Request for Proposal

SCM ARCHITECTS

Date: 8/9/2023
RFP NO: **02**
Project Name: UA 310 ARKV Renovation
Project No.: 21085
Owner: University of Arkansas - Fayetteville

Contractor: Milestone Construction
Attn: Fran Baires
2002 S. 48th St, Suite A
Springdale, AR 72762

Contract Date: see file

Delivered by: E-mail

Please submit an itemized quotation for changes in the contract Sum and/or Time incidental to proposal modification to the Contract Documents described herein.

THIS IS NOT A CHANGE ORDER NOR A DIRECTION TO PROCEED WITH THE WORK DESCRIBED HERIN:

Description: (Written description of the Work)

Provide a price to rework the ducting from AHU-1, EDH changes, and electrical modifications as noted on the attached drawings. The new ducting is to be run horizontally out of the mechanical room and then in a trench running north and south as required until turning vertically. Provide steel angle supports as required at wall penetration from mechanical room. A test core may be required in the chapel to determine the thickness of the slab.

Provide credit as required for floor and wall penetrations from previously issued duct runs and removal of mechanical equipment.

Refer to attached Pettit & Pettit Engineers description sheet and drawings.

Attachments: (List attached documents that support the description)

Pettit & Pettit Cover Letter
M1.01, M2.01, M4.01, M5.01, E1.03, E2.01

By: **Scott Leonard, AIA**

CC: (Owner, Contractor)
Central File: J:\2021\21085 UA 310 Arkansas Ave Renovation\1600 Proposal Request\RFP 02 - Alternate Duct Routing\23-0809 RFP 02 - Alternate Duct Routing.docx

pettitpettit
CONSULTING ENGINEERS, INC

Established 1949

PROPOSAL REQUEST NUMBER: TWO (**2**)

TO: PROJECT MANUAL AND DRAWINGS

FOR: 310 Arkansas Ave Renovation
University of Arkansas
Fayetteville, Arkansas
Pettit & Pettit Project #21-039
SCM Architects Job #21085

DATE: August 8, 2023

Please submit an itemized quotation in accordance with the specifications for the following proposed changes in the scope of work. This is not a Change Order nor a direction to proceed with the work described herein.

PROPOSAL REQUEST ITEMS - Drawings:

A1. REFER TO SHEET M1.01 AND M2.01 FOR DUCTWORK ROUTING REVISIONS. ADDITIONALLY, EDH-1 HAS BE REVISED AND RELOCATED, EDH-2 HAS BEEN DELETED, AND CU-1 HAS BEEN RELOCATED.

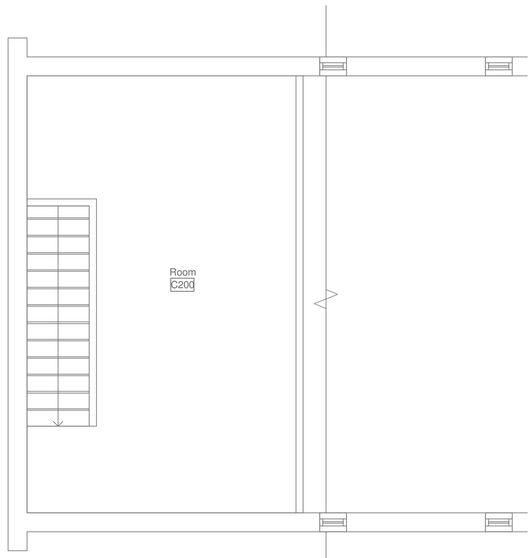
A2. REFER TO SHEET M4.01 REVISIONS TO THE DUCT HEATER SCHEDULE.

A3. REFER TO SHEET M5.01 REVISIONS TO THE DUCT HEATER CONTROLS DIAGRAM AND SEQUENCE OF OPERATIONS.

A4. REFER TO SHEET E1.03 FOR REVISIONS TO THE DUCT HEATER EDH-1 AND THE DELETION OF EDH-2. CU-1 WAS ALSO RELOCATED.

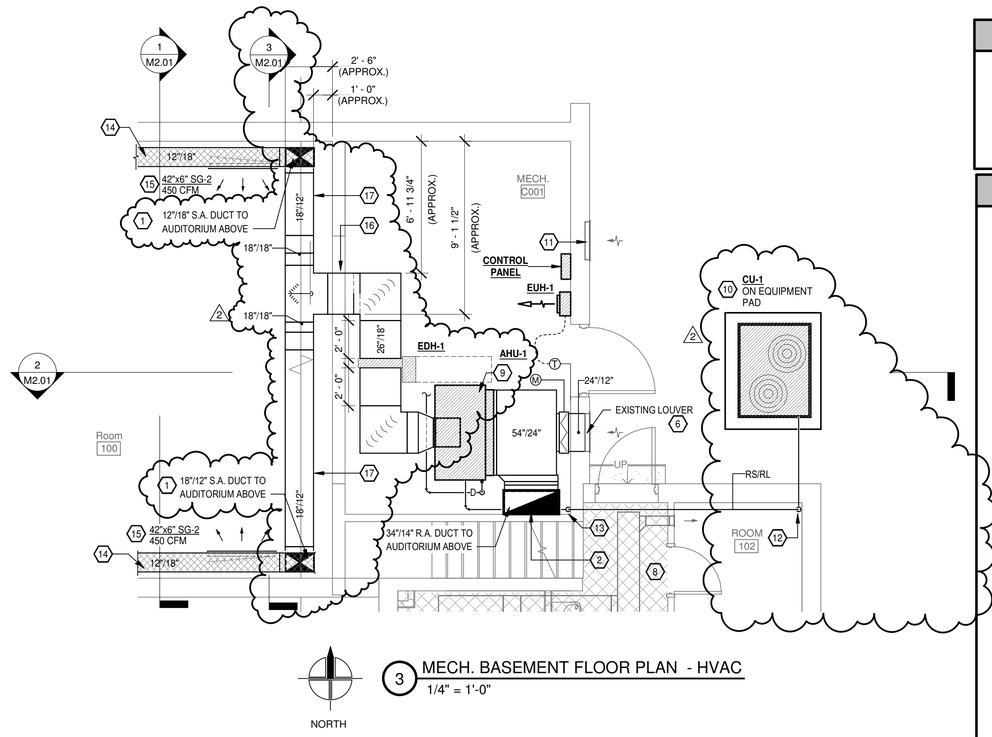
A5. REFER TO SHEET E2.01 FOR REVISIONS TO PANEL “A”. A NEW 125A/3P BREAKER SHALL BE PROVIDED FOR EDH-1. THE ORIGINAL BREAKERS FOR EDH-1 AND EDH-2 SHALL BE LABELED AS SPARE.

END OF PROPOSAL REQUEST



NORTH

2 MEZZANINE FLOOR PLAN - HVAC
1/4" = 1'-0"



NORTH

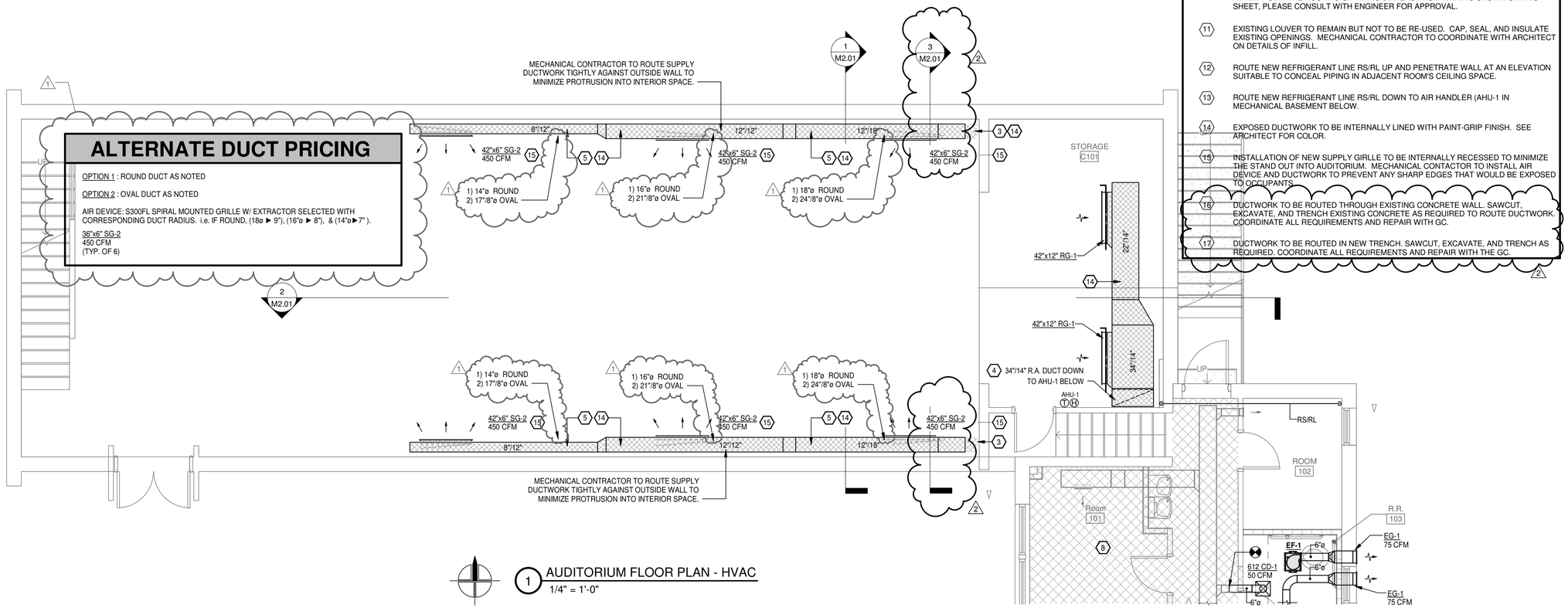
3 MECH. BASEMENT FLOOR PLAN - HVAC
1/4" = 1'-0"

HVAC GENERAL NOTES

1. ALL LIGHTER SOLID LINES REPRESENT PIPING, DUCTWORK, EQUIPMENT, ETC. TO REMAIN.
2. ALL DARKER SOLID LINES REPRESENT NEW PIPING, DUCTWORK, EQUIPMENT, ETC.
3. FIELD VERIFY EXACT SIZE AND LOCATION OF ALL EXISTING ITEMS SHOWN ON THIS PLAN THAT ARE TO BE CONNECTED TO.

HVAC KEYED NOTES - M1.01

1. ROUTE NEW 18"/12" SUPPLY AIR DUCT UP TO AUDITORIUM ABOVE. SAW CUT EXISTING FLOOR PENETRATIONS TO PROVIDE PATHWAY FOR NEW DUCT. PROVIDE GREENHECK MODEL #ODFD-150 OR APPROVED EQUAL FIRE DAMPER AT FLOOR PENETRATIONS.
2. ROUTE NEW 34"/14" RETURN AIR DUCT UP TO AUDITORIUM ABOVE. SAW CUT AS REQUIRED TO PROVIDE PATHWAY FOR NEW RETURN AIR DUCTWORK. PROVIDE GREENHECK MODEL# ODFD-150 OR APPROVED EQUAL FIRE DAMPER AT FLOOR PENETRATIONS.
3. ROUTE NEW 18"/12" SUPPLY AIR DUCT DOWN TO NEW AIR HANDLING UNIT (AHU-1) BELOW. SAW CUT EXISTING FLOOR PENETRATIONS TO PROVIDE PATHWAY FOR NEW DUCT. PROVIDE GREENHECK MODEL #ODFD-150 OR APPROVED EQUAL FIRE DAMPER AT FLOOR PENETRATIONS.
4. ROUTE NEW 34"/14" RETURN AIR TO NEW AIR HANDLING UNIT (AHU-1) BELOW. SAW CUT AS REQUIRED TO PROVIDE PATHWAY OF NEW RETURN AIR DUCTWORK. PROVIDE GREENHECK MODEL# ODFD-150 OR APPROVED EQUAL FIRE DAMPER AT FLOOR PENETRATIONS.
5. ROUTE NEW SUPPLY AIR DUCT TIGHT TO STRUCTURE. SEE DETAIL 1, SHEET M1.01.
6. ROUTE NEW 24"/12" OUTSIDE AIR DUCT TO EXISTING LOUVER. PROVIDE MOTORIZED DAMPER FOR CONTROL OF OUTSIDE AIR.
7. NEC WORKING CLEARANCE FOR ELECTRIC DUCT HEATERS. COORDINATE CLEARANCES WITH ALL TRADES. MOUNT DUCT HEATERS (EDH-1 & EDH-2) A MINIMUM OF 24" FROM DUCT TRANSITION.
8. AREA CROSS HATCHED ON FLOOR PLANS NOT IN MECHANICAL SCOPE.
9. INSTALL NEW AIR HANDLER (AHU-1) IN EXISTING MECHANICAL BASEMENT ON NEW 4" HOUSE KEEPING PAD. CONTRACTOR TO COORDINATE NEW INSTALLATION IN EXISTING SPACE WITH ALL TRADES WHILE FOLLOWING MANUFACTURER'S SPECIFCATION. MECHANICAL CONTRACTOR TO ROUTE NEW REFRIGERANT PIPING FROM OUTDOOR CONDENSIING UNIT (RC-1) TO AIR HANDLER (AHU-1) FOLLOWING THE MANUFACTURER'S INSTRUCTION CLOESLY. IF AT ANY POINT THE ROUTING OF PIPING DIFFERS FROM WHAT IS SHOWN ON THIS SHEET, PLEASE CONSULT WITH ENGINEER FOR APPROVAL.
10. INSTALL NEW OUTDOOR CONDENSING UNIT (CU-1) ON NEW EQUIPMENT PAD. MECHANICAL CONTRACTOR TO COORDINATE NEW INSTALLATION WITH ALL TRADES WHILE FOLLOWING MANUFACTURER'S SPECIFICATIONS. MECHANICAL CONTRACTOR TO ROUTE NEW REFRIGERANT PIPING FROM OUTDOOR CONDENSING UNIT (CU-1) TO AIR HANDLER (AHU-1) FOLLOWING THE MANUFACTURER'S INSTRUCTION CLOESLY. IF AT ANY POINT THE ROUTING OF PIPING DIFFERS FROM WHAT IS SHOWN ON THIS SHEET, PLEASE CONSULT WITH ENGINEER FOR APPROVAL.
11. EXISTING LOUVER TO REMAIN BUT NOT TO BE RE-USED. CAP, SEAL, AND INSULATE EXISTING OPENINGS. MECHANICAL CONTRACTOR TO COORDINATE WITH ARCHITECT ON DETAILS OF INFILL.
12. ROUTE NEW REFRIGERANT LINE RS/RL UP AND PENETRATE WALL AT AN ELEVATION SUITABLE TO CONCEAL PIPING IN ADJACENT ROOM'S CEILING SPACE.
13. ROUTE NEW REFRIGERANT LINE RS/RL DOWN TO AIR HANDLER (AHU-1 IN MECHANICAL BASEMENT BELOW.
14. EXPOSED DUCTWORK TO BE INTERNALLY LINED WITH PAINT-GRIP FINISH. SEE ARCHITECT FOR COLOR.
15. INSTALLATION OF NEW SUPPLY GIRLLE TO BE INTERNALLY RECESSED TO MINIMIZE THE STAND OUT INTO AUDITORIUM. MECHANICAL CONTACTOR TO INSTALL AIR DEVICE AND DUCTWORK TO PREVENT ANY SHARP EDGES THAT WOULD BE EXPOSED TO OCCUPANTS.
16. DUCTWORK TO BE ROUTED THROUGH EXISTING CONCRETE WALL. SAWCUT, EXCAVATE, AND TRENCH EXISTING CONCRETE AS REQUIRED TO ROUTE DUCTWORK. COORDINATE ALL REQUIREMENTS AND REPAIR WITH GC.
17. DUCTWORK TO BE ROUTED IN NEW TRENCH. SAWCUT, EXCAVATE, AND TRENCH AS REQUIRED. COORDINATE ALL REQUIREMENTS AND REPAIR WITH THE GC.



NORTH

1 AUDITORIUM FLOOR PLAN - HVAC
1/4" = 1'-0"

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CORPORATE REGISTRATION PETTIT & PETTIT CONSULTING ENGINEERS, INC. No. 78 ARKANSAS ENGINEER

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310 Arkansas Avenue
Fayetteville, AR 72701

REVISIONS:		
1	ASI 01	09/13/22
2	PR 02	08/02/23

PROJECT NO.
21085
DATE:
January 16, 2023

AUDITORIUM FLOOR PLANS - HVAC

M1.01

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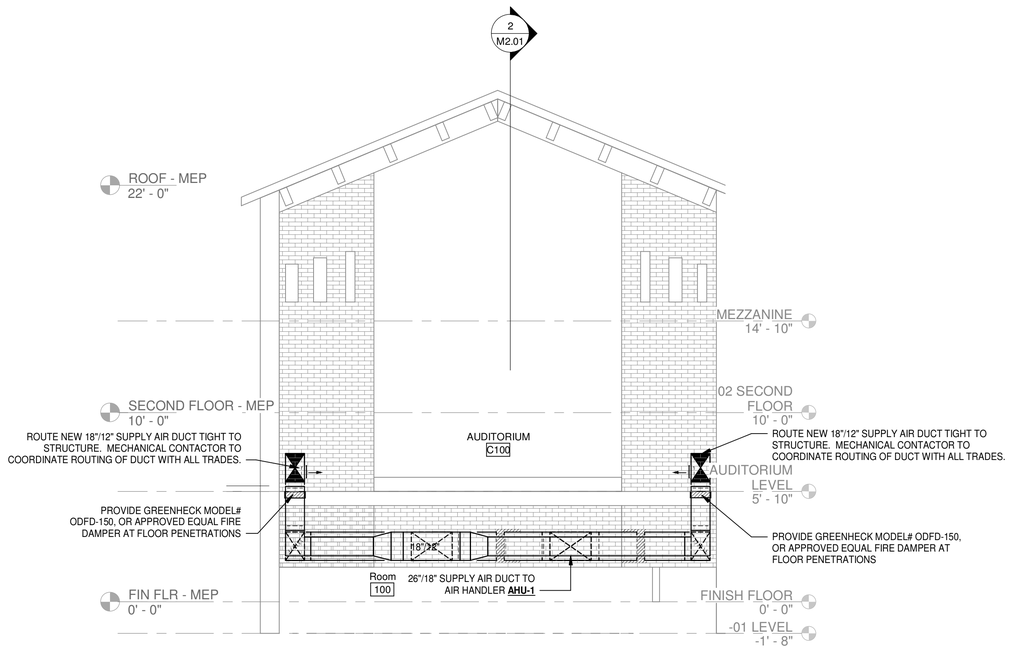
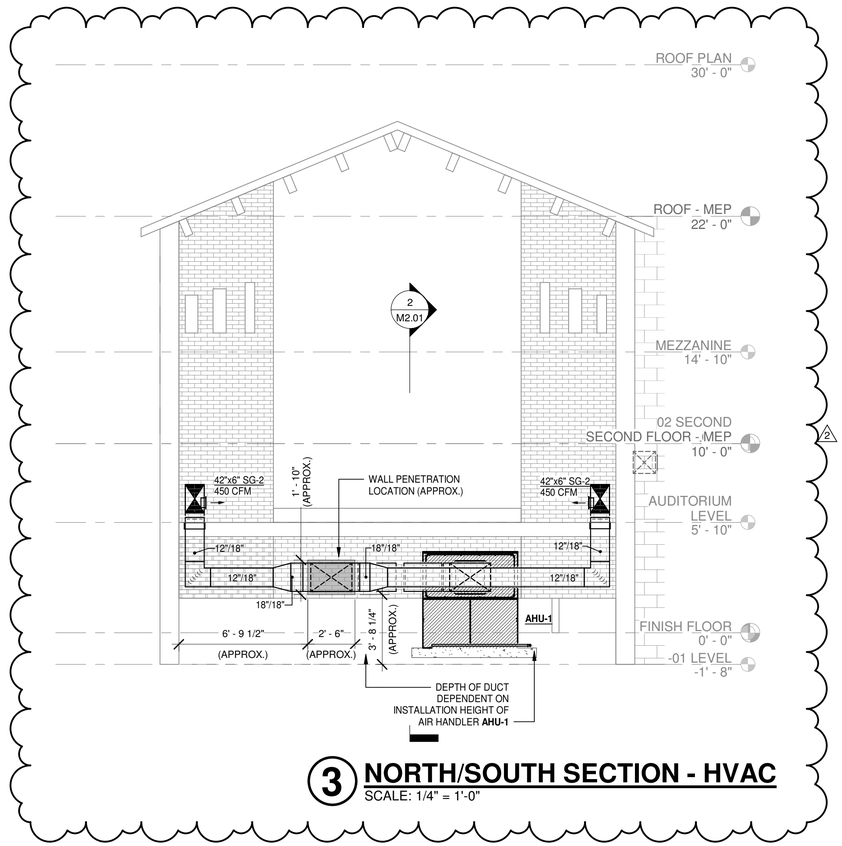


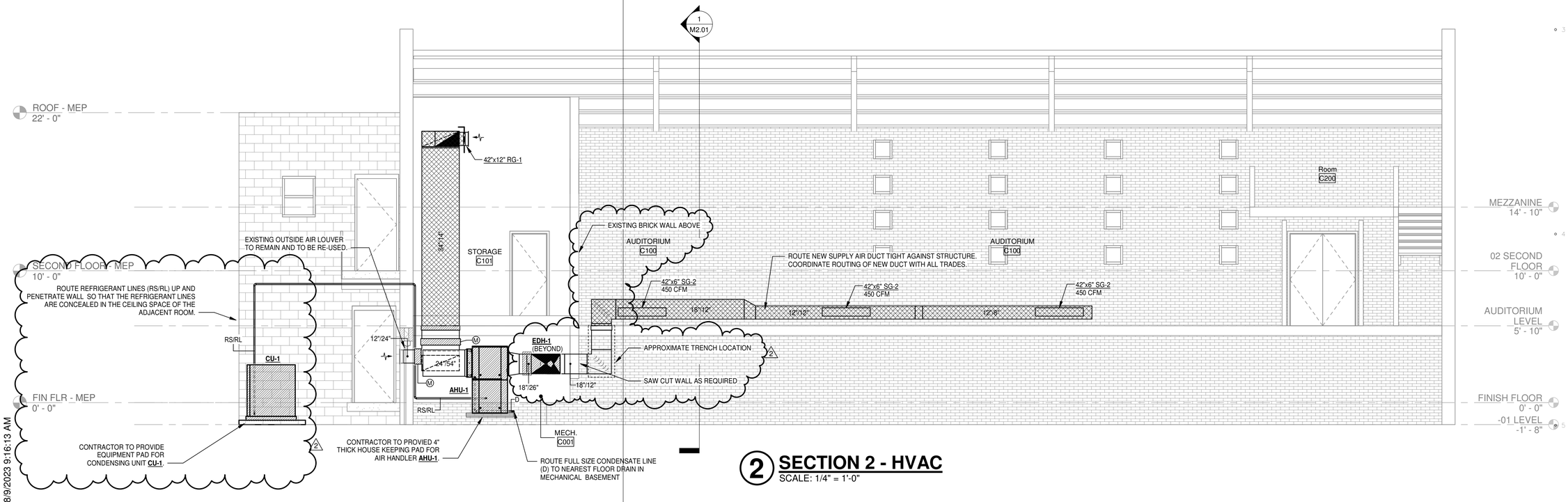
1 SECTION 1 - HVAC

SCALE: 1/4" = 1'-0"



3 NORTH/SOUTH SECTION - HVAC

SCALE: 1/4" = 1'-0"



2 SECTION 2 - HVAC

SCALE: 1/4" = 1'-0"

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REVISIONS:

2	PR 02	08/02/23

PROJECT NO.
21085
DATE:
January 16, 2023

HVAC SECTIONS

M2.01

PACKAGED INDOOR AIR HANDLING UNIT SCHEDULE (HEAT PUMP)

DESIG.	MFR/MDL	TYPE	CFM	OSA	ESP/ TSP	COOLING (NET CAPACITY SHOWN)						HEAT PUMP HEATING				ELECTRIC HEAT (DUCT MOUNT)						HOT GAS RE-HEAT			EVAPORATOR FAN				ELECTRICAL DATA (UNIT)			WEIGHT	REMARKS
						TOTAL	SENS	EAT	LAT(COIL)	AMBIENT	RETURN	47° AMB.	17° AMB.	TEMP	EAT	TYPE	CONTROL	TEMP	EAT/LAT	KW	DUCT	EAT	LAT	MBH	HP	DRIVE	NO	FLA	VOLT	MCA	MAX FUSE		
AHU-1	ABOVE AIR TECHNOLOGIES / VKE-096D-3-HGHP0-00-00-1D-00-00-FR-B	HORZ. INDOOR AIR HANDLER	2,700	540 CFM	1.00"	102.8 MBH	71.2 MBH	78.2°F d.b. 65.8°F w.b.	53.9°F d.b. 52.9°F w.b.	91.0°F d.b. 79.0°F w.b.	75.0°F d.b. 63.0°F w.b.	92.5 MBH EAT: 57.4 LAT: 88.9	51.4 MBH EAT: 51.4 LAT: 68.9	0°F OSA 70°F ISA	---°F	EDH-1 & EDH-2	SCR	0°F OSA 70°F ISA	---°F d.b. ---°F w.b.	17 EA.	12"/18"	53.9°F d.b. 52.9°F w.b.	72.1°F d.b. 59.9°F w.b.	53.2	1.5	BELT	1	5.2	208 3ø	39.8	50	1,050	PROVIDED WITH STAINLESS STEEL DRAIN PAN W/ OVERFLOW SWITCH, 2" MERV 13 FILTERS, INTEGRATED CONTROLLER W/ CAPABILITIES FOR EXTERNAL ELECTRIC DUCT HEATER CONTROL & FACTORY MOUNTED DISCONNECT.

AIR COOLED CONDENSER SCHEDULE

DESIG.	MFR/MDL	TYPE	WEIGHT	SERVES	COOLING			MOTOR DATA						ELECTRICAL			REMARKS
					T(MBH)	S(MBH)	AMBIENT	COMPRESSOR			CONDENSER FAN			VOLTS/PH.	MCA	MOCP	
								NO	LRA	RLA	HP	DRIVE	NO	FLA				
CU-1	ABOVE AIR TECHNOLOGIES / XP4-096D-1-00-00-00-VF	OUTDOOR PROP FAN	885 LBS.	AHU-1	122.5	---	95°	2	(1) 110.0 (1) 98.0	(1) 16.1 (1) 14.5	3	AXIAL	4	2.0	208 v / 1ø	10.0	15	PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.

AIR DEVICE SCHEDULE

DESIG.	MFR./MDL.	TYPE	FACE SIZE	FINISH	FREE AREA	ACCESS.	REMARKS
CD-1	TITUS TMS	LOUVER FACE CEILING SUPPLY	AS NOTED	COORDINATE WITH ARCHITECT	---	OPPOSED BLADE DAMPER	PROVIDE W/ 3/4" SPACED BLADES, 22.5° DEFLECTION, FRONT BLADES PARALLEL TO LONG DIMENSION .
SG-1	TITUS 300RL	SIDEWALL SUPPLY GRILLE	AS NOTED	COORDINATE WITH ARCHITECT	---	OPPOSED BLADE DAMPER	PROVIDE W/ 3/4" SPACED BLADES, 22.5° DEFLECTION, FRONT BLADES PARALLEL TO LONG DIMENSION .
*SG-2	TITUS 300RL- HD	SIDEWALL SUPPLY GRILLE	AS NOTED	COORDINATE WITH ARCHITECT	---	OPPOSED BLADE DAMPER	PROVIDE W/ 3/4" SPACED BLADES, 22.5° DEFLECTION, FRONT BLADES PARALLEL TO LONG DIMENSION & EXTRACTOR .
RG-1	TITUS 350RL	SIDEWALL RETURN GRILLE	AS NOTED	COORDINATE WITH ARCHITECT	---	OPPOSED BLADE DAMPER	PROVIDE W/ 3/4" SPACED BLADES, 22.5° DEFLECTION, FRONT BLADES PARALLEL TO LONG DIMENSION .

* : SEE ALTERNATE DUCT PRICING NOTE ON SHEET M1.01 FOR CORD. OF CORRECT AIR DEVICES.

DUCT HEATER SCHEDULE

DESIG.	MFR/MDL	SERVES	LOCAT	TYPE	CFM	MIN. CFM	MIN. FPM	HEATING		ELECTRICAL DATA		REMARKS
								KW	BTU/HR	AMPS	VOLT/ PHASE	
EDH-1	GREENHECK / IDHE	AHU-1	MECH. ROOM	SLIP IN DUCT MOUNTED	2,700	1,196 CFM AT 60°F	368 FPM AT 60°F	34	116,012	96	208/3ø	PROVIDE WITH SCR CONTROL, SERVICE DISCONNECT, PILOT LIGHT, AIRFLOW SWITCH, AND CONTROL TRANSFORMER. DUCT HEATER MOUNTS IN 26" x 18" DUCT
EDH-2	NOT USED											

UNIT HEATER SCHEDULE

DESIG.	MFR/MDL	SERVES	LOCAT	TYPE	CFM	HEATING		BLOWER		ELECTRICAL		REMARKS
						WATTS	BTU / HOUR	HP	VOLT / PHASE	AMPS	VOLT / PHASE	
EUH-1	MARKEL / J3422T	MECH. BASEMENT	MECH. BASEMENT	WALL HEATER	---	2,000	6,826	---	---	5.6	208 / 3ø	PROVIDE WITH MOUNTING KIT FOR IN-WALL INSTALLATION (WALL BOX: 3420) AND UNIT DISCONNECT.

EXHAUST FAN SCHEDULE

DESIG.	MFR/MDL	SERVES	LOCAT.	TYPE	FAN DATA							MOTOR DATA				REMARKS
					CFM	S.P.	RPM	DRIVE	TYPE	DIA.	SONES	RPM	BHP	HP	VOLT/PH	
EF-1	COOK / GC/GCVF GC-146	RR 103	CEILING MOUNT	INLINE	75	0.35"	900	DIRECT	CENTR.	--	1.5	1,100	---	35 W	120 / 1ø	PROVIDE W/ WALL SLEEVE , BACKDRAFT DAMPER, FAN SPEED CONTROL, BIRD SCREEN, AND DISCONNECT SWITCH.
EF-2	COOK / GC/GCVF GC-146	RR 103	CELING MOUNT	INLINE	75	0.35"	900	DIRECT	CENTR.	--	1.5	1,100	---	35 W	120 / 1ø	PROVIDE W/ WALL SLEEVE , BACKDRAFT DAMPER, FAN SPEED CONTROL, BIRD SCREEN, AND DISCONNECT SWITCH.

DUCTWORK LEGEND

- CEILING DIFFUSER (CD)
- RETURN AIR GRILLE (RA)
- EXHAUST REGISTER (ER)
- 624 CD-1 / 100 CFM — SIZE - DESIGNATION / CUBIC FEET PER MINUTE
- FLEXIBLE DUCT CONNECTOR
- TURNING VANES
- SPLITTER DAMPER (TEE)
- INTERNALLY INSULATED DUCT
- EXTRACTOR
- M.D. — MANUAL DAMPER
- F.D. — FIRE DAMPER AND ACCESS DOOR (SMOKE DAMPER S.D. SIMILAR)
- CD — CONDENSATE DRAIN PIPING
- OD — OVERFLOW CONDENSATE DRAIN PIPING
- RS/RL — REFRIGERANT SUCTION AND LIQUID PIPES
- ϕ — DIAMETER
- T5 — THERMOSTAT (WITH UNIT NUMBER)
- 1 / M-1 DETAIL; 2 / M-2 SECTION — TOP NUMBER REFERS TO THE DETAIL NUMBER. BOTTOM NUMBER REFERS TO THE SHEET WHERE DETAIL IS SHOWN

HVAC GENERAL NOTES

1. DUE TO THE SMALL SCALE OF THIS DRAWING, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, AND ACCESSORIES WHICH MAY BE REQUIRED. THE CONTRACTOR SHALL INVESTIGATE THE STRUCTURAL AND FINISH CONDITIONS AFFECTING THE WORK AND SHALL COORDINATE AND ARRANGE HIS WORK ACCORDINGLY.
2. ROUND BRANCH DUCT RUNOUTS SHALL BE SAME SIZE AS DIFFUSER THROAT UNLESS OTHERWISE NOTED.
3. FLEXIBLE DUCT MAY BE USED FOR FINAL CONNECTIONS TO DIFFUSERS. A MAXIMUM LENGTH OF THREE FEET (3') SHALL BE USED. A HARD 90° ELBOW MUST BE USED WHERE DUCT TURNS DOWN ABOVE DIFFUSER.
4. ALL CEILING-MOUNTED SUPPLY DIFFUSERS SHALL HAVE FOUR-WAY (4-WAY) PATTERN UNLESS OTHERWISE INDICATED.
5. WHERE MANUAL DAMPERS ARE INSTALLED IN EXTERNALLY INSULATED DUCTWORK, PROVIDE STAND-OFF BRACKET TO PREVENT COMPRESSION OF INSULATION BY DAMPER OPERATOR HANDLE.
6. PROVIDE TURNING VANES IN ALL 90-DEGREE MITERED ELBOWS.
7. PROVIDE SLEEVES THROUGH WALLS AND FLOORS. SEAL EXCESS OPENING WITH WATER-PROOF SEALANT. COORDINATE LOCATIONS AND SIZES OF SLEEVES WITH GENERAL CONTRACTOR. SLEEVES SHALL PROVIDE A MAXIMUM OF 1" CLEARANCE BETWEEN DUCT OR PIPE AND SLEEVE. SEAL PENETRATION IN FIRE/SMOKE RATED WALLS AND FLOOR WITH AN APPROVED FIRE/SMOKE BLOCK SEALANT.
8. EXTERNALLY INSULATE SUPPLY, RETURN, RELIEF, AND OUTSIDE AIR DUCTWORK UNLESS NOTED OTHERWISE.
9. EXHAUST DUCTWORK SHALL BE UN-INSULATED, UNLESS NOTED OTHERWISE
10. EXTERNALLY INSULATE LOW-VELOCITY ROUND RUNOUT DUCTWORK
11. DUAL WALL DUCTWORK SHALL BE 1" THICK WITH INSULATION BETWEEN WALLS.
12. INSULATE THE TOP OF ALL SUPPLY AIR DIFFUSERS WITH A MINIMUM OF 1/2" THICK FIBERGLASS DUCT WRAP.
13. RUN COOLING COIL CONDENSATE DRAINS FULL SIZE TO NEAREST FLOOR OR ROOF DRAIN.
14. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS OF FIRE AND SMOKE RATED PARTITIONS.
15. COORDINATE LOCATION OF DUCTS AND DIFFUSERS WITH STRUCTURAL FRAMING MEMBERS. OFFSET DUCTS AS REQUIRED TO CLEAR STRUCTURAL MEMBERS.
16. COORDINATE LOCATIONS AND ELEVATION OF DUCT RUNS WITH PLUMBING, SPRINKLER, AND ELECTRICAL CONTRACTORS.
17. COORDINATE MAKE-UP WATER AND GAS REQUIREMENTS WITH PLUMBING CONTRACTOR.
18. PROVIDE ACCESS DOORS FOR ALL FIRE DAMPERS. PROVIDE CEILING ACCESS DOORS FOR DAMPERS ABOVE GYPSUM BOARD CEILINGS.
19. PAINT DUCTWORK BLACK THAT MAY BE VISIBLE ABOVE PARTIAL CEILINGS. COORDINATE PAINTING OF DUCTWORK WITH ARCHITECT.
20. COORDINATE CEILING DIFFUSER LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS.

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STATE OF ARKANSAS JAMES W. PETTIT REGISTERED PROFESSIONAL ENGINEER 8166 JAMES W. PETTIT 1-4-23

CORPORATE REGISTRATION PETTIT & PETTIT CONSULTING ENGINEERS, INC. No. 78 ARKANSAS ENGINEER

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310 ARKANSAS AVE RENOVATION
UNIVERSITY OF ARKANSAS

310 Arkansas Avenue
Fayetteville, AR 72701

REVISIONS:

2	PR 02	08/02/23

PROJECT NO. 21085
DATE: January 16, 2023

HVAC SCHEDULES

M4.01

SCM ARCHITECTS P.L.L.C.

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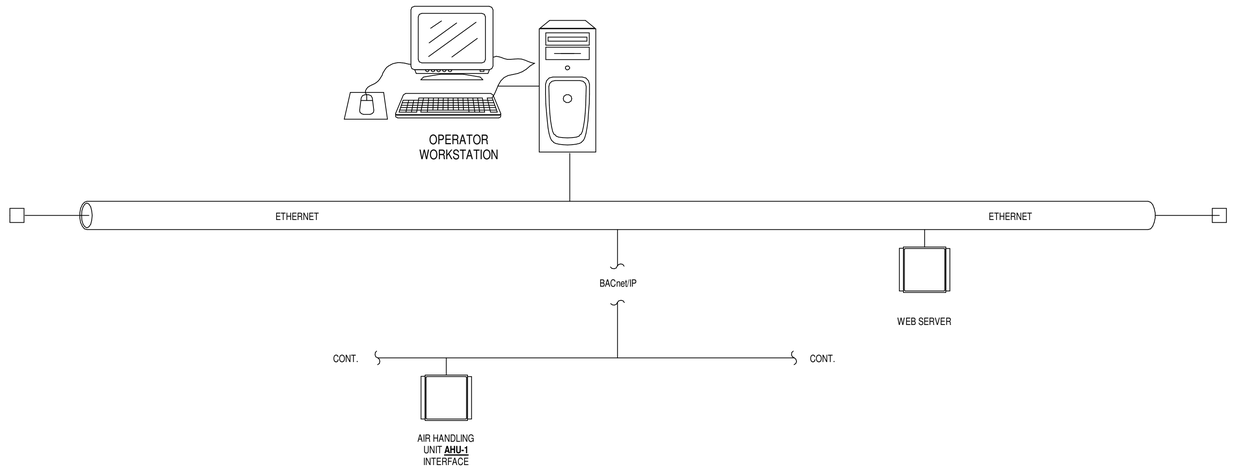
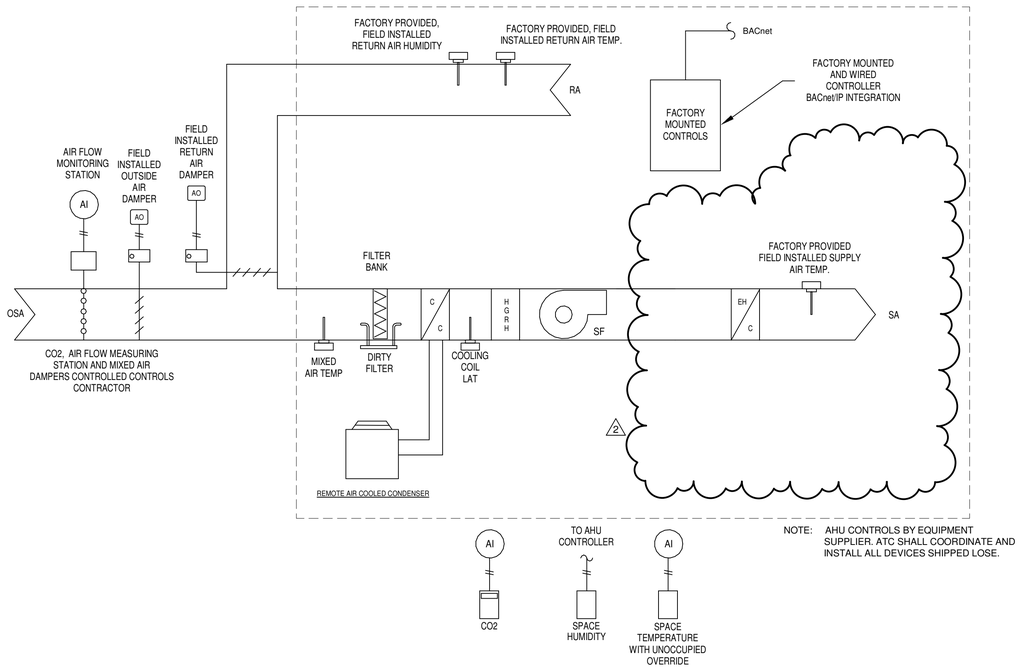


1 SYSTEM ARCHITECTURE
SCALE NTS

HVAC CONTROLS NOTE

ALL CONTROLS SCOPE IS FOR INFORMATION ONLY AND TO BE PERFORMED (BY OTHERS)



NOTE: AHU CONTROLS BY EQUIPMENT SUPPLIER. ATC SHALL COORDINATE AND INSTALL ALL DEVICES SHIPPED LOSE.

2 AIR HANDLING UNIT (AHU-1) INTEGRATION CONTROL DIAGRAM
SCALE NTS

SEQUENCE OF OPERATIONS (AHU-1 & CU-1)

UNIT OPERATION
UNIT OPERATION IS INITIATED WHEN ALL POINTS ARE IN THEIR RUN POSITIONS.

SYSTEM ENABLE: THE SYSTEM ENABLE IS CONTROLLED AT THE UNIT'S DISPLAY TERMINAL, WITHIN THE SYSTEM ENABLE MENU.
REMOTE STOP/START: REMOTE STOP/START NC CONTACTS ARE PROVIDED ON ALL UNITS AND SHIP FROM THE FACTORY JUMPERED FOR CONTINUOUS OPERATION.
BMS CONTROL: THE UNIT IS PROVIDED WITH AN OPTIONAL POINT THAT MAY BE WRITTEN BY A BMS TO INDEX UNIT OPERATION.
SCHEDULE CONTROL: THE UNIT IS PROVIDED WITH A LOCAL SCHEDULE THAT MAY BE SET TO OPERATE THE UNIT IN OCCUPIED OR UNOCCUPIED MODES BASED ON ITS TIME CLOCK.

FAN CONTROL
WHEN THE UNIT IS INDEXED FOR OPERATION AND IN ITS OCCUPIED MODE, THE SUPPLY FAN SHALL BE ENERGIZED AFTER A 30 SEC. (ADJ.) DELAY TO ALLOW FOR OPTIONAL CONTROL DAMPER ACTUATION. THE FAN SHALL RUN CONTINUOUSLY. AFTER AN ADDITIONAL 15 SEC. (ADJ.) DELAY TO ALLOW FOR AIR PROVING, THE UNIT SHALL OPERATE AS DESCRIBED HEREIN.

SYSTEM MODE
THE UNIT PROVIDES AUTOMATIC CHANGE-OVER BETWEEN COOLING, HEATING, AND DEHUMIDIFICATION. THE COOLING AND HEATING SET POINTS ARE SEPARATED BY A DEAD BAND 5°F (ADJ.) TO MINIMIZE UNIT CYCLING AND PREVENT SIMULTANEOUS COOLING AND HEATING. THE DEHUMIDIFICATION SET POINTS ARE ALSO SEPARATED BY A DEAD BAND 10% (ADJ.) .

COOLING OPERATION
ON A RISE IN SPACE TEMPERATURE BY 1°F ABOVE THE COOLING SET POINT 72°F (ADJ.), THE UNIT SHALL ENERGIZE ITS FIRST COMPRESSOR STAGE. THE FIRST COMPRESSOR SHALL ENERGIZE AT 100% AND MODULATE TO MEET THE SPACE SET POINT. FOR DUAL CIRCUIT UNITS, ON A RISE IN SPACE TEMPERATURE BY AN ADDITIONAL 1°F, AND A MIN. DELAY OF 3 MIN., THE SECOND COMPRESSOR STAGE SHALL ENERGIZE.

ON A FALL IN SPACE TEMPERATURE, THE SECOND COMPRESSOR STAGE SHALL DE-ENERGIZE. ON A CONTINUED FALL IN SPACE TEMPERATURE, THE FIRST COMPRESSOR STAGE SHALL BE DE-ENERGIZED.

ALL COMPRESSORS ARE SUBJECT TO A MIN. RUN TIME OF 3 MINUTES AND A MIN. OFF TIME OF 3 MINUTES TO PREVENT SHORT CYCLING.

DEHUMIDIFICATION OPERATION
IF THE UNIT IS NOT OPERATING IN ITS COOLING OR HEATING MODE AND ON A RISE IN SPACE HUMIDITY ABOVE SET POINTS 55% RH (ADJ.) BY 1% RH, THE UNIT SHALL ENTER IT'S DEHUMIDIFICATION MODE. THE UNIT SHALL ENERGIZE ITS FIRST COMPRESSOR. THE FIRST COMPRESSOR SHALL ENERGIZE AT 100% AND MODULATE TO MEET THE SPACE SET POINT.

ON A FALL IN SPACE HUMIDITY, THE FIRST COMPRESSOR SHALL BE DE-ENERGIZED.

REHEAT OPERATION
WHEN THE UNIT IS IN ITS DEHUMIDIFICATION MODE, REHEAT IS AVAILABLE TO PREVENT OVERCOOLING OF THE SPACE`. THE HOT GAS REHEAT COIL IS THE FIRST STAGE OF REHEAT. ADDITIONAL ELECTRIC DUCT HEATER **EDH-1** SHALL BE ENERGIZED TO MAINTAIN THE HEATING SET POINT. 2

HEATING OPERATION
ON A FALL IN SPACE TEMPERATURE BY 1°F BELOW THE HEATING SET POINT OF 70°F (ADJ.), THE ELECTRIC DUCT HEATERS **EDH-1** SHALL MODULATE TO MEET THE SPACE SET POINT. ON A RISE IN SPACE TEMPERATURE, THE ELECTRIC DUCT HEATERS **EDH-1** SHALL MODULATE TO MAINTAIN SPACE SET POINT. ON A CONTINUED RISE IN SPACE TEMPERATURE, THE ELECTRIC DUCT HEATERS SHALL BE DE-ENERGIZED. 2

HEAT PUMP OPERATION
THE HEAT PUMP OPERATION STAGE SHALL SUPERSEDE THE OTHER HEATING STAGES IN THEIR OPERATIONAL ORDER WHERE CONDITIONS ALLOW.

ON A FALL IN SPACE TEMPERATURE BY 1°F BELOW THE ACTIVE SUPPLY AIR SET POINT, THE UNIT SHALL ENERGIZE ITS FIRST COMPRESSOR STAGE. THE FIRST COMPRESS SHALL ENERGIZE AT 100% AND MODULATE TO MEET THE SPACE SET POINT. ON A FALL IN SPACE TEMPERATURE BY AN ADDITIONAL 1°F, AND A MINIMUM DELAY OF 3 MINUTES, THE SECOND HEAT STAGE SHALL ENERGIZE. ON THE CONTINUED FALL IN SPACE TEMPERATURE THE ELECTRIC DUCT HEATERS SHALL BE ENABLED AS DESCRIBED IN THE HEATING OPERATION SEQUENCE ABOVE.

ON A RISE IN SPACE TEMPERATURE, THE SECOND COMPRESSOR STAGE SHALL DE-ENERGIZE. ON A CONTINUED RISE IN MIXED AIR TEMPERATURE, THE FIRST COMPRESSOR STAGE SHALL DE-ENERGIZE

UNOCCUPIED OPERATION
IF THE UNIT UTILIZES THE SYSTEM SCHEDULE, THEN DURING UNOCCUPIED HOURS THE FAN SHALL BE DE-ENERGIZED. IF THE SPACE TEMPERATURE FALL BELOW THE UNOCCUPIED HEAT SET POINT 60°F (ADJ.) BY 1°F OR RISES ABOVE THE UNOCCUPIED COOLING SET POINT 80°F (ADJ.) BY 1°F, THE FAN SHALL ENERGIZE AND THE UNIT SHALL OPERATE AS DESCRIBED HEREIN. ON SATISFACTION UNOCCUPIED SET POINT, THE UNIT SHALL DE-ENERGIZE THE FAN.

SYSTEM ALARMS
AIR PROVING: A DIFFERENTIAL PRESSURE SWITCH OR CURRENT SENSING SWITCH CLOSES TO CONFIRM AIRFLOW PRIOR TO THE ACTIVATION OF OTHER MECHANICAL COMPONENTS. IF THE SWITCH DOESN'T CLOSE AFTER AND ADJ. TIME DELAY OR OPENS DURING UNIT OPERATION, THE UNIT SHALL LOCK-OUT OPERATION AND ENUNCIATE AN ALARM.

DIRTY FILTER: AN ADJ. DIFFERENTIAL PRESSURE SWITCH SHALL OPEN WHEN THE PRESSURE DROPS ACROSS THE FILTER EXCEED THE DESIRED PRESSURE DROP AND ENUNCIATES AN ALARM.

CONDENSATE ALARM: A CONDENSATE PAN SWITCH CONNECTED TO THE PAN INDICATED THE EVENT OF A HIGH WATER LEVEL STATUS. ON A HIGH CONDENSATE CONDITION, THE CIRCUIT WILL OPEN AND SHUT DOWN ALL MECHANICAL COOLING OR LOCK OUT UNIT OPERATION AND ENUNCIATE AN ALARM.

LIFE SAFETY: A DUCT MOUNTED SMOKE DETECTOR SHALL OPEN A RELAY AND BREAK CONTROL POWER TO THE MICROPROCESSOR. UNIT OPERATION SHALL CEASE. THE LIFE SAFETY ALARM SHALL BE ROUTED THROUGH THE CONTROLLER TO ENUNCIATE AN ALARM AND SIGNAL THE BMS.

OUTSIDE AIR CONTROL
SPACE CO2 LEVELS SHALL BE MONITORED. IF SPACE CO2 EXCEEDS 1,100 PPM THE OUTSIDE AIR DAMPER SHALL BE MODULATED LINEARLY TO THE MAX OSA BASED UPON DEVIATION FROM CO2 SETPOINT UNTIL SATISFACTORY SPACE CO2 LEVELS ARE REACHED.

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21085
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HVAC CONTROLS

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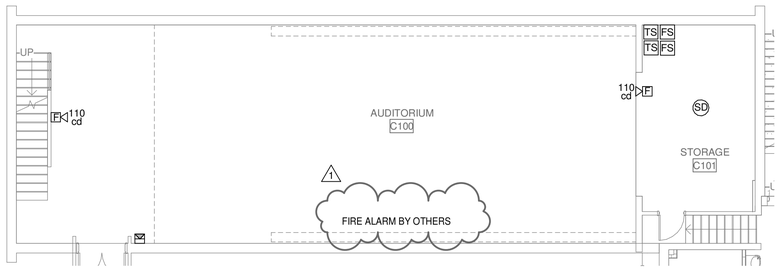

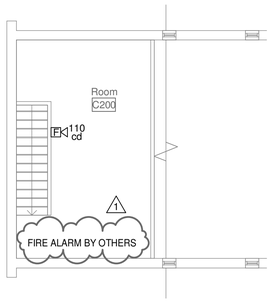

ELECTRICAL SYSTEMS KEYED NOTES

1. PROVIDE POWER TO ABOVE CEILING JUNCTION BOX FOR AUTOMATIC FAUCETS. LOW VOLTAGE TRANSFORMER SHALL BE PROVIDED BY PLUMBING CONTRACTOR AND INSTALLED BY ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR LOW VOLTAGE WIRING AND FINAL CONNECTION AT AUTOMATIC FIXTURES.

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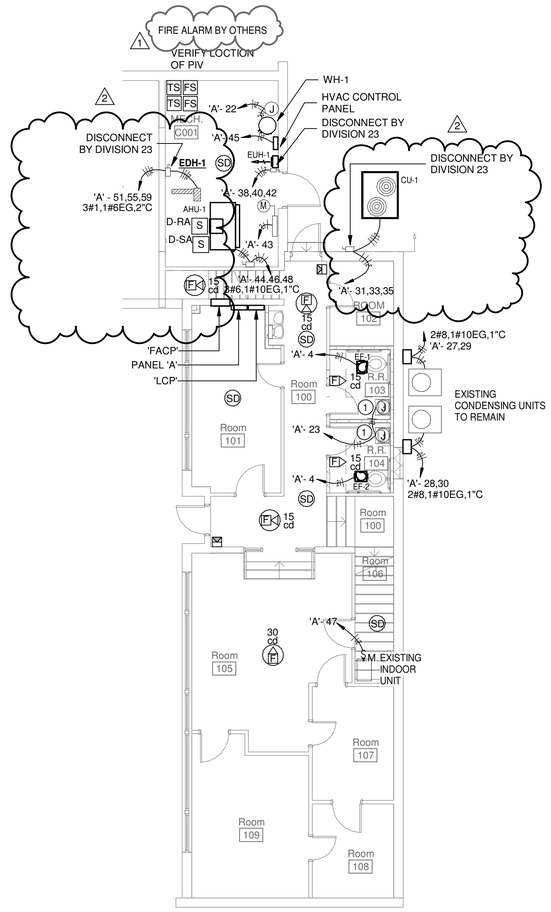
NORTH

1 AUDITORIUM FLOOR PLAN - SYSTEMS
1/8" = 1'-0"

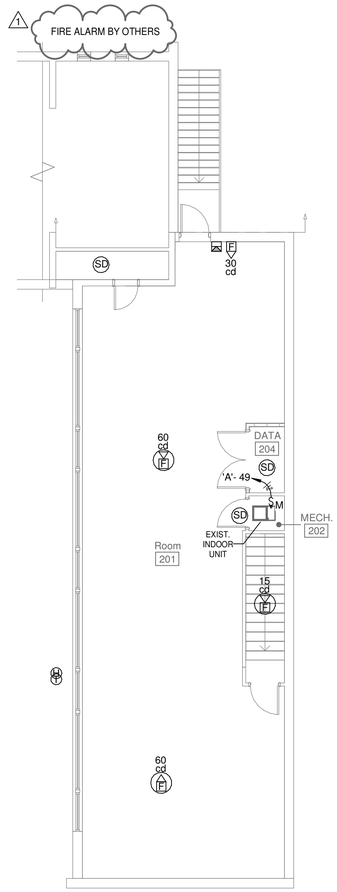


NORTH

3 CLASSROOM WING FIRST FLOOR PLAN - SYSTEMS
1/8" = 1'-0"

NORTH

2 MEZZANINE FLOOR PLAN - SYSTEMS
1/8" = 1'-0"



NORTH

4 CLASSROOM WING SECOND FLOOR PLAN - SYSTEMS
1/8" = 1'-0"

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FLOOR PLANS - SYSTEMS

E1.03

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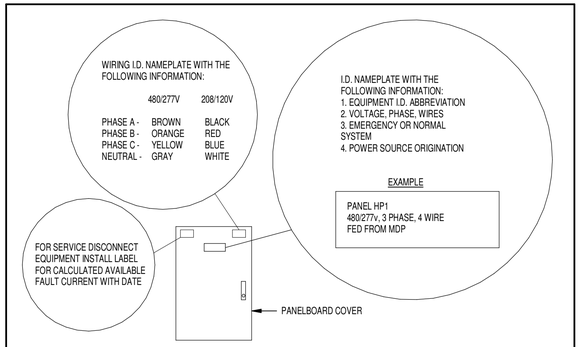
LIGHT FIXTURE SCHEDULE

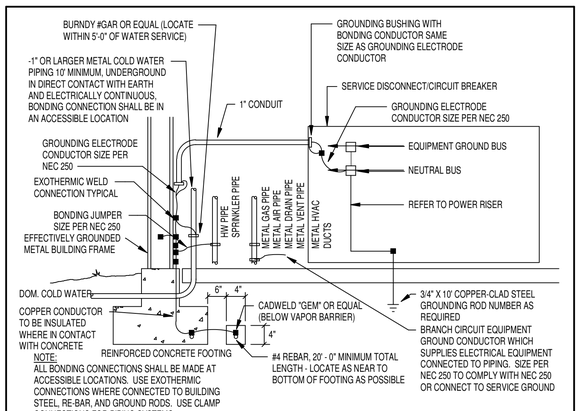
TYPE MARK	MANUFACTURER	MODEL	ELECTRICAL DATA	DESCRIPTION
A	COOPER	CPX 2X2 5000LM 80CRI 40K XXX MIN10 ZT MVOLT	120 V/1-39 VA	2X2 LED FLAT PANEL
A/E	COOPER	CPX 2X2 5000LM 80CRI 40K XXX MIN10 ZT MVOLT-E10WLCP	120 V/1-39 VA	2X2 LED FLAT PANEL - EM BATT
B	ACUITY	LDN6 AL02 SWW1 L06 XX LD MVOLT 90CRI	120 V/1-25 VA	6" DOWNLIGHT
B/E	ACUITY	LDN6 AL02 SWW1 L06 XX LD MVOLT 90CRI E10WCP	120 V/1-25 VA	6" DOWNLIGHT - EM BATT
C1	ACUITY	S1LS LXX 23" FT MSLX 90CRI 40K 1000LMF MINI EGLD MVOLT XXX ZT	120 V/1-19 VA	23' LED DIRECT WALL
C/E	ACUITY	S2LWD 12FT MSL4/MSL8 90CRI 40K 1000LMF MINI EGLD MVOLT XXX ZT	120 V/1-19 VA	SLOT 2 LED DIRECT WALL
D1	ACUITY	ZL1N L48 3000LM FST MVOLT 40K 90CRI XXX XX	120 V/1-25 VA	4' STRIP LIGHT
E	ACUITY	WL4 20L MVOLT LF840	120 V/1-0 VA	WALL BRACKET AND SURFACE MOUNT LED
E/E	ACUITY	WL4 20L MVOLT LF840 - NL - EM	120 V/1-0 VA	WALL BRACKET AND SURFACE MOUNT LED - EM BATT
F	BEGA	TBD	120 V/1-30 VA	EXTERIOR WALL PACK - EM BATT
X	ACUITY	EDG-X-1-R	120 V/1-3 VA	LED CEILING MOUNTED EXIT LIGHT.
X1	ACUITY	ECBR-LED-M6	120 V/1-0 VA	WALL MOUNTED EXIT COMBO LIGHT



PANEL IDENTIFICATION NOTES:

1. SIMILAR FOR DISCONNECTS, MOTOR CONTROLLERS, TRANSFORMERS, LIGHTING CONTROL PANEL, AUTOMATIC TRANSFER SWITCHES, ETC.
2. PROVIDE PANEL IDENTIFICATION FOR ALL NEW PANELS AND FOR ALL EXISTING REWORKED PANELS THAT DO NOT CURRENTLY HAVE IDENTIFICATION TAGS IN PLACE.

1 PANEL & SERVICE ID DETAIL
NOT TO SCALE



NOTE:
ALL BONDING CONNECTIONS SHALL BE MADE AT ACCESSIBLE LOCATIONS. USE EXOTHERMIC CONNECTIONS WHERE CONNECTED TO BUILDING STEEL, RE-BAR, AND GROUND RODS. USE CLAMP CONNECTIONS FOR PIPING SYSTEMS.

2 SERVICE GROUNDING DETAIL
NOT TO SCALE

Panelboard: 'A'

LOCATION:	Room 101	**VOLTAGE:**	120/208 Wye	**COPPER BUS RATING:**	400 A	**MAINS TYPE:**	MLO
MOUNTING:	Recessed	**PHASE:**	3	**GROUND BUS:**		**MCB RATING:**	
ENCLOSURE:	Type 1	**WIRES:**	4	**MINIMUM A.I.C. RATING:**		**FED FROM:**	
		MFR. AND TYPE:	SQUARE D NQ	**SUBFEED LUGS:**		**NEUTRAL RATING:**	

Circuit Number	Load Name	BRKR	A		B		C		BRKR	Load Name	Circuit Number
1	LIGHTING - AUDITORIUM	20A/1P	1514	720					20A/1P	RECEPT - AUDITORIUM C100	2
3	FUTURE LIGHTING - AUDITORUM	20A/1P			1200	1481			20A/1P	LIGHITNG FIRST FLOOR/EF FANS	4
5	RECEPT. - ROOM 109	20A/1P					720	540	20A/1P	RECEPT. - ROOM 108	6
7	RECEOPT. - ROOM 107	20A/1P	720	900					20A/1P	RECEPT. - ROOM 105 & 106	8
9	RECEPT. - ROOM 100, RR 103 & 104	20A/1P			360	720			20A/1P	RECEPT. - ROOM 101	10
11	RECEPT. - 102	20A/1P					540	180	20A/1P	EWC-1	12
13	RECEPT. ROOM 100	20A/1P	540	180					20A/1P	EXTERIOR RECEPT.	14
15	RECEPT. - MEZZ	20A/1P			540	1080			20A/1P	RECEPT. - ROOM 201	16
17	RECEPT. - ROOM 201 & STOR	20A/1P					1080	720	20A/1P	RECEPT. - DATA ROOM	18
19	DATA RACK - VERIFY BREAKER	30A/2P	750	1146					20A/1P	SECOND FLOOR LIGTHING	20
21	--				750	1728			20A/1P	WH-1	22
23	FAUCETS	20A/1P					1000	90	20A/1P	EXTERIIOR WALL PACKS	24
25	RECEPT. - AUDITORIUM C100	20A/1P	540	540					20A/1P	RECEPT. - ROOM C102	26
27	EXISTING EXTERIOR CU UNIT	40A/2P			2715	0			40A/2P	EXISTING EXTERIOR CU UNIT	28
29	--						2715	0		--	30
31	CU-1	15A/3P	1201	0					60A/3P	SPARE	32
33	--				1201	0				-	34
35	--						1201	0		-	36
37	SPARE	60A/3P	0	667					20A/3P	EUH-1	38
39	-				0	667				--	40
41	-						0	667		--	42
43	MOTORIZED DAMPER	20A/1P	250	4780					50A/3P	AHU-1	44
45	HVAC CONTROL PANEL	20A/1P			500	4780				--	46
47	EXISTING HVAC - ROOM 106	20A/1P					1500	4780		--	48
49	EXISTING HVAC - MECH 202	20A/1P	1500	500					20A/1P	FACP	50
51	EDU-1	125A/3P			5764						52
53	-						5764				54
55	-		5764								56
57	-				5764						58
59	-						5764				60
61	-		5764								62
63											64
65											66
67											68
69											70
71											72

Total Load:	27935 VA	29227 VA	27260 VA
Total Amps:	234 A	244 A	227 A

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	4204 VA	125.00%	5255 VA	**Total Connected Load:**	84420 VA
Receptacles	10620 VA	97.08%	10310 VA	**Total Estimated Demand:**	85453 VA
HVAC	28371 VA	100.00%	28371 VA	**Total Connected Current:**	234 A
Power	2000 VA	100.00%	2000 VA	**Total Est. Demand Current:**	237 A
Other	3478 VA	100.00%	3478 VA		
Motor	0 VA	0.00%	0 VA		
Heating	0 VA	0.00%	0 VA		
Existing Load	0 VA	0.00%	0 VA		

Notes:

SYMBOL LEGEND

	DUPLEX RECEPTACLE AT 18" A.F.F. GFI - GROUND FAULT CIRCUIT INTERUPTER AC - MOUNTED ABOVE COUNTER BC - MOUNTED BELOW COUNTER WP - PROVIDED WITH WEATHERPROOF IN-USE TYPE COVER
	QUADRUPLEX RECEPTACLE
	SPECIAL PURPOSE RECEPTACLE NEMA CONFIGURATION SHOWN ON PLAN
	DUPLEX RECEPTACLE - FLOOR MOUNTED
	QUADRUPLEX RECEPTACLE FLOOR MOUNTED
	DATA OUTLET - SEE DATA RISER
	VOICE OUTLET
	DATA OUTLET - FLOOR MOUNTED
WAP	WIRELESS ACCESS POINT
J	JUNCTION BOX
$	SINGLE POLE TOGGLE SWITCH AT 48" A.F.F. TYPICAL 2 - INDICATES 2-POLE TOGGLE 3 - INDICATES 3-WAY TOGGLE 4 - INDICATES 4-WAY TOGGLE D - DIMMER K - KEY OPERATED LV* - LOW VOLTAGE PUSH BUTTON SWITCH, * = NUMBER OF BUTTONS M - MOTOR RATED TOGGLE OC - DUAL TECHNOLOGY OCCUPANCY SENSOR SWITCH WP - WEATHERPROOF COVER
	BRANCH CIRCUIT HOMERUN HOT-NETURAL-GROUND PANEL AND CIRCUIT NUMBER INDICATED ON PLAN
	PANELBOARD
	DISCONNECT SWITCH
PS	POWER SUPPLY
IAM	INDIVIDUAL ADDRESSABLE MODULE
ZAM	ZONE ADAPTER MODULE
HD	HEAT DETECTOR
SD	SMOKE DETECTOR
	MANUAL PULL STATION/BY OTHERS
RA	FIRE ALARM REMOTE ANNUNCIATOR/BY OTHERS
TS	TAMPER SWITCH/BY OTHERS
FS	WATER FLOW SWITCH/BY OTHERS
S D - SA	AIR SAMPLING SUPPLY/BY OTHERS
S D - RA	AIR SAMPLING RETURN/BY OTHERS
F cd	FIRE ALARM AUDIO/VISUAL APPLIANCE CANDELA RATING AS SHOWN ON PLANS/BY OTHERS
F cd	FIRE ALARM VISUAL ONLY APPLIANCE CANDELA RATING SHOWN ON PLANS
OC 1	DUAL TECHNOLOGY OCCUPANCY SENSOR CEILING/WALL MOUNTED EQUAL TO *****
OC 2	PIR OCCUPANCY SENSOR CEILING/WALL MOUNTED EQUAL TO *****
RC1	LIGHTING ROOM CONTROLLER SINGLE RECEPT EQUAL TO *****
RC2	LIGHTING ROOM CONTROLLER DUAL RECEPT EQUAL TO *****
RC3	LIGHTING ROOM CONTROLLER TRIPLE RECEPT EQUAL TO *****
PP	OCCUPANCY SENOR POWER PACK EQUAL TO *****

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ELECTRICAL LEGENDS & DETAILS

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