

# EAST END ELEMENTARY HVAC REPLACEMENT

## SHERIDAN SCHOOL DISTRICT

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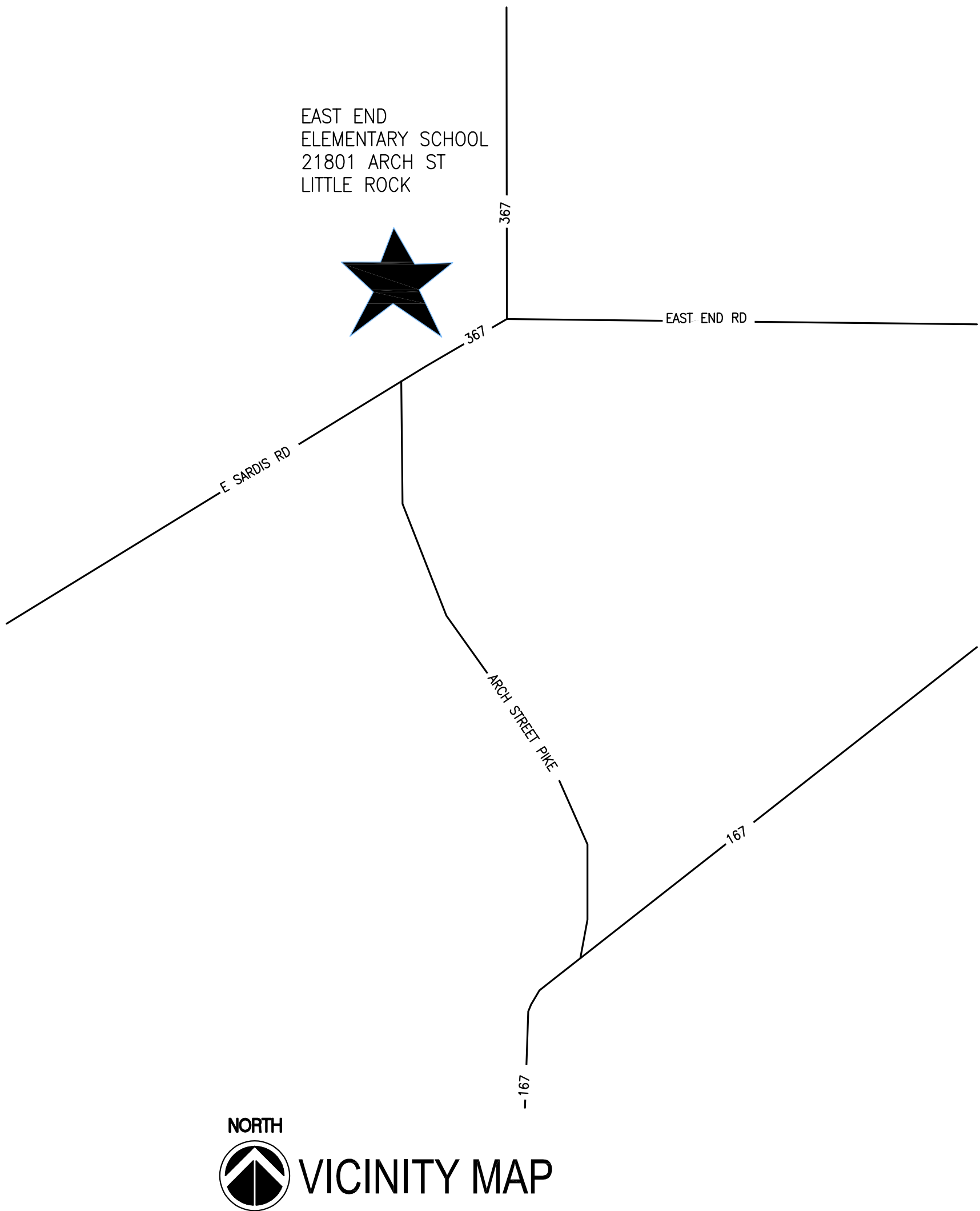
#### ELECTRICAL

E1.1 FLOOR PLAN - ELECTRICAL

CSUSA

AS-BUILTS (NO CHANGE)

8/132/2024



### PROJECT INFORMATION

DRAWINGS AND PROJECT MANUAL APPROVED AND IDENTIFIED AS PARTS OF THE  
OFFICIAL CONTRACT DOCUMENT

OWNER: SHERIDAN SCHOOL DISTRICT  
FACILITY: EAST END ELEMENTARY  
LOCATION: 21801 ARCH STREET  
BY:  
DATE:

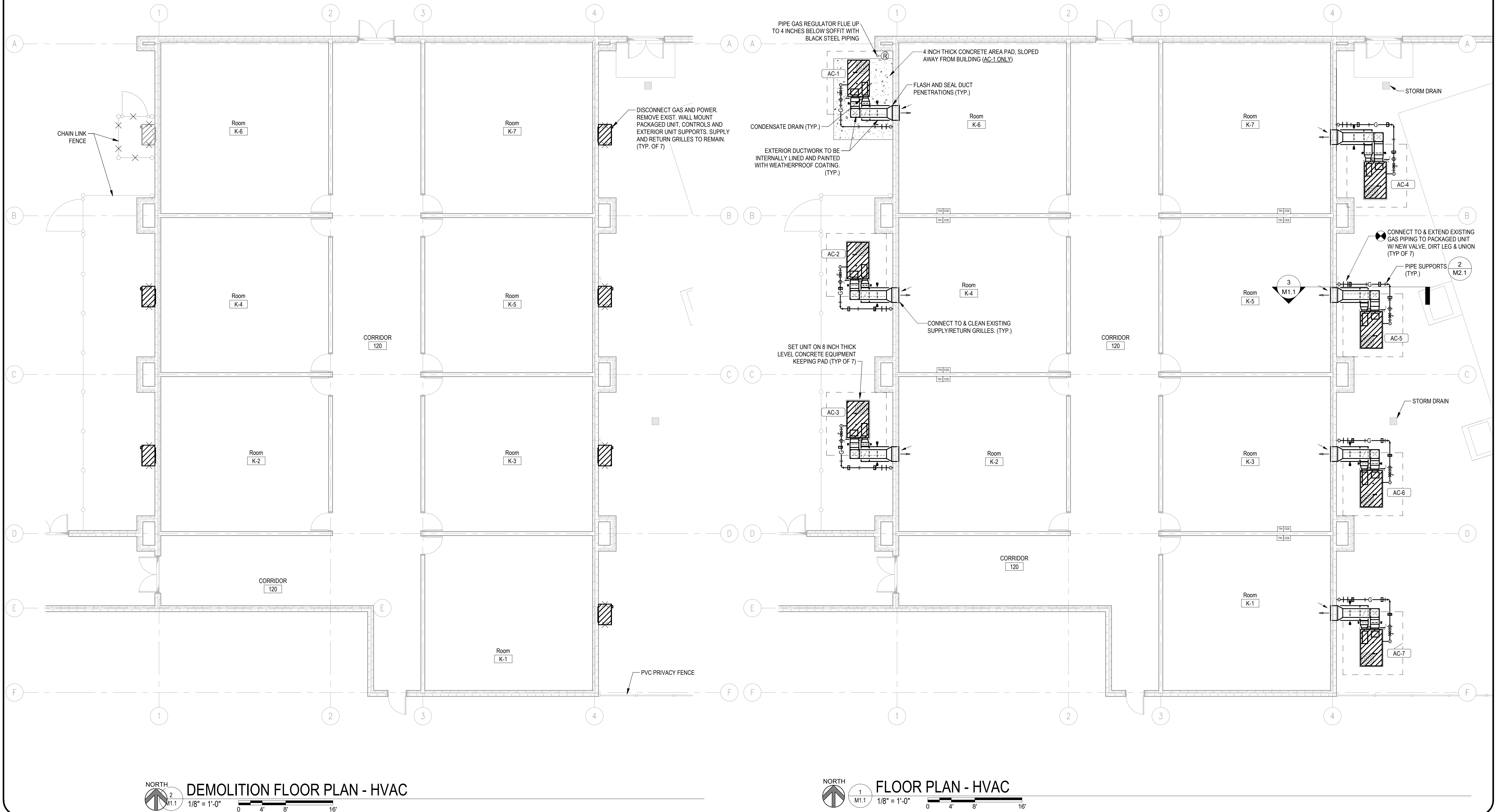
CONTRACTOR:  
ADDRESS:

BY:  
DATE:

ARCHITECT: LEWIS, ELLIOTT, MCMORRAN, VADEN,  
RAGSDALE, & WOODWARD INCORPORATED  
ADDRESS: 11225 HURON LANE, SUITE 104  
LITTLE ROCK, ARKANSAS 72211

BY:  
DATE:

PROJECT NUMBER: 23072  
DRAWINGS AND PROJECT MANUAL DATED: DEC 1, 2023



ELLIOTT • MCMORRAN • VADEN  
RAGSDALE • WOODWARD • INCORPORATED  
501 223 9302 • WWW.LEMVRW.COM

LEWIS  
ARCHITECTS  
ENGINEERS

EAST END ELEMENTARY  
HVAC REPLACEMENT

SHERIDAN SCHOOL DISTRICT

CERTIFICATE OF AUTHORIZATION  
LEWIS  
ARCHITECTS  
ENGINEERS  
No. 185  
ARKANSAS ENGINEER

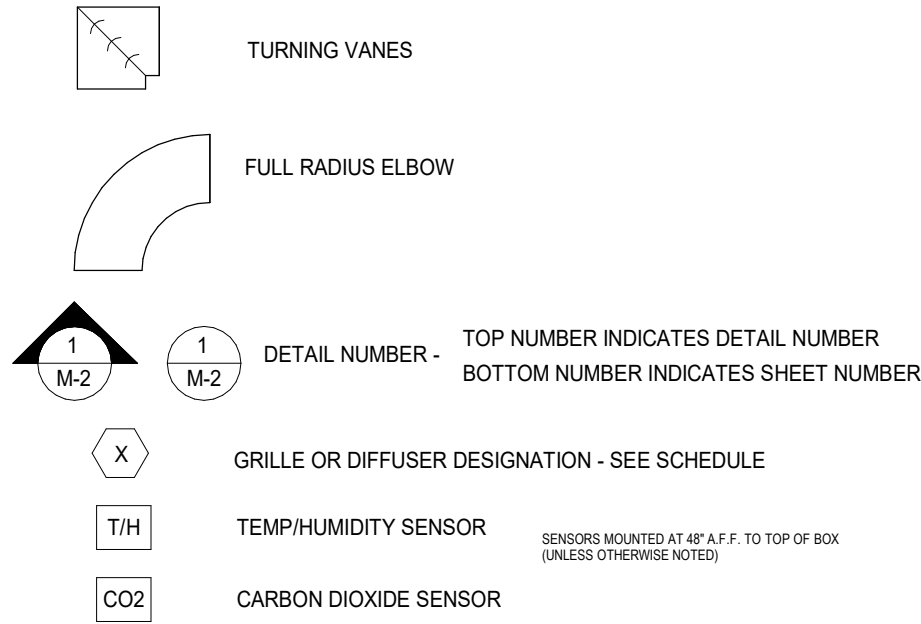
STATE OF  
ARKANSAS  
LICENSED  
PROFESSIONAL  
ENGINEER  
No. 20752  
DANIEL ALLISON

DATE: 12-1-23  
PROJECT NO: 23072  
DRAWN BY: RAB/DBA  
REVISION:

M1.1

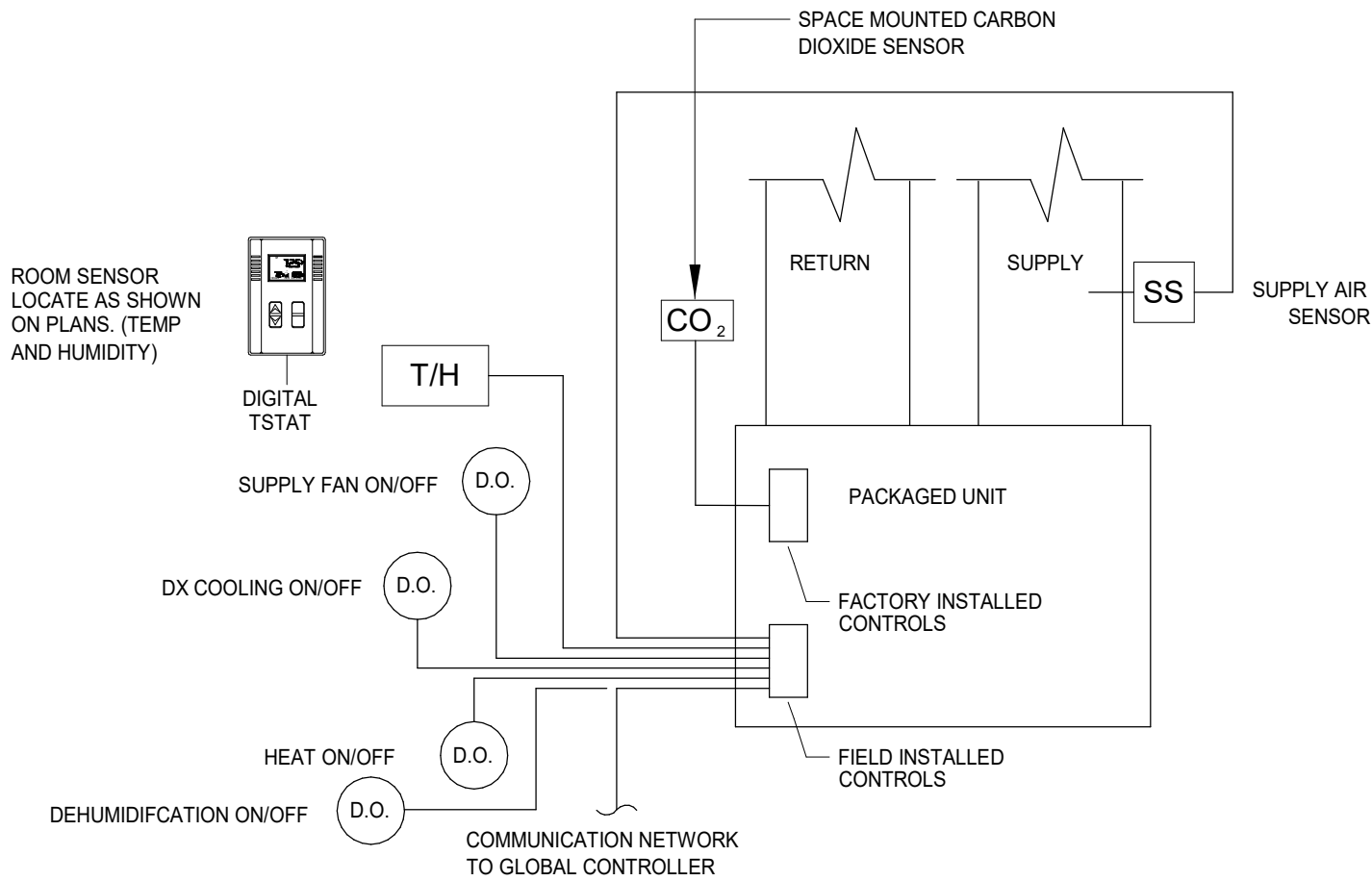
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MECHANICAL LEGEND



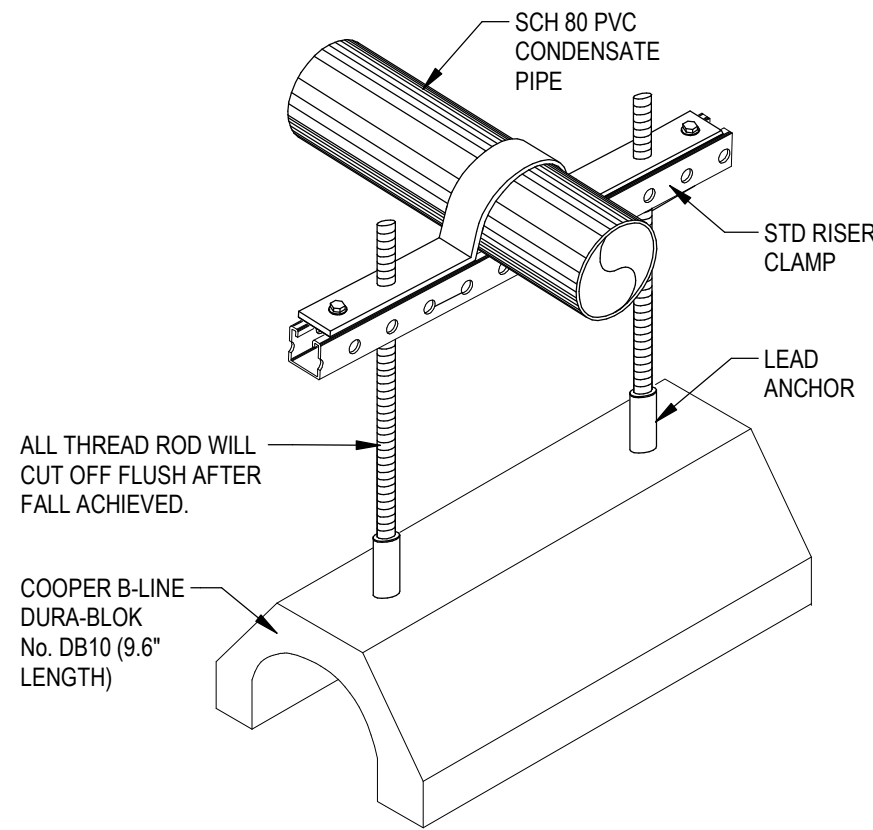
SEQUENCE OF OPERATION

1. GENERAL
- A. OCCUPIED/UNOCCUPIED MODE SHALL BE DETERMINED BY OWNER/OPERATOR BASED ON A WEEKLY SCHEDULE WITH EVENT AND HOLIDAY OVERRIDE SCHEDULES.
2. GAS-FIRED PACKAGED UNITS (AC-1 THRU 7)
- A. SHALL BE CONTROLLED BY DDC CONTROLLER (TEMP. & HUMIDITY CONTROL). FIELD INSTALLED CO2 SENSOR WITH INTEGRAL ECONOMIZER CONTROLLER. PRESET OCCUPIED/UNOCCUPIED SCHEDULES AS DIRECTED BY OWNER.
- B. OCCUPIED MODE
1. BLOWER SHALL CYCLE IN SEQUENCE ON DEMAND FOR HEATING OR COOLING OR DEHUMIDIFICATION.
2. INTEGRAL EQUIPMENT CONTROLS SHALL MODULATE ECONOMIZER, COMPRESSORS, DEHUMIDIFICATION CYCLE, VENTILATION AIR BASED ON CO2 AND HEATING CYCLE IS REQUIRED TO MAINTAIN SET TEMPERATURE AND RELATIVE HUMIDITY (60% MAXIMUM RH).
3. 75°F COOLING/70°F HEATING (ADJUSTABLE).
- C. UNOCCUPIED MODE
1. BLOWER SHALL CYCLE IN SEQUENCE ON DEMAND FOR HEATING OR COOLING OR DEHUMIDIFICATION.
2. OUTSIDE AIR DAMPER SHALL CLOSE.
3. 84°F COOLING / 62°F HEATING (ADJUSTABLE).
- D. ECONOMIZER CYCLE SHALL BE ACTIVATED BASED ON ENTHALPY COMPARISON OF OUTSIDE AIR VERSUS RETURN AIR.
- E. CARBON DIOXIDE MONITORING SHALL PROVIDE AN OVERRIDE OF THE ECONOMIZER TO VENTILATION AIR MAXIMUM POSITION IN RESPONSE TO ELEVATED CO2 LEVELS (DAMPER POSITION SHALL PROPORTIONALLY INCREASE FROM MINIMUM CFM POSITION AT 500 PPM AND OPEN TO MAX POSITION AT 1100 PPM.) REFER TO OUTSIDE AIR SCHEDULE FOR AIRFLOW AMOUNT.



PACKAGE UNIT CONTROLS SCHEMATIC

NOT TO SCALE



CONDENSATE PIPE SUPPORT

NOT TO SCALE

MECHANICAL 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. DUCT SIZES INDICATED ON PLANS ARE ACTUAL SHEET METAL SIZES AND DO ALLOW FOR INTERNAL INSULATION OF RECTANGULAR DUCT, IF APPLICABLE.
3. MOUNT ALL TEMPERATURE SENSORS &/OR THERMOSTATS AT 48" TO TOP OF BOX.
4. PROVIDE TURNING VANES IN ALL 90-DEGREE ELBOWS. UNLESS NOTED OTHERWISE.
5. INTERNALLY INSULATE ALL RECTANGULAR SUPPLY, RETURN, AND OUTSIDE AIR DUCTWORK UNLESS NOTED OTHERWISE.
6. COORDINATE LOCATION OF DUCTS AND DIFFUSERS WITH STRUCTURAL FRAMING MEMBER. OFFSET DUCTS AS REQUIRED TO CLEAR STRUCTURAL MEMBERS.
7. COORDINATE EQUIPMENT ELECTRICAL REQUIREMENTS WITH ELECTRICAL CONTRACTOR.
8. COORDINATE GAS REQUIREMENTS WITH PLUMBING CONTRACTOR.
9. SCREWS TO SECURE AIR DEVICES SHALL BE PAINTED HEAD TYPE PROVIDED BY DEVICE MANUFACTURER. ANY OTHER TYPE USED WILL BE REPLACED WITH PROPER SCREW BEFORE ACCEPTANCE.
10. INSURE 10'-0" MINIMUM CLEARANCE BETWEEN FRESH AIR INTAKE VENTILATORS AND VENTS FOR FURNACE/PLUMBING AND EXHAUST VENTILATORS.

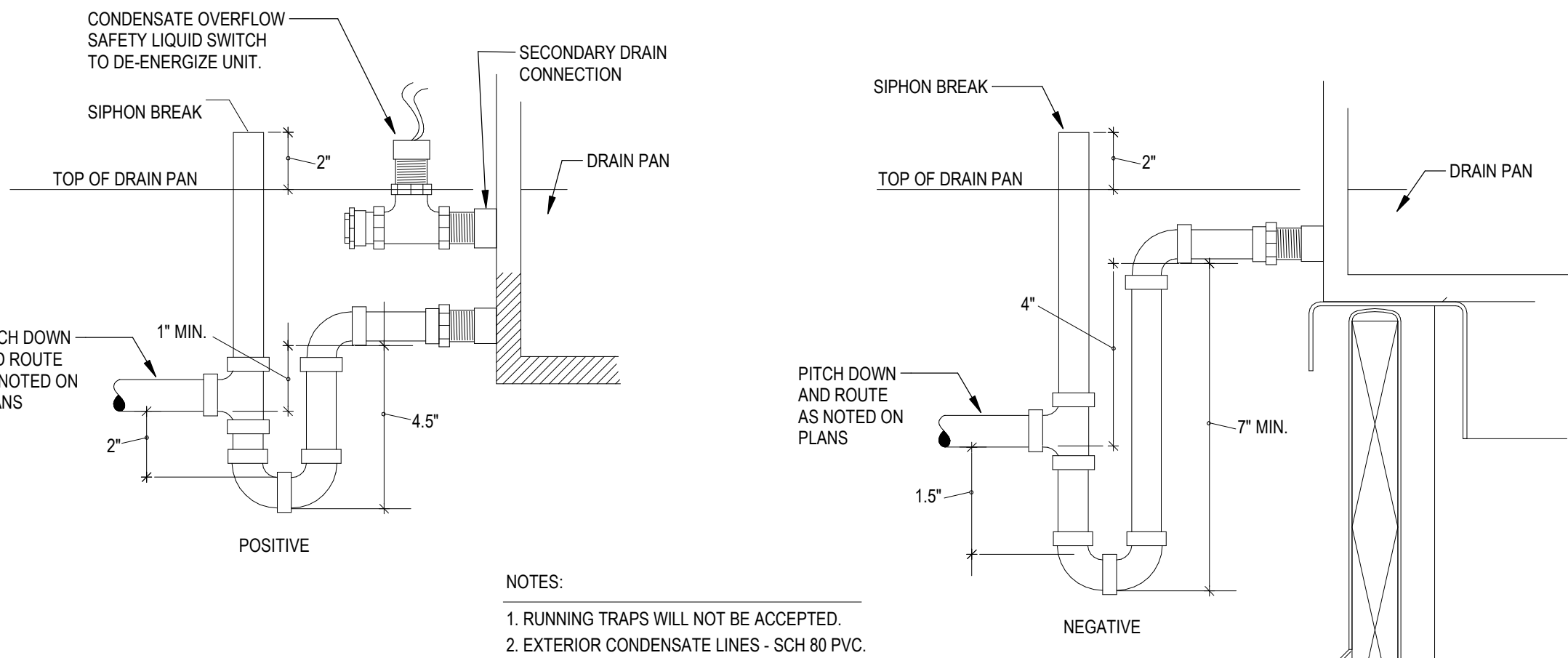
HVAC ABBREVIATIONS

(SEE SHT T-1 FOR GENERAL ABBREVIATIONS)	
A.F.F.	ABOVE FINISHED FLOOR
ABV.	ABOVE
CFM	CUBIC FEET PER MINUTE
DISCH.	DISCHARGE
DN.	DOWN
MIN.	MINIMUM
OSA	OUTSIDE AIR
PLUMB.	PLUMBING
R.A.	RETURN AIR
S.A.	SUPPLY AIR
T-STAT	THERMOSTAT
U.N.O.	UNLESS NOTED OTHERWISE
W/	WITH
I.D.	INTERNAL DIAMETER
EXT. INSUL.	EXTERNALLY INSULATED
INT. INSUL.	INTERNALLY INSULATED
VRF	VARIABLE REFRIGERANT FLOW

PACKAGE EQUIPMENT SCHEDULE

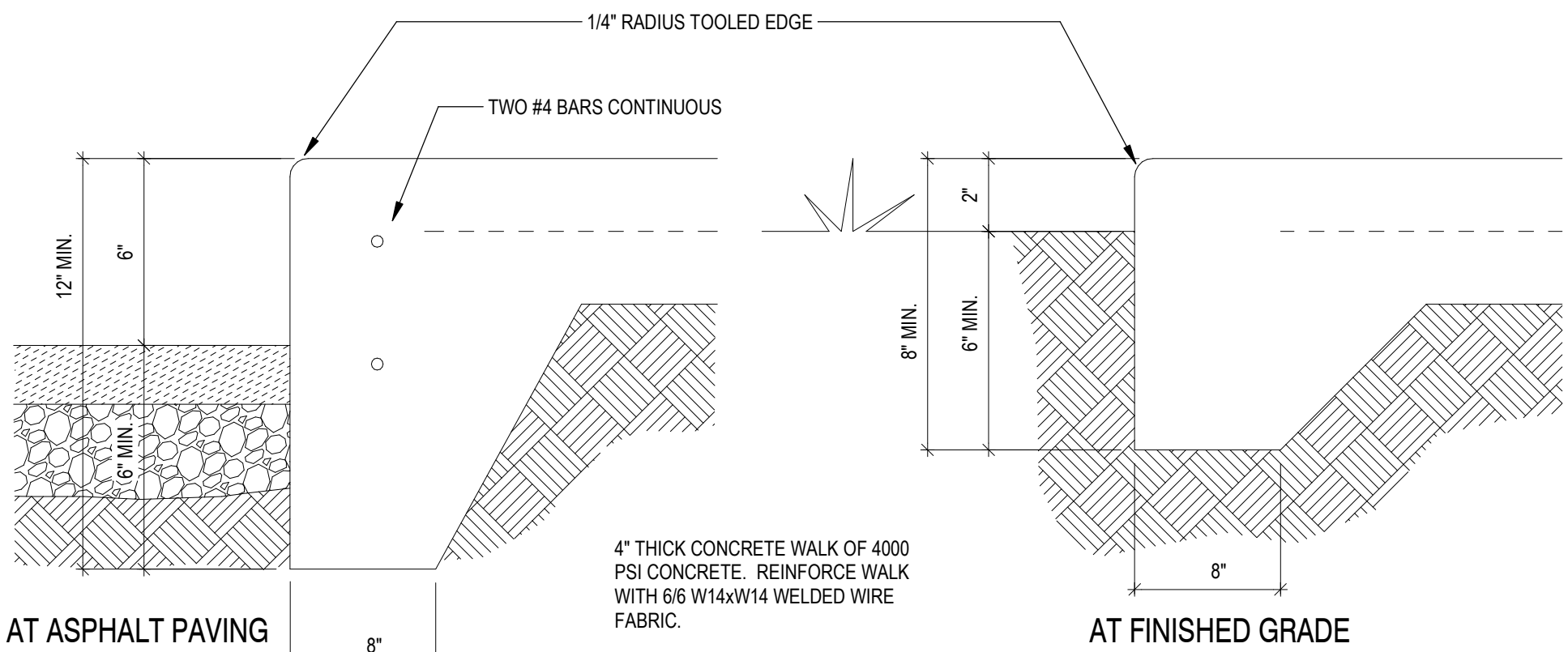
MARK	MANUFACTURER	MODEL	TONNAGE (NOMINAL)	COOLING CAPACITY GROSS TOTAL / SENSIBLE (MBH)	HEATING CAPACITY INPUT/OUTPUT (MBH)	SUPPLY CFM	OSA CFM	E.S.P.	DISCHARGE ARRANGEMENT	BHP	VOLTAGE	MCA / MOC (AMPS)	SEER	COOLING / HEATING STAGES
AC-1 THRU 7	CARRIER	48GCSN05J2M5-0A3A0	4	50 / 37.1	67 / 54 (HIGH HEAT)	1,600	300	0.5	HORIZONTAL SUPPLY / RETURN	1.05	208/3	27 / 30	16.1	2 / 2

- ACCESSORIES & NOTES:
1. STAINLESS STEEL HEAT EXCHANGER
2. 2" PLEATED FILTERS
3. HOT GAS DEHUMIDIFICATION CYCLE
4. 100% OUTSIDE AIR ENTHALPY COMPARISON ECONOMIZER W/ BAROMETRIC RELIEF
5. SPACE CO2 SENSOR W/ LCD DISPLAY
6. HINGED ACCESS PANELS WITH HANDLES
7. LOUVERED HAIL GUARDS



CONDENSATE TRAP DETAIL

NOT TO SCALE



CONCRETE EDGE

NOT TO SCALE

OUTSIDE AIR REQUIREMENTS

UNIT NO.	SERVES	TOTAL AIR FLOW (CFM)	MAXIMUM OCCUPANTS	CFM / OCCUPANT	AREA	CFM/FT²	FRESH AIR DESIGN (CFM)	
							SUPPLY	EXHAUST
AC-1	K-1	1600	20	10	800	0.12	MIN. 100 MAX. 300	BAROMETRIC
AC-2	K-2	1600	20	10	800	0.12	MIN. 100 MAX. 300	BAROMETRIC
AC-3	K-3	1600	20	10	800	0.12	MIN. 100 MAX. 300	BAROMETRIC
AC-4	K-4	1600	20	10	800	0.12	MIN. 100 MAX. 300	BAROMETRIC
AC-5	K-5	1600	20	10	800	0.12	MIN. 100 MAX. 300	BAROMETRIC
AC-6	K-6	1600	20	10	800	0.12	MIN. 100 MAX. 300	BAROMETRIC
AC-7	K-7	1600	20	10	800	0.12	MIN. 100 MAX. 300	BAROMETRIC

- NOTES:
1. THE VENTILATION DESIGN OF THIS PROJECT IS BASED ON CHAPTER 4 OF THE 2010 ARKANSAS MECHANICAL CODE ON VENTILATION AND ASHRAE 62.1-2007.
2. THE VENTILATION AMOUNT (BASED ON NUMBER OF OCCUPANTS) IS INTENDED TO MINIMIZE POTENTIAL FOR HEALTH AFFECTS AND DOES NOT GUARANTEE ACCEPTABLE INDOOR AIR QUALITY. OTHER CONTRIBUTING FACTORS ARE BUILDING MATERIALS, OFFICE EQUIPMENT, MAINTENANCE, JANITORIAL PRACTICES, POLLUTION, NOISE, LIGHTING, PSYCHOLOGICAL STRESS AND THE RANGE OF SUSCEPTIBILITY IN THE OCCUPANTS.
3. DEMAND CONTROL VENTILATION AIR IS INTRODUCED VIA ECONOMIZER CYCLE AS OUTSIDE AIR CONDITIONS PERMIT OR AS CARBON DIOXIDE LEVELS RISE ABOVE 500 PPM INDICATING AN INCREASE OF OCCUPANCY.
- IMPORTANT: CONTRACTOR SHALL INCLUDE THIS INFORMATION IN OWNERS OPERATION AND MAINTENANCE MANUALS.

DUE TO THE SMALL SCALE OF THE PLANS AND DIAGRAMMATIC NATURE OF ELECTRICAL PLANS IN GENERAL, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, JUNCTION BOXES, ETC. WHICH MAY BE REQUIRED. THE CONTRACTOR SHALL INVESTIGATE THE STRUCTURAL AND FINISH CONDITIONS AFFECTING HIS WORK AND SHALL COORDINATE AND ARRANGE HIS WORK ACCORDINGLY.

1. PROVIDE LAMINATED NAMEPLATES ON ALL ELECTRICAL GEAR PER THE SPECIFICATIONS. SCREW OR POP RIVET TO COVERS. ALL SAFETY SWITCHES SHALL BE HEAVY DUTY, NON-FUSED, 240V OR 600V, SOLID NEUTRAL, NEMA 1 OR NEMA 3R AS APPLIES UNLESS NOTED OTHERWISE.

2. MINIMUM CONDUIT SIZE SHALL BE 3/4" UNLESS NOTED OTHERWISE. SLEEVE ALL RACEWAYS ROUTED THRU FOOTINGS OR GRADE BEAMS. CONTRACTOR SHALL FIRESTOP PER SPECIFICATIONS. ALL CONDUIT PENETRATIONS THRU RATED WALLS. VERIFY FIRE RATED WALL LOCATIONS WITH ARCHITECTURAL PLANS. CONTRACTOR SHALL COORDINATE WITH PLUMBING CONTRACTOR AND AVOID ANY WATER CARRYING PIPE INSTALLATION ABOVE ELECTRICAL GEAR AND/OR APPARATUS. SET SCREW AND IDENTIFY TYPE CONDUIT FITTINGS ARE NOT ALLOWED. ALL INTERIOR EXPOSED RACEWAY SHALL BE PAINTED AS DIRECTED BY ARCHITECT.

3. ALL CONDUIT, JUNCTION AND OUTLET BOXES, AND RELATED ROUGH-IN MATERIAL, ARE TO BE CONCEALED UNDER FLOORS, IN WALLS AND ABOVE FINISHED CEILINGS WHERE POSSIBLE UNLESS NOTED OTHERWISE IN THE SPECIFICATIONS OR ON THE DRAWINGS. ALL CONDUITS SHALL BE ROUTED OVERHEAD UNLESS NOTED OTHERWISE OR SHOWN AS BELOW GRADE TO A DEVICE.

4. ALL CONDUCTORS SHALL BE COPPER WITH A MINIMUM SIZE CONDUCTOR OF #12 A.W.G. PROVIDE SPLIT TYPE "THW" OR "THHN" FOR #12 A.W.G. AND #10 A.W.G. ALL FEEDER AND MOTOREQUIPMENT CONDUCTORS SHALL BE COPPER TYPE "THHN" OR "THWN".

5. ALL EQUIPMENT SHALL BE BRACED FOR EARTHQUAKE. LIGHT FIXTURES TO HAVE EARTHQUAKE CLIPS AND INDEPENDENT SUPPORT WIRES AT OPPOSITE CORNERS. ALL CEILING MOUNTED EQUIPMENT SUCH AS LIGHT FIXTURES SHALL BE SECURED TO THE STRUCTURE WITH #12 GA STEEL WIRE ON TWO (2) SIDES. IN ADDITION, LIGHT FIXTURES SHALL BE SECURED TO THE CEILING WITH FACTORY UL LISTED EARTHQUAKE CLIPS.

6. ALL CIRCUITS, LIGHTING AND POWER, SHALL HAVE DEDICATED NEUTRAL CONDUCTORS WITH ONE PER EACH HOT CONDUCTOR (NO SHARING OF NEUTRALS). ONLY 3 "HOT" CIRCUITS ALLOWED PER HOMERUN - U.N.O.

7. ALL OF THE FOLLOWING RECEPTABLES SHALL BE GFCI TYPE:

- a) RECEPTABLES FOR ELECTRIC WATER COOLERS
- b) RECEPTABLES IN BATHROOMS OR WITHIN 6'-0" OF A SINK
- c) NEMA 5-20R RECEPTABLES FOR A KITCHEN OR CONGRESSION AREA.
- d) EXTERIOR RECEPTABLES SHALL BE GFCI AND WEATHER RESISTANT "WR" TYPE.
- e) N/A

NOTE: FEED THROUGH PROTECTION OF GFCI OUTLETS ARE NOT ALLOWED.

8. MOUNT EXTERIOR DISCONNECTS FOR HVAC/MECHANICAL EQUIPMENT AT +48" F.G. TO TOP OF DISCONNECT OR, WHERE APPLICABLE, TOP OF DISCONNECT AT TOP OF ADJACENT SURROUNDING SIKEN WALL. WHICHEVER IS LOWER. COORDINATE LOCATIONS OF ALL DISCONNECTS WITH FINAL EQUIPMENT LOCATIONS PRIOR TO BEGINNING WORK IN ORDER TO IMPEDIE ANY EQUIPMENT ACCESS OR VIOLATE ANY NEC CLEARANCES REQUIREMENTS.

9. THE FINAL TYPEWRITTEN ELECTRICAL PANEL SCHEDULES SHALL REFLECT THE ACTUAL ROOM DESCRIPTIONS AND NUMBERS DEPICTED ON FINAL INSTALLED ROOM SIGNAGE. (FIELD VERIFY FOR ACCURACY).

10. 1. LOW-VOLTAGE, AUDIO/VISUAL AND INTERACTIVE DISPLAY BOARD CONDUITS ARE SIZED IN ACCORDANCE WITH VENDORS INSTALLING UTILIZING "RAPIDRUN" OR "EZ-PLUG" TYPE CABLES TO EQUIPMENT. CONTRACTORS PROVIDING AUDIO/VISUAL CABLING UNDER THIS PROJECT/CONTRACT SHALL UTILIZE THESE TYPES OF CABLES.

2. LIGHT FIXTURES SUBMITTED PROVIDED SHALL MEET THE REQUIREMENTS OF THE DESIGN/LIGHTS CONSORTIUM AND/or ARE ENERGY STAR CERTIFIED.

3. CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND SUBMITTING ALL POWER PACKS, RELAYS, SENSORS, CABLING, ETC AS REQUIRED TO PROVIDE COMPLETE AND OPERATIONAL OCCUPANCY CONTROLS IN COMPLIANCE WITH THE LATEST ENERGY CODES.

4. ALL CONDUITS ENTERING THE BUILDING FROM BELOW GRADE SHALL BE SEALED OFF FROM WATER INFILTRATION WITH CONDUIT SEALANT SYSTEM EQUAL TO POLY-URETHANE FST SYSTEM. ALL EMPTY STUBBED UP CONDUITS SHALL ALSO BE PROVIDED WITH THREADED CAP FOR COVER.

5. PROVIDE HANDLE-LOCK-OFF TYPE BREAKERS FOR ALL CIRCUITS FEEDING ELECTRIC RESISTIVE HEATERS (EH# 1, CH# 4, EDH# FOR EXAMPLE).

1. ALL ELECTRICAL EQUIPMENT, TIMER SWITCHES, SAFETY SWITCHES, TRANSISTERS, PANELS, AND TRANSFORMERS SHALL HAVE LAMINATED BAKELITE NAMEPLATES SECURELY FASTENED TO DEVICE.
2. NAMEPLATE SIZE SHALL BE 1 1/2" x 4" WITH BEVELED EDGES AND 14" LETTERS.
3. NAMEPLATE SHALL INCLUDE PANEL OR EQUIPMENT DESIGNATION, INCLUDE AMPERAGE, VOLTAGE, PHASE, AND WIRE FOR THE PANELS, AND "PANEL FED FROM" FOR THE EQUIPMENT.
4. NAMEPLATES SHALL BE INSTALLED ON PANELS, CABINETS, SWITCHES, ETC. WITH RIVETS OR STAINLESS STEEL SCREWS. PLATES ATTACHED TO DRYWALL OR BLOCK ON OTHER WALL MUST BE ADHESIVE BACK.
5. NAMEPLATES FOR 120 OR 208 VOLT EQUIPMENT SHALL BE BLACK. 277 OR 480 VOLT EQUIPMENT SHALL BE RED. LETTERS SHALL BE WHITE.
6. EMBOSSED STICK BACK WILL NOT BE ALLOWED.
7. NAMEPLATES FOR SWITCHES MAY BE OMITTED FOR FURNACES WHEN THE EQUIPMENT WHICH IS SERVED IS OBVIOUS TO SERVICE TECHNICIAN.
8. WHERE EQUIPMENT DISCONNECT IS AT A PANEL, SECURE NAMEPLATE (WITH UNIT DESIGNATION AND "FED FROM" PANEL) TO THE EQUIPMENT.



4  
E1.1

WHETHER SHOWN OR NOT - THE CONTRACTOR SHALL PROVIDE THE MINIMUM WIRE NOTED BELOW FOR ALL EQUIPMENT CONNECTIONS:

<u>MCCB/BREAKER:</u>	<u>WIRE:</u>
20A	#12AWG
25A-30A	#10AWG
35A-40A	#8AWG
45A-55A	#6AWG
55A-70A	#4AWG
70A-85A	#3AWG
85A-100A	#2AWG


$$1/8'' = 1'-0''$$

ABBREVIATIONS:	AC - ABOVE COUNTER
WP - WEATHERPROOF (3R)	HP - HORSEPOWER
NS - NON-SWITCHED	C - CONDUIT (EMT or RIGID) AS SPECIFIED
EM - EMERGENCY EGRESS FIXTURE	PVC - ELECT. GRADE PVC CONDUIT (SCH. AS NOTED)
CS - TIME CLOCK	WM - SURFACE MOUNTED RAYMOUNT (WIREM.)
LC - LIGHTING CONTACTOR	AV - INDICATES AUDIOVISUAL DEVICE
FA - FIRE ALARM	SB - INDICATES INTERACTIVE DISPLAY BOARD
EW - ELECTRIC WATER COOLER	AF - INDICATES ABOVE FINISHED FLOOR
UN - UNLESS NOTED OTHERWISE	AF - G - INDICATES ABOVE FINISHED GRADE
ED - EXISTING RELOCATED	BFG - INDICATES BELOW FINISHED GRADE
WG - WIRE PROTECTIVE GUARD	FDS - FUSIBLE DISCONNECT SWITCH
1G1G - SINGLE GANG BOX / SINGLE GANG RING	N.F.D.S. - NON-FUSIBLE DISCONNECT SWITCH
* DASHED INDICATES EXISTING OR BELOW GRADE AS NOTED	