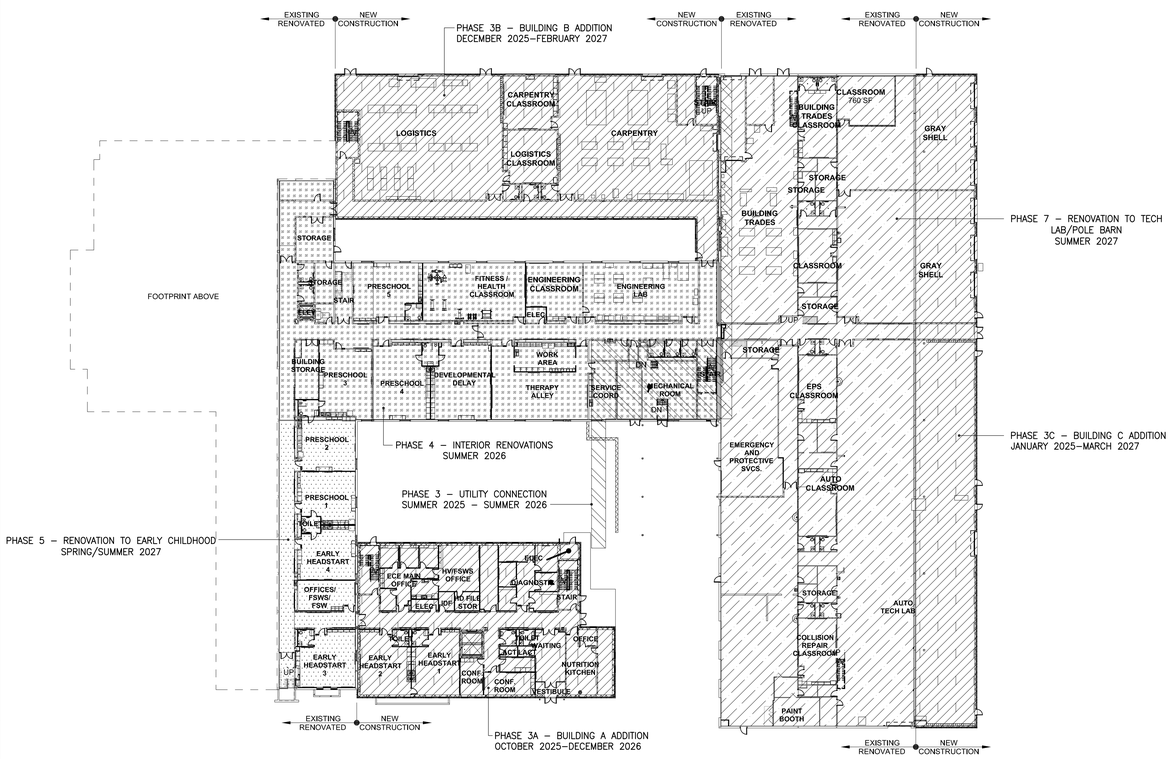
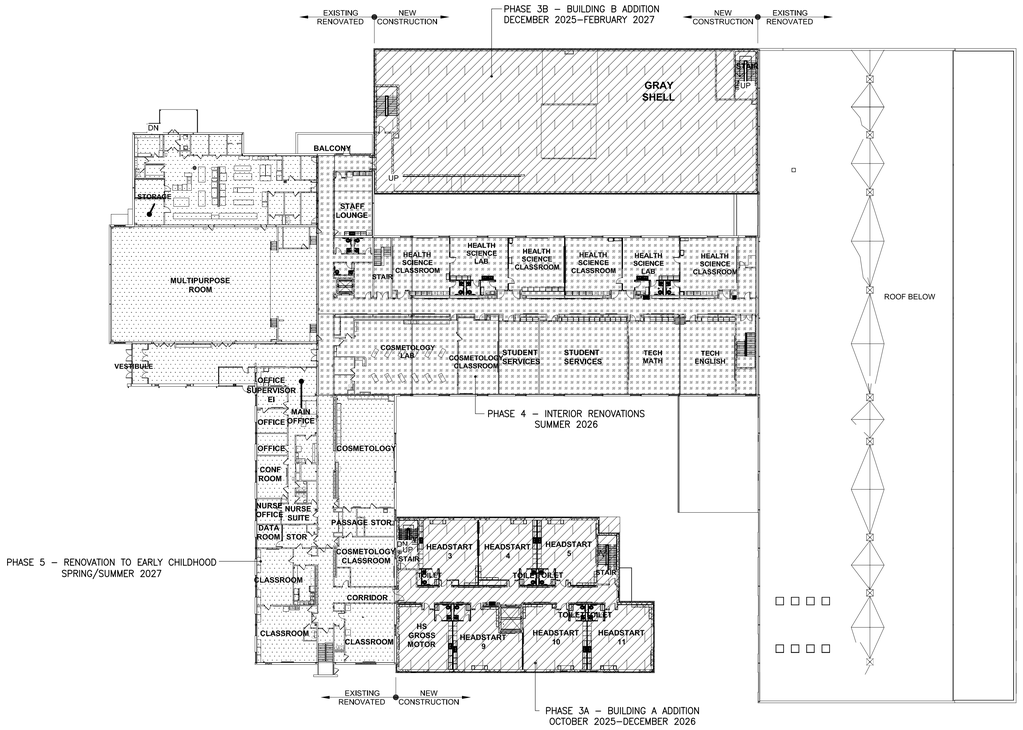
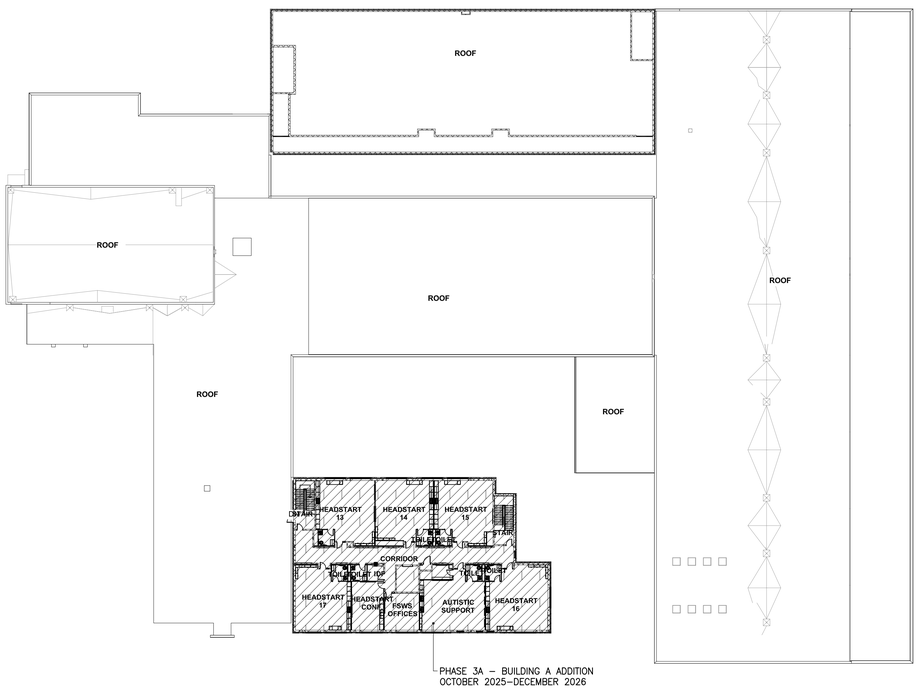


OVERALL FIRST FLOOR PHASING PLAN



OVERALL SECOND FLOOR PHASING PLAN



OVERALL THIRD FLOOR PHASING PLAN

EXISTING BUILDING HVAC SYSTEM

THE EXISTING BUDLING IS SERVED BY A CENTRAL CHILLED WATER PLANT AND CENTRAL HEATING WATER PLANT UTILIZING A 4–PIPE DISTRIBUTION SYSTEM. THE CENTRAL COOLING PLANT CONSISTS OF A RECENTLY REPLACED ROOF MOUNTED 200–TON AIR COOLED CHILLER AS MANUFACTURED BY DAIKEN. THE CHILLED WATER PUMPS ARE LOCATED IN THE EXISTING BOILER ROOM. THE EXITING HEATING PLANT IS SERVED BY MULTIPLE CAST IRON BOILERS. THE HEATING WATER PUMPS AND BOILERS ARE LOCATED IN THE MECHANICAL EQUIPMENT ROOM.

THE CENTRAL HEATING AND COOLING PLANT SERVES UNIT VENTILATORS, FAN COIL UNITS, AND MISCELLANEOUS TERMINAL HEATING UNITS (UNIT HEATERS, CABINET UNIT HEATERS, BASEBOARD RADIATION, CONVECTORS, ETC.). THE SHOP AREAS ARE SERVED BY GAS FIRED INFRARED HEATING UNITS.

PROPOSED BUILDING HVAC SYSTEM

THE BUILDING SHALL BE SERVED BY A CENTRAL CHILLED WATER PLANT AND CENTRAL HEATING WATER PLANT UTILIZING A 4–PIPE DISTRIBUTION SYSTEM. THE EXISTING 200–TON AIR COOLED CHILLER SHALL BE REUSED. ALL CHILLED WATER PIPING SHALL BE REPLACED. PUMPS SHALL BE REPLACED WITH VARIABLE FLOW TYPE WITH DIFFERENTIAL PRESSURE/FLOW BYPASS TO MAINTAIN MINIMUM CHILLER FLOW. THE HEATING WATER PLANT SHALL BE REPLACED IN ITS ENTIRETY WITH CONDENSING BOILERS GENERATING LOW TEMPERATURE HOT WATER WITH CONSTANT FLOW PRIMARY/VARIABLE FLOW SECONDARY DISTRIBUTION SYSTEM.

THE CHILLED WATER AND HEATING WATER DISTRIBUTION SYSTEM SHALL SPLIT IN THE EXISTING MECHANICAL EQUIPMENT ROOM. AN UNDERGROUND MAIN SHALL SERVE THE PHASE 3A ADDITION, A MAIN SHALL SERVE THE EXISTING BUILDING, AND A SEPARATE MAIN SHALL SERVE THE EXISTING SHOP AREA AND PHASE 3B ADDITION.

PROVIDE TEMPORARY PIPING AND VALVING CONNECTING TO EXISTING PIPING SERVING THE EXISTING BUILDING. PHASE 4 PIPING SHALL MAINTAIN FUNCTIONALITY TO PHASE 5 RENOVATION AREAS.

THE BUILDING WILL PRIMARILY BE SERVED BY FAN–COIL UNITS (FCU'S) FOR HEATING AND COOLING AND DEDICATED OUTDOOR AIR SYSTEM (DOAS) UNITS FOR VENTILATION.

DOAS UNITS SHALL BE PACKAGED ROOFTOP UNITS WITH GAS FIRED FURNACES. FAN COIL UNITS SHALL BE 4–PIPE TYPE EXCEPT FOR THE OFFICE ADMIN AREA WHICH SHALL BE A VRF/VRV REFRIGERANT BASED SYSTEM.

PHASING

THE MECHANICAL SYSTEMS SHALL BE PHASED TO MINIMIZE DISRUPTIONS TO THE FUNCTIONALITY OF THE HVAC SYSTEM. OUTAGES, TIE–INS, DRAIN DOWNS/REFILLING ETC. SHALL OCCUR DURING THE SUMMER, WEEKENDS, AND/OR HOLIDAYS. TEMPORARY PIPING, VALVING, TESTING AND BALANCING, AUTOMATIC TEMPERATURE CONTROLS, ETC. SHALL BE REQUIRED THROUGHOUT THE PROJECT TO ENSURE THE BUILDINGS HVAC SYSTEM REMAINS OPERATIONAL AND FUNCTIONAL.

EXISTING AND PROPOSED SYSTEMS DESCRIPTION

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411 WWW.ALBANENGINEERING.COM P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DESCRIPTION:	DATE:
BID SET	03/17/2025

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:
MECHANICAL NOTES AND PHASING

SHEET NUMBER:
M0.1

BID SET

GENERAL NOTES: (MECHANICAL)

GENERAL NOTES AND CONDITIONS:

1. COORDINATE NEW WORK BETWEEN ALL DISCIPLINES.
2. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE CODES, ORDINANCES, REGULATIONS, AND REQUIREMENTS OF ALL AGENCIES HAVING JURISDICTION OVER THE PROJECT.
3. THE INTENT OF THESE DRAWINGS IS FOR THE CONTRACTOR TO PROVIDE ALL LABOR, MATERIAL, FINISHES, EQUIPMENT, INSTALLATION, AND SERVICES NECESSARY FOR AND INCIDENTAL WITH THE WORK, TO PROVIDE THE OWNER WITH A COMPLETE PROJECT INCLUSIVE OF ALL SYSTEMS.
4. PRIOR TO INITIATING ANY PORTION OF THE WORK, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND COORDINATE ALL PORTIONS OF THE CONTRACT DOCUMENTS RELATING TO THAT PORTION OF THE WORK AND AFFECTING ADJOINING PORTIONS. IF DISCREPANCIES EXIST, THEY SHALL BE REPORTED TO THE CONSTRUCTION MANAGER FOR CLARIFICATION AND/OR RESOLUTION BEFORE COMMENCING SUCH WORK.
5. BY SUBMITTING A BID PROPOSAL THE CONTRACTOR CERTIFIES THAT THEY HAVE VISITED THE SITE AND UNDERSTAND THE COMPLETE SCOPE OF WORK, WHICH IS INCLUDED IN THE PROPOSAL.
6. DEFINITIONS: "PROVIDE" MEANS "FURNISH AND INSTALL". "VERIFY" MEANS "VERIFY IN THE FIELD AND COORDINATE DIMENSIONS AND DISCREPANCIES".
7. THESE NOTES AND OTHER NOTES ON THE DRAWINGS ARE DIRECTIONS FOR THE CONTRACTOR'S PERFORMANCE, UNLESS NOTED OTHERWISE (U.N.O.). FOR EXAMPLE, THE VERB "INSTALL" MEANS "CONTRACTOR SHALL INSTALL", "RELOCATE" MEANS "CONTRACTOR SHALL RELOCATE", ETC.
8. UNLESS NOTED OTHERWISE, NUMBERED DIMENSIONS SHOWN ON DRAWINGS TAKE PRECEDENCE OVER SCALED DRAWINGS. DETAIL DRAWINGS TAKE PRECEDENCE OVER GENERAL DRAWINGS. IF CONFLICTS EXIST ON THE DRAWINGS, THEN THE MORE STRINGENT REQUIREMENT SHALL APPLY. FINAL INTERPRETATION SHALL BE MADE BY THE ENGINEER.
9. SAMPLES AND SHOP DRAWINGS MUST BE SUBMITTED BY THE CONTRACTOR TO THE CONSTRUCTION MANAGER FOR REVIEW AND PROCESSING BEFORE THE PURCHASE OR FABRICATION OF ANY MATERIALS.
10. DURING THE WORK, ANY CONDITION DISCOVERED THAT CAUSES CONFLICT WITH THE INTENDED DESIGN MUST BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
11. CONTRACTOR SHALL STAGE WORK IN SUCH A WAY AT TO ENSURE SAFE EMERGENCY EGRESS AT ALL TIMES.
12. EXCEPT FOR PREFINISHED SURFACES, ALL ITEMS DISTURBED OR DAMAGED BY WORK SHALL BE REFINISHED TO MATCH SURROUNDING AREA OR FINISHED AS INDICATED.
13. ALL PENETRATIONS IN WALLS AND CEILING SURFACES SHALL BE PATCHED AND FIRE STOPPED.
14. ANY ALTERATION TO THE STRUCTURE (I.E. CORE DRILLING CONCRETE, ETC.) SHALL BE COORDINATED WITH THE GENERAL TRADES CONTRACTOR.
15. UNLESS OTHERWISE INDICATED, ALL PIPING, CONDUIT, DUCTWORK, AND SIMILAR SERVICES SHALL BE CONCEALED.
16. GENERAL NOTES, THOSE FOUND ON THIS SHEET, APPLY TO ALL DRAWINGS RELATED TO THIS PROJECT.
17. DRAWING NOTES SPECIFICALLY REFER TO ITEMS NOTED WITH NUMBER OR LETTER DESIGNATIONS ON THE RESPECTIVE DRAWING WHERE THE DESIGNATIONS ARE SHOWN.
18. ALL INSULATED EXTERIOR PIPING SYSTEM SHALL BE PROVIDED WITH ALUMINUM JACKETING.
19. ALL DRYER VENT DUCTWORK SHALL BE ALUMINUM OR STAINLESS STEEL WITH SMOOTH INTERIOR (I.E. NO SCREWS ETC).
20. PROVIDE MANUAL VOLUME FOR EACH AIR DEVICE (SUPPLY, RETURN, RELIEF, EXHAUST) WHICH IS INDICATED TO HAVE A SPECIFIC AIRFLOW (CFM).
21. PROVIDE INSULATED STAND–OFFS FOR ALL MANUAL VOLUME DAMPERS INSTALLED IN INSULATED DUCT SYSTEMS.
22. PROVIDE LIQUID LEVEL OVERFLOW SENSORS IN ALL UNIT CONDENSATE DRAIN PANS. INTERLOCK TO DEENERGIZE UNIT AND ALARM THROUGH THE EMS.
23. ALL TRANSFER AIR DUCTS SHALL BE SINGLE WALL SOUND LINED (NO INNER GALVANIZED LINER). ALL OTHER SOUND LINED DUCTS EXCEPT FOR DIFFUSER PLENUM BOXES SHALL BE DOUBLE WALL TYPE WITH PERFORATED GALVANIZED INNER LINER.
24. ALL EXPOSED DUCTWORK SHALL BE PAINT GRADE TYPE WITH SELF SEALING JOINTS (I.E. NOT FLANGED) UNLESS NOTED OTHERWISE.
25. USE RADIUS ELBOW WHEREVER POSSIBLE. USE 90° MITERED ELBOWS WHERE RADIUS ELBOWS CAN'T BE USED.
26. COORDINATE DUCTWORK AND DIFFUSER LOCATIONS WITH ALL CEILING DEVICES.
27. ALL ROOF MOUNTED EXHAUST FANS AND INTAKE VENTS SHALL BE PROVIDED WITH MOTOR OPERATED DAMPERS (MOD'S–ATC) EXCEPT FOR KITCHEN HOOD/RANGE HOOD EXHAUST FANS.
28. PROVIDE DOUBLE WALL INSULATED BLANK OFF PANELS BEHIND UNUSED PORTION OF LOUVERS.
29. ALL EXPOSED CABINETS (CABINET UNIT HEATERS, CONVECTORS ETC), BRICK VENTS, LOUVERS ETC SHALL BE PROVIDED WITH A CUSTOM COLOR AS SELECTED BY THE ARCHITECT.
30. PROVIDE FLANGE/ESCUTCHEON AROUND EXPOSED DUCTS PENETRATING WALLS.
31. WHERE DUCT RUNNOUTS ARE EXPOSED TO VIEW, UTILIZE RIGID DUCTWORK IN LEU OF FLEXIBLE TYPE.
32. ALL ROOF CURBS FOR FANS, VENTS AND UNITS SHALL BE A MINIMUM OF 18" ABOVE FINISHED ROOF AND TOP OF CURB SHALL BE LEVEL.
33. LOCATE ALL ROOF MOUNTED EQUIPMENT WHICH REQUIRES SERVICING A MINIMUM OF 10 FEET FROM THE EDGE OF THE ROOF UNLESS THERE IS MIN 42" HIGH PARAPET.
34. COORDINATE LOCATION OF ALL INTAKE VENTS AND WALL LOUVERS TO BE A MINIMUM OF 15 FEET FROM PLUMBING VENTS, EXHAUST VENTS, EXHAUST FANS ETC.
35. ALL WALL MOUNTED SENSORS SHALL BE PROVIDED WITH PROTECTIVE METAL GUARDS OR CAGES.
36. PROVIDE A SPACE CARBON MONOXIDE SENSOR IN THE FIRST ROOM SERVED BY A GAS FIRED AIR HANDLING UNIT AND IN ROOMS WITH GAS FIRED EQUIPMENT (I.E. UNIT HEATERS, BOILERS, WATER HEATERS ETC). INTERLOCK WITH FIRE ALARM SYSTEM AND TO SHUT OFF EQUIPMENT.
37. ALL HEAT RECOVERY WHEELS SHALL UTILIZE A MOLECULAR SIEVE DESICCANT OR SILICA GEL, AND BE PROVIDED WITH VARIABLE SPEED DRIVES FOR MODULATING CONTROL.
38. DUCT DETECTORS SHALL BE FURNISHED BY THE FIRE ALARM CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR. THE ATC CONTRACTOR SHALL HARD WIRE INTERLOCK TO THE AHU AND THE FIRE ALARM CONTRACTOR SHALL INTERLOCK WITH THE FIRE ALARM.
39. ALL OPEN END DUCTS SHALL BE PROVIDED WITH ½" X ½" MESH BIRD SCREEN.
40. THE CONTRACTOR IS RESPONSIBLE FOR ALL REFRIGERANT ROUTING, SIZING, ACCESSORIES AND INSTALLATION IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
41. COORDINATE ALL DUCTWORK ROUTING REQUIREMENTS, LOCATIONS, SIZES, ETC WITH PRE ENGINEERED FRAMING SYSTEM, AND JOIST MANUFACTURER PRIOR TO FABRICATION OF THE STRUCTURAL SYSTEM.
42. FOR STRUCTURAL MEMBERS NEAR FUNCTIONAL LOUVERS, NOTCH PLENUM BOXES AROUND STRUCTURE TO MAXIMIZE CONTINUOUS OPEN AIR OF PLENUM BOXES CONNECTED TO LOUVERS.
43. WHERE CONFLICTS EXIST IN PIPE SIZES/DUCT SIZES AND OR REQUIREMENTS THE BASIS OF THE BID SHALL BE BASED ON THE LARGER SIZE OR MORE STRINGENT REQUIREMENT.
44. RESTORE, CLEAN, PAINT ALL MATERIALS TO LIKE NEW CONDITIONS PRIOR TO FINAL FIELD REPORT.
45. ALL CHILLED WATER VALVES SHALL BE PROVIDED WITH REMOVABLE/REUSABLE INSULATION COVERS.
46. ALL REFRIGERATION SYSTEMS SHALL UTILIZE R32 OR R–454B A2L TYPE REFRIGERANT. ALL PIPING SYSTEMS SHALL BE INSTALLED TO COMPLY WITH ASHRAE 15 AND 34 AND IMC REQUIREMENTS. PROVIDE ALL ASSOCIATED NATURAL VENTILATION SYSTEMS, REFRIGERANT DETECTORS AND MITIGATION CONTROLS. INSPECT AND LEAK TEST ALL PIPING SYSTEMS IN ACCORDANCE WITH ASME B31.5 AND PROVIDE CERTIFIED TEST RESULTS FOR ALL REFRIGERANT BASED SYSTEMS. CERTIFICATION SHALL INCLUDE TEST DATE, PHOTOGRAPH OF THE PRESSURE GAGE AT THE TEST PRESSURE, REFRIGERANT DESIGNATION, TEST MEDIUM AND THE FIELD TEST PRESSURE APPLIED TO THE HIGH SIDE AND LOW SIDE OF THE SYSTEM.
47. THE VRV/VRF SYSTEM IS A DELEGATED DESIGN. THE CONTRACTOR IS RESPONSIBLE FOR ALL PIPING (SIZES, LENGTHS, ROUTING) AND INSTALLATION REQUIREMENTS BY THE SYSTEM MANUFACTURER.

MECHANICAL LEGEND

SYMBOL	ABBREV	DEFINITION
	SA	SUPPLY AIR DUCT UP, DOWN
	RA	RETURN AIR DUCT UP, DOWN
	EA	EXHAUST AIR DUCT UP, DOWN
	OA	OUTSIDE AIR DUCT UP, DOWN
		RECT. TO ROUND TRANSITION
		FLEXIBLE CONNECTION (DUCTWORK)
		FLEXIBLE DUCT
	VD	MANUAL VOLUME DAMPER
	FD	FIRE DAMPER
	MOD	MOTOR OPERATED DAMPER
	SD	SMOKE DAMPER
	CD	COMBINATION FIRE/SMOKE DAMPER
	SL	ACOUSTICAL DUCT LINING
		DUCT TRANSITION
R		CHANGE IN ELEVATION RISE (R); DROP (D)
AMS	AMS	AIR MONITORING STATION
		SOUND ATTENUATOR
DD	DD	DUCT SMOKE DETECTOR
		ELBOW W/TURNING VANES
		RADIUS ELBOW
AIR FLOW		RETURN AIR REGISTER W/BOOT
T	T'STAT	THERMOSTAT
		GATE VALVE
		GLOBE VALVE
		BALL VALVE
		BALANCING VALVE
		MULTI–PURPOSE VALVE
		CHECK VALVE
		BUTTERFLY VALVE
		3–WAY MODULATING VALVE (ATC)
		2–WAY MODULATING VALVE (ATC)
	PRV	PRESSURE REDUCING VALVE
		NEEDLE VALVE
		PRESSURE RELIEF OR SAFETY VALVE
	HED	HOSE END DRAIN VALVE
		STRAINER W/HOSE END DRAIN VALVE & CAP
		COMBINATION BALANCING/SHUT–OFF VALVE
		AUTOMATIC AIR VENT
		MANUAL AIR VENT
		FLOW METER FITTING
		UNION
		FLANGE
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		FLEXIBLE CONNECTION (PIPING)
		THERMOMETER
		PRESSURE GAUGE W/NEEDLE VALVE
T		TEMPERATURE SENSOR
		PIPE ALIGNMENT GUIDE
		PIPE ANCHOR
	F&T	FLOAT AND THERMOSTATIC TRAP
		PIPE–TURN DOWN
		PIPE–TURN UP
		PIPE–TURN DOWN (DOUBLE LINE PIPE)
		PIPE–TURN UP (DOUBLE LINE PIPE)
		PIPE TEE UP
		PIPE TEE DOWN
		END CAP
		DIRECTION OF FLOW
		CONNECT TO EXISTING
		DEMOLITION ENDS HERE
#		DRAWING NOTE DESIGNATION
#		AIR DEVICE DESIGNATION
#		EQUIPMENT BOX DESIGNATION
	%	PERCENT
	φ	ELECTRICAL PHASE

SYMBOL	ABBREV	DEFINITION
	AD	ACCESS DOOR
	AFF	ABOVE FINISHED FLOOR
	AFPF	AIRFOIL PLENUM FAN
	AHU	AIR HANDLING UNIT
	AMS	AIR MONITORING STATION
	AP	ACCESS PANEL
	APD	AIR PRESSURE DROP
	ATC	AUTOMATIC TEMPERATURE CONTROL
	BBR	BASEBOARD RADIATION
	BHP	BOILER HORSEPOWER
	BHP	BRAKE HORSEPOWER
	BTU	BRITISH THERMAL UNIT
	C	CLOSED
	CAP	CAPACITY
	CAV	CONSTANT AIR VOLUME
	CFM	CUBIC FEET PER MINUTE
	CONV	CONVECTOR
	CS	CONDENSER SUPPLY
	CR	CONDENSER RETURN
RL	RL	REFRIGERANT LIQUID
RS	RS	REFRIGERANT SUCTION
CHS (S)	CHS	CHILLED WATER SUPPLY
CHR (S)	CHR	CHILLED WATER RETURN
CW	CW	DOMESTIC COLD WATER
	CUH	CABINET UNIT HEATER
	DB	DRY BULB
	DB	DECIBEL
Ø	DIA	DIAMETER
	DIFF	DIFFUSER
	DWG	DRAWING
	EAT	ENTERING AIR TEMPERATURE
	EF	EXHAUST FAN
	EFF	EFFICIENCY
	ELECT. CHAR.	ELECTRICAL CHARACTERISTICS
	EMS	ENERGY MANAGEMENT SYSTEM
	ERV	ENERGY RECOVERY VENTILATOR
	ESP	EXTERNAL STATIC PRESSURE
	EX	EXISTING
	EXH	EXHAUST
	ETR	EXISTING TO REMAIN
	E/W	EACH WAY
	EWT	ENTERING WATER TEMPERATURE
	F	FAN
	°F	DEGREES FAHRENHEIT
	FCU	FAN COIL UNIT
	FPM	FEET PER MINUTE
	FT H_2O	FEET WATER GAUGE
	FTR	FINNED TUBE RADIATION
	FZ	FREEZESTAT
G	G	NATURAL GAS
	GPM	GALLONS PER MINUTE
	HT	HEIGHT
HS	HS	HEATING SUPPLY
HR	HR	HEATING RETURN
	HWG	HOT WATER GENERATOR
	HZ	HERTZ
	IN H_2O	INCHES WATER GAUGE
	KW	KILOWATT
	LAT	LEAVING AIR TEMPERATURE
	LBS	POUNDS
	LF	LINEAR FOOT
	LWT	LEAVING WATER TEMPERATURE
	MAX	MAXIMUM
	MBH	BTU PER HOUR (THOUSAND)
	MIN	MINIMUM
	NC	NOISE CRITERIA
	N.C.	NORMALLY CLOSED
	No.	NUMBER
	N.O.	NORMALLY OPEN
	OAF	OUTSIDE AIR FAN
	O/C	ON CENTER
	OED	OPEN END DUCT
	P	PUMP
	PA	PRIMARY AIR
	PD	PRESSURE DROP
	PSI	POUNDS PER SQUARE INCH
	RAF	RETURN AIR FAN
	REG	REGISTER
	REQ'D	REQUIRED
	RPM	REVOLUTIONS PER MINUTE
	RX	REMOVE EXISTING
	SAF	SUPPLY AIR FAN
SAN	SAN	SANITARY
	SB	STAND–BY
	SENS	SENSIBLE
SP	SP	STATIC PRESSURE
	SQ	SQUARE
	STD	STANDARD
	SWT	SUPPLY WATER TEMPERATURE
	TEMP	TEMPERATURE
	TONS	TONS OF REFRIGERATION
V	V	VENT
	V	VOLTS
	VEL	VELOCITY
	VSD	VARIABLE SPEED DRIVE
	W/	WITH
	WB	WET BULB
	WG	WATER GAUGE
	WPD	WATER PRESSURE DROP
	ΔT	TEMPERATURE DIFFERENCE

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

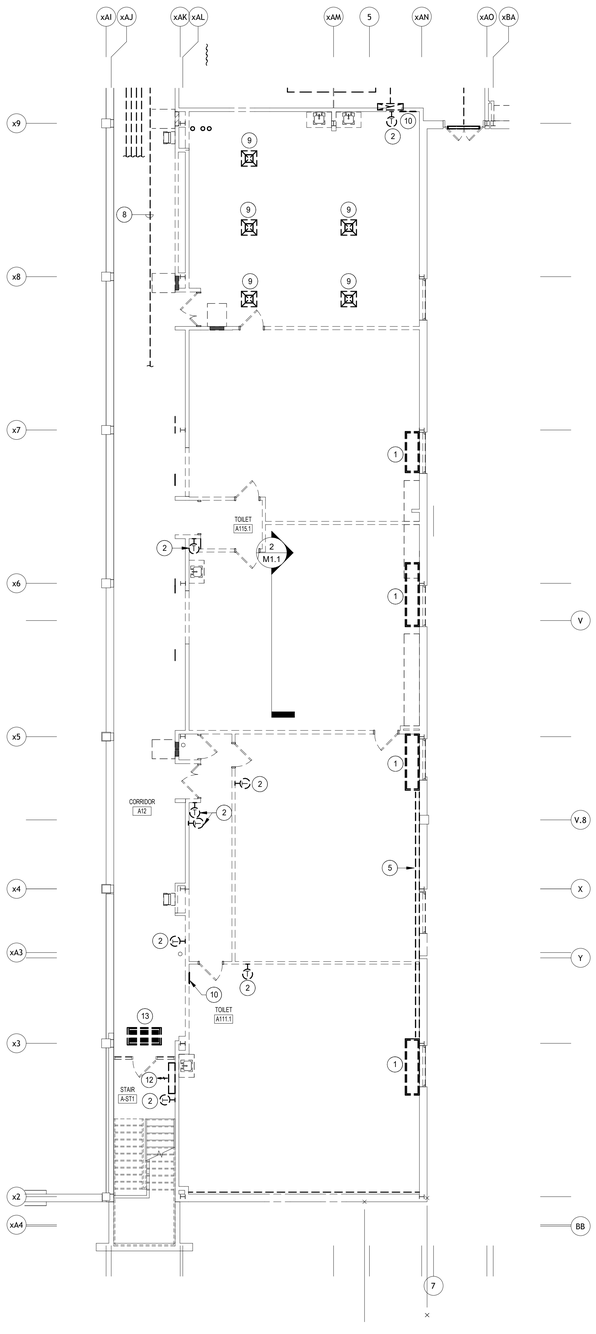
ISSUE DATES
DATE: 03/17/2025 DESCRIPTION: BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

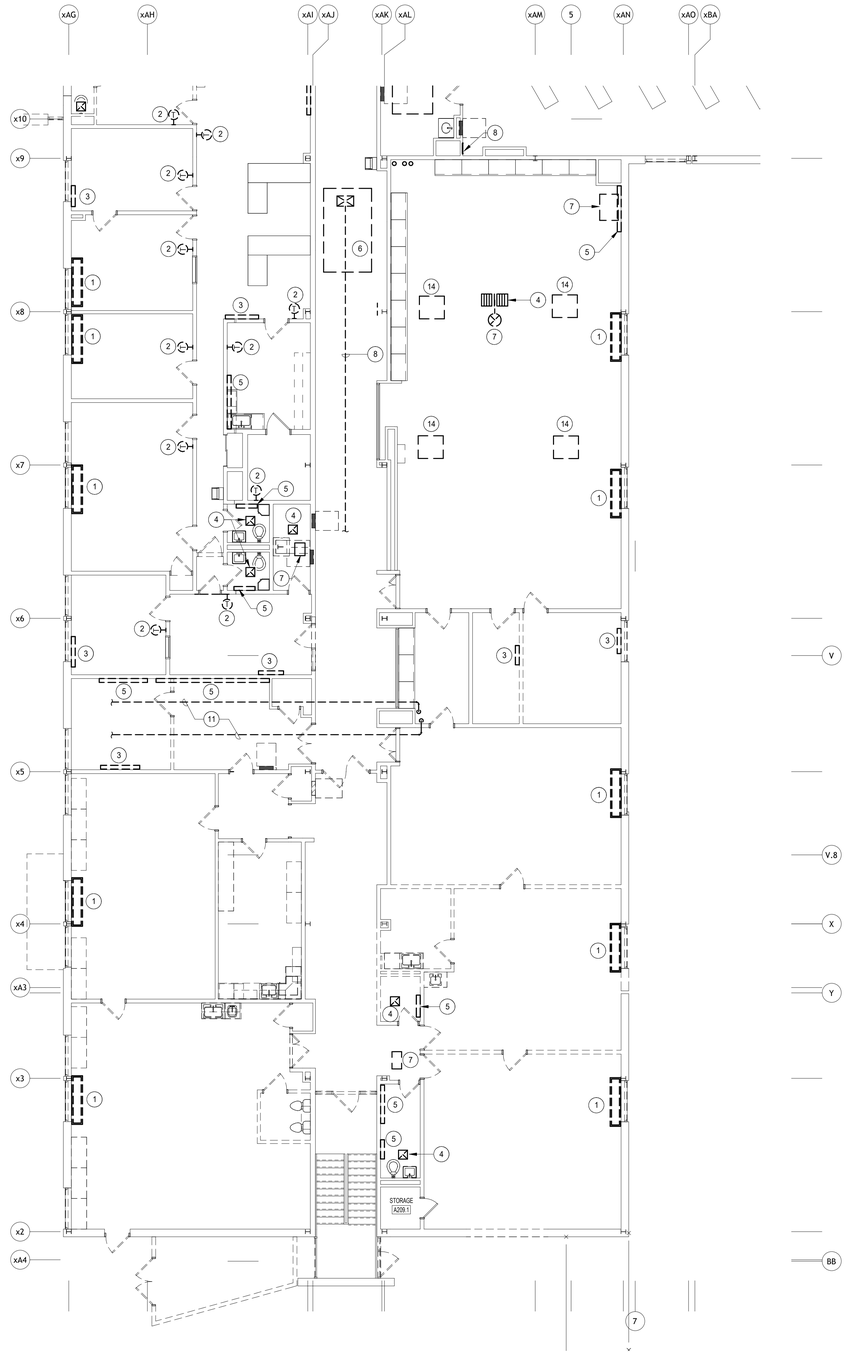
SHEET TITLE:
MECHANICAL LEGEND & ABBREVIATION

SHEET NUMBER:
M0.2

BID SET



PARTIAL FIRST FLOOR PLAN - AREA A - DEMOLITION
1/8" = 1'-0"



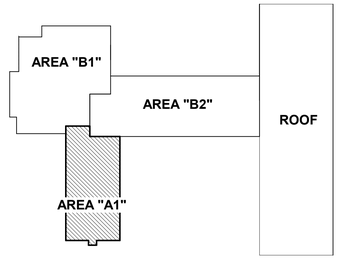
PARTIAL SECOND FLOOR PLAN - AREA A - DEMOLITION
1/8" = 1'-0"

GENERAL NOTES:

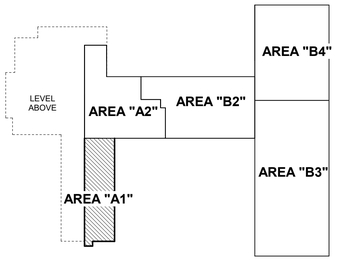
1. EXISTING HVAC SYSTEMS AND EQUIPMENT (EXCEPT FOR CHILLER No.1 SHALL BE REMOVED IN THEIR ENTIRETY. DEMOLITION OF EQUIPMENT AND SYSTEMS SHALL BE PHASED SUCH THAT OCCUPIED AREAS REMAIN FUNCTIONAL.
2. EXISTING UNIT VENTILATORS, THERMOSTATS, PIPING AND CONTROLS SHALL BE REMOVED IN THEIR ENTIRETY. EXISTING OUTSIDE AIR LOUVERS SHALL BE REMOVED AND WALL PENETRATIONS SHALL BE INFILLED.
3. ALL PIPING, VALVING, INSULATION, HANGERS, ETC. SHALL BE REMOVED IN THEIR ENTIRETY. ALL WALL AND FLOOR PENETRATIONS SHALL BE PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
4. ALL DUCTWORK, AIR DEVICES, INSULATION AND SUPPORTS SHALL BE REMOVED IN THEIR ENTIRETY. ALL WALL, FLOOR AND ROOF PENETRATIONS SHALL BE PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
5. ALL ROOF MOUNTED FANS AND EQUIPMENT ROOF CURBS SHALL BE REMOVED IN THEIR ENTIRETY AND ROOF PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
6. ALL TERMINAL HEATING UNITS (CABINET UNIT HEATERS, BASEBOARD RADIATION, ETC.) SHALL BE REMOVED IN THEIR ENTIRETY.

DRAWING NOTES:

1. RX. UNIT VENTILATOR AND ALL ASSOCIATED CONTROLS, PIPING, INSULATION, CONDENSATE DRAIN, ETC IN ITS ENTIRETY. PROVIDE DOUBLE WALL INSULATED BLANK OFF PANEL BEHIND EXISTING LOUVER TO SEAL AIR AND WATER TIGHT.
2. RX. THERMOSTAT AND ALL ASSOCIATED WIRING IN ITS ENTIRETY.
3. RX. FAN COIL UNIT AND ALL ASSOCIATED PIPING, VALVES, INSULATION, ETC. IN ITS ENTIRETY.
4. RX. EXHAUST AIR GRILLE AND ASSOCIATED DUCT WORK IN ITS ENTIRETY.
5. RX. BASEBOARD RADIATOR, PIPING, CONTROLS ETC. IN ITS ENTIRETY.
6. RX. AIR HANDLING UNIT AND ALL ASSOCIATED CONTROLS, WIRING, DUCTWORK CONNECTIONS, ETC. CAPTURE AND DISPOSE OF ALL REFRIGERANT IN ACCORDANCE TO THE LATEST EPA REQUIREMENT.
7. RX. EXHAUST AIR DUCT UP TO FAN ON ROOF.
8. RX. DUCTWORK AND ASSOCIATED AIR DEVICES, HANGERS, SUPPORTS, INSULATION, ETC.
9. RX. SUPPLY AIR DIFFUSER AND ASSOCIATED DUCT WORK IN ITS ENTIRETY.
10. RX. SIDEWALL GRILLE AND PATCH/INFILL EX WALL. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
11. RX. PIPING, HANGER, SUPPORTS, INSULATION, ETC. IN ITS ENTIRETY.
12. RX. UNIT HEATER AND ALL ASSOCIATED PIPING, VALVES, INSULATION, ETC. IN ITS ENTIRETY.
13. RX. CABINET UNIT HEATER AND ALL ASSOCIATED PIPING, VALVES, INSULATION, ETC. IN ITS ENTIRETY.
14. RX. AIR CLEANING UNIT IN ITS ENTIRETY.



KEY PLAN LEVEL 2



KEY PLAN LEVEL 1

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
PA REG. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ # : 21-DCIU-03
DRAWN BY : Author

SHEET TITLE:
PARTIAL FIRST AND SECOND FLOOR PLAN - AREA A - DEMOLITION

SHEET NUMBER:
MD1.1

BID SET

3/14/2025 5:20:42 PM

GENERAL NOTES:

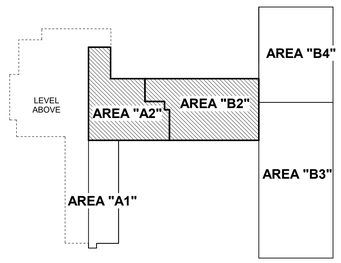
1. EXISTING HVAC SYSTEMS AND EQUIPMENT (EXCEPT FOR CHILLER No.1 SHALL BE REMOVED IN THEIR ENTIRETY. DEMOLITION OF EQUIPMENT AND SYSTEMS SHALL BE PHASED SUCH THAT OCCUPIED AREAS REMAIN FUNCTIONAL.
2. EXISTING UNIT VENTILATORS, THERMOSTATS, PIPING AND CONTROLS SHALL BE REMOVED IN THEIR ENTIRETY. EXISTING OUTSIDE AIR LOUVERS SHALL BE REMOVED AND WALL PENETRATIONS SHALL BE INFILLED.
3. ALL PIPING, VALVING, INSULATION, HANGERS, ETC. SHALL BE REMOVED IN THEIR ENTIRETY. ALL WALL AND FLOOR PENETRATIONS SHALL BE PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
4. ALL DUCTWORK, AIR DEVICES, INSULATION AND SUPPORTS SHALL BE REMOVED IN THEIR ENTIRETY. ALL WALL, FLOOR AND ROOF PENETRATIONS SHALL BE PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
5. ALL ROOF MOUNTED FANS AND EQUIPMENT ROOF CURBS SHALL BE REMOVED IN THEIR ENTIRETY AND ROOF PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
6. ALL TERMINAL HEATING UNITS (CABINET UNIT HEATERS, BASEBOARD RADIATION, ETC.) SHALL BE REMOVED IN THEIR ENTIRETY.

DRAWING NOTES:

1. RX. UNIT VENTILATOR AND ALL ASSOCIATED CONTROLS, PIPING, INSULATION, CONDENSATE DRAIN, ETC IN ITS ENTIRETY. PROVIDE DOUBLE WALL INSULATED BLANK OFF PANEL BEHIND EXISTING LOUVER TO SEAL AIR AND WATER TIGHT.
2. RX. THERMOSTAT AND ALL ASSOCIATED WIRING IN ITS ENTIRETY.
3. RX. PROPELLER FAN AND ALL ASSOCIATED WIRING IN ITS ENTIRETY.
4. RX. EXHAUST AIR GRILLE AND ASSOCIATED DUCT WORK IN ITS ENTIRETY.
5. RX. RADIATOR, PIPING, CONTROLS ETC. IN ITS ENTIRETY.
6. RX. AIR HANDLING UNIT AND ALL ASSOCIATED CONTROLS, WIRING, DUCTWORK CONNECTIONS, ETC. CAPTURE AND DISPOSE OF ALL REFRIGERANT IN ACCORDANCE TO THE LATEST EPA REQUIREMENT.
7. RX. CABINET UNIT HEATER AND ALL ASSOCIATED PIPING, VALVES, INSULATION, ETC. IN ITS ENTIRETY.
8. RX. DUCTWORK AND ASSOCIATED AIR DEVICES, HANGERS, SUPPORTS, INSULATION, ETC.
9. RX. SUPPLY AIR DIFFUSER AND ASSOCIATED DUCT WORK IN ITS ENTIRETY.
10. RX. LOUVER AND PATCH/INFILL EX WALL. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
11. RX. PIPING, HANGER, SUPPORTS, INSULATION, ETC. IN ITS ENTIRETY.
12. RX. UNIT HEATER AND ALL ASSOCIATED PIPING, VALVES, INSULATION, ETC. IN ITS ENTIRETY.
13. RX. GAS FIRED HOT WATER BOILER, IN-LINE CIRCULATOR PUMP, HS/HR PIPING, VALVING, FLUES, CONCRETE PAD ETC. IN ITS ENTIRETY.
14. RX. WATER COOLED CHILLER, CHILLED WATER PIPING, VALVING, ETC. IN ITS ENTIRETY.
15. RX. PUMP, VALVING, CONCRETE PAD, ETC. IN THEIR ENTIRETY.
16. RX. BOILER FLUES AND ALL ASSOCIATED WORK IN ITS ENTIRETY.
17. RX. ATC COMPRESSOR AND ALL ASSOCIATED WORK IN ITS ENTIRETY.
18. RX. HOT WATER HEATER, PIPING, RECIRC PUMP AND ALL ASSOCIATED WORK IN ITS ENTIRETY.
19. RX. EXPANSION TANK AND ALL ASSOCIATED PIPING, ETC. IN ITS ENTIRETY.
20. RX. ATC PANEL.
21. RX. INCINERATOR AND ALL ASSOCIATED WORK IN ITS ENTIRETY.
22. RX. FUEL OIL PUMPS, PIPING, CONTROLS, CONCRETE PAD, WALL MOUNTED FUEL OIL GAUGE ETC IN ITS ENTIRETY.

PARTIAL FIRST FLOOR PLAN - AREA A2 & B2 - DEMOLITION
1/8" = 1'-0"

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'



KEY PLAN LEVEL 1

3/14/2025 5:21:21 PM

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
ANNAPOLIS, MD 21401

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ # : 21-DCIU-03
DRAWN BY : Author

SHEET TITLE:
PARTIAL FIRST FLOOR PLAN - AREA A2 & B2 - DEMOLITION

SHEET NUMBER:
MD1.2

BID SET

GENERAL NOTES:

1. EXISTING HVAC SYSTEMS AND EQUIPMENT (EXCEPT FOR CHILLER No.1 SHALL BE REMOVED IN THEIR ENTIRETY. DEMOLITION OF EQUIPMENT AND SYSTEMS SHALL BE PHASED SUCH THAT OCCUPIED AREAS REMAIN FUNCTIONAL.
2. EXISTING UNIT VENTILATORS, THERMOSTATS, PIPING AND CONTROLS SHALL BE REMOVED IN THEIR ENTIRETY. EXISTING OUTSIDE AIR LOUVERS SHALL BE REMOVED AND WALL PENETRATIONS SHALL BE INFILLED.
3. ALL PIPING, VALVING, INSULATION, HANGERS, ETC. SHALL BE REMOVED IN THEIR ENTIRETY. ALL WALL AND FLOOR PENETRATIONS SHALL BE PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
4. ALL DUCTWORK, AIR DEVICES, INSULATION AND SUPPORTS SHALL BE REMOVED IN THEIR ENTIRETY. ALL WALL, FLOOR AND ROOF PENETRATIONS SHALL BE PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
5. ALL ROOF MOUNTED FANS AND EQUIPMENT ROOF CURBS SHALL BE REMOVED IN THEIR ENTIRETY AND ROOF PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
6. ALL TERMINAL HEATING UNITS (CABINET UNIT HEATERS, BASEBOARD RADIATION, ETC.) SHALL BE REMOVED IN THEIR ENTIRETY.

DRAWING NOTES:

(1) RX. INFRARED HEATER AND ALL ASSOCIATED DUCTWORK, PIPING, ETC IN ITS ENTIRETY.

(2) RX. HEATING AND VENTILATING UNIT, DUCTWORK, PIPING AND ALL ASSOCIATED CONTROLS, WIRING, ETC IN ITS ENTIRETY.

(3) RX. DUCTED FAN COIL UNIT AND ALL ASSOCIATED PIPING, VALVES, INSULATION, ETC. IN ITS ENTIRETY.

(4) RX. UNIT HEATER AND ALL ASSOCIATED PIPING, VALVES, INSULATION, ETC. IN ITS ENTIRETY.

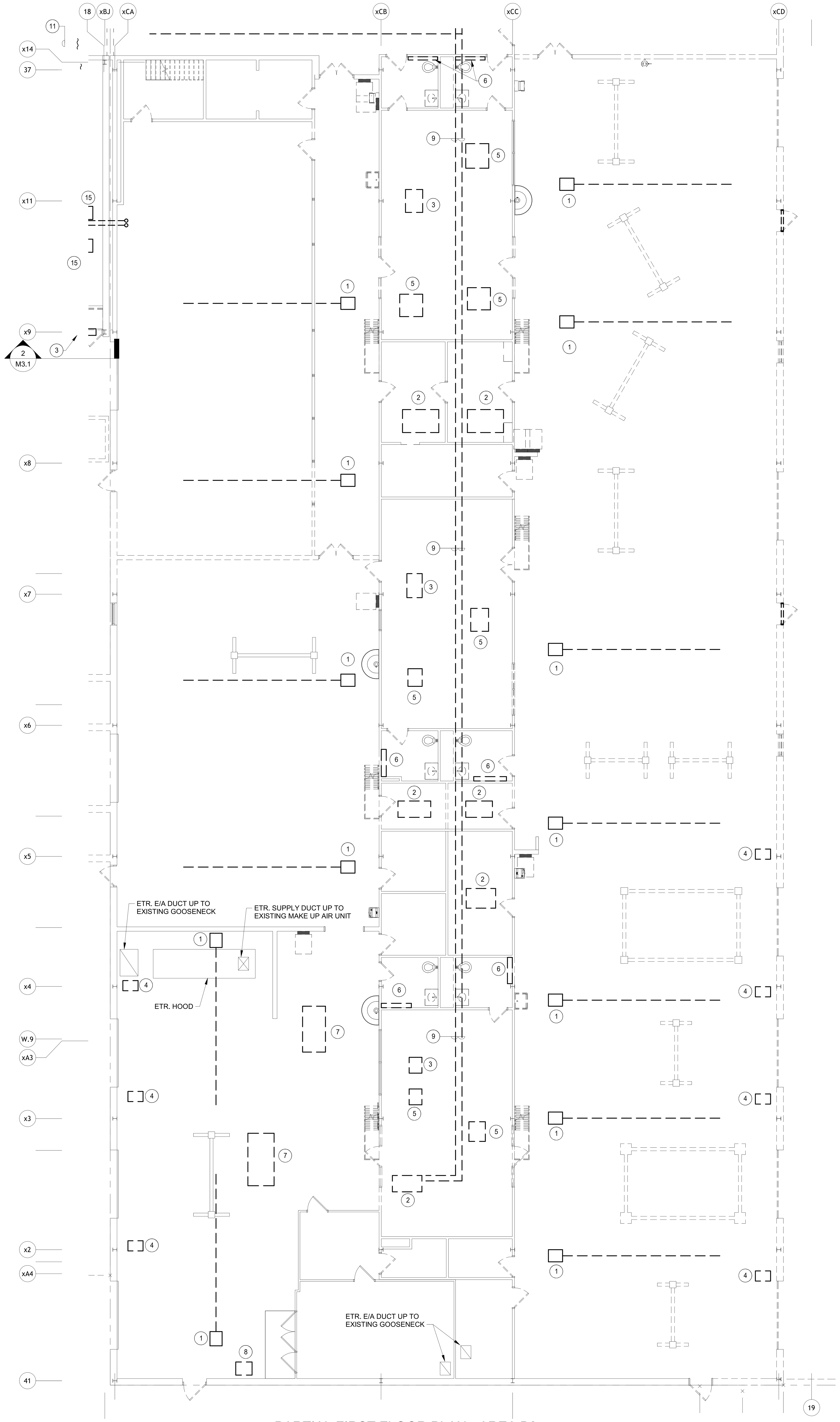
(5) RX. E/A DUCT UP TO EXHAUST FAN ON ROOF.

(6) RX. BASEBOARD RADIATOR, PIPING, CONTROLS ETC. IN ITS ENTIRETY.

(7) RX. AIR FILTRATION UNIT AND ALL ASSOCIATED WORK IN ITS ENTIRETY.

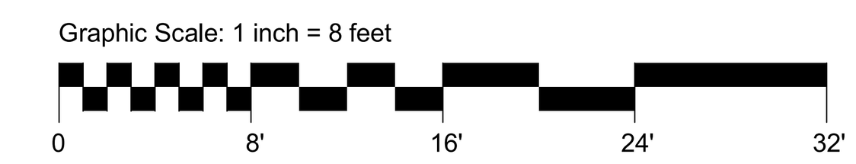
(8) RX. FAN AND ALL ASSOCIATED DUCTWORK IN ITS ENTIRETY.

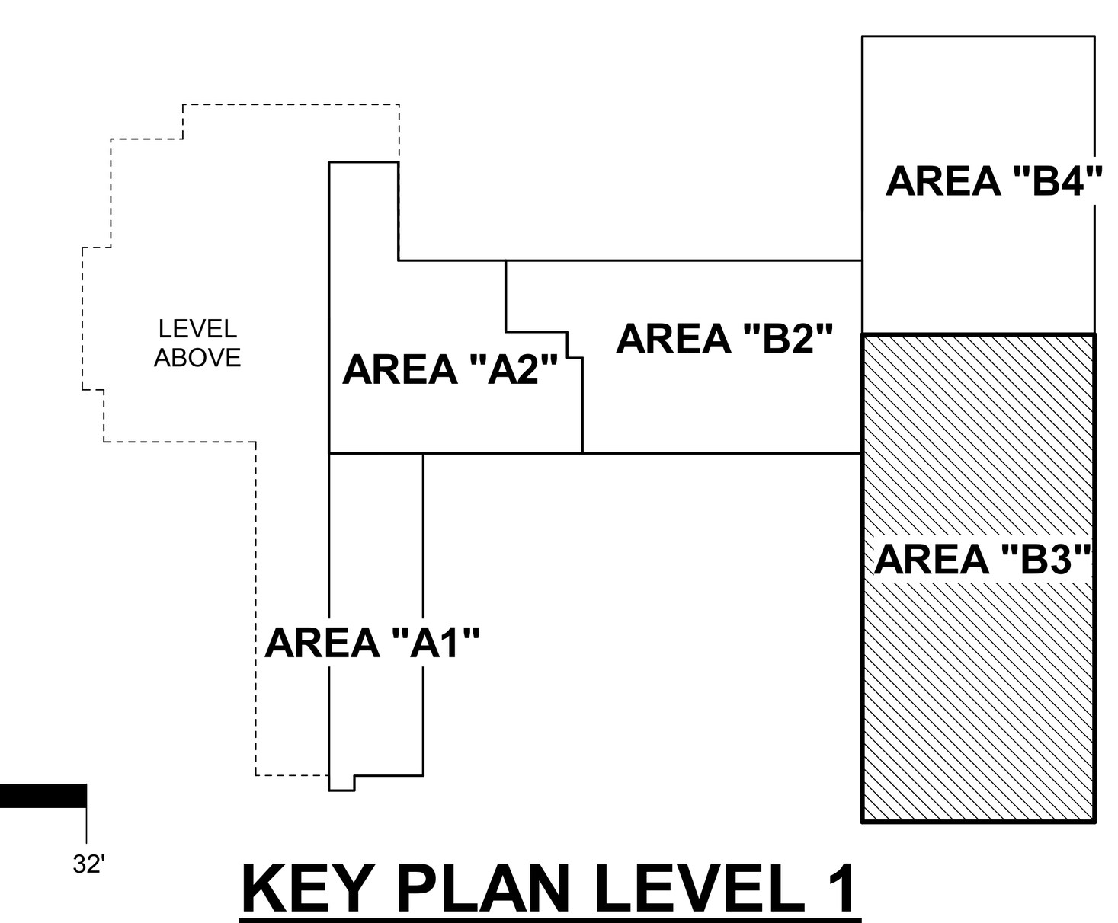
(9) RX. PIPING, HANGER, SUPPORTS, INSULATION, ETC. IN ITS ENTIRETY.



PARTIAL FIRST FLOOR PLAN - AREA B3 - DEMOLITION

1/8" = 1'-0"





KEY PLAN LEVEL 1

MAROTTA/MAIN ARCHITECTS

WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE FOLCROFT TECHNICAL SCHOOL

DELAWARE COUNTY INTERMEDIATE UNIT

701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:

PARTIAL FIRST FLOOR PLAN - AREA B3 - DEMOLITION

SHEET NUMBER:

MD1.3

BID SET

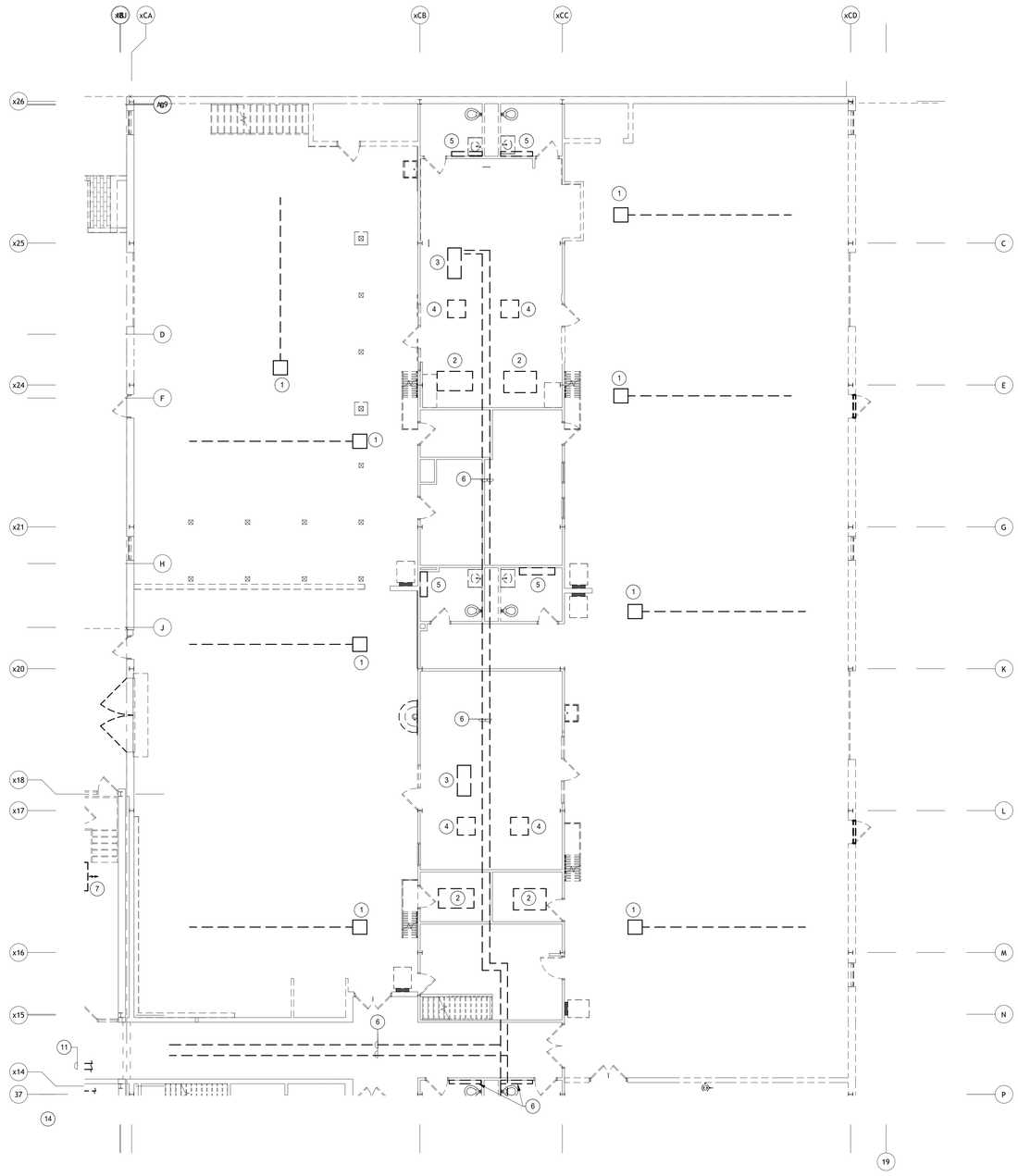
3/14/2025 5:21:48 PM

GENERAL NOTES:

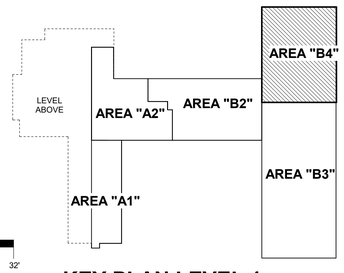
1. EXISTING HVAC SYSTEMS AND EQUIPMENT (EXCEPT FOR CHILLER No.1 SHALL BE REMOVED IN THEIR ENTIRETY. DEMOLITION OF EQUIPMENT AND SYSTEMS SHALL BE PHASED SUCH THAT OCCUPIED AREAS REMAIN FUNCTIONAL.
2. EXISTING UNIT VENTILATORS, THERMOSTATS, PIPING AND CONTROLS SHALL BE REMOVED IN THEIR ENTIRETY. EXISTING OUTSIDE AIR LOUVERS SHALL BE REMOVED AND WALL PENETRATIONS SHALL BE INFILLED.
3. ALL PIPING, VALVING, INSULATION, HANGERS, ETC. SHALL BE REMOVED IN THEIR ENTIRETY. ALL WALL AND FLOOR PENETRATIONS SHALL BE PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
4. ALL DUCTWORK, AIR DEVICES, INSULATION AND SUPPORTS SHALL BE REMOVED IN THEIR ENTIRETY. ALL WALL, FLOOR AND ROOF PENETRATIONS SHALL BE PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
5. ALL ROOF MOUNTED FANS AND EQUIPMENT ROOF CURBS SHALL BE REMOVED IN THEIR ENTIRETY AND ROOF PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
6. ALL TERMINAL HEATING UNITS (CABINET UNIT HEATERS, BASEBOARD RADIATION, ETC.) SHALL BE REMOVED IN THEIR ENTIRETY.

DRAWING NOTES:

1. RX. INFRARED HEATER AND ALL ASSOCIATED DUCTWORK, PIPING, ETC IN ITS ENTIRETY.
2. RX. HEATING AND VENTILATING UNIT, DUCTWORK, PIPING AND ALL ASSOCIATED CONTROLS, WIRING, ETC IN ITS ENTIRETY.
3. RX. DUCTED FAN COIL UNIT AND ALL ASSOCIATED PIPING, VALVES, INSULATION, ETC. IN ITS ENTIRETY.
4. RX. E/A DUCT UP TO EXHAUST FAN ON ROOF.
5. RX. BASEBOARD RADIATOR, PIPING, CONTROLS ETC. IN ITS ENTIRETY.
6. RX. PIPING, HANGER, SUPPORTS, INSULATION, ETC. IN ITS ENTIRETY.



PARTIAL FIRST FLOOR PLAN - AREA B4 - DEMOLITION
1/8" = 1'-0"



KEY PLAN LEVEL 1

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
PA No. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

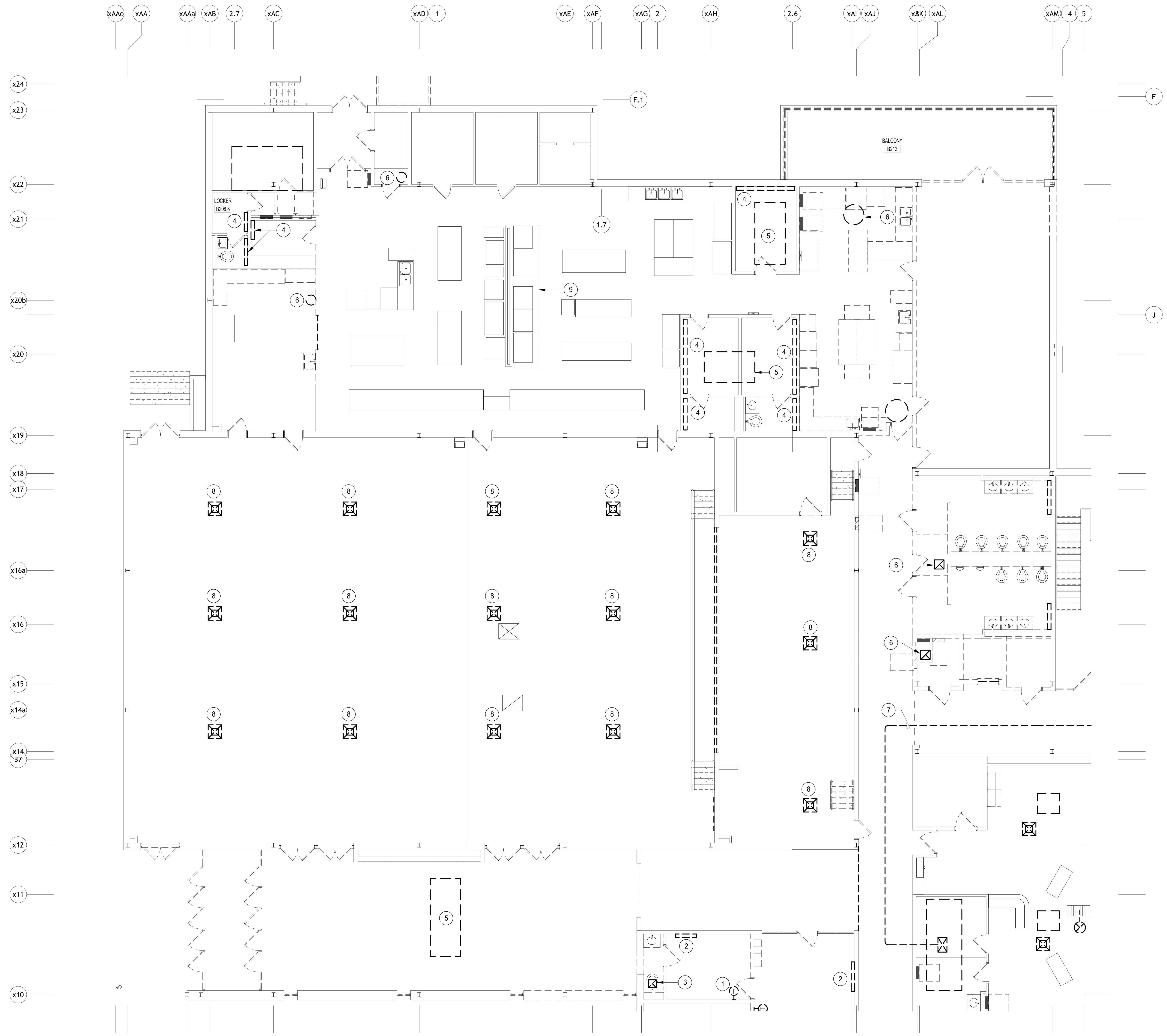
PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:
PARTIAL FIRST FLOOR PLAN - AREA B4 - DEMOLITION

SHEET NUMBER:
MD1.4

BID SET

3/14/2025 5:22:16 PM



PARTIAL SECOND FLOOR PLAN - AREA B1 - DEMOLITION
1/8" = 1'-0"

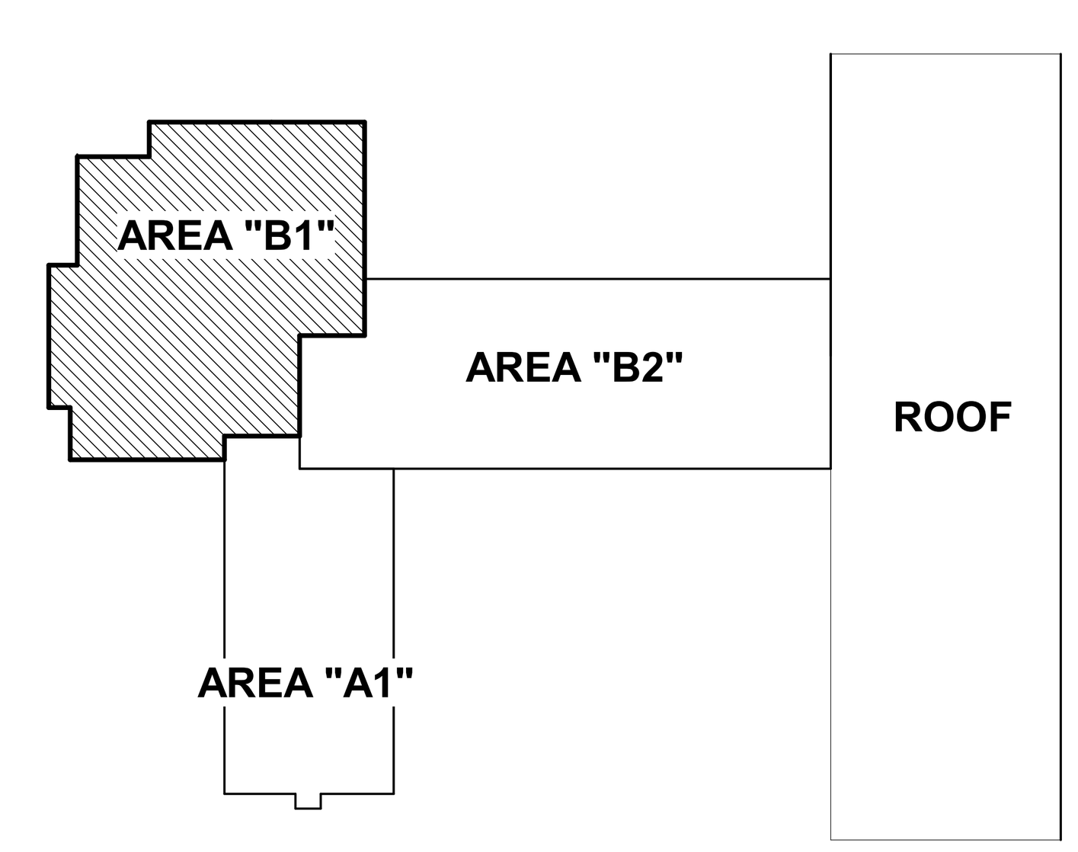
GENERAL NOTES:

1. EXISTING HVAC SYSTEMS AND EQUIPMENT (EXCEPT FOR CHILLER No.1 SHALL BE REMOVED IN THEIR ENTIRETY. DEMOLITION OF EQUIPMENT AND SYSTEMS SHALL BE PHASED SUCH THAT OCCUPIED AREAS REMAIN FUNCTIONAL.
2. EXISTING UNIT VENTILATORS, THERMOSTATS, PIPING AND CONTROLS SHALL BE REMOVED IN THEIR ENTIRETY. EXISTING OUTSIDE AIR LOUVERS SHALL BE REMOVED AND WALL PENETRATIONS SHALL BE INFILLED.
3. ALL PIPING, VALVING, INSULATION, HANGERS, ETC. SHALL BE REMOVED IN THEIR ENTIRETY. ALL WALL AND FLOOR PENETRATIONS SHALL BE PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
4. ALL DUCTWORK, AIR DEVICES, INSULATION AND SUPPORTS SHALL BE REMOVED IN THEIR ENTIRETY. ALL WALL, FLOOR AND ROOF PENETRATIONS SHALL BE PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
5. ALL ROOF MOUNTED FANS AND EQUIPMENT ROOF CURBS SHALL BE REMOVED IN THEIR ENTIRETY AND ROOF PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
6. ALL TERMINAL HEATING UNITS (CABINET UNIT HEATERS, BASEBOARD RADIATION, ETC.) SHALL BE REMOVED IN THEIR ENTIRETY.

DRAWING NOTES:

(1) RX. THERMOSTAT AND ALL ASSOCIATED WIRING IN ITS ENTIRETY.
(2) RX. FAN COIL UNIT AND ALL ASSOCIATED PIPING, VALVES, INSULATION, ETC. IN ITS ENTIRETY.
(3) RX. EXHAUST AIR GRILLE AND ASSOCIATED DUCT WORK IN ITS ENTIRETY.
(4) RX. BASEBOARD RADIATOR, PIPING, CONTROLS ETC. IN ITS ENTIRETY.
(5) RX. AIR HANDLING UNIT AND ALL ASSOCIATED CONTROLS, WIRING, DUCTWORK CONNECTIONS, ETC. CAPTURE AND DISPOSE OF ALL REFRIGERANT IN ACCORDANCE TO THE LATEST EPA REQUIREMENT.
(6) RX. EXHAUST AIR DUCT UP TO EXHAUST FAN ON ROOF.
(7) RX. DUCTWORK AND ASSOCIATED AIR DEVICES, HANGERS, SUPPORTS, INSULATION, ETC.
(8) RX. SUPPLY AIR DIFFUSER AND ASSOCIATED DUCT WORK IN ITS ENTIRETY.
(9) ETR. KITCHEN HOOD.

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'



KEY PLAN LEVEL 2

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:

ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:
PARTIAL SECOND FLOOR PLAN - AREA B1 - DEMOLITION

SHEET NUMBER:
MD1.5

BID SET

3/14/2025 5:22:52 PM

GENERAL NOTES:

1. EXISTING HVAC SYSTEMS AND EQUIPMENT (EXCEPT FOR CHILLER No.1 SHALL BE REMOVED IN THEIR ENTIRETY. DEMOLITION OF EQUIPMENT AND SYSTEMS SHALL BE PHASED SUCH THAT OCCUPIED AREAS REMAIN FUNCTIONAL.
2. EXISTING UNIT VENTILATORS, THERMOSTATS, PIPING AND CONTROLS SHALL BE REMOVED IN THEIR ENTIRETY. EXISTING OUTSIDE AIR LOUVERS SHALL BE REMOVED AND WALL PENETRATIONS SHALL BE INFILLED.
3. ALL PIPING, VALVING, INSULATION, HANGERS, ETC. SHALL BE REMOVED IN THEIR ENTIRETY. ALL WALL AND FLOOR PENETRATIONS SHALL BE PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
4. ALL DUCTWORK, AIR DEVICES, INSULATION AND SUPPORTS SHALL BE REMOVED IN THEIR ENTIRETY. ALL WALL, FLOOR AND ROOF PENETRATIONS SHALL BE PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
5. ALL ROOF MOUNTED FANS AND EQUIPMENT ROOF CURBS SHALL BE REMOVED IN THEIR ENTIRETY AND ROOF PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.
6. ALL TERMINAL HEATING UNITS (CABINET UNIT HEATERS, BASEBOARD RADIATION, ETC.) SHALL BE REMOVED IN THEIR ENTIRETY.

DRAWING NOTES:

(1) RX. UNIT VENTILATOR AND ALL ASSOCIATED CONTROLS, PIPING, INSULATION, CONDENSATE DRAIN, ETC IN ITS ENTIRETY. PROVIDE DOUBLE WALL INSULATED BLANK OFF PANEL BEHIND EXISTING LOUVER TO SEAL AIR AND WATER TIGHT.

(2) RX. FAN COIL UNIT AND ALL ASSOCIATED PIPING, VALVES, INSULATION, ETC. IN ITS ENTIRETY.

(3) RX. BASEBOARD RADIATOR, PIPING, CONTROLS ETC. IN ITS ENTIRETY.

(4) RX. AIR HANDLING UNIT AND ALL ASSOCIATED CONTROLS, WIRING, DUCTWORK CONNECTIONS, ETC. CAPTURE AND DISPOSE OF ALL REFRIGERANT IN ACCORDANCE TO THE LATEST EPA REQUIREMENT.

(5) RX. EXHAUST AIR DUCT UP TO EXHAUST FAN ON ROOF.

(6) RX. DUCTWORK AND ASSOCIATED AIR DEVICES, HANGERS, SUPPORTS, INSULATION, ETC.

(7) RX. SUPPLY AIR DIFFUSER AND ASSOCIATED DUCT WORK IN ITS ENTIRETY.

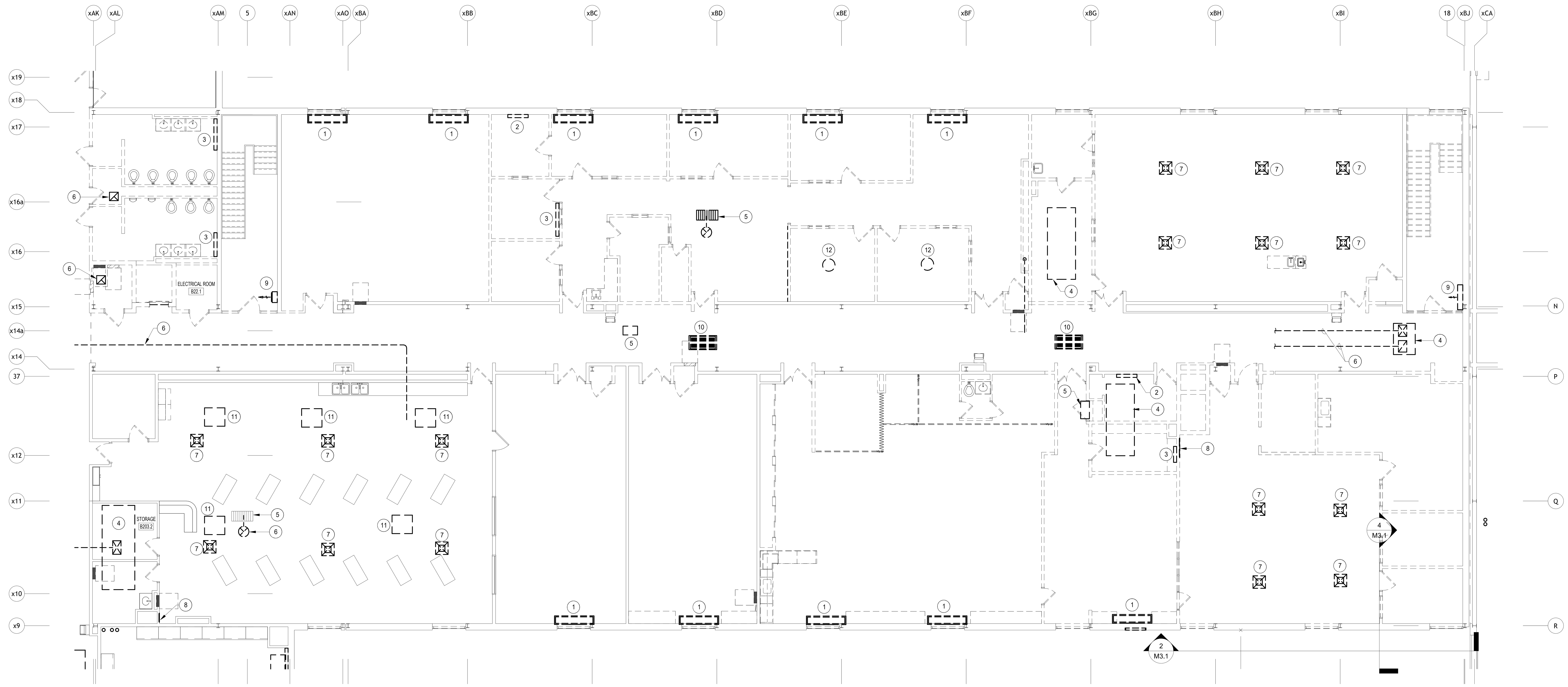
(8) RX. SIDEWALL GRILLE AND PATCH/INFILL EX WALL. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

(9) RX. UNIT HEATER AND ALL ASSOCIATED PIPING, VALVES, INSULATION, ETC. IN ITS ENTIRETY.

(10) RX. CABINET UNIT HEATER AND ALL ASSOCIATED PIPING, VALVES, INSULATION, ETC. IN ITS ENTIRETY.

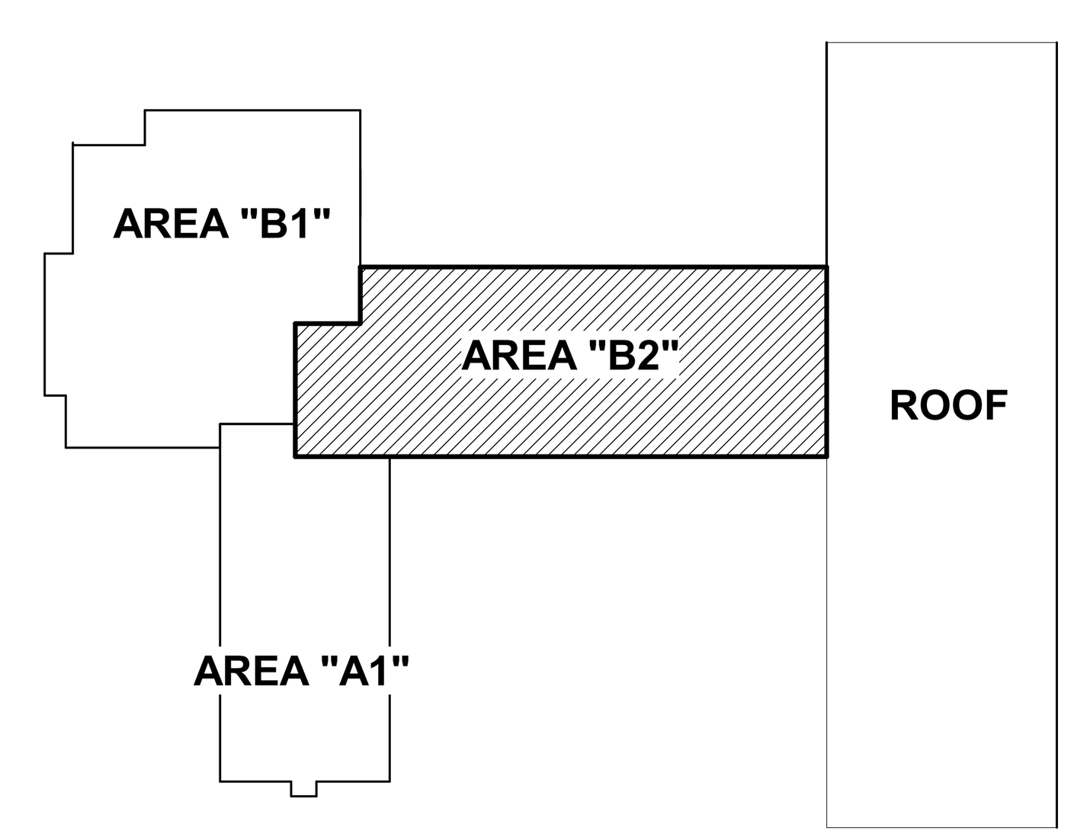
(11) RX. AIR CLEANING UNIT IN ITS ENTIRETY.

(12) RX. CEILING FAN AND ALL ASSOCIATED WIRING IN ITS ENTIRETY.



PARTIAL SECOND FLOOR PLAN - AREA B2 - DEMOLITION
1/8" = 1'-0"

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'



KEY PLAN LEVEL 2

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES DATE:	DESCRIPTION:
03/17/2025	BID SET

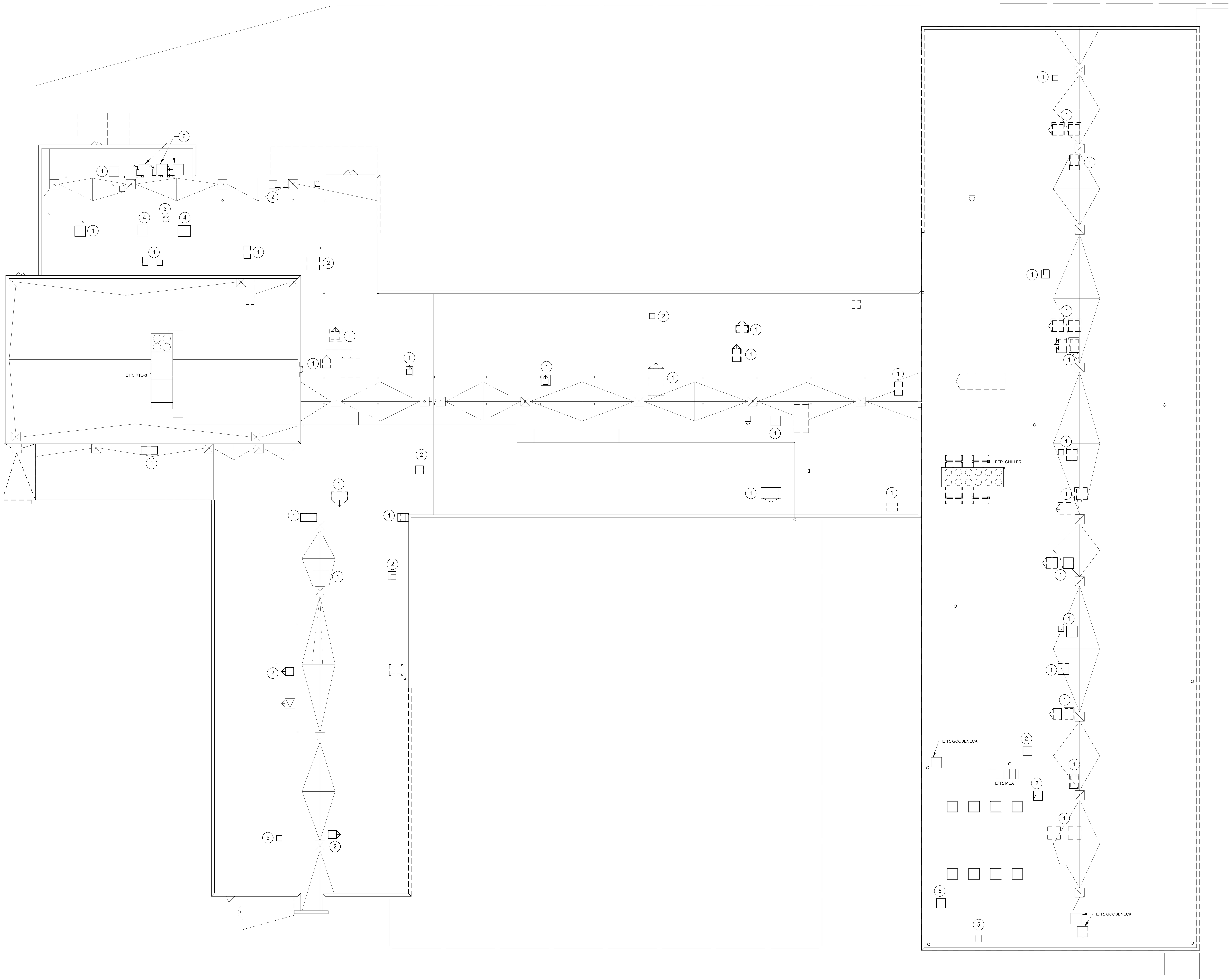
PROJ #: 21-DCIU-03 DRAWN BY: Author

SHEET TITLE:
PARTIAL SECOND FLOOR PLAN - AREA B2 - DEMOLITION

SHEET NUMBER:
MD1.6

BID SET

3/14/2025 5:23:27 PM



ROOF PLAN - DEMOLITION
1/16" = 1'-0"

GENERAL NOTES:

1. EXISTING HVAC SYSTEMS AND EQUIPMENT (EXCEPT FOR CHILLER No.1 SHALL BE REMOVED IN THEIR ENTIRETY. DEMOLITION OF EQUIPMENT AND SYSTEMS SHALL BE PHASED SUCH THAT OCCUPIED AREAS REMAIN FUNCTIONAL.
2. ALL ROOF MOUNTED FANS AND EQUIPMENT ROOF CURBS SHALL BE REMOVED IN THEIR ENTIRETY AND ROOF PATCHED TO MATCH EXISTING MATERIALS AND FINISHES.

DRAWING NOTES:

(1) RX. GRAVITY RELIEF/INTAKE VENT AND ALL ASSOCIATED WORK IN ITS ENTIRETY. CAP EXISTING CURB.
(2) RX. EXHAUST FAN AND ALL ASSOCIATED WORK IN ITS ENTIRETY. CAP EXISTING CURB.
(3) ETR. FAN.
(4) ETR. GRAVITY INTAKE VENT.
(5) RX. E/A VENT AND ALL ASSOCIATED WORK IN ITS ENTIRETY.
(6) ETR. COOLER/FREEZER CONDENSING UNIT.

Graphic Scale: 1 inch = 16 feet
0 16' 32' 48' 64'

3/14/2025 5:24:04 PM

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:

ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:

ROOF PLAN - DEMOLITION

SHEET NUMBER:

MD1.7

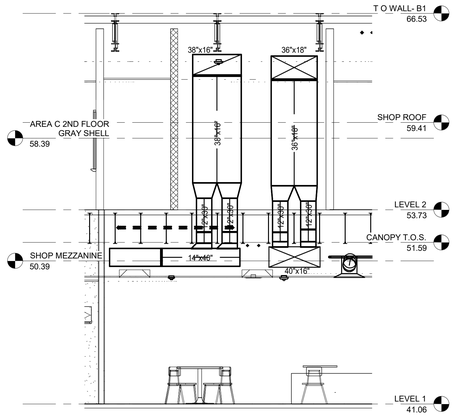
BID SET

GENERAL NOTES:

1. ALL OUTSIDE AIR, RELIEF AIR AND EXHAUST AIR DUCTS CONNECTED TO LOUVERS OR EXHAUST FANS SHALL BE PROVIDED WITH MOTOR OPERATED DAMPERS.
2. ALL AHU/DOAS UNIT SUPPLY AND RETURN AIR DUCTS SHALL BE PROVIDED WITH DUCT SMOKE DETECTORS.
3. CONDITIONED VENTILATION AIR FROM DOAS UNITS SHALL BE EXTENDED TO AND SERVE OCCUPIED SPACES WHERE DUCTLESS OR LOCAL FAN COIL UNITS THAT ARE NOT LOCATED IN PENTHOUSES TO PROVIDE CONDITIONED AIR.
4. ALL OCCUPIED SPACES WILL BE PROVIDED WITH A CEILING RELIEF AIR GRILLE DUCTED TO ITS ASSOCIATED DOAS UNIT.
5. ALL DUCT RISERS THROUGH SLAB AND 2HR FIRE RATED WALL SHALL BE PROVIDED WITH FIRE DAMPER.

DRAWING NOTES:

1. 20"x20" S/A DUCT UP W/FD TO SECOND FLOOR.
2. 20"x20" R/A DUCT UP W/FD TO SECOND FLOOR.
3. 18"x16" E/A DUCT UP W/FD TO SECOND FLOOR.
4. 20"x14" O/A DUCT UP W/FD TO SECOND FLOOR.
5. 16"x16" OED DUCT W/1/2" MESH BIRDSCREEN.
6. 14"x6" OPEN END DUCT W/ 1/2" BIRDSCREEN @ 210 CFM.
7. 16"x8" SOUND LINED TRANSFER AIR DUCT.
8. 30"x12" AND 30"x12" S/A DUCT UP W/FD AND TRANSITION TO 36"x18" DUCT UP TO SECOND FLOOR.
9. 30"x12" AND 30"x12" R/A DUCT UP W/FD AND TRANSITION TO 38"x16" DUCT UP TO SECOND FLOOR.
10. 18"x6" SOUND LINED TRANSFER AIR DUCT.
11. 14"x14" SOUND LINED TRANSFER AIR DUCT.
12. 16"x6" OPEN END DUCT W/ 1/2" BIRDSCREEN @ 325 CFM.
13. 14"x6" OPEN END DUCT W/ 1/2" BIRDSCREEN @ 200 CFM.
14. 14"x8" OPEN END DUCT W/ 1/2" BIRDSCREEN @ 630 CFM.
15. 26"x12" OPEN END DUCT W/ 1/2" BIRDSCREEN @ 1900 CFM.
16. 24"x14" SOUND LINED TRANSFER AIR DUCT.
17. 18"x4" SOUND LINED TRANSFER AIR DUCT.
18. 20"x14" OED W/ 1/2" BIRDSCREEN.
19. 30"x14" SOUNDLINED TRANSFER AIR DUCT.



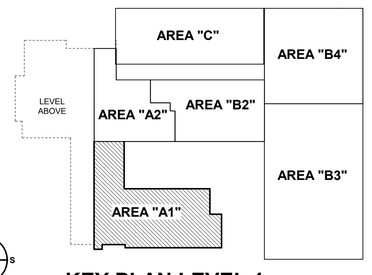
EARLY HEADSTART 4 - SECTION 1
1/4" = 1'-0"

PARTIAL FIRST FLOOR PLAN - AREA A1
1/8" = 1'-0"

Graphic Scale: 1 inch = 4 feet
0 4' 8' 12' 16'

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

PLAN NORTH



KEY PLAN LEVEL 1

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
ALBAN, INC. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ # : 21-DCIU-03
DRAWN BY : Author

SHEET TITLE:
PARTIAL FIRST FLOOR PLAN - AREA A1

SHEET NUMBER:
M1.1

BID SET

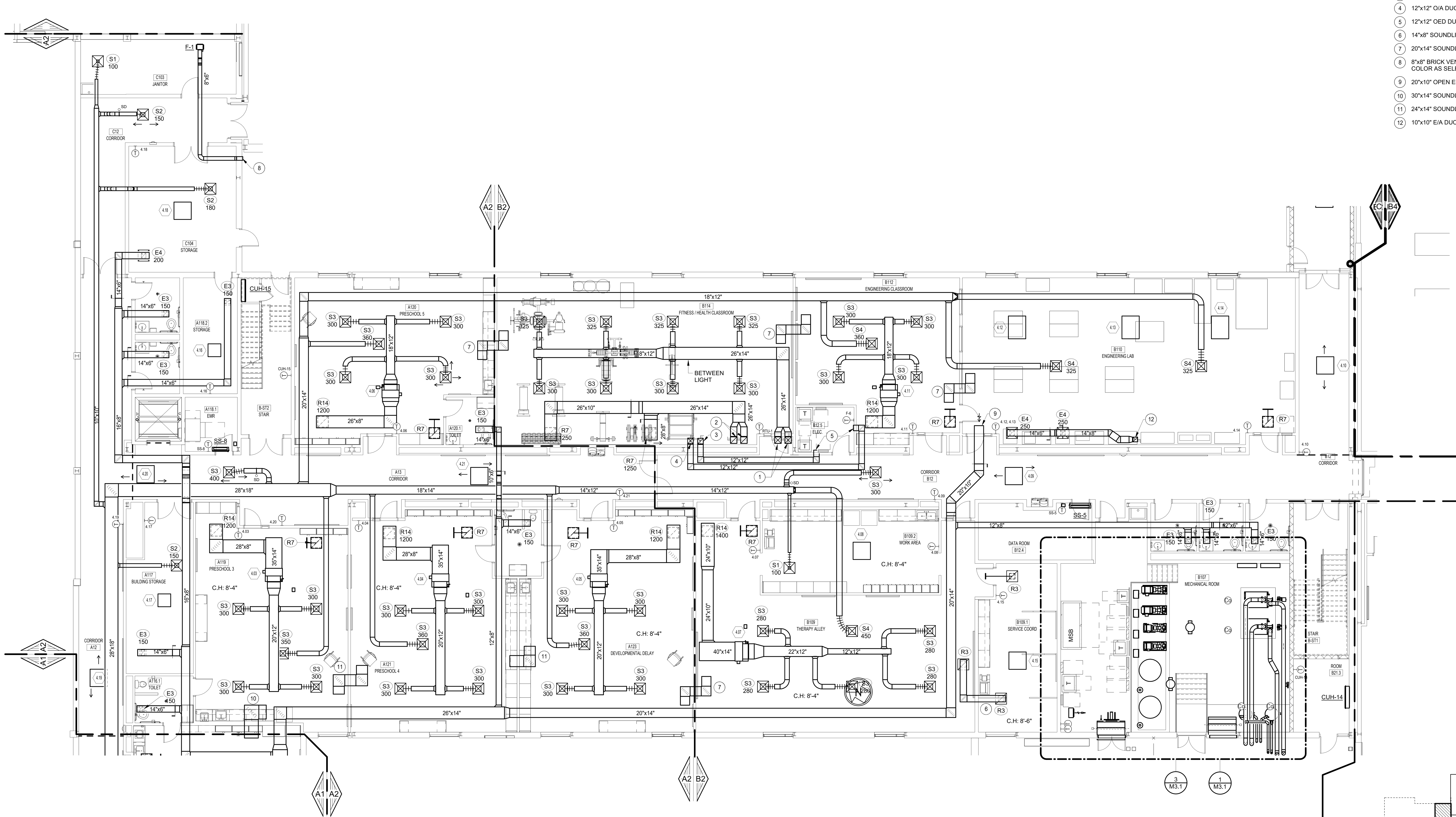
3/17/2025 9:30:33 AM

GENERAL NOTES:

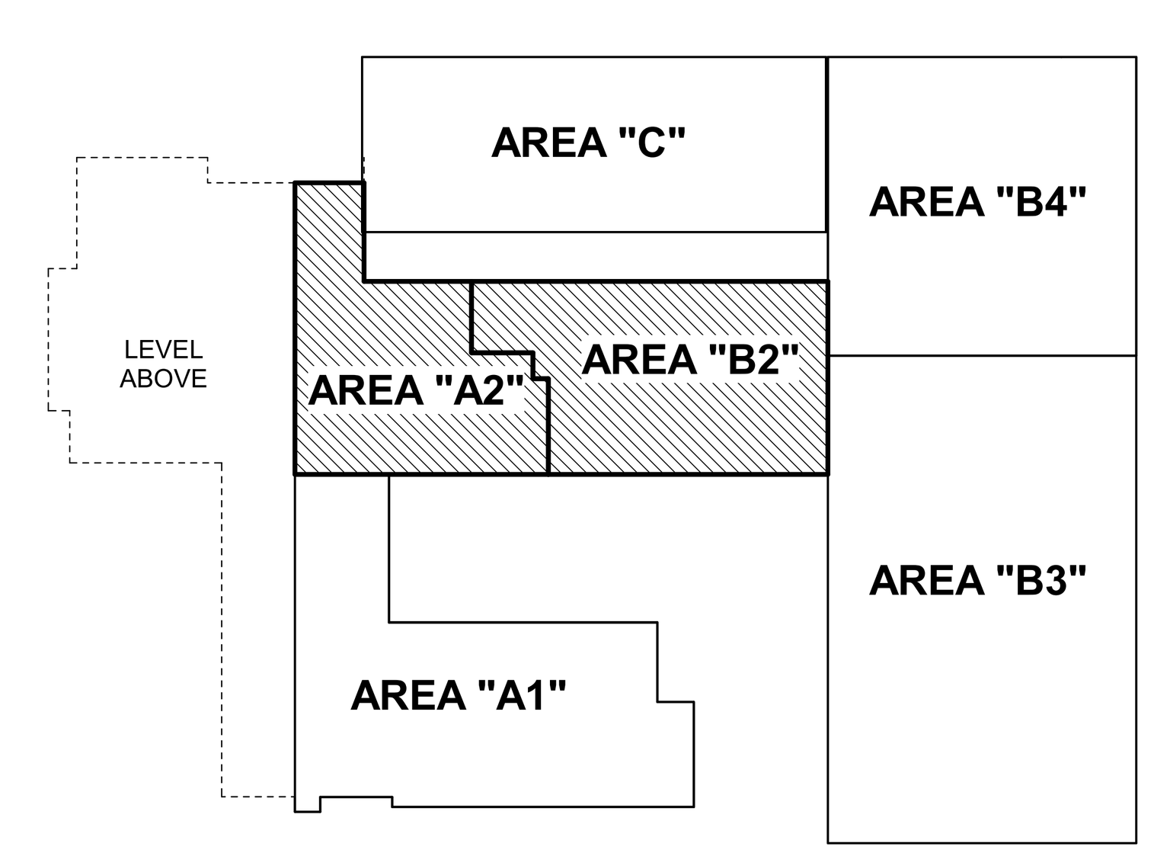
1. ALL OUTSIDE AIR, RELIEF AIR AND EXHAUST AIR DUCTS CONNECTED TO LOUVERS OR EXHAUST FANS SHALL BE PROVIDED WITH MOTOR OPERATED DAMPERS.
2. ALL AHU/DOAS UNIT SUPPLY AND RETURN AIR DUCTS SHALL BE PROVIDED WITH DUCT SMOKE DETECTORS.
3. CONDITIONED VENTILATION AIR FROM DOAS UNITS SHALL BE EXTENDED TO AND SERVE OCCUPIED SPACES WHERE DUCTLESS OR LOCAL FAN COIL UNITS THAT ARE NOT LOCATED IN PENTHOUSES TO PROVIDE CONDITIONED AIR.
4. ALL OCCUPIED SPACES WILL BE PROVIDED WITH A CEILING RELIEF AIR GRILLE DUCTED TO ITS ASSOCIATED DOAS UNIT.
5. ALL DUCT RISERS THROUGH SLAB AND 2HR FIRE RATED WALL SHALL BE PROVIDED WITH FIRE DAMPER.

DRAWING NOTES:

(1) 14"x14" AND 14"x14" S/A DUCT UP W/FD AND TRANSITION TO 26"x14" DUCT UP TO SECOND FLOOR.
(2) 14"x14" AND 14"x14" R/A DUCT UP W/FD AND TRANSITION TO 26"x14" DUCT UP TO SECOND FLOOR.
(3) 12"x12" E/A DUCT UP W/FD TO SECOND FLOOR.
(4) 12"x12" O/A DUCT UP W/FD TO SECOND FLOOR.
(5) 12"x12" OED DUCT W/1/2" MESH BIRDSCREEN.
(6) 14"x8" SOUNDLINED TRANSFER AIR DUCT.
(7) 20"x14" SOUNDLINED TRANSFER AIR DUCT.
(8) 8"x8" BRICK VENT BASED ON GREENHECK MODEL BVE 808. CUSTOM COLOR AS SELECTED BY ARCHITECT.
(9) 20"x10" OPEN END DUCT W/ 1/2" BIRDSCREEN @ 1200 CFM.
(10) 30"x14" SOUNDLINED TRANSFER AIR DUCT.
(11) 24"x14" SOUNDLINED TRANSFER AIR DUCT.
(12) 10"x10" E/A DUCT UP W/ FD TO SECOND FLOOR.



PARTIAL FIRST FLOOR PLAN - AREA A2 & B2
1/8" = 1'-0"



KEY PLAN LEVEL 1

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

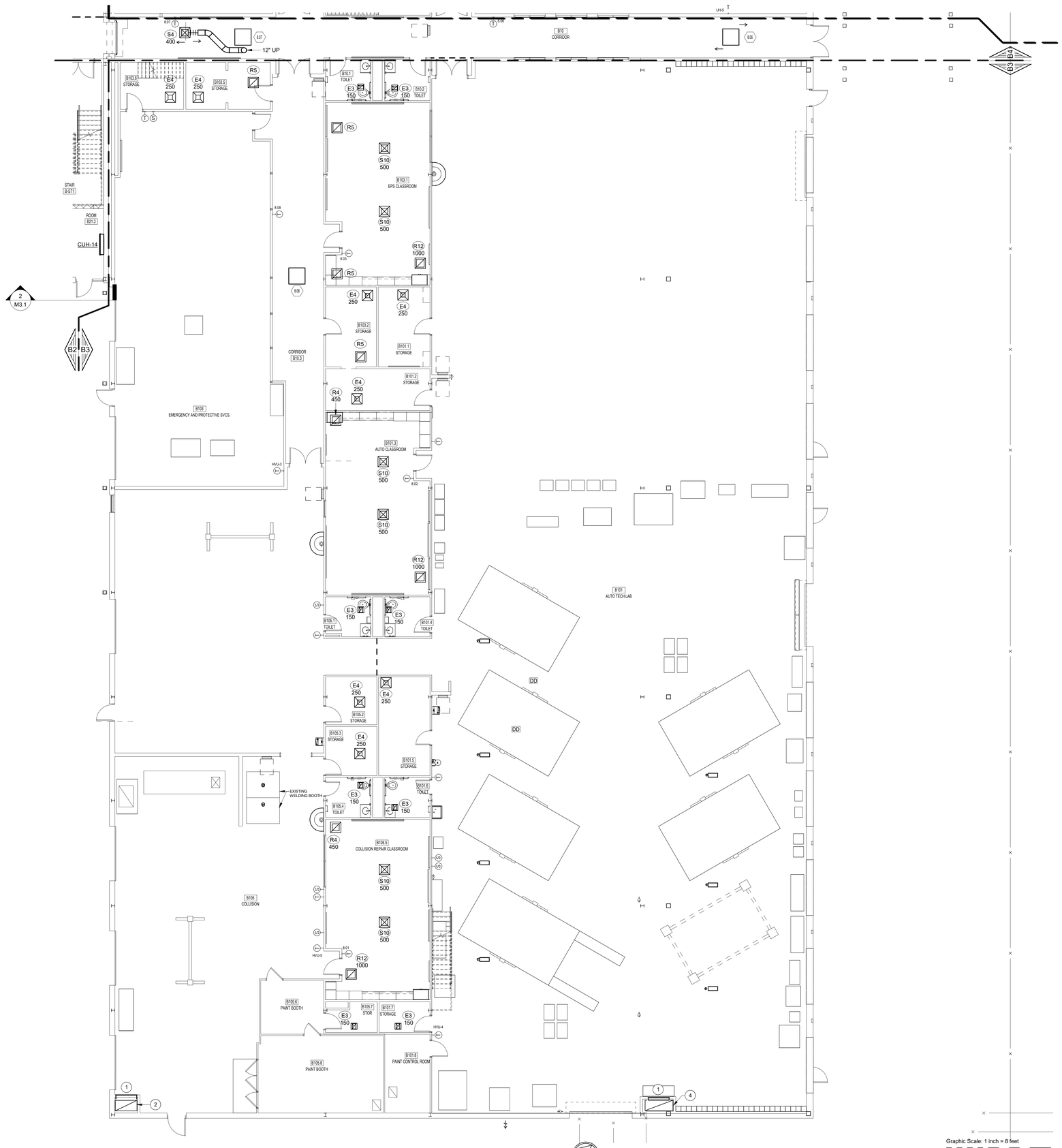
ISSUE DATES	
DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:
PARTIAL FIRST FLOOR PLAN - AREA A2 & B2

SHEET NUMBER:
M1.2

BID SET



PARTIAL FIRST FLOOR PLAN - AREA B3

1/8" = 1'-0"

GENERAL NOTES:

1. ALL OUTSIDE AIR, RELIEF AIR AND EXHAUST AIR DUCTS CONNECTED TO LOUVERS OR EXHAUST FANS SHALL BE PROVIDED WITH MOTOR OPERATED DAMPERS.
2. ALL AHU/DOAS UNIT SUPPLY AND RETURN AIR DUCTS SHALL BE PROVIDED WITH DUCT SMOKE DETECTORS.
3. CONDITIONED VENTILATION AIR FROM DOAS UNITS SHALL BE EXTENDED TO AND SERVE OCCUPIED SPACES WHERE DUCTLESS OR LOCAL FAN COIL UNITS THAT ARE NOT LOCATED IN PENTHOUSES TO PROVIDE CONDITIONED AIR.
4. ALL OCCUPIED SPACES WILL BE PROVIDED WITH A CEILING RELIEF AIR GRILLE DUCTED TO ITS ASSOCIATED DOAS UNIT.
5. ALL DUCT RISERS THROUGH SLAB AND 2HR FIRE RATED WALL SHALL BE PROVIDED WITH FIRE DAMPER.

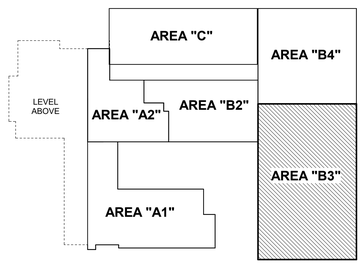
DRAWING NOTES:

1. RETURN AIR GRILLE 48"(W) x72"(H) @ 7050 CFM, 12" A.F.F. BASED ON KEES PATTERN LA-081 ARCHITECTURAL STAMPED GRILLE (13/16" LATTIC/66%/OPEN) 7 GAUGE STEEL W/CUSTOM COLOR SELECTED BY ARCHITECT.
2. 50"x24" R/A DUCT UP.
3. RETURN AIR GRILLE 48" (W) x120" (H) @13300 CFM, 12" A.F.F. GRILLE BASED ON KEES PATTERN LA-081 ARCHITECTURAL STAMPED GRILLE (13/16" LATTICE/60% OPEN) 7 GAUGE STEEL W/CUSTOM COLOR AS SELECTED BY ARCHITECT. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION.
4. 64"x24" R/A DUCT UP.

Graphic Scale: 1 inch = 8 feet

0 8' 16' 24' 32'

PLAN NORTH



KEY PLAN LEVEL 1

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
BALTIMORE, MD 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:

PARTIAL FIRST FLOOR PLAN - AREA B3

SHEET NUMBER:

M1.3

BID SET

3/14/2025 4:15:46 PM

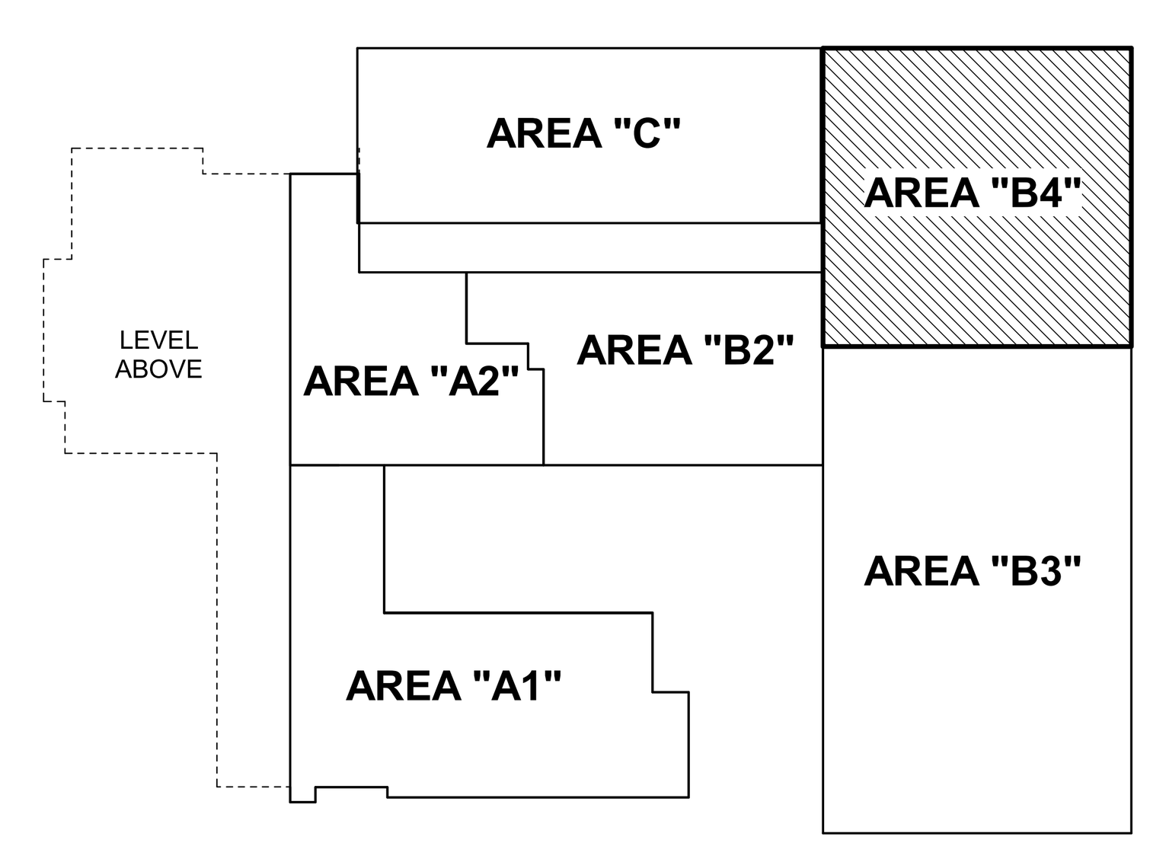
GENERAL NOTES:

1. ALL OUTSIDE AIR, RELIEF AIR AND EXHAUST AIR DUCTS CONNECTED TO LOUVERS OR EXHAUST FANS SHALL BE PROVIDED WITH MOTOR OPERATED DAMPERS.
2. ALL AHU/DOAS UNIT SUPPLY AND RETURN AIR DUCTS SHALL BE PROVIDED WITH DUCT SMOKE DETECTORS.
3. CONDITIONED VENTILATION AIR FROM DOAS UNITS SHALL BE EXTENDED TO AND SERVE OCCUPIED SPACES WHERE DUCTLESS OR LOCAL FAN COIL UNITS THAT ARE NOT LOCATED IN PENTHOUSES TO PROVIDE CONDITIONED AIR.
4. ALL OCCUPIED SPACES WILL BE PROVIDED WITH A CEILING RELIEF AIR GRILLE DUCTED TO ITS ASSOCIATED DOAS UNIT.
5. ALL STAFF BATHROOMS SHALL BE PROVIDED WITH CEILING TYPE EXHAUST FANS.
6. A GAS FIRED MAKE UP AIR UNIT AND KITCHEN TYPE EXHAUST FAN SHALL SERVE THE KITCHEN HOOD.
7. ALL DUCT RISERS THROUGH SLAB AND 2HR FIRE RATED WALL SHALL BE PROVIDED WITH FIRE DAMPER.

DRAWING NOTES:

(1) 72"x36" OED DUCT W/BIRD SCREEN AND MOD DAMPER.
(2) 72"x36" INTAKE LOUVER.
(3) 52"x20" R/A DUCT UP.

PARTIAL FIRST FLOOR PLAN - AREA B4
1/8" = 1'-0"



KEY PLAN LEVEL 1

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

PLAN NORTH

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 21-DCIU-03 DRAWN BY: Author

SHEET TITLE:
PARTIAL FIRST FLOOR PLAN - AREA B4

SHEET NUMBER:
M1.4

BID SET

3/14/2025 4:17:21 PM

GENERAL NOTES:

1. ALL OUTSIDE AIR, RELIEF AIR AND EXHAUST AIR DUCTS CONNECTED TO LOUVERS OR EXHAUST FANS SHALL BE PROVIDED WITH MOTOR OPERATED DAMPERS.
2. ALL AHU/DOAS UNIT SUPPLY AND RETURN AIR DUCTS SHALL BE PROVIDED WITH DUCT SMOKE DETECTORS.
3. CONDITIONED VENTILATION AIR FROM DOAS UNITS SHALL BE EXTENDED TO AND SERVE OCCUPIED SPACES WHERE DUCTLESS OR LOCAL FAN COIL UNITS THAT ARE NOT LOCATED IN PENTHOUSES TO PROVIDE CONDITIONED AIR.
4. ALL OCCUPIED SPACES WILL BE PROVIDED WITH A CEILING RELIEF AIR GRILLE DUCTED TO ITS ASSOCIATED DOAS UNIT.
5. ALL DUCT RISERS THROUGH SLAB AND 2HR FIRE RATED WALL SHALL BE PROVIDED WITH FIRE DAMPER.

DRAWING NOTES:

(1) LONG THROW HIGH CAPACITY ALUMINUM DRUM SUPPLY GRILLE, OPPOSED BLADE DAMPER
AIR SCOOP OPTION
915 CFM, 36"x8" NOMINAL DUCT SIZE.
BASED ON TITUS DL-SV.

(2) LONG THROW HIGH CAPACITY ALUMINUM DRUM SUPPLY GRILLE, OPPOSED BLADE DAMPER
AIR SCOOP OPTION
785 CFM, 36"x8" NOMINAL DUCT SIZE.
BASED ON TITUS DL-SV.

(3) RETURN AIR GRILLE 48"(W)x72"(H) @5500 CFM, 12" A.F.F. BASED ON KEES PATTERN LA-081 ARCHITECTURAL STAMPED GRILLE (13/16" LATTIC/66%/OPEN) 7GAUGE STEEL W/CUSTOM COLOR SELECTED BY ARCHITECT. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION. BOTTOM OF GRILLE 12" ABOVE FINISH FLOOR.

(4) REFER TO DWG M1.10 FOR CONTINUATION.

(5) 14"x14" OED W/ 1/2" BIRDSCREEN.

(6) 48"x12" OED DUCT W/BIRD SCREEN AND MOD DAMPER.

(7) 48"x12" INTAKE LOUVER.

(8) 18"x18" SOUNDLINED TRANSFER AIR DUCT.

(9) RECIRCULATING DUST FILTRATION UNIT. AIRFLOW SYSTEMS MODEL F70-R.

(10) 4"Ø E/A DUCT DN TO BAND SAW @ 350 CFM. REFER TO DETAIL SHEET FOR MORE INFORMATION.

(11) 4"Ø E/A DUCT DN TO OSCILLATING SPINDLE SANDER @ 350 CFM. REFER TO DETAIL SHEET FOR MORE INFORMATION.

(12) 4"Ø E/A DUCT DN TO DISC SANDER @ 400 CFM. REFER TO DETAIL SHEET FOR MORE INFORMATION.

(13) 6"Ø E/A DUCT DN TO PLANNER @ 800 CFM. REFER TO DETAIL SHEET FOR MORE INFORMATION.

(14) 4"Ø E/A DUCT DN TO ROUTER @ 350 CFM. REFER TO DETAIL SHEET FOR MORE INFORMATION.

(15) 4"Ø E/A DUCT DN TO MITER SAW hood @ 350 CFM. REFER TO DETAIL SHEET FOR MORE INFORMATION.

(16) 4"Ø E/A DUCT DN TO CABINET SAW @ 400 CFM. REFER TO DETAIL SHEET FOR MORE INFORMATION.

(17) 4"Ø E/A DUCT DN W/BLAST GATE DAMPER TO FUTURE CNC ROUTER @ 400 CFM. REFER TO DETAIL SHEET FOR MORE INFORMATION.

(18) 4"Ø E/A DUCT DN TO PANEL SAW @ 350 CFM. REFER TO DETAIL SHEET FOR MORE INFORMATION.

(19) 6"Ø E/A DROP WITH HOLES AND BLAST GATES FOR MOBILE EQUIPMENT AND SHOP CLEANUP, FLOOR SWEEP @ 785 CFM.

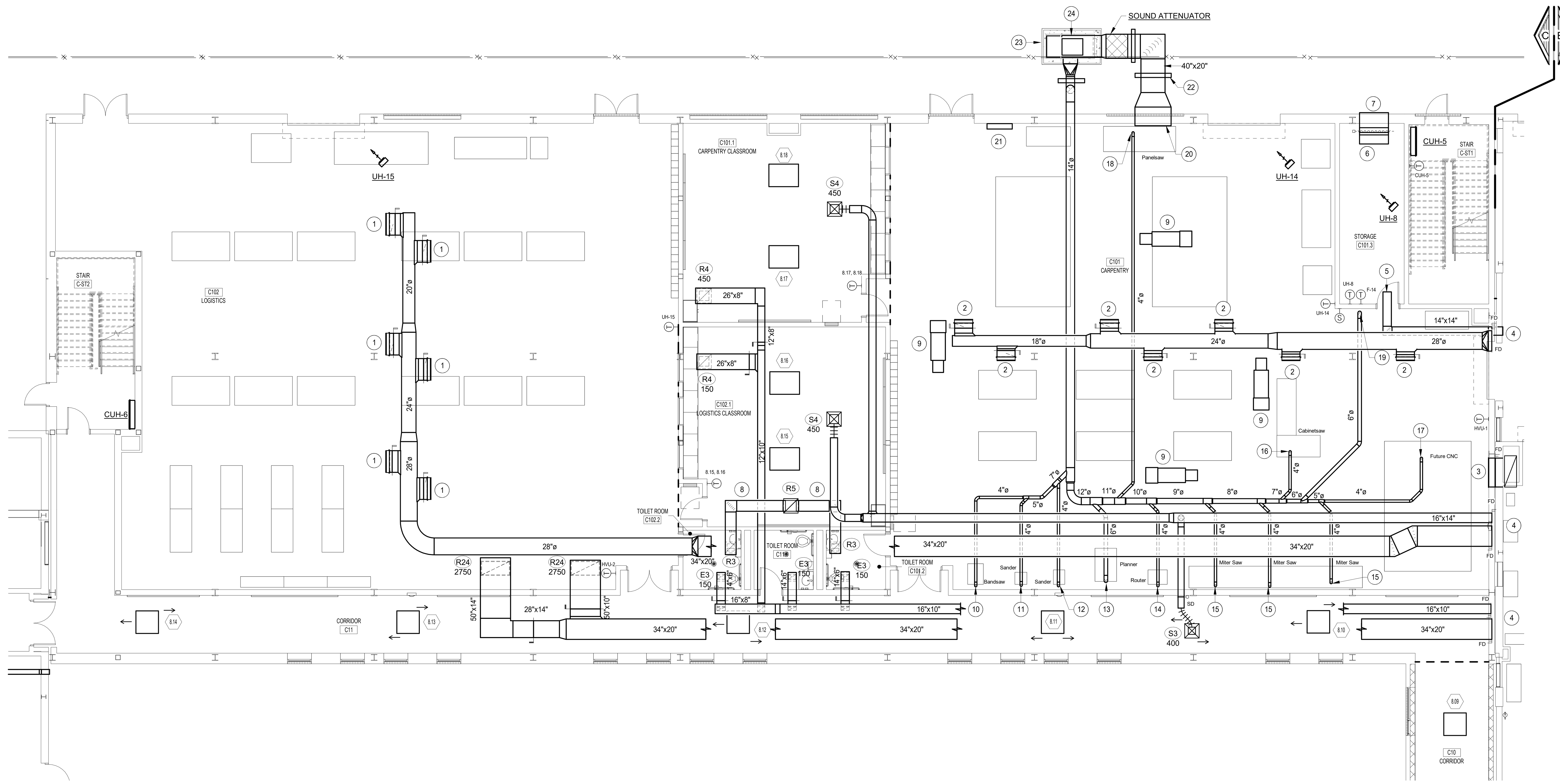
(20) 60"x24" OPEN END DUCT W/ 1/2" MESH BIRDSCREEN.

(21) DUST COLLECTOR CONTROL PANEL.

(22) DUCT SUPPORT. (TYP)

(23) 6" CONCRETE EQUIPMENT PAD.

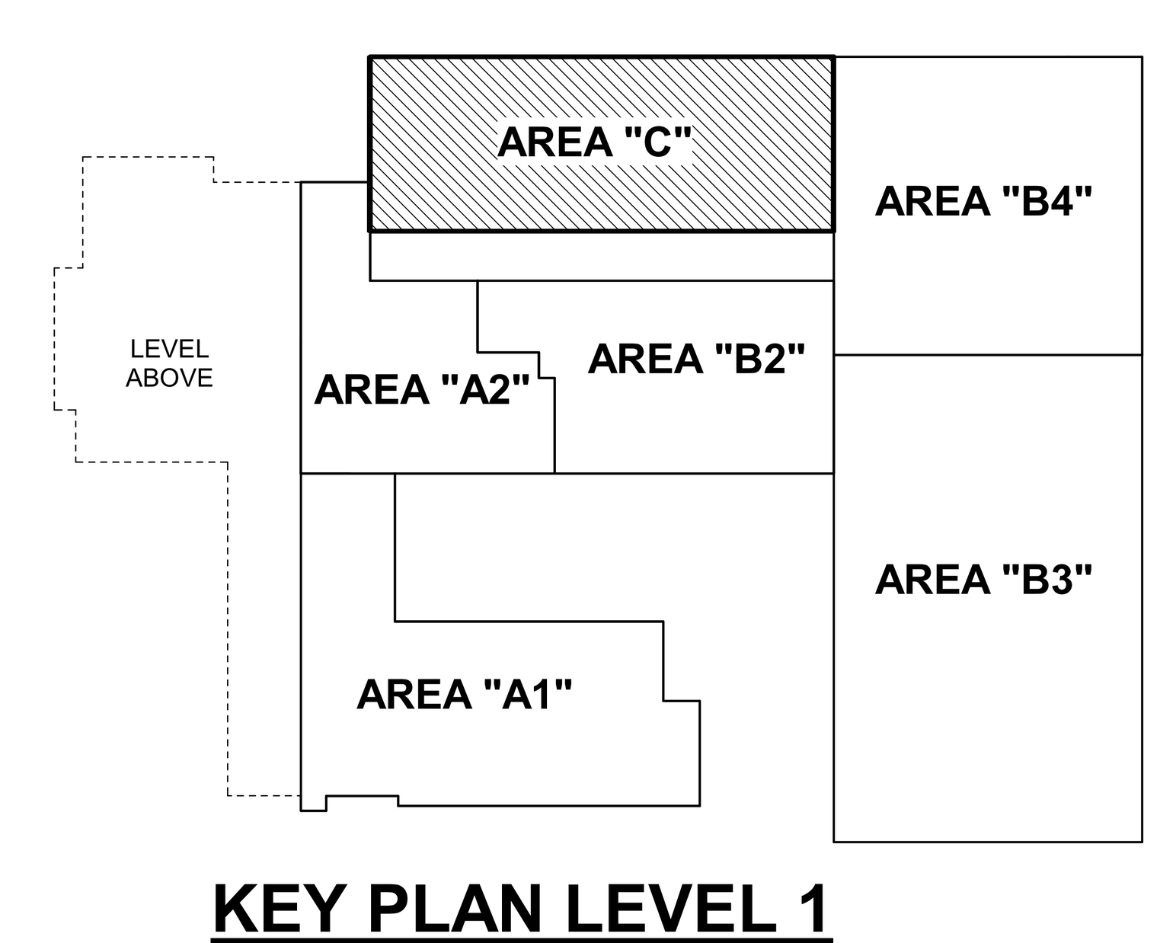
(24) CENTRAL DUST COLLECTION SYSTEM-1 WITH 2 - 55 GALLON DRUMS.



PARTIAL FIRST FLOOR PLAN - AREA C
1/8" = 1'-0"

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

PLAN NORTH



KEY PLAN LEVEL 1

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

SEAL:

CONSULTANT:

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

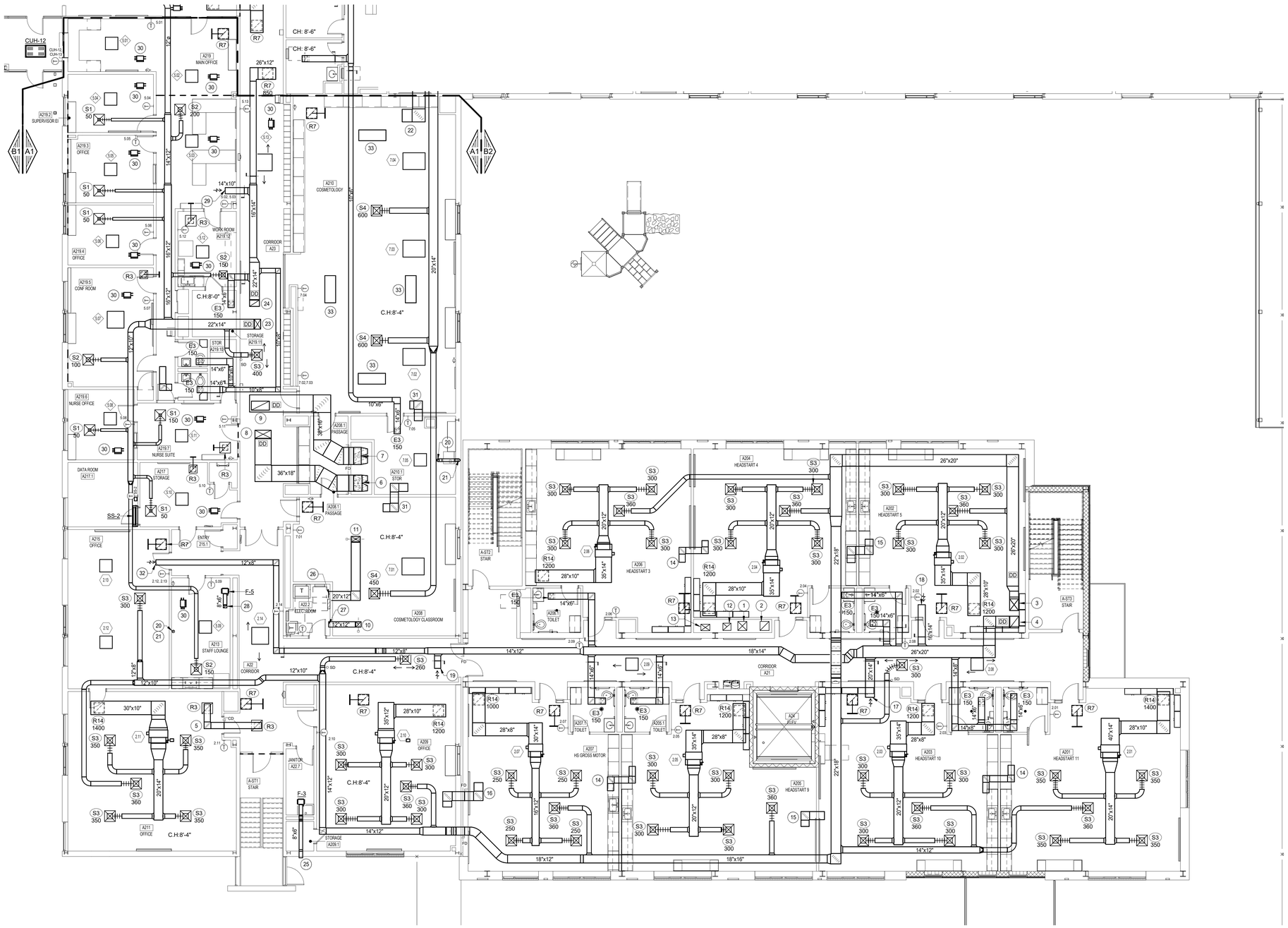
PROJ #: 21-DCIU-03 DRAWN BY: Author

SHEET TITLE:
PARTIAL FIRST FLOOR PLAN - AREA C

SHEET NUMBER:
M1.5

BID SET

3/17/2025 9:24:21 AM



PARTIAL SECOND FLOOR PLAN - AREA A1

1/8" = 1'-0"

GENERAL NOTES:

1. ALL OUTSIDE AIR, RELIEF AIR AND EXHAUST AIR DUCTS CONNECTED TO LOUVERS OR EXHAUST FANS SHALL BE PROVIDED WITH MOTOR OPERATED DAMPERS.
2. ALL AHU/DOAS UNIT SUPPLY AND RETURN AIR DUCTS SHALL BE PROVIDED WITH DUCT SMOKE DETECTORS.
3. CONDITIONED VENTILATION AIR FROM DOAS UNITS SHALL BE EXTENDED TO AND SERVE OCCUPIED SPACES WHERE DUCTLESS OR LOCAL FAN COIL UNITS THAT ARE NOT LOCATED IN PENTHOUSES TO PROVIDE CONDITIONED AIR.
4. ALL OCCUPIED SPACES WILL BE PROVIDED WITH A CEILING RELIEF AIR GRILLE DUCTED TO ITS ASSOCIATED DOAS UNIT.
5. ALL DUCT RISERS THROUGH SLAB AND 2HR FIRE RATED WALL SHALL BE PROVIDED WITH FIRE DAMPER.

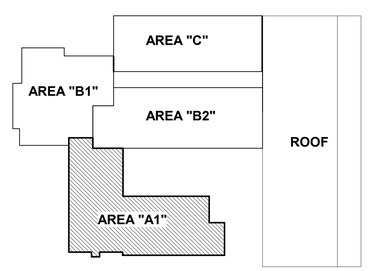
DRAWING NOTES:

1. 20"x20" S/A DUCT UP TO THIRD FLOOR AND DN TO FIRST FLOOR.
2. 20"x20" R/A DUCT UP TO THIRD FLOOR AND DN TO FIRST FLOOR.
3. 20"x26" S/A DUCT UP W/FD TO THIRD FLOOR.
4. 26"x20" R/A DUCT UP W/FD TO THIRD FLOOR.
5. 14"x8" SOUND LINED TRANSFER AIR DUCT.
6. 36"x18" S/A DUCT DN. TO FIRST FLOOR.
7. 38"x16" R/A DUCT DN. TO FIRST FLOOR.
8. 36"x18" S/A DUCT UP TO DOAS-4 ON ROOF.
9. 40"x20" R/A DUCT UP TO DOAS-4 ON ROOF.
10. 12"x12" E/A DUCT UP W/MOD TO F-4 ON ROOF.
11. 20"x12" O/A DUCT UP W/MOD TO GRAVITY INTAKE VENT ON ROOF.
12. 18"x16" E/A DUCT UP TO THIRD FLOOR AND DN TO SECOND FLOOR.
13. 20"x14" O/A DUCT UP TO THIRD FLOOR AND DN TO SECOND FLOOR.
14. 14"x14" SOUND LINED TRANSFER AIR DUCT.
15. 18"x18" SOUND LINED TRANSFER AIR DUCT.
16. 20"x10" SOUND LINED TRANSFER AIR DUCT.
17. 20"x14" OPEN END DUCT W/ 1/2" BIRDSCREEN @ 1200 CFM.
18. 16"x14" OPEN END DUCT W/ 1/2" BIRDSCREEN @ 630 CFM.
19. 14"x10" OPEN END DUCT W/ 1/2" BIRDSCREEN @ 440 CFM.
20. 6"ø ALUMINUM DRYER VENT UP TO ROOF THROUGH ROOF CURB.
21. 6"ø ALUMINUM E/A DUCT DN TO DRYER FULL SIZE CONNECTION VENT BOX (BASED ON GUY GRAY DRYERBOX).
22. 28"x14" SOUND LINED TRANSFER AIR DUCT.
23. 22"x14" S/A DUCT UP TO DOAS-5 ON ROOF.
24. 22"x14" R/A DUCT UP TO DOAS-5 ON ROOF.
25. 8"x8" BRICK VENT BASED ON GREENHECK MODEL BVE 808. CUSTOM COLOR AS SELECTED BY ARCHITECT.
26. 20"x12" OED W/ 1/2" BIRDSCREEN.
27. 12"x12" OED W/ 1/2" BIRDSCREEN.
28. 8"x6" E/A DUCT UP THROUGH ROOF TO GOOSENECK.
29. 14"x10" OPEN END DUCT W/ 1/2" BIRDSCREEN @ 450 CFM.
30. BRANCH SELECTOR BOX.
31. 18"x10" SOUND LINED TRANSFER AIR DUCT.
32. 12"x8" OPEN END DUCT W/ 1/2" BIRDSCREEN @ 300 CFM.
33. AIR CLEANER UNIT. AIRFLOW SYSTEMS MODEL 1000.

Graphic Scale: 1 inch = 8 feet

0 8' 16' 24' 32'

PLAN NORTH



KEY PLAN LEVEL 2

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
ANNAPOLIS, MD 21065

SEAL:

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

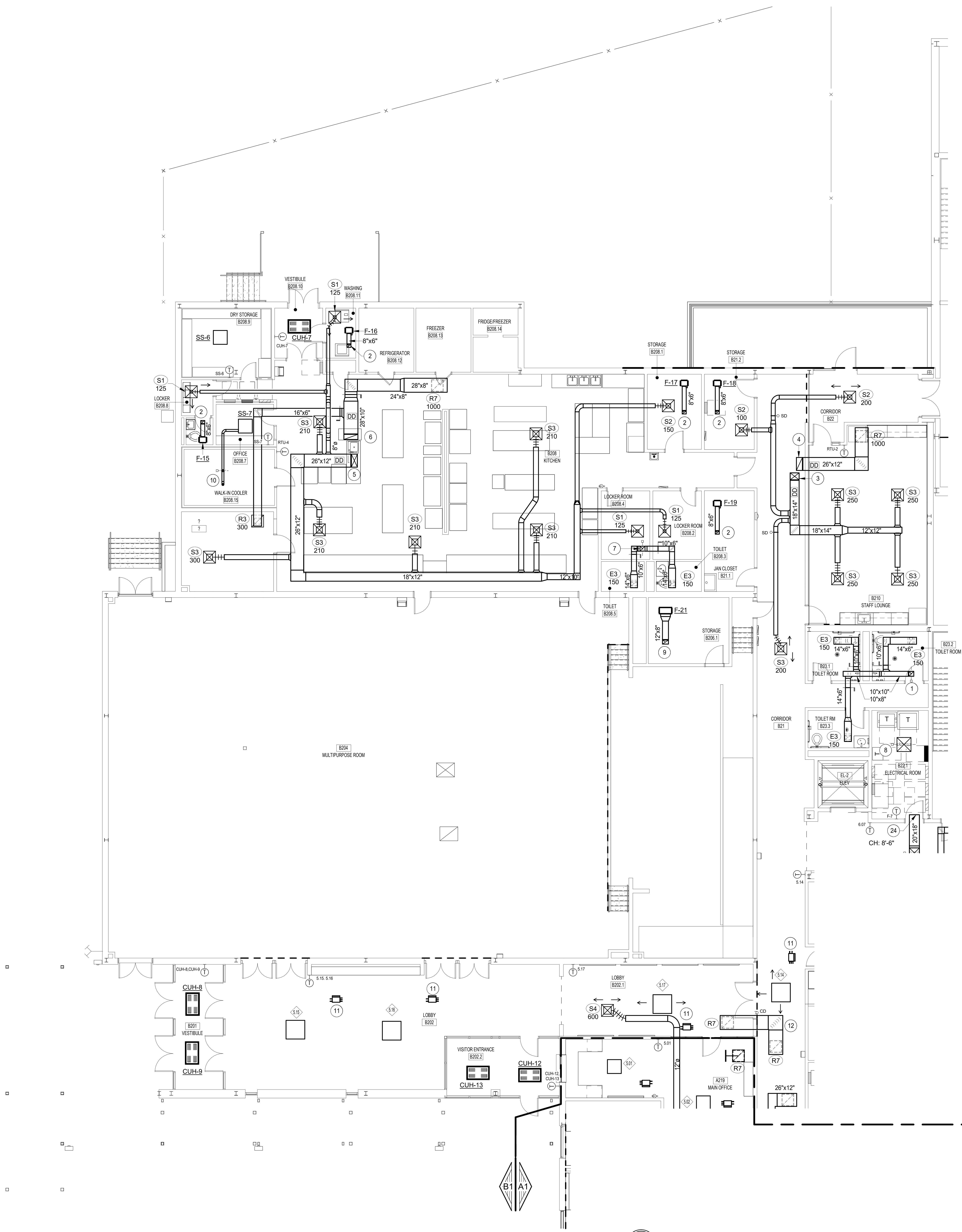
PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:
PARTIAL SECOND FLOOR PLAN - AREA A1

SHEET NUMBER:
M1.6

BID SET

3/14/2025 4:26:51 PM



PARTIAL SECOND FLOOR PLAN - AREA B1

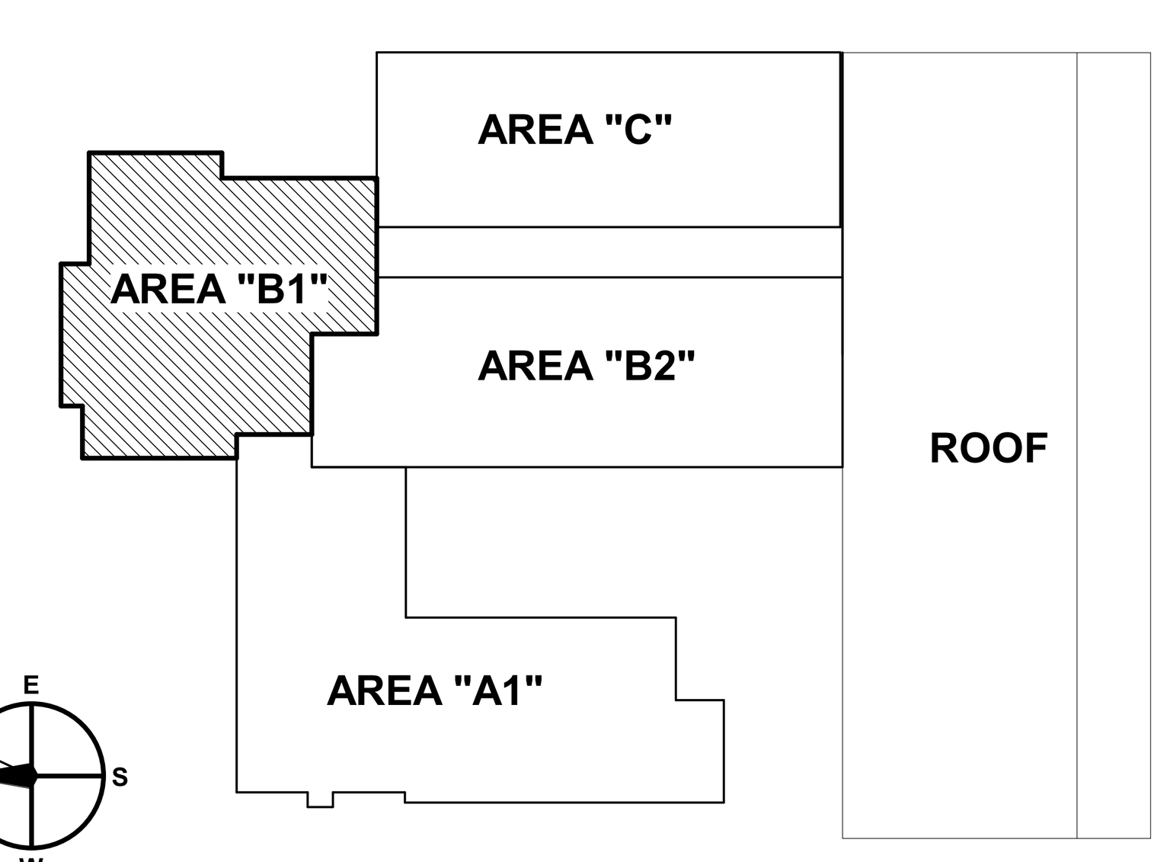
1/8" = 1'-0"

GENERAL NOTES:

1. ALL OUTSIDE AIR, RELIEF AIR AND EXHAUST AIR DUCTS CONNECTED TO LOUVERS OR EXHAUST FANS SHALL BE PROVIDED WITH MOTOR OPERATED DAMPERS.
2. ALL AHU/DOAS UNIT SUPPLY AND RETURN AIR DUCTS SHALL BE PROVIDED WITH DUCT SMOKE DETECTORS.
3. CONDITIONED VENTILATION AIR FROM DOAS UNITS SHALL BE EXTENDED TO AND SERVE OCCUPIED SPACES WHERE DUCTLESS OR LOCAL FAN COIL UNITS THAT ARE NOT LOCATED IN PENTHOUSES TO PROVIDE CONDITIONED AIR.
4. ALL OCCUPIED SPACES WILL BE PROVIDED WITH A CEILING RELIEF AIR GRILLE DUCTED TO ITS ASSOCIATED DOAS UNIT.
5. ALL DUCT RISERS THROUGH SLAB AND 2HR FIRE RATED WALL SHALL BE PROVIDED WITH FIRE DAMPER.

DRAWING NOTES:

1. 10"x10" E/A DUCT UP W/MOD TO F-22 ON ROOF.
2. 8"x6" E/A DUCT UP THROUGH ROOF TO GOOSENECK.
3. 18"x14" S/A DUCT UP TO RTU-2 ON ROOF.
4. 26"x12" R/A DUCT UP TO RTU-2 ON ROOF.
5. 26"x12" S/A DUCT UP TO RTU-4 ON ROOF.
6. 28"x10" R/A DUCT UP TO RTU-4 ON ROOF.
7. 10"x10" E/A DUCT UP W/MOD TO F-20 ON ROOF.
8. 28"x28" O/A DUCT UP W/MOD TO GRAVITY INTAKE VENT ON ROOF AND DN TO ELECTRICAL ROOM W/ 1/2" BIRDSCREEN.
9. 12"x8" E/A DUCT UP THROUGH ROOF TO GOOSENECK.
10. 4" O/A DUCT UP TO ROOF. REFER TO DWG M1.13 FOR CONTINUATION.
11. BRANCH SELECTOR BOX.
12. 28"x6" SOUND LINED TRANSFER AIR DUCT.



KEY PLAN LEVEL 2

Graphic Scale: 1 inch = 8 feet

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

CONSULTANT: ALBAN ENGINEERING, INC

SEAL:

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE FOLCROFT TECHNICAL SCHOOL

DELAWARE COUNTY INTERMEDIATE UNIT

701 HENDERSON BLVD. FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 21-DCIU-03 DRAWN BY: Author

SHEET TITLE: PARTIAL SECOND FLOOR PLAN - AREA B1

SHEET NUMBER: M1.7

BID SET

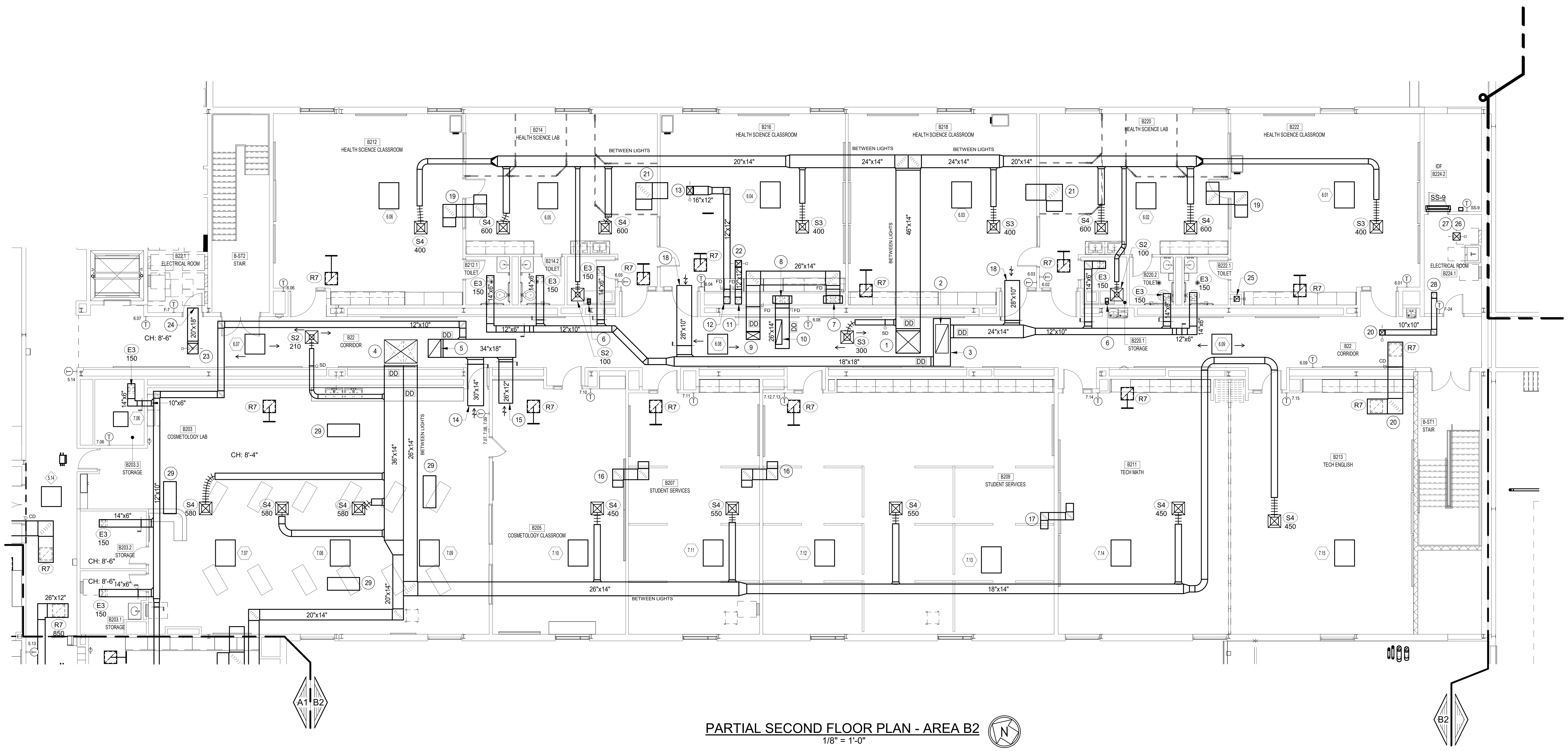
3/14/2025 4:28:38 PM

GENERAL NOTES:

1. ALL OUTSIDE AIR, RELIEF AIR AND EXHAUST AIR DUCTS CONNECTED TO LOUVERS OR EXHAUST FANS SHALL BE PROVIDED WITH MOTOR OPERATED DAMPERS.
2. ALL AHU/DOAS UNIT SUPPLY AND RETURN AIR DUCTS SHALL BE PROVIDED WITH DUCT SMOKE DETECTORS.
3. CONDITIONED VENTILATION AIR FROM DOAS UNITS SHALL BE EXTENDED TO AND SERVE OCCUPIED SPACES WHERE DUCTLESS OR LOCAL FAN COIL UNITS THAT ARE NOT LOCATED IN PENTHOUSES TO PROVIDE CONDITIONED AIR.
4. ALL OCCUPIED SPACES WILL BE PROVIDED WITH A CEILING RELIEF AIR GRILLE DUCTED TO ITS ASSOCIATED DOAS UNIT.
5. ALL DUCT RISERS THROUGH SLAB AND 2HR FIRE RATED WALL SHALL BE PROVIDED WITH FIRE DAMPER.

DRAWING NOTES:

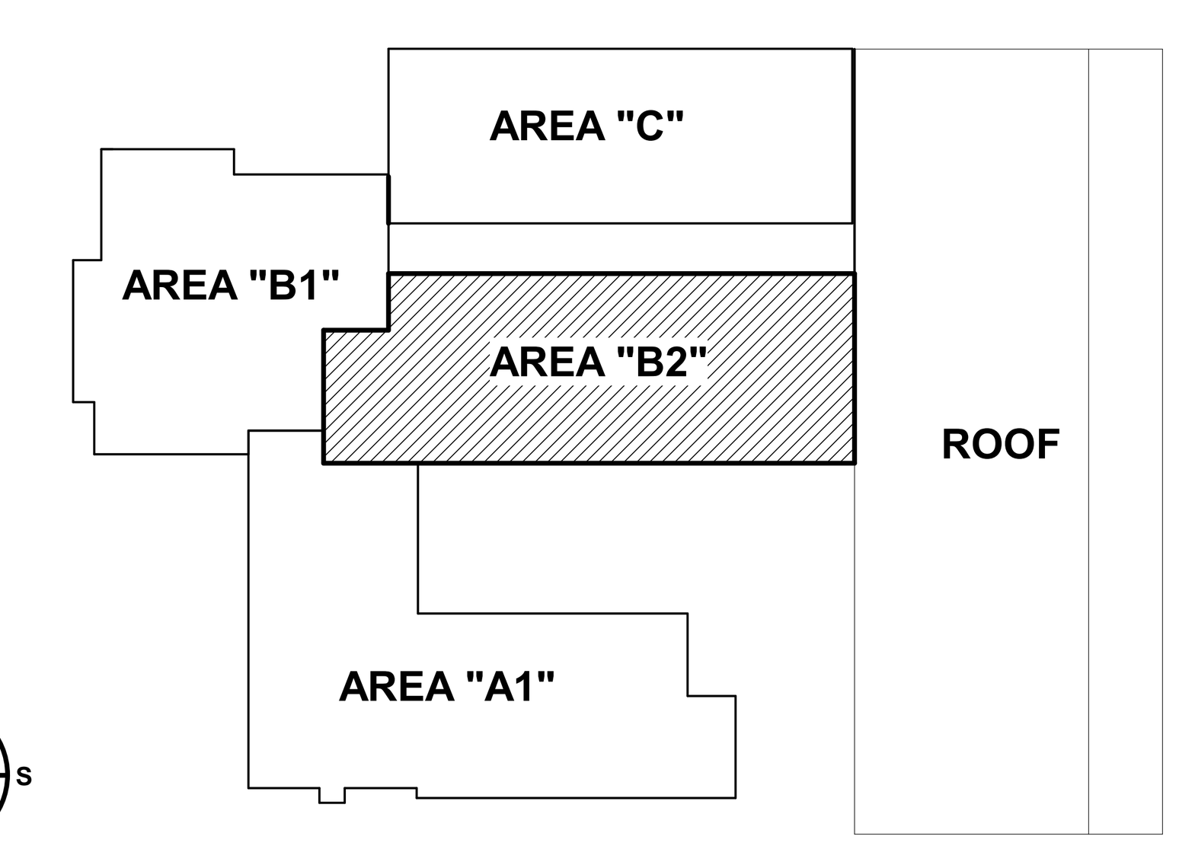
(1) 46"x42" S/A DUCT UP TO DOAS-6 ON ROOF.
(2) 24"x54" R/A DUCT UP TO DOAS-6 ON ROOF.
(3) 32"x20" RETURN AIR PLENUM.
(4) 36"x14" AND 26"x14" S/A DUCTS UP TO SINGLE 62"x44" S/A DUCT UP TO DOAS-7 ON ROOF.
(5) 34"x24" R/A DUCT UP TO DOAS-7 ON ROOF.
(6) 6"Ø ALUMINUM E/A DUCT UP THROUGH ROOF AND DN TO DRYER FULL SIZE CONNECTION VENT BOX (BASED ON GUY GRAY DRYERBOX).
(7) 26"x14" S/A DUCT DN. TO FIRST FLOOR.
(8) 26"x14" R/A DUCT DN. TO FIRST FLOOR.
(9) 26"x14" S/A DUCT UP TO RTU-1 ON ROOF.
(10) 12"x46" R/A DUCT UP TO RTU-1 ON ROOF.
(11) 12"x12" E/A DUCT DN TO FIRST FLOOR.
(12) 12"x12" O/A DUCT DN TO FIRST FLOOR.
(13) 16"x12" O/A DUCT UP W/MOD TO GRAVITY INTAKE VENT ON ROOF.
(14) 30"x14" OPEN END DUCT @ 2790 CFM.
(15) 26"x12" OPEN END DUCT @ 2000 CFM.
(16) 20"x14" SOUND LINED TRANSFER AIR DUCT.
(17) 14"x14" SOUND LINED TRANSFER AIR DUCT.
(18) 28"x10" OPEN END DUCT @ 1650 CFM.
(19) 24"x12" SOUND LINED TRANSFER AIR DUCT.
(20) 10"x10" E/A DUCT UP W/ MOD TO F-24 ON ROOF.
(21) 30"x12" SOUND LINED TRANSFER AIR DUCT.
(22) 12"x12" E/A DUCT UP W/MOD TO F-6 ON ROOF.
(23) 20"x20" E/A DUCT UP W/MOD TO F-7 ON ROOF.
(24) 20"x18" OED W/ 1/2" BIRDSCREEN.
(25) 10"x10" E/A DUCT UP W/ MOD TO F-23 ON ROOF.
(26) 14"x14" O/A DUCT UP W/ MOD TO GRAVITY INTAKE VENT ON ROOF.
(27) 14"x14" OED W/ 1/2" BIRDSCREEN.
(28) 10"x10" OED W/ 1/2" BIRDSCREEN.
(29) AIR CLEANER UNIT. AIRFLOW SYSTEMS MODEL 1000.



PARTIAL SECOND FLOOR PLAN - AREA B2
1/8" = 1'-0"

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

PLAN NORTH



KEY PLAN LEVEL 2

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:

ALBAN ENGINEERING, INC
305 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES DATE:	DESCRIPTION:
03/17/2025	BID SET

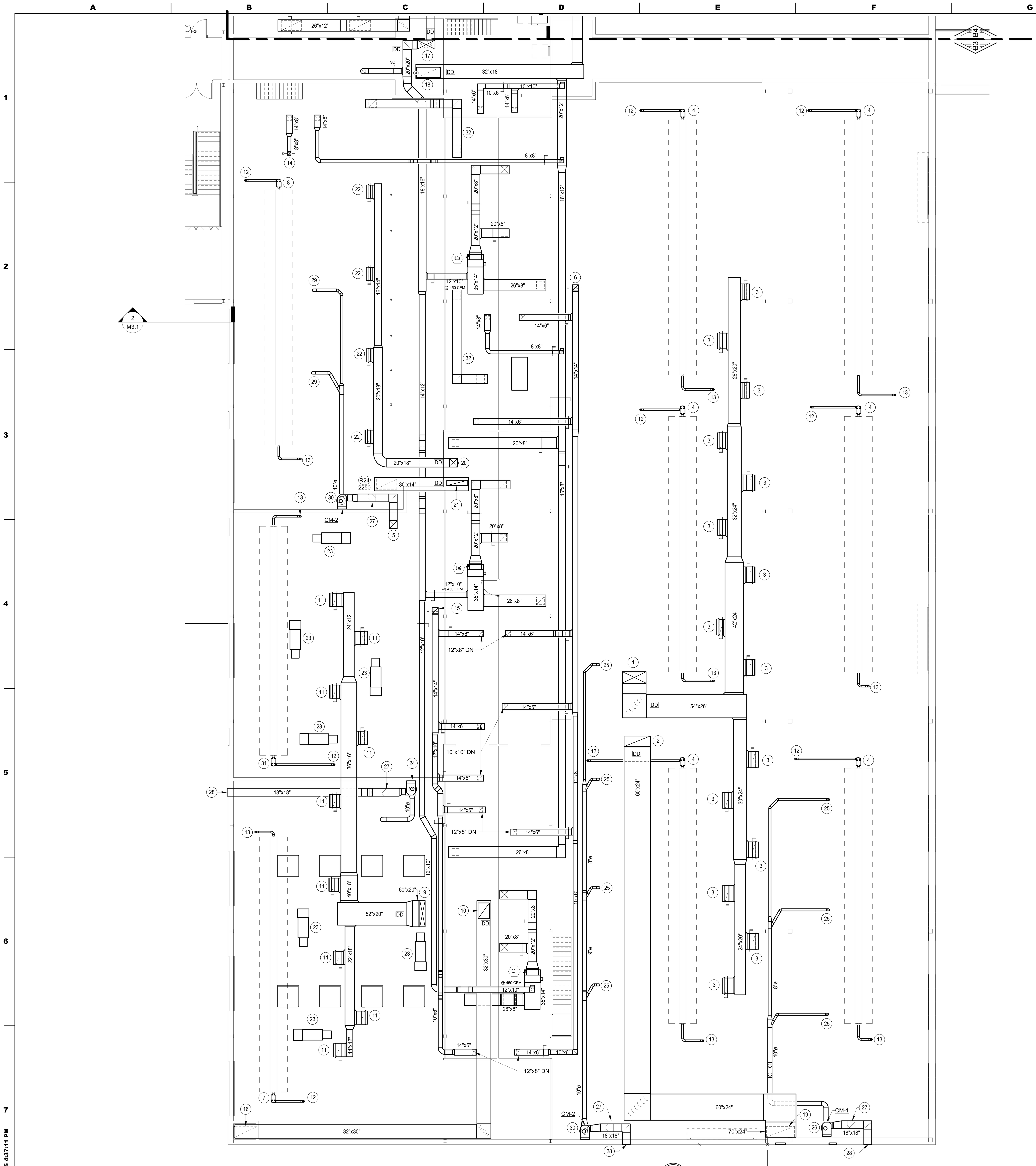
PROJ #: 21-DCIU-03 DRAWN BY: Author

SHEET TITLE:
PARTIAL SECOND FLOOR PLAN - AREA B2

SHEET NUMBER:
M1.8

BID SET

3/14/2025 4:30:58 PM



PARTIAL SECOND FLOOR - AREA B3

1/8" = 1'-0"

Graphic Scale: 1 inch = 8 feet

0 8' 16' 24' 32'

GENERAL NOTES:

1. ALL OUTSIDE AIR, RELIEF AIR AND EXHAUST AIR DUCTS CONNECTED TO LOUVERS OR EXHAUST FANS SHALL BE PROVIDED WITH MOTOR OPERATED DAMPERS.
2. ALL AHU/DOAS UNIT SUPPLY AND RETURN AIR DUCTS SHALL BE PROVIDED WITH DUCT SMOKE DETECTORS.
3. CONDITIONED VENTILATION AIR FROM DOAS UNITS SHALL BE EXTENDED TO AND SERVE OCCUPIED SPACES WHERE DUCTLESS OR LOCAL FAN COIL UNITS THAT ARE NOT LOCATED IN PENTHOUSES TO PROVIDE CONDITIONED AIR.
4. ALL OCCUPIED SPACES WILL BE PROVIDED WITH A CEILING RELIEF AIR GRILLE DUCTED TO ITS ASSOCIATED DOAS UNIT.
5. ALL DUCT RISERS THROUGH SLAB AND 2HR FIRE RATED WALL SHALL BE PROVIDED WITH FIRE DAMPER.

DRAWING NOTES:

(1) 54"x26" S/A DUCT UP TO HVU-4 ON ROOF.

(2) 48"x26" R/A DUCT UP TO HVU-4 ON ROOF.

(3) LONG THROW HIGH CAPACITY ALUMINUM DRUM SUPPLY GRILLE,
OPPOSED BLADE DAMPER
AIR SCOOP OPTION
965 CFM, 36"x8" NOMINAL DUCT SIZE.
BASED ON TITUS DL-SV.

(4) LOW INTENSITY GAS INFRA-RED HEATER
BLOWER: 1/24 HP
120 V/1 Ø/60 HZ
BASED ON SOLARONICS GQG-150-60 CN

(5) 18"x18" E/A DUCT UP THROUGH ROOF.

(6) 14"x14" E/A DUCT UP W/MOD TO F-8 ON ROOF.

(7) LOW INTENSITY GAS INFRA-RED HEATER
BLOWER: 1/24 HP
120 V/1 Ø/60 HZ
BASED ON SOLARONICS GQG-100-50 BN

(8) LOW INTENSITY GAS INFRA-RED HEATER
BLOWER: 1/24 HP
120 V/1 Ø/60 HZ
BASED ON SOLARONICS GQG-125-50 BN

(9) 60"x12" S/A DUCT UP TO HVU-5 ON ROOF.

(10) 36"x26" R/A DUCT UP TO HVU-5 ON ROOF.

(11) LONG THROW HIGH CAPACITY ALUMINUM DRUM SUPPLY GRILLE,
OPPOSED BLADE DAMPER
AIR SCOOP OPTION
890 CFM, 30"x8" NOMINAL DUCT SIZE.
BASED ON TITUS DL-SV.

(12) COMBUSTION AIR INTAKE UP TO ROOF.

(13) EXHAUST FLUE UP TO ROOF.

(14) 8"x8" E/A DUCT UP W/MOD TO F-10 ON ROOF.

(15) 14"x14" E/A DUCT UP W/MOD TO F-9 ON ROOF.

(16) 50"x24" R/A DUCT DN.

(17) 20"x20" AND 20"x20" S/A DUCTS UP TO SINGLE 20x40 S/A DUCT UP TO DOAS-8 ON ROOF.

(18) 24"x55" R/A DUCT UP TO DOAS-8 ON ROOF.

(19) 64"x24" R/A DUCT DN.

(20) 20"x18" S/A DUCT UP TO HVU-3 ON ROOF.

(21) 48"x12" R/A DUCT UP TO HVU-3 ON ROOF.

(22) LONG THROW HIGH CAPACITY ALUMINUM DRUM SUPPLY GRILLE,
OPPOSED BLADE DAMPER
AIR SCOOP OPTION
625 CFM, 30"x8" NOMINAL DUCT SIZE.
BASED ON TITUS DL-SV.

(23) RECIRCULATING DUST FILTRATION UNIT. AIRFLOW SYSTEMS MODEL F70-R.

(24) WELDING BOOTH EXHAUST FAN. REFER TO DWG M7.06 DETAIL 72 FOR ADDITIONAL INFORMATION.

(25) CARBON MONOXIDE EXHAUST RETRACTABLE HOSE REEL (HR-1). 4.5"ø HOSE, 25'-0" IN LENGTH. 300 CFM, OVAL TAILPIPE CONNECTOR. AIRFLOW SYSTEMS VES6-REEL.

(26) Co EXHAUST FAN (CM-1)
SILENCER AND WALL BRACKET
900 CFM @ 5" ESP
3 HP, 460v/3Ø/60Hz
AIRFLOW SYSTEMS INC. MODEL BM12.

(27) SOUND ATTENUATOR (18"x18"x18"L).

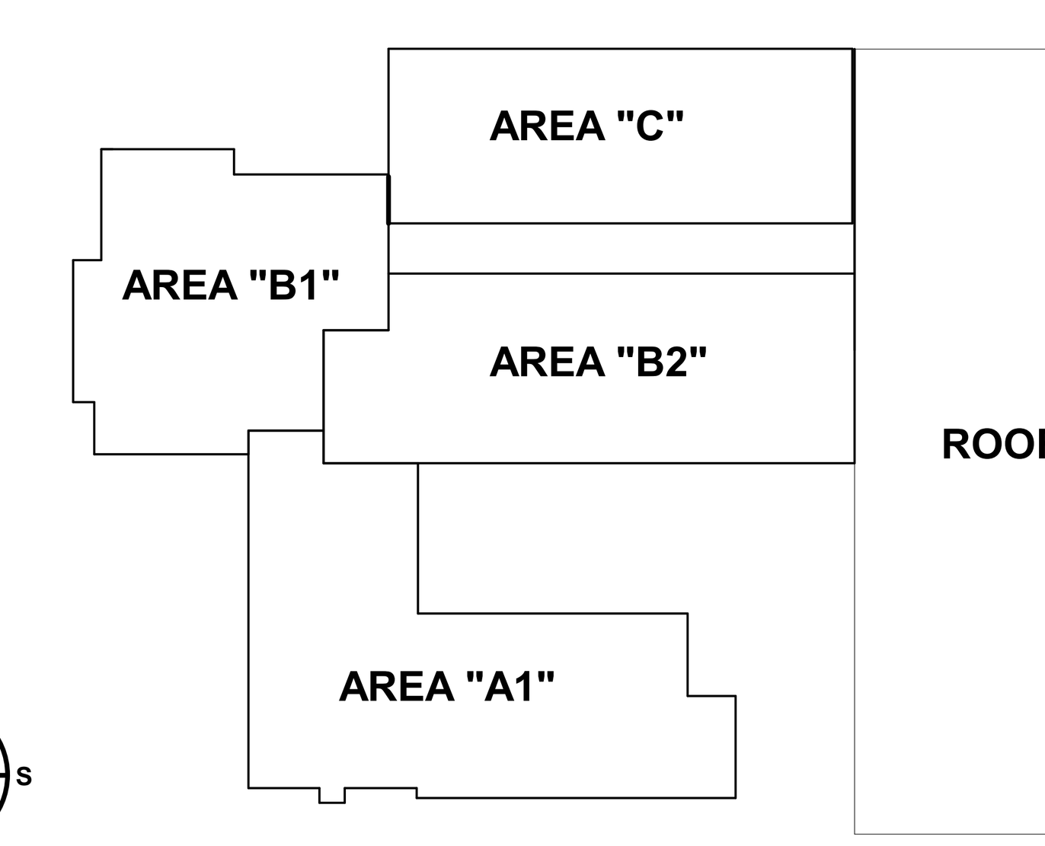
(28) 18"x18" EXHAUST DUCT EXTENSION THROUGH WALL.

(29) CARBON MONOXIDE EXHAUST RETRACTABLE HOSE REEL (HR-2). 6"ø HIGH TEMPERATURE HOSE, 25'-0" IN LENGTH. 6"ø RUBBER DIESEL STACK CONNECTOR. AIRFLOW SYSTEMS VES6-REEL.

(30) Co EXHAUST FAN (CM-2)
SILENCER AND WALL BRACKET
1200 CFM @ 5" ESP
3 HP, 460v/3Ø/60Hz
AIRFLOW SYSTEMS INC. MODEL BM12.

(31) LOW INTENSITY GAS INFRA-RED HEATER
BLOWER: 1/24 HP
120 V/1 Ø/60 HZ
BASED ON SOLARONICS GQG-125-45 BN

(32) 20"x8" SOUNDLINED TRANSFER AIR DUCT.



KEY PLAN LEVEL 2

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:

ALBAN ENGINEERING, INC

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

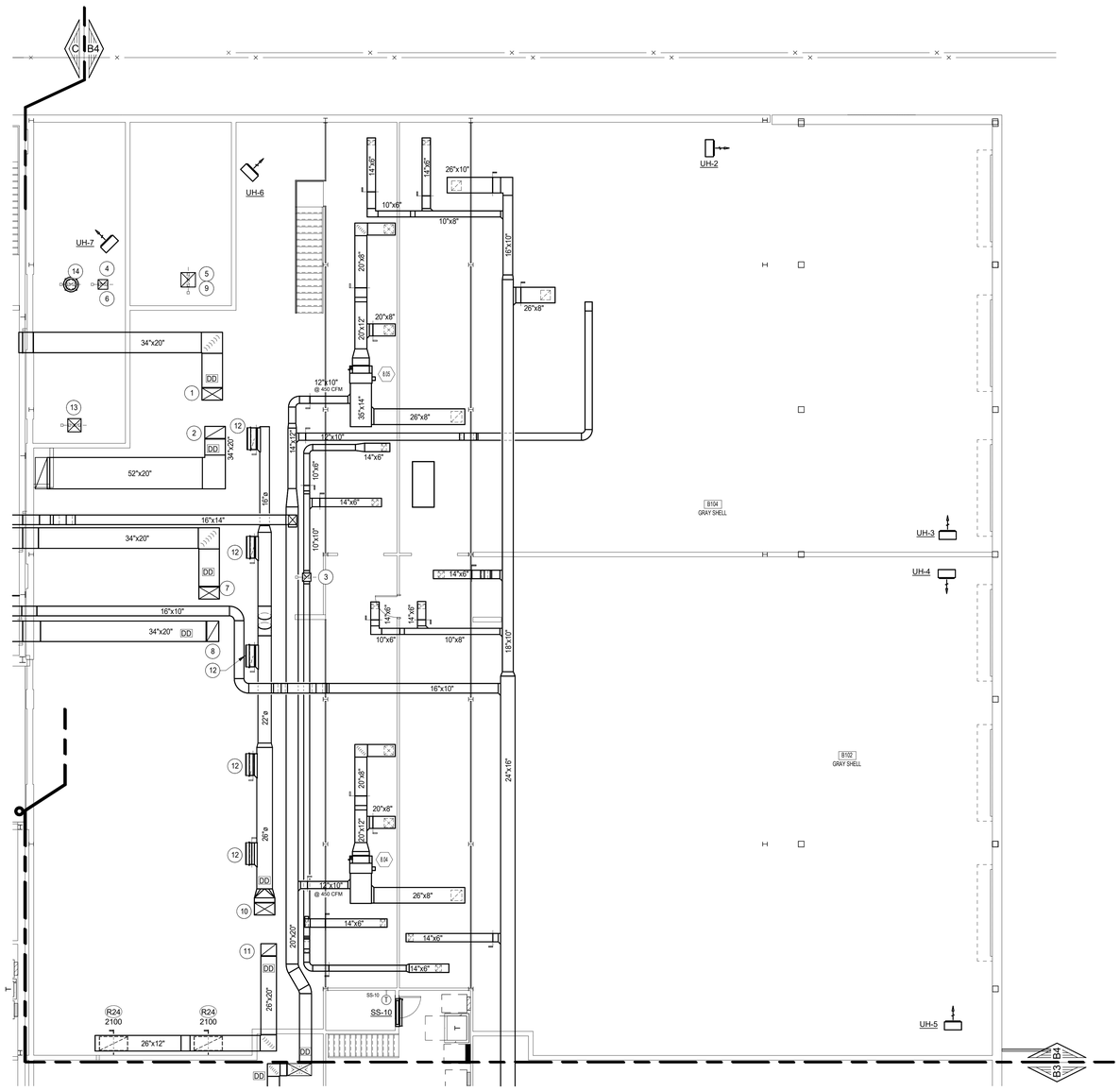
PROJ #: 21-DCIU-03 DRAWN BY: Author

SHEET TITLE:
PARTIAL SECOND FLOOR PLAN - AREA B3

SHEET NUMBER:
M1.9

BID SET

3/14/2025 4:37:11 PM



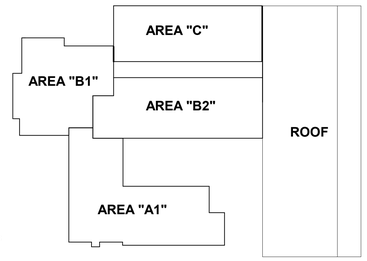
PARTIAL SECOND FLOOR - AREA B4
1/8" = 1'-0"

GENERAL NOTES:

1. ALL OUTSIDE AIR, RELIEF AIR AND EXHAUST AIR DUCTS CONNECTED TO LOUVERS OR EXHAUST FANS SHALL BE PROVIDED WITH MOTOR OPERATED DAMPERS.
2. ALL AHU/DOAS UNIT SUPPLY AND RETURN AIR DUCTS SHALL BE PROVIDED WITH DUCT SMOKE DETECTORS.
3. CONDITIONED VENTILATION AIR FROM DOAS UNITS SHALL BE EXTENDED TO AND SERVE OCCUPIED SPACES WHERE DUCTLESS OR LOCAL FAN COIL UNITS THAT ARE NOT LOCATED IN PENTHOUSES TO PROVIDE CONDITIONED AIR.
4. ALL OCCUPIED SPACES WILL BE PROVIDED WITH A CEILING RELIEF AIR GRILLE DUCTED TO ITS ASSOCIATED DOAS UNIT.
5. ALL DUCT RISERS THROUGH SLAB AND 2HR FIRE RATED WALL SHALL BE PROVIDED WITH FIRE DAMPER.

DRAWING NOTES:

1. 72"x20" S/A DUCT UP TO HVU-1 ON ROOF.
2. 34"x20" R/A DUCT UP TO HVU-1 ON ROOF.
3. 14"x14" E/A DUCT UP W/MOD TO F-11 ON ROOF.
4. 16"x16" E/A DUCT UP W/MOD TO F-13 ON ROOF.
5. 24"x24" OED W/ 1/2" BIRDSCREEN.
6. 16"x16" OED W/ 1/2" BIRDSCREEN.
7. 34"x20" S/A DUCT UP TO HVU-2 ON ROOF.
8. 34"x20" R/A DUCT UP TO HVU-2 ON ROOF.
9. 24"x24" E/A DUCT UP W/MOD TO F-12 ON ROOF.
10. 34"x20" S/A DUCT UP TO HVU-6 ON ROOF.
11. 34"x20" R/A DUCT UP TO HVU-6 ON ROOF.
12. LONG THROW HIGH CAPACITY ALUMINUM DRUM SUPPLY GRILLE, OPPOSED BLADE DAMPER AIR SCOOP OPTION 840 CFM, 36"x8" NOMINAL DUCT SIZE. BASED ON TITUS DL-SV.
13. 22"x22" OED W/ 1/2" BIRDSCREEN IN STORAGE ROOM AND UP W/ MOD TO GRAVITY INTAKE VENT ON ROOF.
14. 14"x14" E/A DUCT UP W/MOD TO F-14 ON ROOF.



KEY PLAN LEVEL 2

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

TRUE NORTH
PLAN NORTH

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
ANNAPOLIS, MD 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:
PARTIAL SECOND FLOOR PLAN - AREA B4

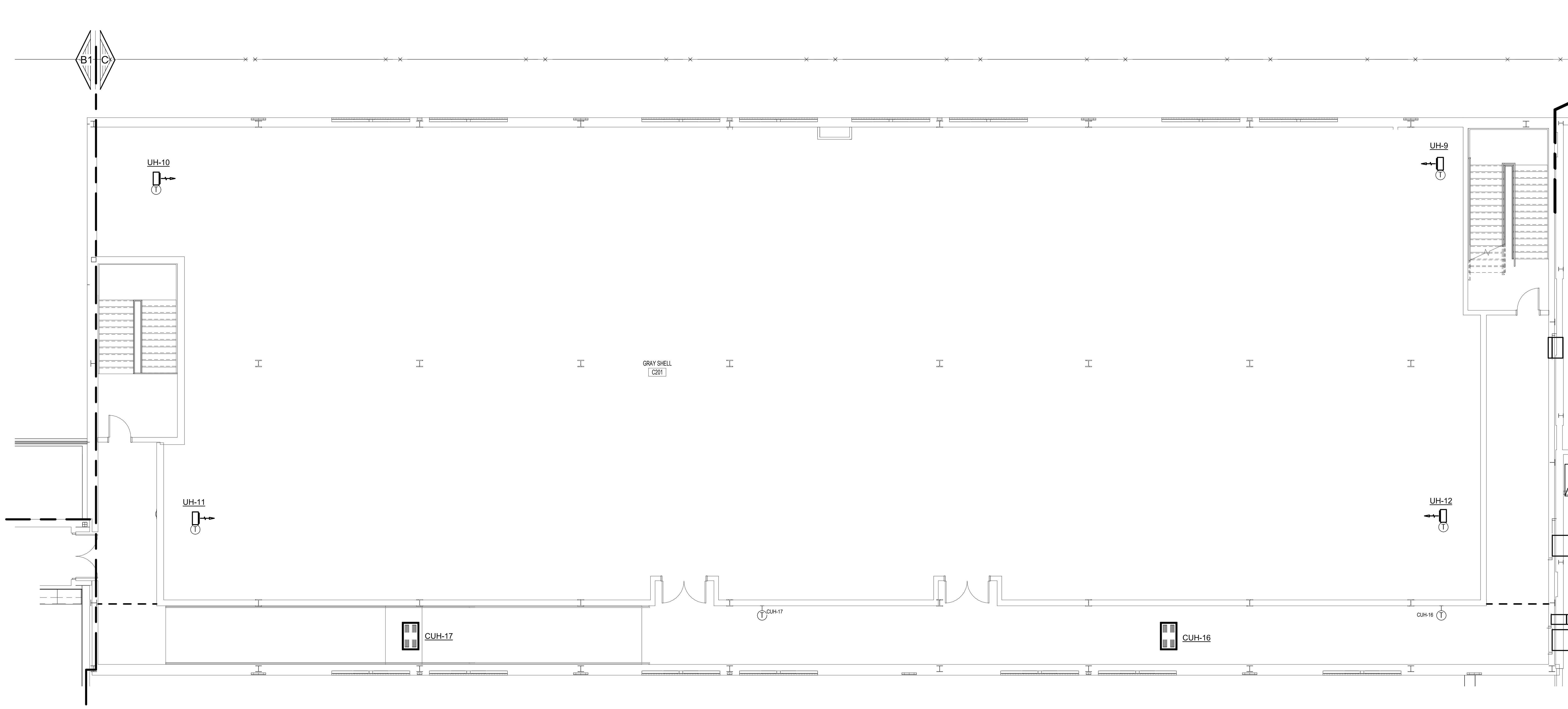
SHEET NUMBER:
M1.10

BID SET

3/14/2025 4:36:50 PM

GENERAL NOTES:

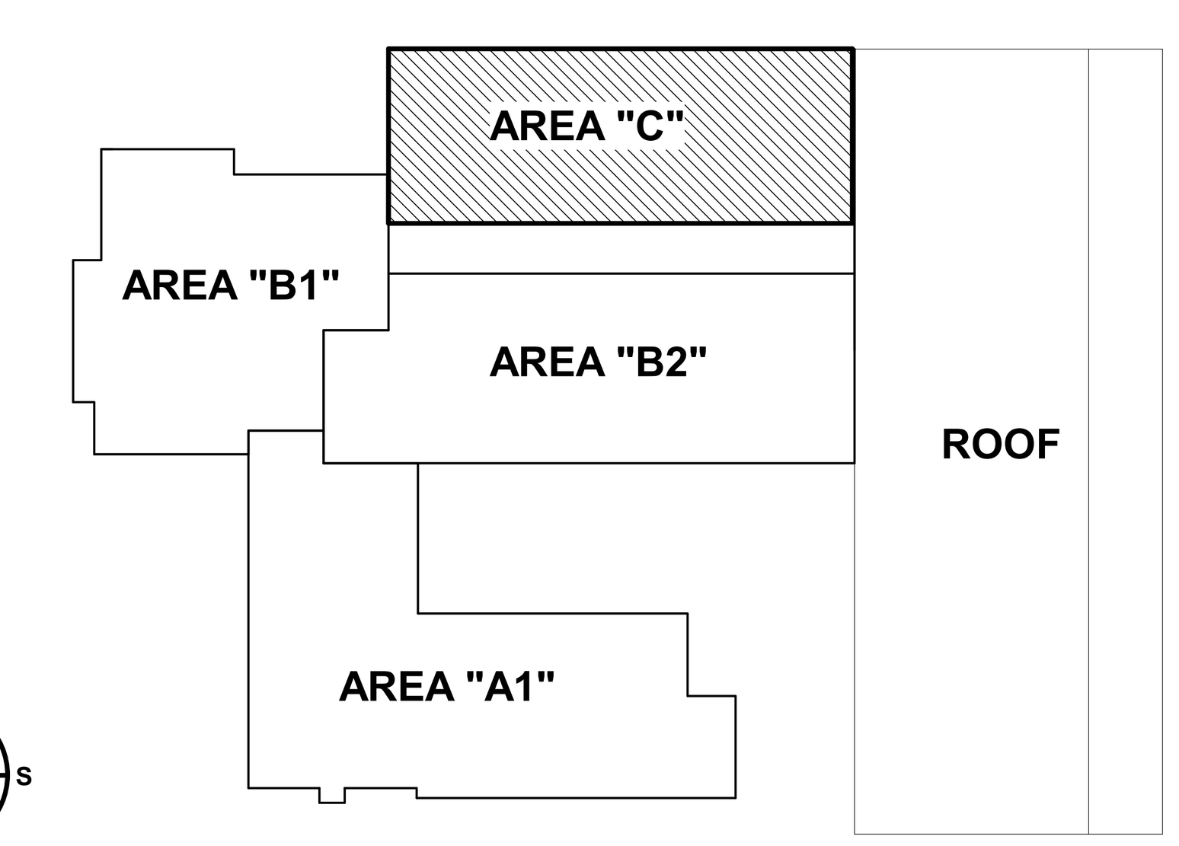
1. ALL OUTSIDE AIR, RELIEF AIR AND EXHAUST AIR DUCTS CONNECTED TO LOUVERS OR EXHAUST FANS SHALL BE PROVIDED WITH MOTOR OPERATED DAMPERS.
2. ALL AHU/DOAS UNIT SUPPLY AND RETURN AIR DUCTS SHALL BE PROVIDED WITH DUCT SMOKE DETECTORS.
3. CONDITIONED VENTILATION AIR FROM DOAS UNITS SHALL BE EXTENDED TO AND SERVE OCCUPIED SPACES WHERE DUCTLESS OR LOCAL FAN COIL UNITS THAT ARE NOT LOCATED IN PENTHOUSES TO PROVIDE CONDITIONED AIR.
4. ALL OCCUPIED SPACES WILL BE PROVIDED WITH A CEILING RELIEF AIR GRILLE DUCTED TO ITS ASSOCIATED DOAS UNIT.
7. ALL DUCT RISERS THROUGH SLAB AND 2HR FIRE RATED WALL SHALL BE PROVIDED WITH FIRE DAMPER.



PARTIAL SECOND FLOOR PLAN - AREA C
1/8" = 1'-0"

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

PLAN NORTH



KEY PLAN LEVEL 2

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:
PARTIAL SECOND FLOOR PLAN - AREA C

SHEET NUMBER:
M1.11

BID SET

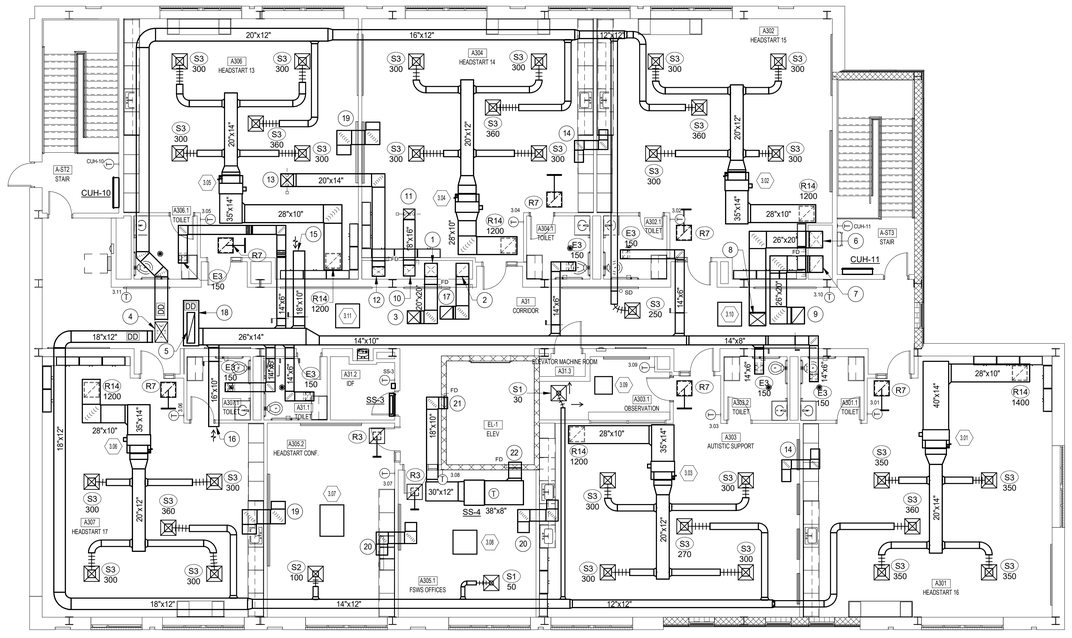
3/14/2025 4:38:53 PM

GENERAL NOTES:

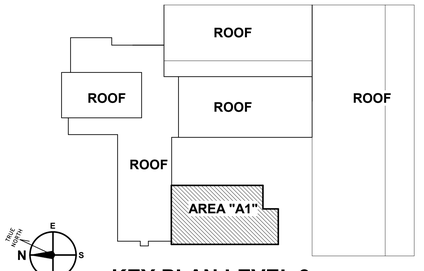
1. ALL OUTSIDE AIR, RELIEF AIR AND EXHAUST AIR DUCTS CONNECTED TO LOUVERS OR EXHAUST FANS SHALL BE PROVIDED WITH MOTOR OPERATED DAMPERS.
2. ALL AHU/DOAS UNIT SUPPLY AND RETURN AIR DUCTS SHALL BE PROVIDED WITH DUCT SMOKE DETECTORS.
3. CONDITIONED VENTILATION AIR FROM DOAS UNITS SHALL BE EXTENDED TO AND SERVE OCCUPIED SPACES WHERE DUCTLESS OR LOCAL FAN COIL UNITS THAT ARE NOT LOCATED IN PENTHOUSES TO PROVIDE CONDITIONED AIR.
4. ALL OCCUPIED SPACES WILL BE PROVIDED WITH A CEILING RELIEF AIR GRILLE DUCTED TO ITS ASSOCIATED DOAS UNIT.
5. ALL DUCT RISERS THROUGH SLAB AND 2HR FIRE RATED WALL SHALL BE PROVIDED WITH FIRE DAMPER.

DRAWING NOTES:

1. 20"x20" S/A DUCT DN TO SECOND FLOOR. REFER TO DWG M1.6 FOR CONTINUATION.
2. 20"x20" R/A DUCT DN TO SECOND FLOOR. REFER TO DWG M1.6 FOR CONTINUATION.
3. 20"x20" S/A DUCT UP TO DOAS-1 ON ROOF.
4. 20"x14" AND 18"x20" DUCTS UP TO SINGLE 32"x20" S/A DUCT UP TO DOAS-3 ON ROOF.
5. 12"x48" R/A DUCT UP TO DOAS-3 ON ROOF.
6. 26"x20" S/A DUCT DN TO SECOND FLOOR. REFER TO DWG M1.6 FOR CONTINUATION.
7. 26"x20" R/A DUCT DN TO SECOND FLOOR. REFER TO DWG M1.6 FOR CONTINUATION.
8. 26"x20" S/A DUCT UP TO DOAS-2 ON ROOF.
9. 26"x20" R/A DUCT UP TO DOAS-2 ON ROOF.
10. 18"x16" E/A DUCT DN TO SECOND FLOOR. REFER TO DWG M1.6 FOR CONTINUATION.
11. 18"x16" E/A DUCT UP W/MOD TO F-2 ON ROOF.
12. 20"x14" O/A DUCT DN TO SECOND FLOOR. REFER TO DWG M1.6 FOR CONTINUATION
13. 20"x20" O/A DUCT UP W/MOD TO GRAVITY INTAKE VENT ON ROOF.
14. 14"x14" SOUND LINED TRANSFER AIR DUCT.
15. 18"x10" OPEN END DUCT W/ 1/2" BIRDSCREEN @ 630 CFM.
16. 18"x8" OPEN END DUCT W/ 1/2" BIRDSCREEN @ 620 CFM.
17. 20"x20" R/A DUCT UP TO DOAS-1 ON ROOF.
18. 24"x18" PLENUM BOX.
19. 22"x14" SOUND LINED TRANSFER AIR DUCT.
20. 18"x14" SOUND LINED TRANSFER AIR DUCT.
21. 18"x10" OPEN END DUCT W/ 1/2" BIRD SCREEN.
22. 20"x8" OPEN END DUCT W/ 1/2" BIRD SCREEN.



PARTIAL THIRD FLOOR PLAN - AREA A
1/8" = 1'-0"



KEY PLAN LEVEL 3

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
ANNAPOLIS, MD 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

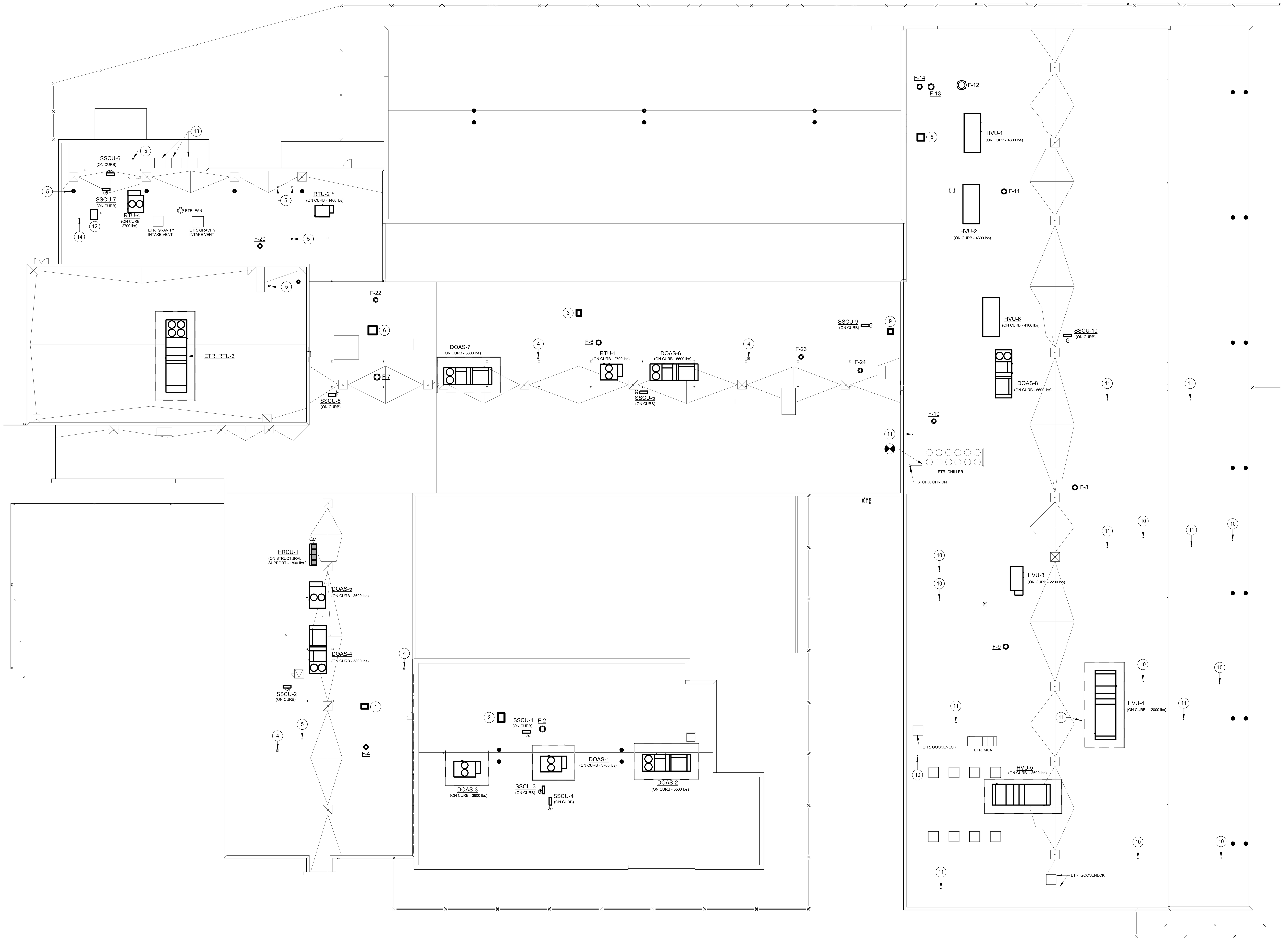
PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:
PARTIAL THIRD FLOOR PLAN - AREA A

SHEET NUMBER:
M1.12

BID SET

3/14/2025 4:40:48 PM



ROOF PLAN
1/16" = 1'-0"

Graphic Scale: 1 inch = 16 feet
0 16' 32' 48' 64'

PLAN NORTH

DRAWING NOTES:

1. GRAVITY INTAKE AIR VENT-1
   750 CFM @.037 " SP
   20"x12" THROAT@ 450 FPM
   34"x26"x13" HIGH
   GREENHECK MODEL WIH
2. GRAVITY INTAKE AIR VENT-2
   1800 CFM @.034 " SP
   30"x20" THROAT@ 432 FPM
   44"x34"x13" HIGH
   GREENHECK MODEL WIH
3. GRAVITY INTAKE AIR VENT-3
   600 CFM @.037 " SP
   16"x12" THROAT@ 450 FPM
   30"x26"x12" HIGH
   GREENHECK MODEL WIH
4. 6"Ø E/A DUCT DN THROUGH CURB WITH BACKDRAFT DAMPER. INSTALL PER MANUFACTURER'S RECOMMENDATION.
5. GOOSENECK. REFER TO DETAIL 42 DRAWING M7.4 FOR ADDITIONAL INFORMATION.
6. GRAVITY INTAKE AIR VENT-4
   2600 CFM @.041 " SP
   28"x28" THROAT@ 478 FPM
   42"x42"x16" HIGH
   GREENHECK MODEL WIH
7. GRAVITY INTAKE AIR VENT-5
   1500 CFM @.036 " SP
   22"x22" THROAT@ 446 FPM
   36"x36"x13" HIGH
   GREENHECK MODEL WIH
8. 4"Ø O/A DUCT THROUGH CURB WITH BACKDRAFT DAMPER AND SS WALL CAP AND DN TO SECOND FLOOR.
9. GRAVITY INTAKE AIR VENT-6
   500 CFM @.025 " SP
   14"x14" THROAT@ 367 FPM
   28"x28"x13" HIGH
   GREENHECK MODEL WIH
10. GAS FIRED INFRARED HEATER EXHAUST FLUE.
11. GAS FIRED INFRARED HEATER COMBUSTION INTAKE.
12. KITCHEN COOLER CONDENSING UNITS (BY KITCHEN EQUIPMENT CONTRACTOR). REFER TO FOOD SERVICE DRAWINGS FOR ADDITIONAL INFORMATION.
13. EXISTING COOLER/FREEZER CONDENSING UNIT.
14. 4"Ø O/A DUCT THROUGH CURB WITH SS WALL CAP AND DN TO FIRST FLOOR.

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:

ALBAN ENGINEERING, INC
305 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 21-DCIU-03 DRAWN BY: Author

SHEET TITLE:
ROOF PLAN

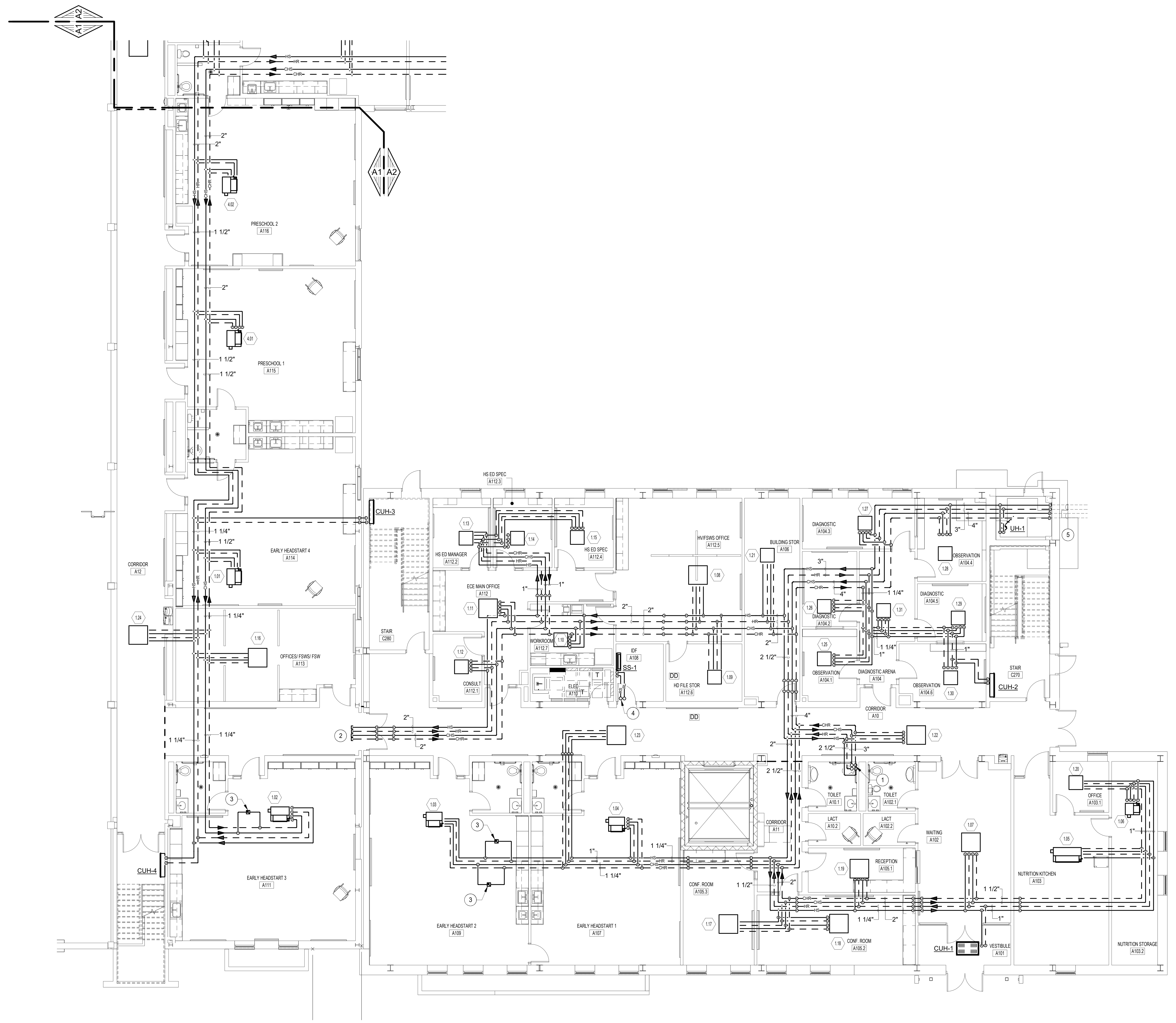
SHEET NUMBER:
M1.13

BID SET

3/14/2025 4:48:52 PM

DRAWING NOTES:

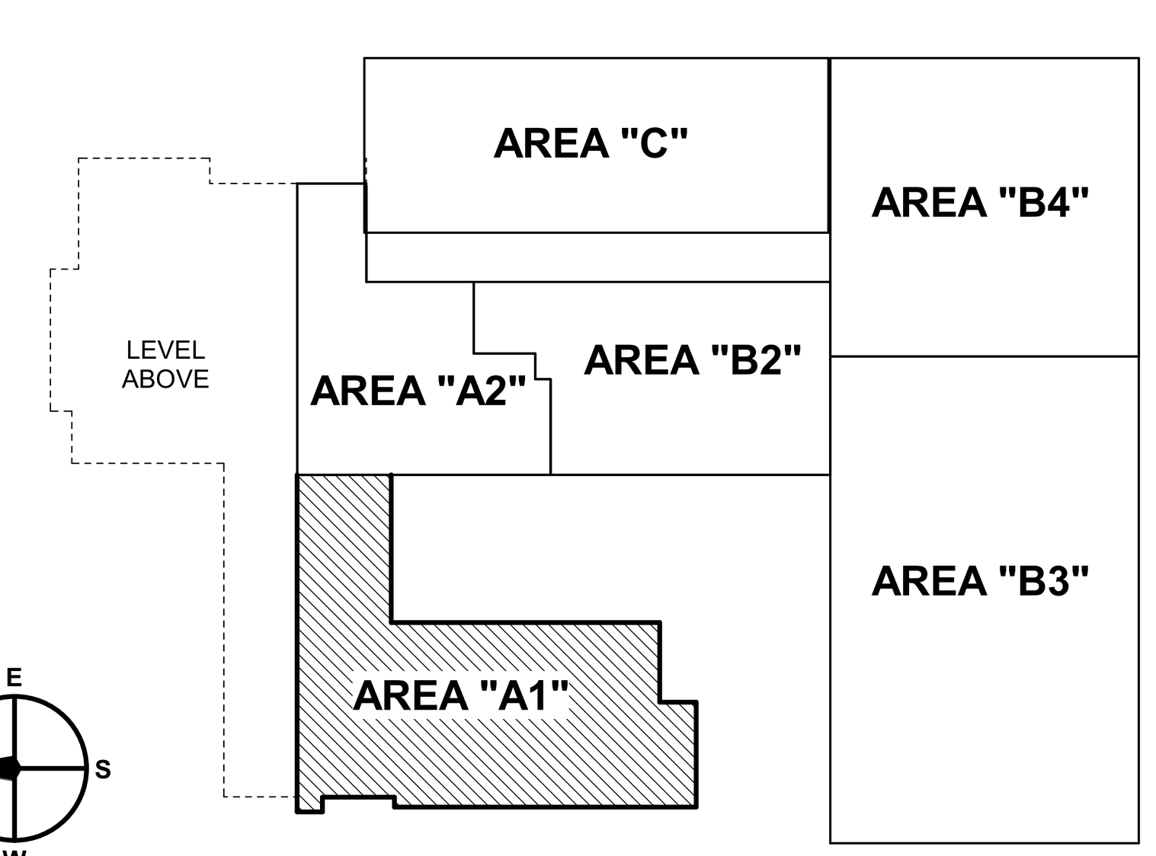
1. 3" CHS/CHR AND 2½" HS/HR PIPING UP. REFER TO DWG M2.6 FOR CONTINUATION.
2. VALVE AND CAP PIPES.
3. END OF MAIN BYPASS
4. REFRIGERANT PIPING UP. REFER TO DWG M2.6 FOR CONTINUATION.
5. 4" CHS, CHR AND 3" HS, HR PIPING BELOW SLAB TO MECHANICAL ROOM. REFER TO DWG M2.2 FOR CONTINUATION.



PARTIAL FIRST FLOOR PLAN PIPING - AREA A1
1/8" = 1'-0"

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

PLAN NORTH



KEY PLAN LEVEL 1

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
701 HENDERSON BLVD. FOLCROFT, PA 19032

ISSUE DATES DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 21-DCIU-03 DRAWN BY: Author

SHEET TITLE:
PARTIAL FIRST FLOOR PIPING PLAN - AREA A1

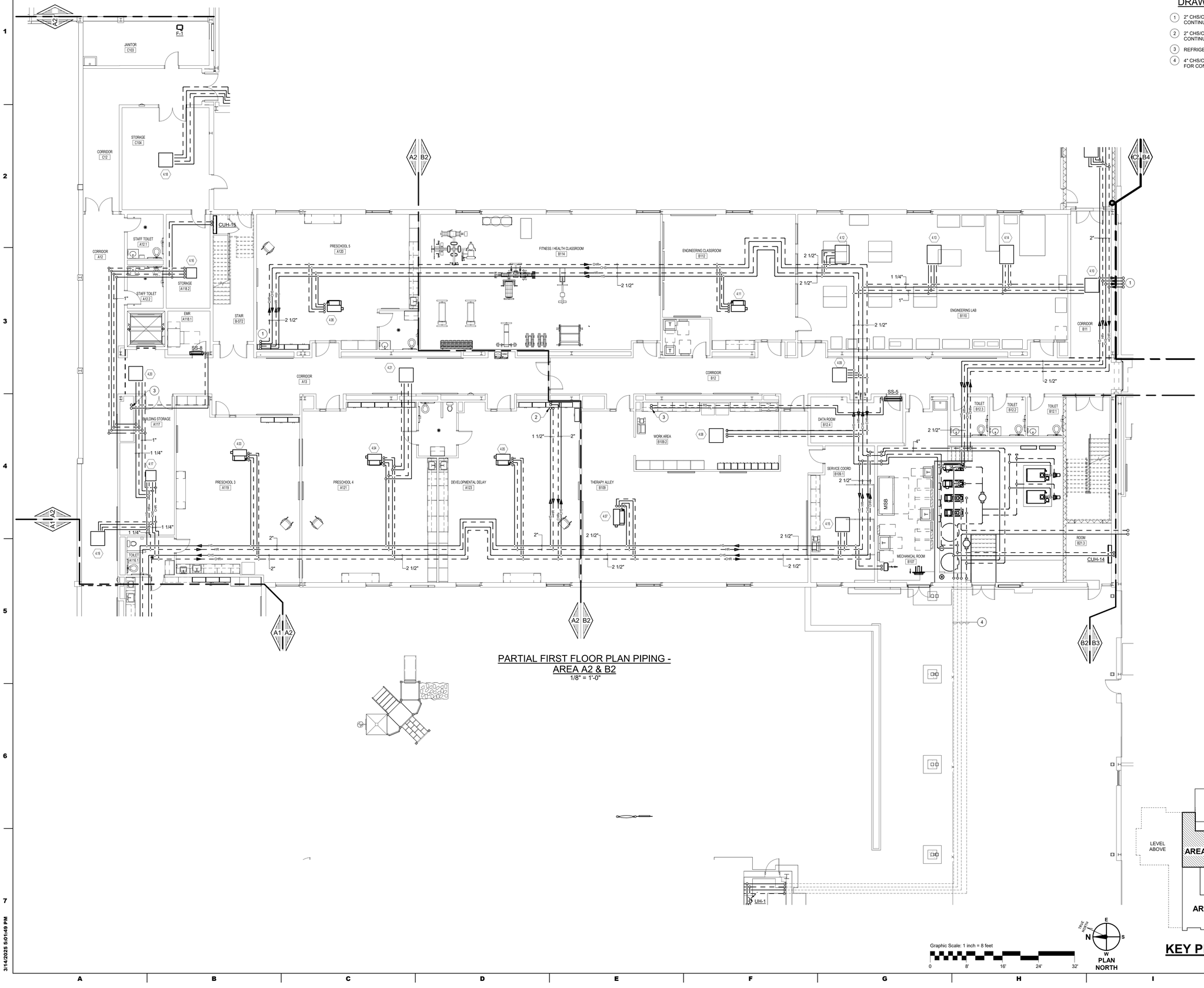
SHEET NUMBER:
M2.1

BID SET

3/17/2025 9:52:01 AM

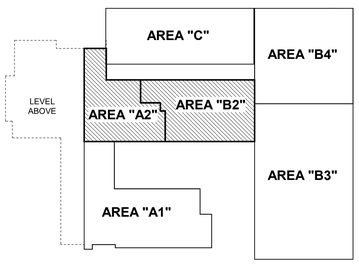
DRAWING NOTES:

1. 2" CHS/CHR AND 2½" HS/HR PIPING UP. REFER TO DWG M2.10 FOR CONTINUATION.
2. 2" CHS/CHR AND 1½" HS/HR PIPING UP. REFER TO DWG M2.8 FOR CONTINUATION.
3. REFRIGERANT PIPING UP. REFER TO DWG M2.8 FOR CONTINUATION.
4. 4" CHS/CHR AND 4" HS/HR PIPING BELOW SLAB. REFER TO DWG M2.1 FOR CONTINUATION.



PARTIAL FIRST FLOOR PLAN PIPING - AREA A2 & B2

1/8" = 1'-0"



KEY PLAN LEVEL 1

Graphic Scale: 1 inch = 8 feet

0 8' 16' 24' 32'

TRUE NORTH

PLAN NORTH

3/14/2025 5:01:49 PM

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBAN-ENGINEERING.COM
ANNAPOLIS, MD 21665

SEAL:

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

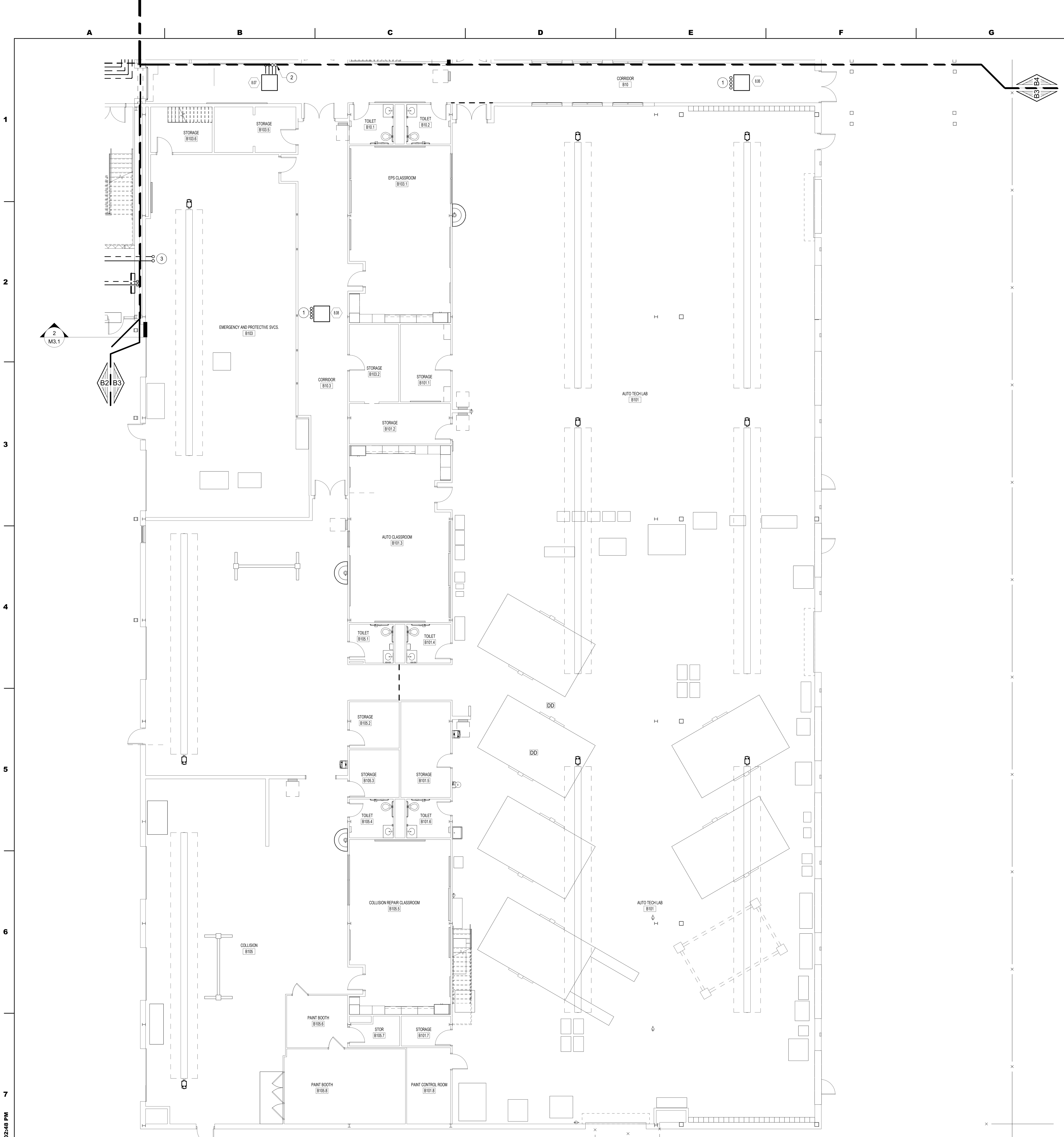
ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:
PARTIAL FIRST FLOOR PIPING PLAN - AREA A2 & B2

SHEET NUMBER:
M2.2

BID SET



PARTIAL FIRST FLOOR PLAN PIPING - AREA B3

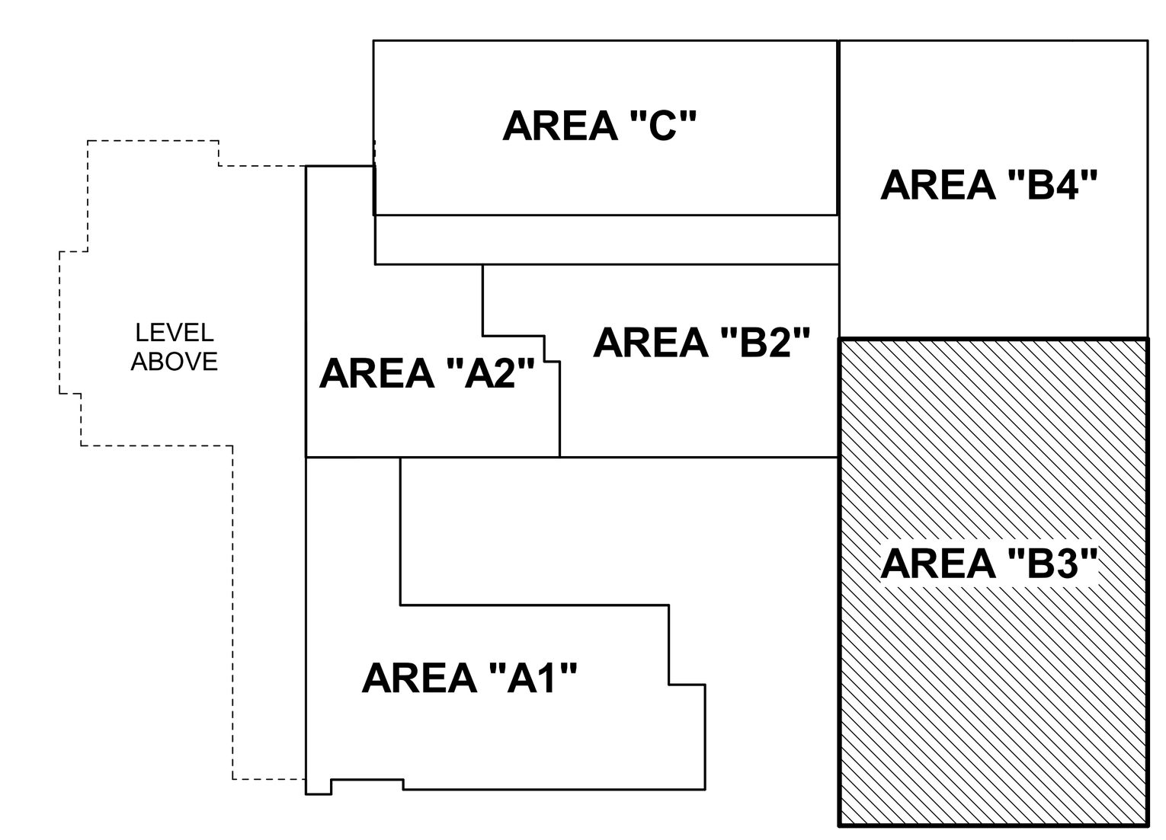
1/8" = 1'-0"

Graphic Scale: 1 inch = 8 feet

PLAN NORTH

DRAWING NOTES:

1. CHS/CHR AND HS/HR PIPING UP. REFER TO DWG M2.9 FOR CONTINUATION.
2. CHS/CHR AND HS/HR PIPING UP. REFER TO DWG M2.10 FOR CONTINUATION.
3. 6" CHS/CHR UP TO EX. CHILLER ON ROOF.



KEY PLAN LEVEL 1

MAROTTA/MAIN ARCHITECTS

WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:

ALBAN ENGINEERING, INC.

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL

DELAWARE COUNTY
INTERMEDIATE UNIT

701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES	
DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:

PARTIAL FIRST FLOOR PIPING PLAN - AREA B3

SHEET NUMBER:

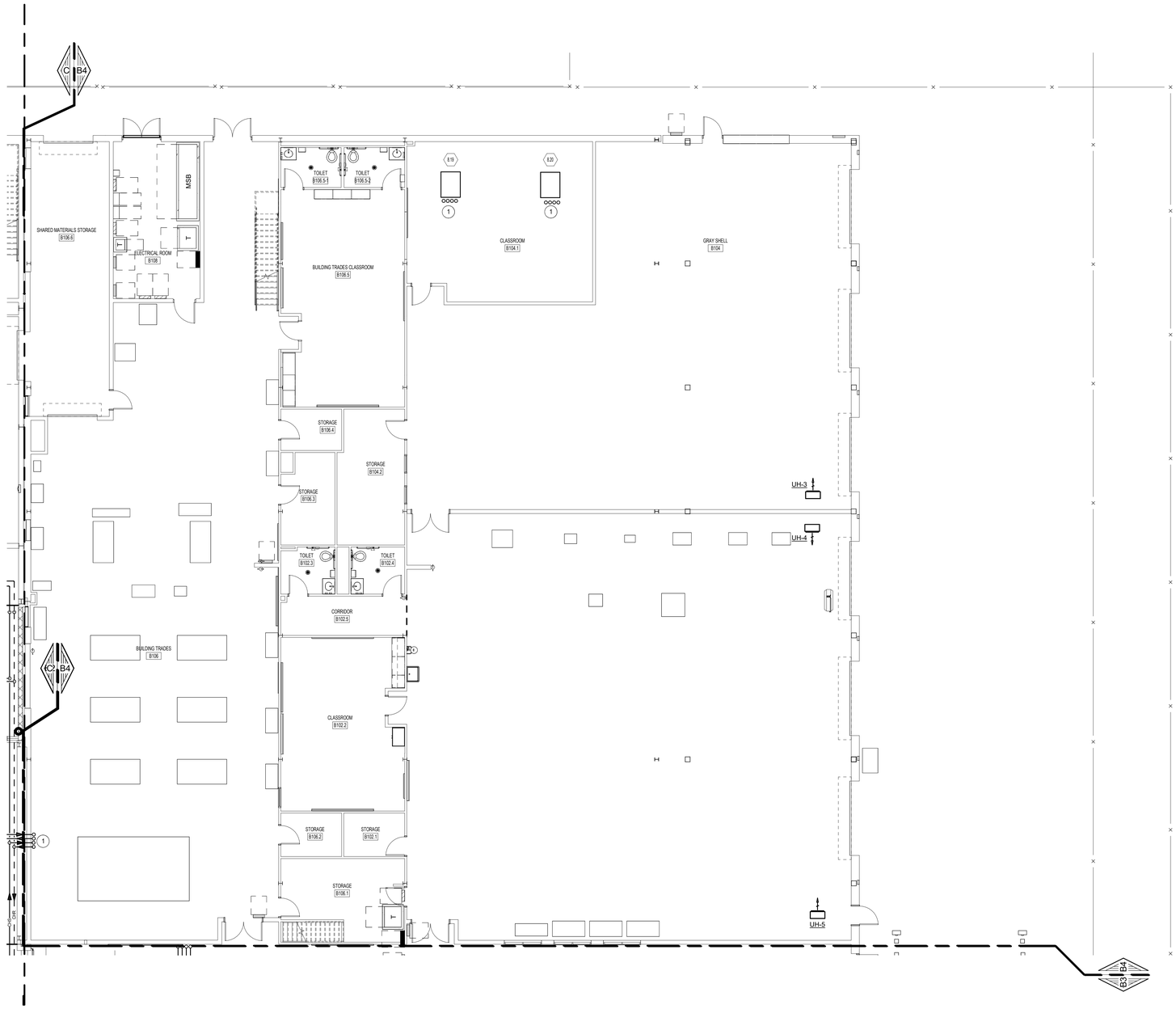
M2.3

BID SET

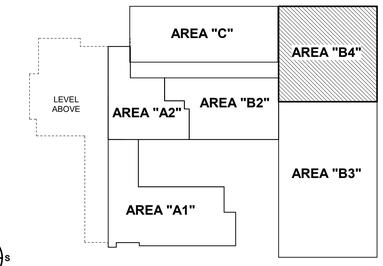
3/14/2025 5:02:48 PM

DRAWING NOTES:

1. CHS/CHR AND HS/HR PIPING UP. REFER TO DWG M2.10 FOR CONTINUATION.



PARTIAL FIRST FLOOR PLAN PIPING - AREA B4
1/8" = 1'-0"



KEY PLAN LEVEL 1

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

TRUE NORTH
N E S W
PLAN NORTH

3/14/2025 5:03:27 PM

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

THIS DRAWING IS THE PROPERTY OF THE ARCHITECT AND MAY NOT BE REPRODUCED IN ANY FORM WITHOUT WRITTEN PERMISSION

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
PA No. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:
PARTIAL FIRST FLOOR PIPING PLAN - AREA B4

SHEET NUMBER:
M2.4

BID SET

MAROTTA/MAIN
ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAHN
ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBAHNENGINEERING.COM
P.N. 21065

Empowering Partnerships for Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 23-ROHM3 DRAWN BY: Author

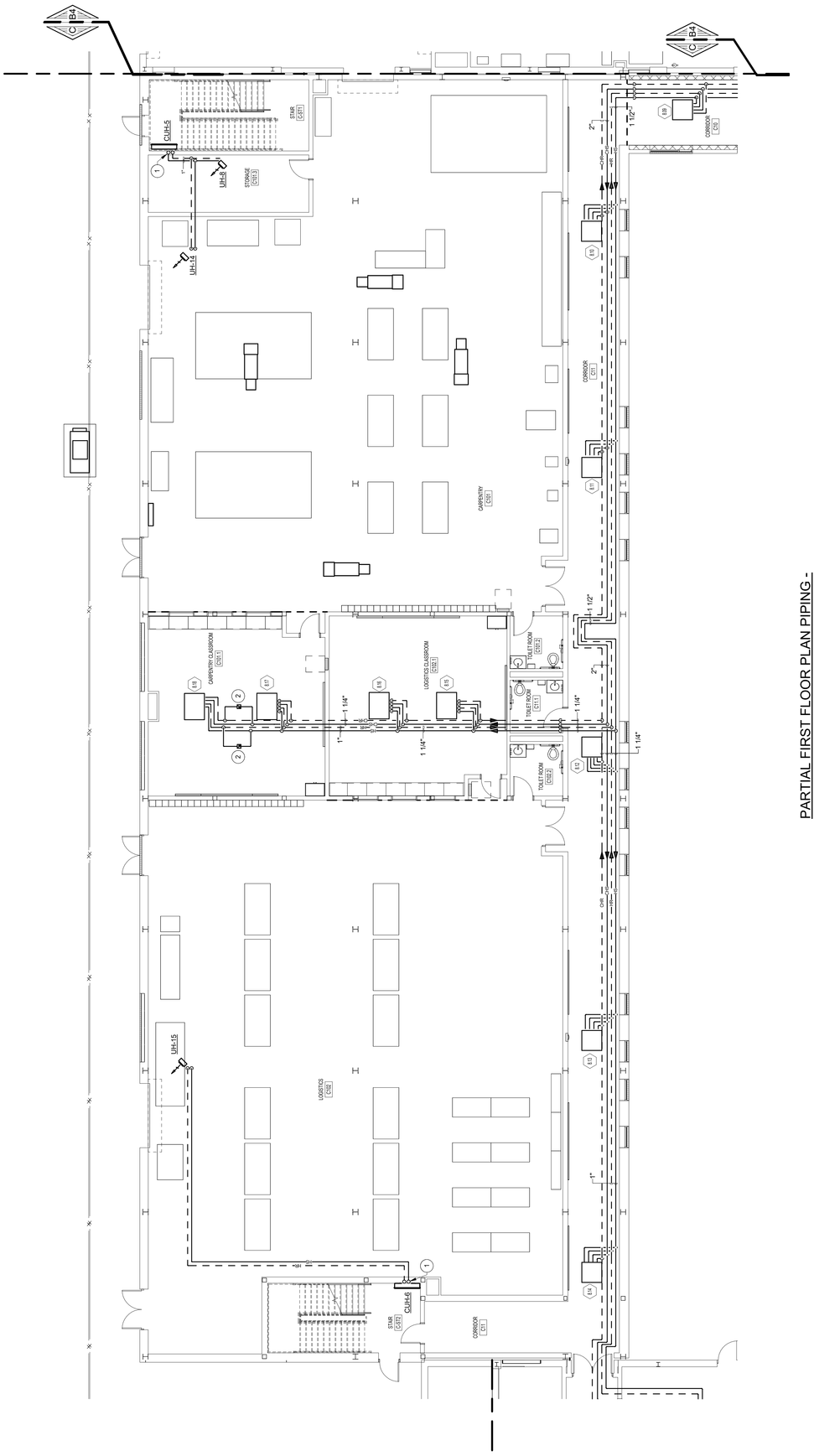
SHEET TITLE:
PARTIAL FIRST FLOOR PIPING PLAN - AREA C

SHEET NUMBER:
M2.5

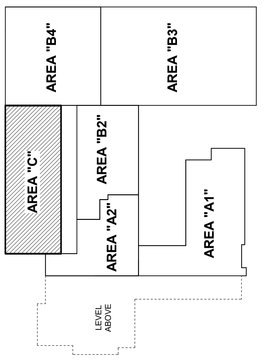
BID SET

DRAWING NOTES:

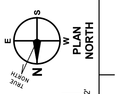
1. 1½" HSHR PIPING UP. REFER TO DWG M2.11 FOR CONTINUATION.
2. END OF MAIN BYPASS.



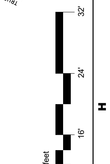
PARTIAL FIRST FLOOR PLAN PIPING - AREA C
1/8" = 1'-0"



KEY PLAN LEVEL 1



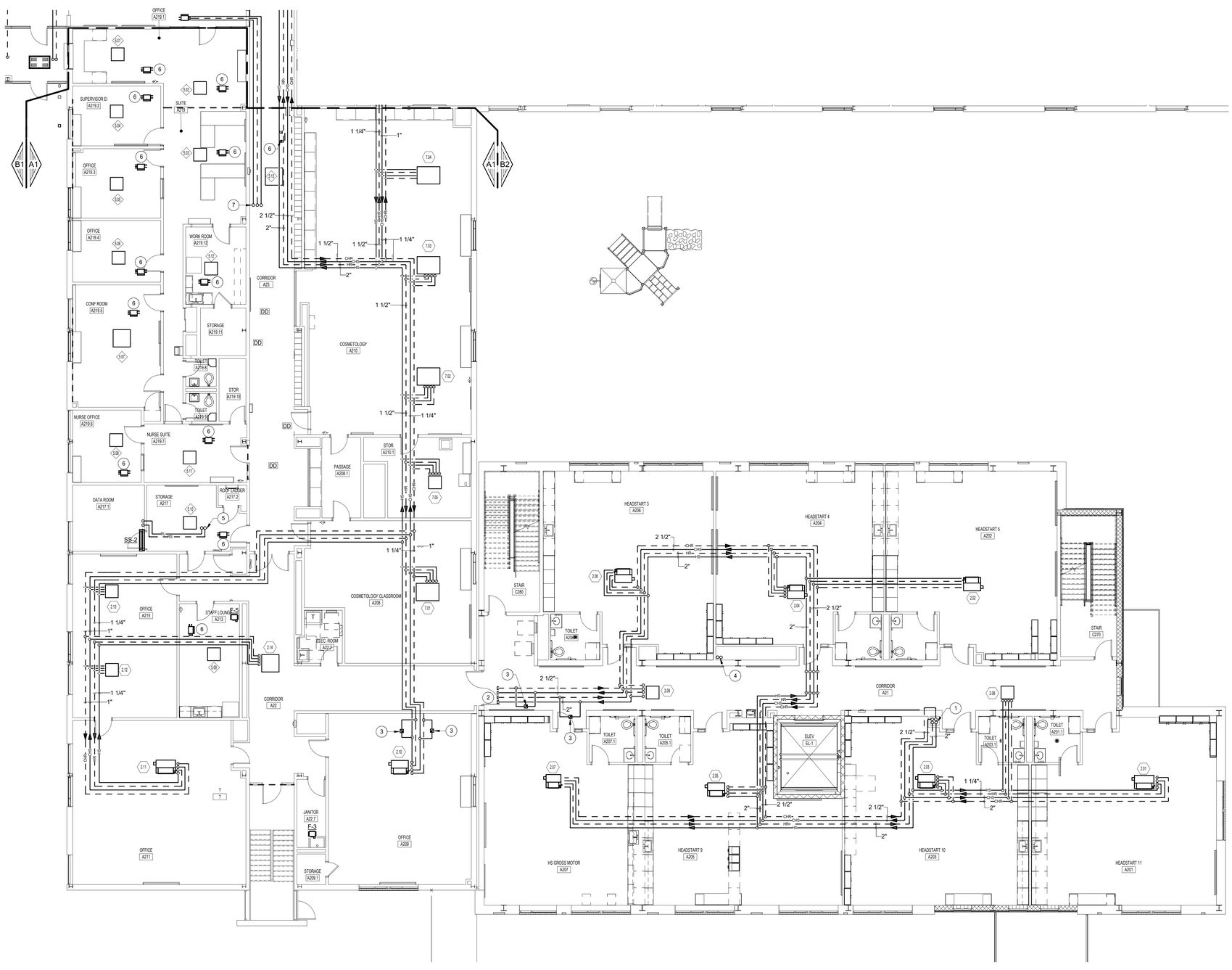
Graphic Scale: 1 inch = 8 feet



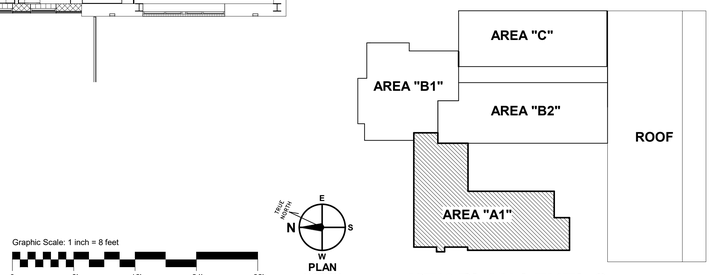
3/17/2025 9:25:11 AM

DRAWING NOTES:

1. 3" CHS/CHR AND 2½" HS/HR PIPING DN. REFER TO DWG M2.1 FOR CONTINUATION. 2½" CHS/CHR AND 2" HS/HR PIPING UP. REFER TO DWG M2.12 FOR CONTINUATION.
2. VALVE AND CAP PIPES.
3. END OF MAIN BYPASS.
4. REFRIGERANT PIPING UP AND DN. REFER TO DWGS M2.12 AND M2.1 FOR CONTINUATION
5. REFRIGERANT PIPING UP TO ROOF. REFER TO DWG M1.13 FOR CONTINUATION.
6. BRANCH SELECTOR.
7. REFRIGERANT PIPING UP TO HRCU-1 ON ROOF.



PARTIAL SECOND FLOOR PLAN PIPING - AREA A1
1/8" = 1'-0"



KEY PLAN LEVEL 2

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

TRUE NORTH
N E S W
PLAN NORTH

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
ALBAN, PA 21065

SEAL:

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025 DESCRIPTION: BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:
PARTIAL SECOND FLOOR PIPING PLAN - AREA A1

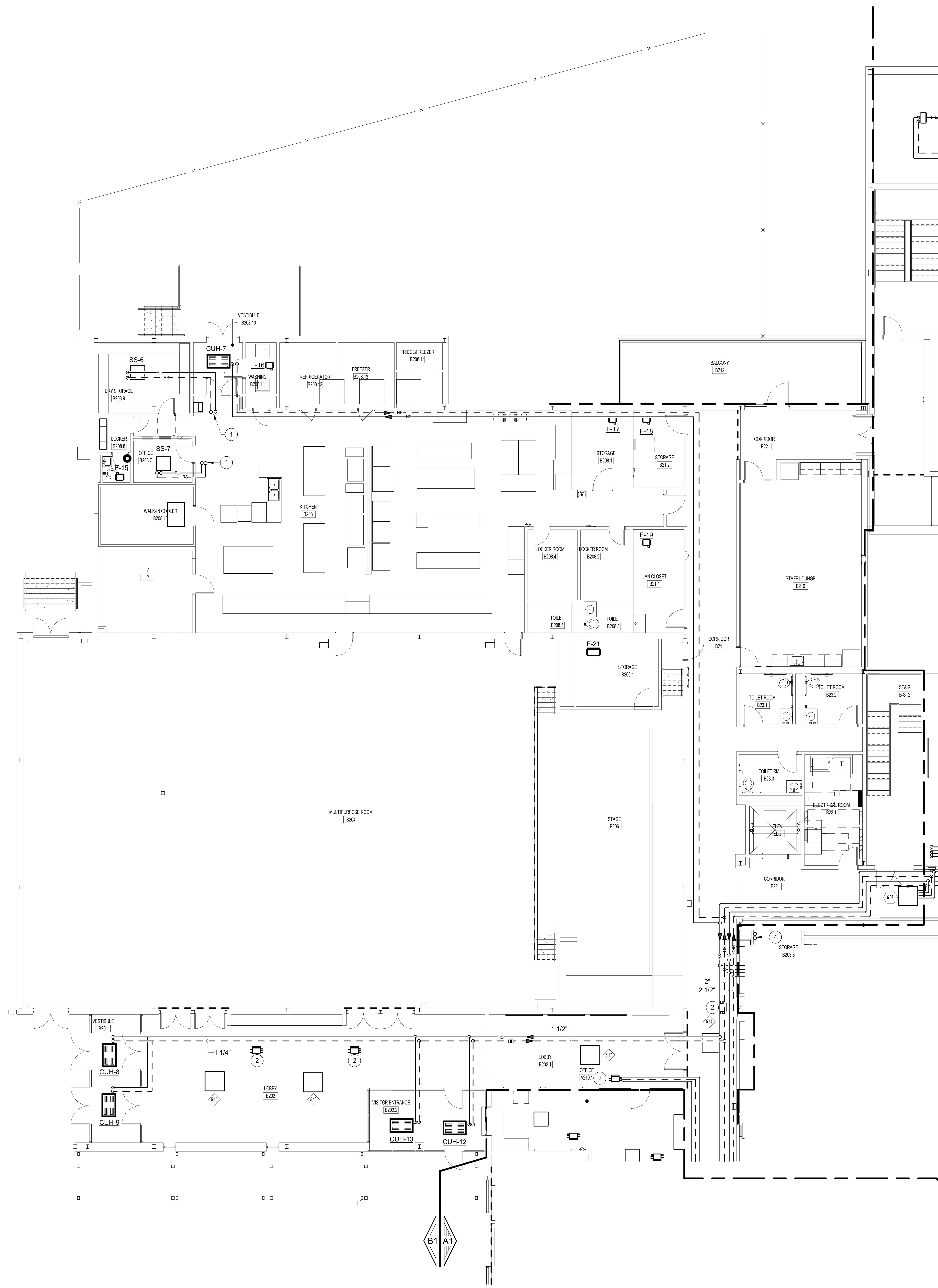
SHEET NUMBER:
M2.6

BID SET

3/14/2025 5:19:17 PM

DRAWING NOTES:

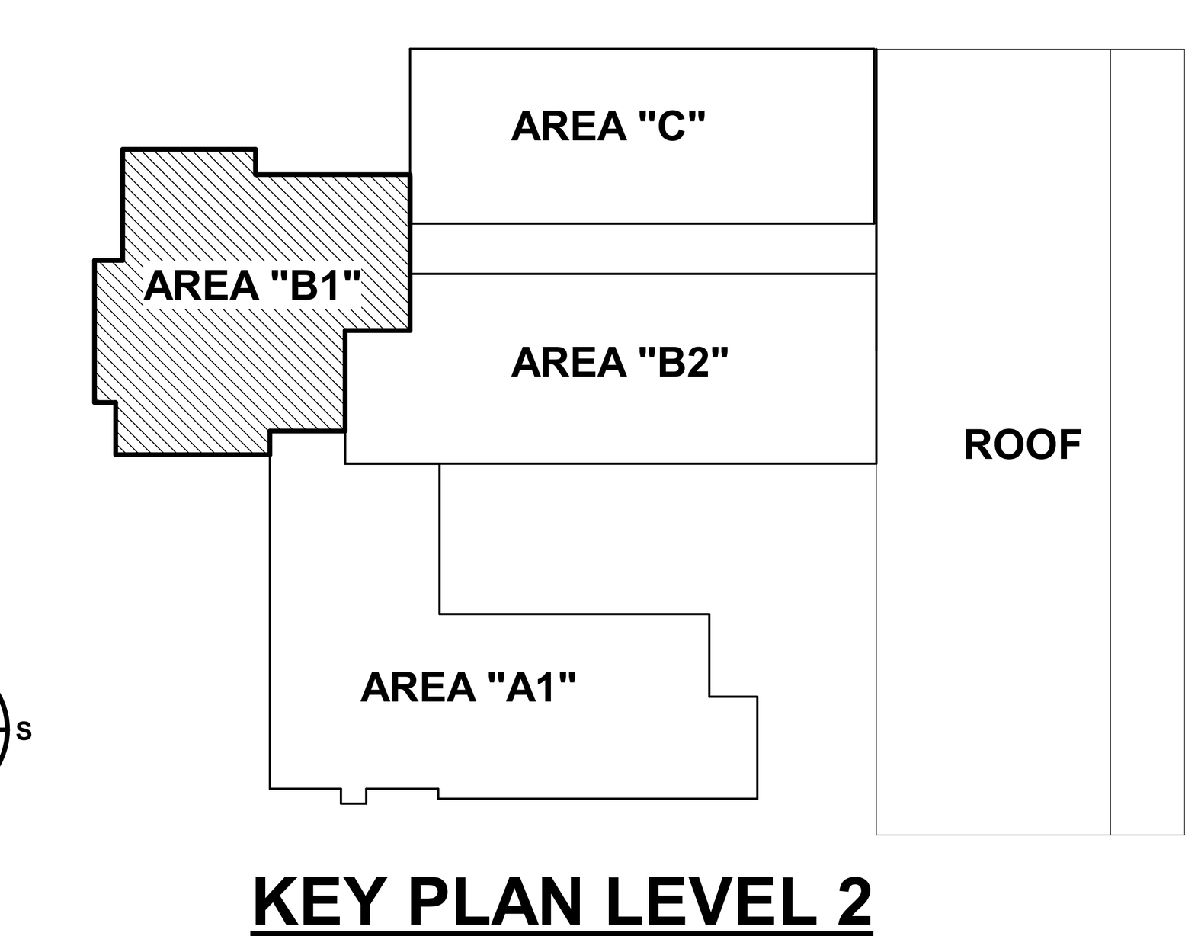
1. REFRIGERANT PIPING UP TO ROOF. REFER TO DWG M1.13 FOR CONTINUATION.
2. BRANCH SELECTOR.



PARTIAL SECOND FLOOR PLAN PIPING - AREA B1
1/8" = 1'-0"

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

PLAN NORTH



KEY PLAN LEVEL 2

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
305 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 21-DCIU-03 DRAWN BY: Author

SHEET TITLE:
PARTIAL SECOND FLOOR PIPING PLAN - AREA B1

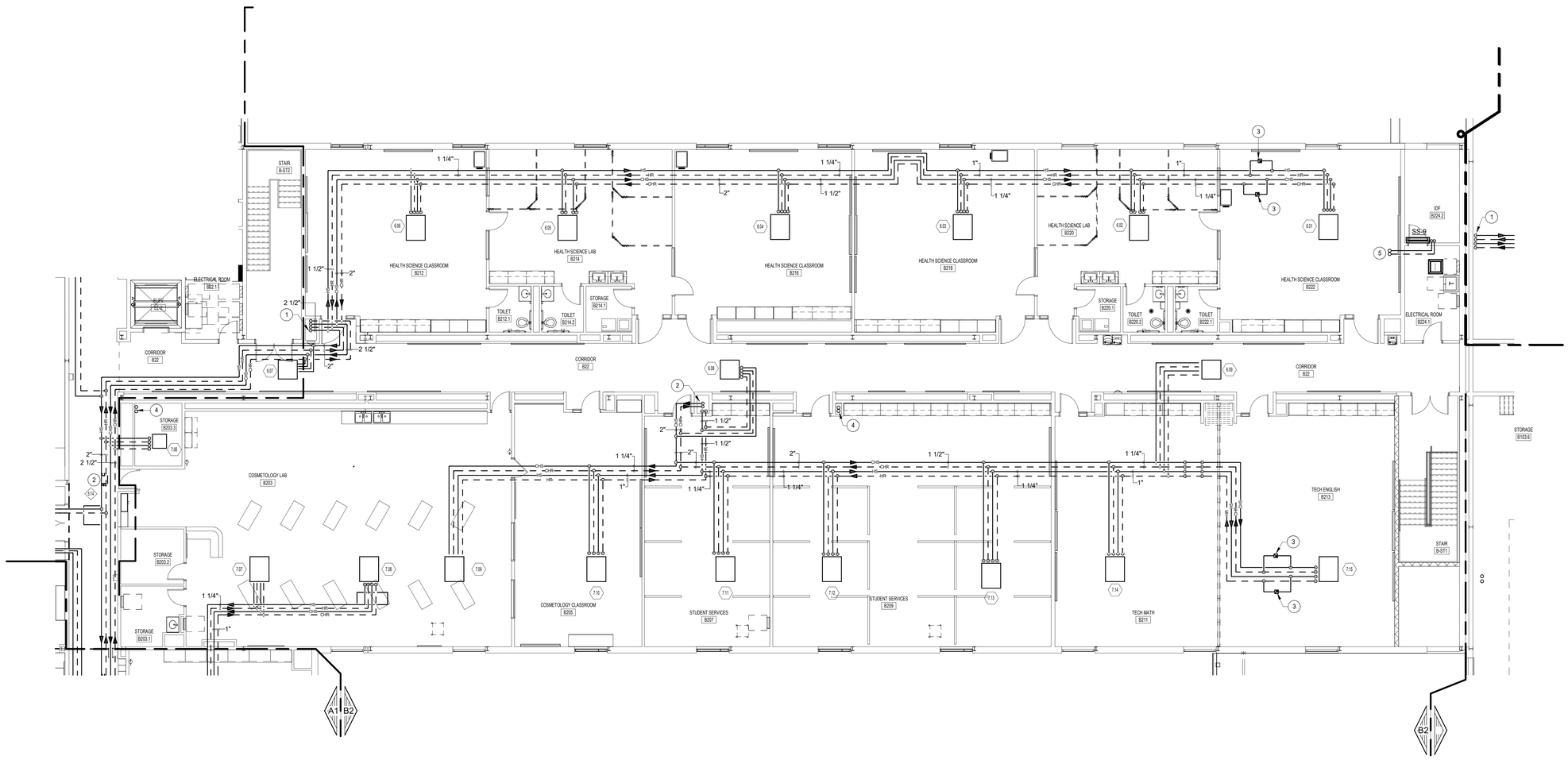
SHEET NUMBER:
M2.7

BID SET

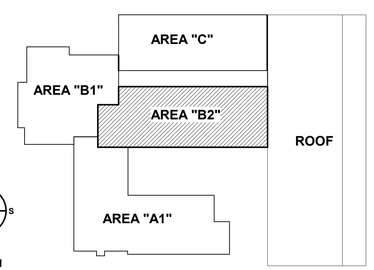
3/14/2025 5:07:02 PM

DRAWING NOTES:

1. 2" CHS/CHR AND 2½" HS/HR PIPNG DN. REFER TO DWG M2.2 FOR CONTINUATION.
2. 2" CHS/CHR AND 1½" HS/HR PIPING DN. REFER TO DWG M2.2 FOR CONTINUATION.
3. END OF MAIN BYPASS.
4. REFRIGERANT PIPING UP TO SSCU-8 ON ROOF AND DN TO FIRST FOOR. REFER TO DWGS M1.13 AND M2.2 FOR CONTINUATION.
5. REFRIGERANT PIPING UP TO SSCU-9 ON ROOF.
6. BRANCH SELECTOR.



PARTIAL SECOND FLOOR PLAN PIPING - AREA B2
1/8" = 1'-0"



KEY PLAN LEVEL 2

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

TRUE NORTH
N E S W
PLAN NORTH

3/14/2025 5:08:11 PM

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

THIS DRAWING IS THE PROPERTY OF THE ARCHITECT AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY PURPOSE WITHOUT THE ARCHITECT'S WRITTEN PERMISSION

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
ANNAPOLIS, MD 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

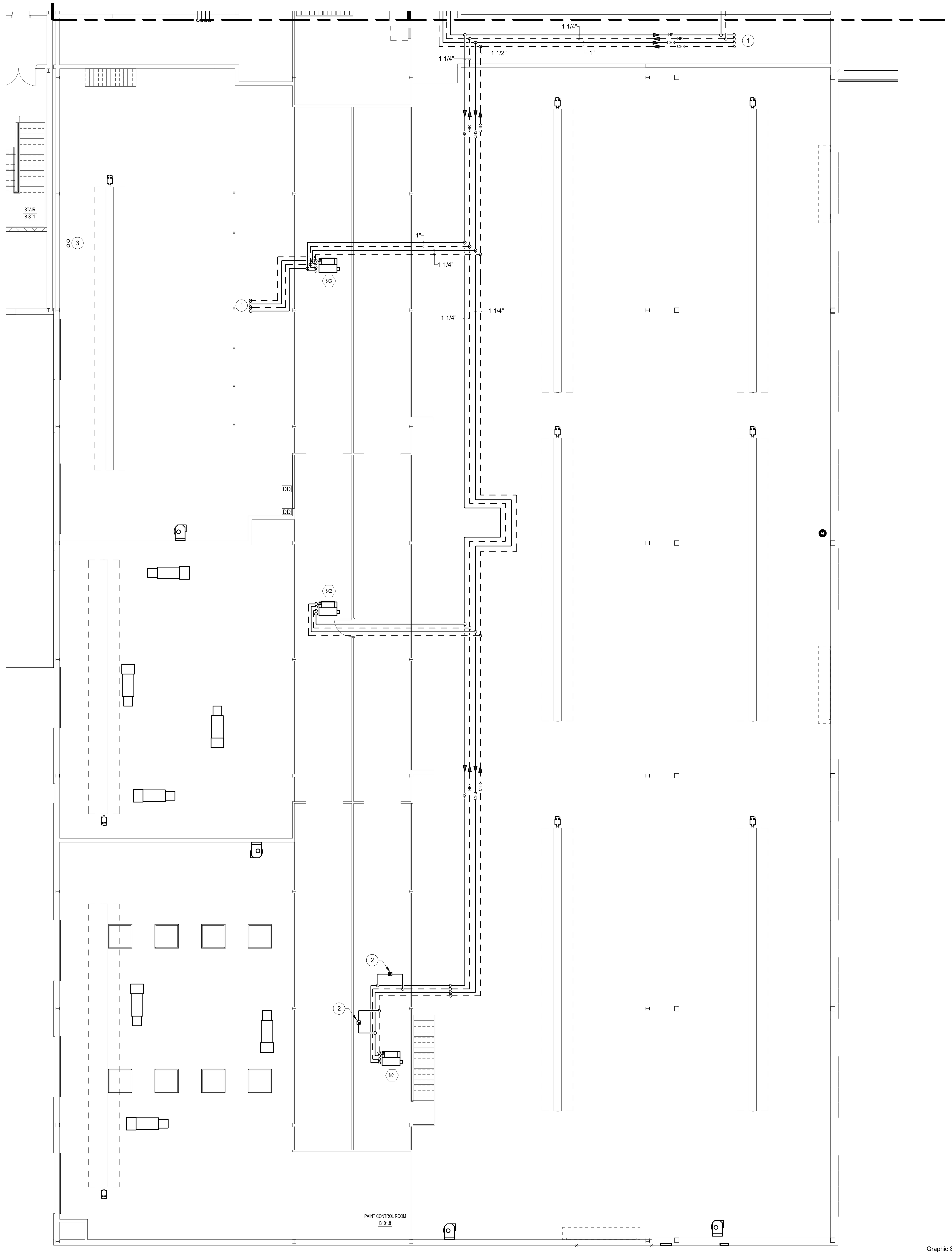
ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:
PARTIAL SECOND FLOOR PIPING PLAN - AREA B2

SHEET NUMBER:
M2.8

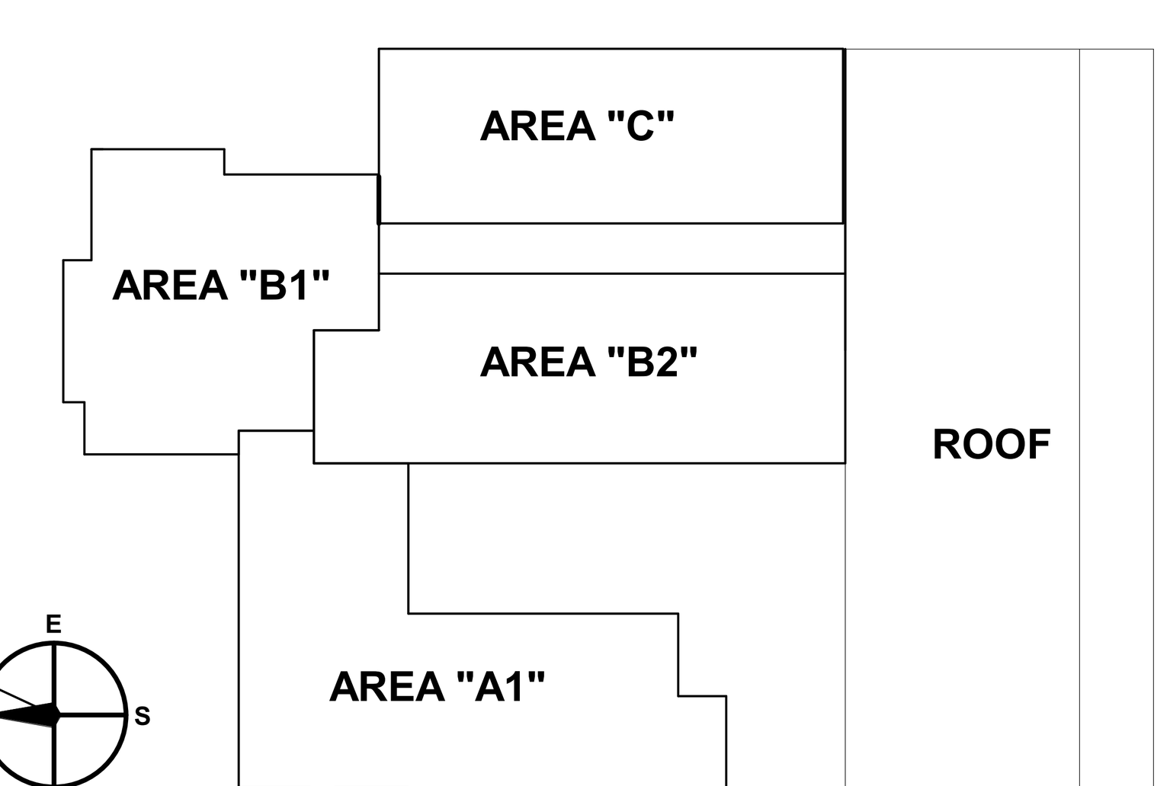
BID SET



PARTIAL SECOND FLOOR PLAN PIPING - AREA B3
1/8" = 1'-0"

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

PLAN NORTH



KEY PLAN LEVEL 2

DRAWING NOTES:

1. CHS/CHR AND HS/HR PIPING DN. REFER TO DWG M2.3 FOR CONTINUATION.
2. END OF MAIN BYPASS.
3. 6" CHS, CHR PIPING UP TO EXISTING CHILLER ON ROOF.

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:
PARTIAL SECOND FLOOR PIPING PLAN - AREA B3

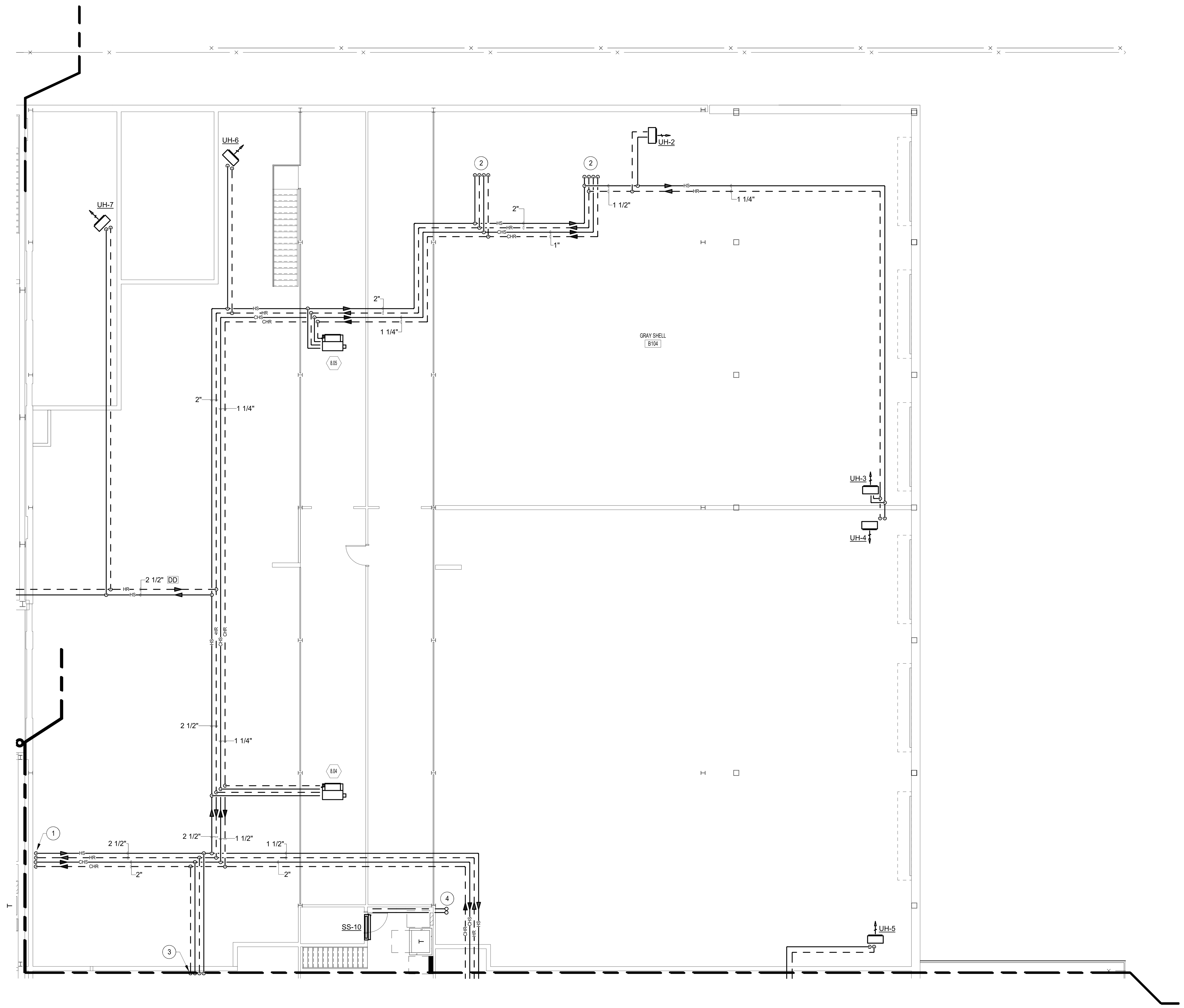
SHEET NUMBER:
M2.9

BID SET

3/14/2025 5:11:47 PM

DRAWING NOTES:

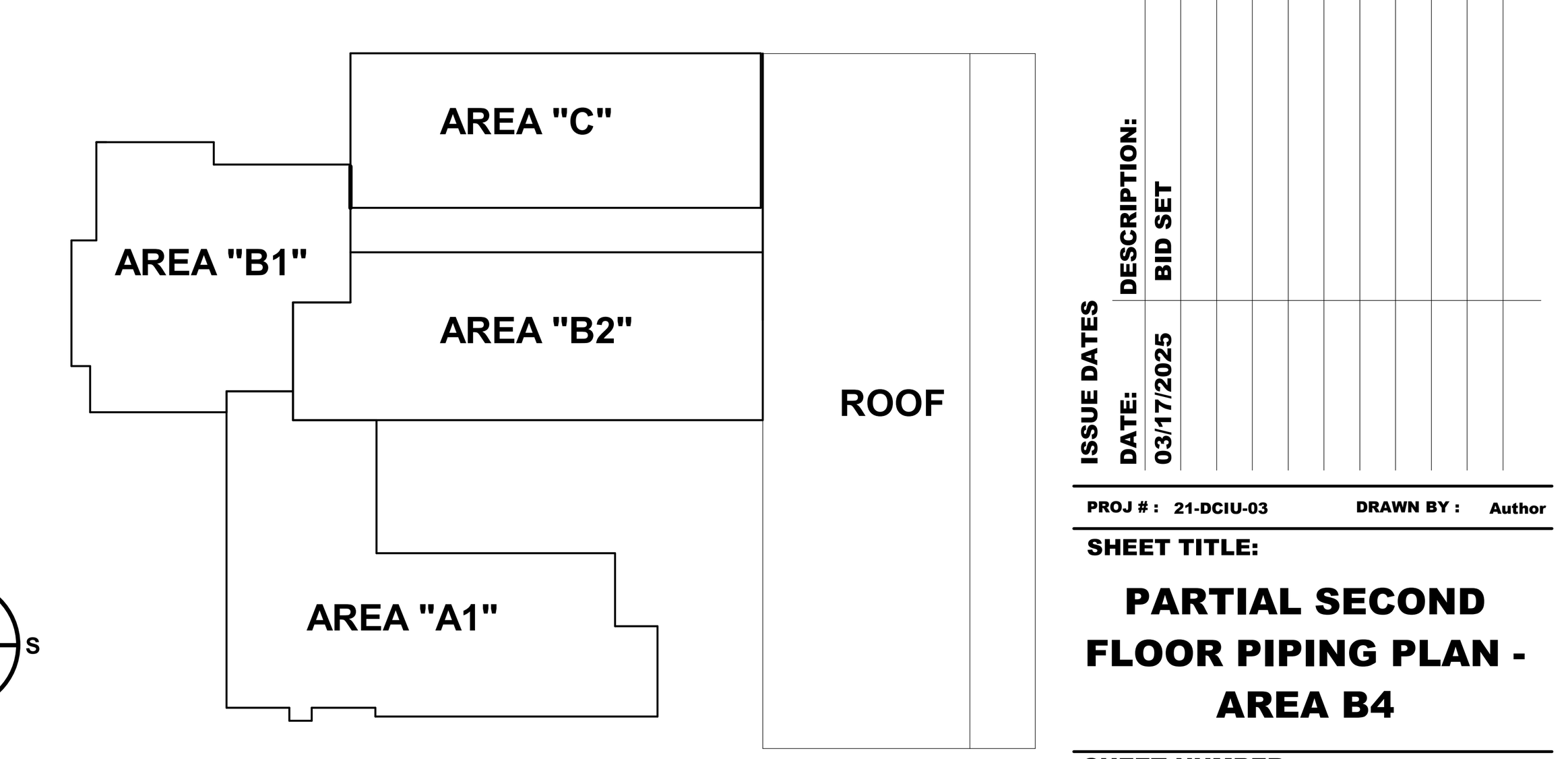
1. 2" CHS/CHR AND 2½" HS/HR PIPING DN. REFER TO DWG M2.2 FOR CONTINUATION.
2. CHS/CHR AND HS/HR PIPING DN. REFER TO DWG M2.4 FOR CONTINUATION.
3. CHS/CHR AND HS/HR PIPING DN. REFER TO DWG M2.3 FOR CONTINUATION.
4. REFRIGERANT PIPING UP TO SSCU-10 ON ROOF.



PARTIAL SECOND FLOOR PLAN PIPING - AREA B4
1/8" = 1'-0"

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

PLAN NORTH



KEY PLAN LEVEL 2

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

THIS DRAWING IS THE PROPERTY OF THE ARCHITECT AND MAY NOT BE REPRODUCED IN ANY FORM WITHOUT WRITTEN PERMISSION

CONSULTANT:
ALBAN ENGINEERING, INC
305 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:
PARTIAL SECOND FLOOR PIPING PLAN - AREA B4

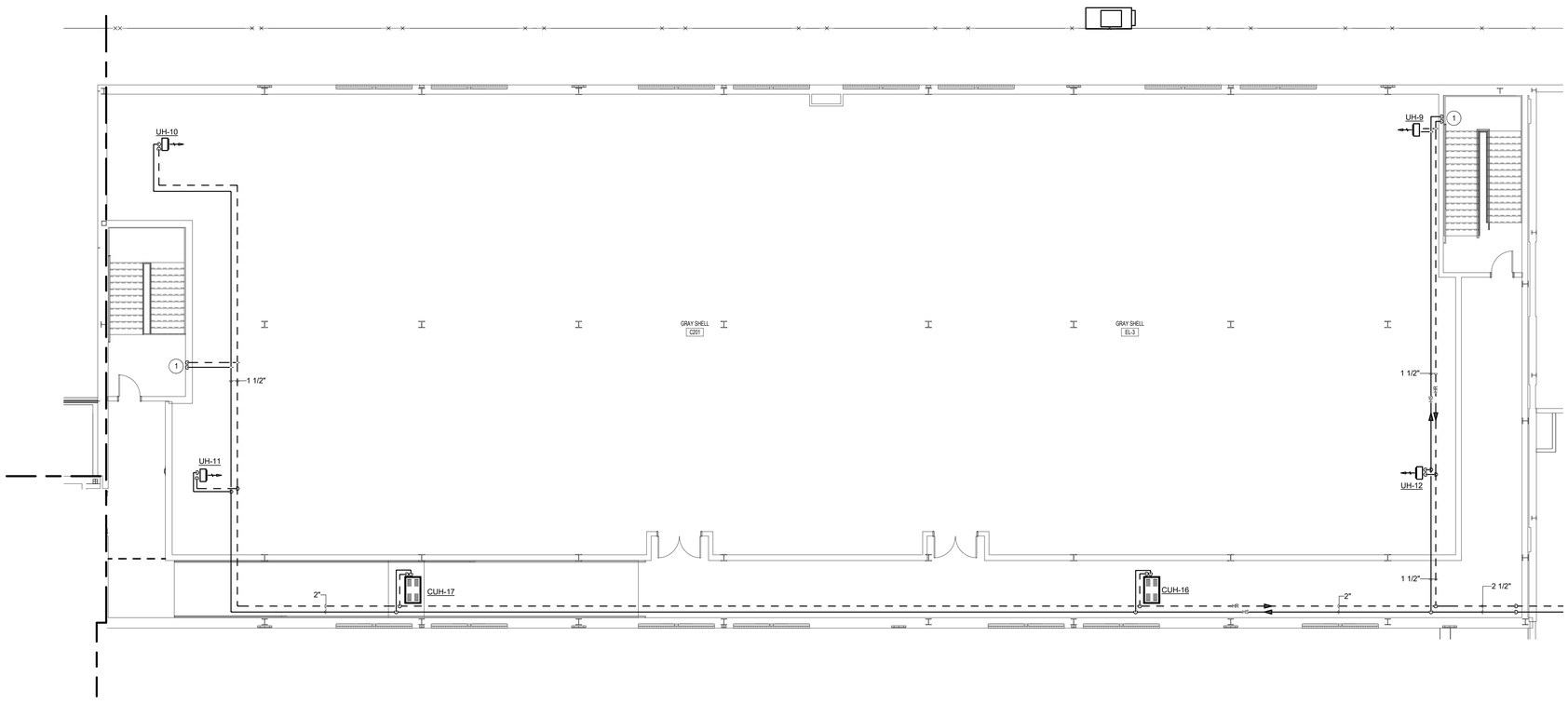
SHEET NUMBER:
M2.10

BID SET

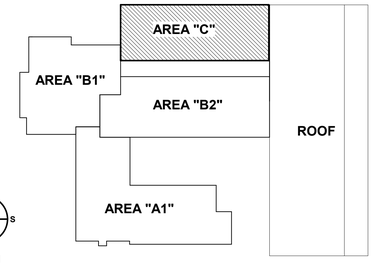
3/14/2025 5:13:21 PM

DRAWING NOTES:

1. HS/HR PIPING DN. REFER TO DWG M2.5 FOR CONTINUATION.



PARTIAL SECOND FLOOR PLAN PIPING - AREA C
1/8" = 1'-0"



KEY PLAN LEVEL 2

Graphic Scale: 1 inch = 8 feet
0 8' 16' 24' 32'

TRUE NORTH
PLAN NORTH

3/14/2025 5:14:13 PM

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBAN-ENGINEERING.COM
PA: 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

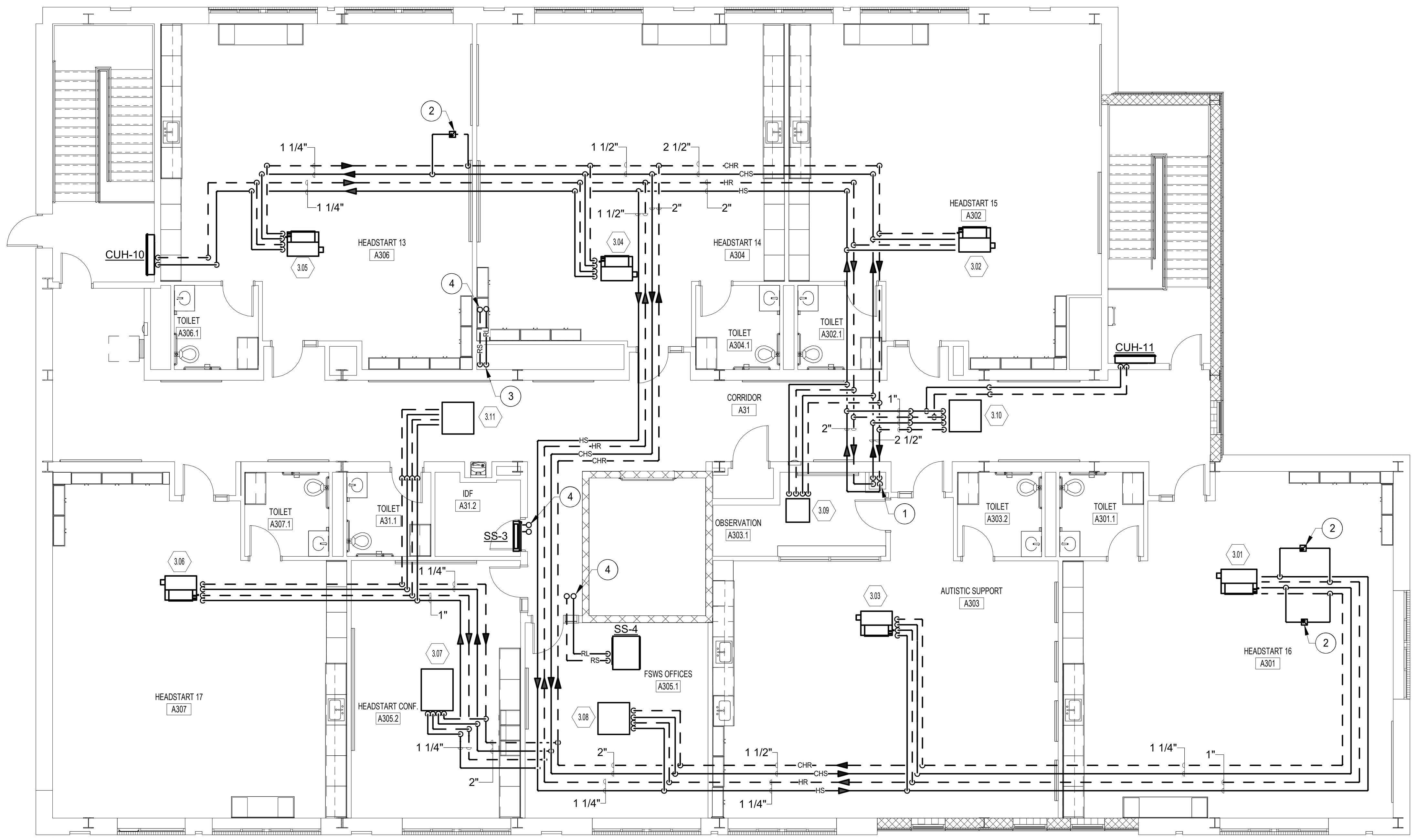
SHEET TITLE:
PARTIAL SECOND FLOOR PIPING PLAN - AREA C

SHEET NUMBER:
M2.11

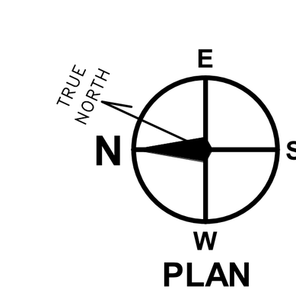
BID SET

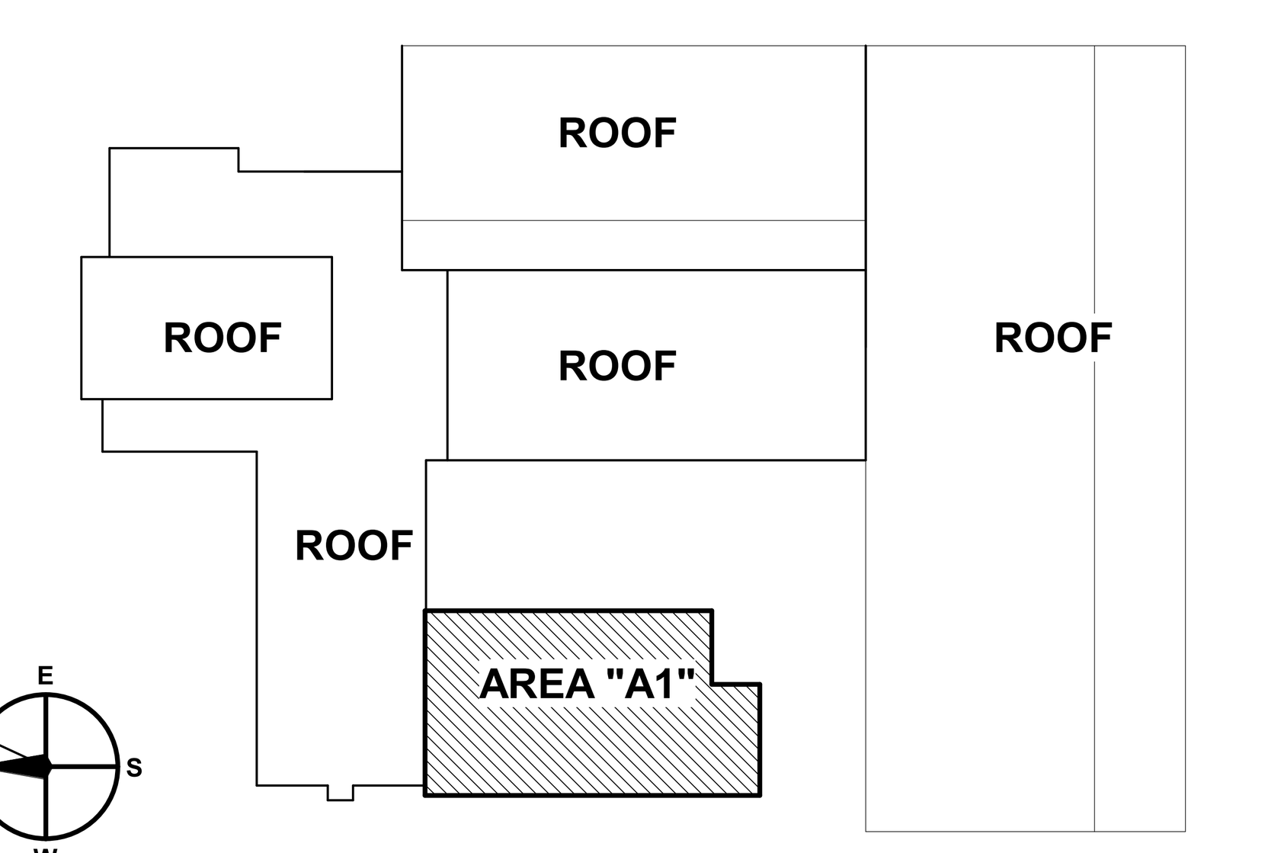
DRAWING NOTES:

1. 2½" CHS/CHR AND 2" HS/HR PIPING DN. REFER TO DWG M2.6 FOR CONTINUATION.
2. END OF MAIN BYPASS.
3. REFRIGERANT PIPING DN. REFER TO DWG M2.6 FOR CONTINUATION.
4. REFRIGERANT PIPING UP TO ROOF. REFER TO DWG M1.13 FOR CONTINUATION.



PARTIAL THIRD FLOOR PLAN PIPING - AREA A
1/8" = 1'-0"





KEY PLAN LEVEL 3

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:

ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES	
DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:

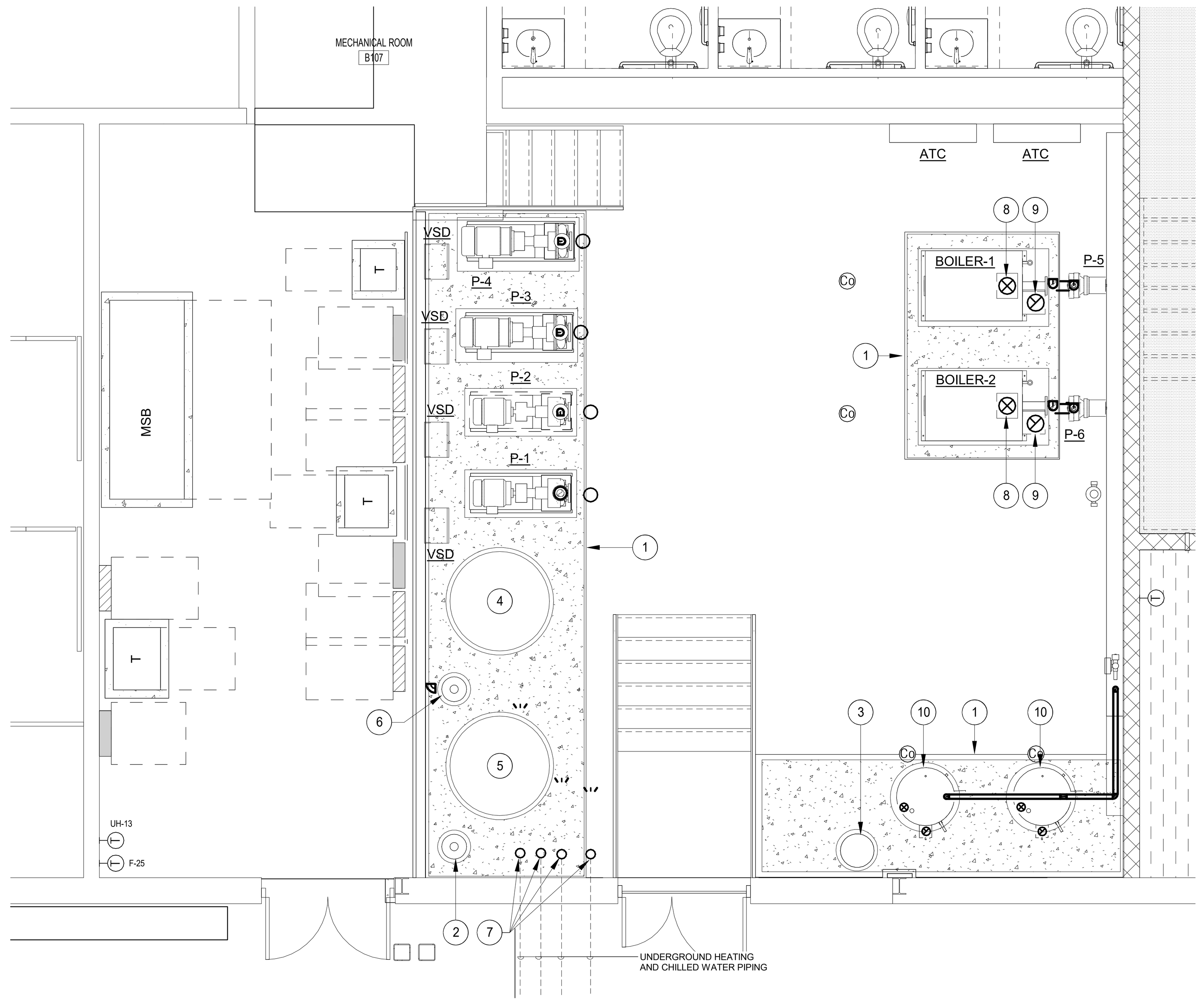
PARTIAL THIRD FLOOR PIPING PLAN - AREA A

SHEET NUMBER:

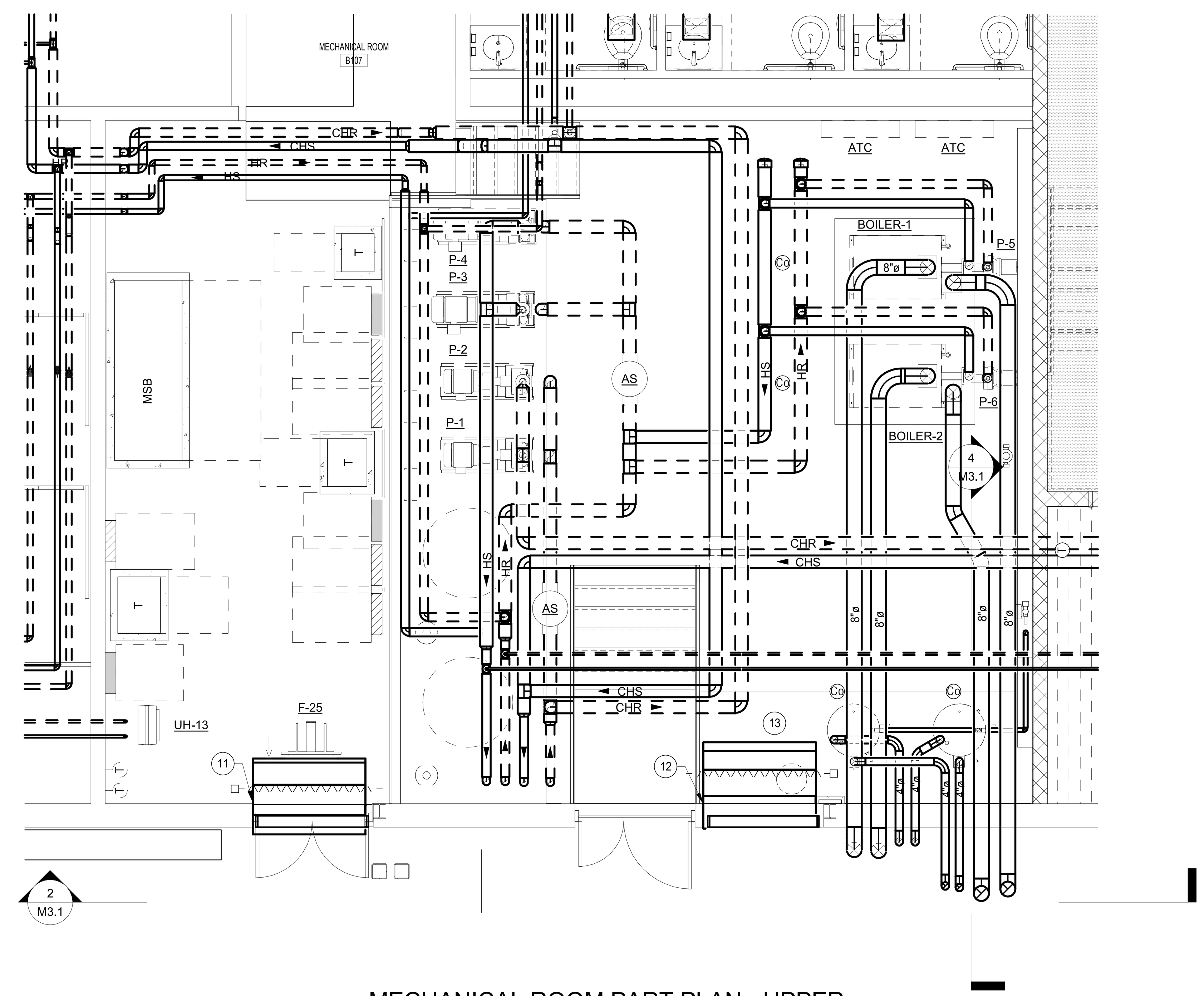
M2.12

BID SET

3/14/2025 5:16:59 PM



MECHANICAL ROOM PART PLAN - LOWER LEVEL
1/4" = 1'-0"



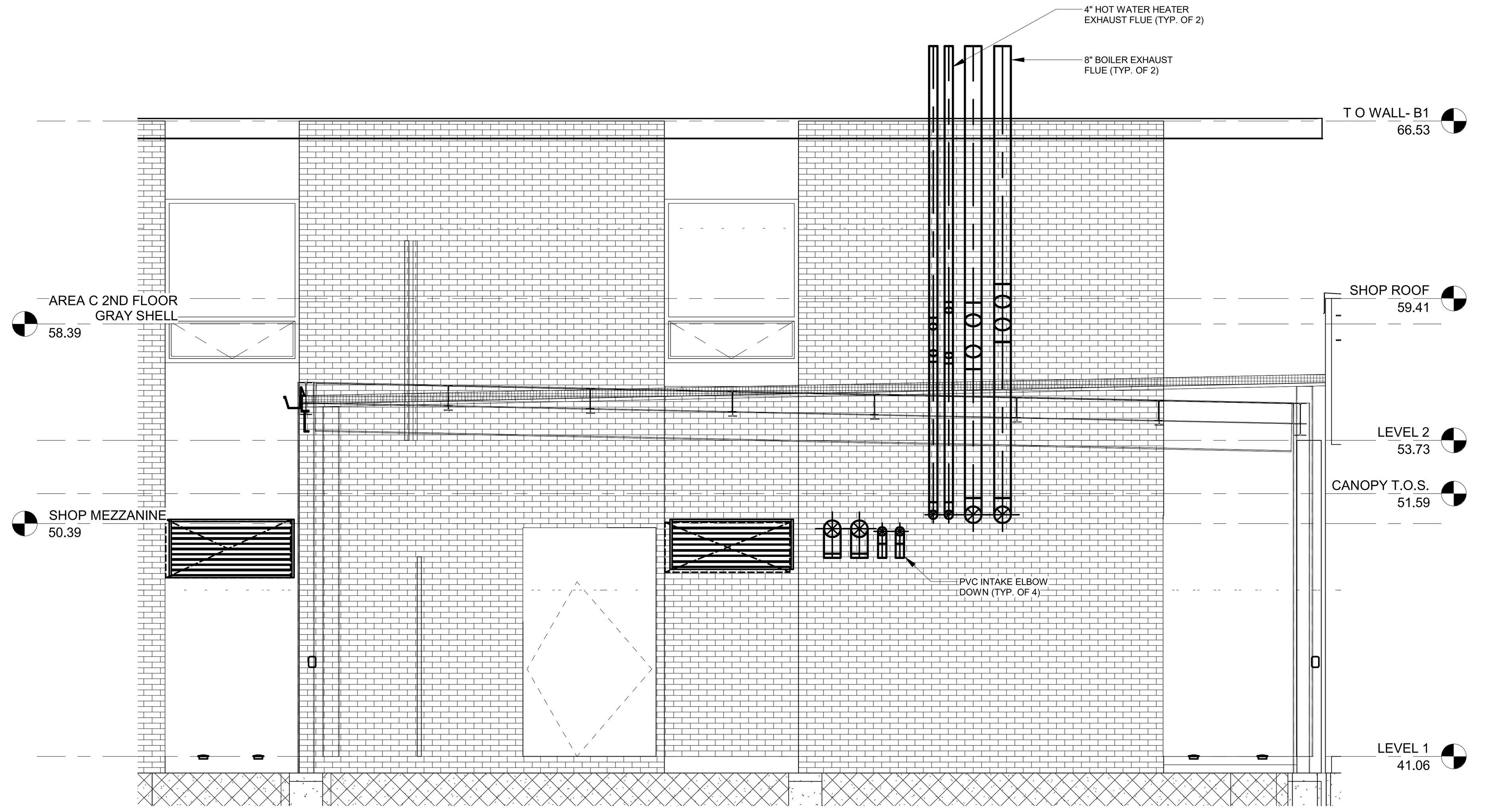
MECHANICAL ROOM PART PLAN - UPPER LEVEL
1/4" = 1'-0"

GENERAL NOTES:

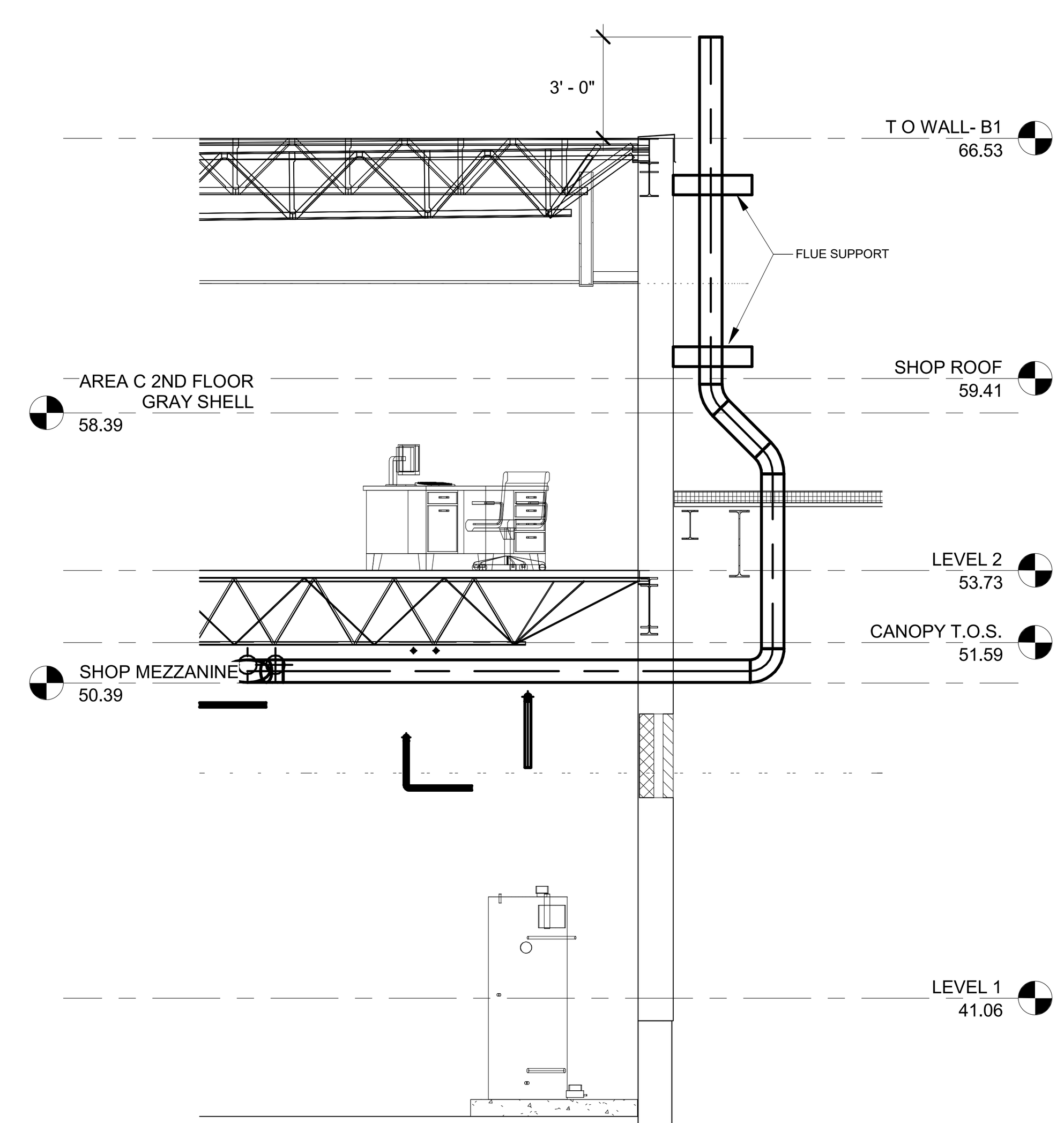
1. PATCH AND REPAIR ALL ROOF AND WALL OPENINGS TO MATCH EXISTING MATERIALS AND FINISHES.

DRAWING NOTES:

1. 6" HOUSEKEEPING CONCRETE PAD.
2. CHILLED WATER CHEMICAL SHOT FEEDER.
3. DOMESTIC WATER EXPANSION TANK.
4. HEATING WATER EXPANSION TANK. ET-2.
5. CHILLED WATER EXPANSION TANK. ET-1.
6. HEATING WATER CHEMICAL SHOT FEEDER.
7. 4" HS, 4" HR, 4" CHS & CHR PIPING DN.
8. 8"Ø BOILER FLUE DN TO BOILER CONNECTION.
9. 8"Ø BOILER COMBUSTION INTAKE DN TO BOILER CONNECTION.
10. DOMESTIC HOT WATER HEATER.
11. 60" Wx28" H E/A PLENUM FULL SIZE OF LOUVER.
12. 60" Wx24" H E/A PLENUM FULL SIZE OF LOUVER.
13. 60"x24" OPEN END DUCT W/ 1/2" BIRDSCREEN.



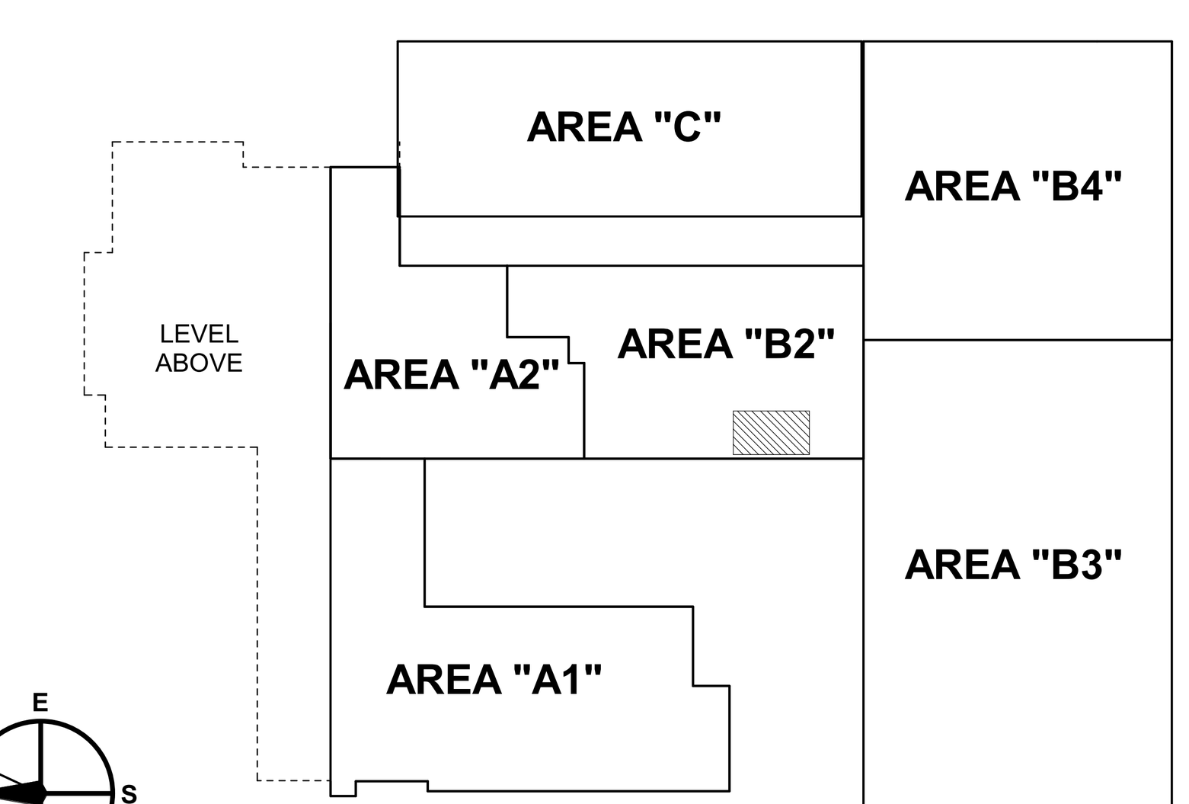
ELEVATION - 1
1/4" = 1'-0"



ELEVATION - 2
1/4" = 1'-0"

Graphic Scale: 1 inch = 4 feet
0 4' 8' 12' 16'

PLAN NORTH



KEY PLAN LEVEL 1

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

THIS DRAWING IS THE PROPERTY OF THE ARCHITECT AND MAY NOT BE PRODUCED IN ANY FORM WITHOUT WRITTEN PERMISSION

CONSULTANT:

ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE FOLCROFT TECHNICAL SCHOOL

DELAWARE COUNTY INTERMEDIATE UNIT

701 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ # : 21-DCIU-03 DRAWN BY : Author

SHEET TITLE:

MECHANICAL ROOM PART PLAN

SHEET NUMBER:

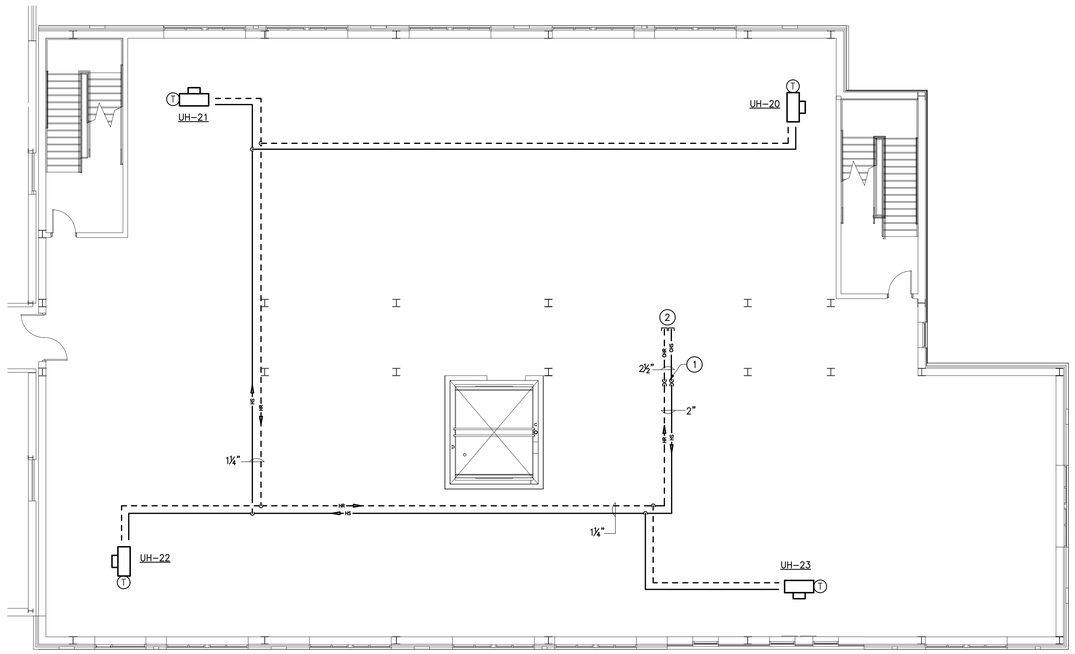
M3.1

BID SET

3/14/2025 5:31:58 PM

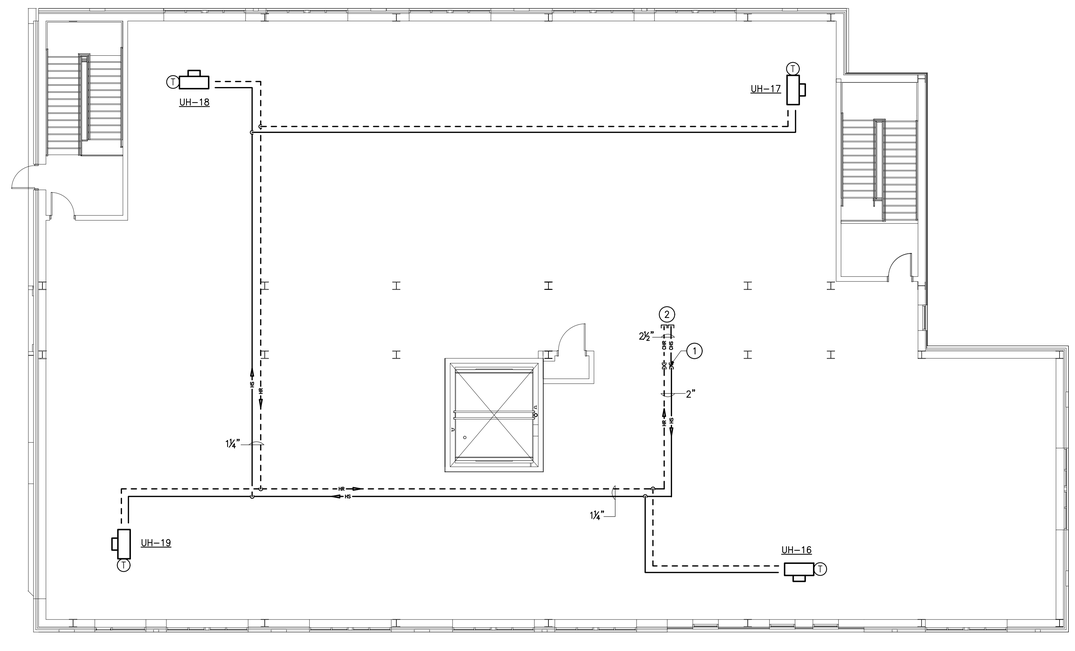
DRAWING NOTES:

1. 3" CHS, CHR AND 2½" HS, HR PIPING DN TO FIRST FLOOR AND 2½" CHS, CHR AND 2" HS, HR PIPING UP TO THIRD FLOOR.
2. VALVE AND CAP FOR FUTURE.
3. 2½" CHS, CHR AND 2" HS, HR PIPING DN TO SECOND FLOOR.



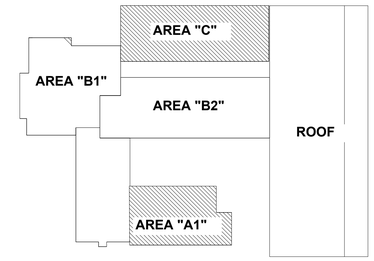
LEVEL 2 PART PLAN – AREA A – ALTERNATE 2

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

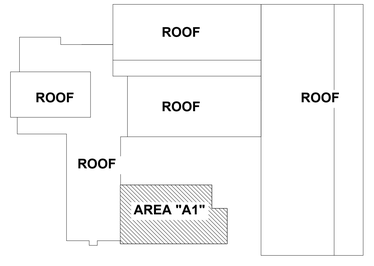


LEVEL 3 PART PLAN – AREA A – ALTERNATE 1

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



KEY PLAN LEVEL 2



KEY PLAN LEVEL 3

0 8' 16' 24' 32'

TRUE NORTH
N E S W
PLAN NORTH

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:

ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU

Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

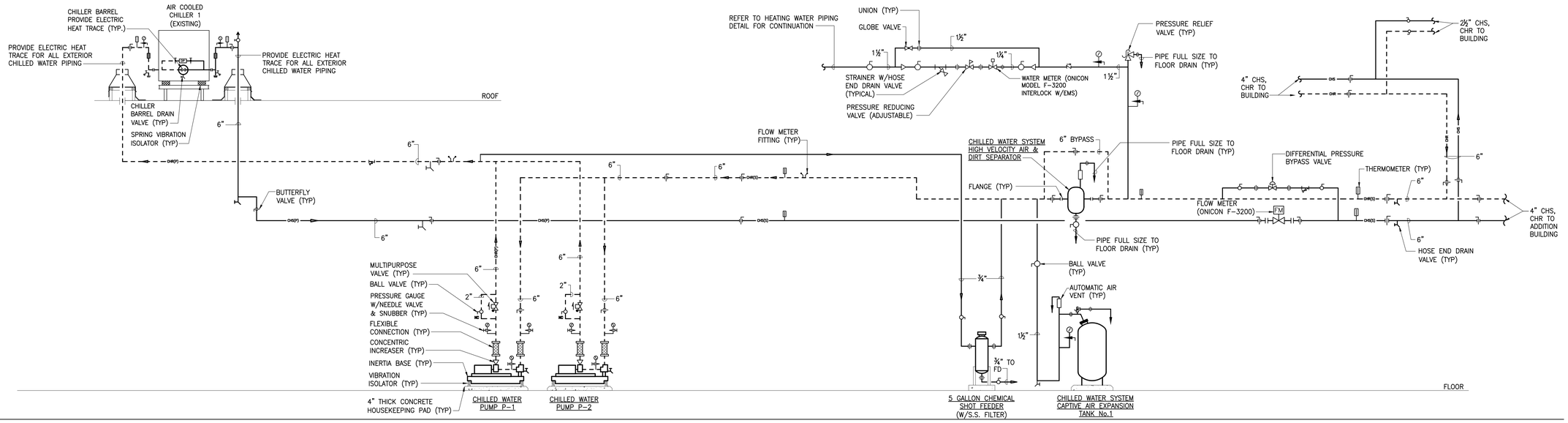
DESCRIPTION:	DATE:
BID SET	03/17/2025

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:
PARTIAL FLOOR PLANS - LEVELS 2 AND 3 - AREA A - ALTERNATES

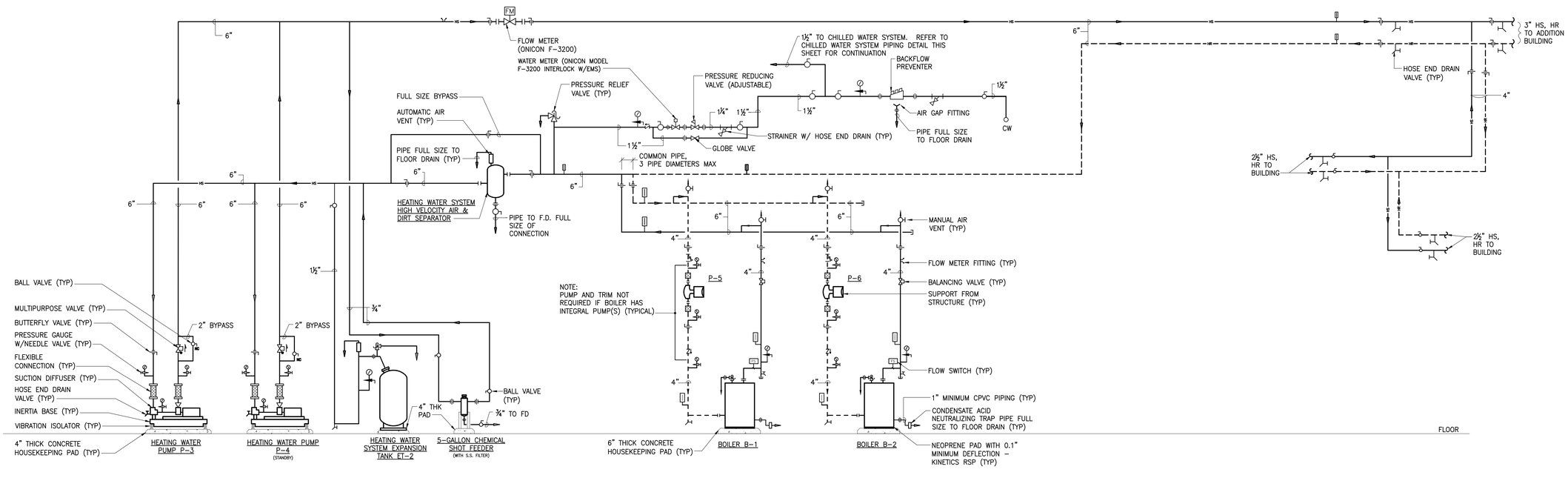
SHEET NUMBER:
M4.1

BID SET



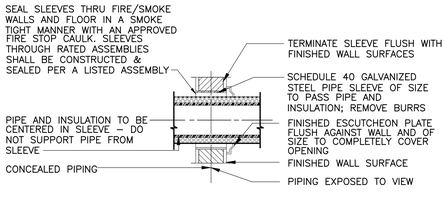
1 CENTRAL CHILLED WATER PLANT PIPING DETAIL

SCALE: NONE



2 CENTRAL HEATING WATER PLANT PIPING DETAIL

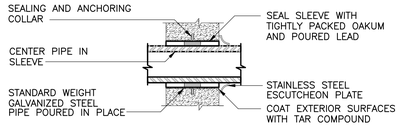
SCALE: NONE



NOTE: FOR INTERIOR FRAME PARTITIONS–PIPE SLEEVES MAY BE FABRICATED FROM GALVANIZED SHEET METAL; ROUND TUBE CLOSED WITH SNAPLOCK JOINT, WELDED SPIRAL SEAMS, OR WELDED LONGITUDINAL JOINT. FABRICATE FROM THE FOLLOWING GAUGES: 3" AND SMALLER, 20 GAUGE; 4" TO 6", 16 GAUGE; OVER 6", 14 GAUGE.

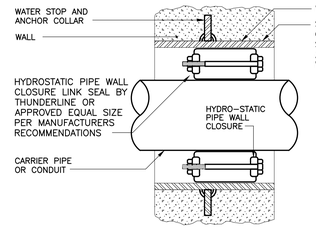
3 TYPICAL PIPE SLEEVE THRU INTERIOR WALL DETAIL

SCALE: NONE



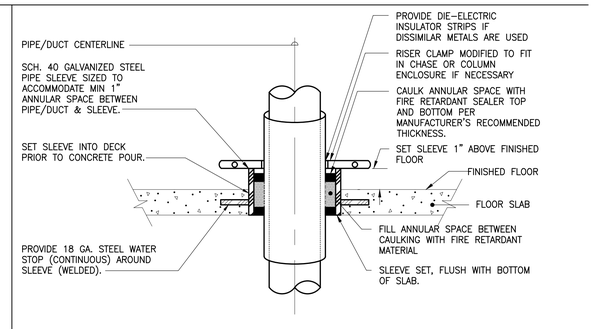
4 TYPICAL PIPE SLEEVE THRU EXTERIOR WALL ABOVE GRADE DETAIL

SCALE: NONE



5 TYPICAL PIPE SLEEVE THRU EXTERIOR WALL BELOW GRADE DETAIL

SCALE: NONE



6 TYPICAL PIPE SLEEVE THRU FLOOR DETAIL

SCALE: NONE

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:

ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.8411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

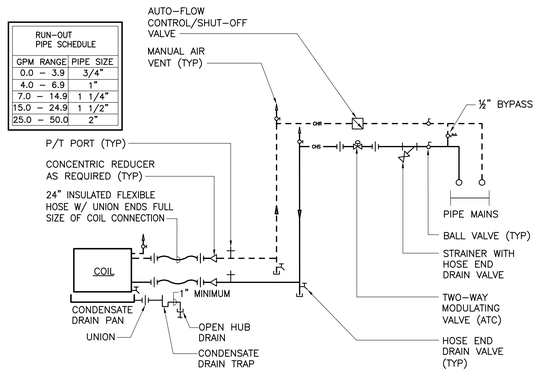
SHEET TITLE:

CENTRAL PLANT PIPING DETAILS

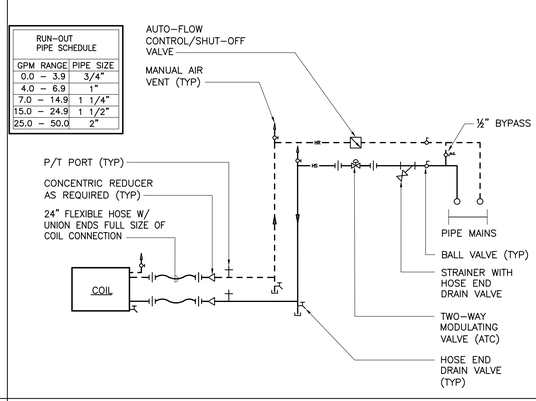
SHEET NUMBER:

M7.1

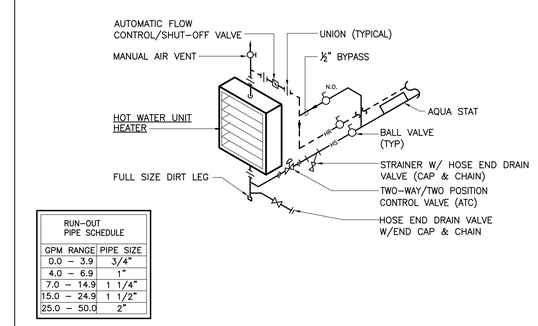
BID SET



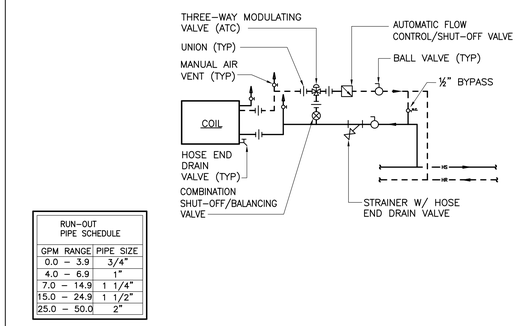
7 TYPICAL FAN COIL UNIT COOLING COIL PIPING DETAIL — SCALE: NONE



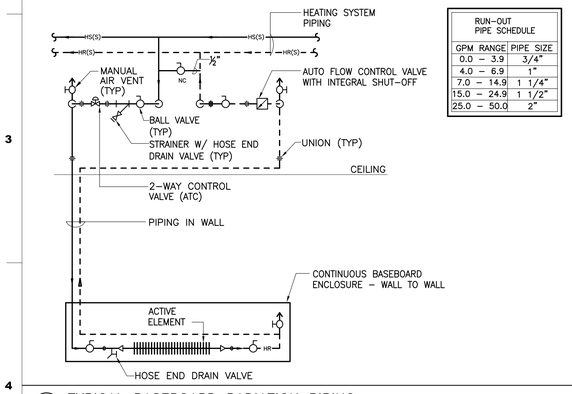
8 TYPICAL FAN COIL UNIT HEATING COIL PIPING DETAIL — SCALE: NONE



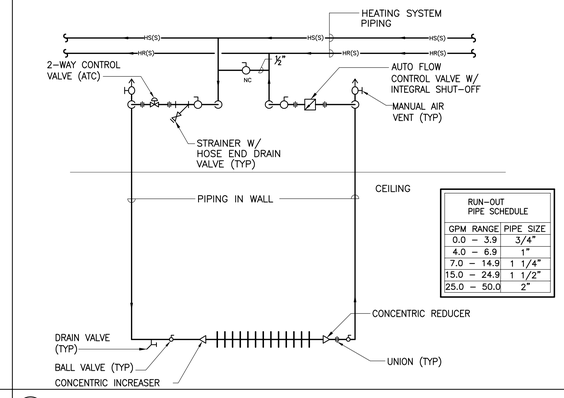
9 TYPICAL HORIZONTAL DISCHARGE HOT WATER UNIT HEATER DETAIL — SCALE: NONE



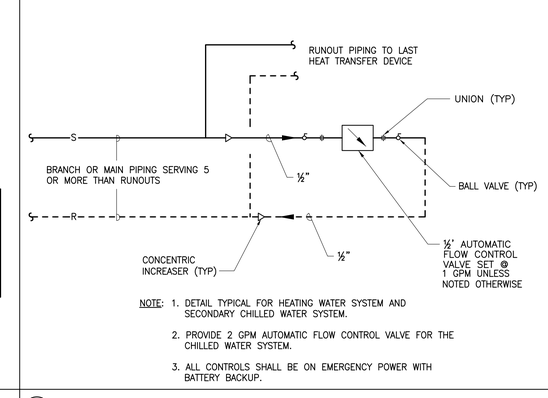
10 TYPICAL CABINET UNIT HEATER PIPING DETAIL — SCALE: NONE



11 TYPICAL BASEBOARD RADIATION PIPING DETAIL WITH 2-WAY CONTROL VALVE — SCALE: NONE

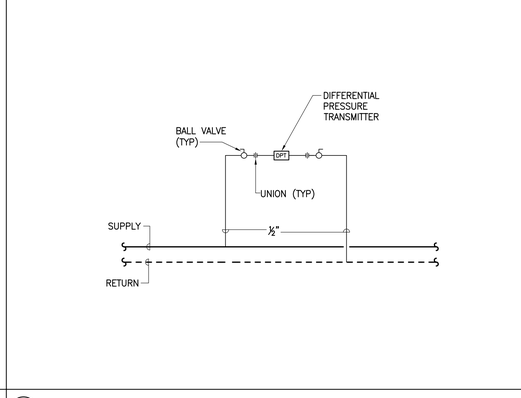


12 TYPICAL HOT WATER CONVECTOR PIPING DETAIL — SCALE: NONE

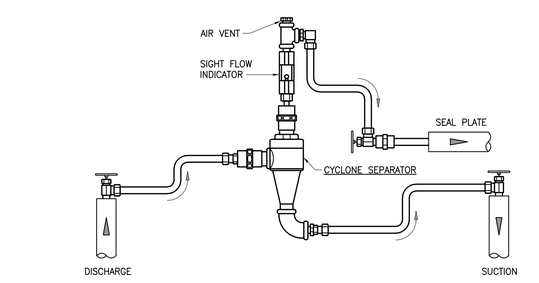


NOTE: 1. DETAIL TYPICAL FOR HEATING WATER SYSTEM AND SECONDARY CHILLED WATER SYSTEM.
2. PROVIDE 2 GPM AUTOMATIC FLOW CONTROL VALVE FOR THE CHILLED WATER SYSTEM.
3. ALL CONTROLS SHALL BE ON EMERGENCY POWER WITH BATTERY BACKUP.

13 TYPICAL LAST RUN OUT BYPASS PIPING DETAIL — SCALE: NONE

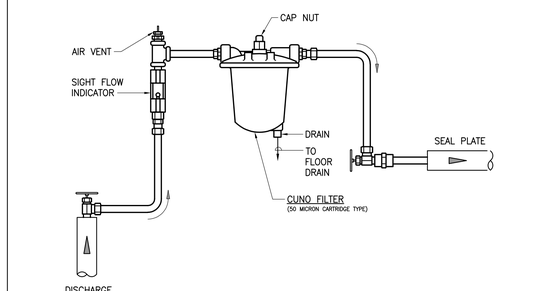


14 TYPICAL SYSTEM DIFFERENTIAL TRANSMITTER DETAIL — SCALE: NONE



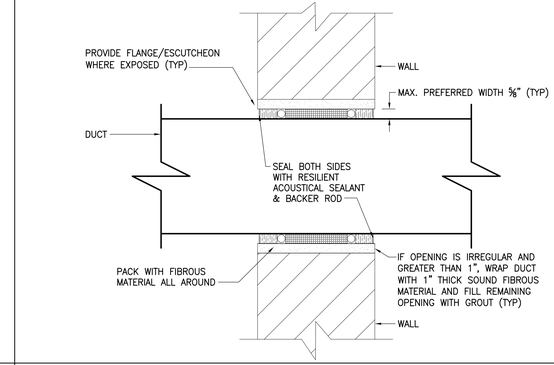
NOTE: FOR USE ON PUMPS >30 PSI.

15 TYPICAL PUMP SEAL CYCLONE SEPARATOR w/ SIGHT FLOW INDICATOR DETAIL — SCALE: NONE

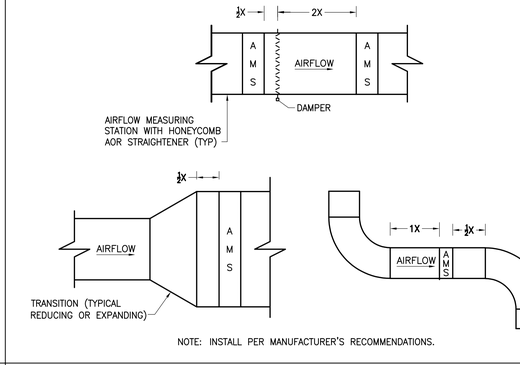


NOTE: FOR USE ON PUMPS ≤30 PSI.

16 TYPICAL PUMP SEAL CUNO FILTER w/ SIGHT FLOW INDICATOR DETAIL — SCALE: NONE

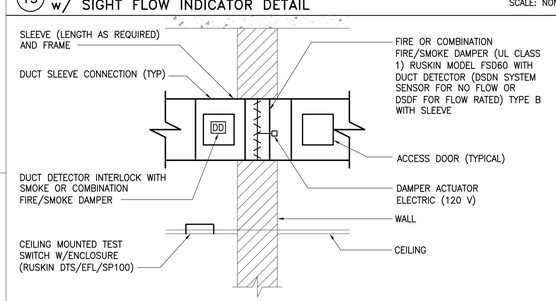


17 TYPICAL DUCT PENETRATION AT EXTERIOR WALL DETAIL — SCALE: NONE



NOTE: INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

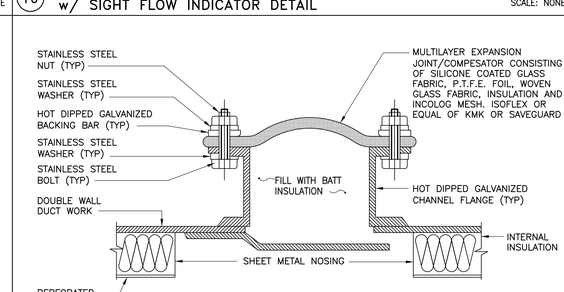
18 TYPICAL AMS INSTALLATION DETAIL — SCALE: NONE



SEQUENCE OF OPERATION

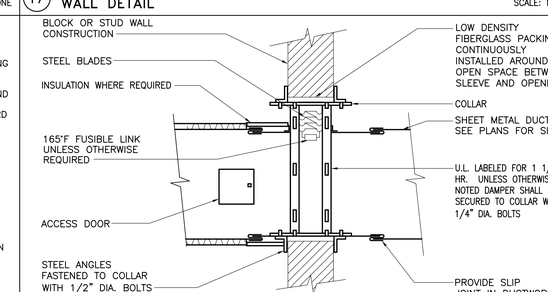
1. DUCT DETECTOR SHALL CLOSE DAMPER WHEN SMOKE AND/OR FIRE IS SENSED.
2. PROVIDE A PRESS TO TEST SWITCH (RUSKIN DTS)
3. PROVIDE ZERO FLOW DUCT DETECTOR FOR GRAVITY TRANSFER AIR DUCTS.
4. INSTALL PER THE MANUFACTURERS RECOMMENDATIONS AND UL REQUIREMENTS.

19 TYPICAL SMOKE AND COMBINATION FIRE/SMOKE DAMPER DETAIL — SCALE: NONE



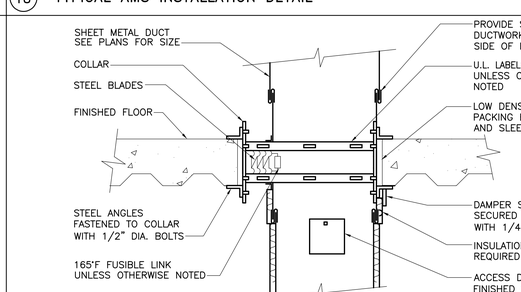
NOTE: LOCATE IN DUCTWORK CROSSING BUILDING EXPANSION JOINTS

20 TYPICAL DUCTWORK EXPANSION JOINT DETAIL — SCALE: NONE



NOTE: 1. INSTALLATION SHALL COMPLY WITH U.L. REQUIREMENTS.
2. LABEL ALL ACCESS DOORS IN ACCORDANCE WITH NFPA REQUIREMENTS.

21 TYPICAL VERTICAL DYNAMIC FIRE DAMPER DETAIL — SCALE: NONE



NOTE: 1. INSTALLATION SHALL COMPLY WITH U.L. REQUIREMENTS.
2. LABEL ALL ACCESS DOORS IN ACCORDANCE WITH NFPA REQUIREMENTS.

22 TYPICAL HORIZONTAL DYNAMIC FIRE DAMPER DETAIL — SCALE: NONE

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MARYLAND 21030 (410) 584-9411
WWW.ALBANENGINEERING.COM
P.A. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

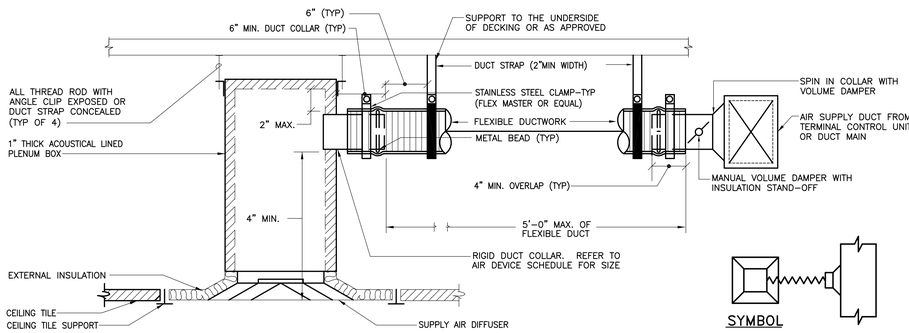
ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:
HEATING, COOLING COIL PIPING & MISC. DETAILS

SHEET NUMBER:
M7.2

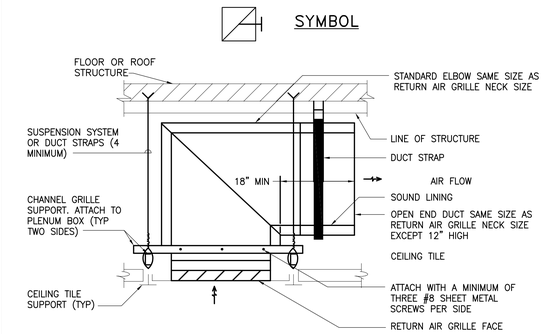
BID SET



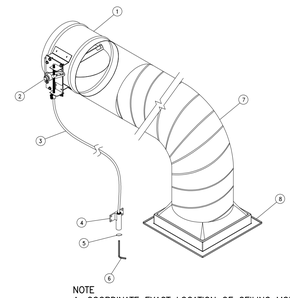
NOTES: 1. STEEL STRAP CLAMP MUST BE POSITIONED BEHIND A BEAD ON THE COLLAR.

CONCEALED CEILING AREA DETAIL

23 TYPICAL CEILING TYPE SUPPLY AIR DEVICE INSTALLATION DETAIL — SCALE: NONE



24 TYPICAL CEILING PLENUM RETURN AIR DEVICE DETAIL — SCALE: NONE



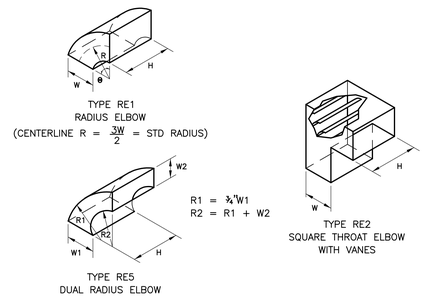
1. REMOTE CABLE OPERATED BALANCING DAMPER.
2. CABLE CONTROLLED LOCKING QUADRANT
3. CONTROL CABLE
4. MOUNTING BRACKET– INSTALL WITH OPEN END FLUSH TO FINISHED CEILING LINE
5. FINISH CAP
6. ALLEN HEX WRENCH
7. DUCT
8. CEILING DIFFUSER OR GRILLE

NOTE
A. COORDINATE EXACT LOCATION OF CEILING MOUNTED CONCEALED REGULATOR WITH ARCHITECT PRIOR TO INSTALLATION.

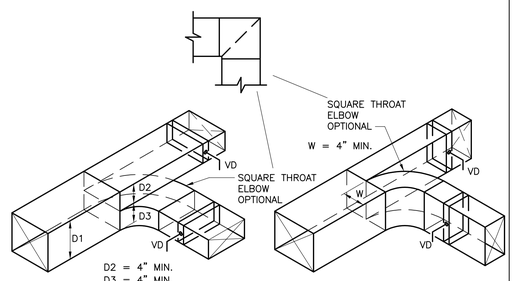
B. DETAIL IS TYPICAL FOR BOTH ROUND AND SQUARE REMOTE MANUAL VOLUME DAMPERS.

C. PROVIDE IN LIEU OF CEILING ACCESS DOOR WHERE MANUAL VOLUME DAMPERS ARE INSTALLED ABOVE HARD/INACCESSABLE CEILING SYSTEMS.

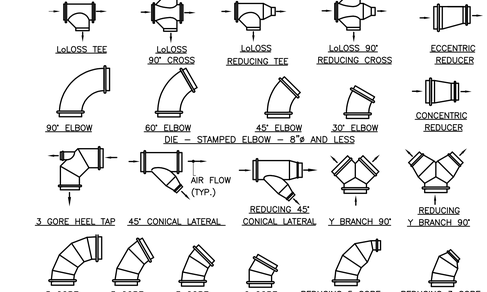
25 TYPICAL REMOTE MANUAL VOLUME DAMPER DETAIL — SCALE: NONE



26 TYPICAL RECTANGULAR DUCT CONSTRUCTION DETAIL — SCALE: NONE

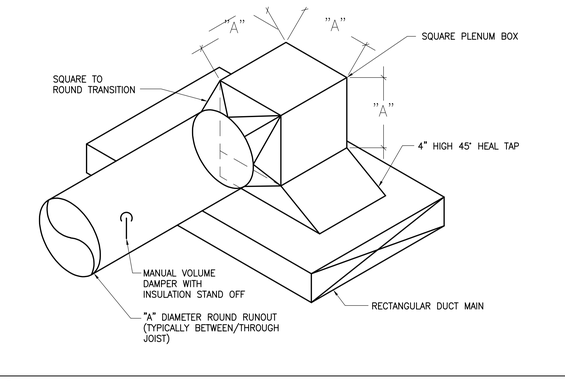


27 PARALLEL FLOW BRANCHES DETAIL — SCALE: NONE

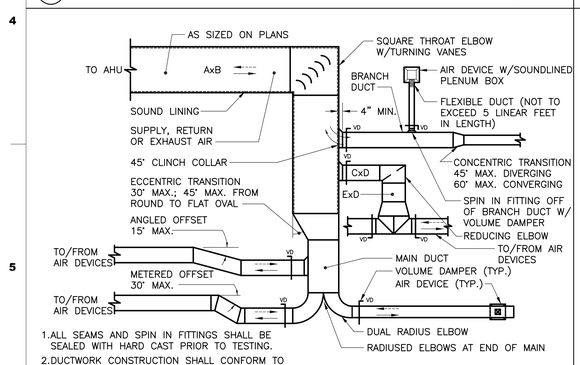


NOTE: 1. ONLY FITTINGS SHOWN SHALL BE UTILIZED.
2. ALL FITTING SHALL BE FULLY WELDED TYPE.

28 TYPICAL ROUND DUCT FITTINGS DETAIL — SCALE: NONE

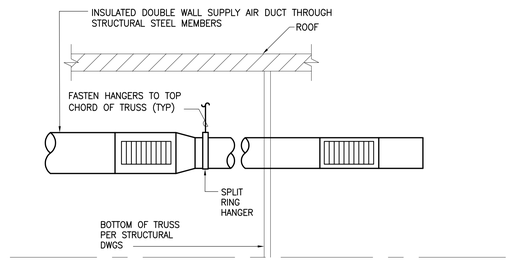


29 TYPICAL TOP OF DUCT SUPPLY/RETURN AIR RUNOUT DETAIL — SCALE: NONE

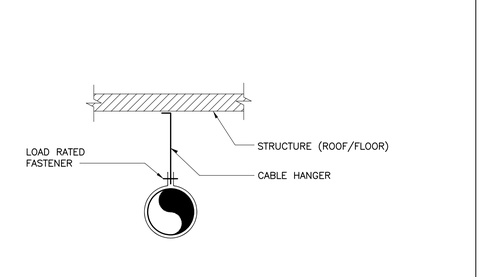


1.ALL SEAMS AND SPIN IN FITTINGS SHALL BE SEALED WITH HARD CAST PRIOR TO TESTING.
2.DUCTWORK CONSTRUCTION SHALL CONFORM TO THE MOST RECENT SMACNA STANDARD HVAC DUCT CONSTRUCTION STANDARDS
3.PROVIDE MANUAL VOLUME DAMPERS FOR EACH BRANCH AND RUNOUT IN LOW PRESSURE SYSTEMS
4.PROVIDE INSULATION STAND–OFFS FOR MANUAL VOLUME DAMPERS INSTALLED IN INSULATED DUCTS.

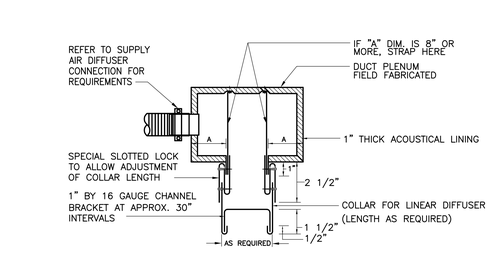
30 TYPICAL SUPPLY, EXHAUST, OR RETURN DUCT OFFSET AND TRANSITION DETAIL — SCALE: NONE



31 TYPICAL SIDEWALL SUPPLY AIR DEVICE INSTALLATION DETAIL — SCALE: NONE

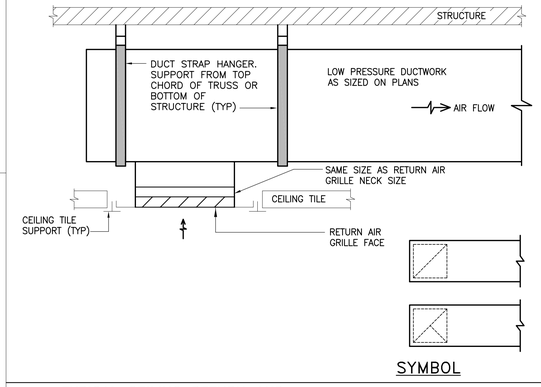


32 EXPOSED DUCT HANGER DETAIL — SCALE: NONE

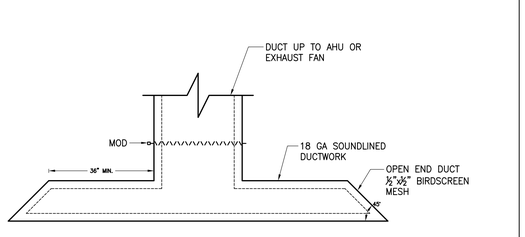


NOTE: REFER TO TYPICAL SUPPLY AIR DEVICE INSTALLATION DETAIL FOR FLEXIBLE DUCT TO RIGID DUCT CONNECTION REQUIREMENTS.

33 TYPICAL LINEAR SLOT DIFFUSER PLENUM DETAIL — SCALE: NONE

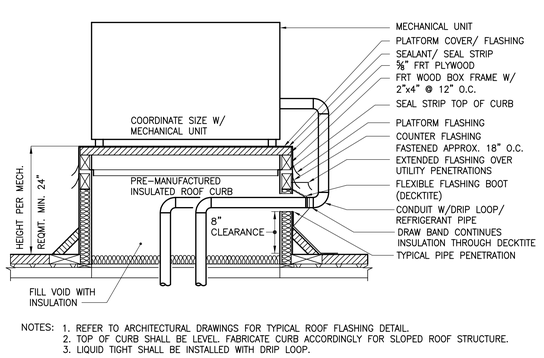


34 TYPICAL CEILING RETURN AND EXHAUST AIR DEVICE DETAIL — SCALE: NONE



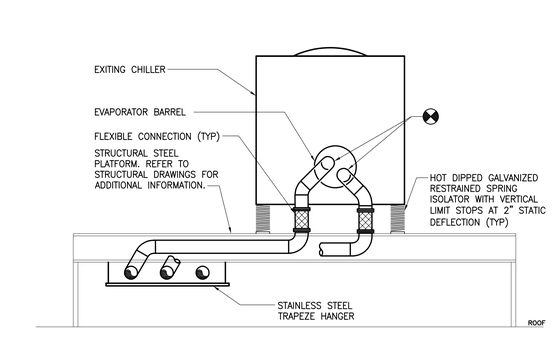
NOTE: AS A MINIMUM DUCT BRANCHES SHALL BE FULL SIZE OF RISER. REFER TO FLOOR PLANS FOR ADDITIONAL INFORMATION.

35 TYPICAL OPEN END DUCT TERMINATION DETAIL — SCALE: NONE



NOTES: 1. REFER TO ARCHITECTURAL DRAWINGS FOR TYPICAL ROOF FLASHING DETAIL.
2. TOP OF CURB SHALL BE LEVEL. FABRICATE CURB ACCORDINGLY FOR SLOPED ROOF STRUCTURE.
3. LIQUID TIGHT SHALL BE INSTALLED WITH DRIP LOOP.

36 TYPICAL EQUIPMENT ROOF CURB DETAIL W/ PIPE PENETRATION DETAIL — SCALE: NONE



37 TYPICAL CHILLER PIPING/SUPPORT DETAIL — SCALE: NONE

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

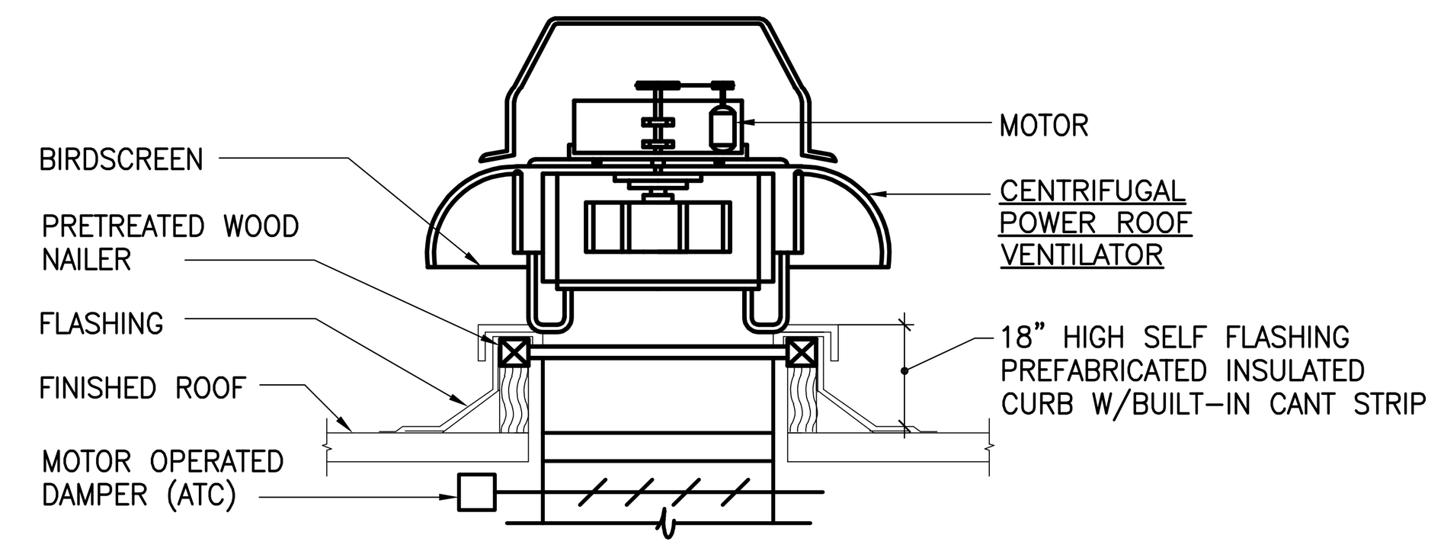
ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:
AIR DISTRIBUTION SYSTEM DETAILS

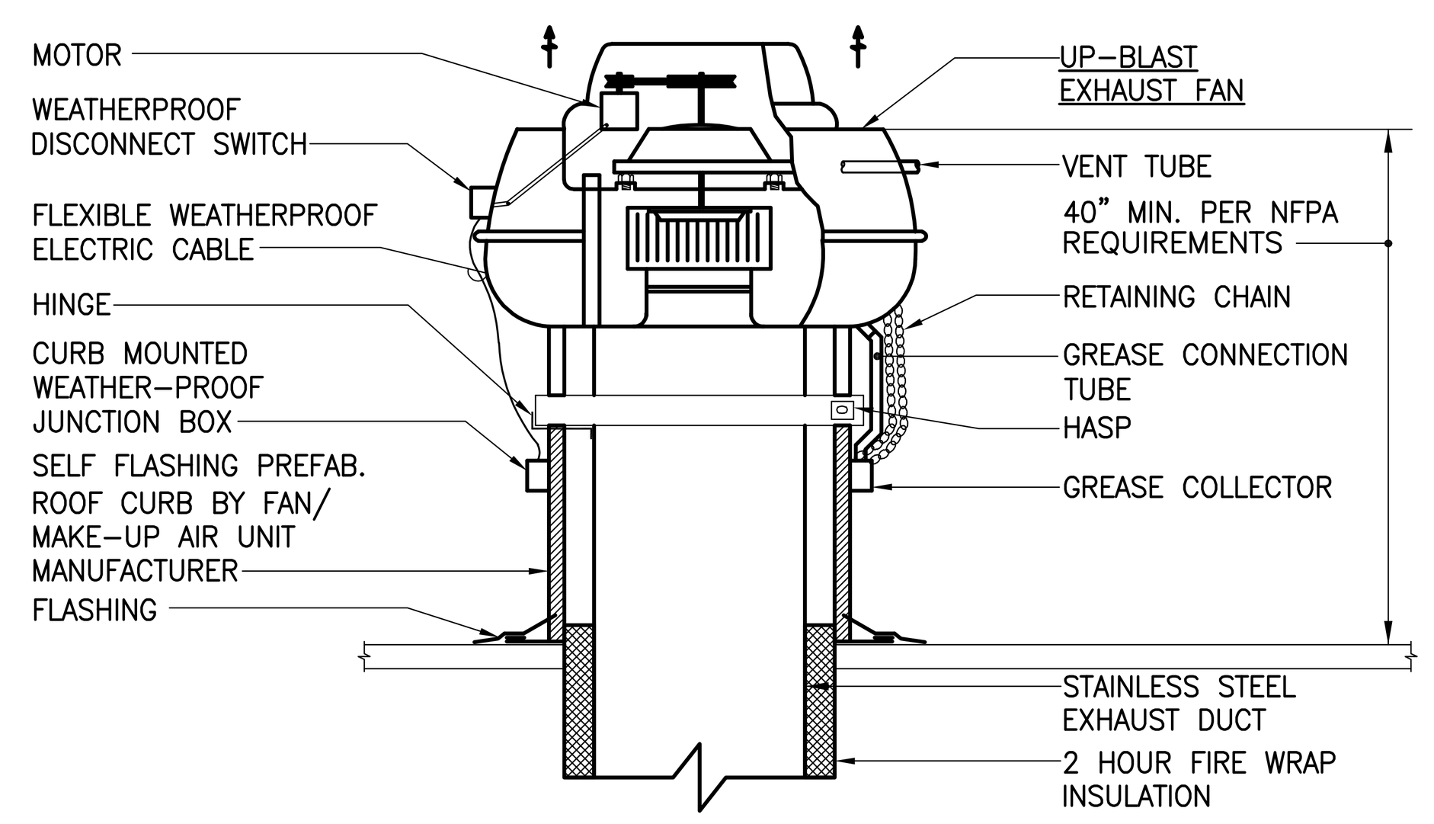
SHEET NUMBER:
M7.3

BID SET



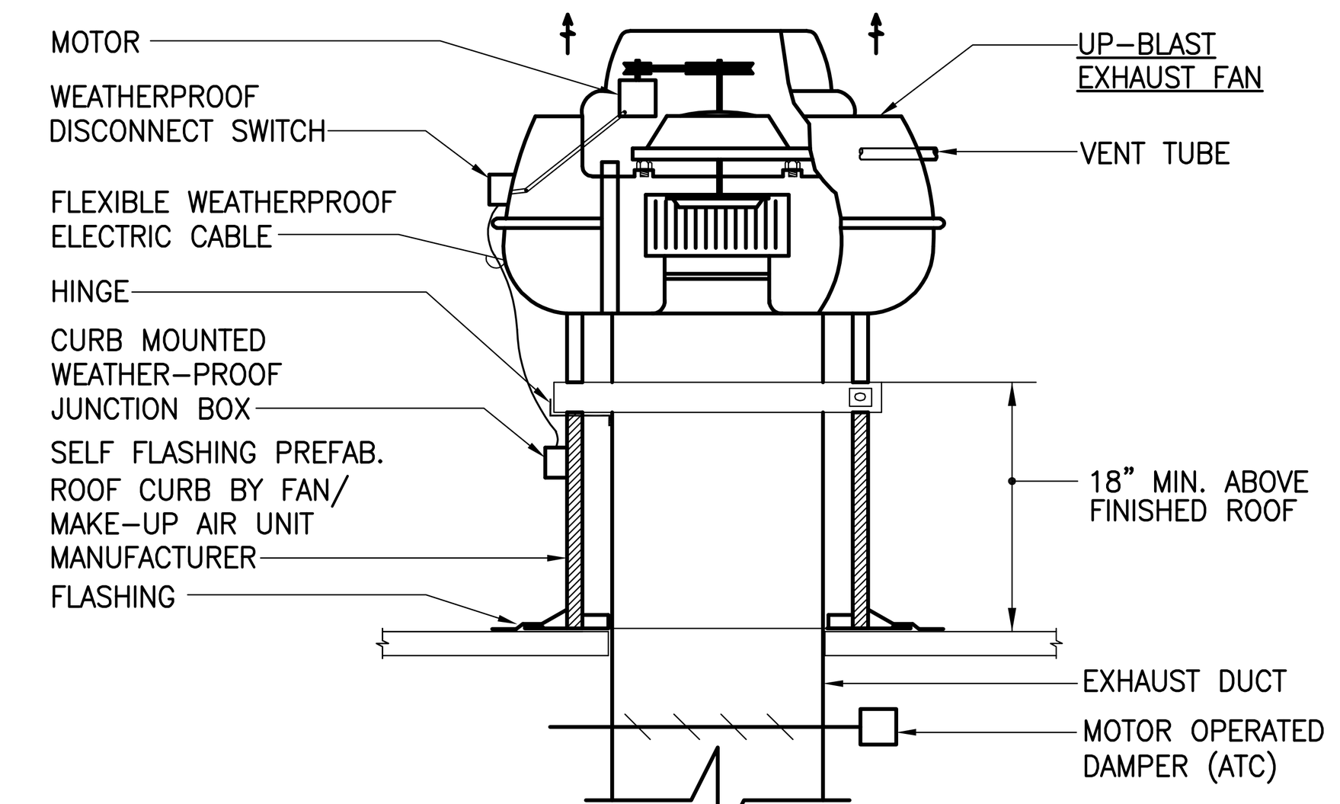
NOTES:
1. DETAIL TYPICAL FOR DIRECT DRIVE TYPE.
2. DIRECT DRIVE TYPE SHALL BE PROVIDED WITH ECM MOTOR OR SPEED CONTROLLER.

38 TYPICAL CENTRIFUGAL POWER ROOF VENTILATOR
SCALE: NONE



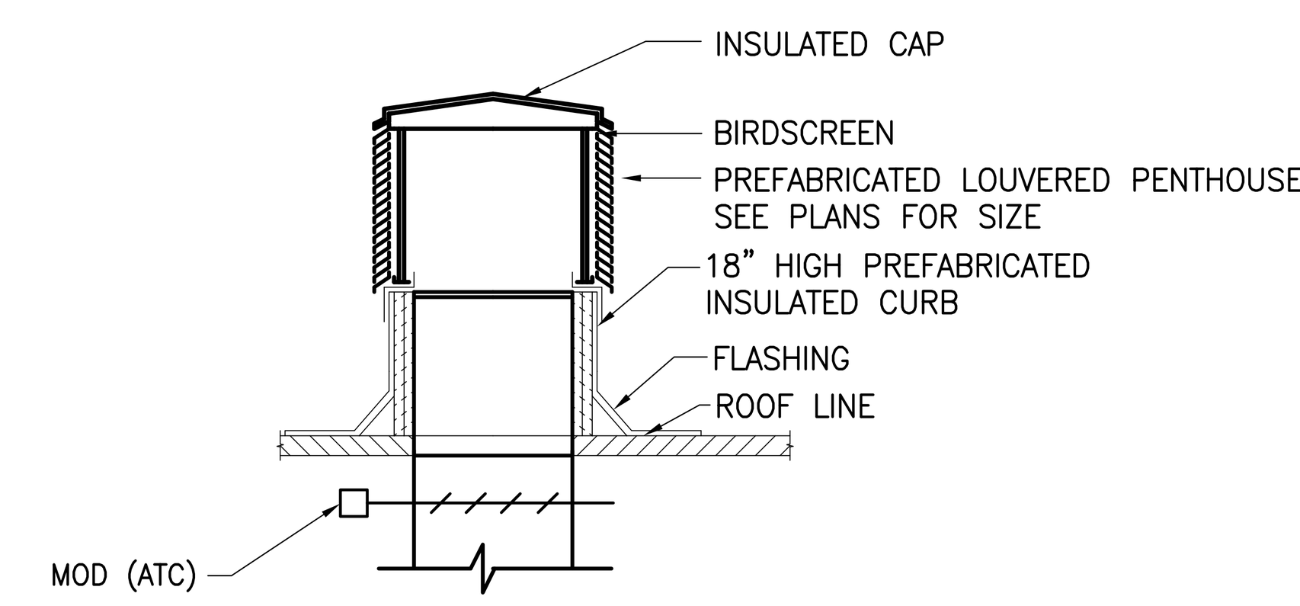
NOTES:
1. INSTALLATION SHALL COMPLY WITH NFPA 96 REQUIREMENTS.
2. COORDINATE FLASHING REQUIREMENTS WITH ARCHITECT.
3. COORDINATE ROOF OPENING SIZE AND LOCATION WITH STRUCTURE ENGINEER.
4. DETAIL TYPICAL FOR DIRECT DRIVE TYPE.
5. DETAIL SIMILAR FOR SIDEWALL MOUNTING.

39 KITCHEN EXHAUST HOOD FAN DETAIL
SCALE: NONE

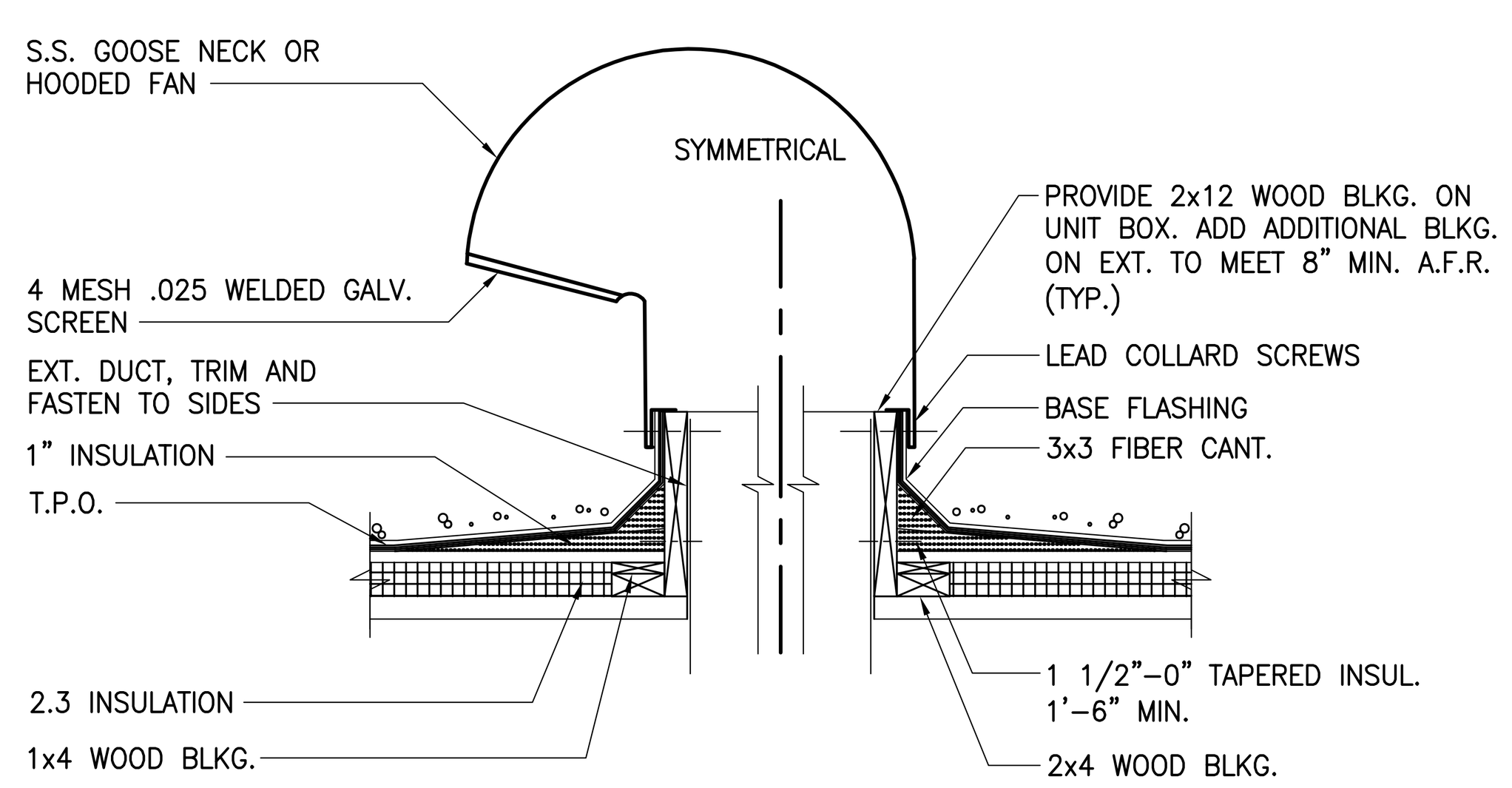


NOTES:
1. COORDINATE FLASHING REQUIREMENTS WITH ARCHITECT.
2. COORDINATE ROOF OPENING SIZE AND LOCATION WITH STRUCTURE ENGINEER.
4. DETAIL TYPICAL FOR DIRECT DRIVE TYPE.
3. DIRECT DRIVE TYPE SHALL BE PROVIDED WITH ECM MOTOR OR SPEED CONTROLLER.

40 TYPICAL UP BLAST FAN DETAIL
SCALE: NONE

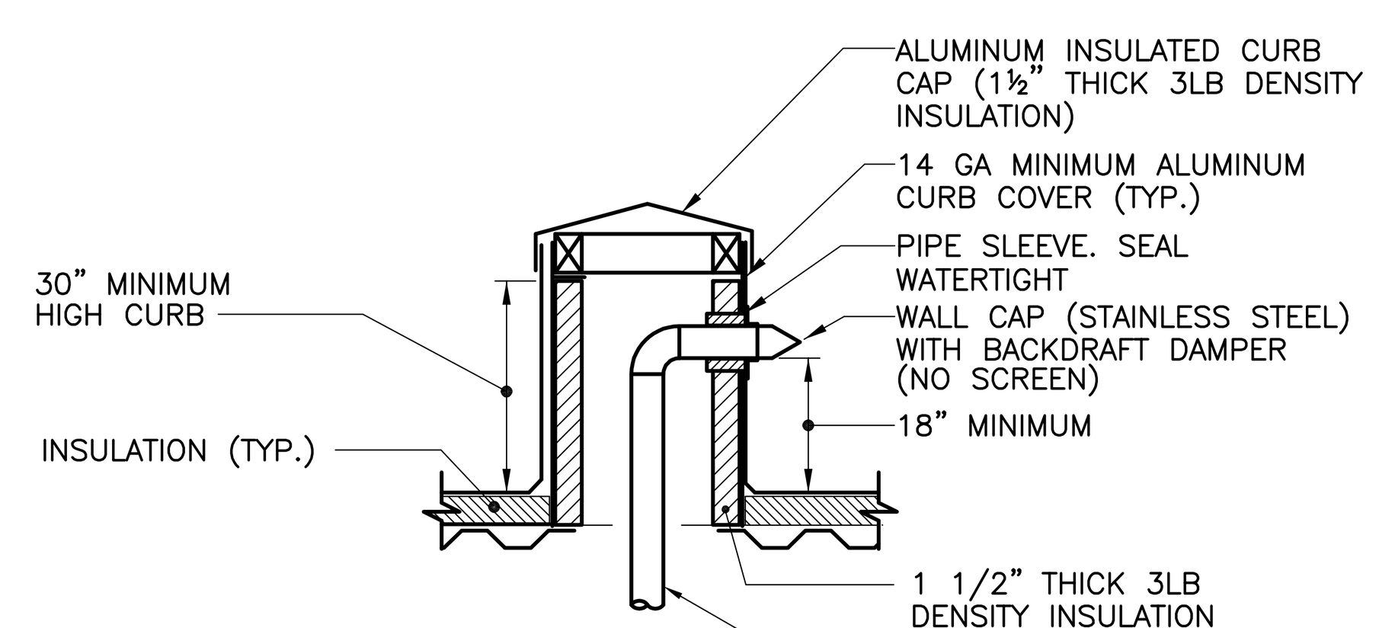


41 TYPICAL GRAVITY RELIEF/INTAKE DETAIL
SCALE: NONE



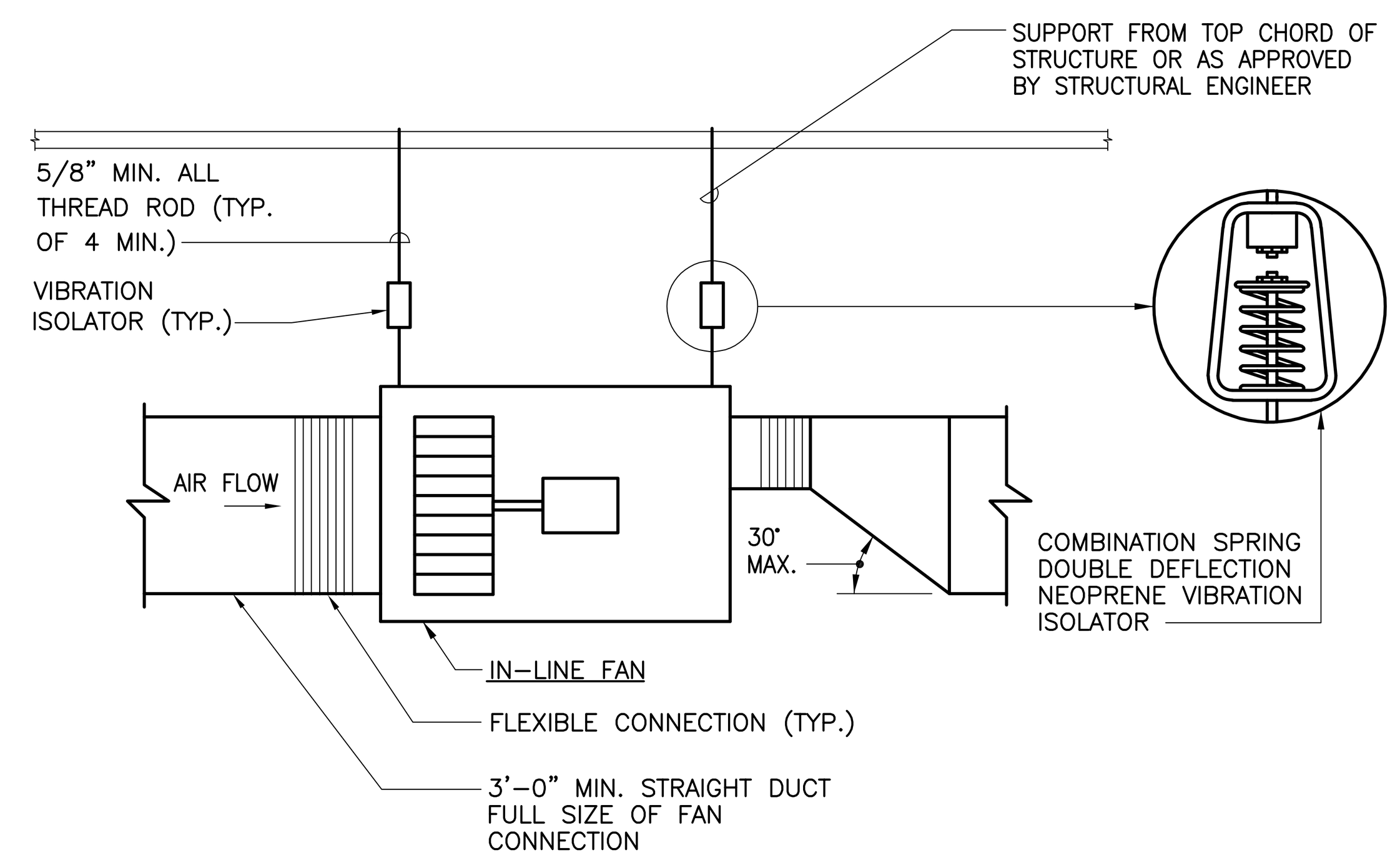
NOTE: DETAIL TYPICAL FOR DUCT PENETRATIONS THROUGH ROOF.

42 TYPICAL GOOSENECK DETAIL
SCALE: NONE

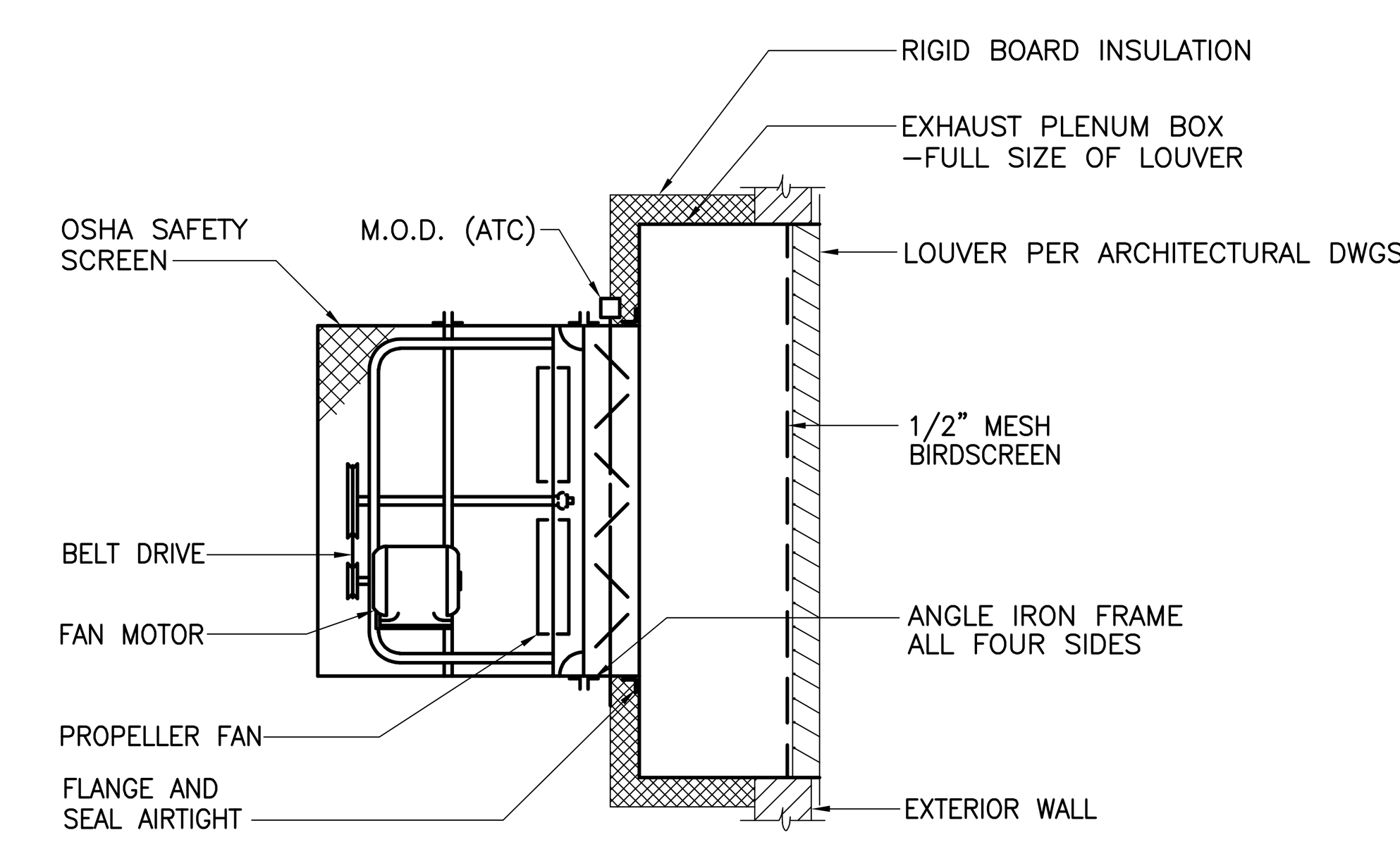


NOTE:
DETAIL IS TYPICAL FOR DRYER VENT, RANGE HOOD VENT, EXHAUST VENT, AND/OR FAN COIL UNIT O/A TERMINATION.

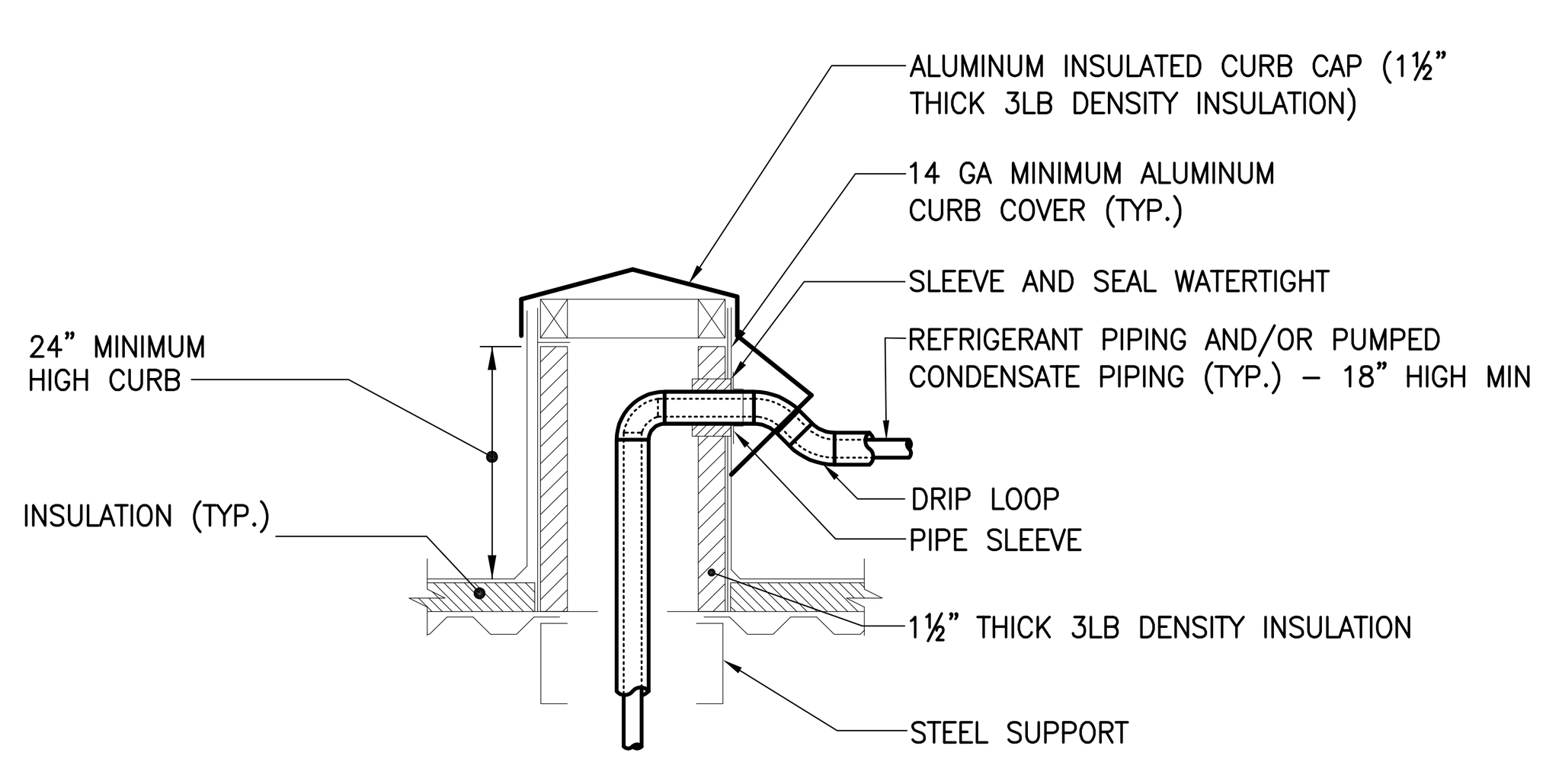
43 TYPICAL VENT THROUGH ROOF CURB DETAIL
SCALE: NONE



44 TYPICAL IN-LINE FAN DETAIL
SCALE: NONE

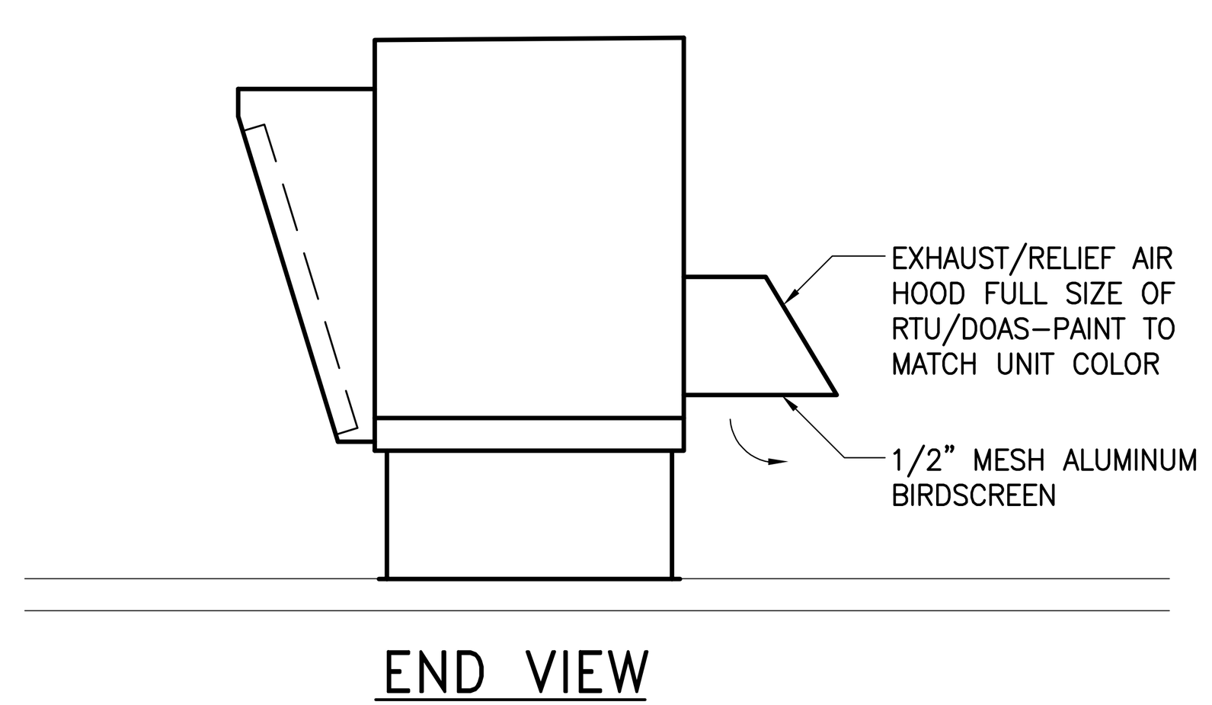


45 TYPICAL WALL MOUNTED PROPELLER EXHAUST FAN DETAIL
SCALE: NONE

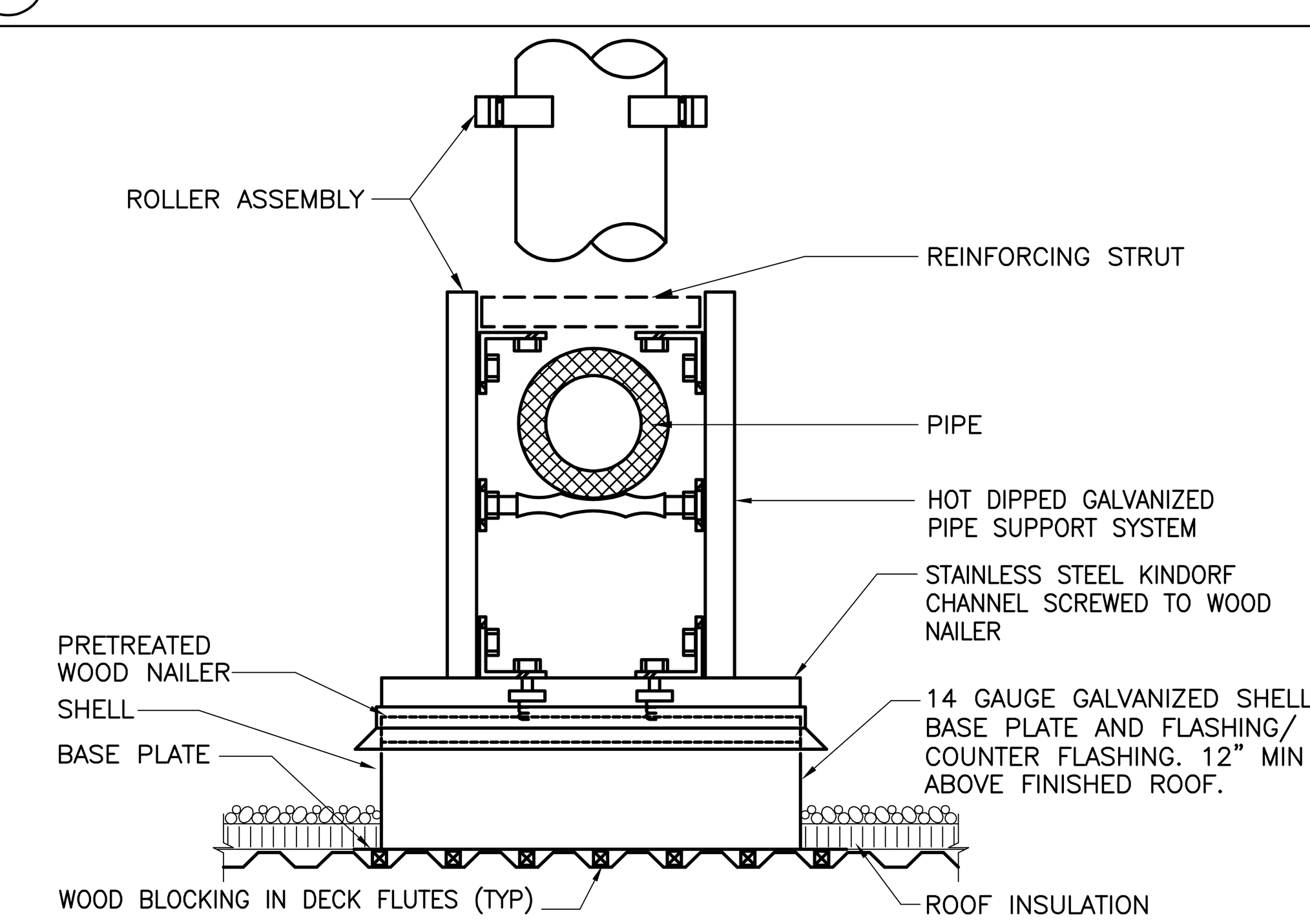


NOTE: PROVIDE AIREX TITAN OUTLET WITH E-FLEX INSULATION JACKET OR EQUAL

46 TYPICAL REFRIGERANT PIPE ROOF PENETRATION CURB DETAIL
SCALE: NONE

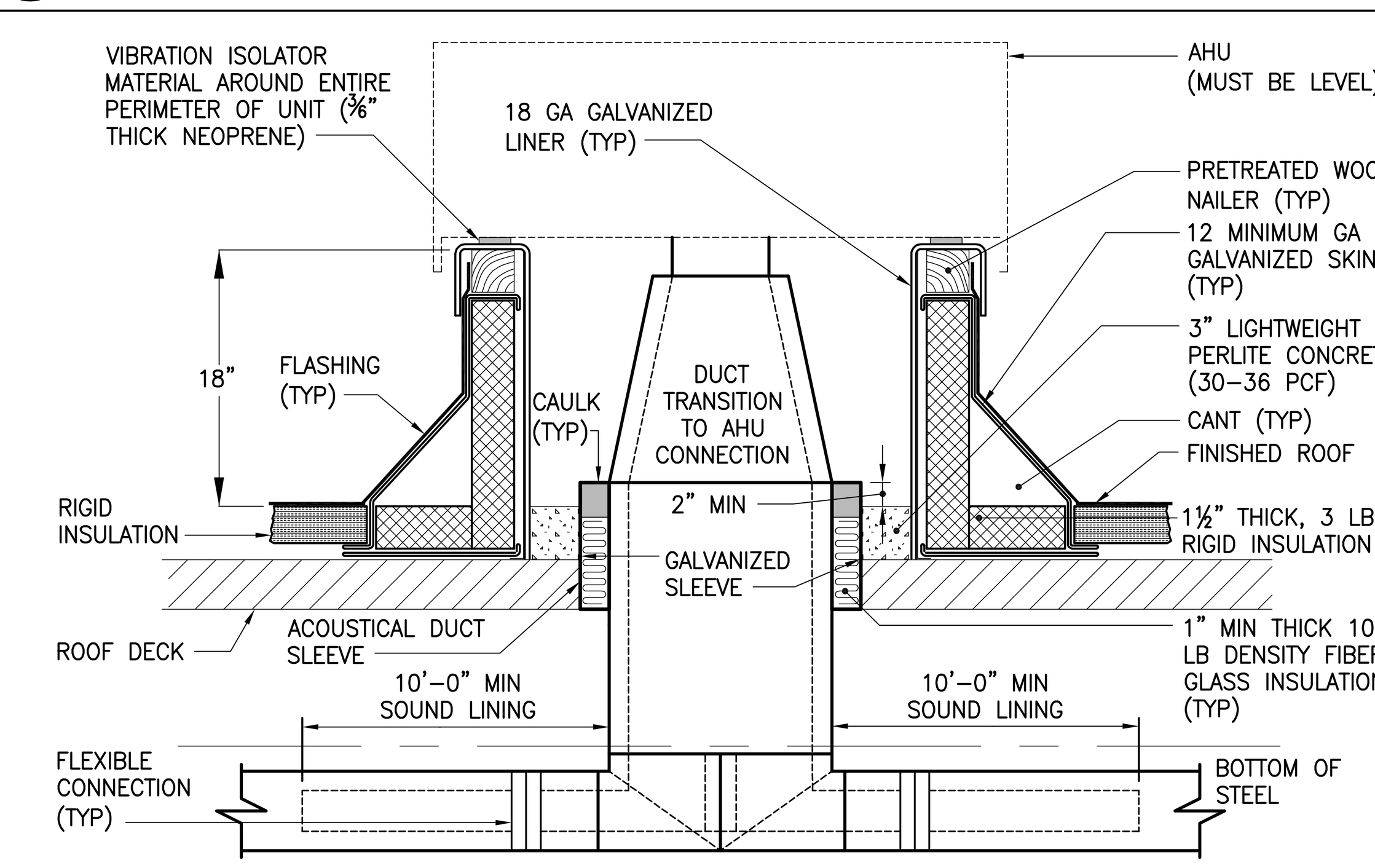


47 TYPICAL E/A HOOD DETAIL
SCALE: NONE



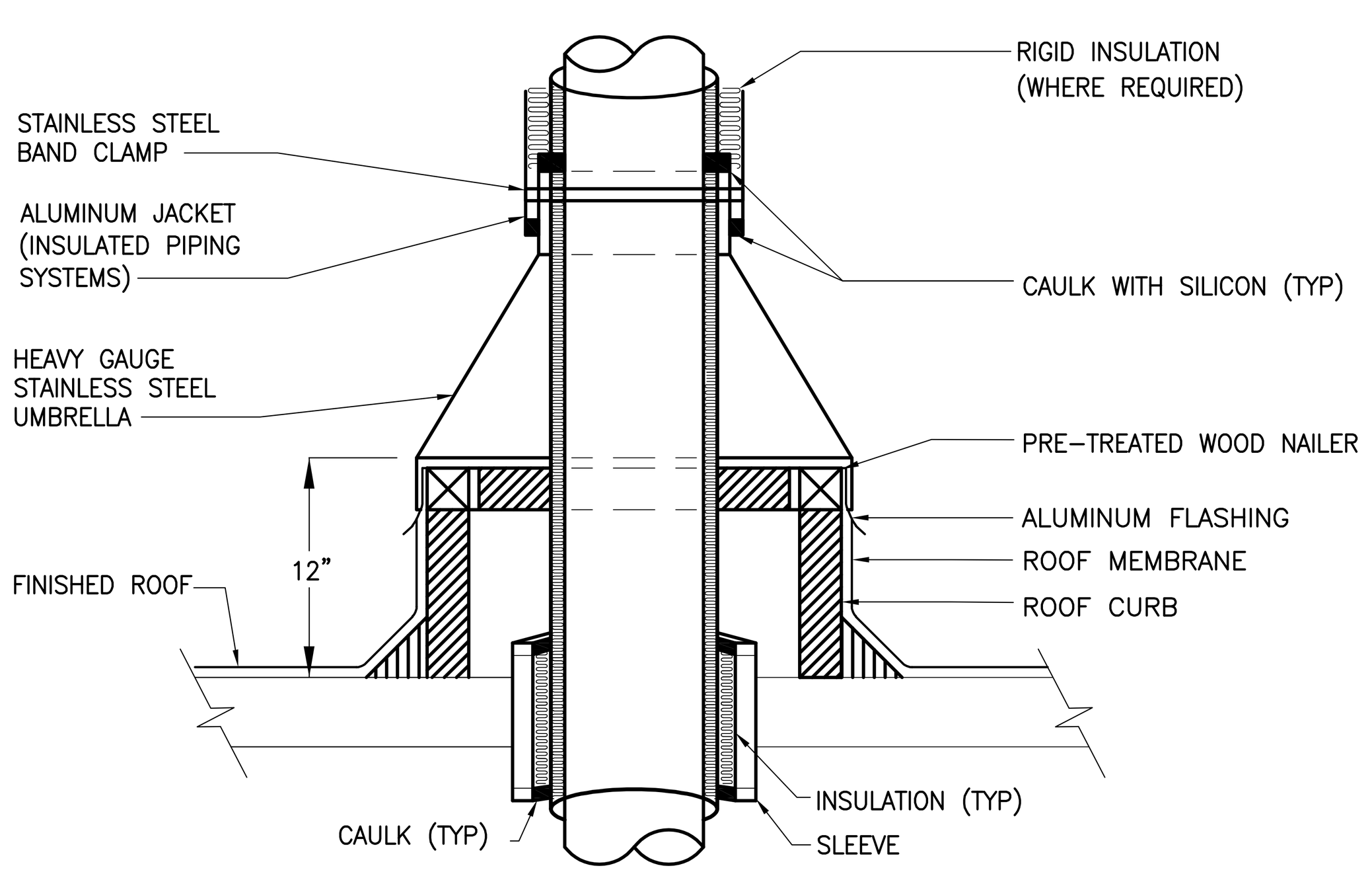
NOTE:
1. COORDINATE ROOF CURB/SUPPORT WITH THE ARCHITECTURAL DRAWINGS
2. CONTRACTOR IS RESPONSIBLE FOR PIPE SUPPORT SYSTEM.
3. PATE HEAVY DUTY PIPE ROLLER SUPPORT OR EQUAL.
4. INSTALL PER THE MANUFACTURERS RECOMMENDATIONS.

48 TYPICAL HYDRONIC PIPE ROOF SUPPORT CURB DETAIL
SCALE: NONE

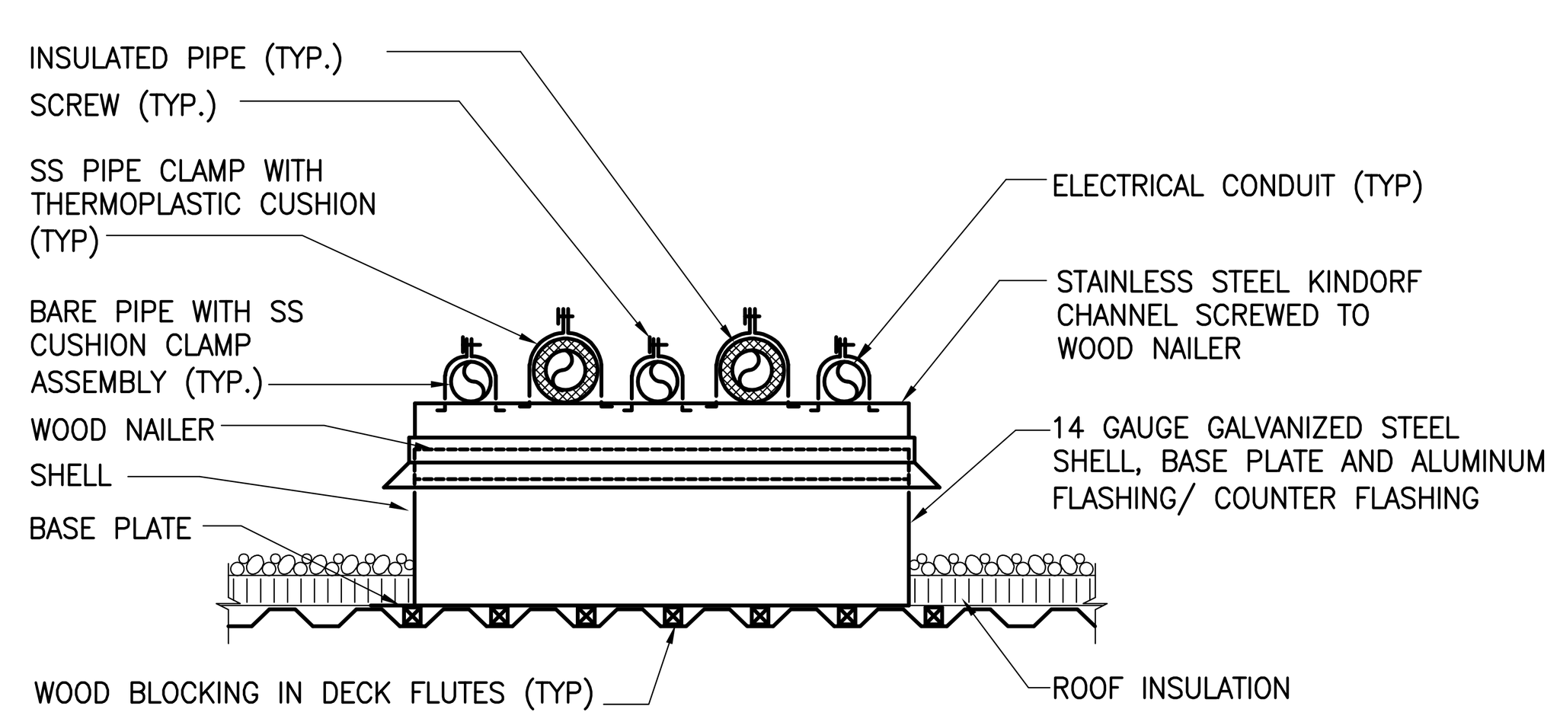


NOTE:
1. DETAIL TYPICAL FOR SUPPLY AND RETURN DUCT CONNECTIONS
2. ROOF DECKS SLOPE AND ROOF CURB SHALL BE SLOPED ACCORDINGLY TO MAINTAIN TOP OF CURB A MINIMUM OF 18" ABOVE THE HIGHEST POINT OF THE ROOF AND BE LEVEL
3. ALL DUCTWORK FROM UNIT CONNECTION TO THE END OF THE SOUND LINED DUCTWORK SHALL BE CONSTRUCTED OF 18 GA GALVANIZED STEEL WITH 1" THICK 6 PCF DENSITY EXTERNAL INSULATION.

49 TYPICAL ROOFTOP AHU INSULATED CURB FOR INSULATED ROOF DECK DETAIL
SCALE: NONE



50 TYPICAL HYDRONIC PIPE/DUCT ROOF PENETRATION CURB DETAIL
SCALE: NONE



NOTE:
1. DETAIL TYPICAL FOR CONDENSATE DRAIN PIPING
2. TOP OF SUPPORT SHALL BE A MINIMUM OF 12" ABOVE FINISHED ROOF
3. PATE OR EQUAL PIPE ROOF CURB ASSEMBLY

51 TYPICAL REFRIGERANT/CONDENSATE DRAIN PIPE ROOF SUPPORT CURB DETAIL
SCALE: NONE

52 NOT USED
SCALE: NONE

53 NOT USED
SCALE: NONE

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:

ALBAN ENGINEERING, INC
503 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

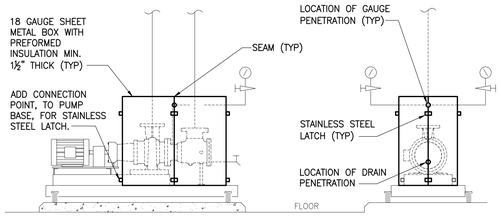
ISSUE DATES DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:
FAN, SUPPORTS & MISC. DETAILS

SHEET NUMBER:
M7.4

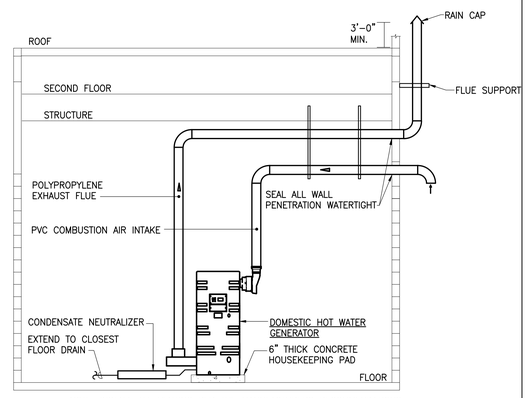
BID SET



NOTE:

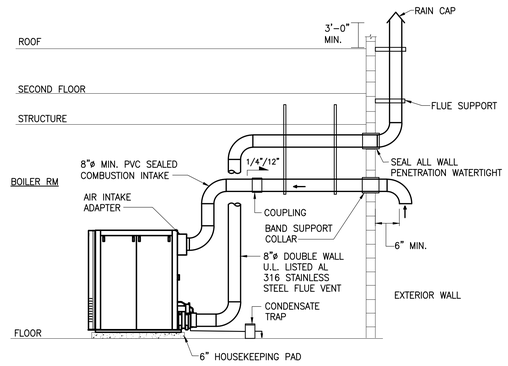
1. ALL FOUR SECTIONS TO BE EASILY REMOVED FOR SERVICING PUMP.
2. INTERIOR OF BOX SHALL BE INSULATED WITH TWO LAYERS OF ¾" FLEXIBLE ELASTOMERIC AND ALL VOIDS SHALL BE FILLED WITH LOOSE BATT INSULATION.

54 TYPICAL END SUCTION PUMP INSULATION BOX DETAIL — SCALE: NONE



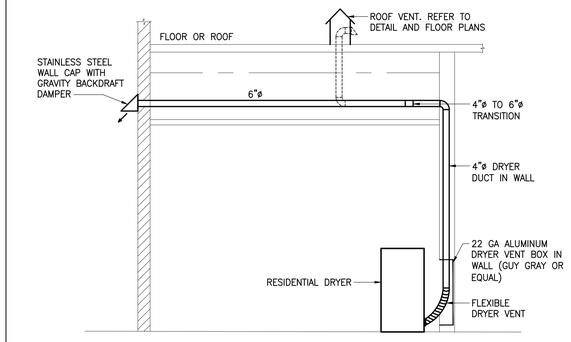
NOTE: INSTALL ALL VENTING PER THE MANUFACTURERS RECOMMENDATIONS

55 TYPICAL DOMESTIC HOT WATER HEATER SEALED COMBUSTION AIR/VENT TERMINAL DETAIL — SCALE: NONE

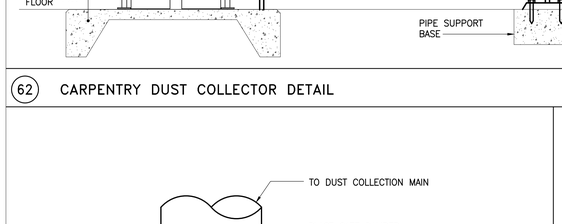


NOTE: INSTALL PER BOILER MANUFACTURER AND FLUE MANUFACTURER RECOMMENDATIONS

56 TYPICAL CONDENSING BOILER VENT DETAIL — SCALE: NONE

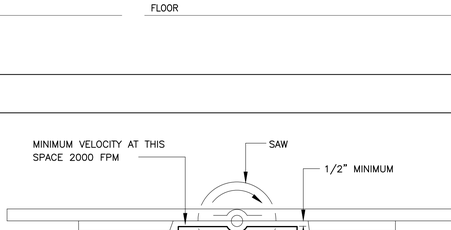


57 TYPICAL RESIDENTIAL DRYER VENT DETAIL — SCALE: NONE



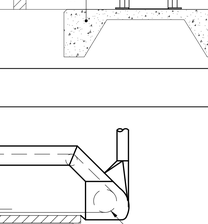
NOTE:
1. INSTALL PER THE MANUFACTURER'S RECOMMENDATIONS
2. PROVIDE ALL ACCESSORIES FOR A FULLY TURNKEY INSTALLATION

58 UNDERGROUND PIPING DETAIL — SCALE: NONE

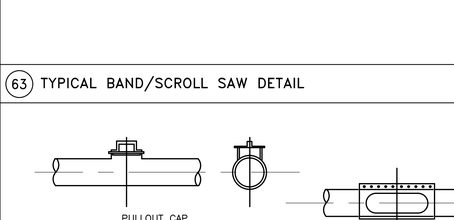


NOTE: PAD SHALL BE SLIGHTLY PITCHED TO ALLOW FOR WATER DRAINAGE. PROVIDE A 6" LEVELING PAD ON TOP OF EQUIPMENT PAD.

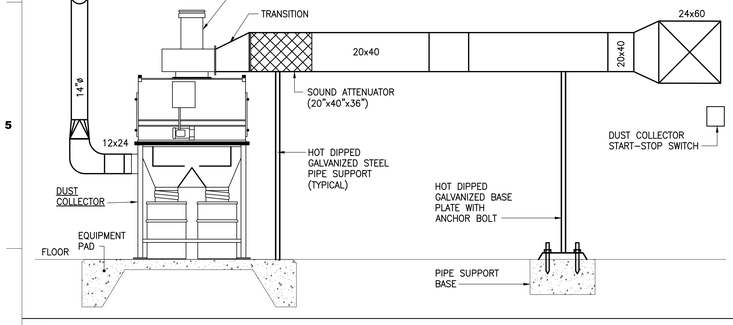
59 CONCRETE EQUIPMENT PAD DETAIL — SCALE: NONE

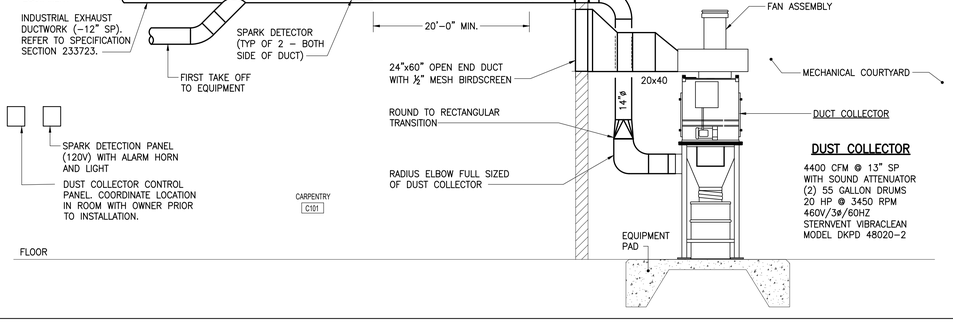


60 TYPICAL DISC SANDER DETAIL — SCALE: NONE



61 TYPICAL CNC ROUTER DETAIL — SCALE: NONE





DUST COLLECTOR START-STOP SWITCH

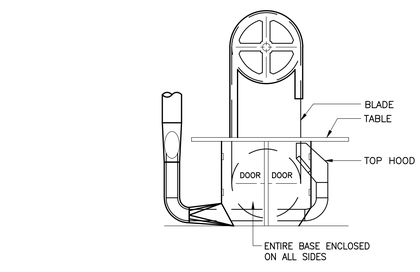
SPARK DETECTION PANEL (120V) WITH ALARM HORN AND LIGHT

DUST COLLECTOR CONTROL PANEL. COORDINATE LOCATION IN ROOM WITH OWNER PRIOR TO INSTALLATION.

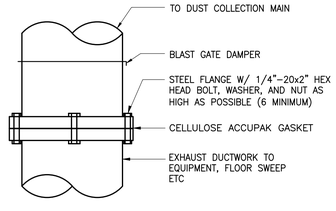
DUST COLLECTOR

4400 CFM @ 13" SP
WITH SOUND ATTENUATOR
(2) 55 GALLON DRUMS
20 HP @ 3450 RPM
460V/3ø/60HZ
STERNVENT VIBRACLEAN
MODEL DKPD 48020-2

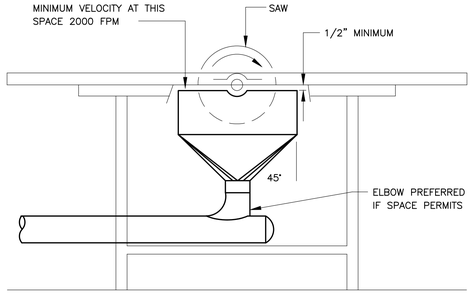
62 CARPENTRY DUST COLLECTOR DETAIL — SCALE: NONE



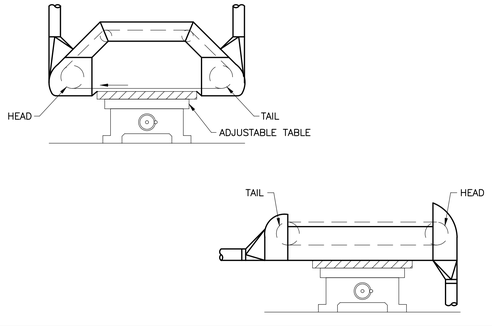
63 TYPICAL BAND/SCROLL SAW DETAIL — SCALE: NONE



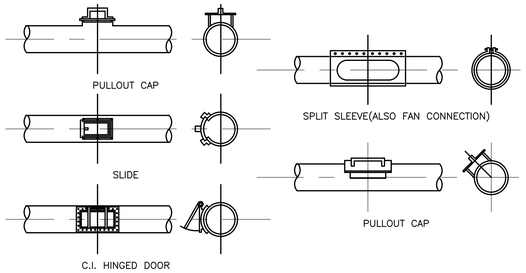
64 TYPICAL DUST EXHAUST SYSTEM RUN OUT DETAIL — SCALE: NONE



65 TABLE SAW EXHAUST DETAIL — SCALE: NONE



66 HORIZONTAL BELT SANDER DETAIL — SCALE: NONE



67 DUST COLLECTION SYSTEM CLEANOUT OPENINGS DETAIL — SCALE: NONE

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6441
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU — Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ # : 21-DCIU-03 DRAWN BY : ALBAN

SHEET TITLE:

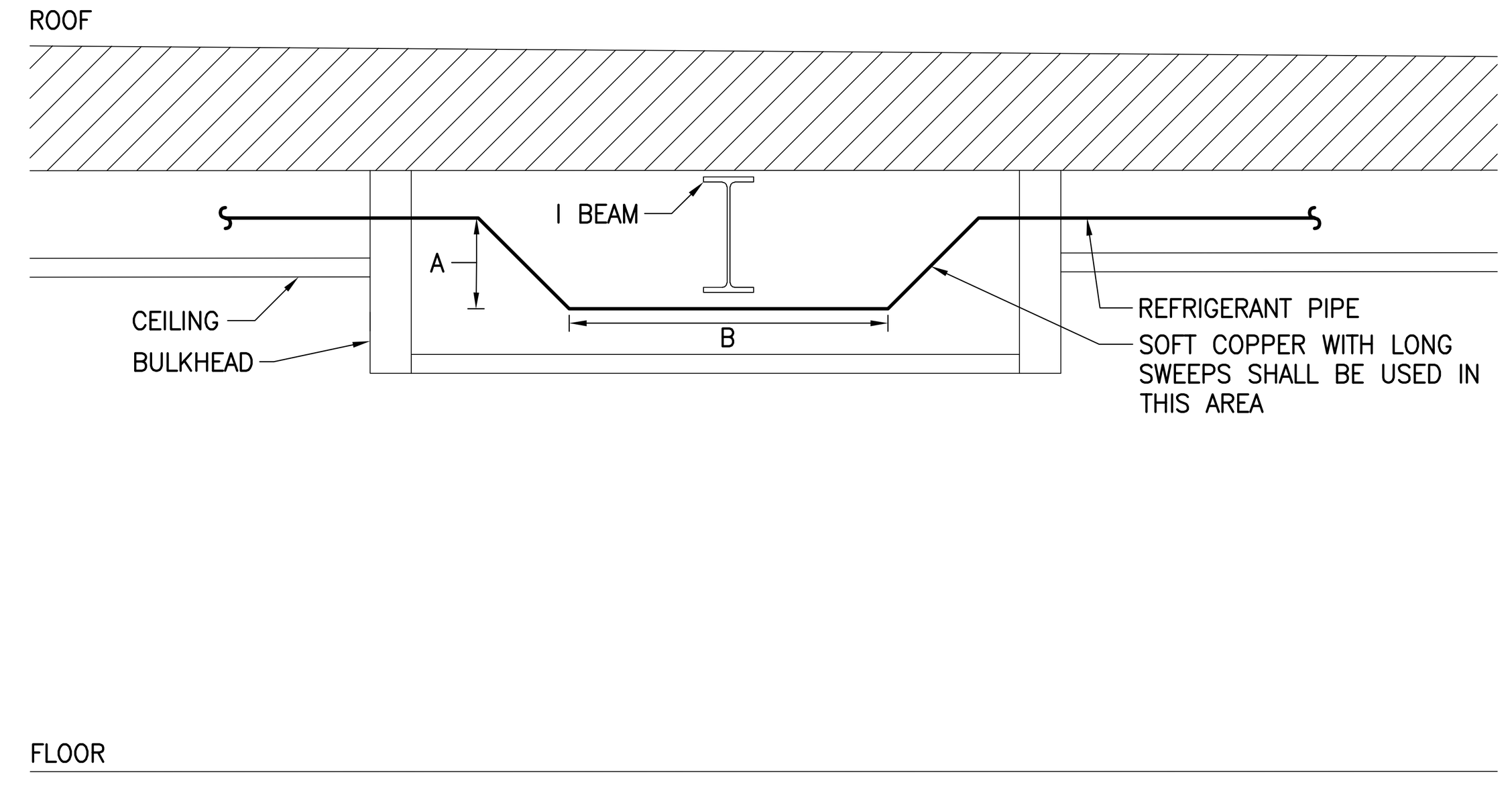
EQUIPMENT AND MISC. DETAILS

SHEET NUMBER:

M7.5

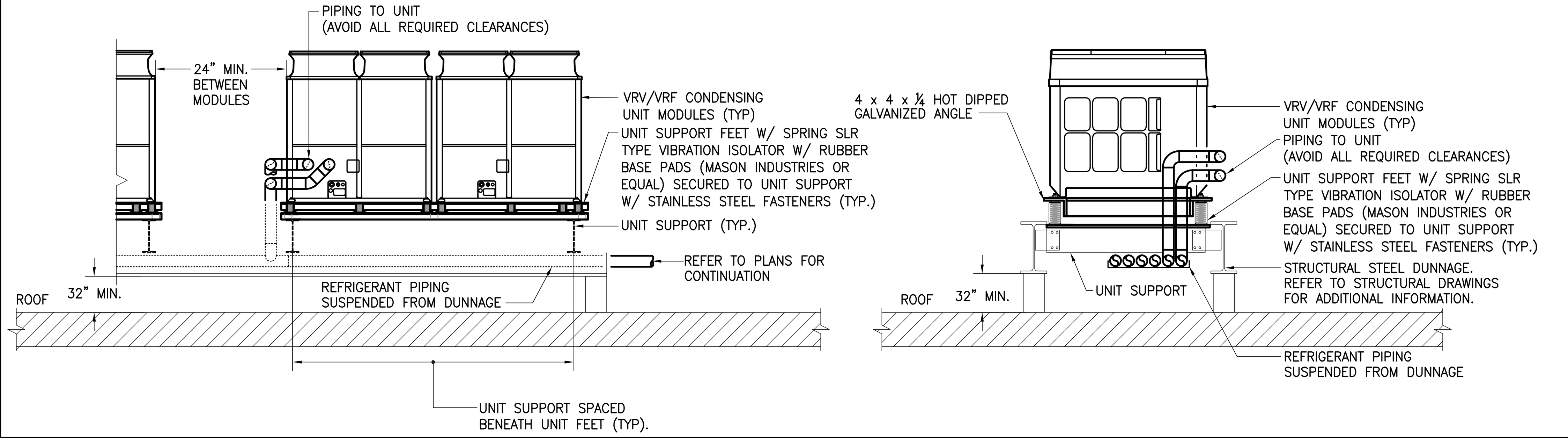
BID SET

NOTES:
1. COORDINATE UNIT SUPPORT SPACING AND THE SELECTED EQUIPMENT MANUFACTURER'S SUPPORT FEET WITH THE STRUCTURAL ENGINEER PRIOR TO INSTALLATION.
2. COORDINATE REFRIGERANT PIPE SUPPORTS WITH THE STRUCTURAL ENGINEER PRIOR TO INSTALLATION.

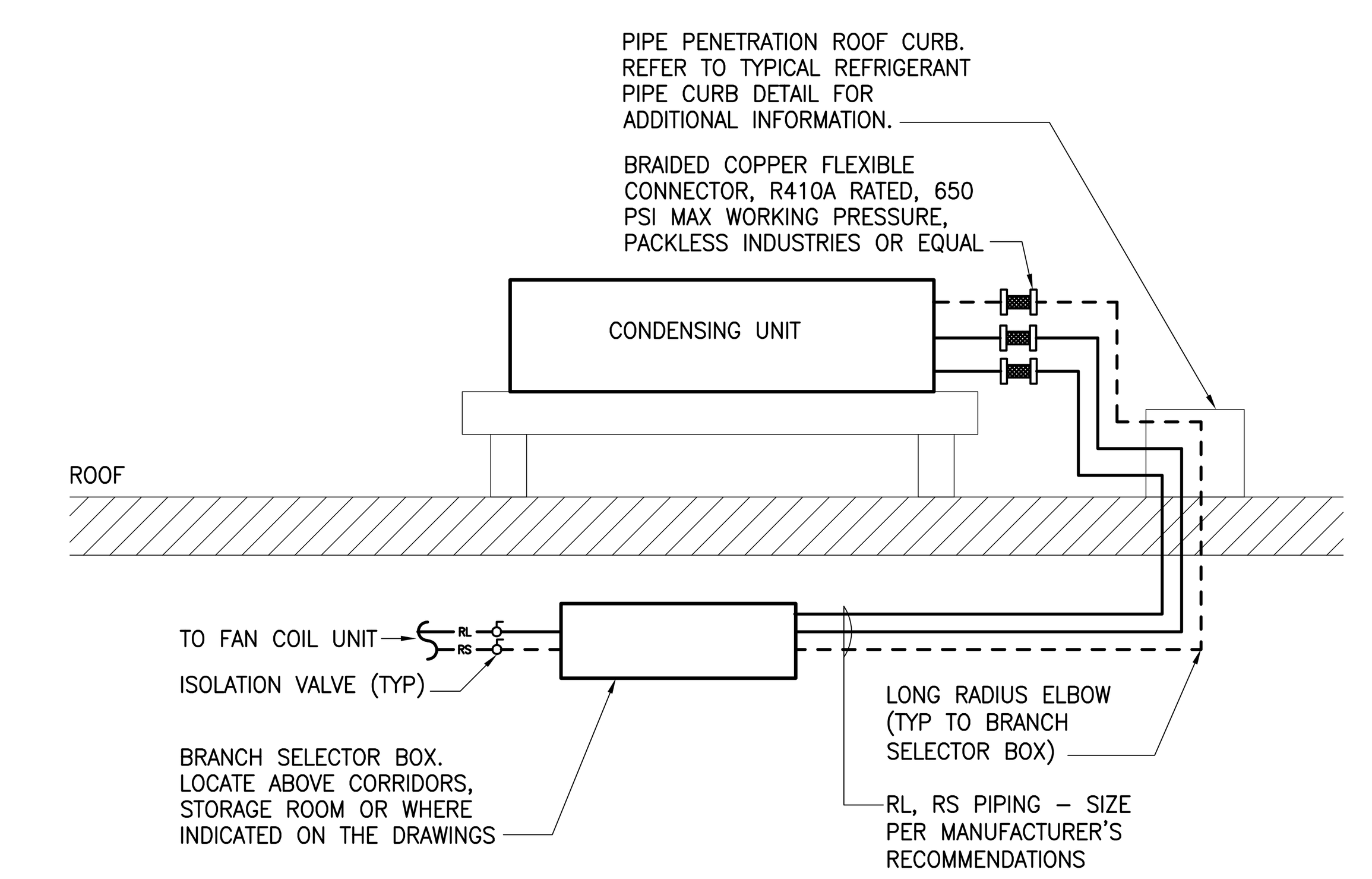


NOTE: DIMENSION B SHALL BE AT LEAST TWICE AS LONG AS DIMENSION A. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR MORE INFORMATION.

68 TYPICAL REFRIGERANT PIPE UNDER BEAM DETAIL — SCALE: NONE

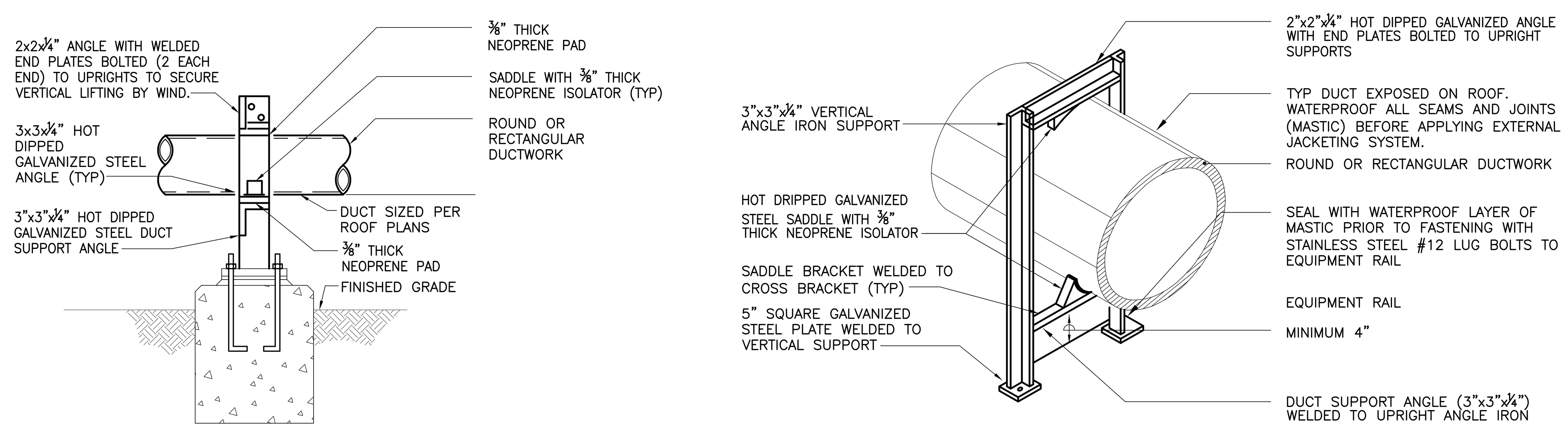


69 TYPICAL VRV/VRF CONDENSING UNITS ON STRUCTURAL DUNNAGE DETAIL — SCALE: NONE



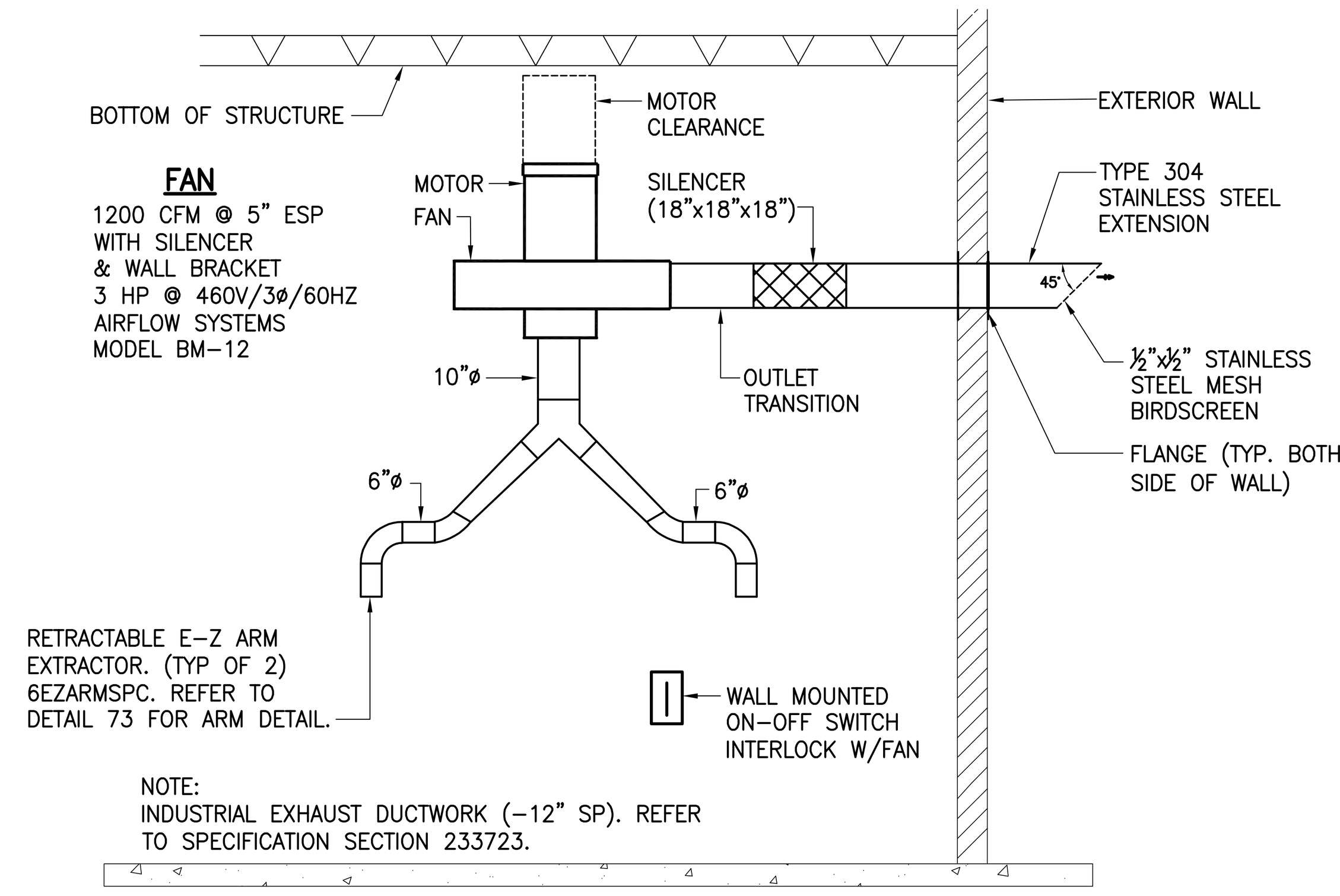
NOTE: 1. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR CLEARANCE REQUIREMENTS
2. INSULATE ALL REFRIGERANT PIPING. PROVIDE ALUMINUM JACKET FOR EXTERIOR PIPING.

70 TYPICAL BRANCH SELECTOR BOX DETAIL — SCALE: NONE



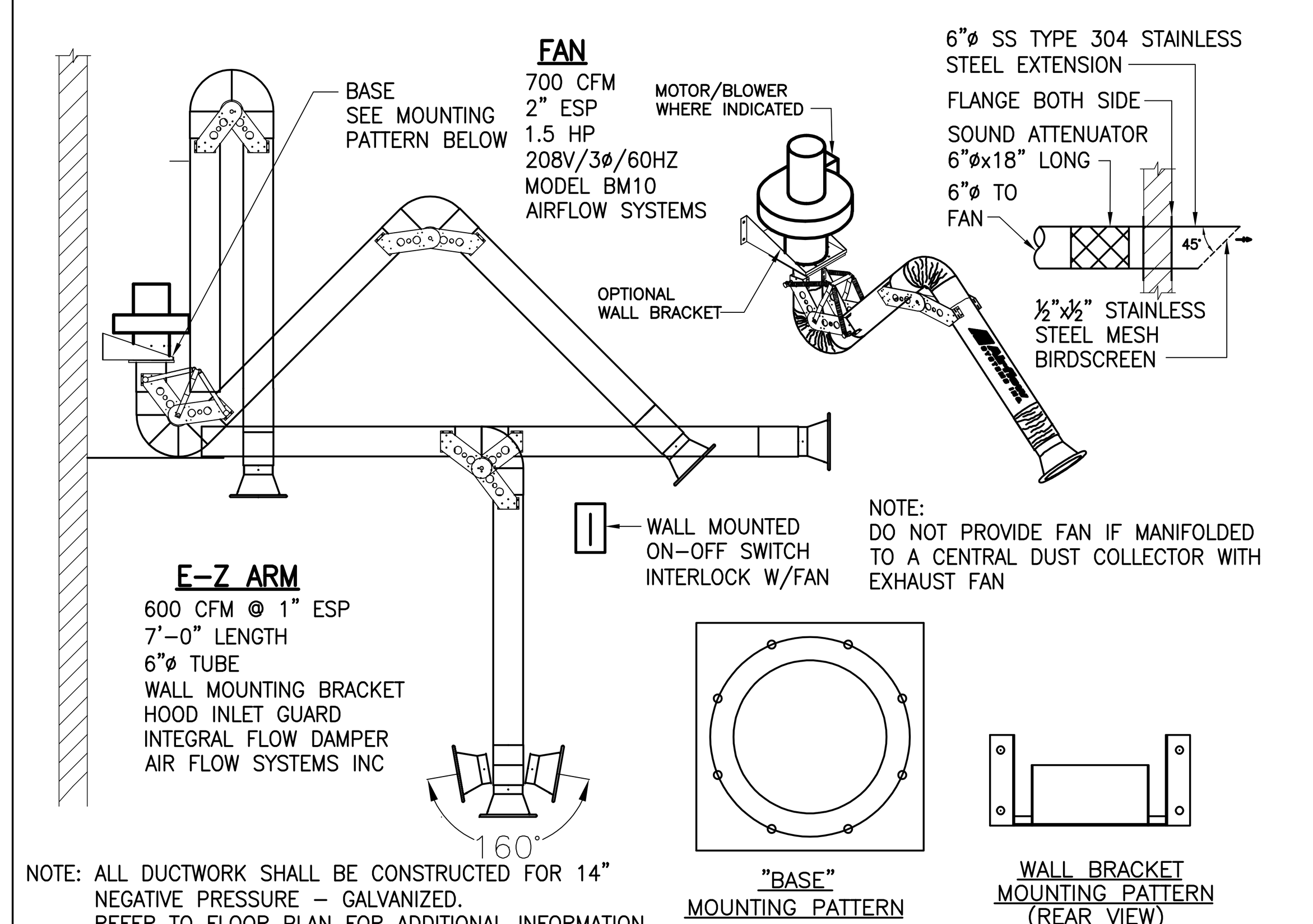
NOTES:
1. ALL STRUCTURAL STEEL SUPPORTS SHALL BE HOT DIPPED GALVANIZED.
2. ALL FLASHING AND COUNTER FLASHING SHALL BE HEAVY GAUGE ALUMINUM.
3. ALL SCREWS SHALL BE STAINLESS STEEL.

71 TYPICAL CONCRETE PIERS DUCT/PIPE SUPPORT DETAIL — SCALE: NONE



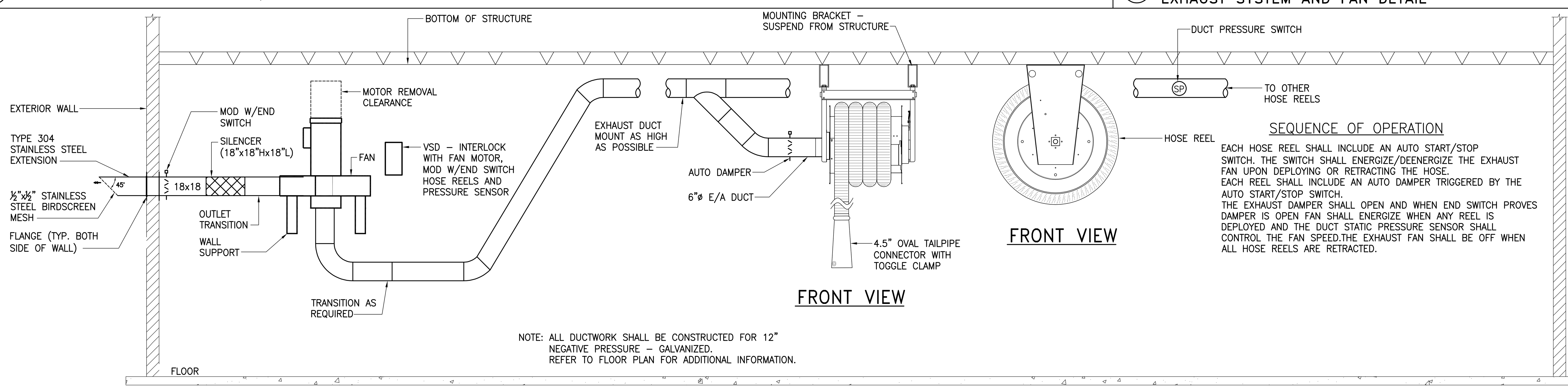
NOTE: ALL DUCTWORK SHALL BE CONSTRUCTED FOR 12" NEGATIVE PRESSURE – GALVANIZED. REFER TO FLOOR PLAN FOR ADDITIONAL INFORMATION.

72 COLLISION SHOP WELDING BOOTH EXHAUST SYSTEM AND FAN DETAIL — SCALE: NONE



NOTE: ALL DUCTWORK SHALL BE CONSTRUCTED FOR 14" NEGATIVE PRESSURE – GALVANIZED. REFER TO FLOOR PLAN FOR ADDITIONAL INFORMATION.

73 6" DIAMETER WELDING FUME EXTRACTOR E-Z ARM WITH EXHAUST DETAIL — SCALE: NONE



NOTE: ALL DUCTWORK SHALL BE CONSTRUCTED FOR 12" NEGATIVE PRESSURE – GALVANIZED. REFER TO FLOOR PLAN FOR ADDITIONAL INFORMATION.

SEQUENCE OF OPERATION

EACH HOSE REEL SHALL INCLUDE AN AUTO START/STOP SWITCH. THE SWITCH SHALL ENERGIZE/DEENERGIZE THE EXHAUST FAN UPON DEPLOYING OR RETRACTING THE HOSE. EACH REEL SHALL INCLUDE AN AUTO DAMPER TRIGGERED BY THE AUTO START/STOP SWITCH. THE EXHAUST DAMPER SHALL OPEN AND WHEN END SWITCH PROVES DAMPER IS OPEN FAN SHALL ENERGIZE WHEN ANY REEL IS DEPLOYED AND THE DUCT STATIC PRESSURE SENSOR SHALL CONTROL THE FAN SPEED.THE EXHAUST FAN SHALL BE OFF WHEN ALL HOSE REELS ARE RETRACTED.

EQUIPMENT NOTES

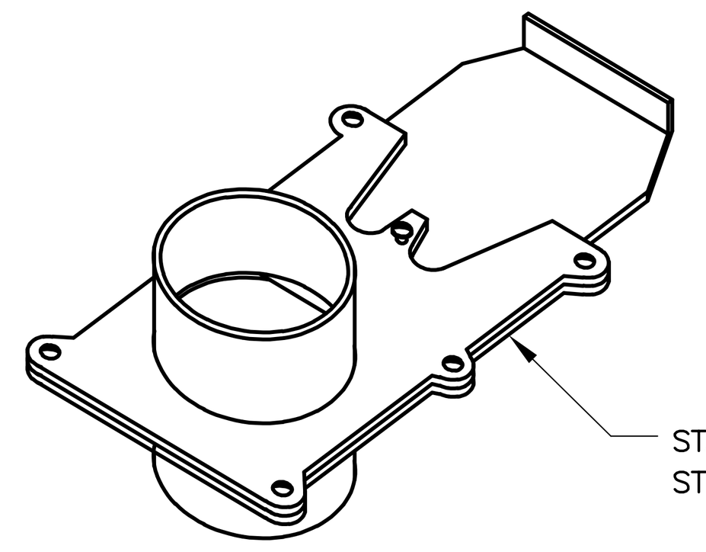
CO EXHAUST FAN (CM-1)
900 CFM @ 5.0" ESP
WITH VSD, OUTLET TRANSITION, SILENCER & WALL BRACKET
3 HP @ 460V/3ø/60HZ, 3.8 AMPS, 1.25 SAFETY FACTOR
AIRFLOW SYSTEMS
MODEL BM-12

HOSE REEL (HR-1)
4½" HOSE DIAMETER
300 CFM
6" CONNECTION
25' HOSE LENGTH
SPRING RETRACTABLE WITH AUTO START-STOP SWITCH AND AUTO OPEN-CLOSE DAMPER
AIRFLOW SYSTEMS VES4-REEL

CO EXHAUST FAN (CM-2)
1200 CFM @ 5.0" ESP
WITH VSD, OUTLET TRANSITION, SILENCER & WALL BRACKET
3 HP @ 460V/3ø/60HZ, 3.8 AMPS, 1.25 SAFETY FACTOR
AIRFLOW SYSTEMS
MODEL BM-12

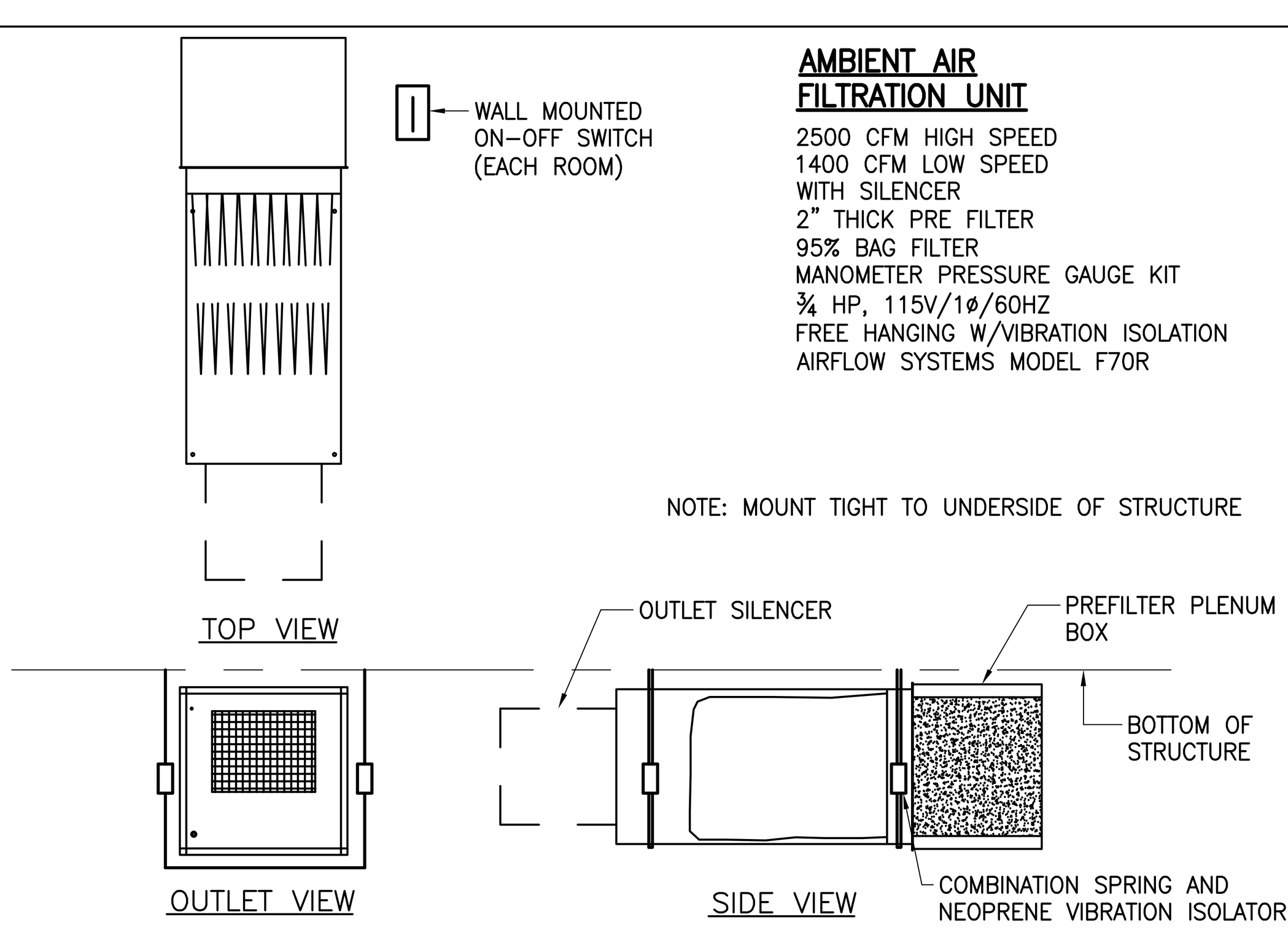
HOSE REEL (HR-2)
6" HOSE DIAMETER
600 CFM
6" CONNECTION
25' HOSE LENGTH
SPRING RETRACTABLE WITH AUTO START-STOP SWITCH AND AUTO OPEN-CLOSE DAMPER
AIRFLOW SYSTEMS VES4-REEL

74 AUTO TECH LAB CARBON MONOXIDE FUME EXTRACTOR W/HOSE REEL DETAIL (TYPICAL) — SCALE: NONE



NOTE: 1. FOR DUST COLLECTING SYSTEMS
2. PROVIDE BLAST GATE DAMPERS IN DUCT RUNOUT SERVING INDIVIDUAL EQUIPMENT, FLOOR SWEEPS, ETC.

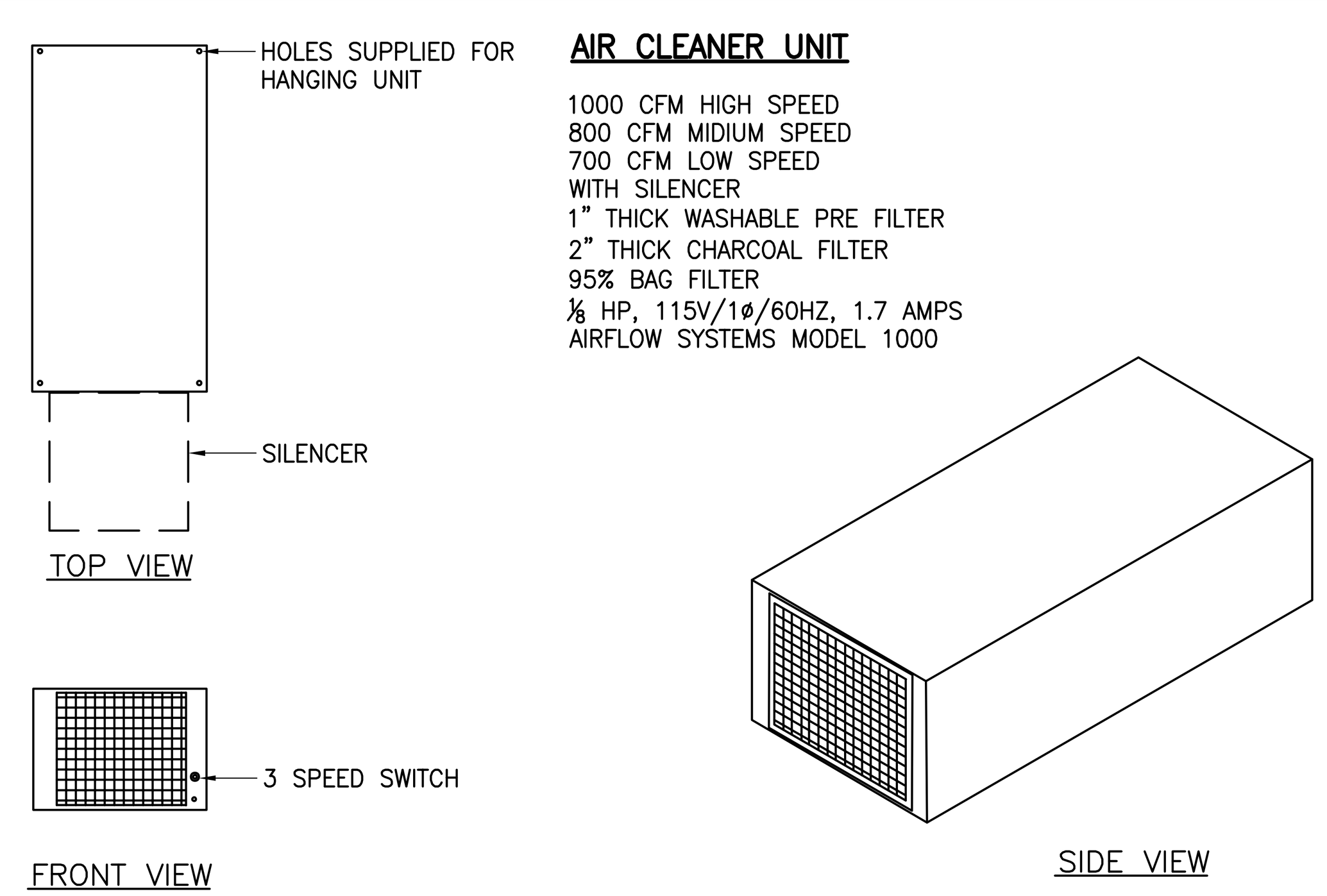
75 TYPICAL BLAST GATE DAMPER DETAIL — SCALE: NONE



AMBIENT AIR FILTRATION UNIT
2500 CFM HIGH SPEED
1400 CFM LOW SPEED
WITH SILENCER
2" THICK PRE FILTER
95% BAG FILTER
MANOMETER PRESSURE GAUGE KIT
¾ HP, 115V/1ø/60HZ
FREE HANGING W/VIBRATION ISOLATION
AIRFLOW SYSTEMS MODEL F70R

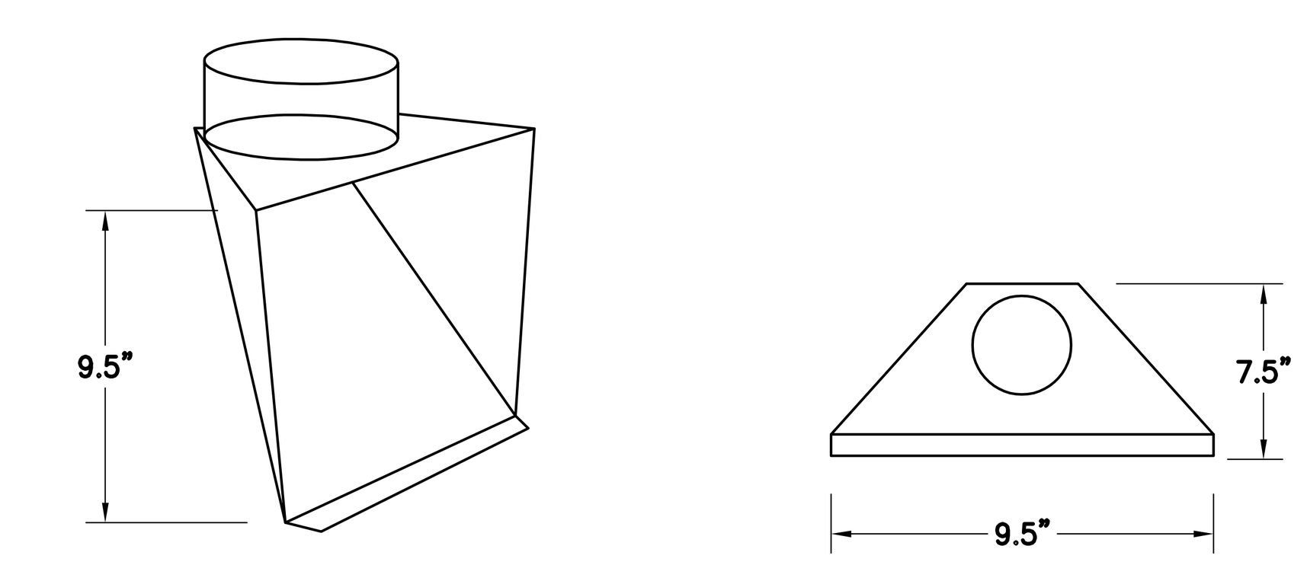
NOTE: MOUNT TIGHT TO UNDERSIDE OF STRUCTURE

76 AMBIENT AIR FILTRATION UNIT DETAIL — SCALE: NONE



AIR CLEANER UNIT
1000 CFM HIGH SPEED
800 CFM MIDIUM SPEED
700 CFM LOW SPEED
WITH SILENCER
1" THICK WASHABLE PRE FILTER
2" THICK CHARCOAL FILTER
95% BAG FILTER
⅓ HP, 115V/1ø/60HZ, 1.7 AMPS
AIRFLOW SYSTEMS MODEL 1000

77 COSMO AIR CLEANER UNIT DETAIL — SCALE: NONE



NOTE: 1. HOOD HAS 4" DIAMETER COLLAR, 16 GAUGE GALVANIZED STEEL, WELDED CONSTRUCTION.
2. HOOD SHALL BE LOCATED BEHIND SAW BLADE.

78 MITER SAW HOOD DETAIL — SCALE: NONE

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
503 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025 — DESCRIPTION: BID SET

PROJ #: 21-DCIU-03 — DRAWN BY: ALBAN

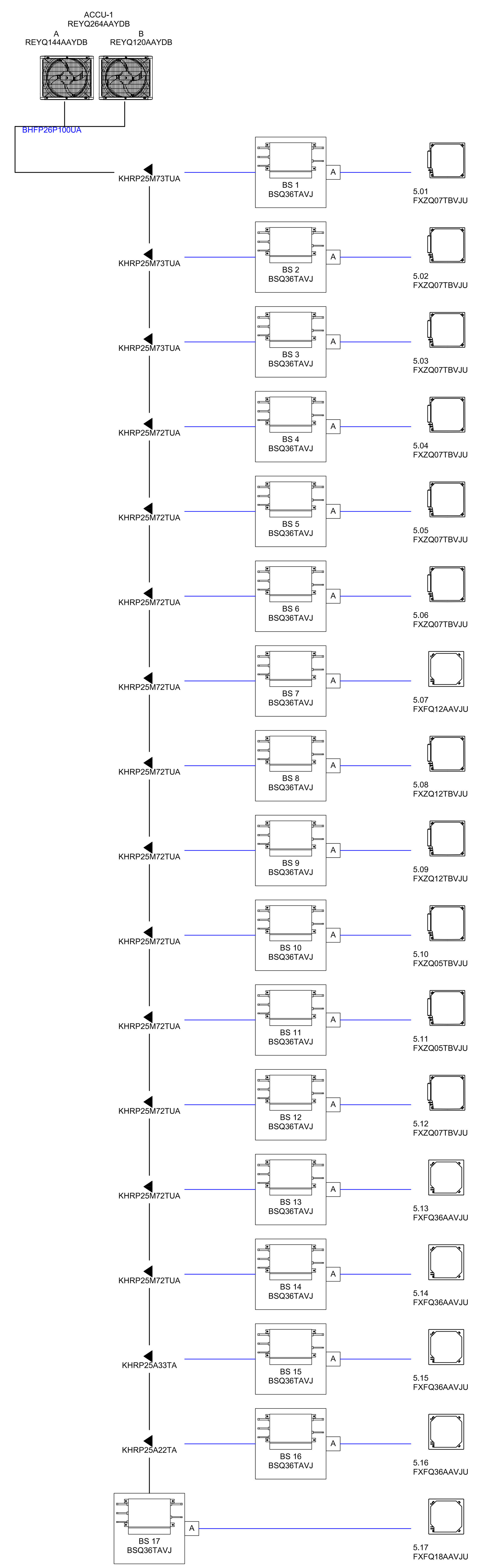
SHEET TITLE:
EQUIPMENT DETAILS

SHEET NUMBER:
M7.6

BID SET

A B C D E F G H I J

1 2 3 4 5 6 7



(79) VRF SYSTEM PIPING DETAILS – HRCU-1 SCALE: NONE

(80) NOT USED

A B C D E F G H I J

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:

ALBAN ENGINEERING, INC
503 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

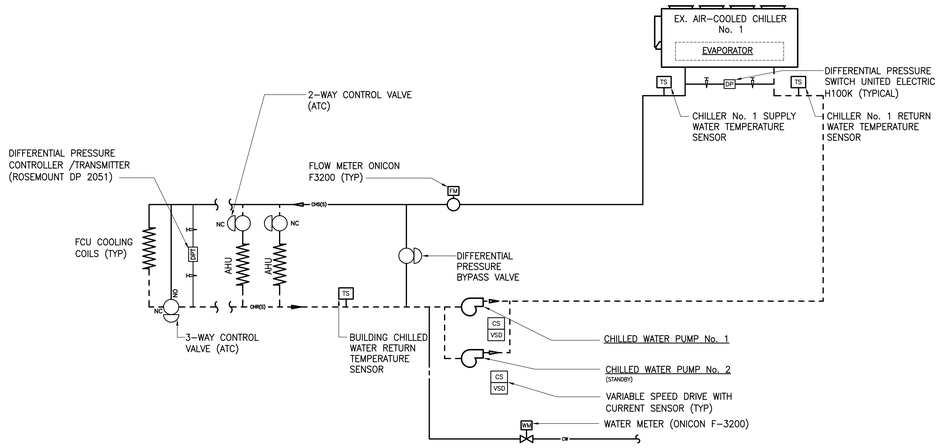
SHEET TITLE:

VRF SYSTEM PIPING DETAILS

SHEET NUMBER:

M7.7

BID SET



ENERGY MANAGEMENT SYSTEM — EMS
HAND-OFF-AUTOMATIC SYSTEM SWITCH — H-O-A
OUTDOOR DRY BULB SENSOR (GLOBAL) — OAT
OUTDOOR AIR DEW POINT SENSOR (GLOBAL) — DP
DIRECT DIGITAL CONTROLLER — DDC
BTU METER (ONICON SYSTEM 10) — BTU

CHILLED WATER CENTRAL PLANT CONTROL DIAGRAM (DDC – ELECTRIC/ELECTRONIC ACTUATION)

SCALE: NONE

1. PROVIDE A SYSTEM HAND-OFF-AUTOMATIC (H-O-A) SWITCH. WHEN INDEXED TO HAND, THE SYSTEM SHALL BE ENERGIZED AND OPERATE THROUGH THE LOCAL CONTROL SYSTEM. WHEN THE SYSTEM SWITCH IS INDEXED TO OFF, THE SYSTEM SHALL BE SHUT-DOWN THROUGH THE LOCAL CONTROL SYSTEM. WHEN THE SYSTEM SWITCH IS INDEXED TO THE AUTOMATIC POSITION, THE SYSTEM SHALL BE STARTED AND STOPPED AUTOMATICALLY THROUGH THE ENERGY MANAGEMENT SYSTEM. THE ENERGY MANAGEMENT SYSTEM SHALL MONITOR THE H-O-A SWITCH POSITION.

2. THE SYSTEM SHALL BE AUTOMATICALLY ENERGIZED WHEN THE SYSTEM IS IN THE OCCUPIED MODE AND WHEN OUTSIDE AIR TEMPERATURE IS 50°F (ADJUSTABLE THROUGH SOFTWARE) AND ABOVE. THE ENERGY MANAGEMENT SYSTEM SHALL SIGNAL THE CHILLER CONTROL PANEL. THE CHILLER CONTROL PANEL SHALL INITIATE ITS INTERNAL START-UP OR SHUT-DOWN SEQUENCE.

3. WHEN THE SYSTEM IS STARTED, THE LEAD CHILLED WATER PUMP SHALL BE ENERGIZED. IF THE LEAD PUMP FAILS TO OPERATE WITHIN 15 SECONDS THE LAG CHILLED WATER PUMP SHALL BE AUTOMATICALLY ENERGIZED AND AN ALARM SHALL BE INDICATED AT THE CENTRAL EMS. LEAD –LAG SECONDARY PUMP SHALL ALTERNATE EVERY 24 HOURS (ADJUSTABLE THROUGH SOFTWARE) OR BASED ON RUN TIME AS SELECTED THROUGH THE EMS.

4. WHEN EVAPORATOR WATER FLOW HAS BEEN ESTABLISHED THROUGH THE CHILLER AS SENSED BY DIFFERENTIAL PRESSURE SWITCH, THE CHILLER SHALL BE ALLOWED TO START AND MAINTAIN 45°F (ADJUSTABLE THROUGH SOFTWARE) SUPPLY WATER TEMPERATURE THROUGH ITS INTERNAL CONTROLS. COORDINATE INTERLOCK REQUIREMENTS WITH THE CHILLER CONTROL PANEL.

5. THE CHILLED WATER SUPPLY TEMPERATURE SHALL BE RESET (LINEAR) BASED ON OUTSIDE FROM 45°F TO 50°F WHEN OUTSIDE AIR TEMPERATURE FALLS FROM 65°F TO 60°F. ALL SET POINTS SHALL BE ADJUSTABLE THROUGH SOFTWARE. THE CHILLER, THROUGH ITS INTERNAL CONTROLS SHALL MAINTAIN DISCHARGE WATER TEMPERATURE SET POINT OF 45°F. THIS SET POINT SHALL BE LOCALLY AND REMOTELY RESETTABLE THROUGH THE EMS.

6. WHEN THE CHILLER IS STOPPED, EITHER MANUALLY OR AUTOMATICALLY, THE ASSOCIATED CHILLED WATER PUMP SHALL REMAIN ENERGIZED FOR AN ADDITIONAL 5 MINUTES (ADJUSTABLE) AFTER THE CHILLER COMPRESSOR HAS BEEN DE-ENERGIZED.

7. CHILLED WATER SYSTEM SHALL VARY SYSTEM FLOW THROUGH PUMP VARIABLE SPEED DRIVE TO MAINTAIN DIFFERENTIAL PRESSURE CONTROLLER SETPOINT NEAR THE END OF THE CHILLED WATER LOOP. COORDINATE LOCATION IN THE FIELD WITH THE ENGINEER. DIFFERENTIAL PRESSURE SETPOINT SHALL BE RESET DOWNWARD THROUGH THE BUILDING DDC SYSTEM BASED ON ALL CHILLED WATER VALVE POSITION UNTIL ONE (1) VALVE IS 90% (ADJUSTABLE THROUGH SOFTWARE) OPEN. PROVIDE A MANUAL SOFTWARE SWITCH TO OVERRIDE SYSTEM DIFFERENTIAL PRESSURE RESET SO AS TO MAINTAIN A CONSTANT SYSTEM DIFFERENTIAL PRESSURE SETPOINT (ADJUSTABLE THROUGH SOFTWARE). PROVIDE A 2 PSIG (ADJ THROUGH SOFTWARE) DEADBAND BETWEEN RAMPING UP AND RAMPING DOWN PUMP SPEED. DIFFERENTIAL PRESSURE SENSOR/TRANSMITTER SHALL BE INDUSTRIAL GRADE QUALITY INTELLIGENT TYPE, ROSEMOUNT MODEL 2051 DP.

8. THE CHILLED WATER SUPPLY FLOW METER SHALL CONTROL THE SYSTEM DIFFERENTIAL PRESSURE BYPASS CONTROL VALVE TO MAINTAIN MINIMUM CHILLER FLOW RATE PLUS 50 GPM (ADJUSTABLE THROUGH SOFTWARE). COORDINATE MINIMUM CHILLER FLOW REQUIREMENTS WITH DAIKEN (EXISTING CHILLER MANUFACTURER).

9. COORDINATE AND INTERLOCK ALL CONTROLS WITH THE EXISTING CHILLER CONTROL PANEL AND CHILLER MANUFACTURER RECOMMENDATIONS. THE ATC CONTRACTOR SHALL PROVIDE INTERLOCK WIRING AND ALL DEVICES NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.

10. PROVIDE A HIGH TEMPERATURE AND LOW PRESSURE ALARM IN THE CHILLED WATER SYSTEM. WHENEVER THE CHILLED WATER RETURN TEMPERATURE IS 100°F (ADJUSTABLE THROUGH SOFTWARE) FOR 15 MINUTES (ADJUSTABLE THROUGH SOFTWARE) OR LONGER THE LEAD CHILLED WATER PUMP SHALL BE DE-ENERGIZED AND ALARMED THROUGH THE EMS.

INPUT/OUTPUT SUMMARY FOR CHILLED WATER SYSTEM

BUILDING SYSTEM: CHILLED WATER SYSTEM
LOCATION: MECHANICAL ROOM

DESCRIPTION	INPUT: ANALOG	INPUT: BINARY	OUTPUTS: ANALOG	OUTPUTS: BINARY	OUTPUTS: 3-POINT FLOATING	ALARMS	FEATURES	REMARKS
	FLOW RATE (GPM); SYSTEM TEMPERATURE; WATER TEMPERATURE; O.A. TEMPERATURE (GLOBAL); DIFFERENTIAL PRESSURE; K.W.; FLOW (TOTALIZATION); BTU; REFRIGERANT HEAD	FLOW SWITCH; STATIC PRESSURE; DIFFERENTIAL PRES. SWITCH; CURRENT SENSOR; SWITCH POSITION INDICATOR	MODULATING ACTUATOR; E/P TRANSDUCER; VARIABLE SPEED	CONTROL RELAY; SOLENOID; START/STOP; 2-POSITION DAMPER MOD.; MODE SELECTOR SWITCH	ACTUATOR; MERCURY RELAY; FEED/BLEED SAW	HIGH LIMIT; LOW LIMIT; RUN TIME; MAINTENANCE MESSAGE; TROUBLE MESSAGE	SCHEDULED START/STOP; TEMPERATURE SETBACK/SETUP; OPTIMIZED START (ADAPT.); DEMAND LIMITING; DUTY CYCLE; VENTILATION DELAY; ECONOMIZER CYCLE (D.B.); H.W. RESET W/ O.A. TEMP.; VAV CONTROL; RESET SCHEDULE; REMOTE OVERRIDE; COLOR GRAPHICS; POINT LOCKOUT; TREND LOG; LEAD-LAG	
CHILLED WATER SYSTEM	● ● ●			●		● ●	● ● ● ● ● ● ●	
CHILLER	●			●		●	● ● ●	●
CHILLER INPUT	●					●		
CHILLED WATER SUPPLY (CHILLER No. 1)	● ● ●					● ●	●	●
CHILLED WATER RETURN (CHILLER No. 1)	●					● ●		●
CHILLED WATER RETURN (BUILDING)	●					● ●		●
CHILLED WATER PUMP P-1		●		●		● ●	● ●	
CHILLED WATER PUMP P-2		●		●		● ●	● ●	
P-1 VARIABLE SPEED DRIVE			●	●			● ● ●	● ●
P-2 VARIABLE SPEED DRIVE			●	●			● ● ●	● ●
SYSTEM DIFFERENTIAL PRESSURE	●					● ●		●
OUTDOOR WETBULB	●							● CALCULATED
OUTDOOR DRY BULB	●							●
H-O-A SYSTEM SWITCH		●						
MAKE UP WATER	●							
CHILLER No. 1 FLOW	●							●
DIFFERENTIAL PRESSURE BYPASS VALVE			●					

CHILLED WATER CENTRAL PLANT SEQUENCE OF OPERATION

CHILLED WATER CENTRAL PLANT INPUT/OUTPUT SUMMARY

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 (410.842.6441)
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:
CHILLED WATER CENTRAL PLANT CONTROL DIAGRAM

SHEET NUMBER:
M8.1

BID SET

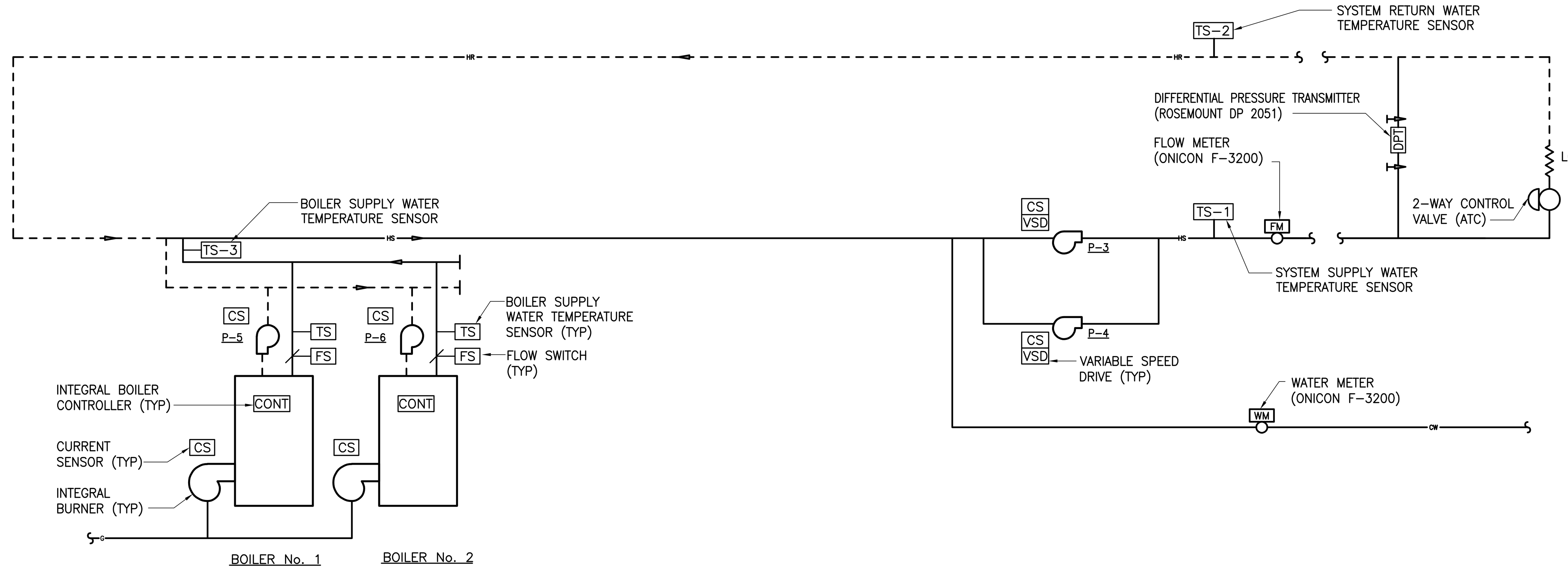
SUPPLY WATER RESET SCHEDULE	
OUTSIDE AIR TEMPERATURE	SUPPLY WATER TEMPERATURE
≤ 25°F	130°F
≥ 65°F	*90°F

* RESET SHALL BE LINEAR TYPE

BOILER SEQUENCING CONTROLLER — BSC

WALL MOUNTED BTU METER (ONICON SYSTEM 10) — BTU

- OAT — OUTDOOR AIR TEMPERATURE SENSOR (GLOBAL)
- EMS — ENERGY MANAGEMENT SYSTEM
- DPS — OUTDOOR AIR DEW POINT SENSOR (GLOBAL)
- DDC — DIRECT DIGITAL CONTROLLER (EMERGENCY POWER)
- ESO — EMERGENCY SHUT-OFF SWITCH
- H-O-A — HAND-OFF-AUTOMATIC SYSTEM SWITCH



HEATING WATER CENTRAL PLANT CONTROL DIAGRAM (DDC – ELECTRONIC ACTUATION)

SCALE: NONE

1. HEATING WATER SYSTEM SHALL BE LOCALLY CONTROLLED BY THE BUILDING AUTOMATIC TEMPERATURE CONTROL SYSTEM OR REMOTELY STARTED AND STOPPED THROUGH THE EMS. PROVIDE A HEATING SYSTEM SOFTWARE TYPE ON – AUTOMATIC – OFF SYSTEM SWITCH. WHEN THE SOFTWARE SWITCH IS MANUALLY TOGGLED TO "ON" THE HEATING SYSTEM SHALL BE ENERGIZED. WHEN THE SOFTWARE SWITCH IS MANUALLY TOGGLED TO "OFF" THE HEATING SYSTEM SHALL BE DE-ENERGIZED. WHEN THE SOFTWARE SWITCH IS IN THE "AUTOMATIC" POSITION THE EMS SHALL ENERGIZE/DE-ENERGIZE THE SYSTEM AUTOMATICALLY BASED ON OUTDOOR AIR TEMPERATURE AND/OR IF A DEHUMIDIFICATION MODE IS INITIATED OR LOW SPACE TEMPERATURE OCCURS.

2. WHEN INDEXED TO THE AUTOMATIC MODE THE HEATING SYSTEM SHALL BE ENERGIZED WHENEVER THE OUTSIDE AIR TEMPERATURE IS 65°F OR LESS (ADJUSTABLE THROUGH SOFTWARE). IF ANY SPACE TEMPERATURE SENSORS FALL BELOW 65°F (ADJUSTABLE THROUGH SOFTWARE) WHEN OPERATING IN THE OCCUPIED MODE, THE HEATING SYSTEM SHALL BE OVERRIDDEN AND SHALL AUTOMATICALLY ENERGIZE. WHEN THE SYSTEM IS INDEXED "ON", THE LEAD SECONDARY DISTRIBUTION HEATING WATER PUMP SHALL BE ENERGIZED. IF THE LEAD PUMP FAILS, AS SENSED BY DIFFERENTIAL PRESSURE SENSOR, THE LAG PUMP (STAND-BY) SHALL ENERGIZE AFTER A 15-SECOND TIME DELAY AND AN AUDIBLE AND VISUAL ALARM WITH SILENCE SWITCH SHALL SOUND AN ALARM ON THE ATC PANEL. LEAD/LAG SECONDARY PUMP SELECTION SHALL ALTERNATE AFTER EVERY WEEK OF OPERATION (ADJUSTABLE THROUGH SOFTWARE-I.E. DAILY, BI-WEELY) OR SHALL BE BASED ON RUN TIME AS DETERMINED THROUGH THE EMS. PROVIDE A LOCAL/REMOTE SOFTWARE SELECTOR SWITCH FOR LOCAL CONTROL/REMOTE EMS LEAD/LAG PUMP CONTROL.

3. THE HEATING WATER SYSTEM SHALL VARY SYSTEM FLOW THROUGH PUMP VARIABLE SPEED DRIVE TO MAINTAIN DIFFERENTIAL PRESSURE CONTROLLER SETPOINT. DIFFERENTIAL PRESSURE SETPOINT SHALL BE ADJUSTABLE AND RESETTABLE THROUGH SOFTWARE. DIFFERENTIAL PRESSURE SENSOR/TRANSMITTER SHALL BE INDUSTRIAL GRADE QUALITY INTELLIGENT TYPE, ROSEMOUNT MODEL 2051 DP. PROVIDE A 2 PSIG (ADJUSTABLE) DEAD BAND BETWEEN INCREASING/DECREASING PUMP SPEEDS. DP LOCATION SHALL BE AT THE END OF THE HEATING WATER MAIN WHERE CONFIRMED BY THE ENGINEER. THE SYSTEM DIFFERENTIAL PRESSURE SETPOINT SHALL BE RESET AS DETERMINED BY THE MOST CRITICAL CONTROL VALVE IN THE SYSTEM. THE EMS SHALL MONITOR ALL CONTROL VALVE SIGNALS AND RESET THE SYSTEM DIFFERENTIAL PRESSURE SETPOINT DOWNWARD TO MAINTAIN A 90% (ADJUSTABLE THROUGH SOFTWARE) OPEN CONTROL VALVE SIGNAL TO THE MOST CRITICAL VALVE. PROVIDE A MANUAL SOFTWARE SWITCH TO OVERRIDE SYSTEM DIFFERENTIAL PRESSURE RESET SO AS TO MAINTAIN A CONSTANT SYSTEM DIFFERENTIAL PRESSURE SETPOINT (ADJUSTABLE THROUGH SOFTWARE).

4. WHEN THE SYSTEM IS ENERGIZED AND FLOW IS PROVED THE BOILER SHALL BE SEQUENCED BY THE BOILER SEQUENCING CONTROLLER (BACNET). THE BOILERS SHALL BE SEQUENCED IN LEAD LAG FASHION BY THE SEQUENCING PANEL AND SHALL MODULATE THE FIRING RATE THROUGH THEIR BUILT-IN CONTROLS TO MAINTAIN SUPPLY WATER TEMPERATURE SETPOINT. THE HEATING WATER SUPPLY WATER TEMPERATURE SETPOINT SHALL BE RESET BASED ON OUTSIDE AIR TEMPERATURE. THE RESET SCHEDULE SHALL BE 130°F SUPPLY WATER TEMPERATURE AT 25°F AND LOWER OUTSIDE AIR TEMPERATURE AND 90°F SUPPLY WATER TEMPERATURE AT 65°F AND HIGHER OUTSIDE AIR TEMPERATURE. A MANUAL SOFTWARE OVERRIDE SHALL BE PROVIDED TO MAINTAIN A CONSTANT 140°F (ADJUSTABLE THROUGH SOFTWARE) SUPPLY WATER TEMPERATURE. ALL SETPOINTS OF THE RESET SCHEDULE SHALL BE ADJUSTABLE THROUGH SOFTWARE. THE RESET SCHEDULE SHALL OPERATE IN LINEAR FASHION. (1:1 RATIO)

5. WHEN A BOILER IS DE-ENERGIZED THE PRIMARY BOILER PUMP SHALL REMAIN ENERGIZED FOR 5 MINUTES (ADJUSTABLE THROUGH SOFTWARE) TO DISSIPATE RESIDUAL HEAT. WHEN THE HEATING PLANT IS DE-ENERGIZED AND THE BOILERS ARE COMMANDED OFF, THE SECONDARY HEATING SYSTEM CIRCULATING PUMPS SHALL REMAIN ON FOR FIVE (5) MINUTES (ADJUSTABLE THROUGH SOFTWARE). BOILERS PUMPS SHALL BE INTERLOCKED WITH ITS ASSOCIATED BOILER.

6. BOILERS SHALL BE DE-ENERGIZED WHEN NO FLOW EXISTS. ALL SAFETIES SHALL BE HARD WIRED.

7. THE BOILERS SHALL BE PROVIDED WITH THEIR OWN SEQUENCING CONTROLS. COORDINATE BUILDING CONTROLS EMS WITH BOILER MANUFACTURER CONTROLS AND SEQUENCING CONTROLLER INCLUDING PROGRAMING FOR A COMPLETE AND FUNCTIONAL SYSTEM. THE ATC SYSTEM SHALL BE ABLE TO OVERRIDE BUILT IN SEQUENCING AND PROVIDE LEAD-LAG CONTROL OF THE BOILERS.

8. WHEN THE BUILDING IS IN THE UNOCCUPIED MODE AS SCHEDULED THROUGH THE EMS AND THE HEATING SYSTEM IS ENERGIZED, THE HEATING WATER SUPPLY SHALL BE RESET TO 110°F (ADJUSTABLE THROUGH SOFTWARE). THE HEATING SYSTEM SHALL BE ENERGIZED IN THE UNOCCUPIED MODE WHENEVER THE OUTSIDE AIR TEMPERATURE IS 50°F (ADJUSTABLE THROUGH SOFTWARE) OR LESS.

9. WHEN THE BUILDING IS IN A WARM-UP MODE, THE SUPPLY WATER TEMPERATURE SHALL AUTOMATICALLY RESET TO 140°F (ADJUSTABLE THROUGH SOFTWARE) REGARDLESS OF OUTSIDE AIR TEMPERATURE UNTIL THE WARM-UP MODE IS COMPLETE AS TIME SCHEDULED THROUGH THE EMS. THIS FEATURE IS ENABLED – DISABLED THROUGH SOFTWARE.

10. PROVIDE AN EMERGENCY BOILER SHUT-DOWN SWITCH AT EACH DOOR WHICH SHALL DE-ENERGIZE BOILERS AND WATER HEATERS WHEN INDEXED OFF. COORDINATE REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.

11. ALL BOILER CONTROLS SHALL BE PROVIDED IN ACCORDANCE WITH THE LATEST ASME-CSD-1 REQUIREMENTS AND STATE OF PENNSYLVANIA REQUIREMENTS.

12. ALL HEATING SYSTEM CONTROLS SHALL BE ON EMERGENCY POWER.

HEATING WATER CENTRAL PLANT SEQUENCE OF OPERATION

INPUT/OUTPUT SUMMARY FOR HEATING WATER SYSTEM

BUILDING SYSTEM: HEATING WATER SYSTEM LOCATION: MECHANICAL RM	INPUT														OUTPUTS																		ALARMS						FEATURES																REMARKS
	ANALOG								BINARY						ANALOG						BINARY						3-POINT FLOATING																												
DESCRIPTION	FLOW RATE (GPM)	STATUS	WATER TEMPERATURE	O.A. TEMPERATURE (GLOBAL)	DIFFERENTIAL PRESSURE	MODULATING ACTUATOR POSITION	FLOW (TOTALIZATION)	BTU (CALCULATED)	FLOW SWITCH	STATIC PRESSURE	DIFFERENTIAL PRESSURE SWITCH	STATUS (DP OR CS)	END SWITCH	POSITION INDICATION	MODULATING ACTUATOR	E/P TRANSDUCER	VARIABLE SPEED (HZ)				CONTROL RELAY	SOLENOID	START/STOP	2-POSITION DAMPER MOD.	2-POSITION POSITION CONTROL VALVE	MODE SELECTOR SWITCH	ACTUATOR	MERCURY RELAY	FEED/BLEED SAV				HIGH LIMIT	LOW LIMIT	RUN TIME	MAINTENANCE MESSAGE	TROUBLE MESSAGE	FIRE/SMOKE	SCHEDULED START/STOP	TEMPERATURE SETBACK/SETUP	OPTIMIZED START (ADAPT.)	DEMAND LIMITING	DUTY CYCLE	VENTILATION DELAY	ECONOMIZER CYCLE (D.B.)	H.W. RESET	VAV CONTROL	REMOTE READ/RESET	TENANT OVERRIDE	COLOR GRAPHICS	POINT LOCKOUT	TREND LOG	LEAD-LAG CONTROL	DP-RESET	REMARKS
HEATING WATER SYSTEM	●			●			●	●															●													●	●		●		●							●		●					
BOILER		●	●						●														●										●	●	●	●			●		●											●	●		TYP EACH BOILER
HW SUPPLY- SYSTEM (TS-1)			●																														●	●												●		●				●			
HW RETURN- SYSTEM (TS-2)			●																														●	●																		●			
BOILER HEADER SUPPLY (TS-3)																																																							
PUMP P-3 AND P-4		●															●						●												●	●			●		●												●		TYP EACH PUMP
PUMP SPEED																	●																									●						●				●			TYP EACH PUMP
SYSTEM LOOP DP					●																												●	●														●				●		●	TYP EACH SENSOR
BOILER SUPPLY			●																														●																			●			TYP EACH BOILER
BOILER RETURN			●																																																	●			TYP EACH BOILER
BOILER ROOM	●																																●	●																					
BOILER PUMP (TYP EACH)		●																					●		●										●	●			●		●														TYPICAL EACH
MAKE UP WATER							●																																																TOTALIZE GALLONS

HEATING WATER CENTRAL PLANT INPUT/OUTPUT SUMMARY

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
503 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

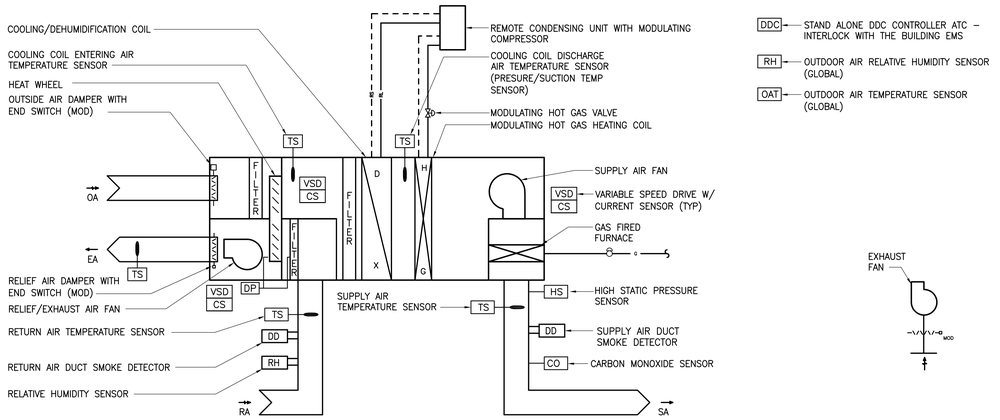
ISSUE DATES DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:
HEATING WATER CENTRAL PLANT CONTROL DIAGRAM

SHEET NUMBER:
M8.2

BID SET



DDC — STAND ALONE DDC CONTROLLER ATC – INTERLOCK WITH THE BUILDING EMS

RH — OUTDOOR AIR RELATIVE HUMIDITY SENSOR (GLOBAL)

OAT — OUTDOOR AIR TEMPERATURE SENSOR (GLOBAL)

TYPICAL DOAS UNIT CONTROL DIAGRAM

SCALE: NONE

INPUT/OUTPUT SUMMARY FOR TYPICAL DOAS UNIT

BUILDING SYSTEM: DEDICATED OUTDOOR AIR SYSTEMS (DOAS)

DESCRIPTION	INPUTS: ANALOG: ROOM TEMPERATURE	DUCT TEMPERATURE	SUPPLY AIR TEMPERATURE	O.A. TEMPERATURE (GLOBAL)	CURRENT SENSOR/STATUS	DIFFERENTIAL PRESSURE	CO_2	RELATIVE HUMIDITY	INPUTS: BINARY: STATUS INDICATION	SWITCH CLOSURE	STATIC PRESSURE	LOW TEMPERATURE CUTOUT	END SWITCH	DIFFERENTIAL PRESSURE SWITCH	OUTPUTS: ANALOG: MODULATING ACTUATOR	E/P TRANSDUCER	VARIABLE SPEED	GAS VALVE	OUTPUTS: BINARY: CONTROL RELAY	SOLENOID	START/STOP	2-POSITION DAMPER MOD.	OUTPUTS: 3-POINT FLOATING: ACTUATOR	MERCURY RELAY	FEED/BLEED SAV	ALARMS: HIGH LIMIT	LOW LIMIT	RUN TIME	MAINTENANCE MESSAGE	SMOKE/FIRE	LIQUID DETECTION	FEATURES: SCHEDULED START/STOP	TEMPORARY SCHEDULE SETUP	OPTIMIZED START (ADAPT.)	DEMAND LIMITING	DUTY CYCLE	VENTILATION DELAY	ECONOMIZER CYCLE	H.W. RESET W/ O.A. TEMP.	VAV CONTROL	REMOTE READ/RESET	TENANT OVERRIDE	COLOR GRAPHICS	POINT LOCKOUT	TREND LOG	WARM UP/PULL DOWN
AHU																																												
RETURN AIR	•					•																																						
DUCT DETECTORS (TYP)																															•													
SUPPLY AIR	•																																										
SUPPLY AND RELIEF FANS				•			•									•					•								•			•										
OUTSIDE AIR (GLOBAL)			•			•																																					
RELIEF/EXHAUST AIR	•	•																																									
SUPPLY AIR STATIC																												•															
OUTSIDE AIR DAMPER													•									•																					
RELIEF AIR DAMPER													•									•																					
CARBON MONOXIDE																												•															
HEAT WHEEL				•												•					•								•			•										
COOLING COIL ENTERING	•																																										
COOLING COIL DISCHARGE	•																																										
GAS FURNACE																	•																										
DEHUMIDIFICATION																				•																							

ATC SYSTEM I/O POINTS LIST

1. GENERAL:

A. THE AIR HANDLING SYSTEM SHALL BE PROVIDED WITH FACTORY MOUNTED REFRIGERATION SYSTEM ONLY CONTROL, GAS FURNACE HEATING SYSTEM CONTROL AND ASSOCIATED SAFETY CONTROLS WITH TERMINAL STRIP FOR ATC CONTROLS. THE UNIT SHALL UTILIZE A FIELD INSTALLED DIRECT DIGITAL CONTROLLER PROVIDED BY THE ATC CONTRACTOR. THE DIRECT DIGITAL CONTROL SYSTEM SHALL BE INTERFACED WITH THE BUILDING ENERGY MANAGEMENT SYSTEM (EMS). THE ATC CONTRACTOR SHALL PROVIDE A DIRECT DIGITAL CONTROLLER AND ALL SENSORS, DEVICES AND CONTROLS NEEDED TO INTERFACE WITH THE AHU CONTROLLER. THE AIR HANDLING SYSTEM SHALL BE STARTED AND STOPPED THROUGH A MANUAL SYSTEM ON–OFF–AUTOMATIC (H–O–A) SWITCH. WHEN INDEXED TO "ON", THE SYSTEM SHALL BE ENERGIZED AND OPERATE UNDER ITS CONTROL SEQUENCE. WHEN INDEXED TO "OFF" THE SYSTEM SHALL DE–ENERGIZE. WHEN INDEXED TO THE "AUTOMATIC" POSITION THE SYSTEM SHALL BE STARTED AND STOPPED BY A SIGNAL FROM THE EMS THROUGH ITS BUILT IN CONTROLLER.

B. SUPPLY FAN SHALL BE LOCALLY OR REMOTELY STARTED AND STOPPED THROUGH THE MANUAL SYSTEM SWITCH OR BY A SIGNAL FROM THE EMS.

C. RELIEF FAN AND HEAT WHEEL SHALL BE INTERLOCKED TO OPERATE WHEN THE SUPPLY FAN OPERATES AND TO BE OFF WHEN THE SUPPLY FAN IS OFF.

D. WHEN THE UNIT SUPPLY FAN IS OFF, THE OUTSIDE AIR DAMPER SHALL CLOSE; THE GAS FIRED FURNACE AND CONDENSING UNIT SHALL BE DE–ENERGIZED; THE HEAT WHEEL SHALL BE DE–ENERGIZED; AND THE RELIEF AIR FAN SHALL BE OFF.

E. SUPPLY FAN, RELIEF FAN, CONDENSING UNIT AND HEAT WHEEL AND RELIEF FAN SHALL DE–ENERGIZE WHENEVER THE SUPPLY AIR TEMPERATURE DROPS BELOW THE LIMIT OF THE DISCHARGE AIR TEMPERATURE SET POINT OF 36°F (ADJUSTABLE THROUGH SOFTWARE) OR WHEN THE DUCT SMOKE DETECTORS SENSES PRODUCTS OF COMBUSTION OR WHEN THE HIGH DUCT STATIC PRESSURE SENSOR REACHES ITS SETPOINT (5" W.C. ADJUSTABLE) OR WHEN CO IS DETECTED IN SUPPLY AIR.

F. WHEN THE AIR HANDLING UNIT IS OFF, THE HEAT WHEEL SHALL BE DE–ENERGIZED. WHENEVER THE AIR HANDLING SYSTEM IS ON AND IN THE OCCUPIED MODE, THE HEAT WHEEL AND THE ASSOCIATED RELIEF AIR FAN SHALL BE ENERGIZED AND OPERATE THROUGH ITS CONTROL SEQUENCE.

G. ALL SAFETIES AND ASSOCIATED CONTROLS SHALL REMAIN ACTIVE WHETHER THE SYSTEM IS LOCALLY OR REMOTELY CONTROLLED AND/OR MANUALLY OVERRIDDEN.

H. PROVIDE A REMOTE EMERGENCY SHUTDOWN SWITCH FOR SYSTEM SHUTDOWN. REMOTE SWITCH SHALL BE INSTALLED AT A LOCATION APPROVED BY THE FIRE INSPECTOR. SHUT–DOWN SHALL OCCUR FROM A SIGNAL THROUGH THE EMS.

I. THE UNIT SHALL OPERATE WITH ITS BUILD–IN CONTROL SEQUENCE WHEN COMMUNICATION IS LOST TO THE EMS. COORDINATE ALL CONTROLLER SETPOINTS WITH THE UNIT MANUFACTURER.

J. EACH DOAS UNIT SHALL BE INTERLOCKED WITH ITS ZONED FAN COIL UNITS. THE FAN COIL UNITS SHALL PROVIDE MORNING WARM UP AND PULL DOWN. THE DOAS UNITS SHALL PROVIDE VENTILATION ONLY WHEN THE BUILDING IS OCCUPIED.

K. COORDINATE ALL CONTROLS WITH THE UNIT MANUFACTURER AND INTEGRATE ALL AVAILABLE POINTS FROM THE UNIT CONTROLLER IN TO THE EMS.

2. OCCUPIED CYCLE

A. GENERAL:

1. WHEN THE SYSTEM IS PLACED IN OCCUPIED MODE, THE OUTSIDE AIR DAMPER AND RELIEF AIR DAMPER SHALL OPEN AND THE SUPPLY FAN SHALL ENERGIZE WHEN THE OUTSIDE AIR DAMPER END SWITCH PROVES DAMPER IS IN OPEN POSITION. THE RELIEF FAN IS COMMANDED ON WHEN SUPPLY FAN RUN STATUS IS CONFIRMED AND THE RELIEF AIR DAMPER IS PROVED TO BE OPEN BY RELIEF AIR DAMPER END SWITCH.

B. COOLING

1. COOLING IS ENABLED WHEN THE SUPPLY AIR TEMPERATURE IS ABOVE THE COOLING SET POINT OF 55°F (ADJUSTABLE AND RESETTABLE THROUGH SOFTWARE) AND OUTSIDE AIR TEMPERATURE IS ABOVE THE COOLING LOCKOUT SET POINT OF 55°F (ADJ). THE UNIT SHALL SEQUENCE THE COOLING STAGES AS REQUIRED TO MAINTAIN THE SUPPLY AIR TEMPERATURE SET POINT OF 53°F (ADJ), MODULATING THE COMPRESSOR FROM 15% TO 100% (OR THROUGH HOT GAS BYPASS). A STAGING DELAY ON AND DELAY OFF SHALL PREVENT EACH STAGE OF MECHANICAL COOLING FROM ENABLING AND DISABLING AT THE SAME TIME. IF THERE ARE MULTIPLE STAGES OF MECHANICAL COOLING AVAILABLE (I.E. MULTIPLE COMPRESSORS) EACH STAGE SHALL SEQUENTIALLY ENABLE BASED ON A TIME DELAY OF 180 SECONDS (ADJ) AND DISABLE BASED ON A MINIMUM DELAY OFF OF 180 SECONDS (ADJ). PROVIDE A 15 MINUTE (ADJ) ANTI–SHORT CYCLE TIME DELAY BETWEEN COMPRESSOR CYCLES.

2. MODULATING HOT GAS REHEAT CONTROL – HOT GAS REHEAT SHALL MODULATE TO MAINTAIN DISCHARGE AIR TEMPERATURE OF 75°F (ADJUSTABLE THROUGH SOFTWARE).

C. REFRIGERATION LOW LIMIT CONTROL:

1. IF THE EVAPORATIVE LEAVING COIL FACE TEMPERATURE FALLS BELOW THE A LOW LIMIT SETPOINT OF 40°F (ADJUSTABLE), THE MECHANICAL COOLING WILL REVERT FROM TEMPERATURE CONTROL TO SEQUENTIALLY DISABLE STAGES OF MECHANICAL COOLING TO MAINTAIN THE LOW LIMIT TEMPERATURE SET POINT.

2. IF THE EVAPORATIVE LEAVING COIL FACE TEMPERATURE FALLS BELOW 34°F (ADJUSTABLE), MECHANICAL COOLING WILL BE DISABLED. MECHANICAL COOLING WILL BE COMMANDED TO RUN UNTIL THE EVAPORATIVE LEAVING COIL FACE TEMPERATURE RISES ABOVE 55°F (ADJUSTABLE) AND THE COMPRESSOR MINIMUM OFF TIME HAS BEEN ACHIEVED.

D. HEATING:

SUPPLY AIR TEMPERATURE SENSOR SHALL MODULATE GAS FURNACE CONTROL VALVE TO MAINTAIN 75°F (ADJUSTABLE AND RESETTABLE THROUGH SOFTWARE), SUPPLY AIR TEMPERATURE SETPOINT.

E. SUPPLY AIR RESET CONTROL:

1. THE SUPPLY AIR TEMPERATURE SHALL BE RESET WHEN ENABLED THROUGH THE ATC.

2. COOLING – SUPPLY AIR TEMPERATURE RESET SHALL BE 75°F SUPPLY AIR TEMPERATURE AT 70°F OUTSIDE AIR TEMPERATURE TO 60°F SUPPLY AIR TEMPERATURE AT 90°F OUTSIDE AIR TEMPERATURE.

3. HEATING SUPPLY AIR TEMPERATURE RESET SHALL BE 75°F SUPPLY AIR TEMPERATURE AT 55°F OUTSIDE AIR TEMPERATURE TO 85°F AT 25°F OUTSIDE AIR TEMPERATURE.

4. ALL SETPOINTS SHALL BE ADJUSTABLE THROUGH SOFTWARE. ALL RESETS SHALL BE LINEAR.

F. HEAT RECOVERY:

1. THE ROTARY AIR–TO–AIR HEAT RECOVERY WHEEL SHALL OPERATE WHEN OUTSIDE AIR IS REQUIRED. THE HEAT WHEEL CONTROLS SHALL INCLUDE FROST CONTROL, CLEANING CYCLE, AND ROTATIONAL DETECTOR.

2. THE HEAT WHEEL ACTS AS THE FIRST STAGE OF HEATING OR COOLING, WHEN THE UNIT IS PLACED IN OCCUPIED MODE, THE SUPPLY FAN RUN STATUS IS CONFIRMED AND THERE IS A CALL FOR MECHANICAL HEATING OF COOLING, THE HEAT WHEEL IS COMMANDED TO RUN. IF THE EXHAUST/RELIEF AIR TEMPERATURE FALLS BELOW ITS TEMPERATURE SETPOINT (32°F–ADJ), AN INCREASED IN DIFFERENTIAL PRESSURE ACROSS THE HEAT WHEEL AND RELIEF FAN RUN STATUS IS CONFIRMED, THE HEAT WHEEL WILL OPERATE IN DEFROST MODE. DURING THIS MODE OF OPERATION, THE HEAT WHEEL WILL REDUCE IN SPEED (ADJUSTABLE) TO PREVENT ANY ICE BUILDUP. COORDINATE FROST CONTROL REQUIREMENTS WITH THE WHEEL MANUFACTURER.

3. THE ENTERING AND LEAVING AIR TEMPERATURES OF SUPPLY AND RELIEF AIR STREAMS SHALL BE MONITORED BY THE EMS. DURING INTERMEDIATE WEATHER CONDITIONS WHEN OUTSIDE AIR TEMPERATURES ARE BETWEEN 60°F (ADJUSTABLE THROUGH SOFTWARE) AND 80°F (ADJUSTABLE THROUGH SOFTWARE) THE WHEEL SHALL ROTATE AT MINIMUM SPEED (% RPM) TO MINIMIZE RECOVERY EFFECTIVENESS (I.E. ECONOMIZER MODE). WHENEVER THE OUTDOOR AIR TEMPERATURE IS WARMER THAN THE RETURN AIR TEMPERATURE THE HEAT WHEEL SHALL BE IN THE COOLING MODE AND OPERATE AT 100% SPEED. WHEN THE OUTSIDE IS LESS THAN 60°F THE WHEEL SPEED SHALL VARY TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT.

G. FAN SPEED CONTROL:

1. SUPPLY AND RELIEF AIR FANS UTILIZE DIRECT DRIVE FANS AND SHALL BE PROVIDED WITH VARIABLE FREQUENCY DRIVES. THE VFDS SHALL BE USED FOR BALANCING PURPOSES. THE FANS SPEEDS SHALL BE FIXED.

2. FOR ROOMS WITH ON–OFF LOCAL CONTROL EXHAUST SYSTEM PROVIDE RELIEF FAN SPEED CONTROL BASED ON MAINTAINING A SLIGHT NEGATIVE PRESSURE.

3. UNOCCUPIED CYCLE

A. HEATING:

1. HEATING SETBACK TEMPERATURE SHALL BE MAINTAINED BY CYCLING THE FAN COIL UNITS (AND ASSOCIATED CONDENSING UNIT FOR VRV SYSTEMS) WHEN ANY SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED SETPOINT OF 60°F (ADJUSTABLE). WHEN OUTSIDE AIR TEMPERATURE FALL TO 20°F OR LESS (ADJUSTABLE THROUGH SOFTWARE) THE SPACE TEMPERATURE SENSORS SHALL BE RESET TO THEIR OCCUPIED SETPOINT TEMPERATURES AND THE FAN COIL UNITS SHALL CYCLE TO MAINTAIN SPACE TEMPERATURE SETPOINT.

B. MECHANICAL COOLING:

1. COOLING SETBACK TEMPERATURE SHALL BE MAINTAINED BY CYCLING THE FAN COIL UNITS (AND ASSOCIATED CONDENSING UNIT FOR VRV SYSTEMS) WHEN THE SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED COOLING TEMPERATURE SETPOINT OF 85°F (ADJUSTABLE THROUGH SOFTWARE).

TYPICAL DOAS UNIT SEQUENCE OF OPERATION – DDC (ELECTRIC/ELECTRONIC ACTUATION)

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
FAX 21065

DCIU — Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ # : 21-DCIU-03 DRAWN BY : ALBAN

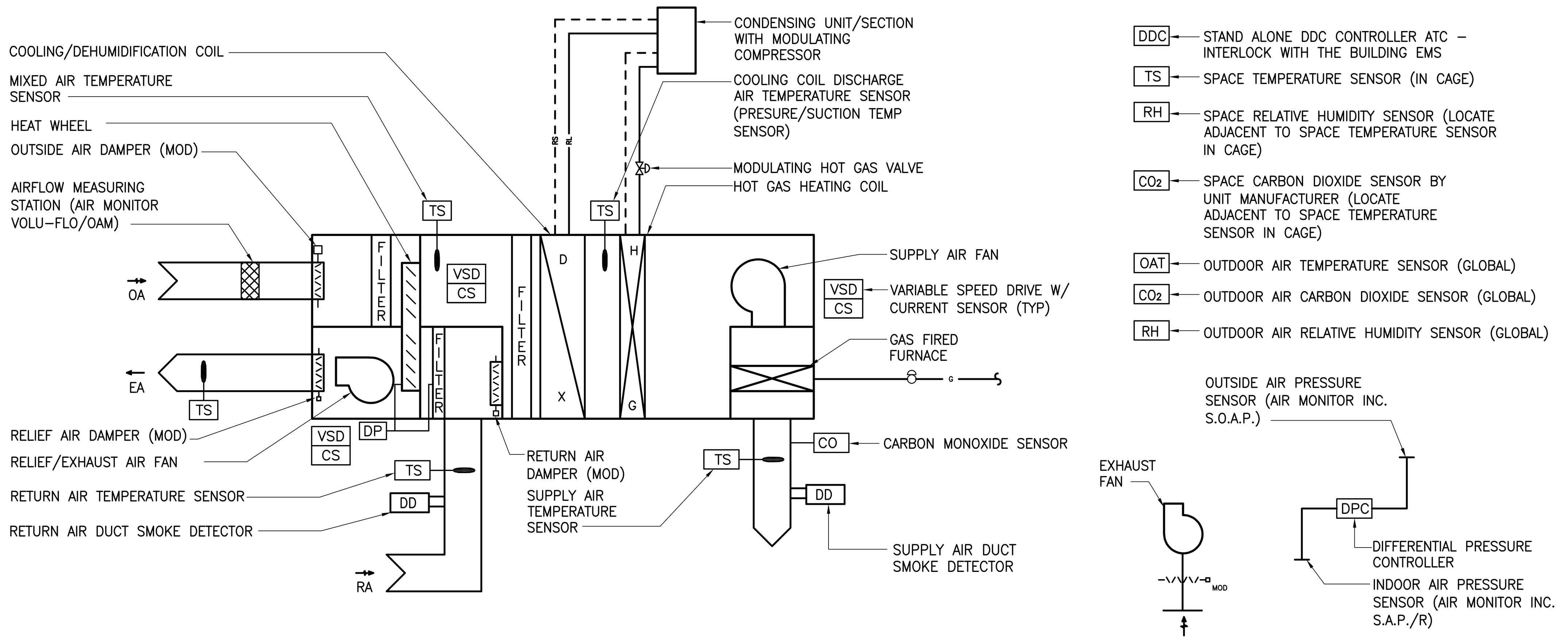
SHEET TITLE:

DOAS UNIT CONTROL DIAGRAM

SHEET NUMBER:

M8.3

BID SET



TYPICAL SINGLE ZONE VARIABLE AIR VOLUME ROOFTOP UNIT CONTROL DIAGRAM

SCALE: NONE

INPUT/OUTPUT SUMMARY FOR TYPICAL PACKAGED ROOFTOP UNIT

BUILDING SYSTEM: AIR HANDLING UNITS (AHU)

INPUTS

DESCRIPTION	ANALOG: ROOM TEMPERATURE	DUCT TEMPERATURE	DEWPOINT TEMPERATURE	O.A. TEMPERATURE (GLOBAL)	CURRENT SENSOR/STATUS	STATIC PRESSURE	CO_2	RELATIVE HUMIDITY	AIRFLOW	BINARY: FLOW SWITCH	SWITCH CLOSURE	STATIC PRESSURE	LOW TEMPERATURE CUTOUT	END SWITCH	DIFFERENTIAL PRESSURE SWITCH
AHU															
RETURN AIR		●						●							
DUCT DETECTORS (TYP)															
SPACE	●						●	●							
SUPPLY AIR		●													
SUPPLY AND RELIEF FANS					●										
OUTSIDE AIR (GLOBAL)				●			●	●							
INDOOR STATIC PRESSURE						●									
RELIEF AIR		●	●												
OUTDOOR AIR									●						
OUTSIDE AIR DAMPER															
RELIEF AIR DAMPER															
RETURN AIR DAMPER															
HEAT WHEEL						●									
CARBON MONOXIDE															

OUTPUTS

DESCRIPTION	ANALOG: MODULATING ACTUATOR	E/P TRANSDUCER	VARIABLE SPEED				BINARY: CONTROL RELAY	SOLENOID	START/STOP	2-POSITION DAMPER MOD.			3-POINT FLOATING: ACTUATOR	MERCURY RELAY	FEED/BLEED SAV			
AHU									●									
RETURN AIR																		
DUCT DETECTORS (TYP)																		
SPACE	●																	
SUPPLY AIR																		
SUPPLY AND RELIEF FANS			●															
OUTSIDE AIR (GLOBAL)																		
INDOOR STATIC PRESSURE																		
RELIEF AIR																		
OUTDOOR AIR																		
OUTSIDE AIR DAMPER	●																	
RELIEF AIR DAMPER	●																	
RETURN AIR DAMPER	●																	
HEAT WHEEL			●						●									
CARBON MONOXIDE																		

ALARMS / FEATURES

DESCRIPTION	ALARMS: HIGH LIMIT	LOW LIMIT	RUN TIME	MAINTENANCE MESSAGE	SMOKE/FIRE	LIQUID DETECTION	FEATURES: SCHEDULED START/STOP	TEMPERATURE SETBACK/SETUP	OPTIMIZED START (ADAPT.)	DEMAND LIMITING	DUTY CYCLE	VENTILATION DELAY	ECONOMIZER CYCLE	H.W. RESET W/ O.A. TEMP.	VAV CONTROL	REMOTE READ/RESET	TENANT OVERRIDE	COLOR GRAPHICS	POINT LOCKOUT	TREND LOG	WARM UP/PULL DOWN
AHU				●			●		●						●	●		●			●
RETURN AIR																					
DUCT DETECTORS (TYP)					●																
SPACE																				●	
SUPPLY AIR		●														●				●	
SUPPLY AND RELIEF FANS				●			●		●												
OUTSIDE AIR (GLOBAL)																●				●	
INDOOR STATIC PRESSURE																					
RELIEF AIR																					
OUTDOOR AIR																					
OUTSIDE AIR DAMPER																					
RELIEF AIR DAMPER																					
RETURN AIR DAMPER																					
HEAT WHEEL				●			●		●												
CARBON MONOXIDE	●			●																	

ATC SYSTEM I/O POINTS LIST

1. GENERAL:

A. THE AIR HANDLING SYSTEM SHALL BE PROVIDED WITH FACTORY MOUNTED REFRIGERATION SYSTEM CONTROLS, GAS FURNACE HEATING SYSTEM CONTROLS AND ASSOCIATED SAFETY CONTROLS WITH TERMINAL STRIP FOR ATC CONTROLS. THE UNIT SHALL UTILIZE A FIELD INSTALLED DIRECT DIGITAL CONTROLLER PROVIDED BY THE ATC CONTRACTOR. THE DIRECT DIGITAL CONTROLLER SHALL BE INTERFACED WITH THE BUILDING ENERGY MANAGEMENT SYSTEM (EMS). THE ATC CONTRACTOR SHALL PROVIDE A DIRECT DIGITAL CONTROLLER AND ALL SENSORS, DEVICES AND CONTROLS NEEDED TO INTERFACE WITH THE AHU CONTROLLER. THE AIR HANDLING SYSTEM SHALL BE STARTED AND STOPPED THROUGH A MANUAL SYSTEM ON–OFF–AUTOMATIC (H–O–A) SWITCH. WHEN INDEXED TO "ON", THE SYSTEM SHALL BE ENERGIZED AND OPERATE UNDER ITS CONTROL SEQUENCE. WHEN INDEXED TO "OFF" THE SYSTEM SHALL DE–ENERGIZE. WHEN INDEXED TO THE "AUTOMATIC" POSITION THE SYSTEM SHALL BE STARTED AND STOPPED BY A SIGNAL FROM THE EMS THROUGH ITS BUILT IN CONTROLLER.

B. SUPPLY FAN SHALL BE LOCALLY OR REMOTELY STARTED AND STOPPED THROUGH THE MANUAL SYSTEM SWITCH OR BY A SIGNAL FROM THE EMS.

C. RELIEF FAN AND HEAT WHEEL SHALL BE INTERLOCKED TO OPERATE WHEN THE SUPPLY FAN OPERATES AND TO BE OFF WHEN THE SUPPLY FAN IS OFF.

D. WHEN THE UNIT SUPPLY FAN IS OFF, THE OUTSIDE AIR DAMPER SHALL CLOSE AND RETURN AIR DAMPER SHALL OPEN; GAS FIRED FURNACE AND CONDENSING UNIT SHALL BE DE–ENERGIZED; THE HEAT WHEEL SHALL BE DE–ENERGIZED; AND THE RELIEF AIR FAN SHALL BE OFF.

E. SUPPLY FAN, RELIEF FAN, CONDENSING UNIT AND HEAT WHEEL AND RELIEF FAN SHALL DE–ENERGIZE WHENEVER THE SUPPLY AIR TEMPERATURE DROPS BELOW THE LIMIT OF THE DISCHARGE AIR TEMPERATURE SET POINT OF 36°F (ADJUSTABLE THROUGH SOFTWARE) OR WHEN THE DUCT SMOKE DETECTORS SENSES PRODUCTS OF COMBUSTION OR WHEN THE HIGH DUCT STATIC PRESSURE SENSOR REACHES ITS SETPOINT (5" W.C. ADJUSTABLE), OR WHEN CO IS DETECTED IN THE SUPPLY DUCT.

F. WHEN THE AIR HANDLING UNIT IS OFF, THE HEAT WHEEL SHALL BE DE–ENERGIZED. WHENEVER THE AIR HANDLING SYSTEM IS ON AND IN THE OCCUPIED MODE, THE HEAT WHEEL AND THE ASSOCIATED RELIEF AIR FAN SHALL BE ENERGIZED AND OPERATE THROUGH ITS CONTROL SEQUENCE.

G. ALL SAFETIES AND ASSOCIATED CONTROLS SHALL REMAIN ACTIVE WHETHER THE SYSTEM IS LOCALLY OR REMOTELY CONTROLLED AND/OR MANUALLY OVERRIDDEN.

H. PROVIDE A REMOTE EMERGENCY SHUTDOWN SWITCH FOR SYSTEM SHUTDOWN. REMOTE SWITCH SHALL BE INSTALLED AT A LOCATION APPROVED BY THE FIRE INSPECTOR. SHUT–DOWN SHALL OCCUR FROM A SIGNAL THROUGH THE EMS.

I. THE UNIT SHALL OPERATE WITH ITS BUILT–IN CONTROL SEQUENCE WHEN COMMUNICATION IS LOST TO THE EMS. COORDINATE ALL CONTROLLER SETPOINTS WITH THE UNIT MANUFACTURER.

2. OCCUPIED CYCLE

A. GENERAL:

1. WHEN THE UNIT SUPPLY FAN IS ENERGIZED TO RUN, IT SHALL GO THROUGH A WARM–UP/PULL DOWN CYCLE. WHEN THE SYSTEM COMPLETES ITS WARM–UP/PULL–DOWN MODE OF OPERATION AND THE SYSTEM SWITCHES TO THE OCCUPIED MODE OF OPERATION, THE OUTSIDE AIR DAMPER SHALL OPEN TO ITS MINIMUM POSITION AND THE RETURN AIR DAMPER SHALL MODULATE TO ITS CORRESPONDING POSITION. THE RELIEF AIR FAN AND HEAT WHEEL SHALL ENERGIZE.

2. THE SPACE TEMPERATURE IS CONTROLLED BY A SINGLE, SPACE MOUNTED TEMPERATURE SENSOR WITH SET POINT ADJUSTMENT. THE SPACE RELATIVE HUMIDITY IS CONTROLLED BY A SINGLE SPACE MOUNTED RELATIVE HUMIDITY SENOR WITH SET POINT ADJUSTMENT.

3. WHEN THE SYSTEM IS PLACED IN OCCUPIED MODE, THE RELIEF FAN IS COMMANDED ON WHEN SUPPLY FAN RUN STATUS IS CONFIRMED AND THE OUTSIDE AIR DAMPER IS OPEN TO ITS MINIMUM SETPOINT OR THE HEAT WHEEL HAS BEEN COMMANDED TO OPERATE.

B. WARM–UP/PULL DOWN:

THE UNIT CONTROL SHALL BE ARRANGED FOR A WINTER MORNING WARM–UP HEATING CYCLE AND SUMMER PULL DOWN COOLING CYCLE. DURING WARM–UP CYCLE THE OUTSIDE AIR DAMPER AND RELIEF AIR DAMPER SHALL REMAIN CLOSED, THE RETURN AIR DAMPER OPEN, AND THE AIR HANDLING UNIT GAS FIRED FURNACE SHALL BE ENGAGED UNTIL THE SPACE TEMPERATURE RISES TO 70°F (ADJUSTABLE). SIMILARLY FOR PULL DOWN CYCLE, THE CONDENSING UNIT SHALL BE STAGED UNTIL THE SPACE TEMPERATURE DROPS TO 75°F (ADJUSTABLE). AT THAT POINT, THE OUTSIDE AIR DAMPER AND RELIEF AIR DAMPER SHALL OPEN, THE RETURN AIR DAMPER SHALL MODULATE TO ITS MINIMUM POSITION, THE RELIEF AIR FAN AND HEAT RECOVERY WHEEL SHALL ENERGIZE AS PREVIOUSLY DESCRIBED, AND THE HEATING AND COOLING CONTROL SHALL BE PLACED UNDER THE CONTROL OF THE SPACE AIR TEMPERATURE SENSOR.

C. COOLING

1. COOLING IS ENABLED WHEN THE SPACE AIR TEMPERATURE IS ABOVE THE COOLING SET POINT OF 76°F (ADJUSTABLE AND RESETTABLE THROUGH SOFTWARE) AND OUTSIDE AIR TEMPERATURE IS ABOVE THE COOLING LOCKOUT SET POINT OF 55°F (ADJ). THE UNIT SHALL SEQUENCE THE COOLING STAGES AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE SET POINT, MODULATING THE COMPRESSOR FROM 15% TO 100% (OR THROUGH HOT GAS BYPASS). A STAGING DELAY ON AND DELAY OFF SHALL PREVENT EACH STAGE OF MECHANICAL COOLING FROM ENABLING AND DISABLING AT THE SAME TIME. IF THERE ARE MULTIPLE STAGES OF MECHANICAL COOLING AVAILABLE (I.E. MULTIPLE COMPRESSORS) EACH STAGE SHALL SEQUENTIALLY ENABLE BASED ON A TIME DELAY OF 180 SECONDS (ADJ) AND DISABLE BASED ON A MINIMUM DELAY OFF OF 180 SECONDS (ADJ). PROVIDE A 15 MINUTE (ADJ) ANTI–SHORT CYCLE TIME DELAY BETWEEN COMPRESSOR CYCLES.

D. REFRIGERATION LOW LIMIT CONTROL:

1. IF THE EVAPORATIVE LEAVING COIL FACE TEMPERATURE FALLS BELOW THE A LOW LIMIT SETPOINT OF 40°F (ADJUSTABLE), THE MECHANICAL COOLING WILL REVERT FROM TEMPERATURE CONTROL TO SEQUENTIALLY DISABLE STAGES OF MECHANICAL COOLING TO MAINTAIN THE LOW LIMIT TEMPERATURE SET POINT.

2. IF THE EVAPORATIVE LEAVING COIL FACE TEMPERATURE FALLS BELOW 34°F (ADJUSTABLE), MECHANICAL COOLING WILL BE DISABLED. MECHANICAL COOLING WILL BE COMMANDED TO RUN UNTIL THE EVAPORATIVE LEAVING COIL FACE TEMPERATURE RISES ABOVE 55°F (ADJUSTABLE) AND THE COMPRESSOR MINIMUM OFF TIME HAS BEEN ACHIEVED.

E. DEHUMIDIFICATION CONTROL:

1. DEHUMIDIFICATION IS ENABLED WHEN THE SUPPLY FAN IS OPERATING, SPACE TEMPERATURE IS SATISFIED OR ABOVE COOLING SET POINT AND THE OUTSIDE AIR TEMPERATURE IS ABOVE THE COMPRESSOR LOCKOUT POINT. SPACE RELATIVE HUMIDITY REACHES ITS SETPOINT 60%RH SPACE (ADJUSTABLE THROUGH SOFTWARE). DEHUMIDIFICATION MODE SHALL BE DISABLED IF EITHER THE SPACE RELATIVE HUMIDITY FALLS 5% (ADJUSTABLE) BELOW THE SPACE DEHUMIDIFICATION SETPOINT OR THE SPACE TEMPERATURE FALLS 5°F (ADJUSTABLE) BELOW THE OCCUPIED SPACE COOLING SETPOINT TEMPERATURE.

2. WHEN THE UNIT IS IN DEHUMIDIFICATION MODE, THE COOLING SHALL REVERT FROM MAINTAINING SPACE TEMPERATURE COOLING SET POINT TO MAINTAINING A CONSTANT LEAVING COIL FACE TEMPERATURE AS DETERMINED BY A REFRIGERATION SUCTION PRESSURE SENSOR LOCATED ON THE FIRST STAGE OF COOLING.

3. MODULATING HOT GAS REHEAT CONTROL–IF THE SPACE TEMPERATURE FALLS BELOW ITS SETPOINT TEMPERATURE OF 75°F (ADJUSTABLE THROUGH SOFTWARE) DURING DEHUMIDIFICATION MODE AND THE FIRST STAGE OF MECHANICAL COOLING IS COMMANDED TO RUN, THE REFRIGERATION MODULATING GAS HEAT WILL BEGIN TO MODULATE OPEN UNTIL THE SPACE TEMPERATURE SET POINT (75°F ADJUSTABLE THROUGH SOFTWARE) IS SATISFIED.

F. ECONOMIZER CONTROL:

1. THE UNIT SHALL BE PROVIDED WITH AN ENTHALPY ECONOMIZER CYCLE. THE ECONOMIZER CONTROL SHALL MODULATE THE OUTSIDE AIR AND RETURN AIR DAMPER TO MAINTAIN SPACE TEMPERATURE WHENEVER OUTSIDE AIR ENTHALPY IS LESS THAN RETURN AIR ENTHALPY. THE ECONOMIZER CYCLE SHALL BE LOCKED OUT WHEN THE UNIT IS OPERATING IN THE DEHUMIDIFICATION SEQUENCE OF OPERATION, OR IF MECHANICAL COOLING IS COMMANDED TO OPERATE.

2. AN ECONOMIZER LOW LIMIT WILL PREVENT THE MIXED AIR TEMPERATURE FROM FALLING BELOW THE ECONOMIZER LOW LIMIT SET POINT OF 45°F (ADJUSTABLE THROUGH SOFTWARE). IF THE MIXED AIR TEMPERATURE FALLS BELOW THE ECONOMIZER LOW LIMIT SET POINT AND MECHANICAL COOLING IS DISABLED, THE ECONOMIZER WILL MODULATE THE OUTSIDE AIR DAMPERS TO MAINTAIN THE ECONOMIZER LOW LIMIT SET POINT. DURING THIS MODE OF OPERATION, THE ECONOMIZER HAS THE ABILITY TO MODULATE THE OUTSIDE AIR DAMPER BELOW THE ECONOMIZER MINIMUM POSITION TO MAINTAIN THE ECONOMIZER LOW LIMIT TEMPERATURE SET POINT.

3. HEATING:

SPACE TEMPERATURE SENSOR SHALL MODULATE GAS FURNACE CONTROL VALVE TO MAINTAIN 70°F (ADJUSTABLE AND RESETTABLE THROUGH SOFTWARE), SPACE TEMPERATURE SETPOINT.

G. HEAT RECOVERY:

1. THE ROTARY AIR–TO–AIR HEAT RECOVERY WHEEL SHALL OPERATE WHEN OUTSIDE AIR IS REQUIRED. THE HEAT WHEEL CONTROLS SHALL INCLUDE FROST CONTROL, CLEANING CYCLE, AND ROTATIONAL DETECTOR. THE HEAT WHEEL SHALL RUN AT FULL SPEED EXCEPT AT OUTSIDE AIR TEMPERATURES OF 50°F–75°F (ADJ–ECONOMIZER OPERATION) AND WHEN FROST OF THE WHEEL MAY OCCUR AS DETERMINED BY DISCHARGE AIR TEMPERATURE AND HEAT WHEEL DIFFERENTIAL PRESSURE. THE ENERGY WHEEL VARIABLE SPEED DRIVE SHALL MODULATE WHEEL SPEED TO PREVENT FROSTING.

2. THE HEAT WHEEL ACTS AS THE FIRST STAGE OF HEATING OR COOLING, WHEN THE UNIT IS PLACED IN OCCUPIED MODE, THE SUPPLY FAN RUN STATUS IS CONFIRMED AND THERE IS A CALL FOR MECHANICAL HEATING OF COOLING, THE HEAT WHEEL IS COMMANDED TO RUN. IF THE UNIT IS IN ECONOMIZER MODE OR THERE IS NOT A CALL FOR EITHER MECHANICAL HEATING OR COOLING THE HEAT WHEEL IS COMMANDED OFF. IF THE RELIEF AIR DISCHARGE AIR TEMPERATURE FALLS BELOW ITS TEMPERATURE SETPOINT, THE HEAT WHEEL DIFFERENTIAL PRESSURE INCREASES AND RELIEF FAN RUN STATUS IS CONFIRMED, THE HEAT WHEEL WILL OPERATE IN DEFROST MODE. DURING THIS MODE OF OPERATION, THE HEAT WHEEL SHALL REDUCE IN SPEED. COORDINATE FROST CONTROL REQUIREMENTS WITH THE HEAT WHEEL MANUFACTURER.

I. OUTSIDE AIR:

1. THE MINIMUM OUTSIDE AIR FLOW RATE SHALL BE 20% OF THE SCHEDULED MINIMUM OUTSIDE AIR FLOW RATE. THE SPACE CARBON DIOXIDE SENSOR SHALL MODULATE OUTSIDE AIR DAMPER OPEN TO THE SCHEDULED MINIMUM OUTSIDE AIR FLOW RATE AS REQUIRED TO MAINTAIN A SPACE CO2 LEVEL THAT IS THE LESSER OF THE FOLLOWING:
   a. A 700 PPM (ADJUSTABLE) DIFFERENCE BETWEEN THE OUTSIDE AIR CO2 LEVEL AND THE SPACE CO2 LEVEL.
   b. A SPACE CO2 LEVEL A SPACE CO2 LEVEL OF 1500 PPM (ADJUSTABLE).

2. OUTSIDE AIR FLOW MEASURING STATION (ATTACHED TO RTU HOOD) SHALL MEASURE OUTSIDE AIR FLOW RATE TO MAINTAIN MINIMUM SETPOINTS.

3. FOR LABS WITH MINIMUM EXHAUST REQUIREMENTS MAINTAIN MINIMUM SCHEDULED OUTDOOR FLOW RATE REQUIREMENTS.

J. FAN SPEED CONTROL:

1. SUPPLY AIR FAN SHALL BE CONTROLLED TO MAINTAIN SPACE TEMPERATURE THROUGH ITS BUILT CONTROLS. THE SUPPLY FAN SHALL MODULATE BETWEEN 50% (ADJUSTABLE THROUGH SOFTWARE) TO 100% OF THE SCHEDULED AIR FLOW RATE.

2. THE RELIEF AIR FAN SHALL VARY ITS FAN SPEED TO MAINTAIN A SLIGHTLY POSITIVE BUILDING PRESSURE (ADJUSTABLE) THROUGH DIFFERENTIAL PRESSURE CONTROLLER.

3. UNOCCUPIED CYCLE

A. GENERAL:

1. THE CONDENSING UNIT SHALL DE–ENERGIZE AND AFTER A FIVE MINUTE TIME DELAY THE SUPPLY FAN, ASSOCIATED RELIEF FAN, AND HEAT RECOVERY WHEEL SHALL BE DE–ENERGIZED, OUTSIDE AIR DAMPER AND RELIEF AIR DAMPER SHALL BE CLOSED, THE GAS FURNACE SHALL BE DEENERGIZED AND RETURN AIR DAMPER SHALL BE OPEN. SPACE TEMPERATURE SENSOR SHALL BE RESET TO 55°F (ADJUSTABLE) IN THE HEATING MODE.

B. HEATING:

1. HEATING SETBACK TEMPERATURE SHALL BE MAINTAINED BY CYCLING THE SUPPLY FAN AS RECIRCULATING UNIT HEATER. WHEN THE SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED SETPOINT OF 55°F (ADJUSTABLE), THE SUPPLY FAN SHALL START AND FULL HEATING SHALL BE ENABLED. HEATING IS DISABLED WHEN SPACE TEMPERATURE REACHES 2°F (ADJUSTABLE THROUGH SOFTWARE) ABOVE SPACE TEMPERATURE SETPOINT. THE SUPPLY FAN SHALL DE–ENERGIZE AFTER THE TIME DELAY TIMES OUT.

C. MECHANICAL COOLING:

1. MECHANICAL COOLING IS DISABLED. IF THE UNIT IS MONITORING SPACE TEMPERATURE AND THE SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED COOLING TEMPERATURE SETPOINT OF 85°F (ADJUSTABLE THROUGH SOFTWARE), THE UNIT COOLING NIGHT CYCLE MODE IS ENABLED. ONCE THE SUPPLY FAN RUN STATUS IS CONFIRMED, THE UNIT OPERATES WITH THE ECONOMIZER DISABLED AND SEQUENTIALLY ENABLES 100% MECHANICAL COOLING CAPACITY. ONCE THE SPACE TEMPERATURE FALLS 2°F (ADJUSTABLE THROUGH SOFTWARE) BELOW THE SPACE UNOCCUPIED COOLING TEMPERATURE SETPOINT, THE COOLING NIGHT CYCLE MODE IS DISABLE. THE SUPPLY FAN IS DISABLED AFTER 120 SECONDS TIME DELAY TO ALLOW FOR MECHANICAL UNLOADING. THE UNOCCUPIED COOLING SEQUENCE OF OPERATION SHALL BE ENABLED/DISABLED BY A MANUAL SOFTWARE SELECTOR SWITCH THROUGH THE EMS.

D. SUMMER UNOCCUPIED MODE

1. WHENEVER THE BUILDING IS UNOCCUPIED AND OCCUPIED SPACE TEMPERATURE SETPOINTS ARE REQUIRED THE AHU SHALL BE ENERGIZED, THE RETURN AIR DAMPER SHALL REMAIN OPEN, THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND THE HEATING AND COOLING SYSTEM SHALL BE SEQUENCED TO MAINTAIN OCCUPIED SPACE TEMPERATURE SETPOINTS. THE "SUMMER UNOCCUPIED" MODE SHALL BE ENABLED – DISABLED THROUGH THE EMS TIME OF DAY PROGRAM.

SINGLE ZONE VARIABLE AIR VOLUME ROOFTOP UNIT SEQUENCE OF OPERATION – DDC (ELECTRIC/ELECTRONIC ACTUATION)

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES DATE:	DESCRIPTION:
03/17/2025	BID SET

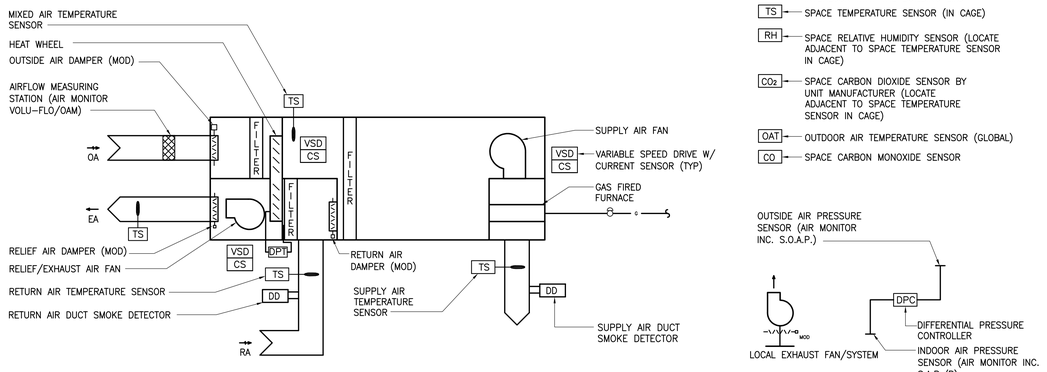
PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:

SINGLE ZONE VARIABLE FLOW AHU CONTROL DIAGRAM

SHEET NUMBER: **M8.4**

BID SET



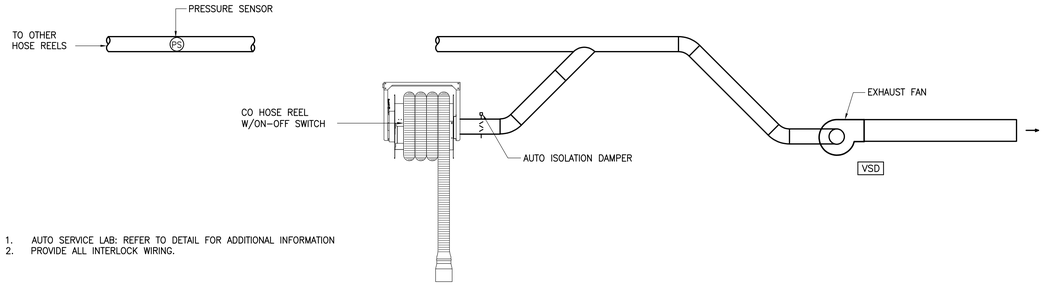
TYPICAL HEATING AND VENTILATING UNIT CONTROL DIAGRAM

SCALE: NONE

INPUT/OUTPUT SUMMARY FOR TYPICAL HEATING AND VENTILATING UNIT

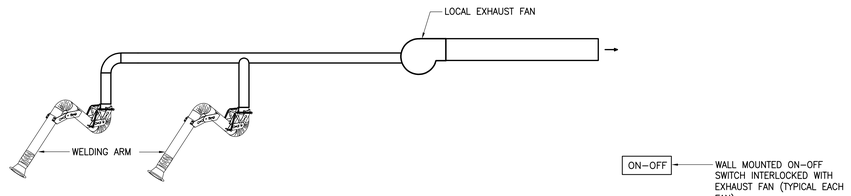
BUILDING SYSTEM: HEATING & VENTILATING UNITS (HVU)	INPUTS: ANALOG: ROOM TEMPERATURE	DUCT TEMPERATURE	DEWPOINT TEMPERATURE	O.A. TEMPERATURE (GLOBAL)	CURRENT SENSOR/STATUS	STATIC PRESSURE	CO_2	RELATIVE HUMIDITY	AIRFLOW	INPUTS: BINARY: FLOW SWITCH	FREEZE CLOSURE	STATIC PRESSURE	LOW TEMPERATURE CUTOUT	END SWITCH	DIFFERENTIAL PRESSURE SWITCH	OUTPUTS: ANALOG: MODULATING ACTUATOR	C/T TRANSDUCER	VARIABLE SPEED	OUTPUTS: BINARY: CONTROL RELAY	SOLENOID	START/STOP	2-POSITION DAMPER MOD.	OUTPUTS: 3-POINT FLOATING: ACTUATOR	MERCURY RELAY	FEED/BLEED VAV	ALARMS: HIGH LIMIT	LOW LIMIT	RUN TIME	MAINTENANCE MESSAGE	SMOKE/FIRE	LIQUID DETECTION	FEATURES: SCHEDULED START/STOP	TEMPERATURE SETBACK/SETUP	OPTIMIZED START (ADAPT.)	DEMAND LIMITING	DUTY CYCLE	VENTILATION DELAY	ECONOMIZER CYCLE	H.W. RESET W/ O.A. TEMP.	VAV CONTROL	REMOTE RESET	TREND FORMATTING	COLOR GRAPHICS	POINT LOCKOUT	TREND LOG	WARM UP/PULL DOWN
DESCRIPTION																																																	
AHU																																																
RETURN AIR	•				•	•														•																											
DUCT DETECTORS (TYP)																																															
SPACE	•					•	•									•																															
SUPPLY AIR		•																										•													•						
SUPPLY AND RELIEF FANS					•													•												•																	
OUTSIDE AIR (GLOBAL)			•				•	•																																							
INDOOR STATIC PRESSURE				•																																					•					
RELIEF AIR	•	•																																												
OUTDOOR AIR								•																																							
OUTSIDE AIR DAMPER																	•																														
RELIEF AIR DAMPER																	•																														
RETURN AIR DAMPER																	•																														
HEAT WHEEL																																															

ATC SYSTEM I/O POINTS LIST



1. AUTO SERVICE LAB: REFER TO DETAIL FOR ADDITIONAL INFORMATION
2. PROVIDE ALL INTERLOCK WIRING.

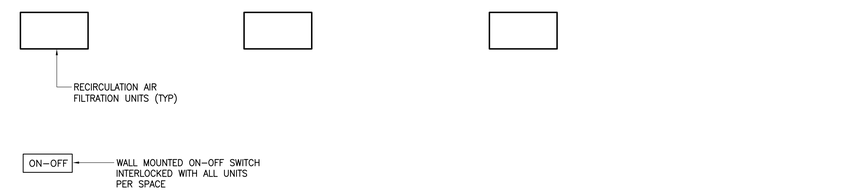
CARBON MONOXIDE EXHAUST SYSTEM CONTROL DIAGRAM



NOTES:

1. EACH EXHAUST FAN SHALL BE PROVIDED WITH A LOCAL WALL MOUNTED ON-OFF SWITCH WHICH SHALL ENERGIZE/DEENERGIZE LOCAL EXHAUST FAN (I.E. WELDING BOOTH, SOLDERING STATION, ETC).
2. REFER TO DETAIL FOR CENTRAL WELDING EXHAUST SYSTEM INFORMATION.

TYPICAL LOCAL WELDING ARM EXHAUST SYSTEM CONTROL DIAGRAM



1. LOCAL ON-OFF SWITCH SHALL ENERGIZE/DEENERGIZE ALL FILTRATION UNITS IN SPACE.
2. DETAIL SIMILAR FOR FUME EXTRACTION UNITS.

TYPICAL RECIRCULATION AIR FILTRATION SYSTEM UNITS CONTROL DIAGRAM

1. GENERAL:

A. THE AIR HANDLING SYSTEM SHALL BE PROVIDED WITH FACTORY MOUNTED REFRIGERATION SYSTEM CONTROLS, GAS FURNACE HEATING SYSTEM CONTROLS AND ASSOCIATED SAFETY CONTROLS WITH TERMINAL STRIP FOR ATC CONTROLS. THE UNIT SHALL UTILIZE A FIELD INSTALLED DIRECT DIGITAL CONTROLLER PROVIDED BY THE ATC CONTRACTOR. THE DIRECT DIGITAL CONTROLLER SHALL BE INTERFACED WITH THE BUILDING ENERGY MANAGEMENT SYSTEM (EMS). THE ATC CONTRACTOR SHALL PROVIDE A DIRECT DIGITAL CONTROLLER AND ALL SENSORS, DEVICES AND CONTROLS NEEDED TO INTERFACE WITH THE AHU CONTROLLER. THE AIR HANDLING SYSTEM SHALL BE STARTED AND STOPPED THROUGH A MANUAL SYSTEM ON–OFF–AUTOMATIC (H–O–A) SWITCH. WHEN INDEXED TO "ON", THE SYSTEM SHALL BE ENERGIZED AND OPERATE UNDER ITS CONTROL SEQUENCE. WHEN INDEXED TO "OFF" THE SYSTEM SHALL DE–ENERGIZE. WHEN INDEXED TO THE "AUTOMATIC" POSITION THE SYSTEM SHALL BE STARTED AND STOPPED BY A SIGNAL FROM THE EMS THROUGH ITS BUILT IN CONTROLLER.

B. SUPPLY FAN SHALL BE LOCALLY OR REMOTELY STARTED AND STOPPED THROUGH THE MANUAL SYSTEM SWITCH OR BY A SIGNAL FROM THE EMS.

C. RELIEF FAN AND HEAT WHEEL SHALL BE INTERLOCKED TO OPERATE WHEN THE SUPPLY FAN OPERATES AND TO BE OFF WHEN THE SUPPLY FAN IS OFF.

D. WHEN THE UNIT SUPPLY FAN IS OFF, THE OUTSIDE AIR DAMPER SHALL CLOSE AND RETURN AIR DAMPER SHALL OPEN; GAS FIRED FURNACE SHALL BE DE–ENERGIZED; THE HEAT WHEEL SHALL BE DE–ENERGIZED; AND THE RELIEF AIR FAN SHALL BE OFF.

E. SUPPLY FAN, RELIEF FAN, CONDENSING UNIT AND HEAT WHEEL AND RELIEF FAN SHALL DE–ENERGIZE WHENEVER THE SUPPLY AIR TEMPERATURE DROPS BELOW THE LIMIT OF THE DISCHARGE AIR TEMPERATURE SET POINT OF 36°F (ADJUSTABLE THROUGH SOFTWARE) OR WHEN THE DUCT SMOKE DETECTORS SENSES PRODUCTS OF COMBUSTION OR WHEN THE HIGH DUCT STATIC PRESSURE SENSOR REACHES ITS SETPOINT (5" W.C. ADJUSTABLE).

F. WHEN THE AIR HANDLING UNIT IS OFF, THE HEAT WHEEL SHALL BE DE–ENERGIZED. WHENEVER THE AIR HANDLING SYSTEM IS ON AND IN THE OCCUPIED MODE, THE HEAT WHEEL AND THE ASSOCIATED RELIEF AIR FAN SHALL BE ENERGIZED AND OPERATE THROUGH ITS CONTROL SEQUENCE.

G. ALL SAFETIES AND ASSOCIATED CONTROLS SHALL REMAIN ACTIVE WHETHER THE SYSTEM IS LOCALLY OR REMOTELY CONTROLLED AND/OR MANUALLY OVERRIDDEN.

H. PROVIDE A REMOTE EMERGENCY SHUTDOWN SWITCH FOR SYSTEM SHUTDOWN. REMOTE SWITCH SHALL BE INSTALLED AT A LOCATION APPROVED BY THE FIRE INSPECTOR. SHUT–DOWN SHALL OCCUR FROM A SIGNAL THROUGH THE EMS.

I. THE UNIT SHALL OPERATE WITH ITS BUILT–IN CONTROL SEQUENCE WHEN COMMUNICATION IS LOST TO THE EMS. COORDINATE ALL CONTROLLER SETPOINTS WITH THE UNIT MANUFACTURER.

J. PROVIDE A SPACE CARBON MONOXIDE SENSOR ADJACENT TO THE SPACE TEMPERATURE SENSOR. WHEN CARBON MONOXIDE IS SENSED IT SHALL DEENERGIZE THE UNIT AND ALARM THE EM AND FIRE ALARM SYSTEM.

2. OCCUPIED CYCLE

A. GENERAL:

1. WHEN THE UNIT SUPPLY FAN IS ENERGIZED TO RUN, IT SHALL GO THROUGH A WARM–UP/PULL DOWN CYCLE. WHEN THE SYSTEM COMPLETES ITS WARM–UP/PULL–DOWN MODE OF OPERATION AND THE SYSTEM SWITCHES TO THE OCCUPIED MODE OF OPERATION, THE OUTSIDE AIR DAMPER SHALL OPEN TO ITS MINIMUM POSITION AND THE RETURN AIR DAMPER SHALL MODULATE TO ITS CORRESPONDING POSITION. THE RELIEF AIR FAN AND HEAT WHEEL SHALL ENERGIZE.
2. THE SPACE TEMPERATURE IS CONTROLLED BY A SINGLE, SPACE MOUNTED TEMPERATURE SENSOR WITH SET POINT ADJUSTMENT.
3. WHEN THE SYSTEM IS PLACED IN OCCUPIED MODE, THE RELIEF FAN IS COMMANDED ON WHEN SUPPLY FAN RUN STATUS IS CONFIRMED AND THE OUTSIDE AIR DAMPER IS OPEN TO ITS MINIMUM SETPOINT OR THE HEAT WHEEL HAS BEEN COMMANDED TO OPERATE.

B. WARM–UP:

THE UNIT CONTROL SHALL BE ARRANGED FOR A WINTER MORNING WARM–UP HEATING CYCLE. DURING WARM–UP CYCLE THE OUTSIDE AIR DAMPER AND RELIEF AIR DAMPER SHALL REMAIN CLOSED, THE RETURN AIR DAMPER OPEN, AND THE AIR HANDLING UNIT GAS FIRED FURNACE SHALL BE ENGAGED UNTIL THE SPACE TEMPERATURE RISES TO 70°F (ADJUSTABLE). AT THAT POINT, THE OUTSIDE AIR DAMPER AND RELIEF AIR DAMPER SHALL OPEN, THE RETURN AIR DAMPER SHALL MODULATE TO ITS MINIMUM POSITION, THE RELIEF AIR FAN AND HEAT RECOVERY WHEEL SHALL ENERGIZE AS PREVIOUSLY DESCRIBED, AND THE HEATING CONTROL SHALL BE PLACED UNDER THE CONTROL OF THE SPACE AIR TEMPERATURE SENSOR.

C. ECONOMIZER CONTROL:

1. THE UNIT SHALL BE PROVIDED WITH AN ENTHALPY ECONOMIZER CYCLE. THE ECONOMIZER CONTROL SHALL MODULATE THE OUTSIDE AIR AND RETURN AIR DAMPER TO MAINTAIN SPACE TEMPERATURE WHENEVER OUTSIDE AIR ENTHALPY IS LESS THAN RETURN AIR ENTHALPY. THE ECONOMIZER CYCLE SHALL BE LOCKED OUT WHEN THE UNIT IS OPERATING IN THE DEHUMIDIFICATION SEQUENCE OF OPERATION.
2. AN ECONOMIZER LOW LIMIT WILL PREVENT THE MIXED AIR TEMPERATURE FROM FALLING BELOW THE ECONOMIZER LOW LIMIT SET POINT OF 45°F (ADJUSTABLE THROUGH SOFTWARE). IF THE MIXED AIR TEMPERATURE FALLS BELOW THE ECONOMIZER LOW LIMIT SET POINT, THE ECONOMIZER WILL MODULATE THE OUTSIDE AIR DAMPERS TO MAINTAIN THE ECONOMIZER LOW LIMIT SET POINT. DURING THIS MODE OF OPERATION, THE ECONOMIZER HAS THE ABILITY TO MODULATE THE OUTSIDE AIR DAMPER BELOW THE ECONOMIZER MINIMUM POSITION TO MAINTAIN THE ECONOMIZER LOW LIMIT TEMPERATURE SET POINT.

D. HEATING::

SPACE TEMPERATURE SENSOR SHALL MODULATE GAS FURNACE CONTROL VALVE TO MAINTAIN 70°F (ADJUSTABLE AND RESETTABLE THROUGH SOFTWARE), SPACE TEMPERATURE SETPOINT.

E. HEAT RECOVERY:

1. THE ROTARY AIR–TO–AIR HEAT RECOVERY WHEEL SHALL OPERATE WHEN OUTSIDE AIR IS REQUIRED. THE HEAT WHEEL CONTROLS SHALL INCLUDE FROST CONTROL, CLEANING CYCLE, AND ROTATIONAL DETECTOR. THE HEAT WHEEL SHALL RUN AT FULL SPEED EXCEPT AT OUTSIDE AIR TEMPERATURES OF 50°F–65°F (ADJ–ECONOMIZER OPERATION) AND WHEN FROST OF THE WHEEL MAY OCCUR AS DETERMINED BY EXHAUST AIR TEMPERATURE SENSOR AND HEAT WHEEL DIFFERENTIAL PRESSURE. THE ENERGY WHEEL VARIABLE SPEED DRIVE SHALL MODULATE WHEEL SPEED TO PREVENT FROSTING.
2. THE HEAT WHEEL ACTS AS THE FIRST STAGE OF HEATING, WHEN THE UNIT IS PLACED IN OCCUPIED MODE, THE SUPPLY FAN RUN STATUS IS CONFIRMED AND THERE IS A CALL FOR MECHANICAL HEATING, THE HEAT WHEEL IS COMMANDED TO RUN. IF THE UNIT IS IN ECONOMIZER MODE OR THERE IS NOT A CALL FOR EITHER MECHANICAL HEATING THE HEAT WHEEL IS COMMANDED OFF. IF THE RELIEF TEMPERATURE FALLS BELOW ITS TEMPERATURE SETPOINT, HEAT WHEEL DIFFERENTIAL PRESSURE INCREASES AND RELIEF FAN RUN STATUS IS CONFIRMED, THE HEAT WHEEL WILL OPERATE IN DEFROST MODE. DURING THIS MODE OF OPERATION, THE HEAT WHEEL WILL REDUCE IN SPEED.

F. HEAT RECOVERY:

1. THE MINIMUM SCHEDULED OUTSIDE AIR FLOW RATE (ADJUSTABLE) SHALL BE MAINTAINED UNTIL THE UNIT OPERATES IN THE ECONOMIZER / VENTILATION MODE.
2. OUTSIDE AIR FLOW MEASURING STATION (ATTACHED TO RTU HOOD) SHALL MEASURE OUTSIDE AIR FLOW RATE TO MAINTAIN MINIMUM SETPOINTS.

G. FAN SPEED CONTROL:

1. SUPPLY AIR FAN SHALL BE CONTROLLED TO MAINTAIN SPACE TEMPERATURE THROUGH ITS BUILT CONTROLS. THE SUPPLY FAN SHALL MODULATE BETWEEN 50% (ADJUSTABLE THROUGH SOFTWARE) TO 100% OF THE SCHEDULED AIR FLOW RATE. FOR LABS WITH HIGH VENTILATION REQUIREMENTS PROVIDE A SOFTWARE SWITCH TO OPERATE CONTINUOUSLY AT FULL SCHEDULED SUPPLY AIR FLOW.
2. THE RELIEF AIR FAN SHALL VARY ITS FAN SPEED TO MAINTAIN A SLIGHTLY NEGATIVE BUILDING PRESSURE THROUGH DIFFERENTIAL PRESSURE CONTROLLER.

3. UNOCCUPIED CYCLE

A. GENERAL:

1. THE SUPPLY FAN, ASSOCIATED RELIEF FAN, AND HEAT RECOVERY WHEEL SHALL BE DE–ENERGIZED, OUTSIDE AIR DAMPER AND RELIEF AIR DAMPER SHALL BE CLOSED, THE GAS FURNACE SHALL BE DEENERGIZED AND RETURN AIR DAMPER SHALL BE OPEN. SPACE TEMPERATURE SENSOR SHALL BE RESET TO 55°F (ADJUSTABLE) IN THE HEATING MODE.

B. HEATING:

1. HEATING SETBACK TEMPERATURE SHALL BE MAINTAINED BY CYCLING THE SUPPLY FAN AS RECIRCULATING UNIT HEATER. WHEN THE SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED SETPOINT OF 55°F (ADJUSTABLE), THE SUPPLY FAN SHALL START AND FULL HEATING SHALL BE ENABLED. HEATING IS DISABLED WHEN SPACE TEMPERATURE REACHES 2°F ABOVE SPACE TEMPERATURE SETPOINT. THE SUPPLY FAN SHALL DE–ENERGIZE AFTER THE TIME DELAY TIMES OUT.

TYPICAL HEATING AND VENTILATING UNIT SEQUENCE OF OPERATION – DDC (ELECTRIC/ELECTRONIC ACTUATION)

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.A. 21065

DCIU — Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DESCRIPTION:	DATE:
BID SET	03/17/2025

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

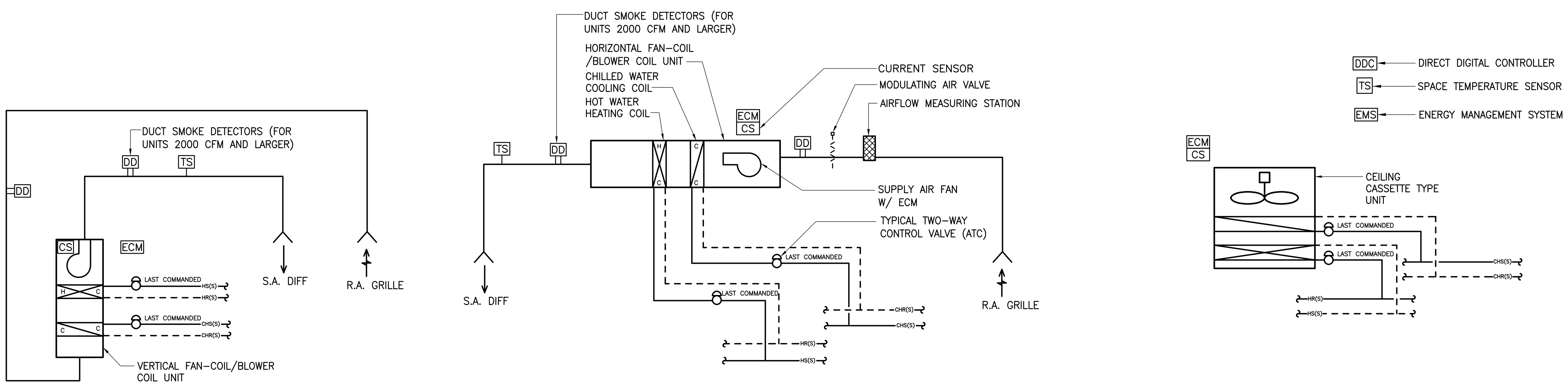
SHEET TITLE:

HEATING AND VENTILATING UNIT CONTROL DIAGRAM

SHEET NUMBER:

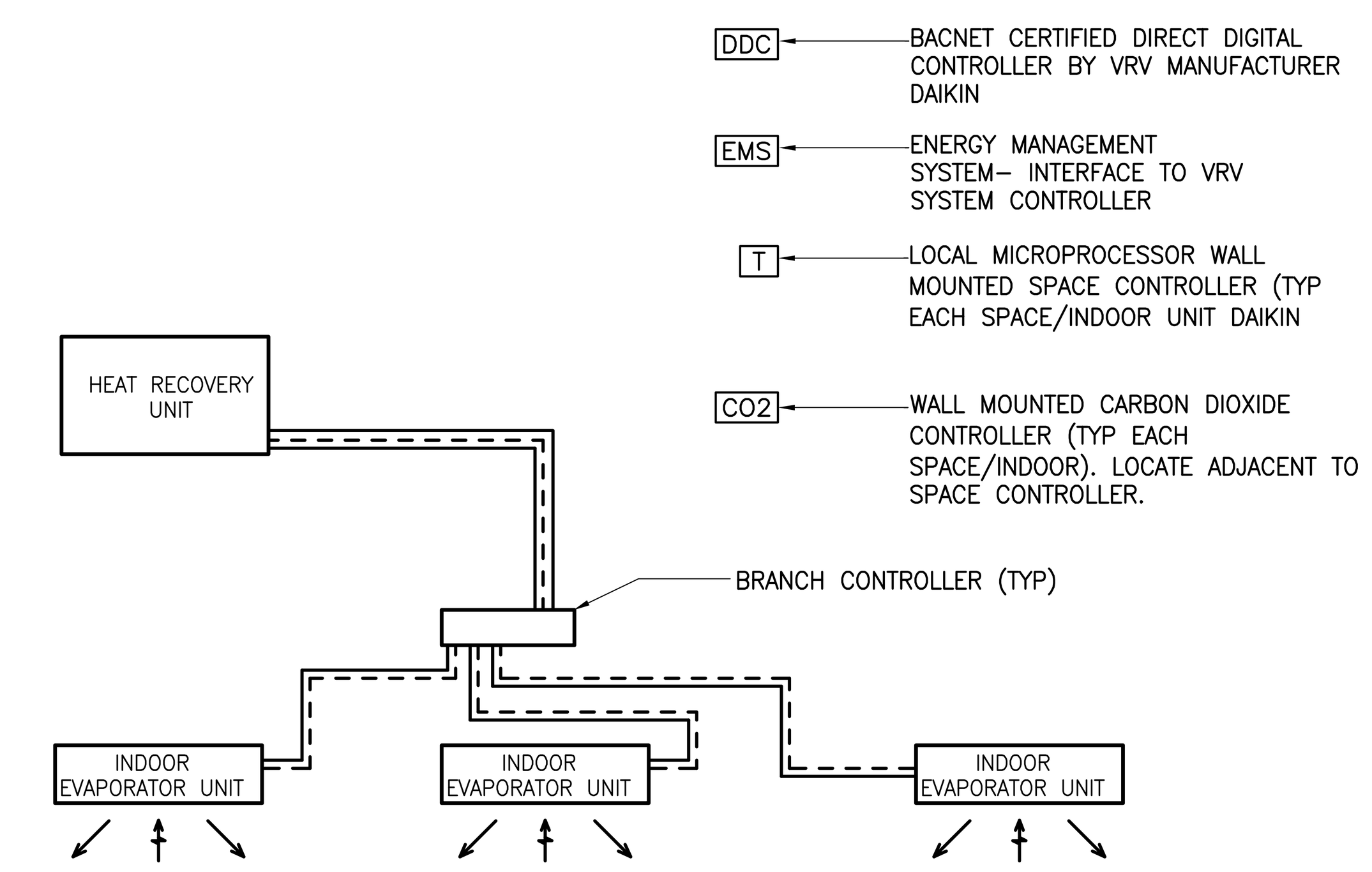
M8.5

BID SET



TYPICAL FOUR PIPE FAN COIL UNIT CONTROL DIAGRAM (DDC–ELECTRIC/ELECTRONIC ACTUATION)

SCALE: NONE



SEQUENCE OF OPERATION

Member Number	Standard name	Object type
1	Start / Stop (setting)	BO
2	Start / Stop (status)	BI
3	Alarm	BI
4	Malfunction code	MI
5	air–conditioning mode (setting)	MO
6	Air–conditioning mode (status)	MI
7	Air flow rate level (setting)	MO
8	Air flow rate level (status)	MI
9	Measured room temperature	AI
10	Set room temperature	AV
11	Filter sign signal	BI
12	Filter sign signal reset	BV
13	Remote controller enable/disable (start/stop)	BV
14	Remote controller enable/disable (air–conditioning mode)	BV
15	Blank	
16	Remote controller enable/disable (set temperature)	BV
17	Central control (lower central control diable)	BV
18	Blank	
19	Accumulated power	ACCUMULATOR
20	Communication status	BI
21	Forced system stop	BV
22	Air direction (setting)	AV
23	Air direction (status)	AI
24	Forced thermostat disable (setting)	BO
25	Forced thermostat disable (status)	BI
26	Energy saving (setting)	BO
27	Energy saving (status)	BI
28	Thermostat status	BI
29	Compressor status	BI
30	Indoor fan status	BI
31	Heater operation Status	BI

NOTES:

BO = BINARY OUTPUT
BO = BINARY INPUT
MI = MULTI STATE INPUT
MO = MULTI STATE OUTPUT
AI = ANALOG INPUT
AV = ANALOG VALUE
BV = BINARY VALUE

TYPICAL HEAT RECOVERY VARIABLE REFRIGERANT FLOW (VRV) SYSTEM CONTROL DIAGRAM

1. **GENERAL:**

A. FAN–COIL UNITS SHALL BE INTERLOCKED SO AS TO BE CONTROLLED IN A ZONE BY ZONE GROUPING. EACH ZONE SHALL BE DETERMINED BY THE DEDICATED VENTILATION AIR UNIT (DOAS) WHICH SERVES THESE UNITS.

B. EACH ZONE SHALL BE PROVIDED WITH A ZONE "HAND–OFF–AUTOMATIC" SOFTWARE SWITCH. WHEN THE SYSTEM IS INDEXED TO "OFF", ALL FAN–COIL UNITS WITHIN THAT ZONE AND ASSOCIATED VENTILATION AIR UNIT SHALL BE DE–ENERGIZED. WHEN THE SYSTEM SWITCH IS INDEXED TO "ON", ALL FAN–COIL UNITS WITHIN THAT ZONE AND ASSOCIATED VENTILATION AIR UNIT SHALL BE ENERGIZED. WHEN THE SYSTEM SWITCH IS INDEXED TO THE "AUTOMATIC" POSITION, ALL INTERLOCKED ZONE FAN–COIL UNITS AND ASSOCIATED VENTILATION AIR UNIT SHALL BE AUTOMATICALLY ENERGIZED/DE–ENERGIZED BY THE EMS. THROUGH THE EMS, INDIVIDUAL FCU'S SHALL BE ENERGIZED/DE–ENERGIZED THOUGH A MANUAL SOFTWARE SWITCH.

C. COOLING COIL AND HEATING COIL CONTROL VALVES FAIL TO THEIR LAST COMMANDED POSITION.

D. FOR ALL FAN COIL UNITS SCHEDULED AT 2000 CFM SUPPLY AIRFLOW OR GREATER, PROVIDE A SUPPLY AIR DUCT SMOKE DETECTOR WHICH DE–ENERGIZES THE UNIT WHEN PRODUCTS OF COMBUSTION ARE SENSED.

E. REFER TO THE DEDICATED OUTDOOR AIR SYSTEM UNIT CONTROL DIAGRAM FOR ADDITIONAL INFORMATION AND INTERLOCK REQUIREMENTS.

F. REFER TO DOAS CONTROL DIAGRAM DRAWING FOR ADDITIONAL INFORMATION.

2. **WARM–UP/PULL DOWN:**

A. GENERAL:
EACH FCU/DOAS ZONE SHALL BE PROVIDED WITH A WARM–UP/PULL DOWN MODE OF OPERATION. WHEN INDEXED TO WARM–UP, THROUGH THE EMS, ALL FAN–COIL UNITS WITHIN THE ZONE SHALL GO INTO A WARM–UP MODE OR PULL DOWN MODE OF OPERATION BASED ON THE OPTIMUM START PROGRAM SIGNAL BY THE EMS. PROVIDE A MINIMUM OF 5 SECONDS (ADJUSTABLE THROUGH SOFTWARE) BETWEEN ENERGIZING INDIVIDUAL FCU'S. THE DOAS UNIT SHALL BE PROVIDED WITH A WARM–UP/PULL–DOWN SEQUENCE WHICH CAN BE ENABLED OR DISABLED THROUGH THE EMS TO SUPPLEMENT THE FCU AND/OR PROVIDE DEHUMIDIFICATION DURING THE PULL DOWN MODE. WHEN INDEXED TO DISABLED, THE FAN COIL UNITS ONLY SHALL ENERGIZE FOR WARM–UP/PULL–DOWN. WHEN THE DEDICATED OUTDOOR AIR UNIT (DOAS) IS ENABLED THROUGH THE EMS, THE DOAS SHALL OPERATE IN ITS WARM–UP/PULL–DOWN MODE TO SUPPLEMENT THE FAN COIL UNITS. WHEN THIS FEATURE IS ENABLED, PROVIDE A ONE MINUTE TIME DELAY (ADJUSTABLE THROUGH SOFTWARE) AFTER THE LAST FCU IS ENERGIZED BEFORE ENERGIZING THE DOAS TO ENSURE ALL FAN COIL UNIT FANS ARE OPERATING.

B. WARM–UP:
WHEN THE SYSTEM IS INDEXED MANUALLY OR AUTOMATICALLY TO THE WARM–UP MODE OF OPERATION, THE HEATING COIL CONTROL VALVE SHALL BE FULLY OPEN TO COIL AND THE FAN SHALL BE ENERGIZED TO FULL SPEED UNTIL THE SPACE TEMPERATURE RAISES TO ITS OCCUPIED HEATING SETPOINT AS SENSED BY SPACE TEMPERATURE SENSOR OR AS TIME SCHEDULED THROUGH THE EMS. ONCE THIS SETPOINT TEMPERATURE IS REACHED, INDIVIDUAL FAN–COIL UNITS SHALL THEN BE CONTROLLED IN AN OCCUPIED MODE BASED ON THEIR ASSOCIATED SPACE TEMPERATURE SENSOR.

C. WHEN IN THE UNOCCUPIED MODE OF OPERATION AND THE OUTSIDE AIR TEMPERATURE FALLS BELOW 20°F (ADJUSTABLE THRU SOFTWARE) THE SPACE TEMPERATURE SENSOR(S) SHALL BE RESET TO THEIR OCCUPIED SETPOINT TEMPERATURE. THE AHU SHALL CYCLE AS PREVIOUSLY DESCRIBED IN PARAGRAPH 3A. THIS FEATURE SHALL BE ENABLED/DISABLED BY A MANUAL SOFTWARE SELECTION SWITCH THROUGH THE EMS.

D. PULL–DOWN:
WHEN THE SYSTEM IS INDEXED MANUALLY OR AUTOMATICALLY TO THE PULL–DOWN MODE OF OPERATION, THE COOLING COIL CONTROL VALVE SHALL BE FULLY OPEN TO COIL AND THE FAN SHALL BE ENERGIZED TO FULL SPEED UNTIL THE SPACE TEMPERATURE RAISES TO ITS OCCUPIED COOLING SETPOINT AS SENSED BY SPACE TEMPERATURE SENSOR OR AS TIME SCHEDULED THROUGH THE EMS. ONCE THIS SETPOINT TEMPERATURE IS REACHED, INDIVIDUAL FAN–COIL UNITS SHALL THEN BE CONTROLLED IN AN OCCUPIED MODE BASED ON THEIR ASSOCIATED SPACE TEMPERATURE SENSOR.

3. **OCCUPIED MODE:**

A. WHEN INDEXED MANUALLY OR REMOTELY BY THE EMS OCCUPIED MODE OF OPERATION, THE SUPPLY FAN SHALL BE ENERGIZED TO RUN CONTINUOUSLY. THE FAN COIL UNITS SHALL BE ENERGIZED IN 5 SECOND INTERNALS AND THE DOAS UNIT SHALL BE TIME DELAY ON BY A MINIMUM OF 1 MINUTE AFTER THE LAST FCU IS ENERGIZED TO ENSURE ALL FCU FANS ARE ENERGIZED.

B. COOLING:
THE COOLING COIL CONTROL VALVE SHALL BE MODULATED TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 75°F (ADJ).

C. HEATING:
THE HEATING COIL CONTROL VALVE SHALL BE MODULATED TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 70°F (ADJ).

D. FAN SPEED:
FAN SPEED SHALL VARY FROM 20% (ADJUSTABLE THROUGH SOFTWARE) OF MAXIMUM SCHEDULED AIR FLOW (ADJUSTABLE THROUGH SOFTWARE. THE SUPPLY FAN SHALL REMAIN ON THE LOWEST FAN SPEED UNTIL THE COOLING COIL CONTROL VALVE OR HEATING COIL CONTROL VALVE IS FULLY OPEN OR DEMAND LIMITED BY SUPPLY AIR TEMPERATURE OF 58°F (ADJUSTABLE THROUGH SOFTWARE) IN COOLING AND 90°F (ADJUSTABLE THROUGH SOFTWARE) IN HEATING. WHEN THE SPACE TEMPERATURE RISES ABOVE ITS SETPOINT TEMPERATURE IN COOLING OR FALLS BELOW ITS SETPOINT TEMPERATURE IN HEATING THE SUPPLY FAN SHALL SLOWLY INCREASE IN FAN SPEED TO MAINTAIN THE SPACE TEMPERATURE SETPOINT.

4. **UNOCCUPIED MODE:**

A. WHEN INDEXED MANUALLY OR REMOTELY BY THE EMS TO THE UNOCCUPIED MODE OF OPERATION, THE SUPPLY FAN SHALL BE DE–ENERGIZED, THE COOLING COIL CONTROL VALVE SHALL BE CLOSED TO THE COIL, THE HEATING COIL CONTROL VALVE SHALL BE OPEN TO THE COIL AND THE AIR VALVE SHALL OPEN.

B. ALL TEMPERATURE SENSORS SHALL BE RESET TO 55°F (ADJ) AND SHALL CYCLE FAN COIL UNITS AS RECIRCULATING UNIT HEATERS TO MAINTAIN THE REDUCED NIGHT SETPOINT TEMPERATURE.

C. SUMMER UNOCCUPIED MODE:
PROVIDE A "SUMMER UNOCCUPIED" SEQUENCE OF OPERATION WHERE ALL FAN COIL UNITS WITHIN THE ZONE SHALL ENERGIZE AND MAINTAIN OCCUPIED SPACE TEMPERATURE SETPOINT.

5. **PRE/POST PURGE:**

WHEN ENABLE TO PRE/POST PURGE MODE THE FAN COIL UNITS SHALL OPERATE IN THEIR OCCUPIED MODE BEFORE AND AFTER OCCUPANCY BASED ON ITS ASSOCIATED DOAS UNIT OPERATION.

SEQUENCE OF OPERATION

1. HEAT RECOVERY UNIT:

A. UNIT SHALL PROVIDE MODULATING HEATING OR COOLING CONTROL AS REQUIRED BY INDOOR UNITS. INDOOR UNITS WILL PROVIDE SIGNAL TO OUTDOOR UNIT, TO SEQUENCE HEAT PUMP OPERATION OR COOLING OPERATION. UNIT SHALL HAVE VARIABLE SPEED COMPRESSOR TO PROVIDE PRECISE TEMPERATURE CONTROL FOR INDOOR UNIT, AND SHALL USE COMPRESSOR PI CONTROL. COMPRESSOR PI CONTROL SHALL USE COMPRESSOR OPERATING PRIORITY TO PROVIDE STABLE TEMPERATURE CONTROL TO MAXIMIZE UNIT ENERGY EFFICIENCY. OIL RETURN MANAGEMENT SYSTEM SHALL BE INTEGRAL TO UNIT CONTROLLER. UNIT SHALL BE PROVIDED WITH LOW AND HIGH PRESSURE PROTECTION. UNIT SHALL BE PROVIDED WITH AUTOMATIC BACKUP OPERATION FEATURE.

B. DEFROST CONTROL SHALL OCCUR NO MORE THAN ONCE EVERY TWO HOURS, AND UNIT SHALL MAINTAIN HEATING MODE DURING THIS PHASE OF OPERATION.

2. INDOOR UNIT:

A. UNITS SHALL HAVE RETURN AIR TEMPERATURE SENSORS AND HARD WIRED WALL MOUNTED CONTROLLER. THERMOSTATS SHALL HAVE ADJUSTABLE SET POINT TO ALLOW USER CONTROL OF ROOM TEMPERATURE.

B. UNITS SHALL HAVE ELECTRONIC EXPANSION VALVES, AND VARIABLE SPEED FANS CONTROLLED TO MINIMIZE ENERGY USE WHILE MAINTAINING SPACE TEMPERATURE SET POINT.

C. UNITS SHALL BE PROVIDED WITH FLOAT SAFETY SWITCH WHICH WILL TURN OFF INDOOR UNIT IN THE EVENT OF CONDENSATE ACCUMULATION.

D. UNIT FAN SPEED SHALL BE DEMAND LIMITED TO MEDIUM 2 SPEED.

3. THE VRV MANUFACTURER SHALL PROVIDE THEIR INTEGRAL CONTROL SYSTEM. THIS SYSTEM SHALL INTERFACE WITH THE COUNTY BACNET EMS SYSTEM. THE ATC CONTROLLER SHALL COORDINATE ALL INTERFACE/INTEGRATION REQUIREMENTS WITH THE UNIT/SYSTEM MANUFACTURER.

4. THE EMS SHALL DETERMINE OCCUPIED/UNOCCUPIED MODES OF OPERATION THROUGH TIME OF DAY SCHEDULING.

5. THE EMS SHALL INTEGRATE ALL AVAILABLE POINTS FROM THE VRF CONTROL SYSTEM.

6. PROVIDE GRAPHICS IN EMS FOR ENTIRE SYSTEM.

TYPICAL HEAT RECOVERY VARIABLE REFRIGERANT FLOW (VRF) SYSTEM SEQUENCE OF OPERATION

INPUT/OUTPUT SUMMARY FOR FAN COIL UNITS

BUILDING SYSTEM: FAN COIL UNITS

INPUTS

DESCRIPTION	ANALOG: ROOM TEMPERATURE	DUCT TEMPERATURE	HUMIDITY	O.A. TEMPERATURE	CARBON DIOXIDE	STATIC PRESSURE	CURRENT SENSOR	AIR FLOW (CFM)	CONTROL SIGNAL	BINARY: FLOW SWITCH	SWITCH CLOSURE	STATUS	LOW TEMPERATURE CUTOUT	END SWITCH	SWITCH POSITION INDICATOR
FAN COIL UNIT ZONE				●											
FAN COIL UNIT							●					●			
SPACE TEMP	●														
CHILLED WATER VALVE									●						
HEATING WATER VALVE									●						
SUPPLY AIR		●													
OUTDOOR AIR								●	●						
SPACE CO2					●										
SUPPLY FAN							●		●						
PANDEMIC MODE															

OUTPUTS

DESCRIPTION	ANALOG: MODULATING ACTUATOR	E/P TRANSDUCER	VARIABLE SPEED/ECM				BINARY: CONTROL RELAY	SOLENOID	START/STOP	2-POSITION DAMPER MOD.			3-POINT FLOATING: ACTUATOR	MERCURY RELAY	FEED/BLEED SAV			
FAN COIL UNIT ZONE																		
FAN COIL UNIT									●									
SPACE TEMP																		
CHILLED WATER VALVE	●																	
HEATING WATER VALVE	●																	
SUPPLY AIR																		
OUTDOOR AIR	●																	
SPACE CO2																		
SUPPLY FAN			●						●									
PANDEMIC MODE									●									

ALARMS

DESCRIPTION	HIGH LIMIT	LOW LIMIT	RUN TIME	MAINTENANCE MESSAGE	SMOKE/FIRE	SECURITY SYSTEM
FAN COIL UNIT ZONE						
FAN COIL UNIT				●	●	
SPACE TEMP	●	●				
CHILLED WATER VALVE						
HEATING WATER VALVE						
SUPPLY AIR						
OUTDOOR AIR						
SPACE CO2	●					
SUPPLY FAN			●			
PANDEMIC MODE						

FEATURES

DESCRIPTION	SCHEDULED START/STOP	TEMPERATURE SETBACK/SETUP	OPTIMIZED START (ADAPT.)	DEMAND LIMITING	DUTY CYCLE	VENTILATION DELAY	ECONOMIZER CYCLE (D.B.)	H.W. RESET W/ O.A. TEMP.	VAV CONTROL	REMOTE READ/RESET	LEAD/LAG CONTROL	COLOR GRAPHICS	POINT LOCKOUT	TREND LOG	WARM UP/PULL DOWN	REMARKS
FAN COIL UNIT ZONE	●	●	●			●						●	●		●	TYPICAL EACH ZONE
FAN COIL UNIT	●															TYPICAL EACH UNIT
SPACE TEMP										●				●		TYPICAL EACH TEMP SENSOR
CHILLED WATER VALVE																
HEATING WATER VALVE																
SUPPLY AIR														●		
OUTDOOR AIR									●							
SPACE CO2														●		
SUPPLY FAN	●			●						●						
PANDEMIC MODE	●															

FAN COIL INPUT/OUTPUT SUMMARY

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:

ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

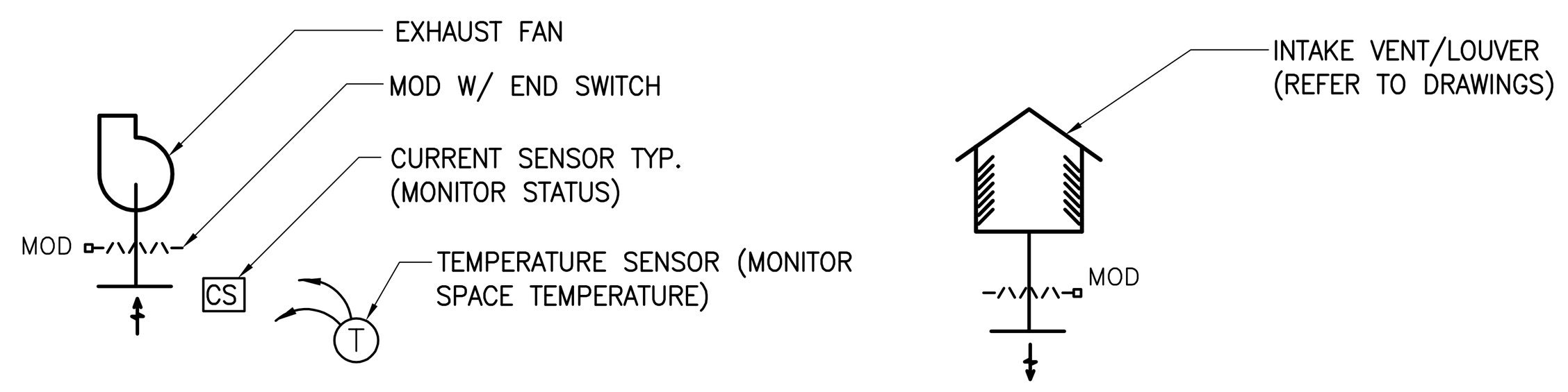
SHEET TITLE:

FCU CONTROL DIAGRAM

SHEET NUMBER:

M8.6

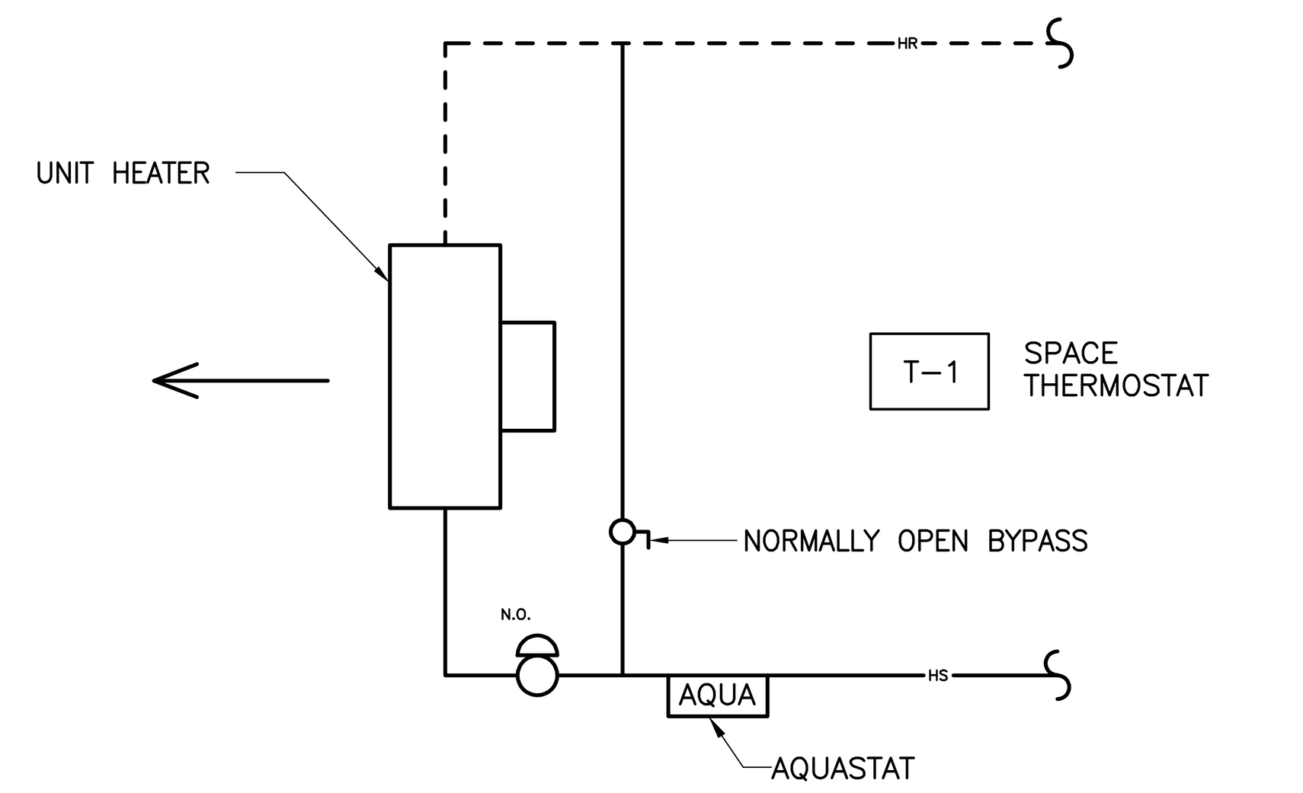
BID SET



SEQUENCE OF OPERATION

1. VENTILATION: SPACE TEMPERATURE SENSOR SHALL ON A RISE IN TEMPERATURE TO 90°F (ADJ), SHALL OPEN OUTSIDE AIR AND EXHAUST AIR DAMPERS AND ENERGIZE EXHAUST FAN AND/OR ENERGIZE SUPPLY FAN. IN A FALL IN TEMPERATURE TO 85°F (ADJ), THE OUTSIDE AIR AND EXHAUST DAMPERS SHALL CLOSE, THE EXHAUST FAN SHALL DE-ENERGIZE AND THE SUPPLY FAN SHALL DE-ENERGIZE. PROVIDE A 5°F DEADBAND BETWEEN ENERGIZING/DE-ENERGIZING FANS TO PREVENT SHORT CYCLING.
2. EMS: HIGH (105°F) AND LOW (40°F) TEMPERATURE ALARMS SHALL BE ANNUNCIATED AT THE CENTRAL ENERGY MANAGEMENT SYSTEM COMPUTER. EMS SHALL MONITOR FAN STATUS.

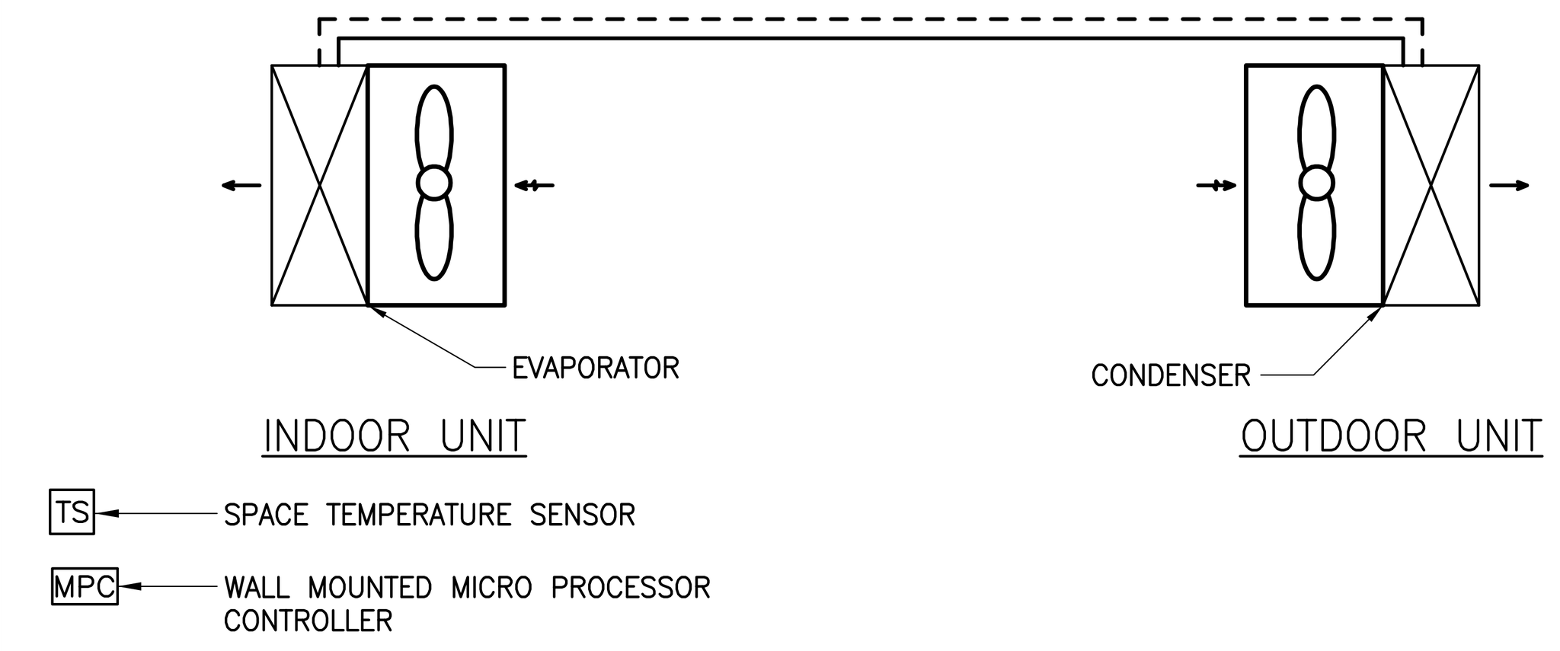
TYPICAL MECHANICAL/ELECTRICAL EQUIPMENT ROOM AND STORAGE ROOM VENTILATION CONTROL DIAGRAM



SEQUENCE OF OPERATION

1. SPACE THERMOSTAT SHALL CYCLE UNIT FAN AND OPEN TWO-WAY TWO POSITION CONTROL VALVE WHEN HOT WATER FLOW IS SENSED BY STRAP ON AQUASTAT TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 65°F (ADJUSTABLE).

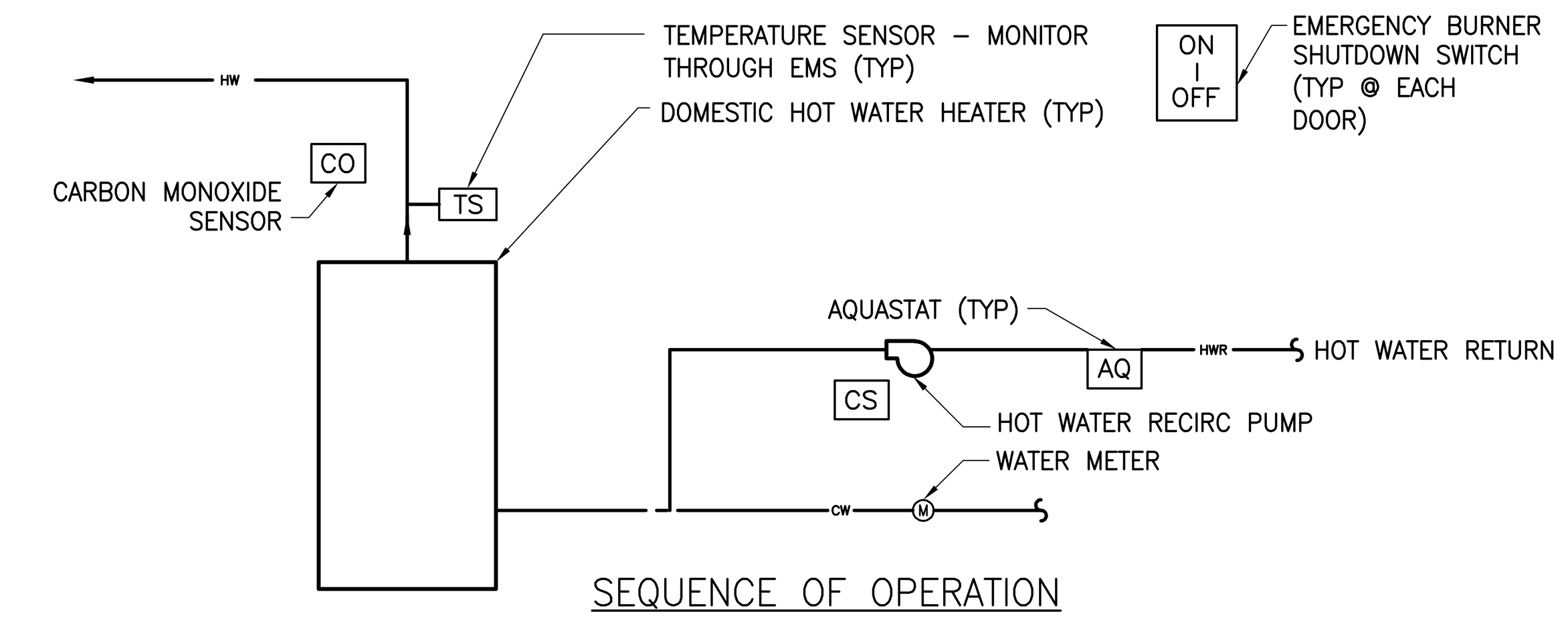
TYPICAL UNIT HEATER CONTROL DIAGRAM



SEQUENCE OF OPERATION

1. MICRO PROCESSOR CONTROLLER SHALL SEQUENCE INDOOR A/C UNIT TO MAINTAIN 70°F (ADJUSTABLE).
2. SPACE TEMPERATURE SHALL MONITOR SPACE TEMPERATURE AND SEND AN ALARM TO THE EMS WHEN A HIGH TEMPERATURE SETPOINT LIMIT (80°F – ADJUSTABLE THROUGH SOFTWARE) IS REACHED.

TYPICAL DUCTLESS SPLIT A/C UNIT/HEAT PUMP CONTROL DIAGRAM

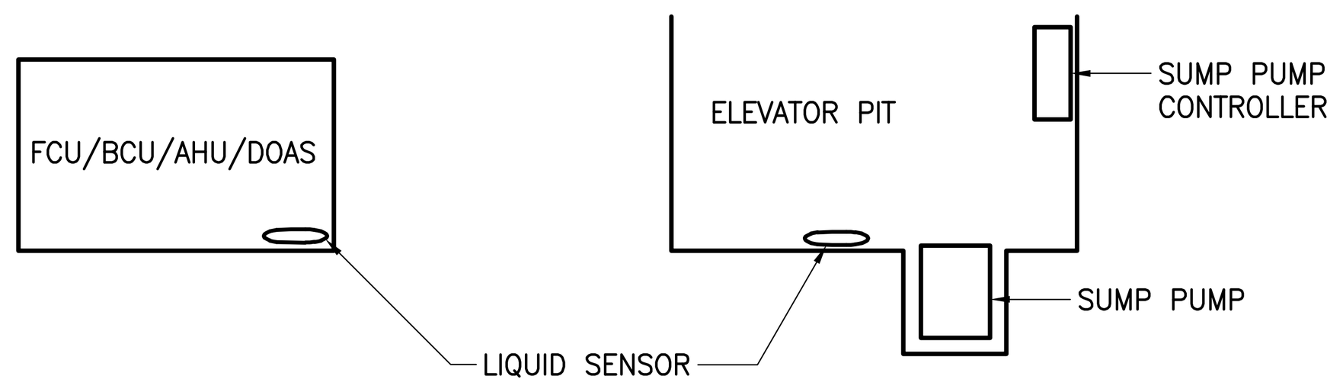


SEQUENCE OF OPERATION

1. WHENEVER RECIRCULATING WATER TEMPERATURE FALLS BELOW ITS SETPOINT (ADJUSTABLE) AS SENSED BY AQUASTAT, THE RECIRCULATION PUMP SHALL BE ENERGIZED TO RUN. PUMP SHALL BE DEENERGIZED WHENEVER THE TEMPERATURE IS ABOVE ITS SETPOINT TEMPERATURE.
2. INTERLOCK EMERGENCY SHUT–DOWN SWITCH WITH BURNER TO SHUT DOWN WHEN SWITCH IS INDEXED TO OFF.
3. PROVIDE ALL INTERLOCKS PER ASME–CSD–1 AND STATE OF PENNSYLVANIA BOILER AND PRESSURE VESSEL SAFETY ACT AND REGULATIONS.
4. PROVIDE START–STOP SCHEDULE OF RECIRC. PUMPS, MONITOR AND HIGH TEMPERATURE ALARM THE DISCHARGE WATER TEMP. PROVIDE STATUS AND PUMP FAILURE ALARM THROUGH THE EMS.
5. PROVIDE A CARBON MONOXIDE SENSOR AT EACH WATER HEATER. WHEN CO IS SENSED IT SHALL DEENERGIZE WATER HEATER AND ALARM THROUGH THE EMS.

TYPICAL DOMESTIC HOT WATER HEATER RECIRCULATION CONTROL DIAGRAM

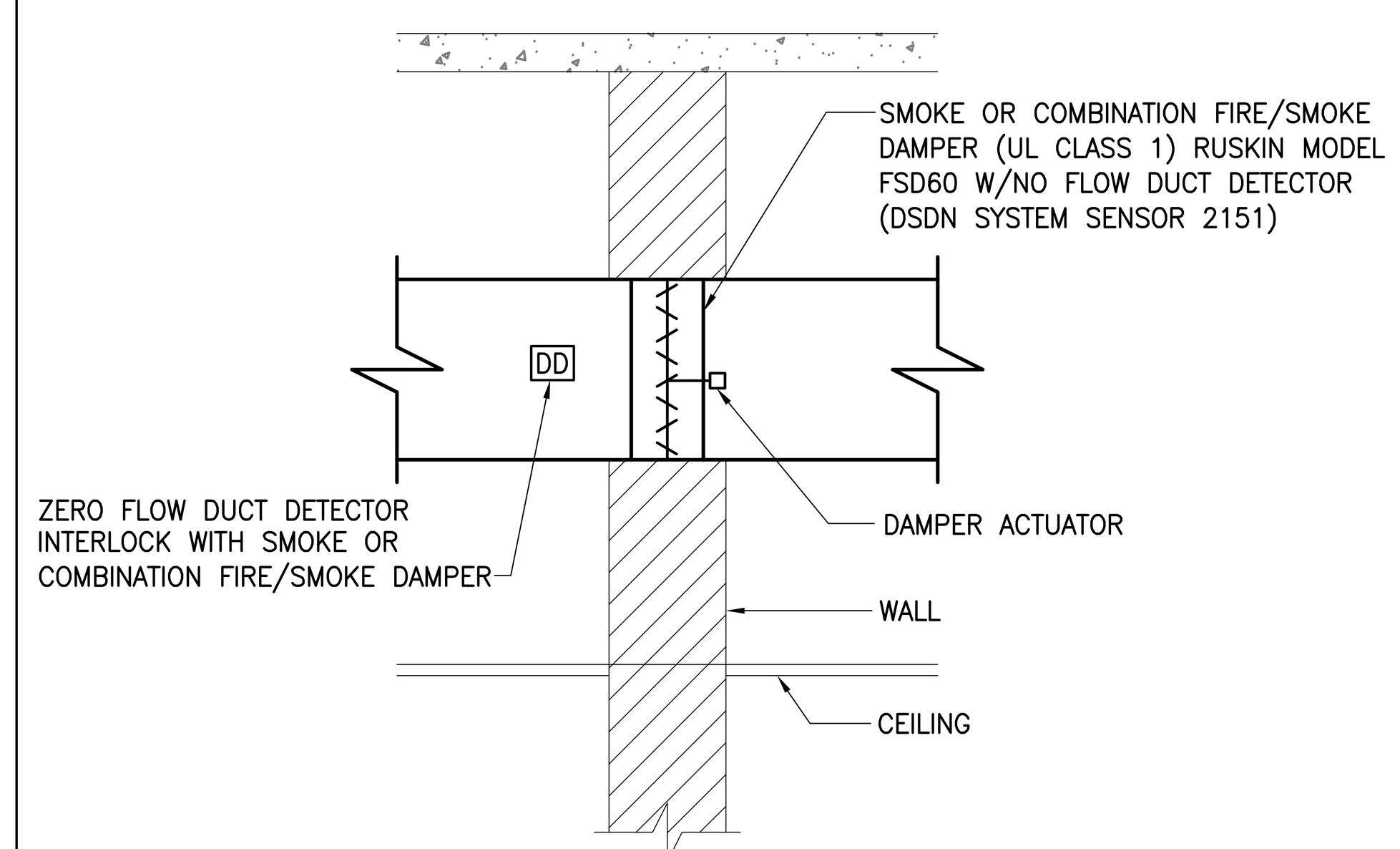
SCALE: NONE



LIQUID SENSOR ALARMS

1. WHEN LIQUID AT A HIGH LEVEL IS SENSED IN FAN COIL BLOWER COIL OR AIR HANDLING UNIT CONDENSATE DRAIN PAN AT THE TOP OF THE CONNECTION LEVEL OR IN THE ELEVATOR SUMP, AN ALARM SHALL BE ANNUNCIATED THROUGH THE EMS.
2. WHEN LIQUID AT A HIGH LEVEL IS SENSED IN ANY AIR HANDLING EQUIPMENT (FCU, BCU, AHU, DOAS EQUIPPED WITH A COOLING COIL) CONDENSATE DRAIN PAN AT THE TOP OF THE CONDENSATE DRAIN PAN CONNECTION LEVEL THE UNIT SHALL AUTOMATICALLY DEENERGIZE.
3. CONNECT SUMP PUMP CONTROLLER TO EMS TO MONITOR ALARMS (LEVEL, FAILURE ETC.) AND STATUS. REFER TO SUMP PUMP SPECIFICATION FOR ADDITIONAL INFORMATION.

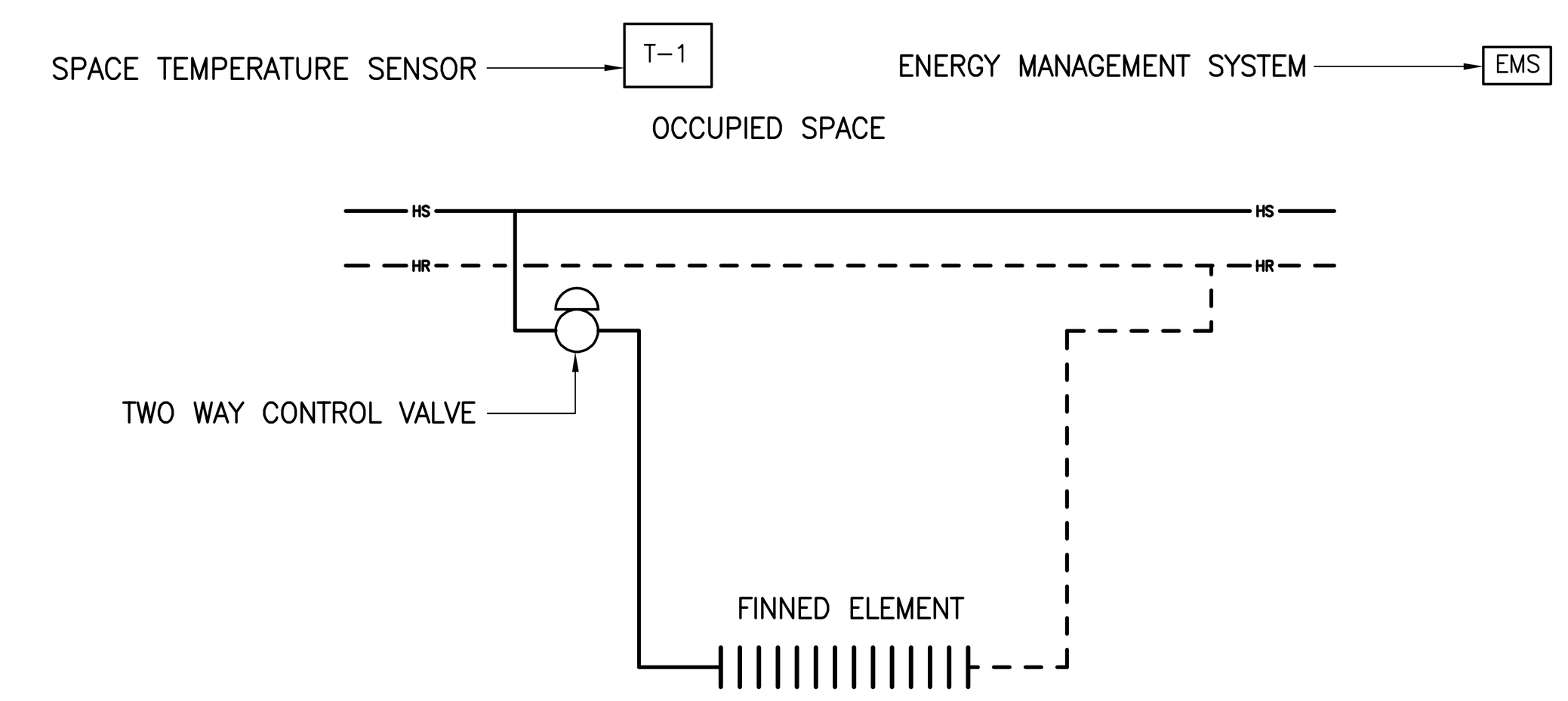
TYPICAL LIQUID SENSOR ALARMS



SEQUENCE OF OPERATION

1. DUCT DETECTOR SHALL CLOSE DAMPER WHEN SMOKE AND/OR FIRE IS SENSED.
2. PROVIDE A PRESS TO TEST BUTTON

SMOKE, FIRE/SMOKE DAMPER CONTROL DIAGRAM

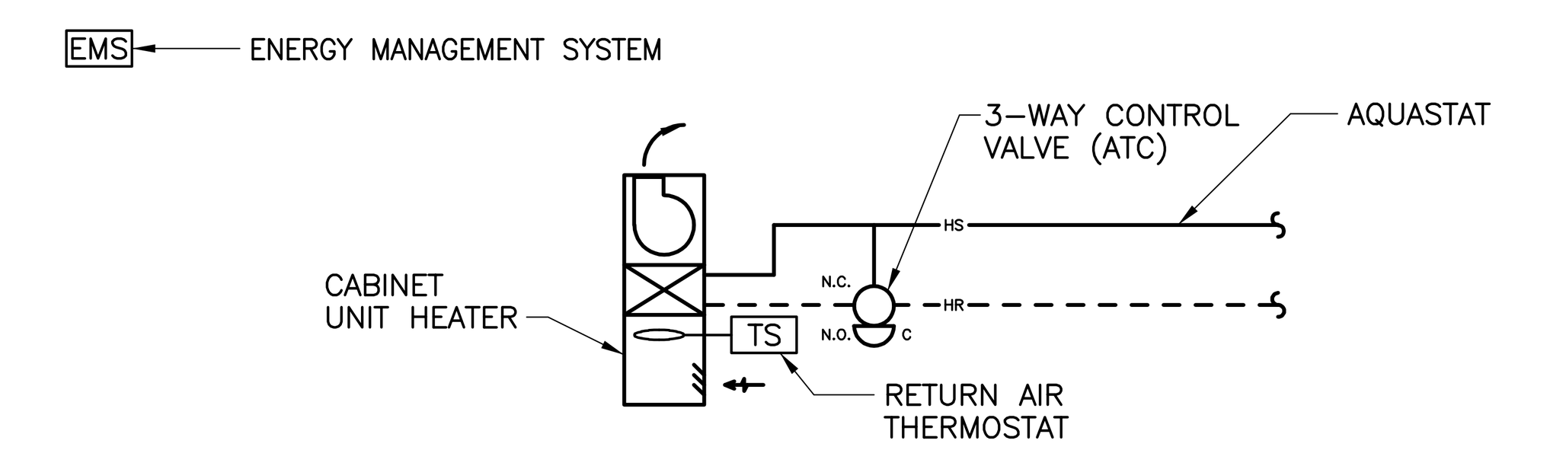


SEQUENCE OF OPERATION

1. A SPACE TEMPERATURE SENSOR SHALL MODULATE THE CONTROL VALVE TO MAINTAIN 68°F. (ADJUSTABLE THROUGH SOFTWARE) SPACE TEMPERATURE.
2. SEQUENCE OF OPERATION IS TYPICAL FOR CONVECTORS.

BASEBOARD RADIATION CONTROL DIAGRAM

SCALE: NONE



SEQUENCE OF OPERATION

1. FAN: WHENEVER HEATING WATER IS AVAILABLE AS DETERMINED BY DDC, THE FAN SHALL RUN CONTINUOUSLY. WHENEVER HOT WATER IS NOT AVAILABLE THE FAN SHALL BE OFF.
2. THREE-WAY MODULATING CONTROL VALVE SHALL VARY WATERFLOW THROUGH THE UNITS HEATING COIL TO MAINTAIN RETURN AIR TEMPERATURE OF 65°F (ADJ).
3. THREE-WAY CONTROL VALVE SHALL FAIL OPEN TO THE COIL.

TYPICAL CABINET UNIT HEATER CONTROL DIAGRAM

SCALE: NONE

MISCELLANEOUS BUILDING INPUT/OUTPUT SUMMARY

BUILDING SYSTEM: MISCELLANEOUS BUILDING POINTS
LOCATION: MECHANICAL ROOM

INPUT

DESCRIPTION	ANALOG: OUTDOOR AIR RH	DUCT TEMPERATURE	WATER TEMPERATURE	O.A. TEMPERATURE (GLOBAL)	DIFFERENTIAL PRESSURE	K.W. (TOTALIZE)	AMPS	VOLTAGE	SPACE TEMPERATURE	BINARY: FLOW SWITCH	STATIC PRESSURE	DIFFERENTIAL PRESSURE SWITCH	CURRENT SENSOR	SWITCH POSITION INDICATOR	STATUS
FREEZER (TYP)									•						
REFRIGERATOR (TYP)									•						
SITE LIGHTS TYPICAL (EACH CONTACTOR)															
EMERGENCY GENERATOR															•
MECH & ELEC EQUIP. ROOMS (TYP)									•						
MISC. EXHAUST FANS (TYP)															•
SPLIT A/C UNIT ROOMS									•						
INCOMING ELECTRIC SERVICE						•	•	•							
E.P. TRANSFER SWITCH (EACH)														•	
ELEVATOR PIT–LIQUID/SUMP PUMP															
LIQUID SENSORS															

OUTPUTS

DESCRIPTION	ANALOG: MODULATING ACTUATOR	E/P TRANSDUCER	VARIABLE SPEED	BINARY: CONTROL RELAY	SOLENOID	START/STOP	2–POSITION DAMPER MOD.	3–POINT FLOATING: ACTUATOR	MERCURY RELAY	FEED/BLEED SAV
FREEZER (TYP)										
REFRIGERATOR (TYP)										
SITE LIGHTS TYPICAL (EACH CONTACTOR)						•				
EMERGENCY GENERATOR										
MECH & ELEC EQUIP. ROOMS (TYP)										
MISC. EXHAUST FANS (TYP)						•				
SPLIT A/C UNIT ROOMS										
INCOMING ELECTRIC SERVICE										
E.P. TRANSFER SWITCH (EACH)										
ELEVATOR PIT–LIQUID/SUMP PUMP										
LIQUID SENSORS										

ALARMS

DESCRIPTION	HIGH LIMIT	LOW LIMIT	RUN TIME	MAINTENANCE MESSAGE	TROUBLE MESSAGE	LIQUID SENSOR
FREEZER (TYP)	•					
REFRIGERATOR (TYP)	•					
SITE LIGHTS TYPICAL (EACH CONTACTOR)						
EMERGENCY GENERATOR				•		
MECH & ELEC EQUIP. ROOMS (TYP)	•	•				
MISC. EXHAUST FANS (TYP)			•	•		
SPLIT A/C UNIT ROOMS	•					
INCOMING ELECTRIC SERVICE						
E.P. TRANSFER SWITCH (EACH)						
ELEVATOR PIT–LIQUID/SUMP PUMP				•	•	•
LIQUID SENSORS						•

FEATURES

DESCRIPTION	SCHEDULED START/STOP	TEMPERATURE SETBACK/SETUP	OPTIMIZED START (ADAPT.)	DEMAND LIMITING	DUTY CYCLE	VENTILATION DELAY	ECONOMIZER CYCLE (D.B.)	H.W. RESET W/ O.A. TEMP.	VAV CONTROL	REMOTE READ/RESET	TENANT OVERRIDE	COLOR GRAPHICS	POINT LOCKOUT	TREND LOG	REMARKS
FREEZER (TYP)														•	
REFRIGERATOR (TYP)														•	
SITE LIGHTS TYPICAL (EACH CONTACTOR)	•														
EMERGENCY GENERATOR															
MECH & ELEC EQUIP. ROOMS (TYP)															
MISC. EXHAUST FANS (TYP)	•														
SPLIT A/C UNIT ROOMS															
INCOMING ELECTRIC SERVICE														•	TYPICAL EACH PHASE
E.P. TRANSFER SWITCH (EACH)															TYPICAL EACH
ELEVATOR PIT–LIQUID/SUMP PUMP															TYPICAL EACH
LIQUID SENSORS															TYPICAL EACH

MISCELLANEOUS INPUT/OUTPUT SUMMARY

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:
MISCELLANEOUS CONTROL DIAGRAM

SHEET NUMBER:
M8.7

BID SET

AIR HANDLING UNIT SCHEDULE

AHU NO.	SERVICE	LOCATION	SUPPLY AIR FAN (FAN ARRAY) PERFORMANCE CHAR. BHP	HP	FAN TYPE	MAX ESP	RPM MAX	STD. AIR CFM MIN	STD. AIR CFM MAX	RETURN/RELIEF AIR FAN (FAN ARRAY) PERFORMANCE CHAR. BHP	HP	FAN TYPE	MAX ESP	RPM MAX	STD. AIR CFM MIN	STD. AIR CFM MAX
DOAS UNIT																
DOAS–1	HEADSTART –1ST FLR	ROOF	2.88	4.4	AFPF	2.0	3037	3,000	3,000	1.53	3.0	AFPF	1.5	2490	2,715	2,715
DOAS–2	HEADSTART –2ND FLR	ROOF	4.38	5.0	AFPF	2.0	2974	4,100	4,100	2.33	4.4	AFPF	1.5	2985	3,770	3,770
DOAS–3	HEADSTART –3RD FLR	ROOF	2.25	4.4	AFPF	2.0	2781	2,500	2,500	1.20	1.7	AFPF	1.5	2275	2,300	2,300
DOAS–4	HEADSTART – 1ST FLOOR	ROOF	6.0	7.5	AFPF	2.0	2136	5,000	5,000	2.95	4.3	AFPF	1.5	2026	4,850	4,850
DOAS–5	OFFICE ADMIN – 2ND FLOOR	ROOF	1.72	3.0	AFPF	2.0	2532	2,000	2,000	0.94	2.1	AFPF	1.5	2587	1,750	1,750
DOAS–6	HEALTH – 2ND FLOOR	ROOF	5.14	7.5	AFPF	2.0	3150	4,500	4,500	2.63	4.4	AFPF	1.5	2401	4,200	4,200
DOAS–7	COSMETOLOGY – 2ND FLOOR	ROOF	8.03	10.0	AFPF	2.0	2378	6,050	6,050	3.52	4.6	AFPF	1.5	1463	5,840	5,840
DOAS–8	SHOP CLASSROOMS – 1ST FLOOR	ROOF	4.95	7.5	AFPF	2.0	3108	4,400	4,400	2.57	4.4	AFPF	1.5	2382	4,150	4,150
AIR HANDLING UNIT																
RTU–1	WEIGHT ROOM	ROOF	1.83	3.0	AFPF	2.0	2602	1,250	2,500	1.20	2.1	AFPF	1.5	2946	1,250	2,500
RTU–2	STAFF LOUNGE	ROOF	1.03	2.1	AFPF	1.5	2631	600	1,500	0.32	0.5	AFPF	1.0	1804	600	1,200
EX.RTU–3	CAFETERIA	ROOF	11.2	–	AFPF	2.0	2303	–	8,000	–	–	AFPF	1.5	–	–	7,000
RTU–4	KITCHEN	ROOF	1.16	1.7	AFPF	1.5	2227	1,000	2,000	0.5	1.2	AFPF	1.0	2077	1,000	1,300
HEATING VENTILATION UNIT																
HVU–1	CARPENTRY	ROOF	6.57	7.5	AFPF	2.0	2216	5,500	5,500	3.0	8.0	AFPF	1.5	2043	5,500	5,500
HVU–2	LOGISTICS	ROOF	6.56	7.5	AFPF	2.0	2216	5,500	5,500	3.3	8.0	AFPF	1.5	2116	5,500	5,500
HVU–3	EMERGENCY AND PROTECTIVE SVCS.	ROOF	2.15	4.0	AFPF	2.0	2740	2,500	2,500	1.33	4.0	AFPF	1.5	2965	2,250	2,250
HVU–4	AUTO TECH LAB	ROOF	18.27	28	AFPF	2.0	2417	14,500	14,500	8.35	11.6	AFPF	1.5	2434	13,300	13,300
HVU–5	COLLISION LAB	ROOF	7.09	11.6	AFPF	2.0	2113	8,000	8,000	3.71	6.1	AFPF	1.5	1523	7,050	7,050
HVU–6	BUILDING TRADE	ROOF	4.39	7.5	AFPF	2.0	2984	4,200	4,200	2.17	4.0	AFPF	1.5	2833	3,450	3,450

AHU NO.	COOLING COIL SYSTEM CONDITION EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	MAX FACE VEL (FPM)	MAX A.P.D (IN H_2O)	SENS. CAP. (MBH)	TOTAL CAP. (MBH)	HG REHEAT COIL EAT DB (°F)	LAT DB (°F)	TOTAL CAP. (MBH)	NG FURNACE SYSTEM CONDITIONS EAT DB (°F)	LAT DB (°F)	MAX A.P.D (IN H_2O)	TOTAL CAP. INPUT (MBH)	TOTAL CAP. OUTPUT (MBH)	OUTSIDE AIR MIN. CFM	%	MAX. CFM
DOAS UNIT																			
DOAS–1	81	70	54	54	195	0.12	85	145	54	70	52	10	85	0.14	300	243	3,000	100	3,000
DOAS–2	81	69	54	53	192	0.13	115	205	54	70	73	10	65	0.13	300	243	4,100	100	4,100
DOAS–3	81	69	53	53	162	0.10	72	124	53	70	47	10	70	0.14	200	162	2,500	100	2,500
DOAS–4	81	70	54	53	234	0.15	142	249	54	70	89	10	77	0.20	450	365	5,000	100	5,000
DOAS–5	80	69	54	54	130	0.07	55	93	54	70	35	10	85	0.09	200	162	2,000	100	2,000
DOAS–6	81	70	55	54	210	0.15	121	212	55	70	74	10	85	0.18	450	365	4,500	100	4,500
DOAS–7	82	70	54	53	270	0.19	174	321	54	70	105	10	84	0.25	600	486	6,050	100	6,050
DOAS–8	81	69	55	54	206	0.15	119	210	55	70	74	10	86	0.17	450	365	4,400	100	4,400
AIR HANDLING UNIT																			
RTU–1	85	72	55	54	162	0.10	76	128	55	70	40	40	100	0.14	200	162	1,250	50	2,500
RTU–2	83	71	57	55	248	0.16	41	71	57	70	22	46	106	0.18	120	97	600	40	1,500
EX.RTU–3	83	71	55	54	500	–	–	–	55	70	–	32	95	–	–	–	5,000	63	8,000
RTU–4	85	72	57	57	130	0.07	58	97	57	70	29	40	115	0.09	200	162	1,000	50	2,000
HEATING VENTILATION UNIT																			
HVU–1	–	–	–	–	–	–	–	–	–	–	–	10	91	0.23	600	486	5,500	100	5,500
HVU–2	–	–	–	–	–	–	–	–	–	–	–	10	91	0.23	600	486	5,500	100	5,500
HVU–3	–	–	–	–	–	–	–	–	–	–	–	10	100	0.10	300	243	2,500	100	2,500
HVU–4	–	–	–	–	–	–	–	–	–	–	–	10	87	0.37	1500	1215	14,500	100	14,500
HVU–5	–	–	–	–	–	–	–	–	–	–	–	10	110	0.09	1125	931	8,000	100	8,000
HVU–6	–	–	–	–	–	–	–	–	–	–	–	10	90	0.16	450	365	4,200	100	4,200

AHU NO.	ELECTRICAL V/Ø/Hz	MOP	MCA	PRE-FILTER MAX. VEL. (FPM)	%EFF (MERV)	APD CLEAN / FINAL	FINAL FILTER MAX. VEL. (FPM)	%EFF (MERV)	APD CLEAN / FINAL	TYPE	WEIGHT (lbs)	EMER. POWER	BASED ON DAIKIN
DOAS UNIT													
DOAS–1	460/3/60	60	41.0	400	8	.1 / 1.0	400	13	.2 / 1.5	DOAS	3,700	NO	DPSC12B
DOAS–2	460/3/60	70	49.6	400	8	.1 / 1.0	400	13	.2 / 1.5	DOAS	5,500	NO	DPSC18B
DOAS–3	460/3/60	45	33.6	400	8	.1 / 1.0	400	13	.2 / 1.5	DOAS	3,600	NO	DPSC10B
DOAS–4	460/3/60	80	62.7	400	8	.1 / 1.0	400	13	.2 / 1.5	DOAS	5,800	NO	DPSC20B
DOAS–5	460/3/60	35	27.4	400	8	.2 / 1.0	400	13	.3 / 1.5	DOAS	3,600	NO	DPSC07B
DOAS–6	460/3/60	70	52.9	400	8	.2 / 1.0	400	13	.4 / 1.5	DOAS	5,600	NO	DPSC18B
DOAS–7	460/3/60	100	81.4	400	8	.2 / 1.0	400	13	.4 / 1.5	DOAS	5,800	NO	DPSC30B
DOAS–8	460/3/60	70	52.9	400	8	.1 / 1.0	400	13	.2 / 1.5	DOAS	5,600	NO	DPSC18B
AIR HANDLING UNIT													
RTU–1	460/3/60	45	31.6	400	8	.1 / 1.0	400	13	.2 / 1.5	SZVF	2,700	NO	DPSC10B
RTU–2	460/3/60	25	18.5	400	8	.1 / 1.0	400	13	.2 / 1.5	SZVF	1,400	NO	DPSC06B
EX.RTU–3	460/3/60	–	–	400	8	.1 / 1.0	400	13	.2 / 1.5	SZVF	–	NO	CSAA017
RTU–4	460/3/60	35	24.3	400	8	.1 / 1.0	400	13	.2 / 1.5	SZVF	2,700	NO	DPSC07B
HEATING VENTILATION UNIT													
HVU–1	460/3/60	25	19.1	400	8	.1 / 1.0	400	13	.2 / 1.5	SZVF	4,300	NO	DAHA21A
HVU–2	460/3/60	25	19.1	400	8	.1 / 1.0	400	13	.2 / 1.5	SZVF	4,300	NO	DAHA21A
HVU–3	460/3/60	15	9.1	400	8	.1 / 1.0	400	13	.2 / 1.5	SZVF	2,200	NO	DAHA07A
HVU–4	460/3/60	50	46.6	400	8	.1 / 1.0	400	13	.2 / 1.5	SZVF	12,000	NO	DAHAC00
HVU–5	460/3/60	30	26.2	400	8	.1 / 1.0	400	13	.2 / 1.5	SZVF	8,600	NO	DAHAB00
HVU–6	460/3/60	20	15.5	400	8	.1 / 1.0	400	13	.2 / 1.5	SZVF	4,100	NO	DAHA21A

NOTES:

1. VAV=VARIABLE AIR VOLUME / CV= CONSTANT AIR VOLUME / SZVS= SINGLE ZONE VARIABLE SPEED
2. ESP = EXTERNAL STATIC PRESSURE BASED ON THE PRESSURE REQUIRED AT THE AHU DUCT CONNECTION.
3. FC = FORWARD CURVED, BIAF = BACKWARD INCLINED AIR FOIL, AFPF = AIRFOIL PLENUM FAN (SINGLE WIDTH, SINGLE INLET).
4. PREFILTERS SHALL BE 2" THICK, MERV 8, FARR 30/30 OR AS APPROVED EQUAL.
5. FINAL FILTERS SHALL BE 4" THICK, MERV 13, FARR FARR OPTI–PAC OR AS APPROVED EQUAL.
6. FOR TOTAL STATIC PRESSURE CALCULATIONS USE MEDIAN (CLEAN/DIRTY) FILTER AIR PRESSURE DROP.
7. PROVIDE VARIABLE SPEED DRIVES OR VARIABLE SPEED ECM'S FOR ALL SUPPLY AND RETURN/RELIEF FANS.
8. ALL FANS SHALL BE DIRECT DRIVE TYPE.
9. EXHAUST FAN CFM VALUE DOES NOT INCLUDE WHEEL PURGE CFM.
10. HEATING CAPACITY FOR ALL UNITS ARE BASED ON HEAT WHEEL FAILURE.
11. REFER TO CONTROL DIAGRAM FOR ADDITIONAL INFORMATION.
12. REFER TO AHU DETAILS FOR ADDITIONAL INFORMATION.
13. PROVIDE DIFFERENTIAL PRESSURE GUAGE ACROSS EACH FILTER BANK.
14. PROVIDE MERV 8 FILTERS PRIOR TO AIR ENTERING THE HEAT RECOVERY WHEEL.
15. ALL SUPPLY & RETURN/RELIEF AIR FANS SHALL BE PROVIDED WITH PIEZO RINGS FOR AIR FLOW MEASURMENT AND CONTROL BY THE ATC CONTRACTOR.

HEAT RECOVERY SCHEDULE

SERVICES AHU–X	MAX A.P.D (IN W.C)	ELECTRICAL CHARACTERISTICS MOTOR HP	V/Ø/Hz	ENTHALPY HEAT RECOVERY DEVICE (ROTARY WHEEL TYPE) SUMMER CONDITIONS SUPPLY DEVICE CFM	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	EXHAUST DEVICE CFM	EAT DB (°F)	EAT WB (°F)	ENTHALPY HEAT RECOVERY DEVICE (ROTARY WHEEL TYPE) WINTER CONDITIONS SUPPLY DEVICE CFM	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	EXHAUST DEVICE CFM	EAT DB (°F)	EAT WB (°F)	REMARKS
DOAS UNIT																				
DOAS–1	0.67	0.17	460/3/60	3,000	95	78	81	70	2715	75	65	3000	10	9	49	44	2715	70	58	–––
DOAS–2	0.53	0.17	460/3/60	4100	95	78	81	69	3770	75	65	4100	10	9	52	46	3770	70	58	–––
DOAS–3	0.57	0.17	460/3/60	2500	95	78	81	69	2300	75	65	2500	10	9	52	46	2300	70	58	–––
DOAS–4	0.64	0.17	460/3/60	5000	95	78	81	70	4850	75	65	5000	10	9	51	45	4850	70	58	–––
DOAS–5	0.46	0.17	460/3/60	2000	95	78	80	69	1750	75	65	2000	10	9	53	47	1750	70	58	–––
DOAS–6	0.58	0.17	460/3/60	4500	95	78	81	70	4200	75	65	4500	10	9	51	46	4200	70	58	–––
DOAS–7	0.77	0.17	460/3/60	6050	95	78	82	70	5840	75	65	6050	10	9	48	43	5840	70	58	–––
DOAS–8	0.57	0.17	460/3/60	4400	95	78	81	69	4150	75	65	4400	10	9	52	46	4150	70	58	–––
HEATING AND VENTILATING UNIT																				
HVU–1	0.71	0.17	460/3/60	5500	95	78	81	70	5500	75	65	5500	10	9	50	45	5500	70	58	–––
HVU–2	0.71	0.17	460/3/60	5500	95	78	81	70	5500	75	65	5500	10	9	50	45	5500	70	58	–––
HVU–3	0.57	0.17	460/3/60	2500	95	78	81	70	2250	75	65	2500	10	9	51	46	2250	70	58	–––
HVU–4	0.90	1.0	460/3/60	14500	95	78	84	72	13300	75	65	14500	10	9	42	39	13300	70	58	–––
HVU–5	0.61	1.0	460/3/60	8000	95	78	84	72	7050	75	65	8000	10	9	46	42	7050	70	58	–––
HVU–6	0.55	0.17	460/3/60	4200	95	78	81	70	3450	75	65	4200	10	9	50	44	3450	70	58	

NOTES: 1. DEVICE ENTERING CFM INDICATED IS UPSTREAM OF HEAT RECOVERY DEVICE AND EXCLUDES PURGE VOLUME.
2. PROVIDE VARIABLE SPEED DRIVES AND FROST CONTROL FOR ALL ENTHALPY ROTARY TYPE HEAT RECOVERY DEVICES.

BOILER SCHEDULE

No. B–X	SERVICE	FUEL SOURCE TYPE	PRESSURE IN W.C.	INPUT (MBH)	RATED OUTPUT (MBH)	GAS MAIN TYPE	FLOW RATE (GPM) MIN	MAX	MAX WPD (ft. H_2O)	EWT (°F)	LWT (°F)	RELIEF SETTING (PSIG)	VENT CONNECTIONS EXHAUST FLUE	COMBUSTION FLUE	ELECTRICAL V/Ø/Hz	MCA	EMERGENCY POWER	SIZE (L x W x H)	BASED ON FULTON ENDURA
1	HEATING LOOP	GAS	4"–28"	2,000	1,874	CSD–1	25	200	5	120	140	80	8	8	120/1/60	25	YES	61x34x84	EDR–2000
2	HEATING LOOP	GAS	4"–28"	2,000	1,874	CSD–1	25	200	5	120	140	80	8	8	120/1/60	25	YES	61x34x84	EDR–2000

NOTES: 1. PROVIDE ACID NEUTRALIZATION TRAP FOR EACH BOILER.
2. BACNET INTEGRATION TO EMS INCLUDING BOILERS START–STOP, STATUS, LEAD–LAG AND GENERAL ALARM RELAYS.
3. EXHAUST VENT MATERIAL SHALL BE AL 29–4C STAINLESS STEEL.
4. INTAKE VENT MATERIAL SHALL BE SCHEDULE 40 PVC.
5. PROVIDE LEAD–LAG SWITCH.
6. PROVIDE AUXILIARY LOW WATER CUT–OFF SWITCH.

PUMP SCHEDULE

UNIT P–X	AREA SERVED	GPM	FT OF HEAD	MOTOR HP	RPM	V/Ø/Hz	TYPE	EMER. POWER	SIZE (SxD)	REMARKS	BASED ON TACO
1	CHILLER No.1 PRIMARY CHILLED WATER	480	75	15	1,750	460/3/60	CS	NO	4x3	BASE MOUNTED END SUCTION	FI 3009D
2	CHILLER No.2 PRIMARY CHILLED WATER	480	75	15	1,750	460/3/60	CS	NO	4x3	BASE MOUNTED END SUCTION	FI 3009D
3	HEATING WATER	400	125	25	1,750	460/3/60	VSD	YES	4x3	BASE MOUNTED END SUCTION	FI 3013D
4	HEATING WATER (SB)	400	125	25	1,750	460/3/60	VSD	YES	4x3	BASE MOUNTED END SUCTION	FI 3013D
5	PRIMARY HEATING BOILER 1	200	25	3	1,750	460/3/60	CS	YES	4x4	IN–LINE CIRCULATOR	1641
6	PRIMARY HEATING BOILER 2	200	25	3	1,750	460/3/60	CS	YES	4x4	IN–LINE CIRCULATOR	1641

NOTES: 1. SB = STAND BY, CS = CONSANT SPEED. VSD = VARIABLE SPEED DRIVE. ECM = ELECTRONICALLY COMMUTATED MOTOR

EXPANSION TANK SCHEDULE

UNIT ET–X	SERVICE	MOUNTING	FILL PRESSURE (PSIG)	OPERATING PRESSURE (PSIG)	TANK VOLUME (GALLONS)	SIZE (DIA x HT)	BASED ON (TACO)
1	CHILLED WATER	FLOOR	25	80	264	36x79	CA–1000
2	HEATING WATER	FLOOR	25	80	370	36x103	CA–1400

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:
EQUIPMENT SCHEDULES

SHEET NUMBER:
M9.1

BID SET

HYDRONIC FAN COIL UNIT SCHEDULE

FCU X.XX	AREA SERVED	TYPE	AIR SIDE CFM	AIR SIDE ESP (in. H_2O)	AIR SIDE FAN QTY	AIR SIDE FAN TYPE	AIR SIDE MOTOR QTY	AIR SIDE MOTOR HP (EA)	COOLING MAX FACE VEL. FPM	COOLING EAT (°F) DB	COOLING EAT (°F) WB	COOLING LAT (°F) DB	COOLING EWT (°F)	COOLING LWT (°F)	COOLING GPM	COOLING MAX. WPD (FT. H_2O)	COOLING SENS CAP (MBH)	COOLING TOTAL CAP (MBH)	HEATING EAT (°F)	HEATING LAT (°F)	HEATING EWT (°F)	HEATING LWT (°F)	HEATING GPM	HEATING MAX. WPD (FT. H_2O)	HEATING TOTAL CAP (MBH)	ELECTRICAL V/ø/Hz	HEATING/ COOLING	MANUFACTURER BASED ON (CARRIER)	FCU X.XX
FIRST FLOOR – AREA A1																													
1.01	A114 – EARLY HEAD START 4	HORIZONTAL	1000	0.5	1	ECM	1	1/2	400	75	65	58	45	55	5.0	5	19.1	24.5	70	85	140	120	1.5	–	16.2	277/1/60	4–PIPE	42DC–10	1.01
1.02	A111 – EARLY HEAD START 3	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	1.02
1.03	A109 – EARLY HEAD START 2	HORIZONTAL	1000	0.5	1	ECM	1	1/2	400	75	65	58	45	55	5.0	5	19.1	24.5	70	90	140	120	2.0	–	21.6	277/1/60	4–PIPE	42DC–10	1.03
1.04	A107 – EARLY HEAD START 1	HORIZONTAL	1000	0.5	1	ECM	1	1/2	400	75	65	58	45	55	5.0	5	19.1	24.5	70	90	140	120	2.0	–	21.6	277/1/60	4–PIPE	42DC–10	1.04
1.05	A103 – NUTRITION KITCHEN	HORIZONTAL	2000	0.5	2	ECM	2	1/2	400	75	65	58	45	55	13.0	7	49.0	65.1	70	80	140	120	2.5	–	21.6	277/1/60	4–PIPE	42DC–20	1.05
1.06	A103.2 – NUTRITION STORAGE	HORIZONTAL	400	0.5	1	ECM	1	1/2	400	75	65	53	45	55	2.5	20	8.8	12.0	70	90	140	120	1.0	–	8.7	277/1/60	4–PIPE	CE–04	1.06
1.07	A102 – WAITING	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4–PIPE	42WKN–18	1.07
1.08	A112.5 – HV/FSWS OFFICE	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	58	45	55	2.5	4	11.1	12.8	70	95	140	120	1.5	–	16.5	277/1/60	4–PIPE	42WKN–20	1.08
1.09	A112.6 – HD FILE STORAGE	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	80	140	120	1.0	–	3.6	277/1/60	4–PIPE	42WKN–08	1.09
1.10	A112.7 – WORK ROOM	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	80	140	120	1.0	–	3.6	277/1/60	4–PIPE	42WKN–08	1.10
1.11	A112 – ECE MAIN OFFICE	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	80	140	120	1.0	–	6.5	277/1/60	4–PIPE	42WKN–18	1.11
1.12	A112.1 – CONSULT	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	80	140	120	1.0	–	3.6	277/1/60	4–PIPE	42WKN–08	1.12
1.13	A112.2 – HS ED MANAGER	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	90	140	120	1.0	–	7.2	277/1/60	4–PIPE	42WKN–08	1.13
1.14	A112.3 – HS ED SPEC	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	90	140	120	1.0	–	7.2	277/1/60	4–PIPE	42WKN–08	1.14
1.15	A112.4 – HS ED SPEC	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	90	140	120	1.0	–	7.2	277/1/60	4–PIPE	42WKN–08	1.15
1.16	A113 – OFFICES/FSWS/FSW	CASSETTE	620	0.0	1	3–SPD	1	1/6	215	75	65	58	45	55	2.5	4	11.1	12.8	70	80	140	120	1.0	–	6.7	277/1/60	4–PIPE	42WKN–20	1.16
1.17	A105.3 – CONFERENCE ROOM	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4–PIPE	42WKN–18	1.17
1.18	A105.2 – CONFERENCE ROOM	CASSETTE	620	0.0	1	3–SPD	1	1/6	215	75	65	58	45	55	2.5	4	11.1	12.8	70	90	140	120	1.5	–	13.0	277/1/60	4–PIPE	42WKN–20	1.18
1.19	A105.1 – RCEPTION	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	80	140	120	1.0	–	6.5	277/1/60	4–PIPE	42WKN–18	1.19
1.20	A103.1 – OFFICE	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	90	140	120	1.0	–	7.2	277/1/60	4–PIPE	42WKN–08	1.20
1.21	A106 – BUILDING STORAGE	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	90	140	120	1.0	–	7.2	277/1/60	4–PIPE	42WKN–08	1.21
1.22	A10 – CORRIDOR	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4–PIPE	42WKN–18	1.22
1.23	A10 – CORRIDOR	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4–PIPE	42WKN–18	1.23
1.24	A12 – CORRIDOR	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	85	140	120	1.0	–	9.8	277/1/60	4–PIPE	42WKN–18	1.24
1.25	A104.1 – OBSERVATION	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	90	140	120	1.0	–	7.2	277/1/60	4–PIPE	42WKN–08	1.25
1.26	A104.2 – DIAGNOSTIC	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	90	140	120	1.0	–	7.2	277/1/60	4–PIPE	42WKN–08	1.26
1.27	A104.3 – DIAGNOSTIC	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	90	140	120	1.0	–	7.2	277/1/60	4–PIPE	42WKN–08	1.27
1.28	A104.4 – OBSERVATION	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	90	140	120	1.0	–	7.2	277/1/60	4–PIPE	42WKN–08	1.28
1.29	A104.5 – DIAGNOSTIC	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	90	140	120	1.0	–	7.2	277/1/60	4–PIPE	42WKN–08	1.29
1.30	A104.6 – OBSERVATION	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	90	140	120	1.0	–	7.2	277/1/60	4–PIPE	42WKN–08	1.30
1.31	A104 – DIAGNOSTIC ARENA	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	90	140	120	1.0	–	7.2	277/1/60	4–PIPE	42WKN–08	1.31
																								–					
SECOND FLOOR – AREA A1																													
2.01	A201 – HEAD START 11	HORIZONTAL	1400	0.5	2	ECM	2	1/2	400	75	65	51	45	55	10.0	20	36.6	48.3	70	90	140	120	3.0	–	30.3	277/1/60	4–PIPE	42DC–14	2.01
2.02	A202 – HEAD START 5	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	2.02
2.03	A203 – HEAD START 10	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	2.03
2.04	A204 – HEAD START 4	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	2.04
2.05	A205 – HEAD START 9	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	2.05
2.06	A206 – HEAD START 3	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	2.06
2.07	A207 – HS GROSS MOTOR	HORIZONTAL	1000	0.5	1	ECM	1	1/2	400	75	65	58	45	55	5.0	5	19.1	24.5	70	90	140	120	2.0	–	21.6	277/1/60	4–PIPE	42DC–10	2.07
2.08	A21 – CORRIDOR	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	85	140	120	1.0	–	5.4	277/1/60	4–PIPE	42WKN–08	2.08
2.09	A21 – CORRIDOR	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	85	140	120	1.0	–	5.4	277/1/60	4–PIPE	42WKN–08	2.09
2.10	A209 – CLASSROOM	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	2.10
2.11	A211 – CASSROOM	HORIZONTAL	1400	0.5	2	ECM	2	1/2	400	75	65	51	45	55	10.0	20	36.6	48.3	70	95	140	120	3.5	–	37.8	277/1/60	4–PIPE	42DC–14	2.11
2.12	A215 – CLASSROOM	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	80	140	120	1.0	–	3.6	277/1/60	4–PIPE	42WKN–08	2.12
2.13	A215 – CLASSROOM	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	90	140	120	1.0	–	7.2	277/1/60	4–PIPE	42WKN–08	2.13
2.14	A22 – CORRIDOR	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	85	140	120	1.0	–	9.8	277/1/60	4–PIPE	42WKN–18	2.14
THIRD FLOOR – AREA A1																													
3.01	A301 – HEAD START 16	HORIZONTAL	1400	0.5	2	ECM	2	1/2	400	75	65	51	45	55	10.0	20	36.6	48.3	70	95	140	120	4.0	–	37.8	277/1/60	4–PIPE	42DC–14	3.01
3.02	A302 – HEAD START 15	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	3.02
3.03	A303 – AUTISTIC SUPPORT	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	3.03
3.04	A304 – HEAD START 14	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	3.04
3.05	A306 – HEAD START 13	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	95	140	120	3.5	–	32.4	277/1/60	4–PIPE	42DC–12	3.05
3.06	A307 – HEAD START 17	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	3.06
3.07	A305.2 – HEAD START CONF.	CASSETTE	940	0.0	2	3–SPD	2	1/6	200	75	65	57	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42WKN–33	3.07
3.08	A305.1 – FSWS OFFICES	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4–PIPE	42WKN–18	3.08
3.09	A303.1 – OBSERVATION	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	85	140	120	1.0	–	5.4	277/1/60	4–PIPE	42WKN–08	3.09
3.10	A31 – CORRIDOR	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4–PIPE	42WKN–18	3.10
3.11	A31 – CORRIDOR	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4–PIPE	42WKN–18	3.11
FIRST FLOOR – AREA A1 AND A2																													
4.01	A115 – PRESCHOOL 1	HORIZONTAL	1000	0.5	1	ECM	1	1/2	400	75	65	58	45	55	5.0	5	19.1	24.5	70	90	140	120	2.0	–	21.6	277/1/60	4–PIPE	42DC–10	4.01
4.02	A116 – PRESCHOOL 2	HORIZONTAL	1000	0.5	1	ECM	1	1/2	400	75	65	58	45	55	5.0	5	19.1	24.5	70	90	140	120	2.0	–	21.6	277/1/60	4–PIPE	42DC–10	4.02
4.03	A119 – PRESCHOOL 3	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	4.03
4.04	A121 – PRESCHOOL 4	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	4.04
4.05	A123 – DEVELOPMENT DELAY	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	4.05
4.06	A120 – PRESCHOOL 5	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	4.06
4.07	B109 – THERAPY ALLEY	HORIZONTAL	1400	0.5	2	ECM	2	1/2	400	75	65	51	45	55	10.0	20	36.6	48.3	70	95	140	120	4.0	–	37.8	277/1/60	4–PIPE	42DC–14	4.07
4.08	B109.2 – WORK AREA	CASSETTE	620	0.0	1	3–SPD	1	1/6	215	75	65	56	45	55	2.5	4	11.1	12.8	70	90	140	120	1.5	–	13.4	277/1/60	4–PIPE	42WKN–20	4.08
4.09	B12 – CORRIDOR	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4–PIPE	42WKN–18	4.09
4.10	B12 – CORRIDOR	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	85	140	120	1.0	–	9.8	277/1/60	4–PIPE	42WKN–18	4.10
4.11	B112 – ENGINEERING CLASSROOM	HORIZONTAL	1200	0.5	2	ECM	2	1/2	400	75	65	52	45	55	8.0	10	29.7	38.5	70	90	140	120	2.5	–	26.0	277/1/60	4–PIPE	42DC–12	4.11
4.12	B110 – ENGINEERING LAB	CASSETTE	940	0.0	2	3–SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4–PIPE	42WKN–33	4.12
4.13	B110 – ENGINEERING LAB	CASSETTE	940	0.0	2	3–SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4–PIPE	42WKN–33	4.13
4.14	B110 – ENGINEERING LAB	CASSETTE	940	0.0	2	3–SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4–PIPE	42WKN–33	4.14
4.15	B109.1 – SERVICE COORD.	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	85	140	120	1.0	–	9.8	277/1/60	4–PIPE	42WKN–18	4.15
4.16	A118.2 – STORAGE	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	80	140	120	1.0	–	3.6	277/1/60	4–PIPE	42WKN–08	4.16
4.17	A117 – BUILDING STORAGE	CASSETTE	330	0.0	1	3–SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	80	140	120	1.0	–	3.6	277/1/60	4–PIPE	42WKN–08	4.17
4.18	C104 – STORAGE	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4–PIPE	42WKN–18	4.18
4.19	A12 – CORRIDOR	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	80	140	120	1.0	–	6.5	277/1/60	4–PIPE	42WKN–18	4.19
4.20	A13 – CORRIDOR	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	80	140	120	1.0	–	6.5	277/1/60	4–PIPE	42WKN–18	4.20
4.21	A13 – CORRIDOR	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	80	140	120	1.0	–	6.5	277/1/60	4–PIPE	42WKN–18	4.21
4.22																													4.22
SECOND FLOOR – AREA B (HEALTH)																													
6.01	B222 – HEALTH SCIENCE CLASSROOM	CASSETTE	940	0.0	2	3–SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4–PIPE	42WKN–33	6.01
6.02	B220 – HEALTH SCIENCE LAB	CASSETTE	940	0.0	2	3–SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4–PIPE	42WKN–33	6.02
6.03	B218 – HEALTH SCIENCE CLASSROOM	CASSETTE	940	0.0	2	3–SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4–PIPE	42WKN–33	6.03
6.04	B216 – HEALTH SCIENCE CLASSROOM	CASSETTE	940	0.0	2	3–SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4–PIPE	42WKN–33	6.04
6.05	B214 – HEALTH SCIENCE LAB	CASSETTE	940	0.0	2	3–SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4–PIPE	42WKN–33	6.05
6.06	B212 – HEALTH SCIENCE CLASSROOM	CASSETTE	940	0.0	2	3–SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4–PIPE	42WKN–33	6.06
6.07	B22 – CORRIDOR	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	80	140	120	1.0	–	6.5	277/1/60	4–PIPE	42WKN–18	6.07
6.08	B22 – CORRIDOR	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	80	140	120	1.0	–	6.5	277/1/60	4–PIPE	42WKN–18	6.08
6.09	B22 – CORRIDOR	CASSETTE	600	0.0	1	3–SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	80	140	120	1.0	–	6.5	277/1/60	4–PIPE	42WKN–18	6.09

NOTES:
1. ALL FAN COIL UNITS SHALL BE DUCTED TYPE WITH RETURN AIR PLENUM.
2. ECM FAN MOTOR VARIABLE SPEED SHALL BE CONTROLLED BY THE SPACE TEMPERATURE SENSOR.(0–10 VDC OR 4–20 MA
3. PROVIDE STAINLESS STEEL DRAIN PANS, PLUG OVERFLOW CONNECTION AND PROVIDE OVERFLOW SENSOR INTERLOCKED WITH ATC.
4. HEATING COILS SHALL BE LOCATED IN THE REHEAT POSITION.
5. PROVIDE DUCT COLLARS FOR SUPPLY (FRONT) AND RETURN (REAR) DUCT CONNECTIONS.
6. FILTERS SHALL BE 4" THICK, MERV 13 IN A FILTER BOX WITH DOOR.
7. CASSETTE FCU'S SHALL BE 3-SPEED TYPE CONTROLLED BY THE WALL SPACE SENSOR

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES

DATE:	DESCRIPTION:
03/17/2025	BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:
FAN COIL UNIT SCHEDULE-1

SHEET NUMBER:
M9.2

BID SET

HYDRONIC FAN COIL UNIT SCHEDULE

FCU (X.XX)	AREA SERVED	TYPE	AIR SIDE						COOLING CHARACTERISTICS										HEATING CHARACTERISTICS							ELECTRICAL	HEATING/ COOLING	MANUFACTURER BASED ON (CARRIER)	FCU X.XX
			CFM	ESP (in. H_2O)	FAN QTY	FAN TYPE	MOTOR QTY	MOTOR HP (EA)	MAX FACE VEL. FPM	EAT (°F) DB	EAT (°F) WB	LAT (°F) DB	EWT (°F)	LWT (°F)	GPM	MAX. WPD (FT. H_2O)	SENS CAP (MBH)	TOTAL CAP (MBH)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	GPM	MAX. WPD (FT. H_2O)	TOTAL CAP (MBH)	V/ø/Hz			
SECOND FLOOR – AREA B (COSMO)																													
7.01	B208 – COSMETOLOGY CLASSROOM	CASSETTE	940	0.0	2	3-SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4-PIPE	42WKN-33	9.01
7.02	B210 – COSMETOLOGY LAB	CASSETTE	940	0.0	2	3-SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4-PIPE	42WKN-33	9.02
7.03	B210 – COSMETOLOGY LAB	CASSETTE	940	0.0	2	3-SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4-PIPE	42WKN-33	9.03
7.04	B210 – COSMETOLOGY LAB	CASSETTE	940	0.0	2	3-SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4-PIPE	42WKN-33	9.04
7.05	B210.1 – STORAGE	CASSETTE	330	0.0	1	3-SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	80	140	120	1.0	–	3.6	277/1/60	4-PIPE	42WKN-08	9.05
7.06	B203.3 – STORAGE	CASSETTE	330	0.0	1	3-SPD	1	1/8	200	75	65	63	45	55	1.0	5	4.5	5.1	70	80	140	120	1.0	–	3.6	277/1/60	4-PIPE	42WKN-08	9.06
7.07	B203 – COSMETOLOGY LAB	CASSETTE	940	0.0	2	3-SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4-PIPE	42WKN-33	9.07
7.08	B203 – COSMETOLOGY LAB	CASSETTE	940	0.0	2	3-SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4-PIPE	42WKN-33	9.08
7.09	B203 – COSMETOLOGY LAB	CASSETTE	940	0.0	2	3-SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4-PIPE	42WKN-33	9.09
7.10	B205 – COSMETOLOGY CLASSROOM	CASSETTE	940	0.0	2	3-SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4-PIPE	42WKN-33	9.10
7.11	B207 – STUDENT SERVICES	CASSETTE	940	0.0	2	3-SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4-PIPE	42WKN-33	9.11
7.12	B209 – STUDENT SERVICES	CASSETTE	940	0.0	2	3-SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4-PIPE	42WKN-33	9.12
7.13	B209 – STUDENT SERVICES	CASSETTE	940	0.0	2	3-SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4-PIPE	42WKN-33	9.13
7.14	B211 – TECH MATH	CASSETTE	940	0.0	2	3-SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4-PIPE	42WKN-33	9.14
7.15	B213 – TECH ENGLISH	CASSETTE	940	0.0	2	3-SPD	2	1/6	200	75	65	58	45	55	4.5	6	18.0	21.4	70	90	140	120	2.0	–	20.3	277/1/60	4-PIPE	42WKN-33	9.15
SECOND FLOOR – AREA B (SHOP)																													
8.01	B105.5 – COLLISION REPAIR CLASSROOM	HORIZONTAL	1000	0.5	1	ECM	1	1/2	400	75	65	58	45	55	5.0	5	19.1	24.5	70	90	140	120	2.0	–	21.6	277/1/60	4-PIPE	42DC-10	8.01
8.02	B101.3 – AUTO CLASSROOM	HORIZONTAL	1000	0.5	1	ECM	1	1/2	400	75	65	58	45	55	5.0	5	19.1	24.5	70	90	140	120	2.0	–	21.6	277/1/60	4-PIPE	42DC-10	8.02
8.03	B103.1 – ESP CLASSROOM	HORIZONTAL	1000	0.5	1	ECM	1	1/2	400	75	65	58	45	55	5.0	5	19.1	24.5	70	90	140	120	2.0	–	21.6	277/1/60	4-PIPE	42DC-10	8.03
8.04	B102.2 – CLASSROOM	HORIZONTAL	1000	0.5	1	ECM	1	1/2	400	75	65	58	45	55	5.0	5	19.1	24.5	70	90	140	120	2.0	–	21.6	277/1/60	4-PIPE	42DC-10	8.04
8.05	B106.5 – BUILDING TRADES CLASSROOM	HORIZONTAL	1000	0.5	1	ECM	1	1/2	400	75	65	58	45	55	5.0	5	19.1	24.5	70	90	140	120	2.0	–	21.6	277/1/60	4-PIPE	42DC-10	8.05
8.06	B10 – CORRIDOR	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4-PIPE	42WKN-18	8.06
8.07	B10 – CORRIDOR	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4-PIPE	42WKN-18	8.07
8.08	B10.3 – CORRIDOR	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	95	140	120	2.0	–	16.2	277/1/60	4-PIPE	42WKN-18	8.08
8.09	C10 – CORRIDOR	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4-PIPE	42WKN-18	8.09
8.10	C11 – CORRIDOR	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4-PIPE	42WKN-18	8.10
8.11	C11 – CORRIDOR	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	95	140	120	2.0	–	16.2	277/1/60	4-PIPE	42WKN-18	8.11
8.12	C11 – CORRIDOR	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4-PIPE	42WKN-18	8.12
8.13	C11 – CORRIDOR	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4-PIPE	42WKN-18	8.13
8.14	C11 – CORRIDOR	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	95	140	120	2.0	–	16.2	277/1/60	4-PIPE	42WKN-18	8.14
8.15	C102.1 – LOGISTIC CLASSROOM	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4-PIPE	42WKN-18	8.15
8.16	C102.1 – LOGISTIC CLASSROOM	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4-PIPE	42WKN-18	8.16
8.17	C101.1 – CARPENTRY CLASSROOM	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	95	140	120	2.0	–	16.2	277/1/60	4-PIPE	42WKN-18	8.17
8.18	C101.1 – CARPENTRY CLASSROOM	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4-PIPE	42WKN-18	8.18
8.19	B104.1 – CLASSROOM	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	95	140	120	2.0	–	16.2	277/1/60	4-PIPE	42WKN-18	8.19
8.20	B104.1 – CLASSROOM	CASSETTE	600	0.0	1	3-SPD	1	1/6	215	75	65	57	45	55	2.5	4	10.8	12.5	70	90	140	120	1.5	–	11.7	277/1/60	4-PIPE	42WKN-18	8.20

1. ALL FAN COIL UNITS SHALL BE DUCTED TYPE WITH RETURN AIR PLENUM.
2. ECM FAN MOTOR VARIABLE SPEED SHALL BE CONTROLLED BY THE SPACE TEMPERATURE SENSOR.(0–10 VDC OR 4–20 MA
3. PROVIDE STAINLESS STEEL DRAIN PANS, PLUG OVERFLOW CONNECTION AND PROVIDE OVERFLOW SENSOR INTERLOCKED WITH ATC.
4. HEATING COILS SHALL BE LOCATED IN THE REHEAT POSITION.
5. PROVIDE DUCT COLLARS FOR SUPPLY (FRONT) AND RETURN (REAR) DUCT CONNECTIONS.
6. FILTERS SHALL BE 4" THICK, MERV 13 IN A FILTER BOX WITH DOOR.
7. CASSETTE FCU'S SHALL BE 3–SPEED TYPE CONTROLLED BY THE WALL SPACE SENSOR

FAN SCHEDULE

UNIT F–X	AREA SERVED	INTERLOCK	LOCATION	CHARACTERISTICS							TYPE	BASED ON (GREENHECK)
				CFM	ESP (in H_2O)	FRPM	DRIVE TYPE	MOTOR HP	MOTOR TYPE	ELECTRICAL V/ø/Hz	ELECTRICAL EMERGENCY POWER	
1	JANITOR C103	DOAS–4	C103	150	0.3	984	DIRECT	20 (WATTS)	VG	115/1/60	NO	CEILING EXHAUST	SP–A390–VG
2	ELECTRICAL A110	TSTAT	ROOF	1800	0.75	1310	DIRECT	1	VG	460/3/60	NO	POWER ROOF VENTILATOR	G–140–VG
3	JANITOR A22.7	DOAS–2	A211.1	150	0.3	984	DIRECT	20 (WATTS)	VG	115/1/60	NO	CEILING EXHAUST	SP–A390–VG
4	ELECTRICAL A22.2	TSTAT	ROOF	750	0.3	1481	DIRECT	1/6	VG	115/1/60	NO	POWER ROOF VENTILATOR	G–095–VG
5	ROOM A213	DOAS–5	A213	150	0.3	984	DIRECT	20 (WATTS)	VG	115/1/60	NO	CEILING EXHAUST	SP–A390–VG
6	ELECTRICAL B12.5	TSTAT	ROOF	600	0.75	1427	DIRECT	1/4	VG	115/1/60	NO	POWER ROOF VENTILATOR	G–099–VG
7	ELECTRICAL B22.1	TSTAT	ROOF	2600	0.3	619	DIRECT	1	VG	460/3/60	NO	POWER ROOF VENTILATOR	G–200–VG
8	STOR. B101.7, B101.5, B101.2, B101.1, TOILET B101.6, B101.4	HVU–4	ROOF	1200	0.6	1313	DIRECT	1/2	VG	115/1/60	NO	POWER ROOF VENTILATOR	G–120–VG
9	STOR. B105.3, B1105.2, TOILET B105.7, B105.4, B105.1	HVU–5	ROOF	950	0.6	1496	DIRECT	1/4	VG	115/1/60	NO	POWER ROOF VENTILATOR	G–100–VG
10	STORAGE B103.6	HVU–3	ROOF	250	0.3	1324	DIRECT	1/10	VG	115/1/60	NO	POWER ROOF VENTILATOR	G–080–VG
11	STORAGE B106.1, B106.2B106.3, B106.4	HVU–6	ROOF	750	0.6	1448	DIRECT	1/4	VG	115/1/60	NO	POWER ROOF VENTILATOR	G–099–VG
12	ELECTRICAL B108	TSTAT	ROOF	4200	0.3	561	DIRECT	2	VG	460/3/60	NO	POWER ROOF VENTILATOR	G–240–VG
13	SHARED MATERIALS STORAGE C101.3	TSTAT	ROOF	1500	0.3	974	DIRECT	1/2	VG	115/1/60	NO	POWER ROOF VENTILATOR	G–140–VG
14	STORAGE C101.2	TSTAT	ROOF	1000	0.5	1483	DIRECT	1/4	VG	115/1/60	NO	POWER ROOF VENTILATOR	G–100–VG
15	TOILET B208.8	RTU–4	B208.8	150	0.3	984	DIRECT	20 (WATTS)	VG	115/1/60	NO	CEILING EXHAUST	SP–A390–VG
16	TOILET B208.11	RTU–4	B208.11	150	0.3	984	DIRECT	20 (WATTS)	VG	115/1/60	NO	CEILING EXHAUST	SP–A390–VG
17	STORAGE B208.1	RTU–4	B208.1	150	0.3	984	DIRECT	20 (WATTS)	VG	115/1/60	NO	CEILING EXHAUST	SP–A390–VG
18	STORAGE B21.2	RTU–2	B21.2	150	0.3	984	DIRECT	20 (WATTS)	VG	115/1/60	NO	CEILING EXHAUST	SP–A390–VG
19	JAN CLOSET B21.1	RTU–2	B21.1	150	0.3	984	DIRECT	20 (WATTS)	VG	115/1/60	NO	CEILING EXHAUST	SP–A390–VG
20	TOILET B208.3, B208.5	RTU–4	ROOF	300	0.3	1430	DIRECT	1/10	VG	115/1/60	NO	POWER ROOF VENTILATOR	G–080–VG
21	STORAGE B206.1	EX. RTU–3	B206.1	300	0.3	916	DIRECT	43 (WATTS)	VG	115/1/60	NO	CEILING EXHAUST	SP–A700–VG
22	TOILET B23.3, B23.1, B23.2	DOAS–7	ROOF	450	0.5	1523	DIRECT	1/10	VG	115/1/60	NO	POWER ROOF VENTILATOR	G–090–VG
23	ENGINEERING LAB B110 – 3D PRINTER	SW	ROOF	500	0.6	1678	DIRECT	1/10	VG	115/1/60	NO	POWER ROOF VENTILATOR	G–090–VG
24	ELECTRICAL ROOM B224.1	TSTAT	ROOF	500	0.3	1390	DIRECT	1/10	VG	115/1/60	NO	POWER ROOF VENTILATOR	G–090–VG
25	MECHANICAL ROOM B107	TSTAT	B107	2500	0.3	882	BELT	1/3	VG	115/1/60	YES	SIDE WALL	SBE–1H24–3

NOTES:
1. TSTAT=THERMOSTAT; SW=SWITCH; SP=STATIC PRESSURE, TD=WITH 15 MINUTE TIME DELAY
2. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH FOR ALL EXHAUST FANS, COORDINATING REQUIREMENTS AND INTERLOCKS WITH ELECTRICAL
3. REFER TO CONTROL DIAGRAMS FOR SPECIFIC SEQUENCES OF OPERATION AND INTERLOCK ARRANGEMENTS
4. KITCHEN HOOD EXHAUST FANS SHALL COMPLY WITH NFPA 96 REQUIREMENTS
5. PROVIDE SPEED CONTROLLER FOR ALL DIRECT DRIVE FANS
6. PROVIDE VARIABLE SPEED DRIVES FOR KITCHEN HOOD EXHAUST FANS

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:

FAN COIL UNIT SCHEDULE-2

SHEET NUMBER:

M9.3

BID SET

VARIABLE REFRIGERANT FLOW (VRF) FAN COIL UNIT SCHEDULE

UNIT ◇XX◇	AREA SERVED	TYPE	MAX ESP	FLOW (CFM)	SENSIBLE COOLING CAP. (MBH)	HEATING CAPACITY (MBH)	SOUND PRESSURE LEVEL. (DB(A))	ELECTRICAL			BASED ON DAIKIN
								MCA	MAX FUSE	V/ø/Hz	
SECOND FLOOR OFFICE ADMIN – AREA B1											
5.01	A219 – MAIN OFFICE	CEILING CASSETTE	0.0	265	4.0	8.5	30	0.3	15	208/1/60	FXZQ07TAVJU
5.02	A219 – MAIN OFFICE	CEILING CASSETTE	0.0	265	4.0	8.5	30	0.3	15	208/1/60	FXZQ07TAVJU
5.03	A219 – MAIN OFFICE	CEILING CASSETTE	0.0	265	4.0	8.5	30	0.3	15	208/1/60	FXZQ07TAVJU
5.04	A219.2 – SUPERVISOR EI	CEILING CASSETTE	0.0	265	3.9	8.5	30	0.3	15	208/1/60	FXZQ07TAVJU
5.05	A219.3 – OFFICE	CEILING CASSETTE	0.0	265	3.9	8.5	30	0.3	15	208/1/60	FXZQ07TAVJU
5.06	A219.4 – OFFICE	CEILING CASSETTE	0.0	265	3.9	8.5	30	0.3	15	208/1/60	FXZQ07TAVJU
5.07	A219.5 – CONFERENCE ROOM	CEILING CASSETTE	0.0	410	7.8	13.5	29	0.3	15	208/1/60	FXFQ12TVJU
5.08	A219.6 – NURSE OFFICE	CEILING CASSETTE	0.0	300	6.4	13.5	30	0.4	15	208/1/60	FXZQ12TAVJU
5.09	A213 – ROOM	CEILING CASSETTE	0.0	300	6.4	13.5	30	0.4	15	208/1/60	FXZQ12TAVJU
5.10	A217 – STORAGE	CEILING CASSETTE	0.0	250	1.5	6.5	30	0.3	15	208/1/60	FXZQ05TAVJU
5.11	A219.7 – NURSE SUITE	CEILING CASSETTE	0.0	250	2.0	6.5	30	0.3	15	208/1/60	FXZQ05TAVJU
5.12	A219.12 – WORK ROOM	CEILING CASSETTE	0.0	265	4.0	8.5	30	0.3	15	208/1/60	FXZQ07TAVJU
5.13	A23 – CORRIDOR	CEILING CASSETTE	0.0	920	20.0	27.0	38	1.5	15	208/1/60	FXFQ36TVJU
5.14	B21 – CORRIDOR	CEILING CASSETTE	0.0	920	20.0	27.0	38	1.5	15	208/1/60	FXFQ36TVJU
5.15	B202 – LOBBY	CEILING CASSETTE	0.0	920	20.0	27.0	38	1.5	15	208/1/60	FXFQ36TVJU
5.16	B202 – LOBBY	CEILING CASSETTE	0.0	920	20.0	27.0	38	1.5	15	208/1/60	FXFQ36TVJU
5.17	B202 – LOBBY	CEILING CASSETTE	0.0	512	10.0	17.0	29	0.4	15	208/1/60	FXFQ18TVJU

NOTES:
1. PROVIDE DISPOSABLE MERV 13 FILTER WITH METAL MOUNTING KIT FOR ALL VRF CASSETTE.
2. ALL CAPACITY ARE BASED ON MEDIUM SPEED. THE UNIT SHALL BE DEMAND LIMITED TO OPERATE UP TO MAXIMUM.
3. VRF SYSTEM SHALL BE THE HEAT RECOVERY TYPE.

VARIABLE REFRIGERANT FLOW (VRF) HEAT RECOVERY CONDENSING UNIT SCHEDULE

UNIT	AREA SERVED	UNIT LOCATION	COOLING MODE		HEATING MODE				ELECTRICAL			EMER. POWER	WEIGHT (LBS) (EACH MODULE)	BASED ON DAIKIN
			CAPACITY (BTU)	OAT (F)	CAPACITY (BTU)	OAT (F)	EER/IEER	COP (47°F)	MCA	MOP	V/ø/Hz			
HRCU–1	SECOND FLOOR OFFICE ADMIN	ROOF	211,270	95	210,867	10	11.2/21.2	3.7	21.3/16.6	25/20	460/3/60	NO	800/728	REYQ264AAYDB

NOTES:
1. RATED IN ACCORDANCE WITH AHRI STANDARD 1230 AND MEET MINIMUM IEER REQUIREMENTS SET FORTH BY ASHRAE 90.1–2013.
2. PROVIDE HAIL GUARD FOR UNITS LOCATED ON ROOF.
3. ELECTRICAL CHARACTERISTICS ARE PER MODULE (1/2).

CABINET UNIT HEATER SCHEDULE

UNIT CUH–X	AREA SERVED	SUPPLY FAN			ELEC CHAR V/ø/Hz	EMERGENCY POWER	HOT WATER SYSTEM CONDITIONS						TYPE	SIZE L"xH"xD"	BASED ON (VULCAN)
		CFM	AMPS	RPM			TOTAL CAP (MBH)	EAT (°F)	EWT (°F)	LWT (°F)	GPM	MAX WPD (ft H₂0)			
1	A101 – VESTIBULE	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	RECESSED CEILING	47x25x9.5	RC–1190–04
2	A–ST3 – STAIR	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	WALL MOUNTED	47x25x9.5	W–1080–04
3	A–ST2 – STAIR	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	WALL MOUNTED	47x25x9.5	W–1080–04
4	A–ST1 – STAIR	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	WALL MOUNTED	47x25x9.5	W–1080–04
5	C–ST1 – STAIR	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	WALL MOUNTED	47x25x9.5	W–1080–04
6	C–ST2 – STAIR	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	WALL MOUNTED	47x25x9.5	W–1080–04
7	B208.10 – VESTIBULE	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	RECESSED CEILING	47x25x9.5	RC–1190–04
8	B201 – VESTIBULE	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	RECESSED CEILING	47x25x9.5	RC–1190–04
9	B201 – VESTIBULE	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	RECESSED CEILING	47x25x9.5	RC–1190–04
10	A–ST2 – STAIR	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	WALL MOUNTED	47x25x9.5	W–1080–04
11	A–ST3 – STAIR	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	WALL MOUNTED	47x25x9.5	W–1080–04
12	B202.2 – VESTIBULE	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	RECESSED CEILING	47x25x9.5	RC–1190–04
13	B202.2 – VESTIBULE	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	RECESSED CEILING	47x25x9.5	RC–1190–04
14	B21.3 – ROOM	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	WALL MOUNTED	47x25x9.5	W–1080–04
15	B–ST2 – STAIR	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	WALL MOUNTED	47x25x9.5	W–1080–04
16	GRAY SHELL CORRIDOR	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	RECESSED CEILING	47x25x9.5	RC–1190–04
17	GRAY SHELL CORRIDOR	420	1.4	1050	115/1/60	NO	25.8	60	140	120	4.0	2	RECESSED CEILING	47x25x9.5	RC–1190–04

NOTES:
1. PROVIDE CUSTOM COLOR AS SELECTED BY ARCHITECT
2. ALL HOT WATER HEATING COILS SHALL BE 2–ROW, HIGH CAPACITY TYPE
3. ALL UNITS SHALL BE PROVIDED WITH A DPST DISCONNECT SWITCH
4. ALL DUCTED UNITS SHALL BE PROVIDED WITH A HIGH STATIC (0.4" W.C.) MOTOR
5. PROVIDE WALL SEAL KIT WITH GASKET FOR ALL RECESSED WALL UNITS
6. PROVIDE HINGED PANEL WITH STOP CHAINS FOR ALL CEILING UNITS
7. PROVIDE DUCT COLLAR FOR UNITS WITH DUCTED CONNECTIONS
8. PROVIDE HEAVY DUTY ALUMINUM BAR GRILLE FOR ALL UNITS
9. PROVIDE LIMITED ACCESS FASTENERS FOR ALL UNITS
10. PROVIDE LEVELING LEGS FOR ALL FLOOR MOUNTED UNITS
11. PROVIDE 14GA. FRONT PANEL FOR ALL UNITS

UNIT HEATER SCHEDULE

UNIT UH–X	AREA SERVED	SUPPLY FAN			ELEC CHAR V/ø/Hz	EMERGENCY POWER	HOT WATER SYSTEM CONDITIONS						TYPE	BASED ON (VULCAN)
		CFM	AMPS	RPM			TOTAL CAP (MBH)	EAT (°F)	EWT (°F)	LWT (°F)	GPM	MAX WPD (ft H₂0)		
1	ELEC – A122	580	1.2	1550	115/1/60	NO	14.2	60	140	129	2.5	1	HORIZONTAL	HV–125
2	GRAY SHELL B104	1100	1.4	1000	115/1/60	NO	30.0	60	140	130	6.0	1	HORIZONTAL	HV–72
3	GRAY SHELL B104	1100	1.4	1000	115/1/60	NO	30.0	60	140	130	6.0	1	HORIZONTAL	HV–72
4	GRAY SHELL B102	1100	1.4	1000	115/1/60	NO	30.0	60	140	130	6.0	1	HORIZONTAL	HV–72
5	GRAY SHELL B102	1100	1.4	1000	115/1/60	NO	30.0	60	140	130	6.0	1	HORIZONTAL	HV–72
6	BUILDING TRADES – B106	580	1.2	1550	115/1/60	NO	14.2	60	140	129	2.5	1	HORIZONTAL	HV–125
7	SHARED MATERIAL STORAGE – C101.3	580	1.2	1550	115/1/60	NO	14.2	60	140	129	2.5	1	HORIZONTAL	HV–125
8	STORAGE – C101.2	580	1.2	1550	115/1/60	NO	14.2	60	140	129	2.5	1	HORIZONTAL	HV–125
9	GRAY SHELL C201	1400	2.2	1000	115/1/60	NO	40.0	60	140	129	7.0	1	HORIZONTAL	HV–96
10	GRAY SHELL C201	1400	2.2	1000	115/1/60	NO	40.0	60	140	129	7.0	1	HORIZONTAL	HV–96
11	GRAY SHELL C201	1400	2.2	1000	115/1/60	NO	40.0	60	140	129	7.0	1	HORIZONTAL	HV–96
12	GRAY SHELL C201	1400	2.2	1000	115/1/60	NO	40.0	60	140	129	7.0	1	HORIZONTAL	HV–96
13	MECHANICAL ROOM B107	1100	1.4	1000	115/1/60	YES	30.0	60	140	130	6.0	1	HORIZONTAL	HV–72
14	CARPENTRY C101	1100	1.4	1000	115/1/60	NO	30.0	60	140	130	6.0	1	HORIZONTAL	HV–72
15	LOGISTIC C102	1100	1.4	1000	115/1/60	NO	30.0	60	140	130	6.0	1	HORIZONTAL	HV–72
16	LEVEL 3 – GRAY SHELL	900	1.4	1000	115/1/60	NO	24.9	60	140	128	4.0	1	HORIZONTAL	HV–60
17	LEVEL 3 – GRAY SHELL	900	1.4	1000	115/1/60	NO	24.9	60	140	128	4.0	1	HORIZONTAL	HV–60
18	LEVEL 3 – GRAY SHELL	900	1.4	1000	115/1/60	NO	24.9	60	140	128	4.0	1	HORIZONTAL	HV–60
19	LEVEL 3 – GRAY SHELL	900	1.4	1000	115/1/60	NO	24.9	60	140	128	4.0	1	HORIZONTAL	HV–60
20	LEVEL 2 – GRAY SHELL	900	1.4	1000	115/1/60	NO	24.9	60	140	128	4.0	1	HORIZONTAL	HV–60
21	LEVEL 2 – GRAY SHELL	900	1.4	1000	115/1/60	NO	24.9	60	140	128	4.0	1	HORIZONTAL	HV–60
22	LEVEL 2 – GRAY SHELL	900	1.4	1000	115/1/60	NO	24.9	60	140	128	4.0	1	HORIZONTAL	HV–60
23	LEVEL 2 – GRAY SHELL	900	1.4	1000	115/1/60	NO	24.9	60	140	128	4.0	1	HORIZONTAL	HV–60

NOTES:
1. ALL HOT WATER HEATING COILS SHALL BE HIGH CAPACITY TYPE
2. ALL UNITS SHALL BE PROVIDED WITH A DPST DISCONNECT SWITCH

AIR DEVICE SCHEDULE

No. ◇Sx◇	CFM MAX	NECK SIZE	COLLAR ø SIZE	MAX NC	TYPE (SEE SPEC.)
SUPPLY AIR DEVICE					
S1	125	6x6	6"ø	18	TITUS TDC
S2	230	9x9	8"ø	18	TITUS TDC
S3	400	12x12	10"ø	18	TITUS TDC
S4	600	15x15	12"ø	18	TITUS TDC
S5	800	18x18	14"ø	18	TITUS TDC
S6	1000	21x21	16"ø	18	TITUS TDC
S7	125	6x6	–	18	TITUS TDC
S8	230	9x9	–	18	TITUS TDC
S9	400	12x12	–	18	TITUS TDC
S10	600	15x15	–	18	TITUS TDC
S11	800	18x18	–	18	TITUS TDC
S12	1000	21x21	–	18	TITUS TDC
S13	200	12x12/8"ø	–	18	TITUS TDC
S14	50	12x12/6"ø	–	18	TITUS TDC
S15	270	10"ø	–	18	TITUS XC–310
S16	390	12"ø	–	18	TITUS XC–310
S17	500	14"ø	–	25	TITUS XC–310
S18	800	18"ø	–	25	TITUS XC–310
S19	1000	20"ø	–	25	TITUS XC–310
S20	1570	24"ø	–	25	TITUS XC–310
S21	2000	30"ø	–	25	TITUS XC–310
S22	2800	36"ø	–	25	TITUS XC–310
S23	150	8x6	–	18	TITUS 300RS
S24	200	12x6	–	18	TITUS 300RS
S25	315	18x6	–	18	TITUS 300RS
S26	350	12x10	–	18	TITUS 300RS
S27	450	24x6	–	18	TITUS 300RS
S28	550	18x10	–	18	TITUS 300RS
S29	650	18x12	–	18	TITUS 300RS
S30	725	24x10	–	18	TITUS 300RS
S31	850	24x12	–	18	TITUS 300RS
S32	950	24x14	–	18	TITUS 300RS
S33	950	36x10	–	18	TITUS 300RS
S34	150	12x4	–	18	TITUS S300FS
S35	250	24x6	–	18	TITUS S300FS
S36	475	36x6	–	18	TITUS S300FS
S37	675	18x12	–	18	TITUS S300FS
S38	1000	36x12	–	18	TITUS S300FS
RETURN AIR DEVICE					
R1	100	6x6	–	18	TITUS 350RL
R2	300	10x10	–	18	TITUS 350RL
R3	450	12x12	–	18	TITUS 350RL
R4	800	16x16	–	18	TITUS 350RL
R5	1000	18x18	–	18	TITUS 350RL
R6	1300	20x20	–	18	TITUS 350RL
R7	1660	22x22	–	18	TITUS 350RL
R8	100	6x6	–	18	TITUS 350RLF
R9	300	10x10	–	18	TITUS 350RLF
R10	450	12x12	–	18	TITUS 350RLF
R11	800	16x16	–	18	TITUS 350RLF
R12	1000	18x18	–	18	TITUS 350RLF
R13	1300	20x20	–	18	TITUS 350RLF
R14	1660	22x22	–	18	TITUS 350RLF
R15	3300	46x22	–	18	TITUS 350RLF
R16	650	18x12	–	18	TITUS 350RL
R17	1000	30x12	–	18	TITUS 350RL
R18	1250	36x12	–	18	TITUS 350RL
R19	4200	46x30	–	18	TITUS 350RL
R20	900	22x10	–	18	TITUS 50F
R21	1900	22x22	–	18	TITUS 50F
R22	4000	46x22	–	18	TITUS 50F
R23	1600	20x20	–	18	TITUS 50FF
R24	3300	46x22	–	18	TITUS 350RL
R25	700	24x12	–	18	TITUS 33RS
R26	1200	24x24	–	18	TITUS 33RS
R27	1700	36x24	–	18	TITUS 33RS
R28	2600	36x36	–	18	TITUS 33RS
R29	3100	42x36	–	18	TITUS 33RS
R30	3500	48x36	–	18	TITUS 33RS
R31	3600	42x42	–	18	TITUS 33RS
R32	4650	48x48	–	18	TITUS 33RS
R33	1700	36x24	–	18	TITUS 33RFS
R34	1610	36x14	–	18	TITUS 350RL
R35	650	22x10	–	18	TITUS 350RLF
EXHAUST AIR DEVICE					
E1	100	6x6	–	18	TITUS 350RL
E2	150	8x6	–	18	TITUS 350RL
E3	300	12x8	–	18	TITUS 350RL
E4	325	10x10	–	18	TITUS 350RL
E5	450	12x12	–	18	TITUS 350RL
E6	750	18x12	–	18	TITUS 350RL
E7	800	16x16	–	18	TITUS 350RL
E8	900	24x12	–	18	TITUS 350RL
E9	1050	18x18	–	18	TITUS 350RL
E10	1300	20x20	–	18	TITUS 350RL
E11	1550	22x22	–	18	TITUS 350RL
E12	1750	30x18	–	18	TITUS 350RL
E13	2450	42x18	–	18	TITUS 350RL
E14	2750	42x20	–	18	TITUS 350RL
E15	3300	46x22	–	18	TITUS 350RL

NOTES:
1. ALL SUPPLY AIR DIFFUSERS SHALL BE 4–WAY BLOW UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
2. ALL SUPPLY AIR REGISTERS SHALL BE DOUBLE DEFLECTION WITH FRONT BLADES PARALLEL TO THE SHORT DIMENSION (VERTICAL).
3. PROVIDE 24x24 OR 48x24 MODULE FOR ALL LAY–IN SUPPLY, RETURN AND EXHAUST AIR DEVICES. TRIM MODULE AS NECESSARY TO FIT INTO GRID IF LESS THAN 24x24 OR 48x24 IS AVAILABLE.
4. EGGCRATE REGISTERS SHALL HAVE ½"x½"x1" DEEP ALUMINUM CORES.
5. EXHAUST REGISTERS CONNECTED TO STAINLESS STEEL DUCTWORK SHALL BE CONSTRUCTED OF STAINLESS STEEL.
6. FOR SUPPLY AIR DEVICES CONNECTED TO THE BOTTOM OF BRANCH DUCTS (ie SERVING MORE THAN ONE AIR DEVICE) PROVIDE DAMPER WITH GRID, TITUS AG–65 OR EQUAL.
7. NOT ALL AIR DEVICES SCHEDULED MAY BE USED.
8. COLLAR SIZE REFERS TO RUNNOUT CONNECTION TO SOUND LINED PLENUM BOX FABRICATED BY THE SHEET METAL CONTRACTOR CONNECTING TO THE DIFFUSER NECK. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
9. PROVIDE AIR EXTRACTOR FOR ALL SIDEWALL SUPPLY REGISTERS.
10. PROVIDE ALUMINUM CONSTRUCTION FOR ALL AIR DEVICES LOCATED IN LOCKER ROOMS, KITCHEN, ROOMS WITH SHOWERS AND ALL SCIENCE LABS.
11. ALL TDCA TYPE DIFFUSERS SHALL BE PROVIDED WITH ADJUSTABLE VANES, ACCESSIBLE FROM THE DIFFUSER FACE, WITH THE DISCHARGE PATTERN SET TO THE VERTICAL POSITION.

DUCTLESS SPLIT SYSTEM SCHEDULE

UNIT SS–X	AREA SERVED	LOCATION		MAX CFM	REFRIGERANT TYPE	COOLING CAPACITY (BTUs)	SEER/EER	HEATING CAPACITY (BTUs)	INDOOR CONDITIONS		OUTDOOR	ELECTRICAL			INDOOR UNIT TYPE	INDOOR UNIT SIZE (H x W x D)	OUTDOOR UNIT MAX OPERATING WT (LBS)	BASED ON DAIKIN		
		EVAPORATOR	CONDENSER						EAT DB (°F)	EAT WB (°F)	EAT DB (°F)	V/ø/Hz	MCA	EMERGENCY POWER				EVAPORATOR	CONDENSER	SPLIT SYSTEM CONDENSING UNIT No.
SS–1	A108 – IDF (COOLING ONLY)	A108	ROOF	360	R454B	11,000	17.0/8.5	–	80	67	95	208/1/60	7.7	YES	WALL MOUNTED	11–11/16 x 35–1/16 x 8–1/4	57	FTKB12AXVJU	RKB12AXVJU	SSCU–1
SS–2	A217.1 DATA ROOM (COOLING ONLY)	A217.1	ROOF	635	R454B	24,000	17.3/10.2	–	80	67	95	208/1/60	16.5	YES	WALL MOUNTED	11–3/8 x 41–3/8 x 9–1/4	172	FAQ24TAVJU	RZR24TAVJU	SSCU–2
SS–3	A31.2 – IDF (COOLING ONLY)	A31.2	ROOF	360	R454B	11,000	17.0/8.5	–	80	67	95	208/1/60	7.7	YES	WALL MOUNTED	11–11/16 x 35–1/16 x 8–1/4	57	FTKB12AXVJU	RKB12AXVJU	SSCU–3
SS–4	A–EL–1 – ELEVATOR (COOLING ONLY)	A31	ROOF	635	R454B	18,000	19.4/12.7	–	80	67	95	208/1/60	16.5	NO	DUCTED CONCEALED	11–13/16 x 39–3/8 x 27–9/16	172	FBQ18PVJU	RZR18TAVJUA	SSCU–4
SS–5	B12.4 – DATA ROOM (COOLING ONLY)	B12.4	ROOF	915	R454B	34,400	15.9/9.10	–	80	67	95	208/1/60	17.0	YES	WALL MOUNTED	13–3/8 x 47–1/4 x 10–3/16	133	FTX36NVJU	RK36NMVJUA	SSCU–5
SS–6	B208.9 – DRY STORAGE	B208.9	ROOF	399	R454B	9,100	20.9/13.0	10,000	80	67	95	208/1/60	9.0	NO	CEILING CASSETTE	10–1/4 x 22–5/8 x 22–5/8	60	FFQ09Q2VJU	RXQ09RMVJU9	SSCU–6
SS–7	B208.7 – OFFICE	B208.7	ROOF	399	R454B	9,100	20.9/13.0	10,000	80	67	95	208/1/60	9.0	NO	CEILING CASSETTE	10–1/4 x 22–5/8 x 22–5/8	60	FFQ09Q2VJU	RXQ09RMVJU9	SSCU–7
SS–8	A118.1 – EMR (COOLING ONLY)	A118.1	ROOF	360	R454B	11,000	17.0/8.5	–	80	67	95	208/1/60	7.7	NO	WALL MOUNTED	11–11/16 x 35–1/16 x 8–1/4	57	FTKB12AXVJU	RKB12AXVJU	SSCU–8
SS–9	B224.2 – IDF (COOLING ONLY)	A118.1	ROOF	635	R454B	24,000	17.3/10.2	–	80	67	95	208/1/60	16.5	YES	WALL MOUNTED	11–3/8 x 41–3/8 x 9–1/4	172	FAQ24TAVJU	RZR24TAVJU	SSCU–9
SS–10	IDF – SHOP AREA (COOLING ONLY)	–	ROOF	360	R454B	11,000	17.0/8.5	–	80	67	95	208/1/60	7.7	YES	WALL MOUNTED	11–11/16 x 35–1/16 x 8–1/4	57	FTKB12AXVJU	RKB12AXVJU	SSCU–10

NOTES:
1. BASED ON DAIKIN WITH INVERTER DRIVEN COMPRESSOR R454B REFRIGERANT AND DEHUMIDIFICATION MODE. OR EQUAL OF MITSUBISHI ELECTRIC ADVANCED MICROPROCESSOR CONTROLLER 165'F REFRIGERANT LINE LENGTH. 100' LIFT.
2. FOR CONDENSING UNITS LOCATED ON ROOF. PROVIDE HAIL GUARD AND WIND BAFFLE.
3. FOR COOLING ONLY SPLIT SYSTEMS, PROVIDE LOW AMBIENT CONTROL (COOLING TO 0'F OUTDOOR AIR TEMPERATURE) AND WIND BAFFLE.
4. SPLIT SYSTEMS LOCATED IN IDF/MDF SPACES SHALL HAVE TEMPERATURE SENSOR WITH HI–TEMP ALARM FURNISHED BY THE ATC CONTRACTOR.
5. ALL WALL MOUNTED SPLIT SYSTEMS SHALL BE PROVIDE WITH INTEGRAL CONDENSATE PUMP

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6441
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:
VRF AND CABINET UNIT HEATER SCHEDULES

SHEET NUMBER:
M9.4

BID SET

VENTILATION RATES SCHEDULE (1/2)

AHU No.(s)	SERVICE	ZONE FLOOR ARE Az (ft^2)	REQUIRED OUTDOOR AIR RATE/AREA Ra (CFM/ft^2)	AREA OUTDOOR AIR FLOW RATE AzRa (CFM)	ZONE POPULATION Pz (#)	REQUIRED OUTDOOR AIR RATE/PERSON Rp (CFM/pp)	POPULATION OUTDOOR AIR FLOW RATE PzRp (CFM)	BREATHING ZONE (Vbz=AzRa+PzRp) CFM	ZONE DIST EFF (Ez)	BREATHING ZONE O/A (Voz=Vbz/Ez) CFM	S/A DESIGN (Vpz) CFM	O/A FRAC (Zp=Voz/Vpz)
	DOAS-1-HEADSTART 1ST FLOOR											
1	A104 - DIAGNOSTIC ARENA	927	0.12	111	25	10	250	361	0.8	452	1000	0.45
1	A112.5 - HV/FSWS OFFICE	506	0.06	30	5	5	25	55	0.8	69	600	0.12
1	A112.7 - WORKROOM	144	0.06	9	4	5	20	29	0.8	36	330	0.11
1	A112.4 - HS ED SPEC	116	0.06	7	1	5	5	12	0.8	15	330	0.05
1	A112.3 - HS ED SPEC	115	0.06	7	1	5	5	12	0.8	15	330	0.05
1	A112.2 - HS ED SPEC	113	0.06	7	1	5	5	12	0.8	15	330	0.04
1	A112.1 - CONSULT	92	0.06	6	2	5	10	16	0.8	19	330	0.06
1	A10/A12 - COORIDORS	2130	0.06	128	0	0	0	128	0.8	160	1800	0.09
1	A113 - OFFICES/FSWS/FSW	442	0.06	27	4	5	20	47	0.8	58	620	0.09
1	A114 - EARLY HEADSTART 1	785	0.12	94	21	10	210	304	0.8	380	1000	0.38
1	A111 - HEADSTART 1	821	0.12	99	21	10	210	309	0.8	386	1200	0.32
1	A109 - EARLY HEADSTART 2	668	0.12	80	23	10	230	310	0.8	388	1000	0.39
1	A107 - EARLY HEADSTART1	668	0.12	80	23	10	230	310	0.8	388	1000	0.39
1	A105.3 - CONF. ROOM	229	0.06	14	10	5	50	64	0.8	80	600	0.13
1	A105.2 - CONF. ROOM	310	0.06	19	10	5	50	69	0.8	86	620	0.14
1	A102 - WAITING	417	0.06	25	10	8	75	100	0.8	125	600	0.21
1	A105.1 - RECEPTION	135	0.06	8	3	5	15	23	0.8	29	600	0.05
1	A103.1 - OFFICE	82	0.06	5	2	5	10	15	0.8	19	330	0.06
1	A103 - NUTRITION KITCHEN	445	0.12	53	4	5	20	73	0.8	92	400	0.23
	TOTAL									2809	13020	0.22
	DOAS-2-HEADSTART 2ND FLOOR											
2	A202 - HEADSTART 5	930	0.12	112	25	10	250	362	0.8	452	1200	0.38
2	A204 - HEADSTART 4	930	0.12	112	25	10	250	362	0.8	452	1200	0.38
2	A206 - HEADSTART 3	930	0.12	112	25	10	250	362	0.8	452	1200	0.38
2	A201 - HEADSTART 11	1033	0.12	124	25	10	250	374	0.8	467	1400	0.33
2	A203 - HEADSTART 10	1023	0.12	123	25	10	250	373	0.8	466	1200	0.39
2	A205 - HEADSTART 9	935	0.12	112	25	10	250	362	0.8	453	1200	0.38
2	A207 - HS GROSS MOTOR	935	0.12	112	25	10	250	362	0.8	453	1000	0.45
2	A209 - CLASSROOM	856	0.12	103	25	10	250	353	0.8	441	1200	0.37
2	A211 - CLASSROOM	907	0.12	109	25	10	250	359	0.8	449	1400	0.32
2	A21 - CORRIDOR	1170	0.06	70	0	0	0	70	0.8	88	660	0.13
2	A22 - CORRIDOR	906	0.06	54	0	0	0	54	0.8	68	600	0.11
	TOTAL									4240	12260	0.35
	DOAS-3-HEADSTART 3RD FLOOR											
3	A301 - HEADSTART 16	1015	0.12	122	25	10	250	372	0.8	465	1400	0.33
3	A302 - HEADSTART 15	930	0.12	112	25	10	250	362	0.8	452	1200	0.38
3	A303 - AUTISTIC SUPPORT	915	0.12	110	25	10	250	360	0.8	450	1200	0.37
3	A303.1 - OBSERVATION	130	0.06	8	2	5	10	18	0.8	22	330	0.07
3	A304 - HEADSTART 14	937	0.12	112	25	10	250	362	0.8	453	1200	0.38
3	A305.1 - FSWS OFFICES	350	0.06	21	4	5	20	41	0.8	51	600	0.09
3	A305.2 - HEADSTART CONF.	425	0.06	26	22	5	110	136	0.8	169	940	0.18
3	A306 - HEADSTART 13	942	0.12	113	25	10	250	363	0.8	454	1200	0.38
3	A307 - HEADSTART 17	880	0.12	106	25	10	250	356	0.8	445	1200	0.37
3	A31 - CORRIDOR	1000	0.06	60	0	0	0	60	0.8	75	600	0.13
	TOTAL									3036	9870	0.31
	DOAS-4- ADMIN/HEADSTART - 1ST AND 2ND FLOOR											
4	A115 - PRESCHOOL 1	758	0.12	91	21	10	210	301	0.8	376	1000	0.38
4	A116 - PRESCHOOL 2	845	0.12	101	21	10	210	311	0.8	389	1000	0.39
4	A117 - BUILDING STORAGE	374	0.12	45	0	0	0	45	0.8	56	330	0.17
4	C104 - STORAGE	440	0.12	53	0	0	0	53	0.8	66	600	0.11
4	C12 - CORRIDOR	415	0.06	25	0	0	0	25	0.8	31	600	0.05
4	A13 - CORRIDOR	1040	0.06	62	0	0	0	62	0.8	78	1200	0.07
4	A119 - PRESCHOOL3	1002	0.12	120	25	10	250	370	0.8	463	1200	0.39
4	A120 - PRE SCHOOL 5	985	0.12	118	25	10	250	368	0.8	460	1200	0.38
4	A123 - DEVELOPMENT DELAY	1184	0.12	142	25	10	250	392	0.8	490	1200	0.41
4	A121 - PRESCHOOL 4	1100	0.12	132	25	10	250	382	0.8	478	1200	0.40
4	B109 - THERAPY ALLEY	1500	0.18	270	5	10	50	320	0.8	400	1400	0.29
4	B109.2 - WORK AREA	475	0.18	86	5	10	50	136	0.8	169	620	0.27
4	B12 - COORIDOR	1255	0.06	75	0	0	0	75	0.8	94	600	0.16
4	B112 - ENGINEERING CLASS	790	0.06	47	29	8	218	265	0.8	331	1200	0.28
4	B110 - ENGINEERING LAB	1765	0.06	106	50	8	400	506	0.8	632	3760	0.17
	TOTAL									4514	17110	0.26
	DOAS-5-OFFICE ADMIN - 2ND FLOOR											
5	A213 - ROOM	225	0.06	14	4	5	20	34	0.8	42	300	0.14
5	A215 - CLASSROOM	555	0.06	33	2	5	10	43	0.8	54	660	0.08
5	A217 - STORAGE	188	0.06	11	2	5	10	21	0.8	27	405	0.07
5	A219.6 - NURSE OFFICE	160	0.18	29	1	10	10	39	0.8	49	405	0.12
5	A219.7 - NURSE SUIT	195	0.06	12	1	5	5	17	0.8	21	405	0.05
5	A219.5 - CONF. ROOM	350	0.18	63	1	10	10	73	0.8	91	300	0.30
5	A219.12 - WORK ROOM	150	0.06	9	2	5	10	19	0.8	24	405	0.06
5	A219.3 - OFFICE	198	0.18	36	1	10	10	46	0.8	57	300	0.19
5	A23 - CORRIDOR	755	0.06	45	0	0	0	45	0.8	57	1165	0.05
5	A219.4 - OFFICE	175	0.18	32	1	10	10	42	0.8	52	300	0.17
5	A219.2 - SUPERVISOR	170	0.18	31	1	10	10	41	0.8	51	300	0.17
5	A219 - MAIN OFFICE	805	0.18	145	4	10	40	185	0.8	231	810	0.29
5	B202 - LOBBY	985	0.18	177	0	10	0	177	0.8	222	1165	0.19
5	B202.1 - ROOM	385	0.18	69	2	10	20	89	0.8	112	1165	0.10
	TOTAL									1088	8085	0.13
	DOAS-6-HEALTH - 2ND FLOOR											
6	B222 - HEALTH SCIENCE CR	870	0.12	104	30	10	300	404	0.8	506	940	0.54
6	B220 - HEALTH SCIENCE LAB	691	0.18	124	20	10	200	324	0.8	405	940	0.43
6	B218 - HEALTH SCIENCE CR	870	0.12	104	30	10	300	404	0.8	506	940	0.54
6	B216 - HEALTH SCIENCE CR	882	0.12	106	30	10	300	406	0.8	507	940	0.54
6	B214 - HEALTH SCIENCE LAB	685	0.18	123	20	10	200	323	0.8	404	940	0.43
6	B212 - HEALTH SCIENCE CR	873	0.12	105	30	10	300	405	0.8	506	940	0.54
	TOTAL									2834	5640	0.50
	DOAS-7-COSMETOLOGY- 2ND FLOOR											
7	B211 - TECH MATH	1057	0.12	127	30	10	300	427	0.8	534	940	0.57
7	B209 - STUDENT SERVICES	1828	0.12	219	30	10	300	519	0.8	649	940	0.69
7	B207 - STUDENT SERVICES	805.7	0.12	97	20	10	200	297	0.8	371	940	0.39
7	B205 - COSMETOLOGY CR.	820	0.18	148	25	10	250	398	0.8	497	940	0.53
7	B203 - COSMETOLOGY LAB	2141	0.18	385	40	10	400	785	0.8	982	2820	0.35
7	B210 - COSMETOLOGY	1735	0.18	312	40	10	400	712	0.8	890	2820	0.32
7	A208 - COSMETOLOGY CR.	700	0.18	126	29	10	290	416	0.8	520	940	0.55
7	B22 - CORRIDOR	2370	0.06	142	0	0	0	142	0.8	178	1800	0.10
7	B213 - TECH ENGLISH	1148	0.12	138	30	10	300	438	0.8	547	940	0.58
	TOTAL									5168	13080	0.40
	DOAS-8-SHOP CLASSROOMS - 1ST FLOOR											
8	B105.5 - COLLISON CR.	672	0.12	81	20	10	200	281	0.8	351	1000	0.35
8	B101.3 - AUTO CLASSROOM	680	0.12	82	20	10	200	282	0.8	352	1000	0.35
8	B103.1 - EPS CLASSROOM	700	0.12	84	20	10	200	284	0.8	355	1000	0.36
8	B102.2 - CLASS ROOM	540	0.12	65	15	10	150	215	0.8	269	1000	0.27
8	B106.5 - BLDG TRADES CR.	694	0.12	83	20	10	200	283	0.8	354	1000	0.35
8	B104.1 - CLASSROOM	750	0.12	90	20	10	200	290	0.8	363	1200	0.30
8	C101.1 - CARPENTRY CR.	750	0.12	90	20	10	200	290	0.8	363	1200	0.30
8	C102.1 - LOGISTICS CR.	750	0.12	90	20	10	200	290	0.8	363	1200	0.30
	TOTAL									2768	8600	0.32

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.6441
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:
VENTILATION RATES SCHEDULE-1

SHEET NUMBER:
M9.5

BID SET

VENTILATION RATES SCHEDULE (2/2)

AHU No.(s)	SERVICE	ZONE FLOOR ARE Az (ft^2)	REQUIRED OUTDOOR AIR RATE/AREA Ra (CFM/ft^2)	AREA OUTDOOR AIR FLOW RATE AzRa (CFM)	ZONE POPULATION Pz (#)	REQUIRED OUTDOOR AIR RATE/PERSON Rp (CFM/pp)	POPULATION OUTDOOR AIR FLOW RATE PzRp (CFM)	BREATHING ZONE (Vbz=AzRa+PzRp) CFM	ZONE DIST EFF (Ez)	BREATHING ZONE O/A (Voz=Vbz/Ez) CFM	S/A DESIGN (Vpz) CFM	O/A FRAC (Zp=Voz/Vpz)
RTU-1-WEIGHT ROOM												
1	B114 - FITNESS/HEALTH CR	1590	0.18	286	20	20	400	686	0.8	858	2600	0.33
	TOTAL									858	2600	0.33
RTU-2-STAFF LOUNGE												
2	B21 - CORRIDOR	1700	0.06	102	0	0	0	102	0.8	128	500	0.26
2	B210 - STAFF LOUNGE	634	0.12	76	10	10	100	176	0.8	220	1000	0.22
	TOTAL									348	1500	0.23
RTU-3-CAFETERIA												
3	B204 - MULTIPURPOSE ROOM	5000	0.12	600	125	8	938	1538	0.8	1922	8000	0.24
	TOTAL									1922	8000	0.24
RTU-4-KITCHEN												
4	B208 - KITCHEN	2220	0.12	266	40	8	300	566	0.8	708	900	0.79
4	B208.6 - DISHWASHING	370	0.12	44	4	8	30	74	0.8	93	300	0.31
4	B208.7 - OFFICE	65	0.06	4	1	5	5	9	0.8	11	200	0.06
4	B208.2 - LOCKER ROOM	93	0.12	11	0	0	0	11	0.8	14	150	0.09
4	B208.4 - LOCKER ROOM	93	0.12	11	0	0	0	11	0.8	14	150	0.09
4	B21.2 - STORAGE	115	0.12	14	0	0	0	14	0.8	17	150	0.12
4	B208.1 - STORAGE	115	0.12	14	0	0	0	14	0.8	17	150	0.12
	TOTAL									875	2000	0.44
HVU-1-CARPENTRY												
1	C101 - CARPENTRY	4970	0.12	596	100	10	1000	1596	0.8	1996	5500	0.36
	TOTAL									1996	5500	0.36
HVU-2-LOGISTICS												
2	C102 - LOGISTICS	5000	0.12	600	100	10	1000	1600	0.8	2000	5500	0.36
	TOTAL									2000	5500	0.36
HVU-3-EMERGENCY												
3	B103 - EMERGENCY & SVCS	2155	0.06	129	40	5	200	329	0.8	412	2500	0.16
	TOTAL									412	2500	0.16
HVU-4-AUTO TECH LAB												
4	B101 - AUTO TECH LAB	14410	0.18	2594	200	10	2000	4594	0.8	5742	14500	0.40
	TOTAL									5742	14500	0.40
HVU-5-COLLISION												
5	B105 - COLLISION LAB	4560	0.18	821	100	10	1000	1821	0.8	2276	8010	0.28
	TOTAL									2276	8010	0.28
HVU-6-BUILDING TRADES												
6	B106 - BUILDNG TRADES	4100	0.06	246	50	5	250	496	0.8	620	2000	0.31
	TOTAL									620	2000	0.31

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.8411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ # : 21-DCIU-03 DRAWN BY : ALBAN

SHEET TITLE:
VENTILATION RATES SCHEDULE-2

SHEET NUMBER:
M9.6

BID SET

KITCHEN NOTES: (PLUMBING)

1. ALL OUTLETS AND CONNECTIONS SHOWN RELATE TO FOOD SERVICE FIXTURES AND EQUIPMENT ONLY. SEE ARCHITECTURAL/ENGINEERING PLANS FOR ADDITIONAL PLUMBING REQUIREMENTS.
2. THIS PLUMBING PLAN IS INTENDED TO SHOW ROUGH-IN LOCATIONS AND HEIGHTS, CONNECTION SIZES, POSITIONS, HEIGHTS AND LOAD REQUIREMENTS. DIMENSIONS SHOWN ARE FROM FINISHED FLOORS AND FINISHED WALLS. VERIFY WALL PARTITION LOCATIONS WITH ARCHITECTURAL DRAWINGS.
3. FINAL CONNECTIONS TO ALL EQUIPMENT SHALL BE BY PLUMBING CONTRACTOR INCLUDING REQUIRED MATERIALS SUCH AS, STOPS, VALVES, FILTERS, TRAPS, CHECK VALVES, PIPING, TUBING, ETC. TO ASSURE PROPER OPERATION ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND LOCAL CODES.
4. PLUMBING CONTRACTOR (P.C.), OR EQUIVALENT, SHALL FURNISH AND INSTALL THE FOLLOWING:
   - A. ALL WATER AND WASTE SERVICE TO POINT OF ROUGH-IN AS SHOWN ON PLAN. ROUGH-IN OUTLETS TO STUB 4" OUT OF WALLS AT HEIGHT INDICATED FROM FINISHED FLOOR TO CENTERLINE OF OUTLET. FLOOR ROUGH-INS TO STUB UP 2" ABOVE FINISHED FLOOR OR CURBS. ALL FLOOR OPENINGS/PENETRATIONS ARE TO BE SEALED WATERTIGHT.
   - B. ALL WASTE LINES, DIRECT OR INDIRECT, EXCEPT AS NOTED. MINIMUM DIAMETER OF LINE SHALL BE AS INDICATED ON PLAN REGARDLESS OF CONNECTION SIZE, AND SHALL BE PITCHED DOWNWARD. MAINTAIN DRAIN LINES AS HIGH AS POSSIBLE ABOVE FLOOR FOR SANITATION AND AND CLEANING. ALL WASTE LINES SHALL HAVE ADEQUATE CLEAN-OUT PROVISIONS.
   - C. PRESSURE REDUCING AND/OR REGULATING VALVES FOR DISHWASHERS, BOOSTER HEATERS, OR AS OTHERWISE NOTED IN ALL FOOD SERVICE AREAS.
   - D. ALL FLOOR SINKS, COMPLETE WITH TOP GRATES INDICATED, AND REMOVABLE SEDIMENT BUCKETS SET FLUSH WITH FINISH FLOOR, UNLESS NOTED.
   - E. INDIRECT WASTE LINES FOR WALK-IN COOLER/FREEZER BLOWER COILS SHALL BE PITCHED 3/4" PER FOOT OF HORIZONTAL RUN, AND TERMINATE WITH A P-TRAP OVER FLOOR SINK OR APPROVED RECEPTOR WITH VACUUM BREAK AS REQUIRED BY LOCAL CODE.
   - F. INSTALL FIRE CONTROL GAS SHUT-OFF VALVES AS SUPPLIED BY FIRE PROTECTION SYSTEM SUBCONTRACTOR PER LOCAL CODES. (IF GAS COOKING EQUIPMENT IS SPECIFIED.)
   - G. VACUUM BREAKERS, AS REQUIRED, EXCEPT FOR DISHWASHERS AND DISPOSERS, AS SUPPLIED BY KITCHEN EQUIPMENT CONTRACTOR.
5. ALL VENT PIPES SHALL BE CONCEALED IN WALLS OR COLUMN CHASES. USE LOOP VENTS FOR ISLAND FIXTURES.
6. ALL EXPOSED PIPING AND FITTINGS IN KITCHEN AREAS SHALL BE CHROME-PLATED OR STAINLESS STEEL.
7. ALL LINES ROUTED THROUGH EQUIPMENT SHALL NOT INTERFERE WITH INTENDED USE OF, OR SERVICING OF EQUIPMENT.
8. PLUMBING CONTRACTOR (P.C.), OR EQUIVALENT, SHALL INTERCONNECT DISHWASHING MACHINE WITH BOOSTER HEATER, AND WATER-TYPE VENTILATORS WITH CONTROL PANELS AS PER MANUFACTURER'S INSTRUCTIONS, WHEN APPLICABLE AND NOTED.
9. REFER TO KITCHEN EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION, REQUIREMENTS AND NOTES.

PLUMBING NOTES:

- A. COORDINATE WORK BETWEEN ALL DISCIPLINES.
- B. CONTRACTOR SHALL VERIFY SIZE AND LOCATION OF ALL EXISTING PIPING PRIOR TO REMOVING OR MAKING CONNECTION THERETO. COORDINATE NEW WORK WITH EXISTING TO REMAIN BETWEEN ALL DISCIPLINES.
- C. CONDENSATE FROM MECHANICAL EQUIPMENT COILS SHALL BE PIPED TO THE STORM DRAIN SYSTEM PIPING UNLESS OTHERWISE INDICATED ON DRAWINGS.
- D. REFER TO SECTIONS ON ARCHITECTURAL AND MECHANICAL DRAWINGS FOR PIPE ROUTING THROUGH THE FACILITY.
- E. COORDINATE PLUMBING PIPING ENCLOSURES WITH ARCHITECTURAL DRAWINGS PRIOR TO SETTING PIPING BELOW SLABS.
- F. COORDINATE ALL FLOOR, SINK AND TRENCH DRAIN LOCATIONS WITH MECHANICAL EQUIPMENT PLACEMENT PRIOR TO SETTING SUCH DRAINS. DRAINS SHALL BE LOCATED AS CLOSE TO EQUIPMENT DRAIN POINTS AS POSSIBLE.
- G. FIELD VERIFY PIPING MATERIALS AND SIZES PRIOR TO CONNECTION THERETO.
- H. PROVIDE SHUTOFF VALVES IN DOMESTIC WATER SYSTEM BRANCH LINES SERVING TWO OR MORE FIXTURES.
- I. INSTALL PIPING SO VALVES ARE ACCESSIBLE.
- J. WHERE HOT AND COLD WATER PIPING DROPS INTO PIPE CHASE, THE SIZE SHOWN FOR THE PIPE DROPS SHALL BE USED TO THE LAST FIXTURE.
- K. ITEMS SUCH AS ACCESS DOORS, RISE AND DROPS IN PIPING, ETC., ARE INDICATED ON THE DRAWINGS FOR CLARITY OR A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERPRETED AS THE EXTENT OF THE REQUIREMENTS FOR THESE ITEMS. THE CONTRACTOR IS RESPONSIBLE FOR THESE ITEMS AS REQUIRED ELSEWHERE IN THE CONTRACT DOCUMENTS.
- L. ALL PLUMBING FIXTURES SHALL HAVE A MINIMUM AIR GAP FROM THE LOWEST END OF A POTABLE WATER OUTLET TO THE FLOOD RIM OR LINE OF THE FIXTURE INTO WHICH IT DISCHARGES. THE AIR GAP SHALL BE A MINIMUM OF TWICE THE EFFECTIVE OPENING OF A POTABLE WATER OUTLET UNLESS THE OUTLET IS A DISTANCE LESS THAN 3 TIMES THE EFFECTIVE OPENING AWAY FROM A WALL OR SIMILAR VERTICAL SURFACE IN WHICH CASE THE MINIMUM REQUIRED AIR GAP SHALL BE 3 TIMES THE EFFECTIVE OPENING OF THE OUTLET.
- M. FIXTURES SUBJECT TO INTERMITTENT OR CONTINUOUS PRESSURE BACK-SIPHONAGE SHALL BE PROVIDED WITH A BACKFLOW PREVENTION DEVICE, (ASSE PER AHJ).
- N. FIXTURES WHICH DISCHARGE INDIRECTLY INTO A FLOOR DRAIN OR FLOOR SINK SHALL DISCHARGE WITH AN AIR GAP EQUAL TO TWICE THE DIAMETER OF THE FIXTURE DISCHARGE PIPE.
- O. INSULATE ALL HORIZONTAL SECTIONS OF EXISTING AND NEW STORM WATER AND STORM WATER OVERFLOW PIPING.
- P. COORDINATE ALL DEMOLITION AND CONSTRUCTION ACTIVITIES WITH HAZARDOUS MATERIALS DRAWINGS, SPECIFICATIONS SECTION 023126, THE ASBESTOS CONTAINING MATERIAL SURVEY AND LEAD BASED PAINT SCREENING REPORT, AND ALL SUBSEQUENTLY REFERENCED SECTIONS OF THE SPECIFICATIONS. THE CONTRACTOR IS REQUIRED TO IDENTIFY, ABATE, PROPERLY HANDLE AND DISPOSE OF ALL HAZARDOUS MATERIALS NECESSARY TO COMPLETE CONTRACT WORK: INCLUDING BUT NOT LIMITED TO ASBESTOS, LEAD, PCB LIGHT BALLASTS, FLUORESCENT LIGHT BULBS, AND THERMOSTATS WITH MERCURY SWITCHES.
- Q. COORDINATE SETTING AND ELEVATION OF KITCHEN FLOOR SINKS AND DRAINS WITH LOCAL PLUMBING INSPECTOR.
- R. ALL PIPING NOT INDICATED IN CHASES SHALL BE LOCATED ABOVE CEILING AS HIGH AS POSSIBLE. COORDINATE ROUTING OF PIPING WITH OTHER DISCIPLINES.
- S. PROVIDE SINK TAILPIECE WITH DISHWASHER DRAIN CONNECTION AND PROVIDE HOT WATER SUPPLY CONNECTION TO DISHWASHER AT REQUIRED LOCATIONS AS INDICATED PER ARCHITECTURAL DRAWINGS. INSTALL PLUMBING UTILITIES AS REQUIRED PER MANUFACTURERS RECOMMENDATIONS.
- T. PROVIDE WATER HAMMER ARRESTORS WHERE QUICK CLOSING VALVES ARE INSTALLED. INSTALLATION AND QUANTITY SHALL BE PER CONTRACT DRAWINGS AND MANUFACTURERS RECOMMENDATIONS. WATER HAMMER ARRESTORS SHALL BE ACCESSIBLE FOR MAINTENANCE.
- U. THE LOCATION OF EXISTING UNDERGROUND UTILITIES IS SHOWN IN AN APPROXIMATE WAY ONLY. DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. REPAIR ALL DAMAGES OCCASIONED BY FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
- V. FOR PLUMBING FIXTURES BEING REMOVED AND NO NEW FIXTURE IS INDICATED TO BE PROVIDED AT THE SAME LOCATION, REMOVE PIPING TO THE POINT OF CONCEALMENT AND REPAIR WALL, CEILING OR FLOOR TO MATCH EXISTING.
- W. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR PROTECTING ALL DRAINS DURING THE CONSTRUCTION AND RETURNING THEM FREE FLOWING AND IN WORKING CONDITION. CONTRACTOR SHALL GUARANTEE ALL DRAINS FOR AT LEAST 90 DAYS AFTER FINAL COMPLETION OF THE BUILDING.
- X. IF SITE WORK PIPING IS INSTALLED AT THE SAME TIME PLUMBING CONTRACTOR IS INSTALLING PIPING, THE PLUMBING CONTRACTOR SHALL MAKE THE CONNECTION TO THE SITE PLUMBING.
- Y. PRIOR TO BEGINNING PHASE WORK, CONTRACTOR SHALL SCOPE AND VIDEOTAPE ALL EXISTING SANITARY AND STORM WATER PIPING TO REMAIN BELOW SLAB FOR PIPING 3" AND ABOVE.
- CONTRACTOR SHALL NOTIFY OWNER/ ARCHITECT OF CLOGGED, BROKEN, BELLIED OR COLLAPSED PIPING, OR CONDITION WHERE GRAVITY FLOW IS NOT MAINTAINED.
- UPON COMPLETION OF EACH PHASE WORK, CONTRACTOR SHALL RE-SCOPE AND VIDEOTAPE THE SANITARY AND STORM WATER PIPING SYSTEMS.
- CONTRACTOR SHALL ROD CLEAN AND FLUSH ALL EXISTING SANITARY AND STORM WATER PIPING.

Z. AFTER PRESSURE TESTS ARE COMPLETE ALL SANITARY AND STORM WATER PIPING 3" AND LARGER LOCATED UNDER SLAB WILL NEED TO BE VIDEOTAPED BY A THIRD PARTY TO THE FIRST MANHOLE OR CLEAN-OUT LOCATED OUTSIDE OF THE BUILDING. WCPS PLUMBING DEPARTMENT WILL NEED TO BE NOTIFIED 24 HOURS PRIOR TO THE TEST. A COPY OF THE VIDEO IS TO BE DELIVERED TO THE WCPS PLUMBING DEPARTMENT.

AA. ODOR HOG CHARCOAL FILTERS SHALL BE PROVIDED FOR TO ALL SANITARY VENTS

AB. PIPING JOINT FROM DRAIN BOWL TO LEADER PIPING SHALL BE LEAD AND BROWN OIL OAKUM ON ALL ROOF DRAINS

AC. ROOF DRAINS SHALL HAVE VANDAL PROOF DOMES

AD. ALL GAS PIPING SHALL BE PAINTED YELLOW. ALL OTHER EXPOSED (EXISTING AND PROPOSED) PIPING SHALL BE PAINTED TO MATCH WALL OR UNDERSIDE OF ROOF/CEILING.

PHASING NOTES:

- A. REFER TO ARCHITECTURAL DRAWINGS AND THE SPECIFICATIONS FOR ADDITIONAL PHASING INFORMATION, MILESTONES, AND REQUIREMENTS.
- B. COORDINATE ALL OUTAGES WITH THE OWNER IN ACCORDANCE WITH THE SPECIFICATION REQUIREMENTS.
- C. COORDINATE ALL PLUMBING PHASING WITH FIRE PROTECTION AND MECHANICAL CONTRACTOR'S WORK AND PHASING REQUIREMENTS.
- D. THE CONTRACTOR SHALL PROVIDE TEMPORARY PIPING (HOSES), VALVING, ETC TO ACCOMMODATE NEW SYSTEMS, KEEP EXISTING SYSTEMS SERVING OCCUPIED AREAS FUNCTIONING AT ALL TIMES AND AS NECESSARY FOR PHASING. REFER TO THE PROJECT SPECIFICATIONS AND ARCHITECTURAL DRAWINGS FOR ADDITIONAL PHASING REQUIREMENTS.
- E. PLUMBING CONTRACTOR SHALL COORDINATE WITH CIVIL CONTRACTOR ALL SANITARY AND STORM WATER MAINS PRIOR TO DEMOLITION AND OR INSTALLATION OF SUCH MAINS LEAVING THE BUILDING.
- F. PROVIDE ALL TEMPORARY PIPING, BYPASS, VALVES, ETC AS NECESSARY TO KEEP ALL SYSTEMS SERVING OCCUPIED AREAS FUNCTIONAL AT ALL TIMES.
- G. COORDINATE ALL WORK THAT IS REQUIRED IN AREAS OTHER THAN THE DESIGNATED PHASE WITH ALL OTHER DISCIPLINES. REVIEW OUT OF PHASE WORK REQUIRMENTS WITH THE OWNER, ENGINEER, AND GENERAL TRADES CONTRACTOR.
- H. THE CONTRACTOR SHALL FULLY FIELD INVESTIGATE ALL EXISTING SYSTEMS (AFTER SCHOOL HOURS) AND DEVELOP A PHASING PLAN TO BE REVIEWED WITH THE OWNER, ENGINEER AND GENERAL TRADES CONTRACTOR.

LINE TYPE LEGEND

SYMBOL	DEFINITION
	DEMOLITION
	EXISTING TO REMAIN
	NEW WORK
	BROKEN AND DASHED WORK BELOW

PLUMBING LEGEND

SYMBOLS

SYMBOL	DEFINITION
	COLD WATER
	TEMPERED WATER (110°)
	TEMPERED WATER RETURN (110°)
	140° DOMESTIC HOT WATER
	140° DOMESTIC HOT WATER RETURN
T	TEMPERED WATER
F	FIRE LINE
SP	SPRINKLER LINE
	SANITARY
	VENT
	STORM WATER
PD	PUMPED DISCHARGE
CD	CONDENSATE DRAIN
	FOUNDATION DRAIN
AW	ACID RESISTANT WASTE
AV	ACID RESISTANT VENT
G	NATURAL GAS
CA	COMPRESSED AIR
	BALL VALVE
	PIPING BELOW GRADE OR SLAB
	BUTTERFLY VALVE
	UNION
	GATE VALVE
	GLOBE VALVE
	BALANCING VALVE
	PLUG VALVE
RPBF	REDUCED PRESS. BACKFLOW PREVENTER
PRV	PRESSURE REDUCING VALVE
	CHECK VALVE
DCVA	DOUBLE DETECTOR CHECK VALVE
	BACKWATER VALVE
	FLOOR CLEANOUT
	WALL CLEANOUT
	PIPE UP
	PIPE UP & DOWN
	PIPE DOWN
	SIGHT GLASS
	FLOAT VALVE
	FLOOR DRAIN
	FLOOR DRAIN WITH TRAP PRIMER
	FLOOR SINK
(F)	ROOF DRAIN (W/ SQ.FT INDICATED)
	TRAP (ELEVATION)
	VENT THROUGH ROOF (ELEVATION)
	VENT THROUGH ROOF (PLAN)
	MIXING VALVE
	METER (FLUID OR GAS)
"	INCHES
'	FEET
	HOSE BIBB (PLAN)
	NON-FREEZE WALL HYDRANT
	HOSE BIBB (ELEV.)
	HOSE END DRAIN
TS	OUTSIDE STEM & YOKE VALVE
OSY	NON-RISING STEM & YOKE
FS	FLOW SWITCH
TS	TAMPER SWITCH
PS	PRESSURE SWITCH
	FIRE DEPT HOSE CONNECTION
FS	FLOOR CONTROL VALVE ASSEMBLY
	'Y' STRAINER
	WATER HAMMER ARRESTOR
	ACCESS PANEL
	POINT OF CONN. TO SITE UTILITIES
	SQUARE FOOTAGE
	DUPLEX GAS OUTLET
	ECCENTRIC REDUCER
	CONCENTRIC REDUCER
	FLEXIBLE CONNECTION
	CAPPED PIPE
	BLIND FLANGE
	MANUAL AIR VENT
	AUTOMATIC AIR VENT
	BLOW DOWN VALVE (W/HOSE END)
	PRESSURE/TEMP. RELIEF VALVE
ΔP	PRESSURE DIFFERENCE
ΔT	TEMPERATURE DIFFERENCE
	CENTER LINE
	THERMOMETER
	PRESSURE GAUGE W/ NEEDLE VALVE
Ø	DIAMETER (OR ELECTRICAL PHASE)
	BACK WATER VALVE W/ ACCESS COVER
	SOLENOID VALVE
%	SLOPE OF PIPE (WITH % OF SLOPE SHOWN)
	DIRECTION OF FLOW
	FUNNEL CONNECTION @ FLOOR DRAIN
S-A-1	SANITARY/WATER RISER DESIGNATION
	EXISTING TO REMAIN
	REMOVE EXISTING
	DEMOLITION ENDS HERE
	CONNECT TO EXISTING HERE

NOTE: NOT ALL SYMBOLS MAY BE USED.

ABBREVIATIONS

ABBREV.	DEFINITION
140°	140° DOMESTIC HOT WATER
140°R	140° DOMESTIC HOT WATER RETURN
AAV	AUTOMATIC AIR VENT
ABV	ABOVE
AD	AREA DRAIN
AFF	ABOVE FINISHED FLOOR
ANC	ANCHOR
AP	ACCESS PANEL
APPROX	APPROXIMATE
AQ	AQUASTAT
AV	ACID VENT
AW	ACID WASTE
BDV	BLOW DOWN VALVE
BF	BLIND FLANGE
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BOP	BOTTOM OF PIPE
BOTT	BOTTOM
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BWV	BACK WATER VALVE W/ ACCESS COVER
CA	COMPRESSED AIR
CAP	CAPACITY
CD, COND	CONDENSATE DRAIN
CI	CAST IRON
CLG	CEILING
CO	CLEANOUT
CONN	CONNECT
CONC	CONCRETE
CU FT	CUBIC FEET
CW	COLD WATER
CX	CONNECT TO EXISTING
DDC	DOUBLE DETECTOR CHECK VALVE
DFU	DRAINAGE FIXTURE UNITS
DIA	DIAMETER
DISH	DISCHARGE
DN	PIPE DOWN
DS	DOWN SPOUT W/BOOT
DST	DEEP SEAL TRAP
DWG	DRAWING
ELEC	ELECTRIC
ELEV	ELEVATION
EWT	ENTERING WATER TEMPERATURE
EX	EXISTING
F	FIRE LINE
FC	FUNNEL CONNECTION @ FD
FCO	FLOOR CLEANOUT
FCVA	FLOOR CONTROL VALVE ASSEMBLY
FD	FLOOR DRAIN
FDV	FIRE DEPT. HOSE CONNECTION
FS	FLOW SWITCH
FT	FEET
FT.HD	FEET OF HEAD
G	GAS
GA	GAUGE
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
HB	HOSE BIBB
HED	HOSE END DRAIN
HOR	HORIZONTAL
HP	HORSEPOWER
HT	HEAT TRAP
HW	HOT WATER (140°F)
HWR	HOT WATER RETURN (140°F)
HYD	HYDRAULIC
IN	INCHES
I.E.	INVERT ELEVATION
IW	INDIRECT WASTE
LOC	LIMIT OF CONTRACT
MAV	MANUAL AIR VENT
NFGH	NON-FREEZE GROUND HYDRANT
NFWH	NON-FREEZE WALL HYDRANT
NRS	NON-RISING STEM & YOKE
OHD	OPEN HUB DRAIN
O.S.&Y	OUTSIDE STEM & YOKE VALVE
P	PRESSURE
PCOND	PUMPED CONDENSATE
PD	PUMPED DISCHARGE
PH	PIPE HANGER
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSAN	PUMPED SANITARY
PSC	PUMPED STEAM CONDENSATE
RD	ROOF DRAIN
RL	RAIN LEADER
SAN, S	SANITARY
SC	STEAM CONDENSATE
SCH	SCHEDULE
SP	SPRINKLER LINE
STD	STANDARD
SW	STORM WATER
T	TEMPERATURE
TD	TRENCH DRAIN
TS	TAMPER SWITCH
TW	TEMPERED WATER
TWR	TEMPERED WATER RETURN
UP	PIPE UP
UP&DN	PIPE UP & DN
V	VENT
VB	VACUUM BREAKER
VTR	VENT THROUGH ROOF
WCO	WALL CLEANOUT
WHA	WATER HAMMER ARRESTOR
WSFU	WATER SUPPLY FIXTURE UNITS
TD	TRENCH DRAIN

NOTE:
NOT ALL ABBREVIATIONS MAY BE USED.

MAROTTA/MAIN ARCHITECTS
WWW.MAROTTAMAIN.COM

SEAL:

CONSULTANT:
ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450 HUNT VALLEY, MD 21030 410.842.8411
WWW.ALBANENGINEERING.COM
P.N. 21065

DCIU
Empowering Partnerships For Education

ADDITIONS AND RENOVATIONS TO THE
FOLCROFT TECHNICAL SCHOOL
DELAWARE COUNTY
INTERMEDIATE UNIT
70 HENDERSON BLVD.
FOLCROFT, PA 19032

ISSUE DATES
DATE: 03/17/2025
DESCRIPTION: BID SET

PROJ #: 21-DCIU-03 DRAWN BY: ALBAN

SHEET TITLE:

PLUMBING LEGEND AND GENERAL NOTES

SHEET NUMBER:

P0.1

BID SET