP. AND CONDENSATE DRAIN PIPING TO NEAREST CONDENSATE RECEPTOR. CONDENSATE RECEPTOR BY DIV. 22.

HVAC DRAWING NOTES

1. .

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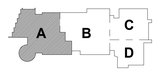


KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL PIPING FIRST FLOOR PLAN - AREA A

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

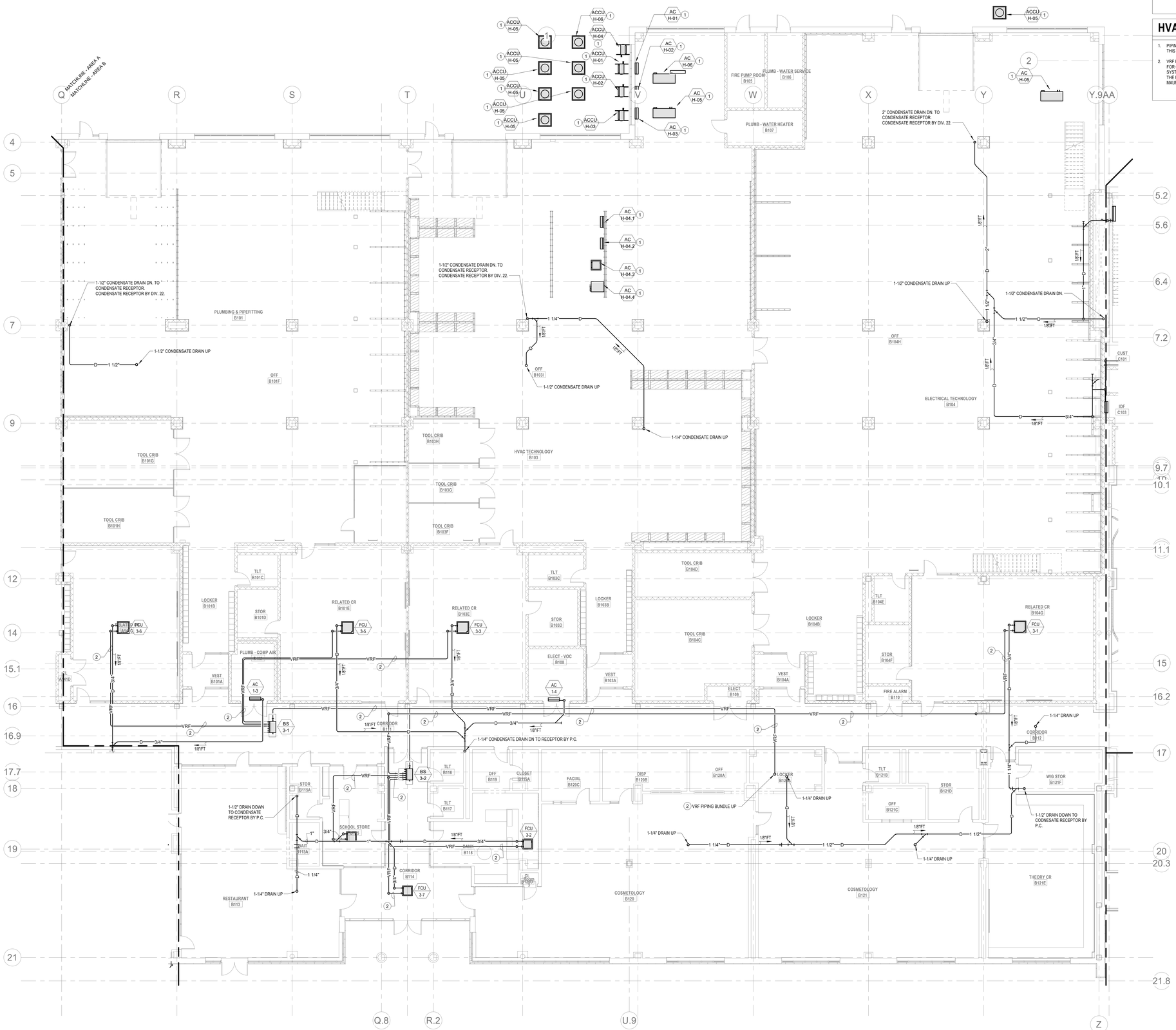
M1-3-1A

HVAC GENERAL NOTES

1. PROVIDE REFRIGERANT LINE SET FROM EACH AC UNIT TO ASSOCIATED CONDENSING UNIT ON ROOF, INTEGRAL CONDENSATE PUMP, AND CONDENSATE DRAIN PIPING TO NEAREST CONDENSATE RECEPTOR. CONDENSATE RECEPTOR BY DIV. 22.

HVAC DRAWING NOTES

1. PIPING FOR STUDENT TRAINING EQUIPMENT SHALL NOT BE INSTALLED UNDER THIS CONTRACT.
2. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.



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January 13, 2023

KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL PIPING FIRST FLOOR PLAN - AREA B

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-3-1B

HVAC DRAWING NOTES

1. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.
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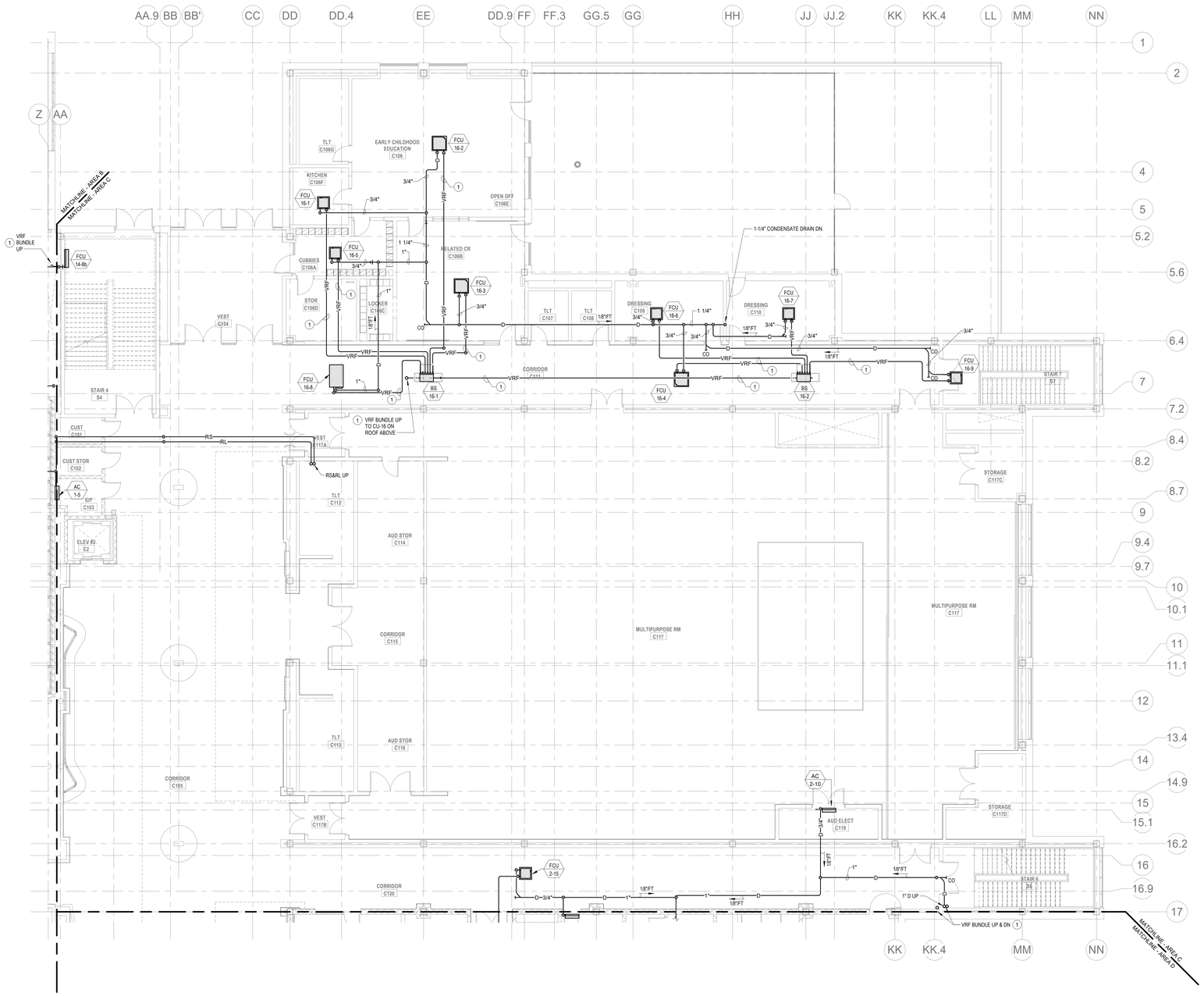

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MSBA 60% CD SUBMISSION

January 13, 2023

KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

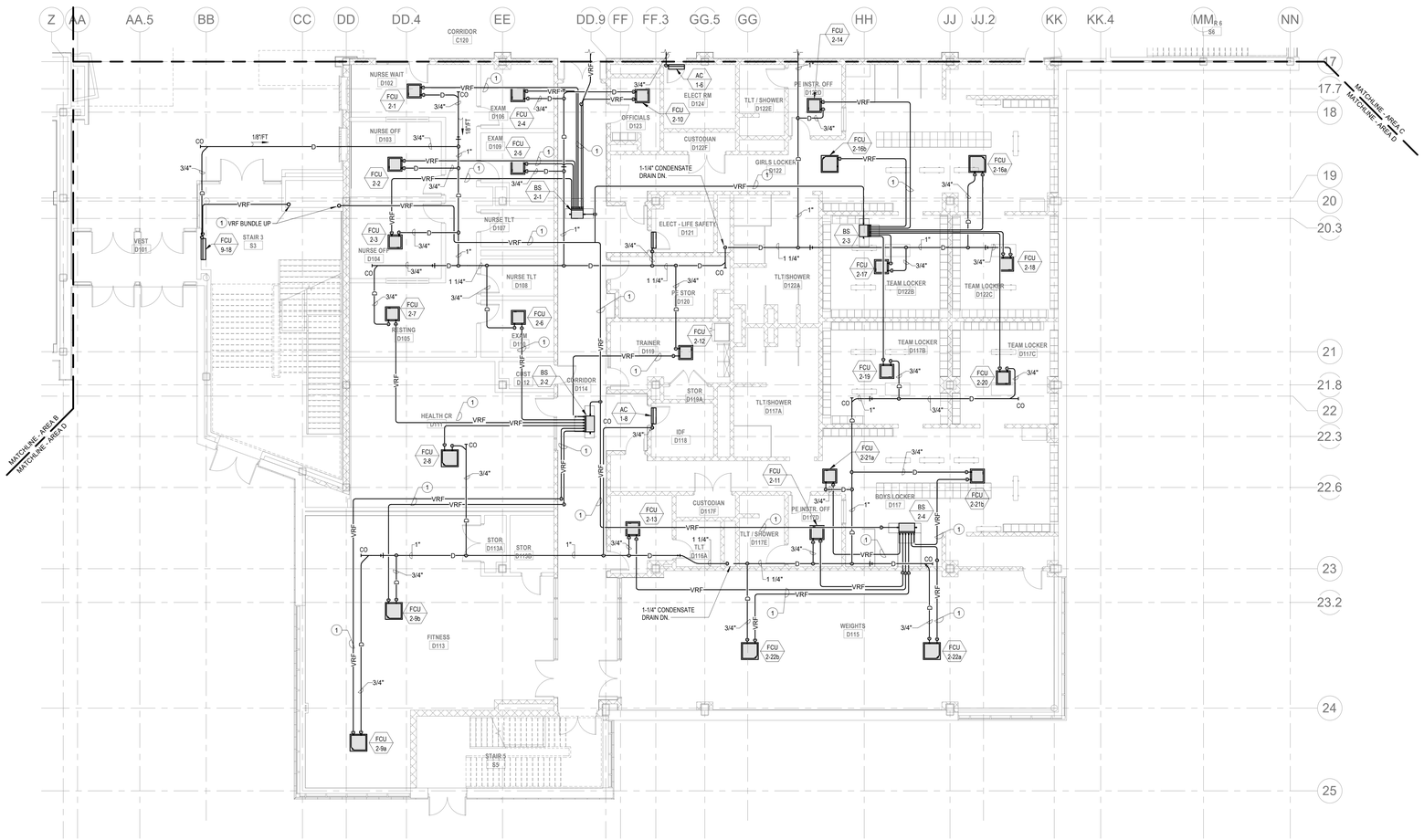
MECHANICAL PIPING FIRST FLOOR PLAN - AREA C

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-3-1C

HVAC DRAWING NOTES

1. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.
2. PROVIDE REFRIGERANT LINE SET FROM EACH AC UNIT TO ASSOCIATED CONDENSING UNIT ON ROOF. INTEGRAL CONDENSATE PUMP. AND CONDENSATE DRAIN PIPING TO NEAREST CONDENSATE RECEPTOR. CONDENSATE RECEPTOR BY DIV. 22.



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January 13, 2023

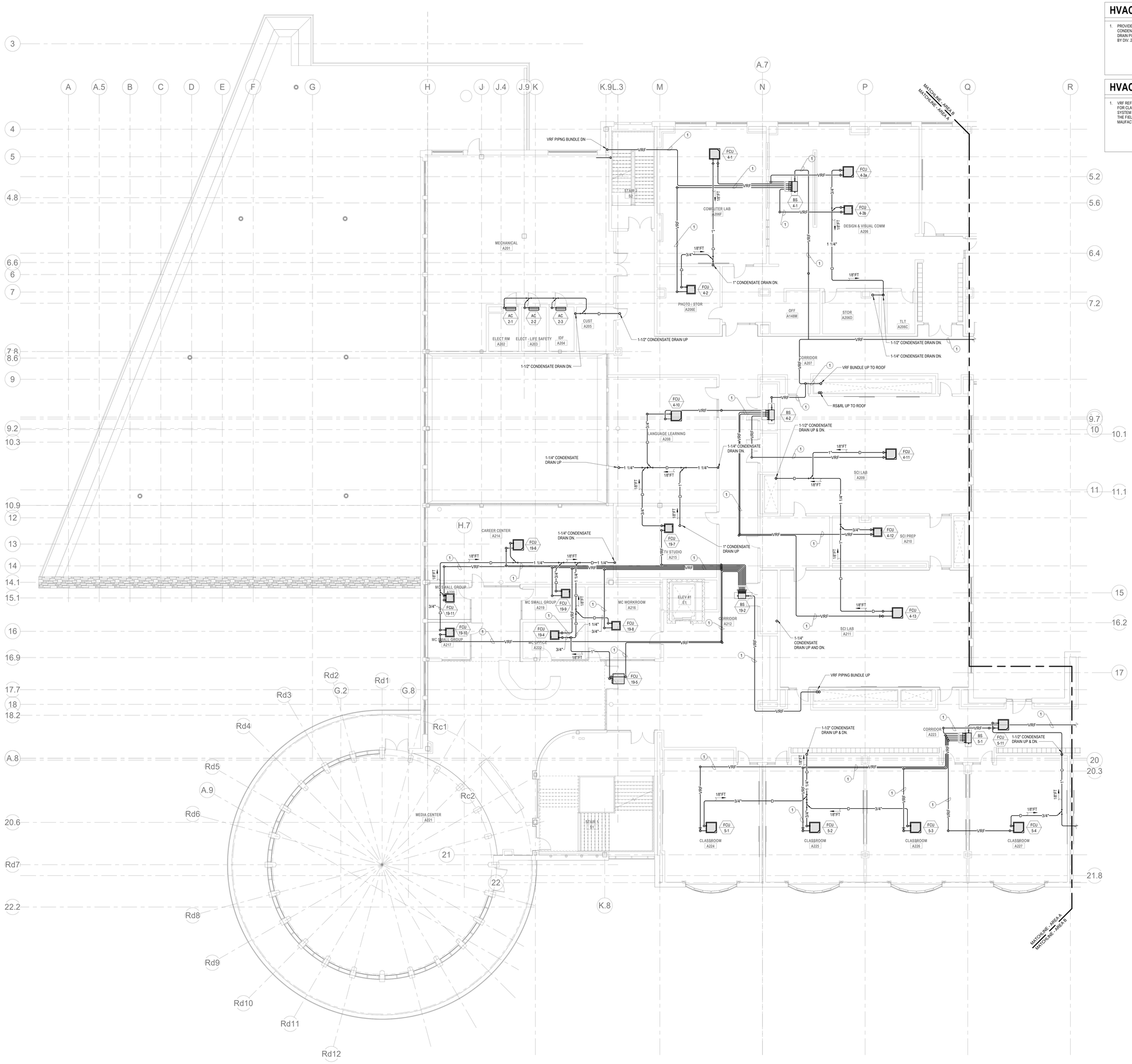
KEY PLAN

PROJECT NORTH | MAGNETIC NORTH

MECHANICAL PIPING FIRST FLOOR PLAN - AREA D

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-3-1D



HVAC GENERAL NOTES

1. PROVIDE REFRIGERANT LINE SET FROM EACH AC UNIT TO ASSOCIATED CONDENSING UNIT ON ROOF. INTEGRAL CONDENSATE PUMP, AND CONDENSATE DRAIN PIPING TO NEAREST CONDENSATE RECEPTOR. CONDENSATE RECEPTOR BY DIV. 22.

HVAC DRAWING NOTES

1. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.

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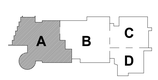
January 13, 2023



KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL PIPING SECOND FLOOR PLAN - AREA A

Scale: 1/8" = 1'-0"

Job No.: 20202

Drawn By: DRA

Date: January 13, 2023

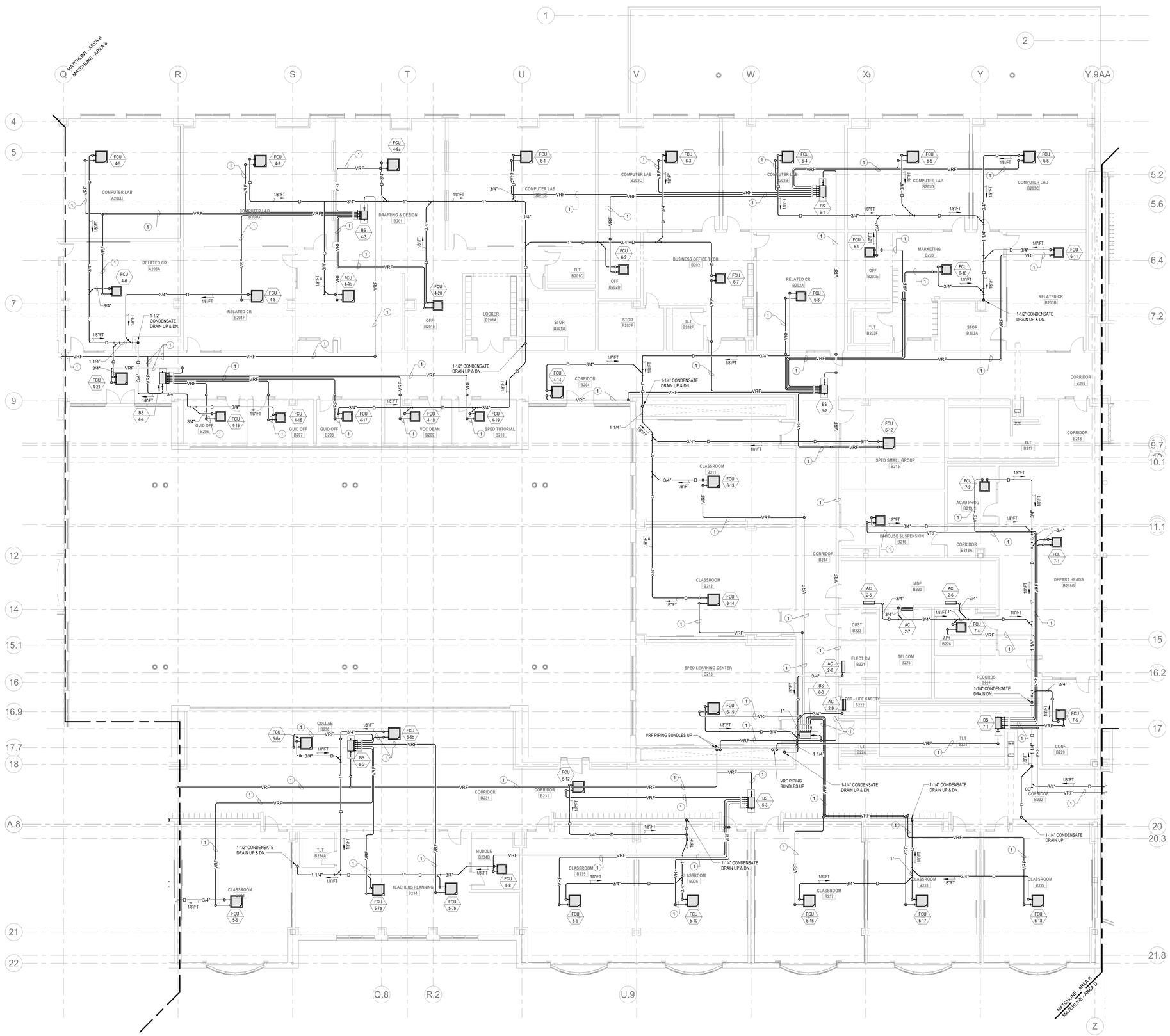
M1-3-2A

HVAC GENERAL NOTES

1. PROVIDE REFRIGERANT LINE SET FROM EACH AC UNIT TO ASSOCIATED CONDENSING UNIT ON ROOF. INTEGRAL CONDENSATE PUMP, AND CONDENSATE DRAIN PIPING TO NEAREST CONDENSATE RECEPTOR. CONDENSATE RECEPTOR BY DIV. 22.

HVAC DRAWING NOTES

1. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.



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January 13, 2023

KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL PIPING SECOND FLOOR PLAN - AREA B

Scale: 1/8" = 1'-0"

Job No.: 20202

Drawn By: DRA

Date: January 13, 2023

M1-3-2B

HVAC DRAWING NOTES

1. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.
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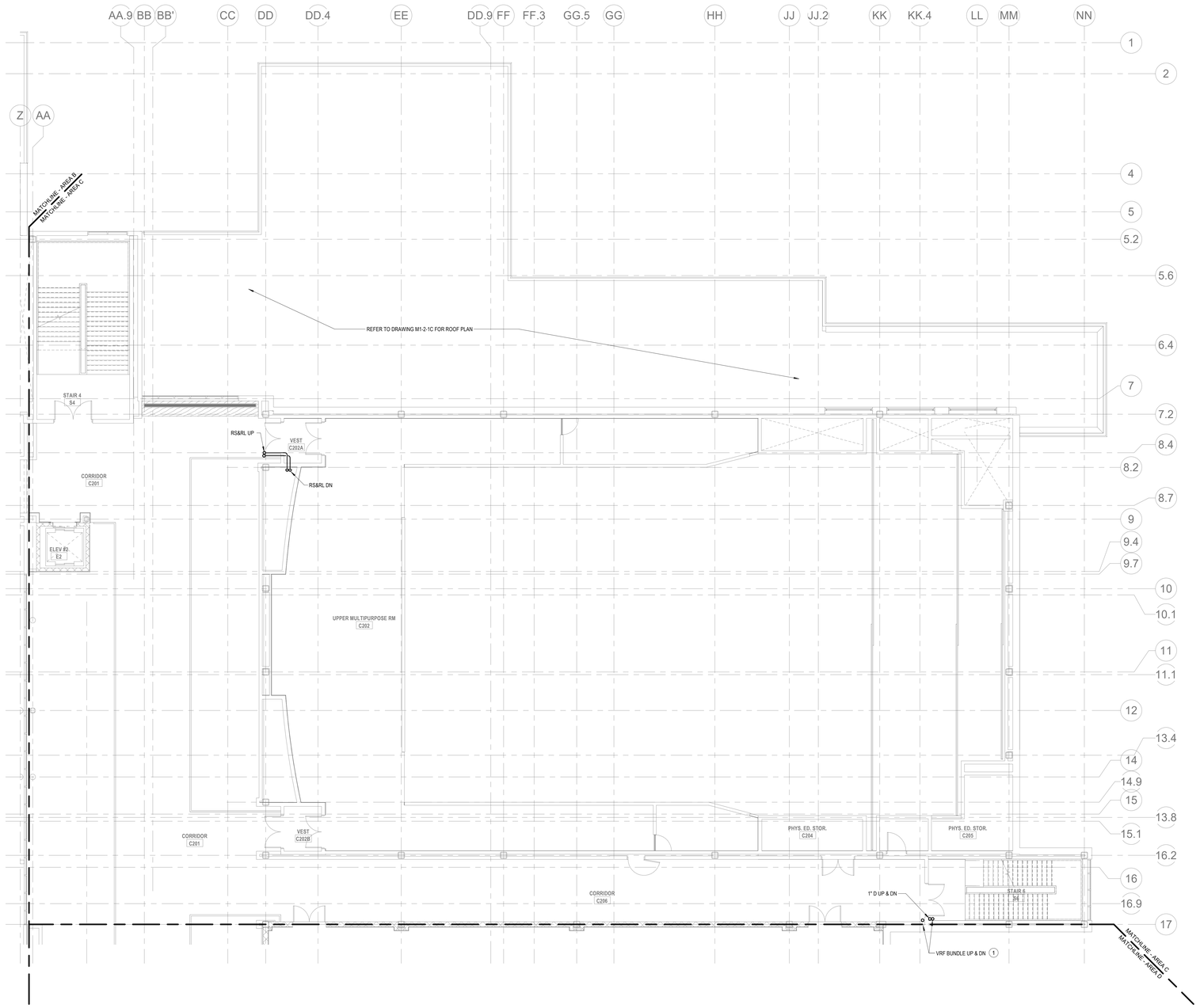

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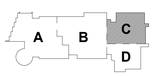


KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

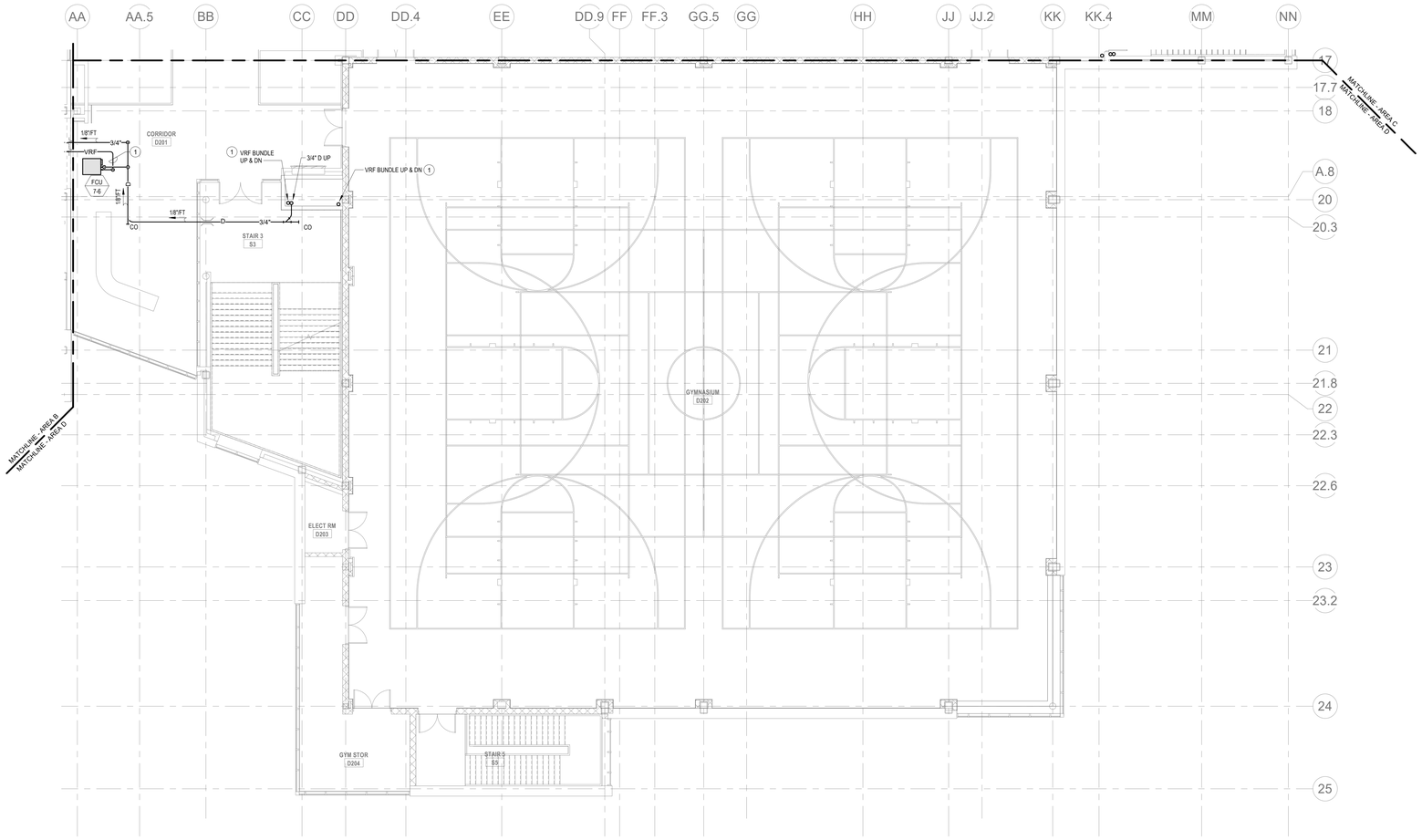
MECHANICAL PIPING SECOND FLOOR PLAN - AREA C

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-3-2C

HVAC DRAWING NOTES

1. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.
2. PROVIDE REFRIGERANT LINE SET FROM AC UNIT TO ASSOCIATED CONDENSING UNIT ON ROOF, INTEGRAL CONDENSATE PUMP, AND CONDENSATE DRAIN PIPING TO NEAREST CONDENSATE RECEPTOR. CONDENSATE RECEPTOR BY DIV. 22.



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KEY PLAN

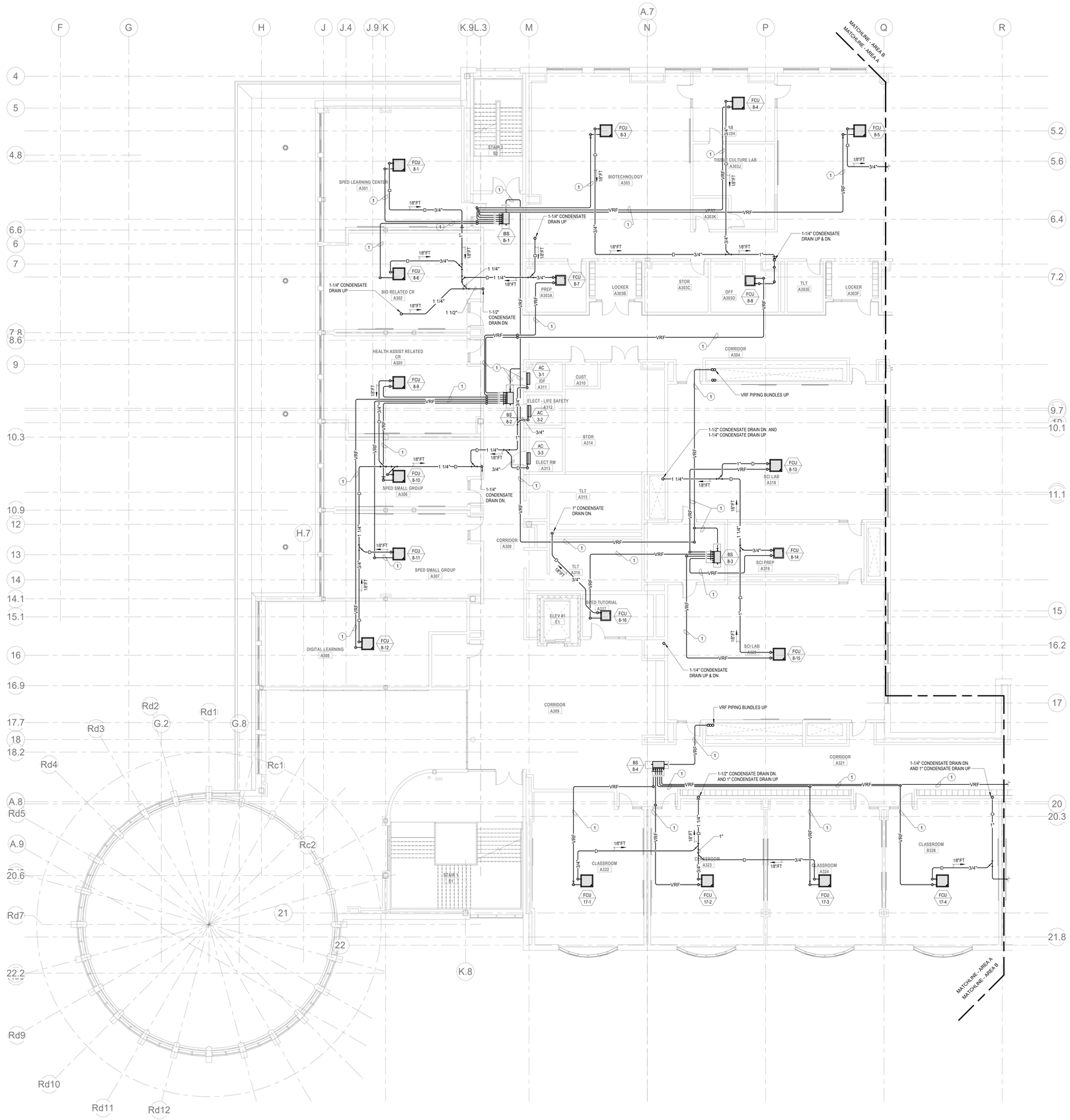
PROJECT NORTH

MAGNETIC NORTH

MECHANICAL PIPING SECOND FLOOR PLAN - AREA D

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-3-2D



HVAC GENERAL NOTES

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HVAC DRAWING NOTES

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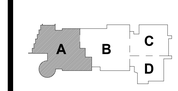


KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL PIPING THIRD FLOOR PLAN - AREA A

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

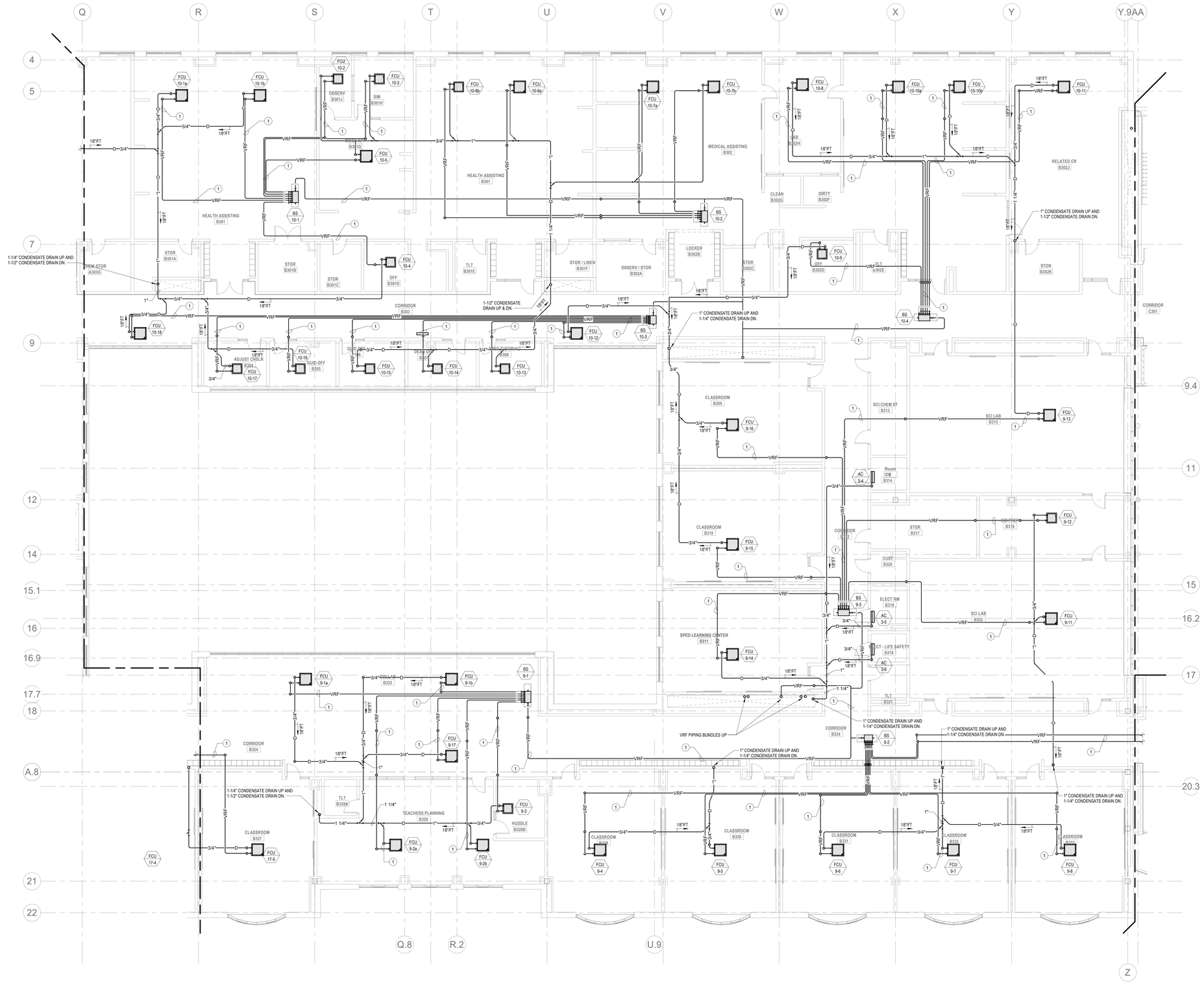
M1-3-3A

HVAC GENERAL NOTES

1. PROVIDE REFRIGERANT LINE SET FROM EACH AC UNIT TO ASSOCIATED CONDENSING UNIT ON ROOF. INTEGRAL CONDENSATE PUMP, AND CONDENSATE DRAIN PIPING TO NEAREST CONDENSATE RECEPTOR. CONDENSATE RECEPTOR BY DIV. 22.

HVAC DRAWING NOTES

1. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.



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KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL PIPING THIRD FLOOR PLAN - AREA B

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-3-3B

HVAC DRAWING NOTES

1. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.
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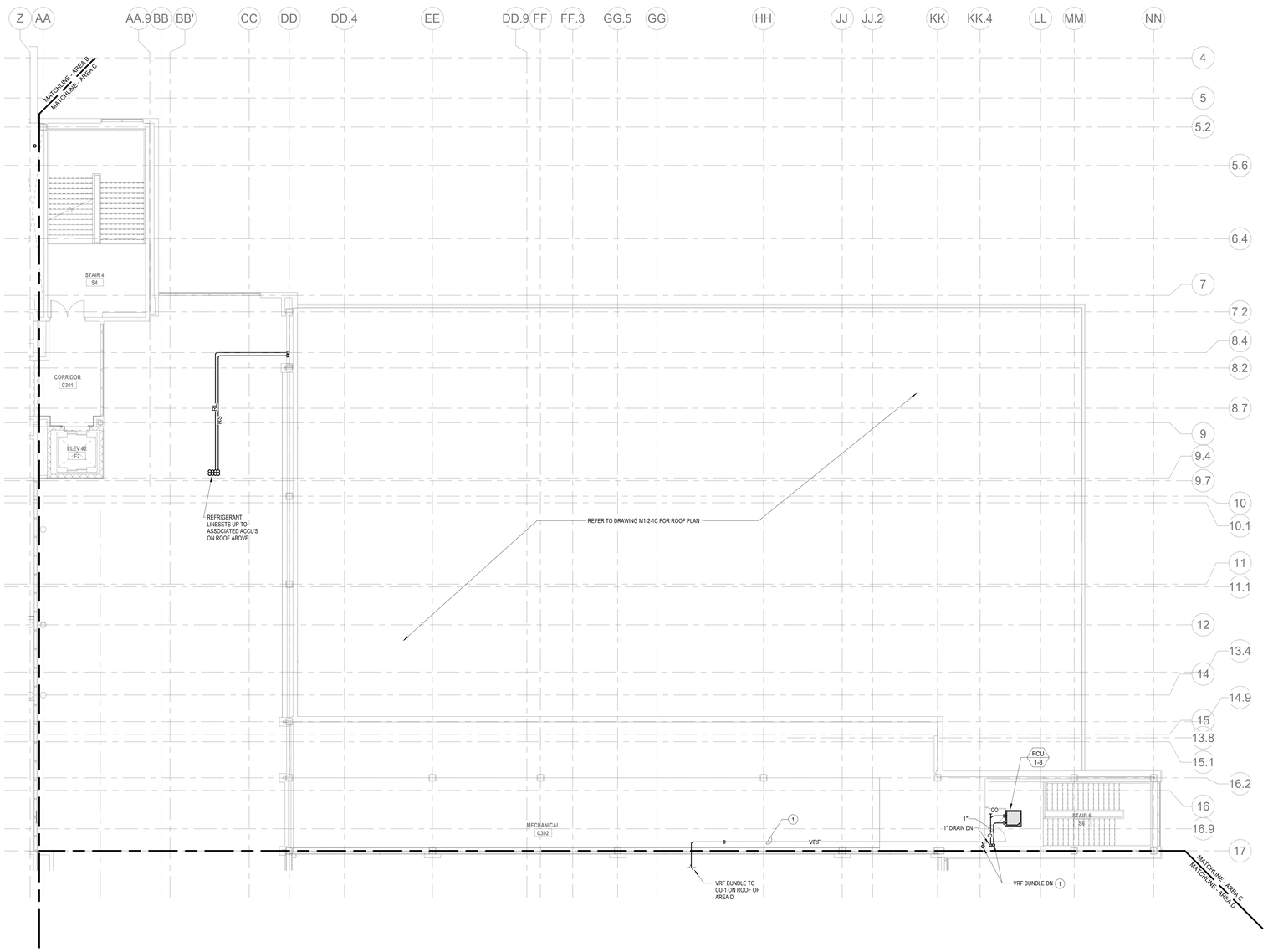

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KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL PIPING THIRD FLOOR PLAN - AREA C

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-3-3C

HVAC DRAWING NOTES

1. VRF REFRIGERANT PIPING IS SHOWN IN A SINGLE LINE DIAGRAMATIC LAYOUT FOR CLARITY. REFER TO THE M2 SERIES DRAWINGS FOR DETAILS ON VRF SYSTEM PIPING SIZES AND QUANTITIES. ALL LENGTHS ARE TO BE CONFIRMED IN THE FIELD AND SIZES ARE TO BE COORDINATED WITH THE VRF SYSTEM MAUFACTURER PRIOR TO ORDERING.
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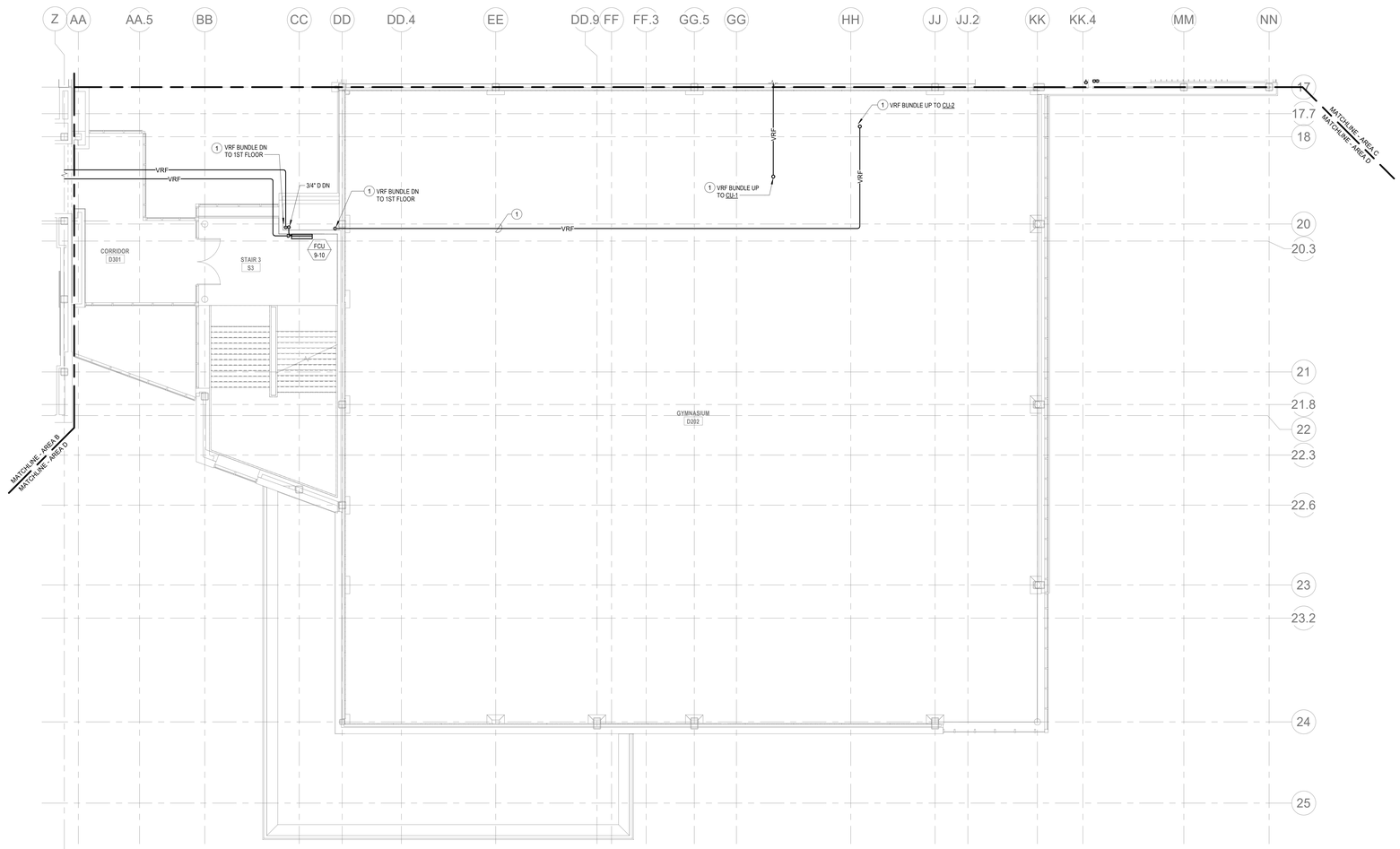

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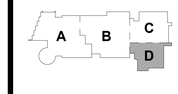
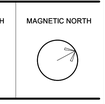


KEY PLAN

PROJECT NORTH

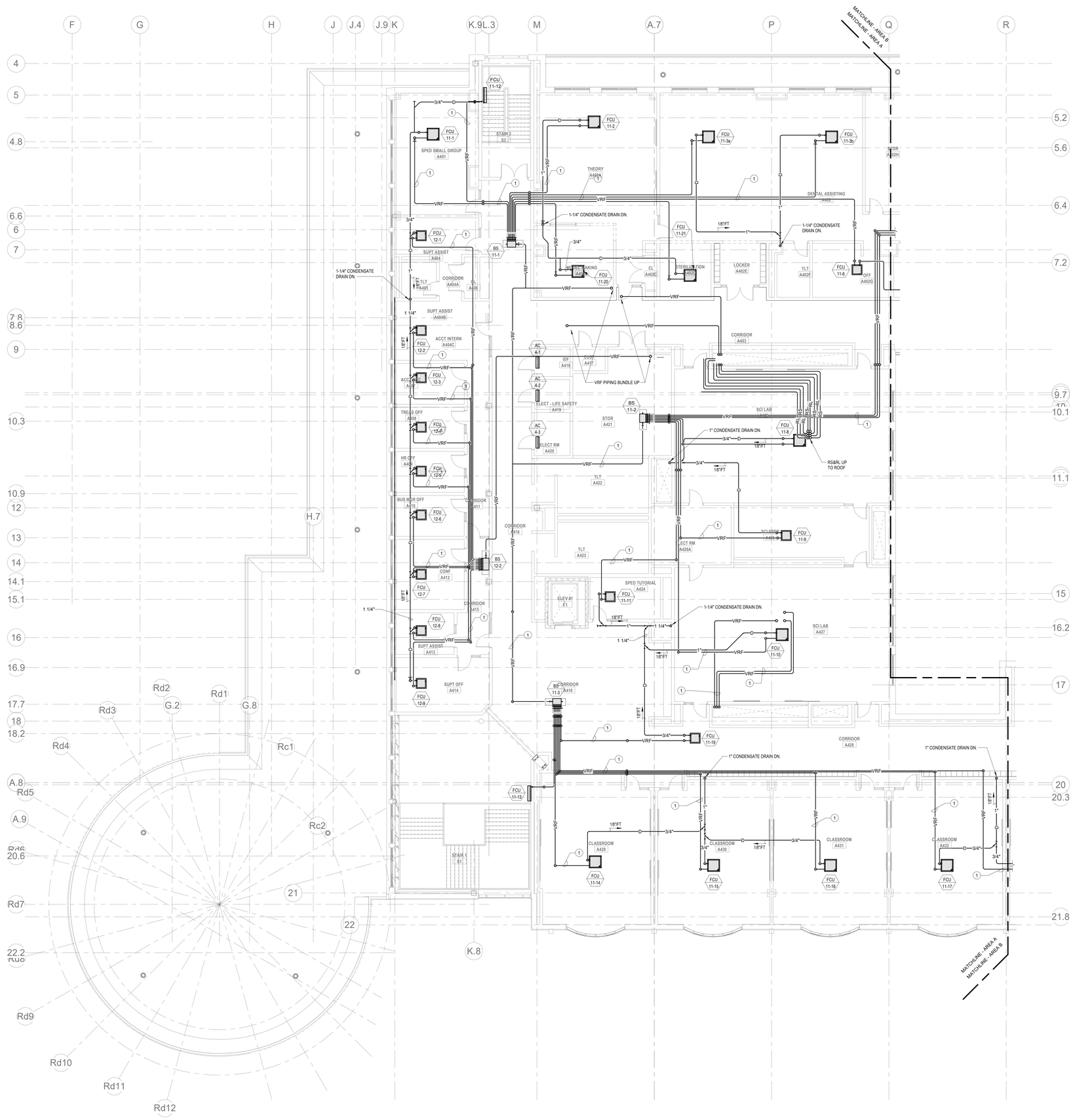
MAGNETIC NORTH



MECHANICAL PIPING THIRD FLOOR PLAN - AREA D

Scale: 1/8" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M1-3-3D



HVAC GENERAL NOTES

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HVAC DRAWING NOTES

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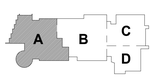


KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL PIPING FOURTH FLOOR PLAN - AREA A

Scale: 1/8" = 1'-0"

Job No.: 20202

Drawn By: DRA

Date: January 13, 2023

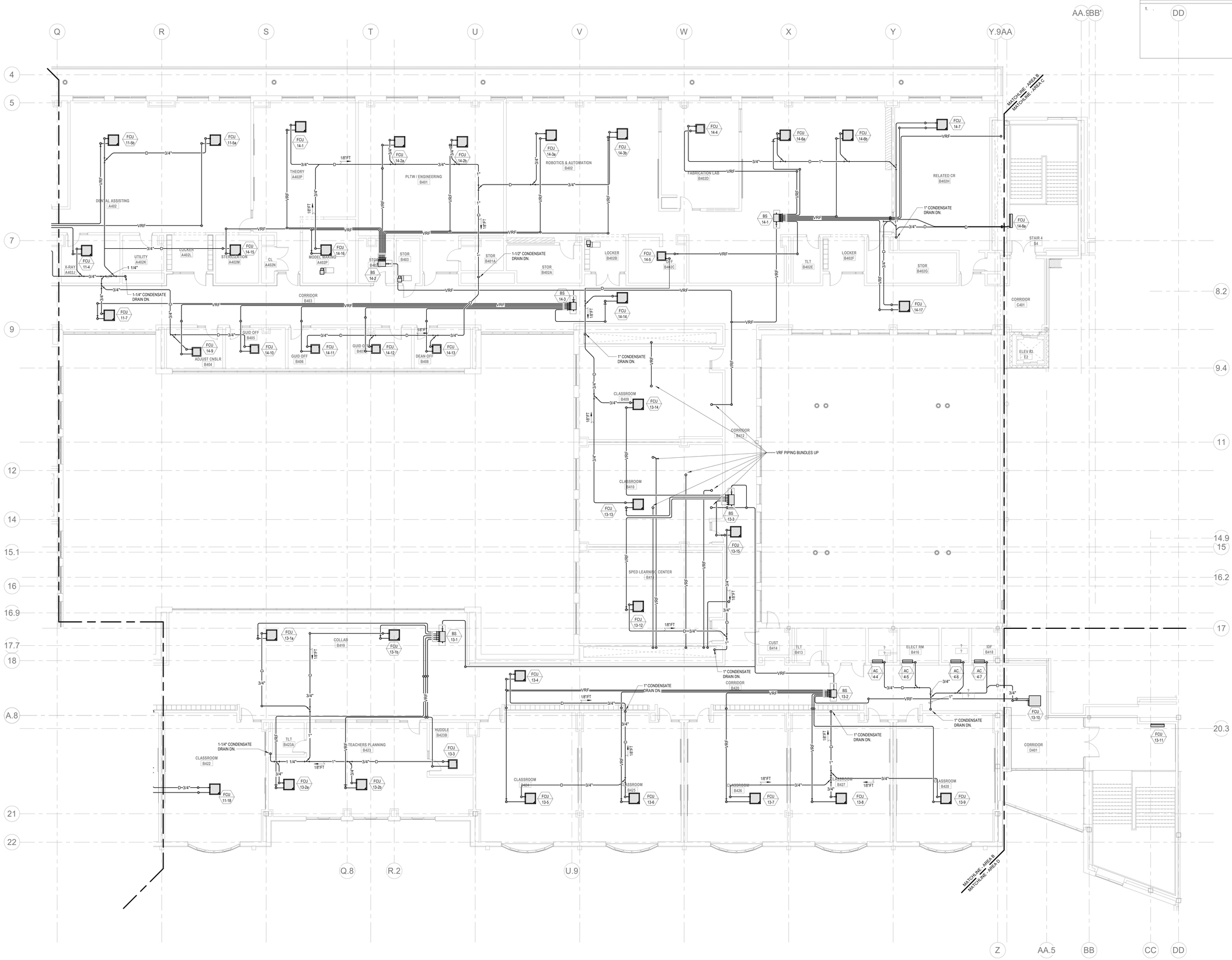
M1-3-4A

HVAC GENERAL NOTES

1. REFER TO VRF PIPING DIAGRAMS ON THE M2 SERIES DRAWINGS FOR REFRIGERANT PIPING DISTRIBUTION. PROVIDE A CONDENSATE DRAIN FROM EACH FAN COIL UNT TO THE NEAREST CONDENSATE RECEPTOR. CONDENSATE RECEPTOR BY DIV. 22.
2. PROVIDE REFRIGERANT LINE SET FROM EACH AC UNIT TO ASSOCIATED CONDENSING UNIT ON ROOF. INTEGRAL CONDENSATE PUMP, AND CONDENSATE DRAIN PIPING TO NEAREST CONDENSATE RECEPTOR. CONDENSATE RECEPTOR BY DIV. 22.

HVAC DRAWING NOTES

1. .



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KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL PIPING FOURTH FLOOR PLAN - AREA B

Scale: 1/8" = 1'-0"

Job No.: 20202

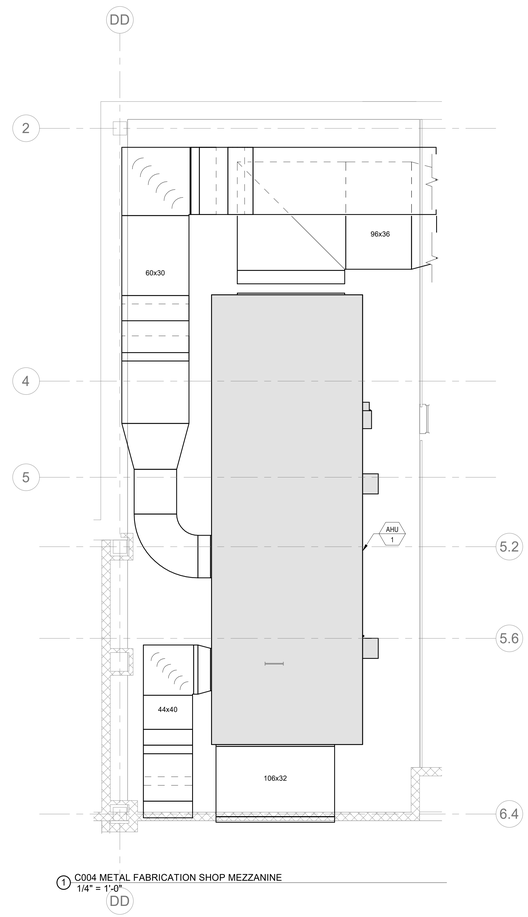
Drawn By: DRA

Date: January 13, 2023

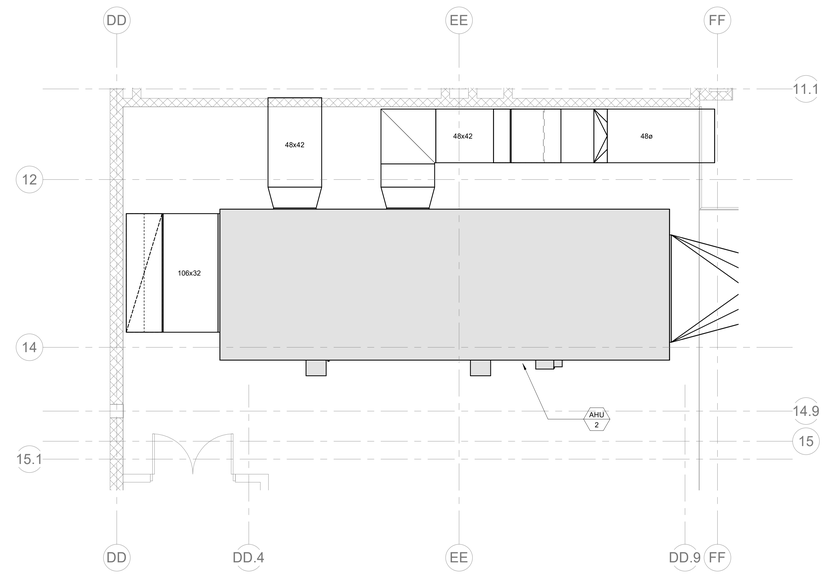
M1-3-4B

HVAC GENERAL NOTES

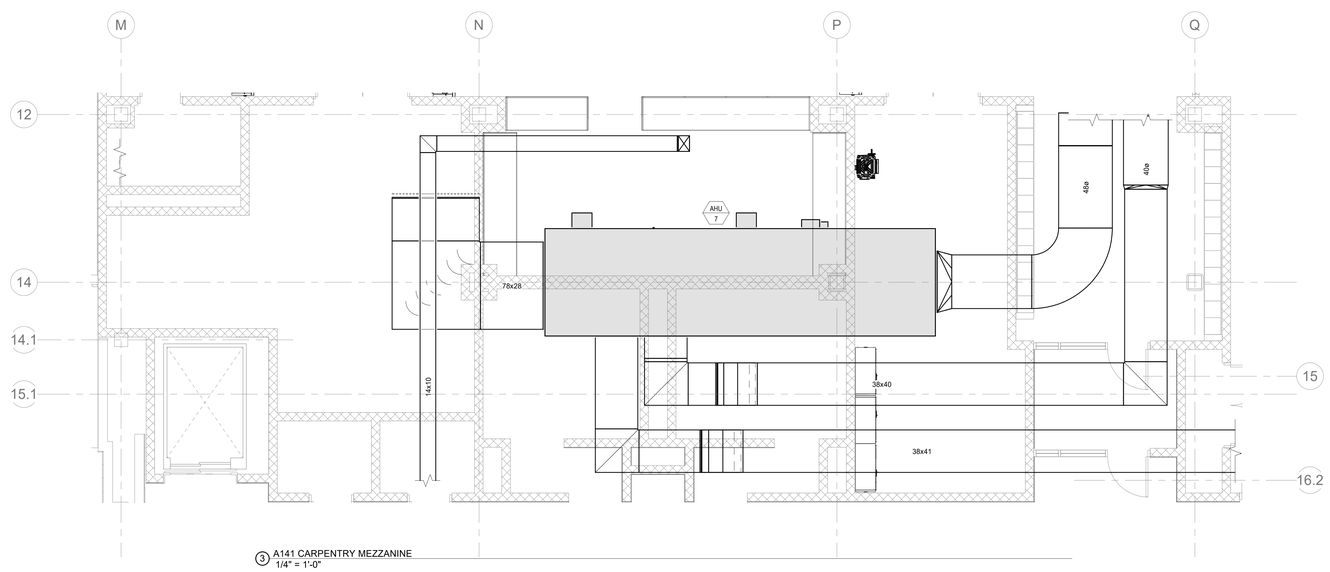
1. PROVIDE A LITTLE GIANT VCMA-15ULS OR EQUAL CONDENSATE PUMP WITH CONDENSATE PIPING FROM AHU CONDENSATE DISCAHRGE TO NEAREAST CONDENSATE RECEPTOR. TYPICAL FOR EACH AHU.



1 C004 METAL FABRICATION SHOP MEZZANINE
1/4" = 1'-0"



2 C022 AUTO COLLISION MEZZANINE
1/4" = 1'-0"



3 A141 CARPENTRY MEZZANINE
1/4" = 1'-0"

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January 13, 2023

PROJECT NORTH

MAGNETIC NORTH

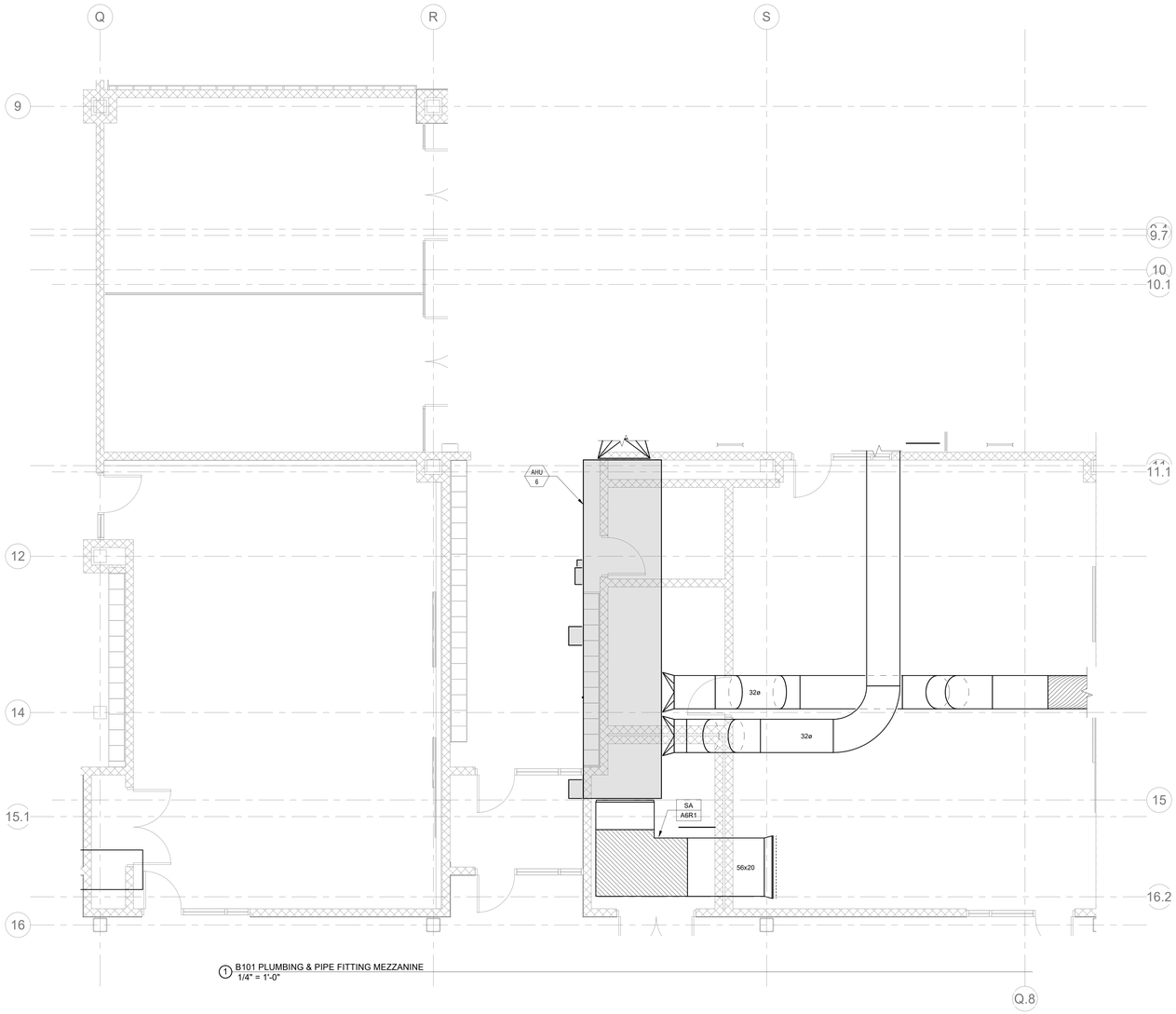
MECHANICAL ENLARGED PLANS

Scale: 1/4" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

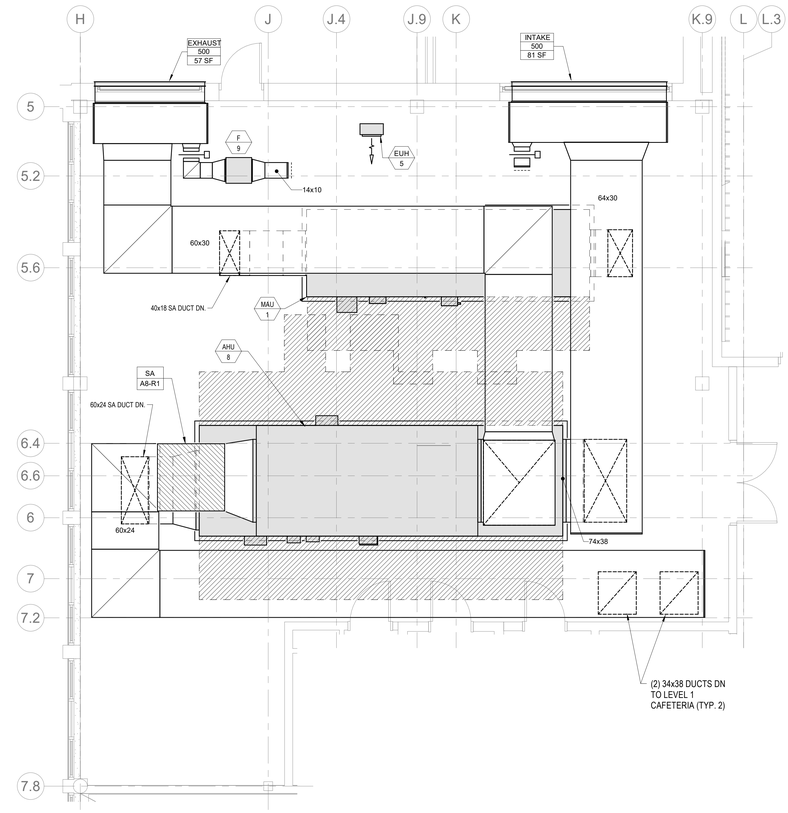
M2-0-1

HVAC GENERAL NOTES

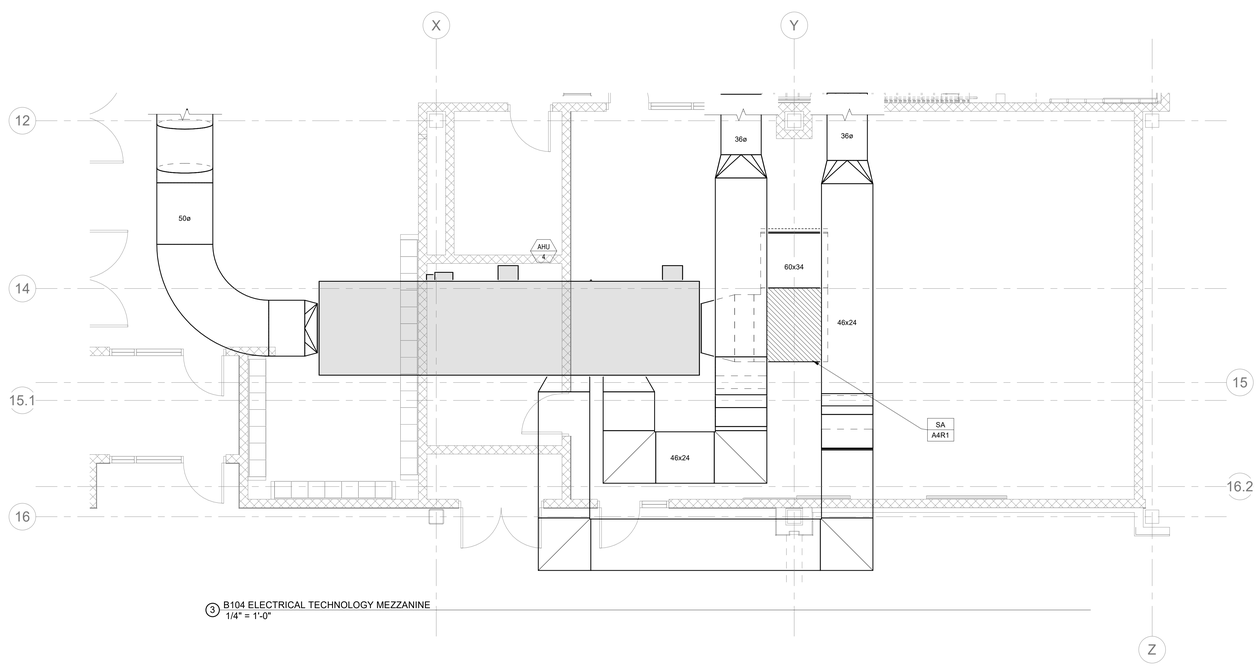
1. PROVIDE A LITTLE GIANT VCMA-15ULS OR EQUAL CONDENSATE PUMP WITH CONDENSATE PIPING FROM AHU CONDENSATE DISCAHRGE TO NEAREAST CONDENSATE RECEPTOR. TYPICAL FOR EACH AHU.



1 B101 PLUMBING & PIPE FITTING MEZZANINE
1/4" = 1'-0"



2 A201 MECHANICAL ROOM
1/4" = 1'-0"



3 B104 ELECTRICAL TECHNOLOGY MEZZANINE
1/4" = 1'-0"

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January 13, 2023

PROJECT NORTH

MAGNETIC NORTH

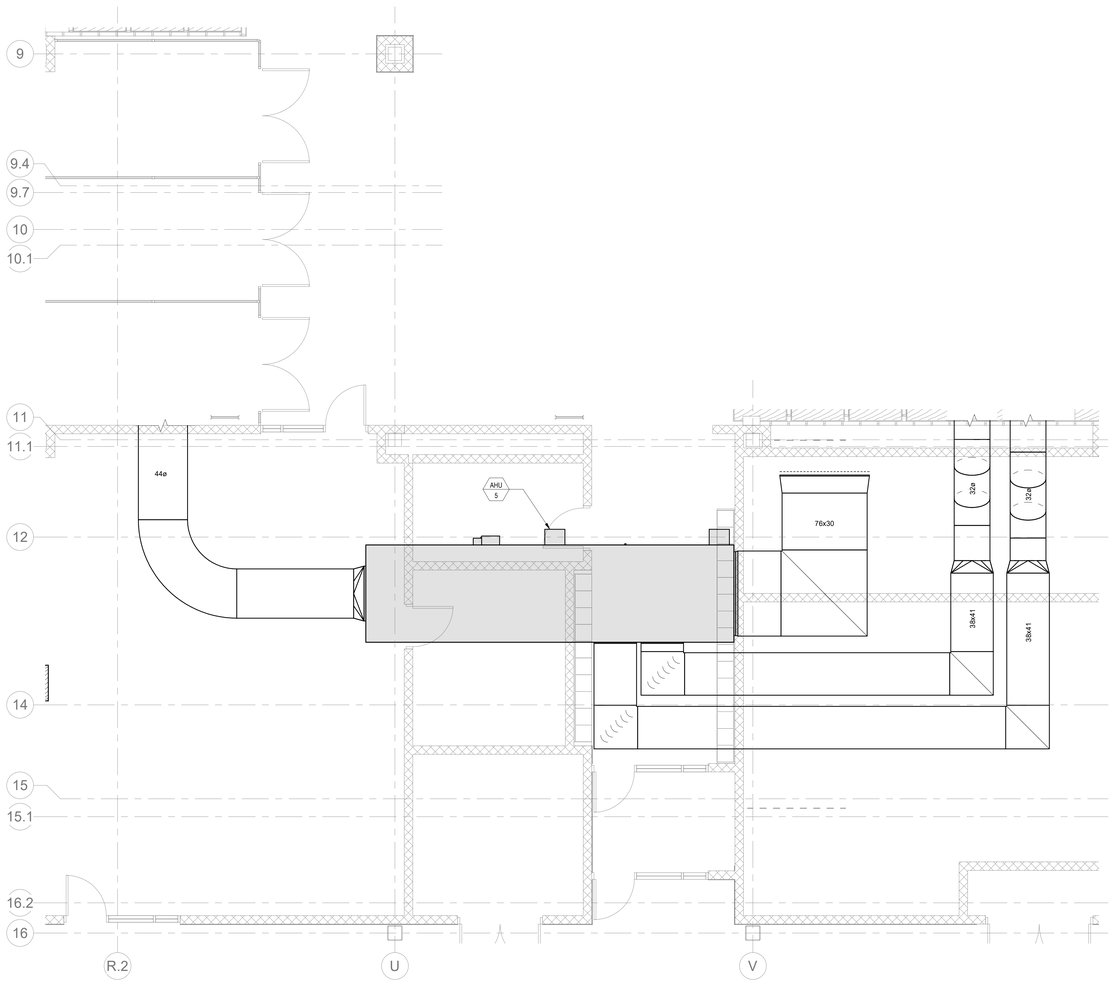
MECHANICAL ENLARGED PLANS

Scale: 1/4" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M2-0-2

HVAC GENERAL NOTES

1. PROVIDE A LITTLE GIANT VCMA-15ULS OR EQUAL CONDENSATE PUMP WITH CONDENSATE PIPING FROM AHU CONDENSATE DISCAHRGE TO NEAREAST CONDENSATE RECEPTOR. TYPICAL FOR EACH AHU.



② B103 HVAC TECHNOLOGY MEZZANINE
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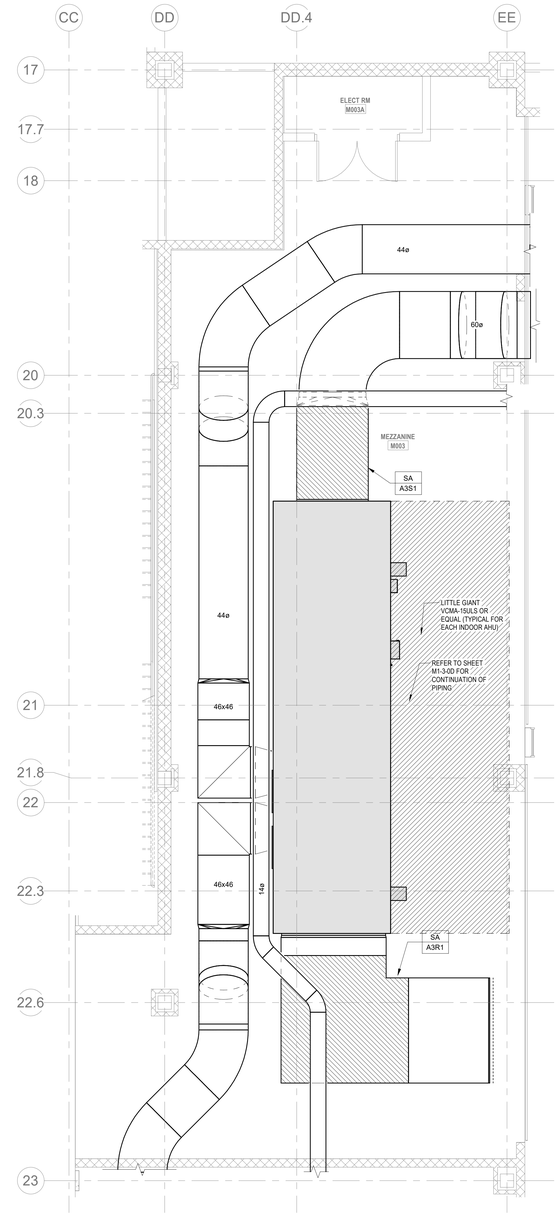
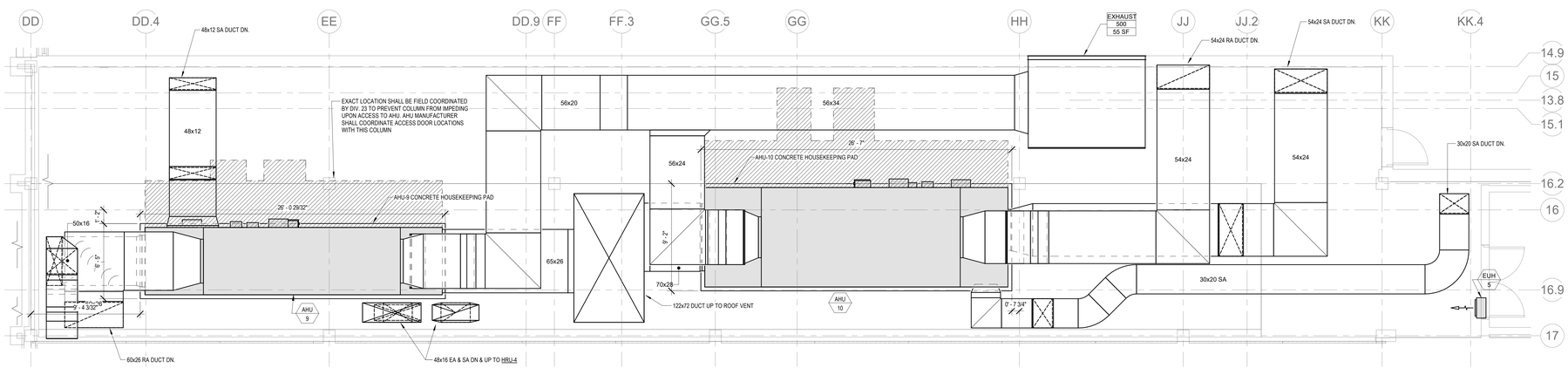


③ D008 AUTO TECHNOLOGY MEZZANINE
1/4" = 1'-0"



① C302 MECHANINCAL ROOM
1/4" = 1'-0"

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PROJECT NORTH | MAGNETIC NORTH

MECHANICAL ENLARGED PLANS

Scale: 1/4" = 1'-0"
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M2-0-3

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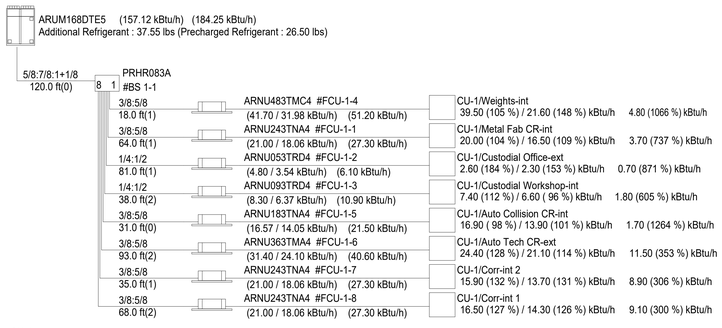
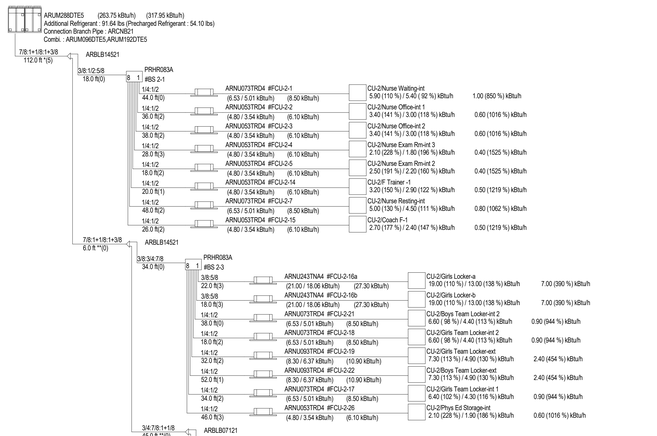


1 CU-1
NOT TO SCALE



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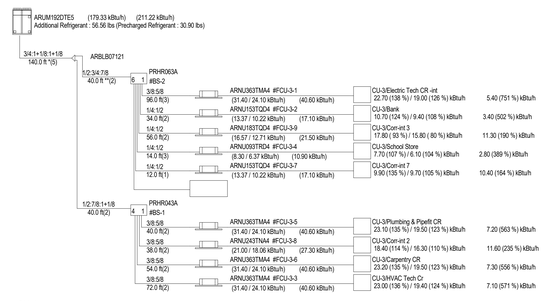

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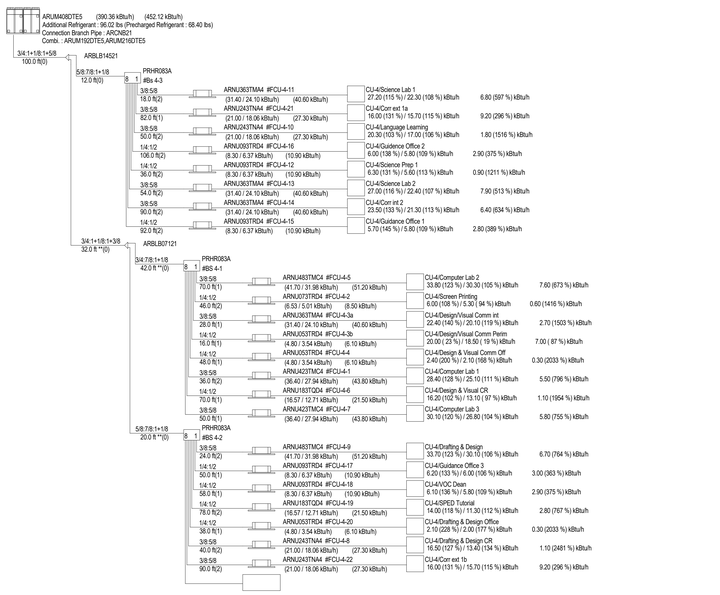

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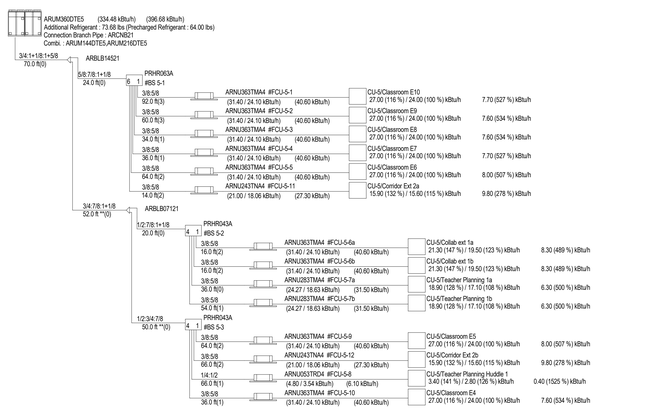

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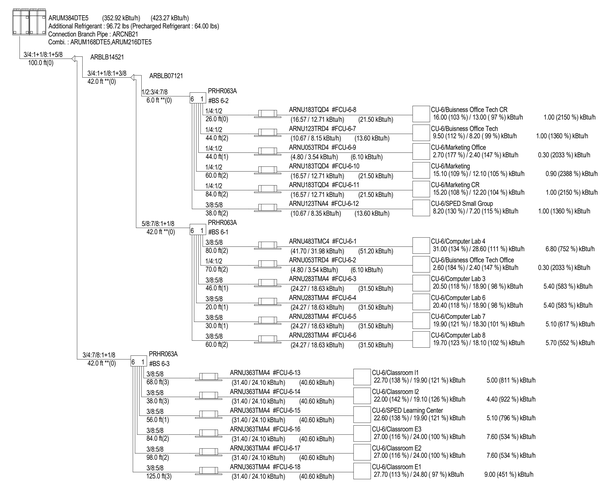

6 CU-6
NOT TO SCALE

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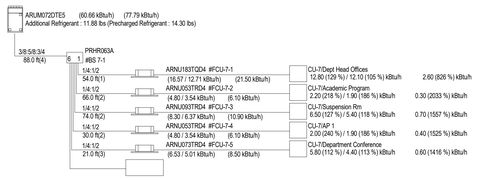
PROJECT NORTH

MAGNETIC NORTH

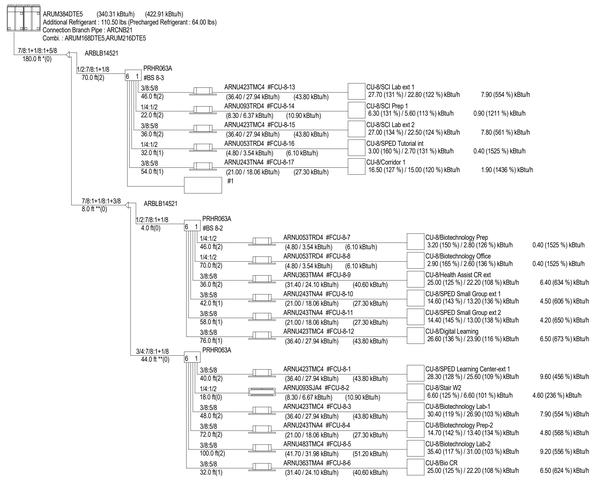
MECHANICAL VRF SYSTEM DIAGRAMS SHEET #1

Scale: NOT TO SCALE
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M3-0-1



1 CU-7
NOT TO SCALE



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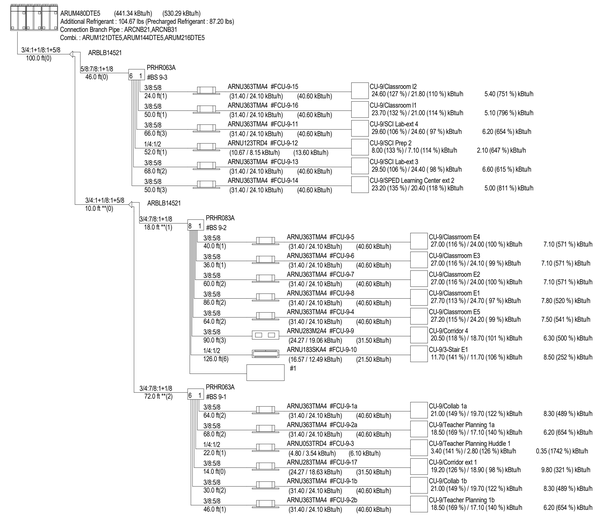
NOT TO SCALE



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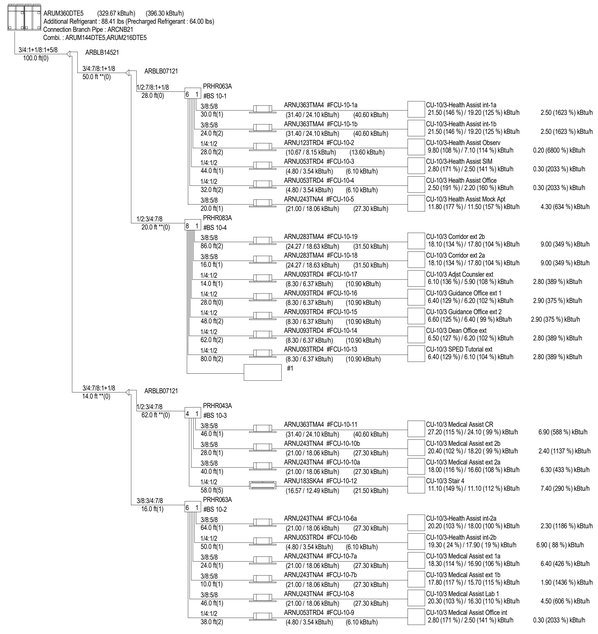

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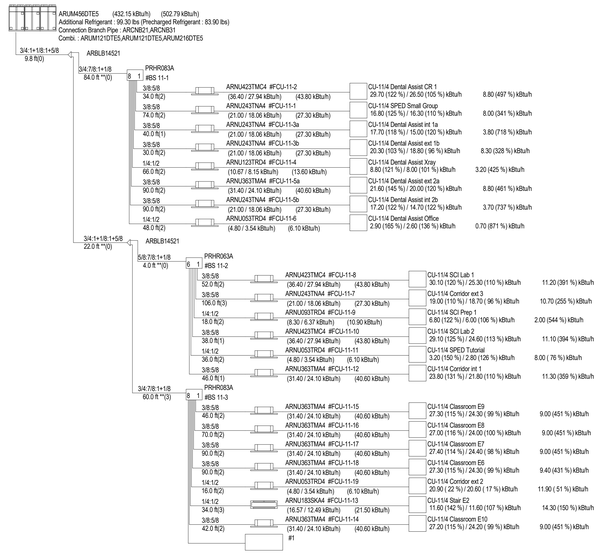

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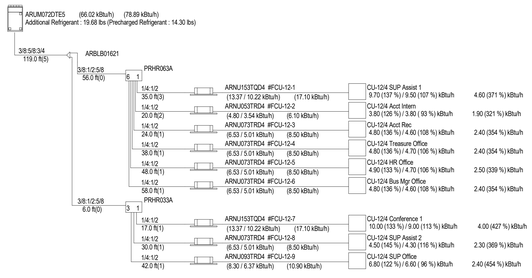

6 CU-12
NOT TO SCALE

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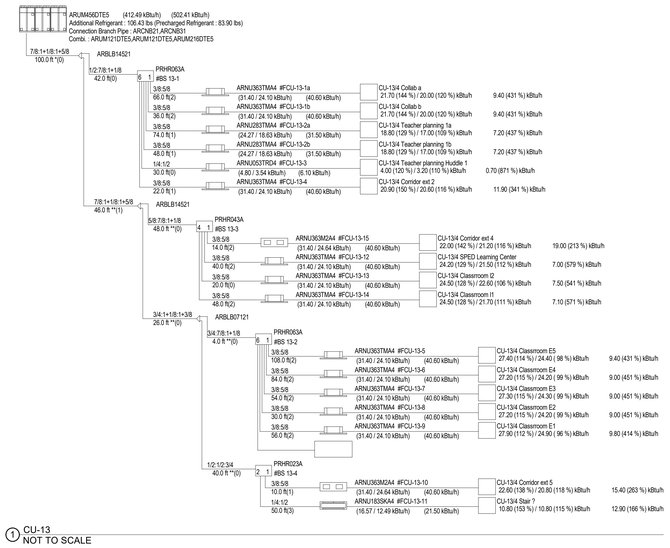
MECHANICAL VRF SYSTEM DIAGRAMS SHEET #2

Scale: NOT TO SCALE
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M3-0-2



1 CU-13
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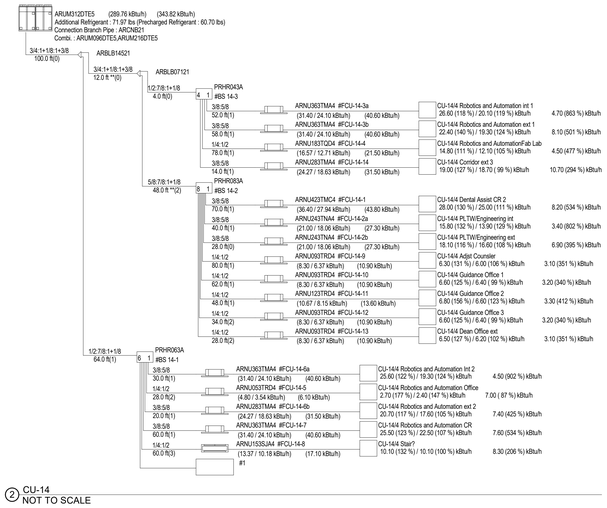

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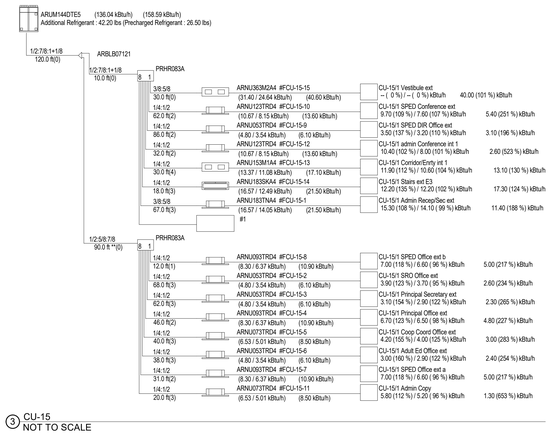

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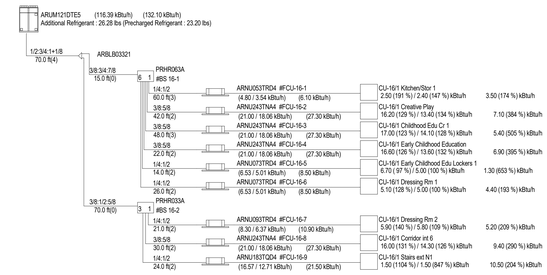

4 CU-16
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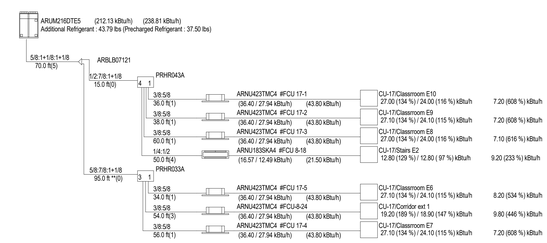
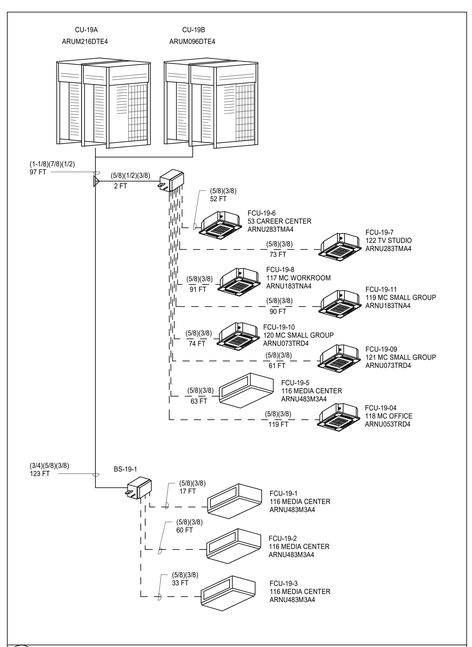
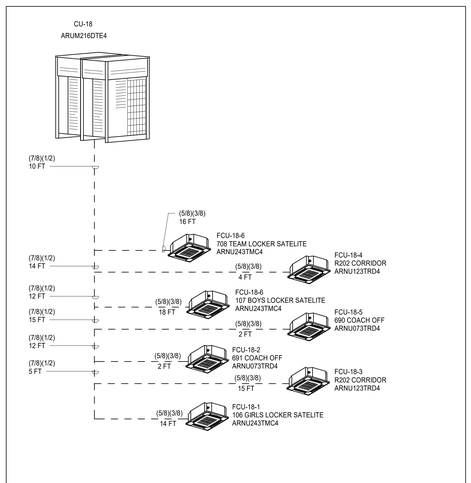


5 CU-17
NOT TO SCALE



5 M2-0-3 VRF SYSTEM FLOW DIAGRAM N.T.S.



6 M2-0-3 VRF SYSTEM FLOW DIAGRAM N.T.S.

ACCU SYSTEMS LEGEND

- (3/8") x (5/8") — REFRIGERANT LIQUID PIPE SIZE; REFRIGERANT SUCTION PIPE SIZE
- (3/8") x (5/8") x (1/2") — REFRIGERANT HP/LP GAS PIPE SIZE; REFRIGERANT SUCTION PIPE SIZE; REFRIGERANT LIQUID PIPE SIZE
- MW-NP — Y BRANCH PIPING CONNECTOR
- BS — HEAT RECOVERY BOX
- 16.0 FT — LENGTH OF 2 OR 3 PIPE REFRIGERANT SYSTEM BETWEEN SYSTEM EQUIPMENT CONNECTIONS. REFER TO FLOOR PLANS.
- YVAHR — HEAT RECOVERY CONDENSING UNIT MODULE.

PIPING LEGEND

- TWO PIPE
- THREE PIPE

VRF SYSTEM DIAGRAM NOTES

1. PIPING SIZES AND OVERALL LENGTHS AS SHOWN IN THESE DIAGRAMS SHALL BE FIELD VERIFIED BY THE HVAC CONTRACTOR AND COORDINATED BETWEEN THE HVAC CONTRACTOR AND THE VRF SYSTEM EQUIPMENT MANUFACTURER, PRIOR TO PROCUREMENT AND INSTALLATION BY THE HVAC CONTRACTOR.
2. Y BRANCH PIPING KIT, FURNISHED BY EQUIPMENT MANUFACTURER. (TYPICAL).
3. MODEL AND PART NUMBERS ARE BASED UPON YORK.
4. HVAC CONTRACTOR SHALL NOTE THAT THE LOCATION OF THE FIRST BRANCH IN THE VRF REFRIGERANT PIPING SYSTEM,DOWNSTREAM OF EACH AIR-COOLED CONDENSING UNIT, IS CRITICAL TO THE PROPER OPERATION OF THE SYSTEM AND SHALL BE STRICTLY ADHERED TO AS SHOWN ON THE DRAWINGS. THE HVAC CONTRACTOR SHALL CLOSELY COORDINATE THE INSTALLATION OF THE VRF SYSTEMS WITH THE VRF SYSTEM MANUFACTURER.
5. ALL IN-LINE SYSTEM EQUIPMENT ARRANGEMENTS AND INSTALLATIONS SHALL STRICTLY ADHERE TO THESE SYSTEM DIAGRAMS, UNLESS OTHERWISE DIRECTED BY THE VRF SYSTEM MANUFACTURER.

7 M2-0-3 VRF SYSTEM DIAGRAM NOTES AND LEGEND NTS

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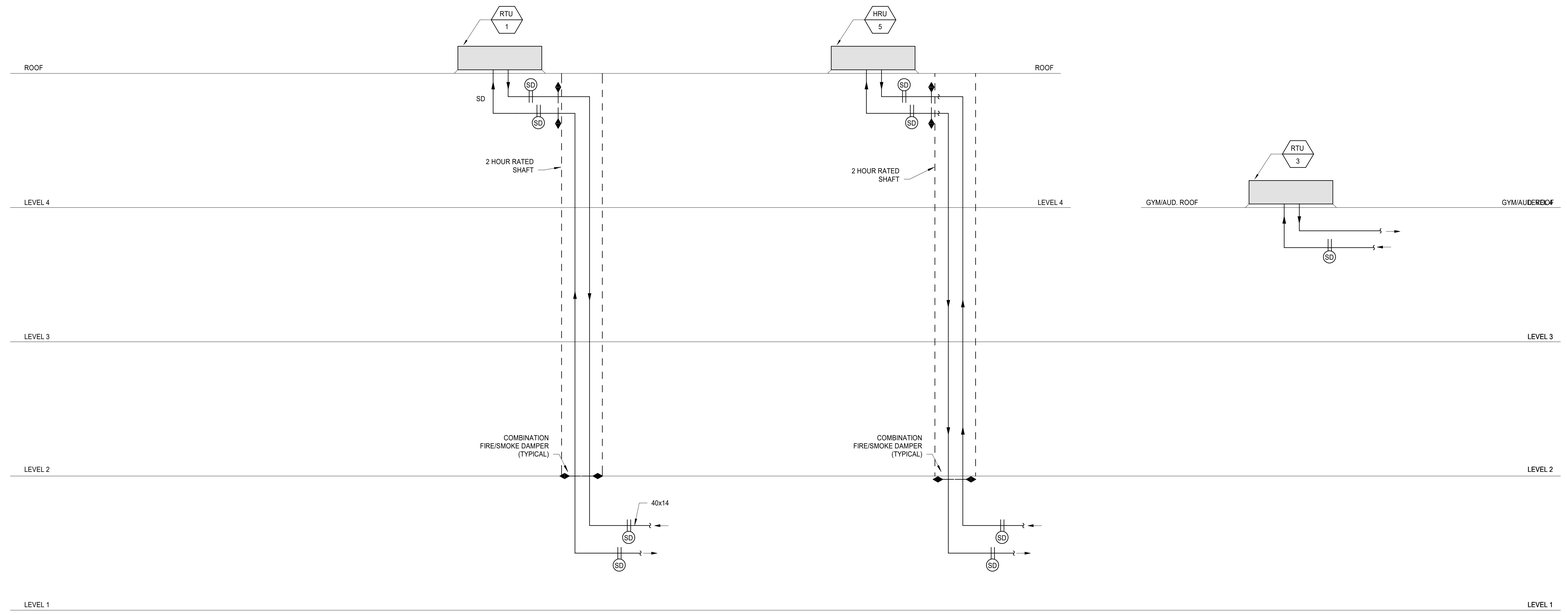
MECHANICAL VRF SYSTEM DIAGRAMS SHEET #3

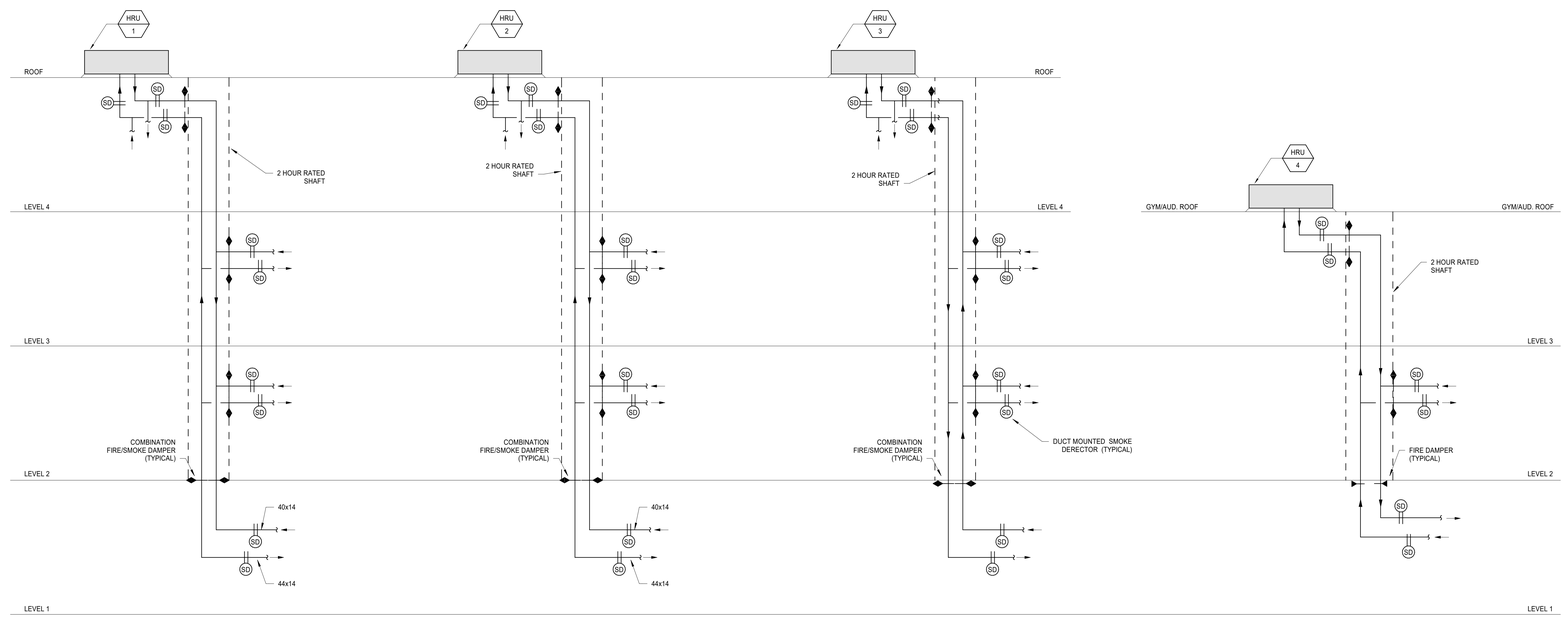
Scale: NTS
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M3-0-3



1 M2-0-4 **RTU DUCT RISER DIAGRAM**

N.T.S.



2 M2-0-4 **HRU RISER DIAGRAM**

N.T.S.

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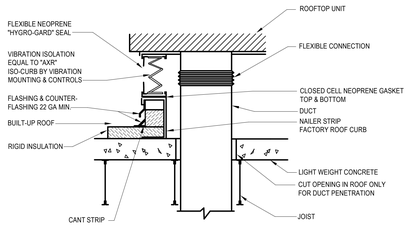
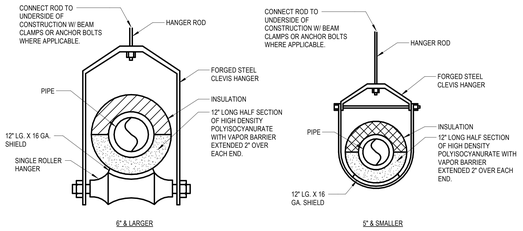
MECHANICAL AIR RISER DIAGRAMS

Scale: NTS
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

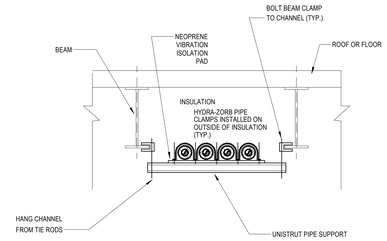
M3-0-4



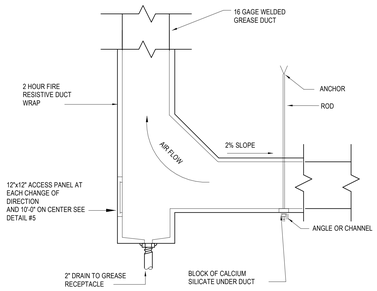
1 M4-0-1 **3-ROOF CURB AND VIBRATION ISOLATION (III)**
NOT TO SCALE



2 M4-0-1 **1 & 2-PIPE HANGER DETAILS**
NOT TO SCALE

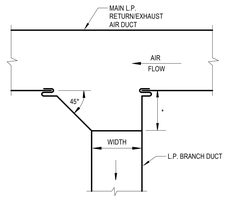


3 M4-0-1 **3-PIPE SUPPORT (ABOVE CEILING)**
NOT TO SCALE

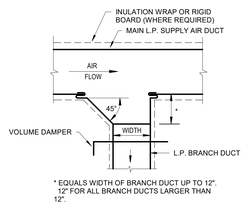


NOTE:
1. RISER AND HANGER SUPPORT ANGLES AND FASTENERS SHALL BE ARRANGED IN ACCORDANCE WITH SMACNA STANDARDS.

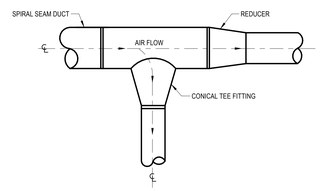
4 M4-0-1 **ARRANGEMENT AT BASE OF GREASE DUCT RISER**
12" = 1'-0"



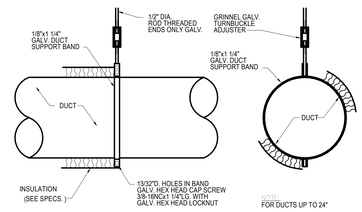
5 M4-0-1 **L.P. BRANCH DUCT TAKE-OFF DETAIL (RETURN/EXHAUST)**
NOT TO SCALE



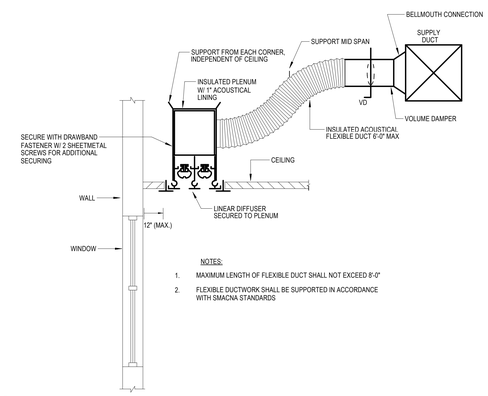
6 M4-0-1 **SUPPLY L.P. BRANCH DUCT DETAIL**
NOT TO SCALE



7 M4-0-1 **1-HP BRANCH CONNECTION & REDUCER DETAIL**
NOT TO SCALE

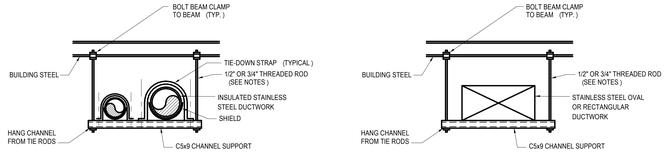


8 M4-0-1 **10-ROUND DUCT HANGER (UNDER 24")**
NOT TO SCALE



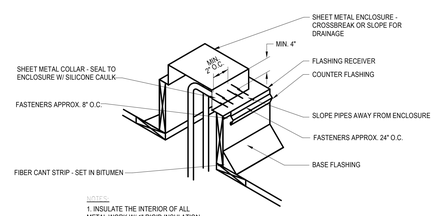
NOTES:
1. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL NOT EXCEED 8'-0"
2. FLEXIBLE DUCTWORK SHALL BE SUPPORTED IN ACCORDANCE WITH SMACNA STANDARDS

9 M4-0-1 **2-LINEAR DIFFUSER**
NOT TO SCALE



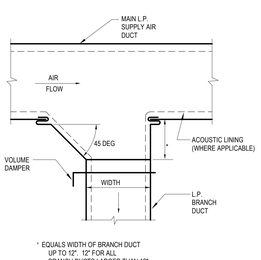
NOTE:
1. USE 3/4" THREADED RODS FOR 1000 LBS. OR GREATER OF A LOAD ON HORIZONTAL SUPPORT.
2. USE 1/2" THREADED RODS FOR LESS THAN 1000 LBS. OF A LOAD ON HORIZONTAL SUPPORT.
3. PROVIDE VIBRATION ISOLATORS WHERE REQUIRED BY SPECIFICATIONS.

10 M4-0-1 **PIPING AND DUCTWORK SUPPORT**
NOT TO SCALE



NOTES:
1. INSULATE THE INTERIOR OF ALL METAL WORK W/ 1" RIGID INSULATION
2. CURB SHALL HAVE A MIN. HEIGHT OF 18" ABOVE ROOF SURFACE
3. CURB FRAMING SHALL BE EITHER FABRICATED FROM PRESSURE TREATED LUMBER OR GALV. STEEL, MIN. 14 GA.

11 M4-0-1 **12-ROOF PIPE CURB**
NOT TO SCALE

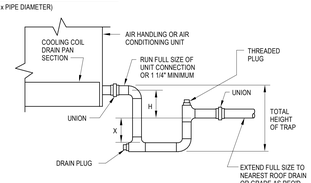


13 M4-0-1 **4-L.P. BRANCH DUCT TAKE-OFF DETAIL (SUPPLY)**
NOT TO SCALE

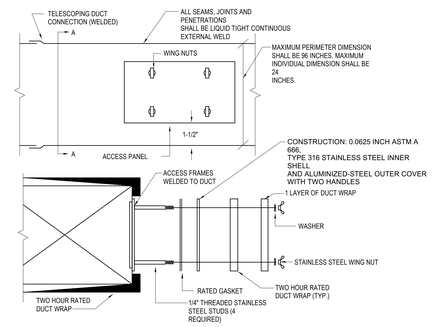
DRAIN TRAPPING HEIGHT		
FAN ARRANGEMENT	H	X
BLOW-THRU (POSITIVE STATIC PRESSURE)	A	B
DRAW-THRU (NEGATIVE STATIC PRESSURE)	D	C

A = MINIMUM 1"
B = AT LEAST 1" PLUS CASING STATIC PRESSURE
C = 1/2 "D"
D = AT LEAST 1" PLUS CASING STATIC PRESSURE

TOTAL HEIGHT OF TRAP = X + H + (1.5 x PIPE DIAMETER)
(WITHOUT INSULATION)



14 M4-0-1 **1. CONDENSATE DRAIN DETAIL**
NOT TO SCALE



SECTION A-A

NOTES:
1. ACCESS PANELS SHALL BE OF THE SAME MATERIAL AND THICKNESS AS DUCT. PANELS SHALL HAVE GASKET OR SEALANT RATED FOR 1500° AND BE LIQUID TIGHT.
2. SECURE ACCESS PANELS TO OPENINGS WITH STAINLESS STEEL STUDS, LATCHES, AND WING NUTS WELDED TO DUCT BUT NOT PENETRATING DUCT WALLS.
3. ACCESS OPENINGS (7"x7") SHALL BE PROVIDED AT 20 FT INTERVALS AND NOT FURTHER THAN 10 FOOT FROM CHANGE IN DIRECTION OF DUCT.
4. ON VERTICAL DUCTWORK, PROVIDE AN ACCESS OPENING ON EACH FLOOR.
5. DUCTS SHALL BE 16 GAUGE CARBON STEEL. ALL SEAMS, JOINTS AND CONNECTIONS SHALL BE LIQUID TIGHT WITH CONTINUOUS EXTERNAL WELD.
6. OVERLAPPING DUCT CONNECTIONS SHALL BE AS OUTLINED IN NFPA 96.

12 M4-0-1 **ARRANGEMENT AT ACCESS PANEL - GREASE DUCT**
12" = 1'-0"

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225 Oakland Road
Studio 205
South Windsor, CT
06074
260 Charles Street
Studio 300
Waltham, MA
02453
Planning | Architecture | Interior Design
Tel: 617.964.1700
www.draws.com

Northeast Metropolitan Regional Vocational High School

Wakefield, MA 01880

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BOSTON, MA 02114-3306
TEL: 617.367.8600 FAX: 617.367.0300
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MSBA 60% CD SUBMISSION

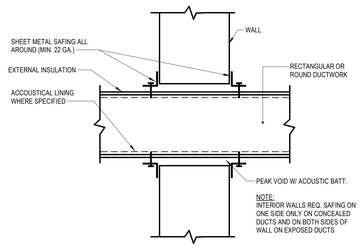
January 13, 2023

PROJECT NORTH | MAGNETIC NORTH

MECHANICAL DETAILS SHEET #1

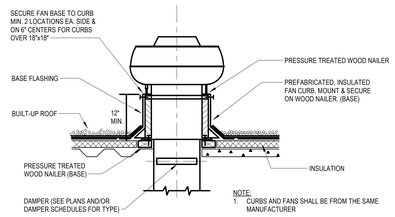
Scale: NOT TO SCALE
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M4-0-1



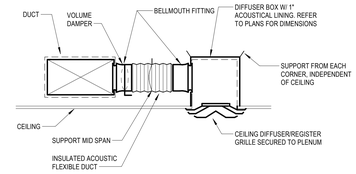
NOTE:
INTERIOR WALLS REQ. SAFING ON ONE SIDE ONLY ON CONCEALED DUCTS AND ON BOTH SIDES OF WALL ON EXPOSED DUCTS

4 / M4-0-2 DUCT THRU NON-FIRE RATED WALL
NOT TO SCALE



NOTE:
1. CURBS AND FANS SHALL BE FROM THE SAME MANUFACTURER

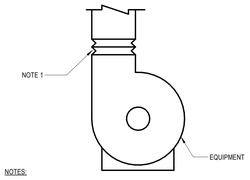
3 / M4-0-2 UPBLAST ROOF FAN MOUNTING
NOT TO SCALE



NOTES:
1. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL NOT EXCEED 6'-0".

2. FLEXIBLE DUCTWORK SHALL BE SUPPORTED IN ACCORDANCE WITH SMACNA STANDARDS.

2 / M4-0-2 FLEXIBLE DUCT CONNECTION
NOT TO SCALE



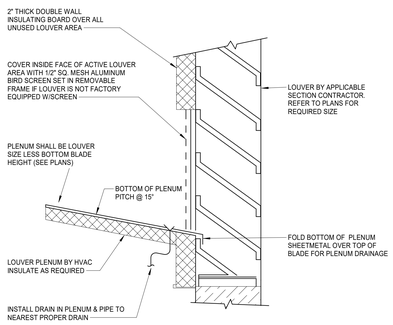
NOTES:

1. THICK (30 OZ/SQ. YD.) NEOPRENE SPECIFICATIONS GRADE, HIGH TENSILE AND TEAR STRENGTH, 10" WIDE SIMILAR TO DURO-DYNE MODEL 10051-DFN-10 OR EQUAL. (FOR TEMPERATURES UP TO AND INCLUDING 200°F)

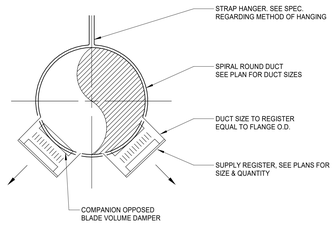
2. THICK COMPOSITE, SPECIFCATIONS GRADE, HIGH TENSILE AND TEAR STRENGTH, SIMILAR TO EFFOX, INC. OR EQUAL. (FOR TEMPERATURES AVOBE 200°F)

3. SUPPORT DUCTS INDEPENDENTLY FROM STRUCTURAL STEEL.

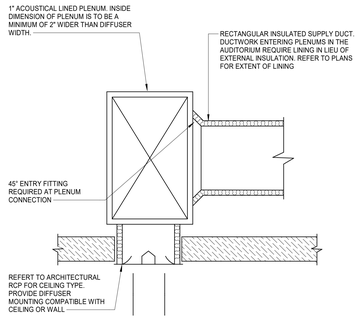
1 / M4-0-2 FLEXIBLE CONNECTION INSTALLATION
NOT TO SCALE



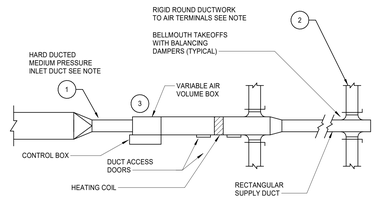
9 / M4-0-2 LOUVER/PLENUM
1/8" = 1'-0"



7 / M4-0-2 SUPPLY REGISTER (ROUND DUCTWORK)
1/8" = 1'-0"



6 / M4-0-2 TYPICAL LINEAR DIFFUSER PLENUM
1/8" = 1'-0"



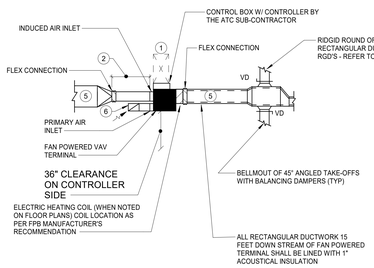
NOTES:

1. INLET DUCT SIZE SHALL BE AS SHOWN ON FLOOR PLAN. FINAL DUCT TO BOX CONNECTION SHALL BE INLET SIZE FOR 3FT TO 5FT BEFORE BOX CONNECTION.

2. BRANCH DUCT SIZE SHALL BE AS SHOWN ON FLOOR PLAN OR THE SAME SIZE AS DIFFUSER NECK IF NOT SHOWN.

3. MAINTAIN A 3'-0" SERVICE CLEARANCE FOR ALL MOTOR OPERATED EQUIPMENT (MOTORS, PANELS, COILS, FILTERS ETC.) AS REQUIRED BY THE EQUIPMENT MANUFACTURER.

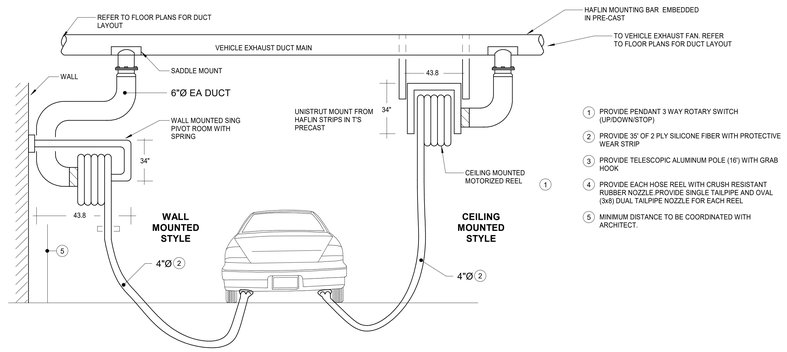
5 / M4-0-2 VAV BOX AND DUCT TAKE-OFFS
1/8" = 1'-0"



NOTES:

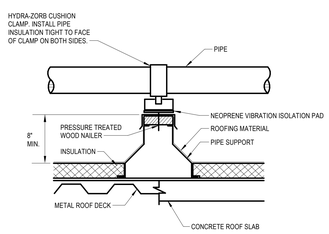
1. PROVIDE A MINIMUM OF 36" CLEARANCE IN FRONT OF THE ELECTRIC CONTROL PANEL(S) (AS PER THE NATIONAL ELECTRIC CODE)-NO PIPING, DUCTWORK,BUILDING STRUCTURE, ETC SHALL BE IN THIS MAINTENANCE ZONE-COORDINATE WITH ALL TRADES. INSTALL BOX W/REQUIRED MANUFACTURERS CLEARANCES ALL AROUND.
2. 24" MINIMUM LENGTH OF INLET-SIZE STRAIGHTDUCTWORK FROM TERMINAL CONNECTION TO DUCTWORK TRANSITION AT THE RECTANGULAR PRESSURE.
3. ALL BOXES SHALL BE INSTALLED PER THIS DETAIL.
4. BRANCH DUCT SIZE SHALL BE AS SHOWN ON FLOOR PLAN OR SHALL BE THE SAME SIZE AS DIFFUSER NECK IF NOT INDICATED.
5. DUCT SIZE TO BE AS SHOWN ON PLANS. TRANSITION TO BOX CONNECTION INLET /DISCHARGE SIZES AS REQUIRED.
6. LINED SOUND DEFLECTION RA DUCT BOOT;TAPERED UP AT ANGLE W/ OPENING AT TOP PROVIDED BY BOX MFR. DUCT BOOT SIZE TO MATCH BOX RA OPENING SIZE. PROVIDE MIN. 4' HORIZ. RUN.
7. FPB TO BE WRAPPED IN MASS-LOADED VINYL (SOUNDSEAL B-10 OR EQUAL) W/MIN. SURFACE DENSITY OF 1.0 LB/P AND A 1" QUILTED INSULATING UNDERLAY. SERVICE. ACCESS PANELS TO BE MAINTAINED BY VELCRO ATTACHMENT OF WRAP TO PANELS.

10 / M4-0-2 FAN-POWERED VAV TERMINAL AND TAKE-OFFS
1/8" = 1'-0"

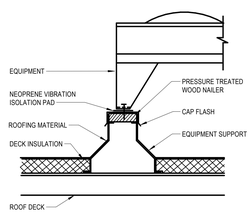


1. PROVIDE PENDANT 3 WAY ROTARY SWITCH (UP/DOWN/STOP).
2. PROVIDE 35' OF 2 PLY SILICONE FIBER WITH PROTECTIVE WEAR STRIP
3. PROVIDE TELESCOPIC ALUMINUM POLE (16') WITH GRAB HOOK
4. PROVIDE EACH HOSE REEL WITH CRUSH RESISTANT RUBBER NOZZLE.PROVIDE SINGLE TAILPIPE AND OVAL (3x8) DUAL TAILPIPE NOZZLE FOR EACH REEL
5. MINIMUM DISTANCE TO BE COORDINATED WITH ARCHITECT.

8 / M4-0-2 OVERHEAD CAR EXHAUST SYSTEM
1/8" = 1'-0"



13 / M4-0-2 ROOF PIPE SUPPORT CURB
NOT TO SCALE



12 / M4-0-2 EQUIPMENT CURB
NOT TO SCALE

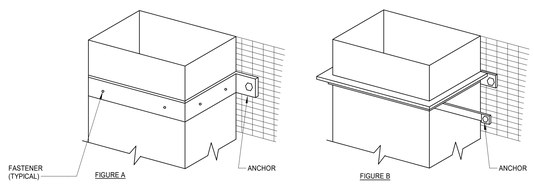


FIGURE A SUGGESTED SIZING

DUCT SIZE	BAND
18" x 12" 24" x 20"	1-1/2"x16 Ga. 1"x1/8"

FIGURE B SUGGESTED SIZING

DUCT SIZE	BAND
30"x12"	1"x1"x1/8"
36"x18"	1"x1"x1/8"
42"x24"	1-1/4"x1"x1-1/4"x1/8"
48"x30"	1-1/4"x1"x1-1/4"x1/8"

DUCT GAUGE	ALLOWABLE LOAD PER FASTENER
28,26	25 LB
24,22,20	35 LB
18,16	50 LB

NOTES:

1. BRACKETS ARE SIZED FOR 12 FEET OF DUCT, MAXIMUM.

2. LOCATE DUCTS AGAINST WALL OR MAXIMUM OF 2" AWAY FROM WALL.

3. BRACKETS SHALL BE SIZED TO SATISFY SMACNA TENSILE AND SHEAR LOAD CRITERIA.

11 / M4-0-2 DUCTWORK SUPPORT FROM WALL
1/8" = 1'-0"

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January 13, 2023

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MECHANICAL DETAILS SHEET #2

Scale: As indicated
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M4-0-2

ENERGY RECOVERY VENTILATOR - ELECTRIC HEATING COIL (ERV)

UNIT NO	SERVICE	LOCATION	AIR FLOWS (CFM) O.A.	AIR FLOWS (CFM) EXH	ELECTRICAL CHARACTERISTICS V	PH	MCA	MOP	MANUFACTURER	MODEL	REMARKS	STARTER TYPE
ERV-1	ADMIN AREA 1A	A120 WAITING	695	350	208	1	54.7	60	OXYGEN8	A16IN	PROVIDE 1 KW ELEC COIL	PS
ERV-2	DEPARTMENT HEADS	ROOF AREA B	285	285	208	1	2.7	15	SALDA	SMARTY 4X-K-F2-1.1	PROVIDE 2 KW POST HEATER @ 208V/1PH - MOCP=15	PS
ERV-3	EARLY CHILDHOOD	EARLY CHILDHOOD	1100	1005	480	3	21.2	25	OXYGEN8	H15	PROVIDE 1.3 KW ELEC COIL	PS
ERV-4	MEDIA CENTER	ROOF AREA A	1795	1795	480	3	29.1	30	OXYGEN8	C22OU	PROVIDE 3.3 KW COIL	PS
ERV-5	CONCESSIONS BUILDING	CONCESSIONS BUILDING	1545	1500	480	3	24.5	25	OXYGEN8	H20	PROVIDE 1.4 KW ELEC COIL	PS
ERV-6	LOCKER BUILDING	LOCKER BUILDING	1590	1490	480	3	24.4	25	OXYGEN8	H20	PROVIDE 1.9 KW ELEC COIL	PS
ERV-7	ADMIN AREA 4A	A403 CORRIDOR	250	195	208	1	2.7	15	SALDA	SMARTY 4X-K-F2-1.1	PROVIDE 2 KW POST HEATER @ 208V/1PH - MOCP=15	PS

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE 2 INCH MERV-13 FILTER FOR OUTDOOR AIR.
3. PROVIDE 2 INCH MERV-8 EXHAUST FILTER.
4. MAXIMUM FILTER VELOCITY TO BE 400 FPM.
5. PROVIDE SINGLE POINT POWER CONNECTION FOR OXYGEN8 UNITS.
6. PROVIDE FROST CONTROL.

DEDICATED OUTDOOR AIR ROOFTOP UNITS - DXCOOLING/HEATING WITH ELECTRIC PRE-HEAT (HRU)

UNIT NO.	LOCATION	SERVICE	OUTDOOR AIR FLOW (CFM)	SUPPLY FAN MAX AIRFLOW (CFM)	SUPPLY FAN TSP (IN.WG)	SUPPLY FAN CONTROL	RETURN FAN MAX AIRFLOW (CFM)	COOLING COIL (VRF) TOTAL CAP (MBH)	ELECTRIC PRE-HEAT COIL KW	ELECTRICAL V	PH	FLA	MCA	OPD	WEIGHT	MANUFACTURER	MODEL	REMARKS
HRU-1	ROOF AREA A	CLASSROOMS	16000	16000	5.50	VFD	15000	822.0	80	480	3	155.8	169.6	175	23580.00	THERMOTECH	YCO-118x80	SEE NOTES
HRU-2	ROOF AREA A	CLASSROOMS	16000	16000	5.50	VFD	15000	822.0	80	480	3	155.8	169.6	175	23580.00	THERMOTECH	YCO-118x80	SEE NOTES
HRU-3	ROOF AREA B	CLASSROOMS	16000	16000	5.50	VFD	15000	822.0	80	480	3	155.8	169.6	175	23580.00	THERMOTECH	YCO-118x80	SEE NOTES
HRU-4	ROOF AREA D	LOCKER/SHOWER	7070	7070	5.00	VFD	7070	409.0	25	480	3	61.2	76.5	80	14356.00	THERMOTECH	YCO-80x57	SEE NOTES
HRU-5	ROOF AREA B	COSMETOLOGY	2760	2760	4.80	VFD	2760	115.0	10	460	3	28.8	36.0	40	9028.00	INNERGYTECH	YCO-56x43	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. REFER TO ENERGY RECOVERY WHEEL SCHEDULE.
3. THE BREAK HORSEPWER LISTED HERE IS THE MAXIMUM ALLOWABLE WHICH SHALL INCLUDE ALL UNIT SPECIFIC SYSTEM EFFECTS AND COMPONENT PRESSURE DROPS.
4. PROVIDE MERV-8 PRE-FILTER AND MERV-13 FINAL FILTER FOR SUPPLY AIR FLOW. PROVIDE MERV-8 FILTERS FOR THE RETURN/EXHAUST AIRFLOW UPSTREAM OF TOTAL ENERGY WHEEL.
5. ALLOW FOR 1" W.C. FILTER LOADING ON THE SUPPLY AND 0.5" W.C. FILTER LOADING ON THE EXHAUST AIR STREAMS.
6. PROVIDE 22-INCH HIGH, FULL PERIMETER SPRING ROOF CURB WITH 2-INCH DEFLECTION – TYPE PC-4CS
7. PROVIDE DIRECT DRIVE PLENUM FANS WITH AIRFOIL SHAPED BLADES.
8. PROVIDE REFRIGERANT PIPING BETWEEN HRU AND VCU CONDENSING UNIT

MAKE-UP AIR UNIT - DX COOLING/HEATING WITH ELECTRIC PRE-HEAT (MAU)

UNIT NO.	LOCATION	SERVICE	OUTDOOR AIRFLOW MAX	SUPPLY FAN MAX AIRFLOW (CFM)	SUPPLY FAN TSP (IN.WG)	COOLING COIL TOTAL CAP (MBH)	ELECTRIC PRE-HEAT COIL KW	ELECTRICAL V	PH	FLA	MCA	OPD	WEIGHT	MANUFACTURER	MODEL	REMARKS
MAU-1	MECHANICAL 281	KITCHEN	6510	6510	2.10	392.0	95	460	3	136	139.5	150	6060.00	YORK	YCI-48x78	SEE NOTES
MAU-2	ROOF AREA A	CULINARY KITCHEN	15605	15605	2.00	1057.0	225	460	3	327	338.4	400	16163.00	YORK	YCO-78x108	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. INCLUDES UP TO 1" W.C. OF DIRTY FILTER (LOADING) ALLOWANCE.
3. PROVIDE SEPARATE ELECTRICAL FEED, 20 AMPS, 120V, 1 PH FOR SERVICE OUTLET AND INTERIOR UNIT LIGHTS.
4. PROVIDE 22-INCH SPRING ROOF CURB.
5. PROVIDE REFRIGERANT PIPING BETWEEN MAU AND VCU CONDENSING UNIT.

ROOFTOP AIR HANDLING UNIT - DX COOLING/HEATING WITH ELECTRIC PRE-HEAT (RTU)

UNIT NO.	LOCATION	SERVICE	OUTDOOR AIRFLOW MIN	SUPPLY FAN MAX AIRFLOW (CFM)	SUPPLY FAN TSP (IN.WG)	SUPPLY FAN CONTROL	RETURN FAN MAX AIRFLOW (CFM)	RETURN FAN TSP (IN.WG)	RETURN FAN CONTROL	ENERGY RECOVERY TYPE	COOLING COIL TOTAL CAP (MBH)	ELECTRIC PRE-HEAT COIL KW	ELECTRICAL V	PH	FLA	MCA	OPD	WEIGHT	MANUFACTURER	MODEL	REMARKS
RTU-1	ROOF AREA A	CULINARY	680	1165	3.40	VFD	1165	3.40	VFD	ALUMINUM W/MOLECULAR SIEVE 4A	39.8	45.0	460	3	17	21.7	20	12062.00	THERMOTECH	YCO-36x54	SEE NOTES
RTU-2	ROOF AREA D	GYMNASIUM	4050	14000	5.40	VFD	14000	3.20	VFD	ALUMINUM W/MOLECULAR SIEVE 4A	545.0	45.0	460	3	711.7	139.5	150	18631.00	THERMOTECH	YCO-66x116	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. REFER TO ENGERY RECOVERY WHEEL SCHEDULE
3. PROVIDE 2 INCH MERV-13 FILTER FOR OUTDOOR AIR.
4. PROVIDE OUTSIDE AIR INTAKE HOOD.
5. PROVIDE 2 INCH MERV-8 EXHAUST FILTER.
6. MAXIMUM FILTER VELOCITY TO BE 400 FPM.
7. PROVIDE SINGLE POINT POWER CONNECTION.
8. PROVIDE CONVENIENCE OUTLET POWERED BY DEDICATED 120V/1PH/20AMP FEED (BY DIV. 26)
9. PROVIDE FROST CONTROL.
10. PROVIDE REFRIGERANT PIPING BETWEEN RTU AND VCU CONDENSING UNIT

INDOOR AIR HANDLING UNIT - DX COOLING/HEATING WITH ELECTRIC PRE-HEAT (AHU)

UNIT NO.	LOCATION	SERVICE	OUTDOOR AIRFLOW MIN	SUPPLY FAN MAX AIRFLOW (CFM)	SUPPLY FAN TSP (IN.WG)	SUPPLY FAN CONTROL	RETURN FAN MAX AIRFLOW (CFM)	RETURN FAN ESP (IN.WG)	RETURN FAN CONTROL	ENERGY RECOVERY TYPE	COOLING COIL TOTAL CAP (MBH)	ELECTRIC PRE-HEAT COIL KW	ELECTRICAL V	PH	FLA	MCA	OPD	WEIGHT	MANUFACTURER	MODEL	REMARKS
AHU-1	METAL FABRICATION MEZZANINE	METAL FABRICATION	2860	20000	2.55	VFD	17000	2.10	VFD	NONE	755.1	285.0	480	3	412	425.2	450	16663.00	YORK	YCI-75x135	SEE NOTES
AHU-2	METAL FABRICATION MEZZANINE	METAL FABRICATION	2860	20000	2.55	VFD	17000	2.10	VFD	NONE	755.1	285.0	480	3	412	425.2	450	16663.00	YORK	YCI-75x135	SEE NOTES
AHU-3	AUTO TECHNOLOGY MEZZANINE	AUTO TECHNOLOGY	6685	15475	3.40	VFD	15745	1.90	VFD	NONE	596.0	225.0	480	3	328	338.4	400	13230.00	YORK	YCI-75x105	SEE NOTES
AHU-4	ELECTRICAL TECHNOLOGY MEZZANINE	ELECTRICAL TECHNOLOGY	1965	9405	3.22	VFD	6985	2.00	VFD	NONE	230.8	135.0	480	3	198	205.3	225	10993.00	YORK	YCI-60x84	SEE NOTES
AHU-5	HVAC TECHNOLOGY MEZZANINE	HVAC TECHNOLOGY	2095	7275	3.84	VFD	5180	2.11	VFD	NONE	272.0	105.0	480	3	157	163.8	175	8219.00	YORK	YCI-55x75	SEE NOTES
AHU-6	PLUMBING & PIPEFITTING MEZZANINE	PLUMBING & PIPEFITTING	2115	6570	3.80	VFD	6080	2.00	VFD	NONE	232.3	95.0	480	3	9143	147.8	150	7903.00	YORK	YCI-51x75	SEE NOTES
AHU-7	CARPENTRY MEZZANINE	CARPENTRY	2400	8265	2.36	VFD	3835	2.10	VFD	NONE	300.6	120.0	480	3	179	186.5	200	9115.00	YORK	YCI-57x84	SEE NOTES
AHU-8	MECHANICAL 281	CAFETERIA	7100	10255	3.90	VFD	8850	2.80	VFD	ALUMINUM W/MOLECULAR SIEVE 4A	456.6	35.0	480	3	85	106.4	110	16278.00	THERMOTECH	YCI-65x111	SEE NOTES
AHU-9	MECHANICAL 639	EVENTS ENTRY	2595	3555	4.10	VFD	2595	4.00	VFD	ALUMINUM W/MOLECULAR SIEVE 4A	393.9	30.0	480	3	78	97.9	100	14986.00	THERMOTECH	YCI-66x102	SEE NOTES
AHU-10	MECHANICAL 639	AUDITORIUM	965	9485	4.00	VFD	9485	3.20	VFD	ALUMINUM W/MOLECULAR SIEVE 4A	479.0	35.0	480	3	85	106.4	110	15229.00	THERMOTECH	YCI-66x102	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. MAXIMUM FAN POWER INCLUDES DRIVE LOSSES AND ANY SYSTEM EFFECTS INTERNAL TO ROOFTOP UNIT.
3. THE BREAK HORSEPOWER LISTED HERE IS THE MAXIMUM ALLOWABLE WHICH SHALL INCLUDE ALL UNIT ENTRY/EXIT LOSEES AND UNIT SPECIFIC SYSTEM EFFECT.
4. PROVIDE DIRECT DRIVE PLENUM FANS WITH AIRFOIL SHAPED BLADES.
5. PROVIDE MERV-8 PREFILTER AND MERV-13 FINAL FILTER.
6. SUPPLY FAN IS ADJUSTED TO ALLOW FOR A TOTAL AIR SYSTEM LEAKAGE OF 3%.
7. DIRTY FILTER ALLOWANCE SHALL BE 0.5" W.G.
8. PROVIDE 6-INCH BASE RAIL.
9. PROVIDE ECONOMIZER SECTION.
10. PROVIDE SINGLE POINT POWER CONNECTION WITH CONVENIECE OUTLET FED FROM DEDICATED 120V/1PH/20 AMP LINE FROM DIV. 26.
11. UNIT SHALL BE INDOOR TYPE.
12. PROVIDE WITH UNIT DISCONNECT SWITCH.
13. SUPPLY AIR FAN SHALL BE PLENUM TYPE.
14. RETURN AIR FAN SHALL BE PLENUM TYPE, INNER FACE OF CASING SHALL BE PERFORATED WITH MYLAR OR TEDLAR LINING.
15. PROVIDE ODP MOTORS FOR FANS.
16. PROVIDE WITH VFD COMPATIBLE MOTORS.
17. PROVIDE ELECTRICALLY INSULATED BEARINGS ON VFD DRIVEN MOTORS. PROVIDE SHAFT MOUNTED STATIC DISCHARGE DISAPPATION RING WITH CONDUCTIVE MICROFIBERS (ELECTRO STAIC TECHNOLOGY AEGIS SGR OR APPROVED EQUAL).
18. THE BRAKEHORSE POWER LISTED IS THE MAXIMUM ALLOWABLE WHICH SHALL INCLUDE ALL DRIVE LOSSES AND UNIT SPECIFIC FAN SYSTEM EFFECTS.
19. PROVIDE WITH OUTDOOR AIRFLOW MEASURING STATION.
20. PROVIDE 2" SPRING ISOLATORS.
21. PROVIDE WITH ENERGY RECOVERY SECTION. REFER TO ENERGY RECOVERY SCHEDULE FOR PERFORMANCE REQUIREMENTS.

FAN SCHEDULE (F)

UNIT NO.	LOCATION	SERVICE	AIRFLOW (CFM)	MOTOR SIZE HP	MOTOR V	MOTOR PH	MANUFACTURER	MODEL	NOTES
F-1	ROOF AREA A	KITCHEN DISHWASHER	600	1/2	120	1	GREENHECK	CUE-100HP-VG	
F-2	ROOF AREA A	CULINARY OVEN	900	3/4	208	1	GREENHECK	CUE-140HP-VG	
F-5	AUTO TECH	VECHICLE EXHAUST	2600	5	460	3	CAR-MON	CMB-20	
F-7	AUTO TECH	VECHICLE EXHAUST	2100	3	460	3	CAR-MON	CMB-20	
F-8	ROOF AREA A	CULINARY DISHWASHER	600	1/2	120	1	GREENHECK	CUE-100HP-VG	
F-9	MECHANICAL 281	MECHANICAL 281	500	3/4	208	1	GREENHECK	SQ-98-VG	
F-11	ROOF AREA B	B201 LASER CUTTER	360	-	208	1	CINCINNATI FAN	RBE-9	
F-12	ROOF AREA B	B201 LASER CUTTER	360	-	208	1	CINCINNATI FAN	RBE-9	
F-13	ROOF AREA C	METAL FAB. WELDING BOOTHS	18400	20	460	3	GREENHECK	QEI-30	VFD
F-15	ROOF AREA C	AUTO COLL. SPRAY BOOTH	15000	15	460	3	GREENHECK	QEI-30	
F-16	ROOF AREA C	AUTO COLL. SPRAY BOOTH	15000	15	460	3	GREENHECK	QEI-33	
F-17	ROOF AREA C	AUTO COLL. MIXING BOOTH	900	0.75	208	1	GREENHECK	CUE-140HP-VG	
F-18	DRY STORAGE 583	DRY STORAGE 583	415	3/4	120	3	GREENHECK	SQ-98-VG	
F-19	MAINT. GARAGE	MAINT. GARAGE M101	1700	3/4	208	1	GREENHECK	SQ-98-VG	
F-20	ROOF AREA C	AUDITORIUM TOILETS	450	1.25	208	1	GREENHECK	CUE-100HP-VG	
F-21	FIELD MAINT. GARAGE	FIELD MAINT. GARAGE	1100	3/4	208	1	GREENHECK	SQ-130-VG	
KEF-1	ROOF AREA A	HOOD A37	2800	1-1/2	460	3	GREENHECK	USGF-180HP	VFD
KEF-2	ROOF AREA A	HOOD A38	3300	2	460	3	GREENHECK	USGF-180HP	VFD
KEF-3	ROOF AREA A	HOOD D12	1850	1	460	3	GREENHECK	USGF-160HP	VFD
KEF-4	ROOF AREA A	HOOD E04	2365	1-1/2	460	3	GREENHECK	USGF-180HP	VFD
KEF-5	ROOF AREA A	HOODS F13, 14, 16, & 17	9390	5	460	3	GREENHECK	CUBE-360HP	VFD

NOTES:
1. REFER TO SPECIFICATIONS SECITON 230000 FOR ALTERNATE MANUFACTUERERS FOR PRODUCTS/SYSTEMS LISTED UNER THIS SCHEDULE.
2. PROVIDE EC MOTOR.
3. PROVIDE 18-INCH PRE-FABRICATED ROOF CURB FOR ROOF MOUNTED FANS.
4. ALL SUSPENDED FANS SHALL BE MOUNTED ON TYPE HSN VIBRATION ISOLATORS WITH A 1.5" MINIMUM STATIC DEFELCTION.
5. PROVIDE FAN COMPLETE WTH UL-762 RATING AND HINGED ROOF CURB FOR ROOF MOUNTED UPBLAST KITCHEN HOOD EXHAUST FANS.
6. PROVIDE REMOTE MOUNT LOW VOLTAGE INDICATOR PANEL CAPABLE OF DISPLAYING: NORMAL OPERATION, NO POWER, BLOCKED DUCT, LOCKED MOTOR ROTOR AND LOW SPEED CONDITIONS.
7. 10% BELT LOSS INCLUDED ON BELT DRIVE FANS.
8. PROVIDE VFD FOR INTERLOCKING WITH KITCHEN HOOD CONTROL MODULE.
9. PROVIDE WITH DISCONNECT SWITCH.
10. PROVIDE VFD COMPATIBLE MOTORS FOR NON EC MOTORS.
11. PROVIDE ELECTRICALLY INSULATED BEARINGS ON VFD DRIVEN MOTORS. PROVIDE SHAFT MOUNTED STATIC DISCHARGE DISAPPATION RING WITH CONDUCTIVE MICROFIBERS (ELECTRO STAIC TECHNOLOGY AEGIS SGR OR APPROVED EQUAL).
12. THE BRAKEHORSE POWER LISTED IS THE MAXIMUM ALLOWABLE WHICH SHALL INCLUDE ALL DRIVE LOSSES AND UNIT SPECIFIC FAN SYSTEM EFFECTS.
13. PROVIDE WITH INTEGRAL CONTROL DAMPER WITH END SWITCH.
14. INTERLOCK FANS SERVING EQUIPMENT WITH EQUIPMENT CONTROLS.

AIR CONDITIONING UNITS - DX SPLIT SYSTEMS (AC)

UNIT NO	AREA SERVED	TYPE	ELECTRICAL CHARACTERISTICS V	PH	DX REFRIGERANT COOLING TOTAL CAPACITY (MBH)	SOUND LEVEL (DBA)	MANUFACTURER	MODEL	NOTES	STARTER TYPE
AC - 0-1	MAIN ELECTRICAL -C001	WALL MOUNTED	208	1	36.0	51	LG	LSN363HLV3		
AC - 0-2	MAIN ELECTRIC STANDBY - C005	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 0-3	LIFE SAFETY ELECTRICAL - C006	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 0-4	GENERATOR PANELS - C007	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 0-5	IDF - C009	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 0-6	PLUMBING C008	WALL MOUNTED	208	1	36.0	51	LG	LSN363HLV3		
AC - 0-7	ELEV MACHINE RM - C012	WALL MOUNTED	208	1	36.0	51	LG	LSN363HLV3		
AC - 1-1	MAIN KITCHEN ELECTRICAL - 192	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 1-2	IDF - 588	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 1-3	PLUMBING - COMPRESSED AIR - 212	WALL MOUNTED	208	1	36.0	51	LG	LSN363HLV3		
AC - 1-4	VOC ELECTRICAL - 194	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 1-5	IDF - 217	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 1-6		WALL MOUNTED	0	1	0.0	0	x	xx		
AC - 1-6	ELECTRIC RM - 124	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 1-7	LIFE SAFETY ELECTRICAL - 121	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 1-8	IDF - 118	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 2-1	ELECTRIC RM - 370	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 2-2	LIFE SAFETY ELECTRICAL - 371	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 2-3	IDF - 372	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 2-4	ELEV MACHINE RM - 718	WALL MOUNTED	208	1	36.0	51	LG	LSN363HLV3		
AC - 2-5	MDF - 188	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 2-6	MDF - 188	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 2-7	TELECOM - 142	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 2-8	ELECTRIC RM - 200	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 2-9	ELECTRIC RM - 203	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 2-10	ELECTRIC RM - 203	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 3-1	IDF - 221	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 3-2	LIFE SAFETY ELECTRICAL - 236	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 3-3	ELECTRIC RM - 199	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 3-4	IDF - 223	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 3-5	ELECTRIC RM - 198	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 3-6	LIFE SAFETY ELECTRICAL - 237	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 4-1	IDF - 219	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 4-2	LIFE SAFETY ELECTRICAL - 201	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 4-3	ELECTRIC RM - 195	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 4-4	LIFE SAFETY ELECTRICAL - 202	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 4-5	ELECTRIC RM - 196	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 4-6	AMPLIFIER ELECT RM - 207	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - 4-7	IDF - 384	WALL MOUNTED	208	1	24.0	49	LG	LSN243HLV3		
AC - H-01	HVAC TECH B103 - STUDENT TRAINER	WALL MOUNTED	208	1	18.0	47	LG	LSN181HSV5		
AC - H-02	HVAC TECH B103 - STUDENT TRAINER	WALL MOUNTED	208	1	18.0	47	LG	LSN181HSV5		
AC - H-03	HVAC TECH B103 - STUDENT TRAINER	WALL MOUNTED	208	1	18.0	47	LG	LSN181HSV5		
AC - H-04.1	HVAC TECH B103 - STUDENT TRAINER	WALL MOUNTED	208	1	18.0	47	LG	LSN181HSV5		
AC - H-04.2	HVAC TECH B103 - STUDENT TRAINER	WALL MOUNTED	208	1	18.0	47	LG	LSN181HSV5		
AC - H-04.3	HVAC TECH B103 - STUDENT TRAINER	2x2 CEILING CASSETTE	208	1	18.0	0	LG	ARNU183TQD4		
AC - H-04.4	HVAC TECH B103 - STUDENT TRAINER	DUCTED	208	1	18.0	0	LG	ARNU183TNA4		
AC - H-05	HVAC TECH B103 - STUDENT TRAINER	DUCTED	208	1	48.0	0	TRANE	TAM9A0C48V41DA		
AC - H-05	HVAC TECH B103 - STUDENT TRAINER	DUCTED	208	1	48.0	0	TRANE	TAM9A0C48V41DA		
AC - H-06	HVAC TECH B103 - STUDENT TRAINER	DUCTED	208	1	48.0	0	TRANE	TAM9A0C48V41DA		

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE BUILT-IN CONDENSATE PUMP.
3. PROVIDE REMOTE WALL MOUNTED WIRED CONTROLLER.
4. UNITS SHALL OPERATE AT HIGH SPEED.
5. UNIT MANUFACTURE IS TO PROVIDE INTEGRAL FLOAT SWITCH FOR ATC TO TIE INTO FOR ALARM.
6. INDOOR UNIT IS POWERED FROM OUTDOOR UNIT. DIV. 26 SHALL PROVIDE FEEDER FROM OUTDOOR UNIT TO INDOOR UNIT.

AIR-COOLED CONDENSING UNIT (ACCU)

UNIT NO	SYSTEM	LOCATION	NOMINAL CAPACITY (TONS)	AMBIENT AIR TEMP. (°F)	ELECTRIC CONNECTION V	PH	MCA	MOCP	MINIMUM EER	WEIGHT (LBS)	MANUFACTURER	MODEL	NOTES
ACCU - 0-1	AC - 0-1	ROOF AREA B	3.0	95.0	208	1	23.0	30	10	200.00	LG	LSU363HLV3	
ACCU - 0-2	AC - 0-2	ROOF AREA B	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 0-3	AC - 0-3	ROOF AREA B	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 0-4	AC - 0-4	ROOF AREA B	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 0-5	AC - 0-5	ROOF AREA B	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 0-6	AC - 0-6	ROOF AREA B	3.0	95.0	208	1	23.0	30	10	200.00	LG	LSU363HLV3	
ACCU - 0-7	AC - 0-7	ROOF AREA B	3.0	95.0	208	1	23.0	30	10	200.00	LG	LSU363HLV3	
ACCU - 1-1	AC - 1-1	ROOF AREA A	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 1-2	AC - 1-2	ROOF AREA A	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 1-3	AC - 1-3	ROOF AREA A	3.0	95.0	208	1	23.0	30	10	200.00	LG	LSU363HLV3	
ACCU - 1-4	AC - 1-4	ROOF AREA B	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 1-5	AC - 1-5	ROOF AREA B	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 1-6	AC - 1-6	ROOF AREA B	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 1-6	AC - 1-6	ROOF AREA B	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 1-7	AC - 1-7	ROOF AREA B	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 2-1	AC - 2-1	ROOF AREA A	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 2-2	AC - 2-2	ROOF AREA A	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 2-3	AC - 2-3	ROOF AREA A	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 2-4	AC - 2-4	ROOF AREA A	3.0	95.0	208	1	23.0	30	10	200.00	LG	LSU363HLV3	
ACCU - 2-5	AC - 2-5	ROOF AREA B	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 2-6	AC - 2-6	ROOF AREA B	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU -2-7	AC - 2-7	ROOF AREA B	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 2-8	AC - 2-8	ROOF AREA B	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 2-9	AC - 2-9	ROOF AREA B	2.0	95.0	208	1	19.0	30	13	200.00	LG	LSU243HLV3	
ACCU - 2-10	AC - 2-10	RO

VRF BRANCH CIRCUIT SELECTOR SCHEDULE (BS)

	ELEC. DATA						
UNIT NO	V	PH	RATED AMPS	MANUFACTRUER	MODEL	NOTES
BS-1-1	208	1	0.06	LG	PRHR083A	SEE NOTES
BS-1-2	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-2-1	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-2-2	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-2-3	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-2-4	208	1	0.09	LG	PRHR063A	SEE NOTES
BS-3-1	208	1	0.06	LG	PRHR083A	SEE NOTES
BS-3-2	208	1	0.06	LG	PRHR043A	SEE NOTES
BS-4-1	208	1	0.09	LG	PRHR063A	SEE NOTES
BS-4-2	208	1	0.06	LG	PRHR043A	SEE NOTES
BS-4-3	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-4-4	208	1	0.09	LG	PRHR063A	SEE NOTES
BS-5-1	208	1	0.09	LG	PRHR063A	SEE NOTES
BS-5-2	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-5-3	208	1	0.06	LG	PRHR043A	SEE NOTES
BS-6-1	208	1	0.09	LG	PRHR063A	SEE NOTES
BS-6-2	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-6-3	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-7-1	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-8-1	208	1	0.09	LG	PRHR063A	SEE NOTES
BS-8-2	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-8-3	208	1	0.06	LG	PRHR043A	SEE NOTES
BS-8-4	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-9-1	208	1	0.09	LG	PRHR063A	SEE NOTES
BS-9-2	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-9-3	208	1	0.09	LG	PRHR063A	SEE NOTES
BS-10-1	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-10-2	208	1	0.06	LG	PRHR043A	SEE NOTES
BS-10-3	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-10-4	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-11-1	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-11-2	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-11-3	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-12-1	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-13-1	208	1	0.09	LG	PRHR063A	SEE NOTES
BS-13-2	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-13-3	208	1	0.06	LG	PRHR043A	SEE NOTES
BS-14-1	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-14-2	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-14-3	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-15-1	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-15-2	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-16-1	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-16-2	208	1	0.06	LG	PRHR043A	SEE NOTES
BS-18-1	208	1	0.09	LG	PRHR083A	SEE NOTES
BS-19-1	208	1	0.09	LG	PRHR083A	SEE NOTES

VRF FAN COIL UNIT (FCU)

				ELECTRICAL						
UNIT NO	TYPE	LOCATION	VRF CONDENSING UNIT	NOMINAL (TONS)	V	PH	MOCP	MAX SOUND RATING (DBA) H/M/L	MANUFACTURER	MODEL	NOTES
FCU-1-1	3x3 CEILING CASSETTE	METAL FAB CR	CU-1	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-1-2	2x2 CEILING CASSETTE	CUST OFF	CU-1	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-1-3	2x2 CEILING CASSETTE	CUST WORKSHOP	CU-1	0.8	208	1	0	0	LG	ARNU093TRD4	
FCU-1-4	3x3 CEILING CASSETTE	TEAM LOCKER	CU-1	4.0	208	1	0	0	LG	ARNU483TMC4	
FCU-1-5	3x3 CEILING CASSETTE	AUTO COLL. CR	CU-1	1.5	208	1	0	0	LG	ARNU183TNA4	
FCU-1-6	3x3 CEILING CASSETTE	AUTO TECH. CR	CU-1	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-1-7	WALL MOUNTED	STAIR 4 667	CU-1	1.5	208	1	0	0	LG	ARNU183SKA4	
FCU-1-8	3x3 CEILING CASSETTE	STAIR 56	CU-1	1.5	208	1	0	0	LG	ARNU183TNA4	
FCU-1-9	2x2 CEILING CASSETTE	CUST OFF	CU-1	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-1-10	2x2 CEILING CASSETTE	CUST OFF	CU-1	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-2-1	2x2 CEILING CASSETTE	NURSE WAIT 102	CU-2	0.6	208	1	0	0	LG	ARNU073TRD4	
FCU-2-2	2x2 CEILING CASSETTE	NURSE OFFICE 103	CU-2	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-2-3	2x2 CEILING CASSETTE	NURSE OFFICE 104	CU-2	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-2-4	2x2 CEILING CASSETTE	EXAM 106	CU-2	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-2-5	2x2 CEILING CASSETTE	EXAM 109	CU-2	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-2-6	2x2 CEILING CASSETTE	EXAM 110	CU-2	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-2-7	2x2 CEILING CASSETTE	RESTING 105	CU-2	0.6	208	1	0	0	LG	ARNU073TRD4	
FCU-2-8	3x3 CEILING CASSETTE	HEALTH CR 111	CU-2	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-2-9a	3x3 CEILING CASSETTE	FITNESS 113	CU-2	4.0	208	1	0	0	LG	ARNU483TMC4	
FCU-2-9b	3x3 CEILING CASSETTE	FITNESS 113	CU-2	4.0	208	1	0	0	LG	ARNU483TMC4	
FCU-2-10	2x2 CEILING CASSETTE	OFFICIALS 123	CU-2	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-2-11	2x2 CEILING CASSETTE	PE INSTR. OFF 117D	CU-2	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-2-12	2x2 CEILING CASSETTE	TRAINER 119	CU-2	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-2-13	2x2 CEILING CASSETTE	ATH. DIR. OFF 116	CU-2	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-2-14	2x2 CEILING CASSETTE	PE INSTR. OFF 122D	CU-2	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-2-15	2x2 CEILING CASSETTE	OFFICIALS 123	CU-2	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-2-16a	3x3 CEILING CASSETTE	GIRLS LOCKER 122	CU-2	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-2-16b	3x3 CEILING CASSETTE	GIRLS LOCKER 122	CU-2	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-2-17	2x2 CEILING CASSETTE	TEAM LOCKER 122B	CU-2	0.6	208	1	0	0	LG	ARNU073TRD4	
FCU-2-18	2x2 CEILING CASSETTE	TEAM LOCKER 122C	CU-2	0.6	208	1	0	0	LG	ARNU073TRD4	
FCU-2-19	2x2 CEILING CASSETTE	TEAM LOCKER 117B	CU-2	0.6	208	1	0	0	LG	ARNU073TRD4	
FCU-2-20	2x2 CEILING CASSETTE	TEAM LOCKER 117C	CU-2	0.6	208	1	0	0	LG	ARNU073TRD4	
FCU-2-21a	2x2 CEILING CASSETTE	BOYS LOCKER 117	CU-2	0.6	208	1	0	0	LG	ARNU073TRD4	
FCU-2-21b	2x2 CEILING CASSETTE	BOYS LOCKER 117	CU-2	0.6	208	1	0	0	LG	ARNU073TRD4	
FCU-2-22a	3x3 CEILING CASSETTE	WEIGHTS 115	CU-2	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-2-22b	3x3 CEILING CASSETTE	WEIGHTS 115	CU-2	2.3	208	1	0	0	LG	ARNU283TMA4	
FCU-3-1	3x3 CEILING CASSETTE	RELATED CR 516	CU-3	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-3-2	2x2 CEILING CASSETTE	BANE 160	CU-3	1.3	208	1	0	0	LG	ARNU153TQD4	
FCU-3-3	3x3 CEILING CASSETTE	RELATED CR 504	CU-3	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-3-4	2x2 CEILING CASSETTE	SCHOOL STORE 159	CU-3	0.8	208	1	0	0	LG	ARNU093TRD4	
FCU-3-5	3x3 CEILING CASSETTE	RELATED CR 503	CU-3	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-3-6	3x3 CEILING CASSETTE	RELATED CR 496	CU-3	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-3-7	2x2 CEILING CASSETTE	CORRIDOR 577	CU-3	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-4-1	3x3 CEILING CASSETTE	COMPUTER LAB 416	CU-4	3.5	208	1	0	0	LG	ARNU423TAA4	
FCU-4-2	2x2 CEILING CASSETTE	PHOTO / STORAGE	CU-4	0.6	208	1	0	0	LG	ARNU073TRD4	
FCU-4-3a	3x3 CEILING CASSETTE	DESIGN & VISUAL COMM 0	CU-4	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-4-3b	2x2 CEILING CASSETTE	DESIGN & VISUAL COMM 0	CU-4	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-4-4	WALL MOUNTED	STAIR 1 715	CU-4	1.5	208	1	0	0	LG	ARNU183SKA4	
FCU-4-5	3x3 CEILING CASSETTE	COMPUTER LAB 417	CU-4	4.0	208	1	0	0	LG	ARNU483TAA4	
FCU-4-6	2x2 CEILING CASSETTE	RELATED CR 418	CU-4	1.5	208	1	0	0	LG	ARNU183TQD4	
FCU-4-7	3x3 CEILING CASSETTE	COMPUTER LAB 410	CU-4	3.5	208	1	0	0	LG	ARNU423TRD4	
FCU-4-8	3x3 CEILING CASSETTE	RELATED CR 411	CU-4	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-4-9a	3x3 CEILING CASSETTE	CORRIDOR	CU-4	4.0	208	1	0	0	LG	ARNU483TAA4	
FCU-4-9b	3x3 CEILING CASSETTE	CORRIDOR	CU-4	4.0	208	1	0	0	LG	ARNU483TAA4	
FCU-4-10	3x3 CEILING CASSETTE	LANGUAGE LEARNING 0	CU-4	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-4-11	3x3 CEILING CASSETTE	SCIENCE LAB 29	CU-4	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-4-12	2x2 CEILING CASSETTE	SCI PREP	CU-4	0.8	208	1	0	0	LG	ARNU093TRD4	
FCU-4-13	3x3 CEILING CASSETTE	SCIENCE LAB 0	CU-4	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-4-14	3x3 CEILING CASSETTE	CORRIDOR	CU-4	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-4-15	2x2 CEILING CASSETTE	GUIDANCE OFFICE 138	CU-4	0.8	208	1	0	0	LG	ARNU093TRD4	
FCU-4-16	2x2 CEILING CASSETTE	GUIDANCE OFFICE 139	CU-4	0.8	208	1	0	0	LG	ARNU093TRD4	
FCU-4-17	2x2 CEILING CASSETTE	GUIDANCE OFFICE 140	CU-4	0.8	208	1	0	0	LG	ARNU093TRD4	
FCU-4-18	2x2 CEILING CASSETTE	VOC DEAN 168	CU-4	0.8	208	1	0	0	LG	ARNU093TRD4	
FCU-4-19	2x2 CEILING CASSETTE	SPED TUTORIAL 81	CU-4	1.5	208	1	0	0	LG	ARNU183TQD4	
FCU-4-20	2x2 CEILING CASSETTE	OFFICE 413	CU-4	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-4-21	3x3 CEILING CASSETTE	CORRIDOR	CU-4	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-5-1	3x3 CEILING CASSETTE	CR 0	CU-5	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-5-2	3x3 CEILING CASSETTE	CR 0	CU-5	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-5-3	3x3 CEILING CASSETTE	CR 0	CU-5	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-5-4	3x3 CEILING CASSETTE	CR 0	CU-5	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-5-5	3x3 CEILING CASSETTE	CR 0	CU-5	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-5-6a	3x3 CEILING CASSETTE	COLLAB 50	CU-5	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-5-6b	3x3 CEILING CASSETTE	COLLAB 50	CU-5	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-5-7a	3x3 CEILING CASSETTE	TEACHERS PLANNING 0	CU-5	2.3	208	1	0	0	LG	ARNU283TMA4	
FCU-5-7b	3x3 CEILING CASSETTE	TEACHERS PLANNING 0	CU-5	2.3	208	1	0	0	LG	ARNU283TMA4	
FCU-5-8	2x2 CEILING CASSETTE	HUDDLE 636	CU-5	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-5-9	3x3 CEILING CASSETTE	CR 0	CU-5	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-5-10	3x3 CEILING CASSETTE	CR 0	CU-5	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-5-11	3x3 CEILING CASSETTE	CORRIDOR	CU-5	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-5-12	3x3 CEILING CASSETTE	CORRIDOR	CU-5	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-6-1	3x3 CEILING CASSETTE	COMPUTER LAB 409	CU-6	4.0	208	1	0	0	LG	ARNU483TMC4	
FCU-6-2	2x2 CEILING CASSETTE	OFFICE 405	CU-6	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-6-3	3x3 CEILING CASSETTE	COMPUTER LAB 396	CU-6	2.3	208	1	0	0	LG	ARNU283TMA4	
FCU-6-4	3x3 CEILING CASSETTE	COMPUTER LAB 397	CU-6	2.3	208	1	0	0	LG	ARNU283TMA4	
FCU-6-5	3x3 CEILING CASSETTE	COMPUTER LAB 398	CU-6	2.3	208	1	0	0	LG	ARNU283TMA4	
FCU-6-6	3x3 CEILING CASSETTE	COMPUTER LAB 399	CU-6	2.3	208	1	0	0	LG	ARNU283TMA4	
FCU-6-7	2x2 CEILING CASSETTE	BUSINESS OFFICE TECH 0	CU-6	1.0	208	1	0	0	LG	ARNU123TNA4	
FCU-6-8	2x2 CEILING CASSETTE	RELATED CR 404	CU-6	1.5	208	1	0	0	LG	ARNU183TQD4	
FCU-6-9	2x2 CEILING CASSETTE	OFFICE 401	CU-6	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-6-10	2x2 CEILING CASSETTE	MARKETING 441	CU-6	1.5	208	1	0	0	LG	ARNU183TQD4	
FCU-6-11	2x2 CEILING CASSETTE	RELATED CR 400	CU-6	1.5	208	1	0	0	LG	ARNU183TQD4	
FCU-6-12	3x3 CEILING CASSETTE	SPED SMALL GROUP 79	CU-6	1.0	208	1	0	0	LG	ARNU123TNA4	
FCU-6-13	3x3 CEILING CASSETTE	CR 0	CU-6	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-6-14	3x3 CEILING CASSETTE	CR 0	CU-6	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-6-15	3x3 CEILING CASSETTE	SPED LEARNING CENTER	CU-6	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-6-16	3x3 CEILING CASSETTE	CR 68	CU-6	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-6-17	3x3 CEILING CASSETTE	CR 69	CU-6	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-6-18	3x3 CEILING CASSETTE	CR 70	CU-6	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-7-1	2x2 CEILING CASSETTE	DEPT HEADS	CU-7	1.5	208	1	0	0	LG	ARNU183TQD4	
FCU-7-2	2x2 CEILING CASSETTE	ACAD PASS 167	CU-7	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-7-3	2x2 CEILING CASSETTE	IN-HOUSE SUSPENSION 269	CU-7	0.8	208	1	0	0	LG	ARNU093TRD4	
FCU-7-4	2x2 CEILING CASSETTE	AP1 169	CU-7	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-7-5	2x2 CEILING CASSETTE	CONF 258	CU-7	0.6	208	1	0	0	LG	ARNU073TRD4	
FCU-7-6	CEILING CONCEALED - DUCTED	CORRIDOR	CU-7	2.3	208	1	0	0	LG	ARNU283MA4	
FCU-8-1	3x3 CEILING CASSETTE	SPED LEARNING CENTER	CU-8	3.5	208	1	0	0	LG	ARNU423TAA4	
FCU-8-3	3x3 CEILING CASSETTE	BIO TECHNOLOGY 249	CU-8	3.5	208	1	0	0	LG	ARNU423TAA4	
FCU-8-4	3x3 CEILING CASSETTE	LAB 479	CU-8	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-8-5	3x3 CEILING CASSETTE	BIO TECHNOLOGY 249	CU-8	4.0	208	1	0	0	LG	ARNU483TMC4	
FCU-8-6	3x3 CEILING CASSETTE	BIO RELATED CR	CU-8	4.0	208	1	0	0	LG	ARNU483TMC4	
FCU-8-7	2x2 CEILING CASSETTE	PREP 474	CU-8	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-8-8	2x2 CEILING CASSETTE	STORAGE 475	CU-8	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-8-9	3x3 CEILING CASSETTE	HEALTH ASSIST RELATED CR	CU-8	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-8-10	3x3 CEILING CASSETTE	SPED GROUP SMALL 78	CU-8	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-8-11	3x3 CEILING CASSETTE	SPED GROUP SMALL 77	CU-8	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-8-12	3x3 CEILING CASSETTE	DIGITAL LEARNING 163	CU-8	3.5	208	1	0	0	LG	ARNU423TAA4	
FCU-8-13	3x3 CEILING CASSETTE	SCIENCE LAB 0	CU-8	3.5	208	1	0	0	LG	ARNU423TMC4	
FCU-8-14	2x2 CEILING CASSETTE	SCI PREP 26	CU-8	0.8	208	1	0	0	LG	ARNU093TRD4	
FCU-8-15	3x3 CEILING CASSETTE	SCIENCE LAB 0	CU-8	3.5	208	1	0	0	LG	ARNU423TAA4	
FCU-8-16	2x2 CEILING CASSETTE	SPED TUTORIAL 84	CU-8	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-9-1a	3x3 CEILING CASSETTE	COLLAB 47	CU-9	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-9-1b	3x3 CEILING CASSETTE	COLLAB 47	CU-9	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-9-2a	3x3 CEILING CASSETTE	TEACHERS PLANNING 0	CU-9	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-9-2b	3x3 CEILING CASSETTE	TEACHERS PLANNING 0	CU-9	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-9-3	2x2 CEILING CASSETTE	HUDDLE 634	CU-9	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-9-4	3x3 CEILING CASSETTE	CR 0	CU-9	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-9-5	3x3 CEILING CASSETTE	CR 0	CU-9	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-9-6	3x3 CEILING CASSETTE	CR 0	CU-9	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-9-7	3x3 CEILING CASSETTE	CR 0	CU-9	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-9-8	3x3 CEILING CASSETTE	CR 0	CU-9	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-9-10	WALL MOUNTED	STAIR 3	CU-9	1.5	208	1	0	0	LG	ARNU183SKA4	
FCU-9-11	3x3 CEILING CASSETTE	SCIENCE LAB 76	CU-9	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-9-12	2x2 CEILING CASSETTE	SCI PREP	CU-9	1.0	208	1	0	0	LG	ARNU123TRD4	
FCU-9-13	3x3 CEILING CASSETTE	SCIENCE LAB 0	CU-9	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-9-14	3x3 CEILING CASSETTE	SPED LEARNING CENTER 24	CU-9	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-9-15	3x3 CEILING CASSETTE	CR 0	CU-9	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-9-16	3x3 CEILING CASSETTE	CR 0	CU-9	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-9-17	3x3 CEILING CASSETTE	CORRIDOR	CU-9	2.3	208	1	0	0	LG	ARNU283TMA4	
FCU-9-18	WALL MOUNTED	STAIR 3	CU-9	1.5	208	1	0	0	LG	ARNU183SKA4	
FCU-10-1a	3x3 CEILING CASSETTE	HEALTH ASSISTING 0	CU-10	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-10-1b	3x3 CEILING CASSETTE	HEALTH ASSISTING 0	CU-10	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-10-2	2x2 CEILING CASSETTE	OBSERVATION	CU-10	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-10-3	2x2 CEILING CASSETTE	SIM 390	CU-10	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-10-4	2x2 CEILING CASSETTE	OFFICE 392	CU-10	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-10-5	3x3 CEILING CASSETTE	MOCK APT 395	CU-10	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-10-6a	3x3 CEILING CASSETTE	HEALTH ASSISTING 0	CU-10	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-10-6b	2x2 CEILING CASSETTE	HEALTH ASSISTING 0	CU-10	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-10-7a	3x3 CEILING CASSETTE	HEALTH ASSISTING 0	CU-10	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-10-7b	3x3 CEILING CASSETTE	HEALTH ASSISTING 0	CU-10	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-10-8	3x3 CEILING CASSETTE	LAB 480	CU-10	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-10-9	2x2 CEILING CASSETTE	OFFICE 487	CU-10	0.5	208	1	0	0	LG	ARNU053TRD4	
FCU-10-10a	3x3 CEILING CASSETTE	MEDICAL ASSISTING 0	CU-10	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-10-10b	3x3 CEILING CASSETTE	MEDICAL ASSISTING 0	CU-10	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-10-11	3x3 CEILING CASSETTE	RELATED CR 483	CU-10	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-10-12	3x3 CEILING CASSETTE	CORRIDOR	CU-10	2.3	208	1	0	0	LG	ARNU283TMA4	
FCU-10-13	2x2 CEILING CASSETTE	SPED TUTORIAL 82	CU-10	0.8	208	1	0	0	LG	ARNU093TRD4	
FCU-10-14	2x2 CEILING CASSETTE	DEANS OFFICE 671	CU-10	0.8	208	1	0	0	LG	ARNU093TRD4	
FCU-10-15	2x2 CEILING CASSETTE	GUIDANCE OFFICE 22	CU-10	0.8	208	1	0	0	LG	ARNU093TRD4	
FCU-10-16	2x2 CEILING CASSETTE	GUIDANCE OFFICE 135	CU-10	0.8	208	1	0	0	LG	ARNU093TRD4	
FCU-10-17	2x2 CEILING CASSETTE	ADJUST CNSLR	CU-10	0.8	208	1	0	0	LG	ARNU093TRD4	
FCU-10-18	3x3 CEILING CASSETTE	CORRIDOR	CU-10	2.3	208	1	0	0	LG	ARNU283TMA4	

VRF FAN COIL UNIT (FCU) - CONTINUED

					ELECTRICAL						
UNIT NO	TYPE	LOCATION	VRF CONDENSING UNIT	NOMINAL (TONS)	V	PH	MOCP	MAX SOUND RATING (DBA) H/M/L	MANUFACTURER	MODEL	NOTES
FCU-11-1	3x3 CEILING CASSETTE	SPED SMALL GROUP 80	CU-11	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-11-2	3x3 CEILING CASSETTE	THEORY	CU-11	3.5	208	1	0	0	LG	ARNU423TAA4	
FCU-11-3a	3x3 CEILING CASSETTE	DENTAL ASSISTING	CU-11	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-11-3b	3x3 CEILING CASSETTE	DENTAL ASSISTING	CU-11	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-11-4	3x3 CEILING CASSETTE	X-RAY	CU-11	1.0	208	1	0	0	LG	ARNU123TRD4	
FCU-11-5a	3x3 CEILING CASSETTE	DENTAL ASSISTING	CU-11	3.0	208	1	0	0	LG	ARNU363TMA4	
FCU-11-5b	3x3 CEILING CASSETTE	DENTAL ASSISTING	CU-11	2.0	208	1	0	0	LG	ARNU243TNA4	
FCU-11-6	2x2 CEILING CASSETTE	OFFICE	CU-11	4.5	208	1	0	0	LG	ARNU053TRD4	
FCU-11-7	3x3 CEILING CASSETTE	CORRIDOR	CU-11	2.0	208	1	0	0	LG	ARNU

GRILLES, REGISTERS, AND DIFFUSERS

TAG NO	SERVICE	MOUNTING	MAX NC	CONSTRUCTION MATERIAL	FACE SIZE (IN) OR SLOT WIDTH	ACCESSORIES	MANUFACTURER	MODEL	NOTES
A	SUPPLY	LAY-IN	20	ALUMINUM	24x24	NA	TITUS	TDC	SEE NOTES
A1	SUPPLY	SURFACE	20	ALUMINUM	24x24	NA	TITUS	TDC	SEE NOTES
A3	SUPPLY	SIDEWALL	20	ALUMINUM	DUCT SIZE + 1-5/8"	NA	TITUS	TDC	SEE NOTES
C	EXHAUST/RETURN	LAY-IN	20	ALUMINUM	24x24	NA	TITUS	350FL	SEE NOTES
C1	EXHAUST/RETURN	SURFACE	20	ALUMINUM	12x12	NA	TITUS	350FL	SEE NOTES
C2	EXHAUST/RETURN	SIDEWALL	20	ALUMINUM	DUCT SIZE + 1-5/8"	NA	TITUS	350FL	SEE NOTES
D	SUPPLY	LAY-IN	20	ALUMINUM	(2) 1.5" SLOTS	INSULATED PLENUM	TITUS	FL-15-HT	SEE NOTES
D1	SUPPLY	MUD-IN	20	ALUMINUM	(1) 1" SLOT	NA	TITUS	FL-10-HT	SEE NOTES
D2	SUPPLY	MUD-IN	20	ALUMINUM	(2) 1" SLOTS	NA	TITUS	FL-10-HT	SEE NOTES
E	SUPPLY	SURFACE	20	ALUMINUM	(4) 1" SLOTS	BLACK INSULATED PLENUM	TITUS	ML-39	SEE NOTES
F	SUPPLY	DUCT MOUNTED	20	ALUMINUM	DUCT SIZE + 1-1/2"	NA	TITUS	S300FL	SEE NOTES
G	EXHAUST/RETURN	DUCT MOUNTED	20	ALUMINUM	DUCT SIZE + 1-1/2"	NA	TITUS	S8F	SEE NOTES
H	EXHAUST/RETURN	SURFACE	20	ALUMINUM	(4) 1" SLOTS	NA	TITUS	MLR-39	SEE NOTES
I	SUPPLY	FLOOR MOUNTED	20	ALUMINUM	1/23" BARS 30 DEG DEFLEC	NA	TITUS	CT-PP-3	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. FINISH SHALL BE SELECTED BY THE ARCHITECT
3. FRAME BORDER SHALL MATCH CEILING TYPE. COORDINATE WITH THE ARCHITECTURAL PLANS.
4. SEE DRAWINGS FOR NECK SIZE AND AIR BLOW PATTERN. PROVIDE DIRECTIONAL CLIPS. THE CONTRACTOR SHALL INSTALL BLOW CLIPS IN THE FIELD.
5. FLOOR GRILLE SHALL BE PROVIDED AND INSTALLED BY ACCESS FLOOR CONTRACTOR.
6. PROVIDE WITH STAINLESS STEEL FACE AND ALUMINUM BACK PAN.
7. THE LINEAR SLOT DIFFUSERS SHALL BE ADJUSTED FOR TWO WAY PATTERN.

FAN TERMINAL UNIT - ELECTRIC HEATING (FTU)

UNIT NO	SYSTEM	TYPE	PRIMARY AIR VALVE: PRIMARY INLET SIZE (IN)	PRIMARY AIR VALVE: MAX. DESIGN AIRFLOW (CFM)	PRIMARY AIR VALVE: MIN DESIGN AIRFLOW (CFM)	PRIMARY AIR VALVE: TOTAL PRESS DROP (IN WG)	FAN: FAN SIZE	FAN: FAN SP (IN WG)	FAN: MOTOR SIZE (HP)	FAN: V	FAN: PH	SOUND DATA - MAX PWL IN 3RD OCTAVE BAND @1.0" INLET PRESSURE: DISCH	SOUND DATA - MAX PWL IN 3RD OCTAVE BAND @1.0" INLET PRESSURE: RAD	ELECTRIC REHEAT COIL: EAT DB (°F)	ELECTRIC REHEAT COIL: LAT DB (°F)	ELECTRIC REHEAT COIL: KW	ELECTRICAL: V	ELECTRICAL: PH	ELECTRICAL: MCA	ELECTRICAL: MOCP	MANUFACTURER	MODEL	NOTES
FTU-1		SERIES	12"	1025	155	0.00		0.00	1	0	1			65.0	95.0	0.0	0	1	0.0	0			
FTU-2		SERIES	12"	1025	155	0.00		0.00	1	0	1			65.0	95.0	0.0	0	1	0.0	0			
FTU-3		SERIES	12"	1025	155	0.00		0.00	1	0	1			65.0	95.0	0.0	0	1	0.0	0			
FTU-4		SERIES	12"	945	145	0.00		0.00	1	0	1			65.0	95.0	0.0	0	1	0.0	0			
FTU-5	COSMETOLOGY	SERIES	12"	1230	185	1.00	04	0.50	0.5	277	1	35	37	65.0	95.8	12.0	480	3	23.2	25	TITUS	DTQS	SEE NOTES
FTU-6	COSMETOLOGY	SERIES	12"	1230	185	1.00	04	0.50	0.5	277	1	35	37	65.0	95.8	12.0	480	3	23.2	25	TITUS	DTQS	SEE NOTES
FTU-7	CULINARY CR	SERIES	14"	1500	225	1.00	06	0.50	1	277	1	28	35	65.0	96.6	15.0	480	3	31.2	35	TITUS	DTQS	SEE NOTES
FTU-8	CULINARY KITCHEN	SERIES	14"	2250	340	1.00	06	0.00	1	277	1	36	43	65.0	95.9	22.0	480	3	41.7	45	TITUS	DTQS	SEE NOTES
FTU-9	CULINARY KITCHEN	SERIES	14"	2250	340	1.00	06	0.00	1	277	1	36	43	65.0	95.9	22.0	480	3	41.7	45	TITUS	DTQS	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECITON 230000 FOR ALTERNATE MANUFACTUERERS FOR PRODUCTS/SYSTEMS LISTED UNER THIS SCHEDULE.
2. PROVIDE EC MOTOR.
3. PROVIDE 1" FILTER.
4. PROVIDE 1" FOIL FACED LINER.
5. SCHEDULED TOTAL PRESSURE DROP ACROSS PRIMARY AIR VALVE IS APPLICABLE AT MAXIMUM AIRFLOW SETPOINT.
6. PROVIDE WITH FUSED DISCONNECT.
7. SINGLE POINT POWER CONNECTION.
8. PROVIDE SCR CONTROL FOR ELECTRIC HEAT.
9. ATC CONTRACTOR SHALL PROVIDE CONTROL VOLTAGE TRANSFORMERS, CONTROLS AND CONTOLLERS.

SOUND ATTENUATOR SCHEDULE (SA)

UNIT NO.	LOCATION	AIR FLOW (CFM)	MANUFACTURER	MODEL	REMARKS
SA-0					
SA-0					
SA-0					
SA-A1S1		0			
SA-A3R1		0			
SA-A4R1		0			
SA-A6R1		0			
SA-A6S1		0			
SA-A6S1		0			
SA-A8R1		10255	VIBRO-ACOUSTICS		
SA-R3R1		0			
SA-R3S1		0			
SA-R3S2		0			

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. PROVIDE ELBOW SOUND ATTENUATORS CUSTOM DESIGNED TO ATTACH DIRECTLY TO ROOFTOP UNIT DUCT CONNECTION. ROUTE THROUGH ROOF CURB AND PENETRATE ROOF DECK, EXTEND DOWNWARD TO CLEAR STRUCTURE BEFORE TURNING INTO A HORIZONTAL POSITION. SEAL ROOF PENETRATIONS TO SOUND ATTENUATORS.
3. PROVIDE "T" SHAPED (DOUBLE ELBOW TYPE) SOUND ATTENUATORS CUSTOM DESIGNED TO ATTACH DIRECTLY TO ROOFTOP UNIT DUCT CONNECTION. ROUTE THROUGH ROOF CURB AND PENETRATE ROOF DECK, EXTEND DOWNWARD TO CLEAR STRUCTURE BEFOR ETURNING INTO A HORIZONTAL POSITION. SEAL ROOF PENETRATIONS TO SOUND ATTENUATORS.
4. ALL SOUND ATTENUATORS OVERALL WIDTH AND LENGTH SHALL MATCH THE ASSOCIATED AIR HANDLER'S DUCT CONNECTION SIZE. CONTRACTOR TO COORDINATE WITH SUBMITTED AIR HANDLER SHOP DRAWING PRIOR TO ORDERING SOUND ATTENUATORS.

AIR COOLED VRF CONDENSING UNIT (VCU)

UNIT NO	SYSTEM	LOCATION	NOMINAL CAPACITY (TONS)	MODULE QUANTITY	MODULE A: V	MODULE A: PH	MODULE A: MCA	MODULE A: MOCP	MODULE B: V	MODULE B: PH	MODULE B: MCA	MODULE B: MOCP	MODULE C: V	MODULE C: PH	MODULE C: MCA	MODULE C: FLA	MODULE C: TOTAL MOCP	SOUND RATING (DB)	MANUFACTURER	MODEL	NOTES
VCU-1A	AHU-1	ROOF AREA C	22	2	460	3	16.4	25	460	3	28.5	35						63	LG	ARUM264DTE5	
VCU-1B	AHU-1	ROOF AREA C	22	2	460	3	16.4	25	460	3	28.5	35						63	LG	ARUM264DTE5	
VCU-1C	AHU-1	ROOF AREA C	22	2	460	3	16.4	25	460	3	28.5	35						63	LG	ARUM264DTE5	
VCU-2A	AHU-2	ROOF AREA C	22	2	460	3	16.4	25	460	3	28.5	35						63	LG	ARUM264DTE5	
VCU-2B	AHU-2	ROOF AREA C	22	2	460	3	16.4	25	460	3	28.5	35						63	LG	ARUM264DTE5	
VCU-2C	AHU-2	ROOF AREA C	22	2	460	3	16.4	25	460	3	28.5	35						63	LG	ARUM264DTE5	
VCU-3A	AHU-3	ROOF AREA D	26	2	460	3	16.4	25	460	3	38.3	50						65	LG	ARUM312BTE5	
VCU-3B	AHU-3	ROOF AREA D	26	2	460	3	16.4	25	460	3	38.3	50						65	LG	ARUM312BTE5	
VCU-4A	AHU-4	ROOF AREA B	14	1	460	3	28.5	35										61	LG	ARUM168DTE5	
VCU-4B	AHU-4	ROOF AREA B	14	1	460	3	28.5	35										61	LG	ARUM168DTE5	
VCU-5A	AHU-5	ROOF AREA B	12	1	460	3	26.4	35										60	LG	ARUM144DTE5	
VCU-5B	AHU-5	ROOF AREA B	12	1	460	3	26.4	35										60	LG	ARUM144DTE5	
VCU-6A	AHU-6	ROOF AREA A	12	1	460	3	18.4	25										59	LG	ARUM121DTE5	
VCU-6B	AHU-6	ROOF AREA A	12	1	460	3	18.4	25										59	LG	ARUM121DTE5	
VCU-7A	AHU-7	ROOF AREA A	14	1	460	3	28.5	35										61	LG	ARUM168DTE5	
VCU-7B	AHU-7	ROOF AREA A	14	1	460	3	28.5	35										61	LG	ARUM168DTE5	
VCU-8A	AHU-8	ROOF AREA A	20	1	460	3	37.2	50										65	LG	ARUM241DTE5	
VCU-8B	AHU-8	ROOF AREA A	20	1	460	3	37.2	50										65	LG	ARUM241DTE5	
VCU-9A	AHU-9	ROOF AREA C	14	1	460	3	28.5	35										61	LG	ARUM168DTE5	
VCU-9B	AHU-9	ROOF AREA C	14	1	460	3	28.5	35										61	LG	ARUM168DTE5	
VCU-10A	AHU-10	ROOF AREA D	22	2	460	3	16.4	25	460	3	28.5	35						63	LG	ARUM264DTE5	
VCU-10B	AHU-10	ROOF AREA D	22	2	460	3	16.4	25	460	3	28.5	35						63	LG	ARUM264DTE5	
VCU-H1A	HRU-1	ROOF AREA A	24	2	460	3	16.4	25	460	3	35.7	50						63	LG	ARUM288DTE5	
VCU-H1B	HRU-1	ROOF AREA A	24	2	460	3	16.4	25	460	3	35.7	50						63	LG	ARUM288DTE5	
VCU-H1C	HRU-1	ROOF AREA A	24	2	460	3	16.4	25	460	3	35.7	50						63	LG	ARUM288DTE5	
VCU-H2A	HRU-2	ROOF AREA A	24	2	460	3	16.4	25	460	3	35.7	50						63	LG	ARUM288DTE5	
VCU-H2B	HRU-2	ROOF AREA A	24	2	460	3	16.4	25	460	3	35.7	50						63	LG	ARUM288DTE5	
VCU-H2C	HRU-2	ROOF AREA A	24	2	460	3	16.4	25	460	3	35.7	50						63	LG	ARUM288DTE5	
VCU-H3A	HRU-3	ROOF AREA B	24	2	460	3	16.4	25	460	3	35.7	50						63	LG	ARUM288DTE5	
VCU-H3B	HRU-3	ROOF AREA B	24	2	460	3	16.4	25	460	3	35.7	50						63	LG	ARUM288DTE5	
VCU-H3C	HRU-3	ROOF AREA B	24	2	460	3	16.4	25	460	3	35.7	50						63	LG	ARUM288DTE5	
VCU-H4A	HRU-4	ROOF AREA C	18	1	460	3	50.0	38										64	LG	ARUM216DTE5	
VCU-H4B	HRU-4	ROOF AREA D	18	1	460	3	50.0	38										64	LG	ARUM216DTE5	
VCU-H5A	HRU-5	ROOF AREA B	6	1	460	3	20.0	13										58	LG	ARUM072DTE5	
VCU-H5B	HRU-5	ROOF AREA B	6	1	460	3	20.0	13										58	LG	ARUM072DTE5	
VCU-M1A	MAU-1	ROOF AREA A	18	1	460	3	50.0	38										64	LG	ARUM216DTE5	
VCU-M1B	MAU-1	ROOF AREA A	18	1	460	3	50.0	38										64	LG	ARUM216DTE5	
VCU-M2A	MAU-2	ROOF AREA A	30	2	460	3	26.4	35	460	3	38.3	50						66	LG	ARUM360DTE5	
VCU-M2B	MAU-2	ROOF AREA A	30	2	460	3	26.4	35	460	3	38.3	50						66	LG	ARUM360DTE5	
VCU-M2C	MAU-2	ROOF AREA A	30	2	460	3	26.4	35	460	3	38.3	50						66	LG	ARUM360DTE5	
VCU-R1A	RTU-1	ROOF AREA A	6	1	460	3	20.0	13										58	LG	ARUM072DTE5	
VCU-R2A	RTU-2	ROOF AREA D	18	1	460	3	50.0	36										62	LG	ARUM192DTE5	
VCU-R2B	RTU-2	ROOF AREA D	18	1	460	3	50.0	36										62	LG	ARUM192DTE5	
VCU-R2C	RTU-2	ROOF AREA D	18	1	460	3	50.0	36										62	LG	ARUM192DTE5	

NOTES:
1. REFER TO SPECIFICATIONS SECTION 230000 FOR ALTERNATE MANUFACTURERS FOR PRODUCTS/SYSTEMS LISTED UNDER THIS SCHEDULE.
2. VCUS CONSISTS OF (2) UNITS TWINED TOGETHER. MECHANICAL SUB-CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL EQUIPMENT, WIRING, AND PIPING TO PROVIDE A COMPLETE VRF SYSTEM.
3. PROVIDE LOW AMBIENT CONTROL CAPABLE OF OPERATION AT -14 DEGREES F.
4. PROVIDE AHU AND EEV KITS FOR EACH CIRCUIT.
5. MECHANICAL CONTRACTOR SHALL COORDINATE A SEPARATE DISCONNECT SWITCH PROVIDED BY THE ELECTRICAL CONTRACTOR.
6. EACH MODULE REQUIRES A SEPARATE ELECTRICAL POWER CONNECTION.
7. PROVIDE FRAME CONNECTOR Y-BRANCH ACCESSORY.
8. PROVIDE HAIL GUARD.

DESTRATIFICATION FAN (DF)

UNIT NO	BLADE DIA (FT)	MAXIMUM CFM	ELEC DATA: V	ELEC DATA: PH	HP	WATTS	RPM	SERVICE	MANUFACTURER	MODEL	REMARKS
DF-1	18	0	480	3	2.0	0.0	86	GYM	BAF	BASIC 6	SEE NOTES

NOTES:
1. REFER TO SPECIFICATIONS SECITON 230000 FOR ALTERNATE MANUFACTUERERS FOR PRODUCTS/SYSTEMS LISTED UNER THIS SCHEDULE.
2. PROVIDE WIRE CAGE/GUARD FOR FAN AND DOWN DROPS.

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Drummey Rosane Anderson, Inc.

225 Oakland Road
Studio 205
South Windsor, CT
06074

260 Charles Street
Studio 300
Waltham, MA
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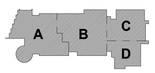
January 13, 2023



KEY PLAN

PROJECT NORTH

MAGNETIC NORTH

MECHANICAL SCHEDULE SHEET #3

Scale:
Job No.: 20202
Drawn By: DRA
Date: January 13, 2023

M5-0-3