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DM-12 UPSTATE HODGE CENTER ARENA HUMIDITY CORRECTION SC STATE PROJECT #H34-9543-JM

UNIVERSITY OF SOUTH CAROLINA UPSTATE

Spartanburg, South Carolina

DESIGN TEAM

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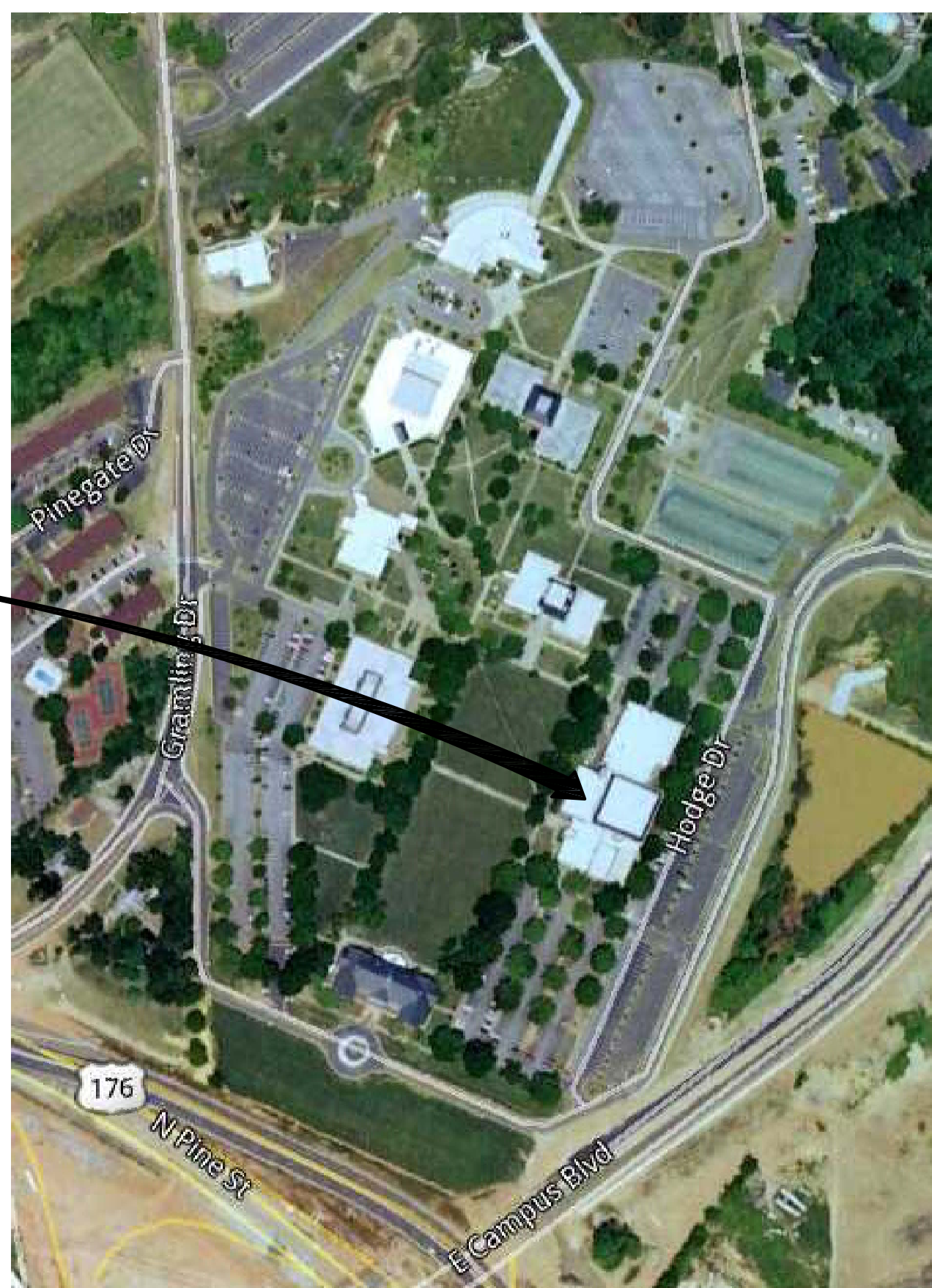
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HODGE CENTER
ARENA HUMIDITY SITE
(BASEMENT)



VICINITY MAP

INDEX OF DRAWINGS

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NO.	DATE	BY	DESCRIPTION	REVISIONS
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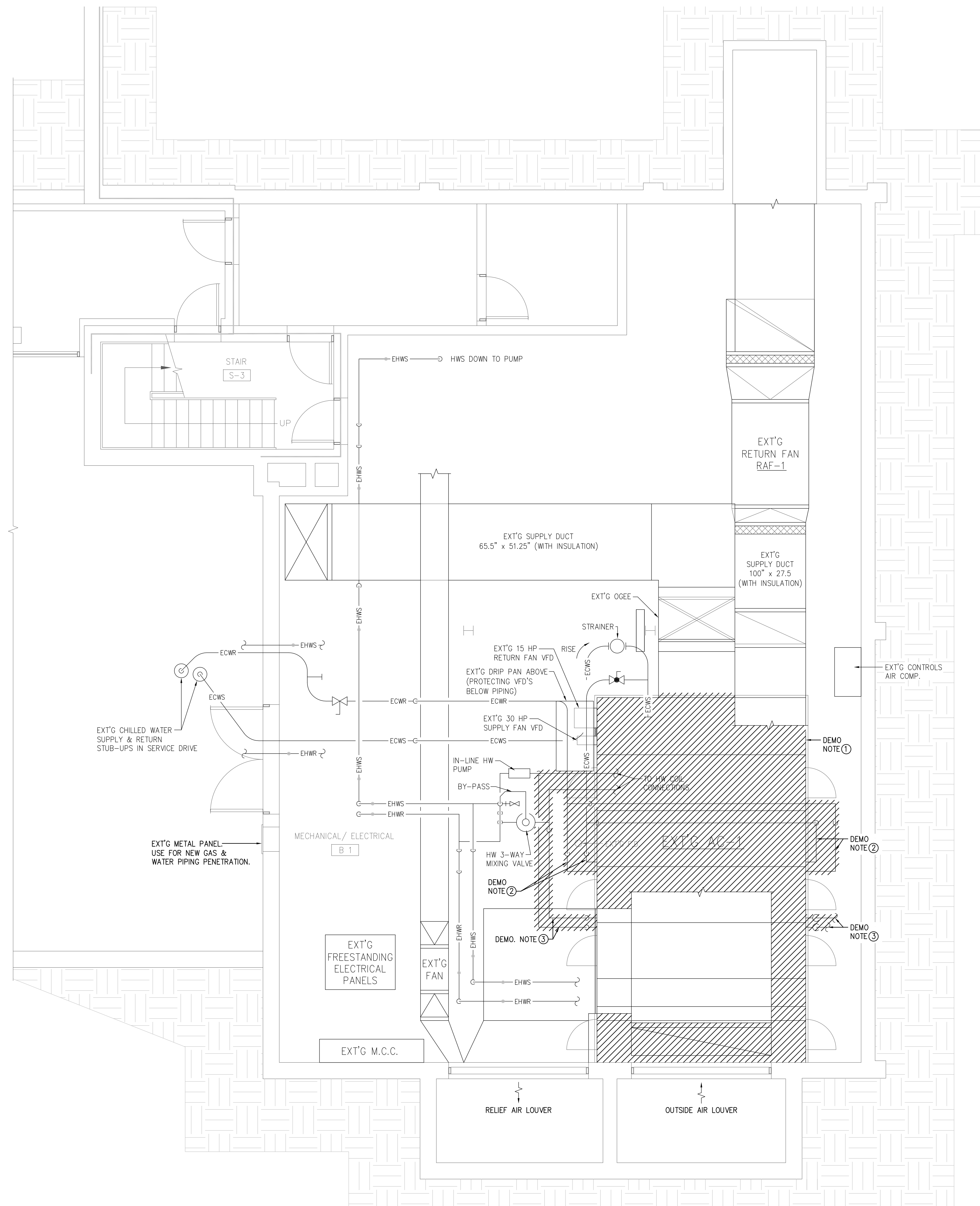
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**DM-12 UPSTATE HODGE CENTER
ARENA HUMIDITY CORRECTION
SC STATE PROJECT #H34-9543-JM
SPARTANBURG, SOUTH CAROLINA**

DESIGN JCP	DRAWN TMI
CHECKED JCP	
DATE 9/27/13	
PERITUS #130103	
SHEET T-1	
1 OF 1 SHEETS	

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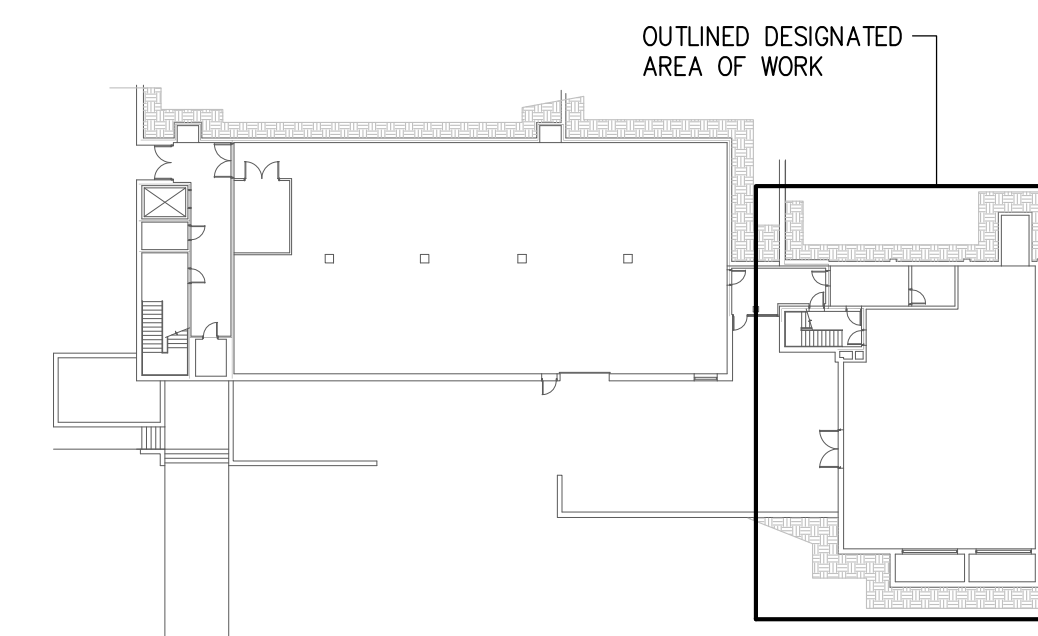
DEMOLITION WORK NOTES:

- ① REMOVE EXISTING AIR HANDLING UNIT, EQUIPMENT TAG AC-1, CARRIER MODEL 27CC-445. DISCONNECT AC-1 FROM EXISTING SUPPLY, RETURN, AND OUTSIDE AIR DUCTWORK. DISCONNECT AC-1 FROM EXISTING CHILLED WATER PIPING, HOT WATER PIPING, AND COOLING COIL CONDENSATE DRAIN PIPING.
- ② REMOVE EXISTING CHILLED WATER SUPPLY AND RETURN PIPING AT LOCATIONS INDICATED. EXISTING AC-1 COOLING COILS FEATURE 2 STACKED HIGH x 2 STACKED WIDE COOLING COILS WITH SUPPLY/RETURN CONNECTIONS BOTH SIDES OF UNIT.
- ③ REMOVE EXISTING HOT WATER SUPPLY AND RETURN PIPING AT LOCATIONS INDICATED. PIPING SHALL BE REMOVED UP TO IN-LINE TERTIARY PUMP COMMON OUTLET AND UP TO COMMON RETURN CONNECTION AT 3-WAY MIXING VALVE. PUMP AND 3-WAY MIXING VALVE SHALL REMAIN.

PARTIAL HVAC DEMOLITION PLAN

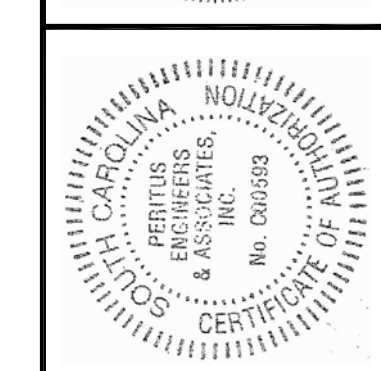
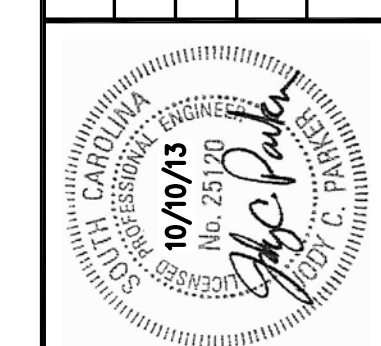
SCALE: 1/4" = 1'-0"

////// HATCHED AREA INDICATES ITEMS TO BE REMOVED



KEY PLAN
NO SCALE

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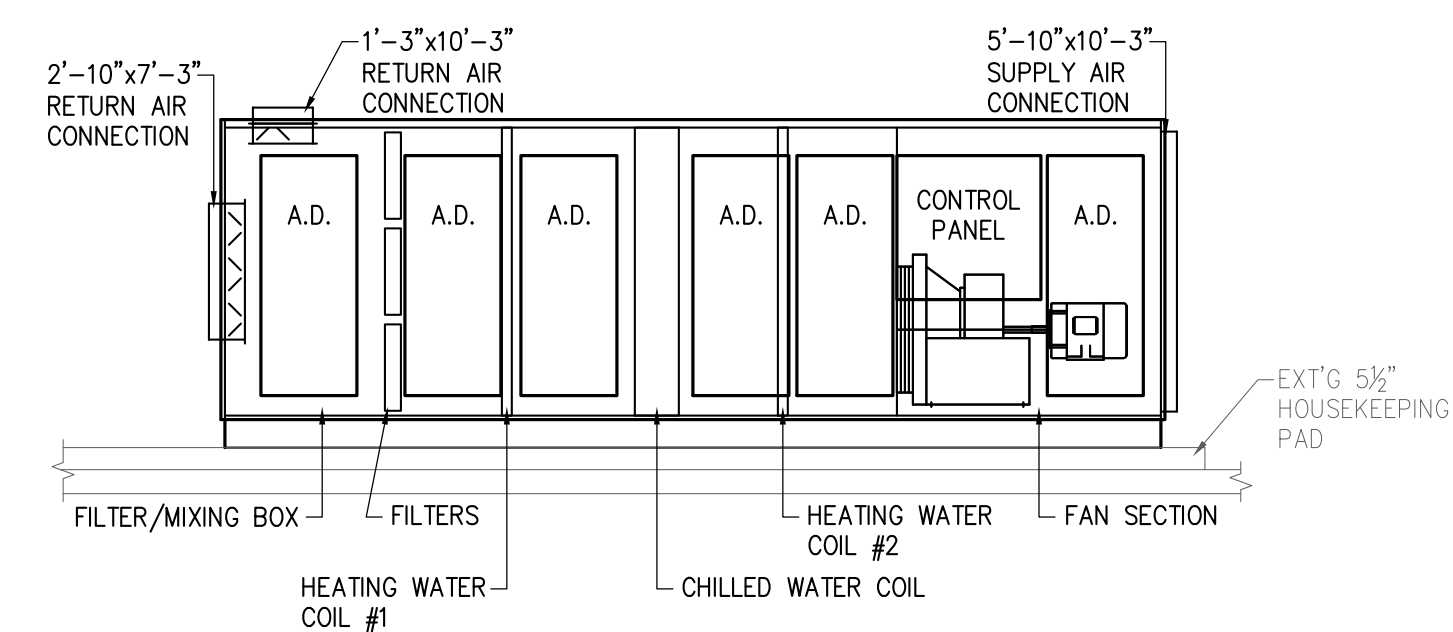
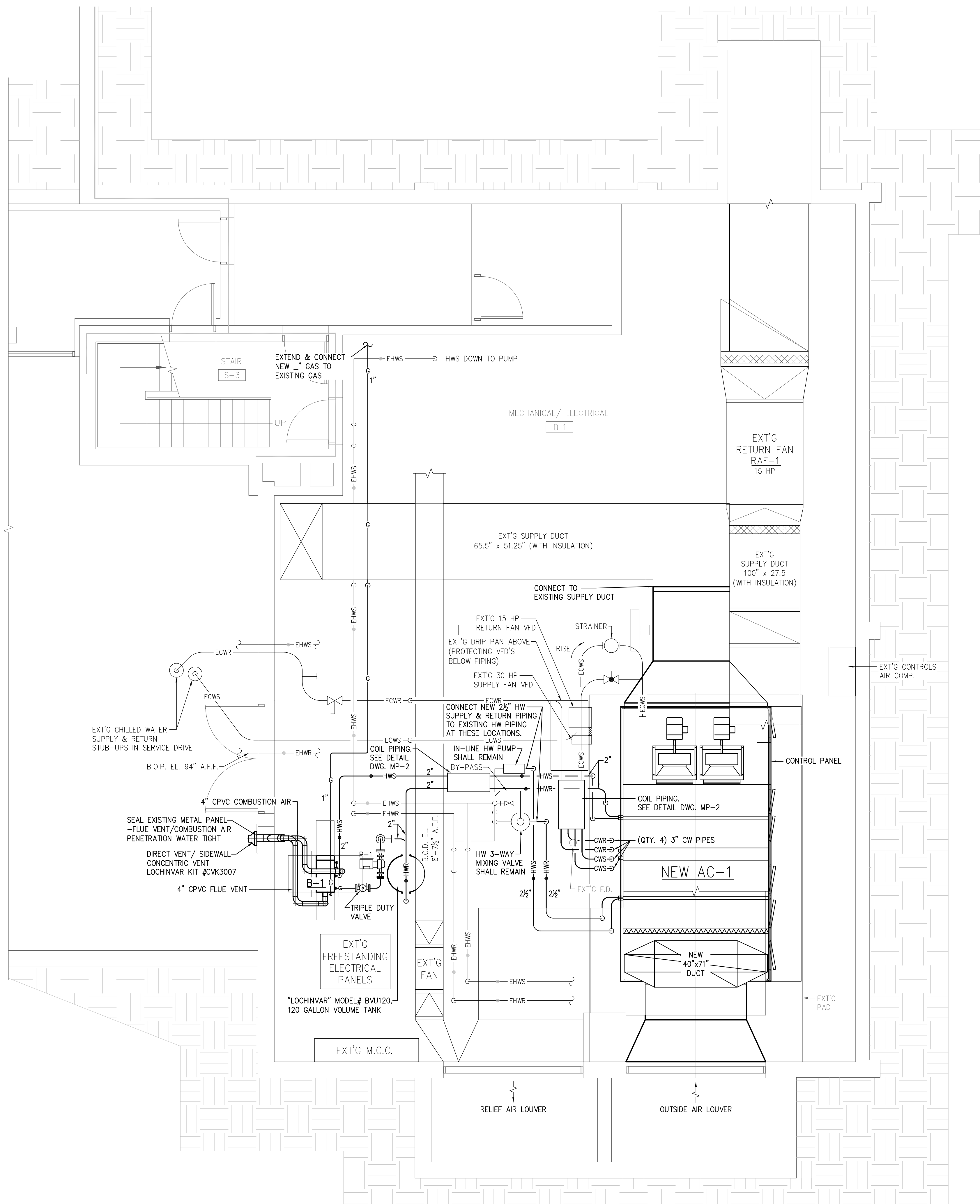


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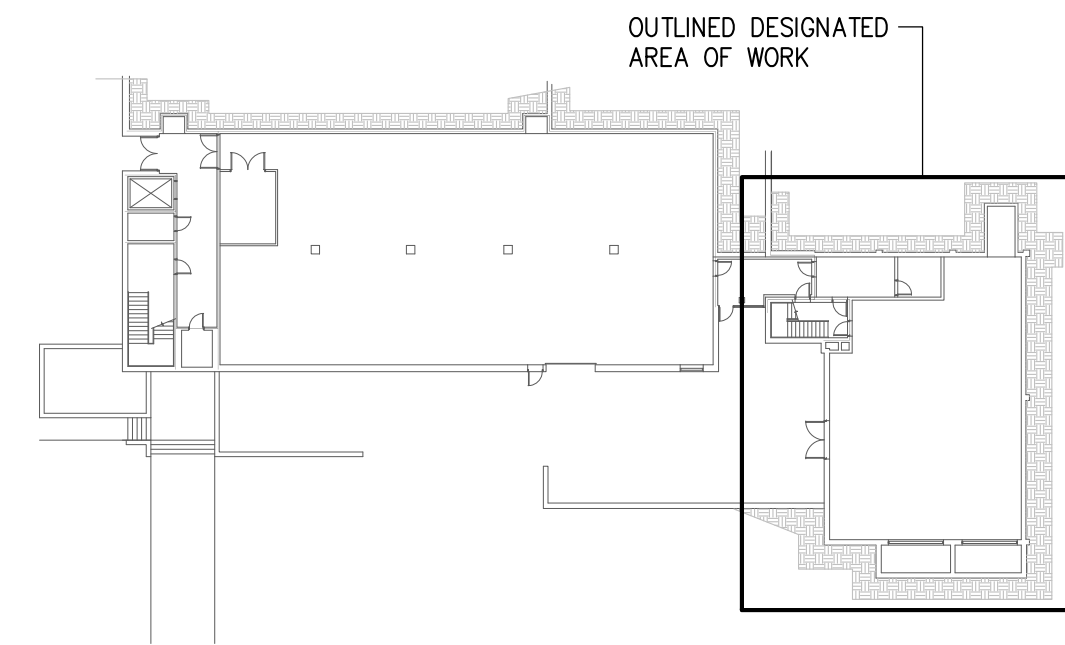
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SPARTANBURG, SOUTH CAROLINA**

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PROJECT NO. PERITUS #130103	
SHEET DM-1	
1 OF 4 SHEETS	

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NEW AC-1 DETAIL
NO SCALE



KEY PLAN
NO SCALE

HVAC PARTIAL NEW WORK PLAN
SCALE: 1/4" = 1'-0"
ALL NEW WORK SHOWN IN **BOLD**

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DM-12 UPSTATE HODGE CENTER ARENA HUMIDITY CORRECTION SC STATE PROJECT #H34-9543-JM SPARTANBURG, SOUTH CAROLINA	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; font-size: x-small;">DESIGN JCP</td> <td style="width: 50%; font-size: x-small;">DRAWN TMI</td> </tr> <tr> <td style="font-size: x-small;">CHECKED JCP</td> <td style="font-size: x-small;">DATE 9/27/13</td> </tr> <tr> <td colspan="2" style="font-size: x-small;">PERITUS #130103</td> </tr> <tr> <td colspan="2" style="text-align: center; font-size: 2em;">M-1</td> </tr> <tr> <td colspan="2" style="text-align: center; font-size: x-small;">2 OF 4 SHEETS</td> </tr> </table>	DESIGN JCP	DRAWN TMI	CHECKED JCP	DATE 9/27/13	PERITUS #130103		M-1		2 OF 4 SHEETS	
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CUSTOM AIR HANDLING UNIT SCHEDULE

UNIT NO.	INNOVENT MODEL NO.	AIR SYSTEM TYPE	SUPPLY FAN DATA (DUAL DIRECT DRIVE PLENUM FANS)								COOLING COIL DATA								HEATING COIL #1 DATA								HEATING COIL #2 DATA								WEIGHT (lbs.)		
			CFM TOTAL	CFM O.A.	T.S.P. INCHES	E.S.P. INCHES	H.P. (QTY.)	VOLTAGE	M.C.A.	M.O.P.	TOTAL M.B.H.	ENT. DB F	ENT. WB F	LVG. DB F	LVG. WB F	FACE VELOCITY	S.P. INCHES	G.P.M.	Δ P FT.	MIN. ROWS	M.B.H.	ENT. DB F	LVG. DB F	FACE VELOCITY	S.P. INCHES	G.P.M.	Δ P FT.	ROWS	M.B.H.	ENT. DB F	LVG. DB F	FACE VELOCITY	S.P. INCHES	G.P.M.		Δ P FT.	ROWS
AC-1	CAHU	SZVAV	25,000	6000	3.87	2.0	(2)15	460/3/60	41.6	60	1169	80	67	52	51.6	487	0.84	195	17.1	8	812	45	75	496	0.09	55	4.2	1	569	55	76	487	0.07	39	6.9	1	10,000

- CHILLED WATER EWT = 44°; HEATING WATER EWT = 160F(HTG COIL #1), 130F(HTG COIL #2); SZVAV = SINGLE ZONE VARIABLE AIR VOLUME
- MIXING BOX W/OA & RA DAMPERS AND ANGLED (MERV 8) FILTERS
 - HEATING COIL #1 UPSTREAM COOLING COIL
 - CHILLED WATER COIL
 - HEATING COIL #2 DOWNSTREAM COOLING COIL
 - DIRECT DRIVE OPEN SUPPLY FANS W/ INTERNAL VIBRATION ISOLATION
 - ODP PREMIUM EFFICIENCY MOTORS (E+3)
 - FACTORY MOUNTED VFD FOR SUPPLY AIR FANS

HIGH EFFICIENCY GAS-FIRED CONDENSING BOILER SCHEDULE

SYMBOL	LOCHINVAR MODEL No.	HEAT TRANSFER PERFORMANCE								ELECTRICAL		REMARKS	
		HEATING M.B.H. (OUTPUT)	G.P.M.	WPD (FT.)	ENT. WATER TEMP. °F	LVG. WATER TEMP. °F	GAS FIRING RATE-MB.H. (INPUT MAX)	GAS FIRING RATE-MB.H. (INPUT MIN)	THERMAL EFFICIENCY	VENT DIA. INCHES	VOLTAGE		TOTAL AMPS
B-1	KBN501	470	37	16	105	130	500	100	94%	4"	115/1/60	6.7	SEE NOTES #1 - #4

- NOTES:
- CONDENSATE NEUTRALIZATION KIT.
 - HIGH & LOW GAS PRESSURE SWITCHES WITH MANUAL RESET.
 - CATEGORY IV PVC VENTING.
 - FULLY MODULATING BURNER WITH 5:1 TURNDOWN RATIO.

PUMP SCHEDULE

PUMP No.	B & G MODEL No.	G.P.M. EA.	HEAD FT.	H.P. EA.	VOLTAGE	TRIPLE DUTY VALVE		SERVICE
						MODEL		
P-1	SERIES 60 1½"x1½"x7"	37	50	2	208/1/60	3DV-1.5RFF		BOILER B-1 CIRCULATING PUMP(N-LINE)

CONTROL VALVE SCHEDULE

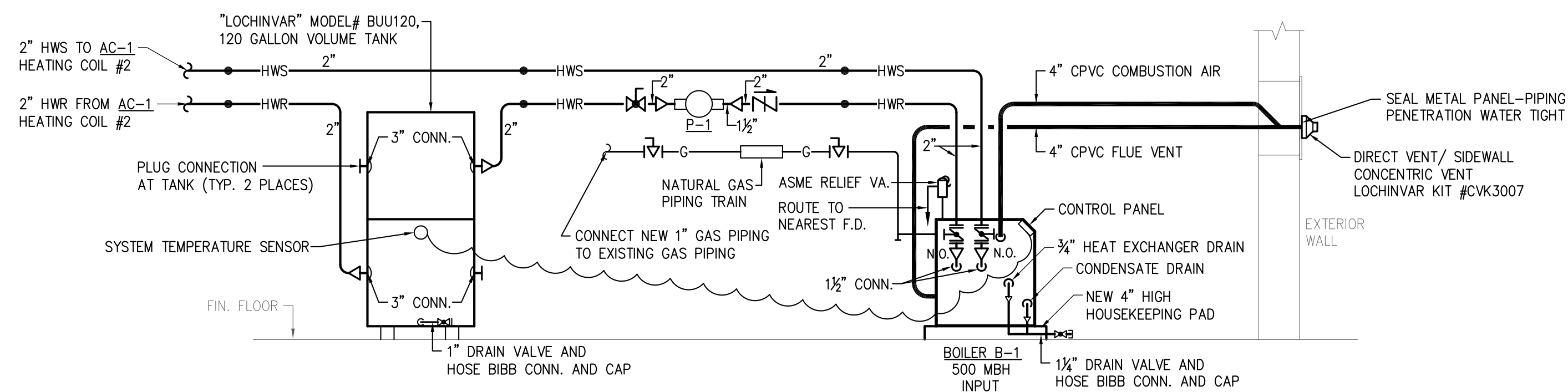
SYMBOL	SERVICE	SIZE	CV	G.P.M.	TYPE	NO. REQ'D.	REMARKS
CV-1	AC-1 CLG COIL UPPER	2½"	*	98	2W	1	
CV-2	AC-1 CLG COIL LOWER	2½"	*	98	2W	1	
CV-3	AC-1 HTG #2 COIL	1½"	*	39	3W	1	

- NOTES:
- * TO BE SET & CONFIRMED BY "JOHNSON CONTROLS".

CIRCUIT BALANCER SCHEDULE

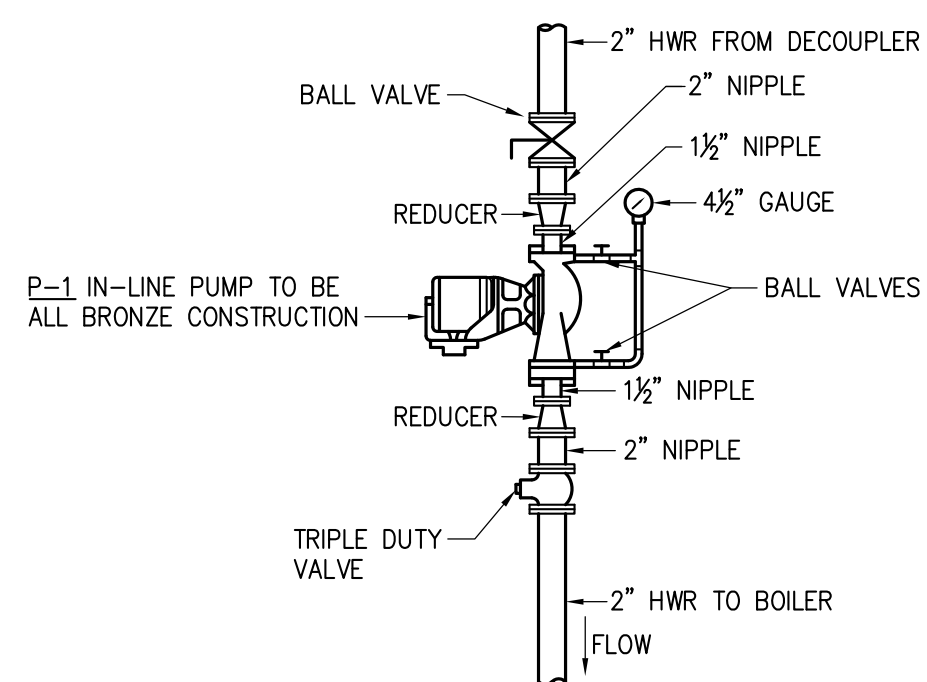
SYMBOL	B&G MODEL	G.P.M.	DP. FEET	APPROX. SETTING	NO. REQ'D.	REMARKS
CB-1	2½ CB	98	*	*	1	AC-1 CLG COIL UPPER
CB-2	2½ CB	98	*	*	1	AC-1 CLG COIL LOWER
CB-3	2 CB	39	*	*	1	AC-1 HTG #2 COIL
CB-4	2 CB	39	*	*	1	AC-1 HTG #2 COIL - BYPASS

- NOTES:
- * TO BE COMPLETED BY TEST AND BALANCE CONTRACTOR.



BOILER B-1 PIPING FLOW DIAGRAM

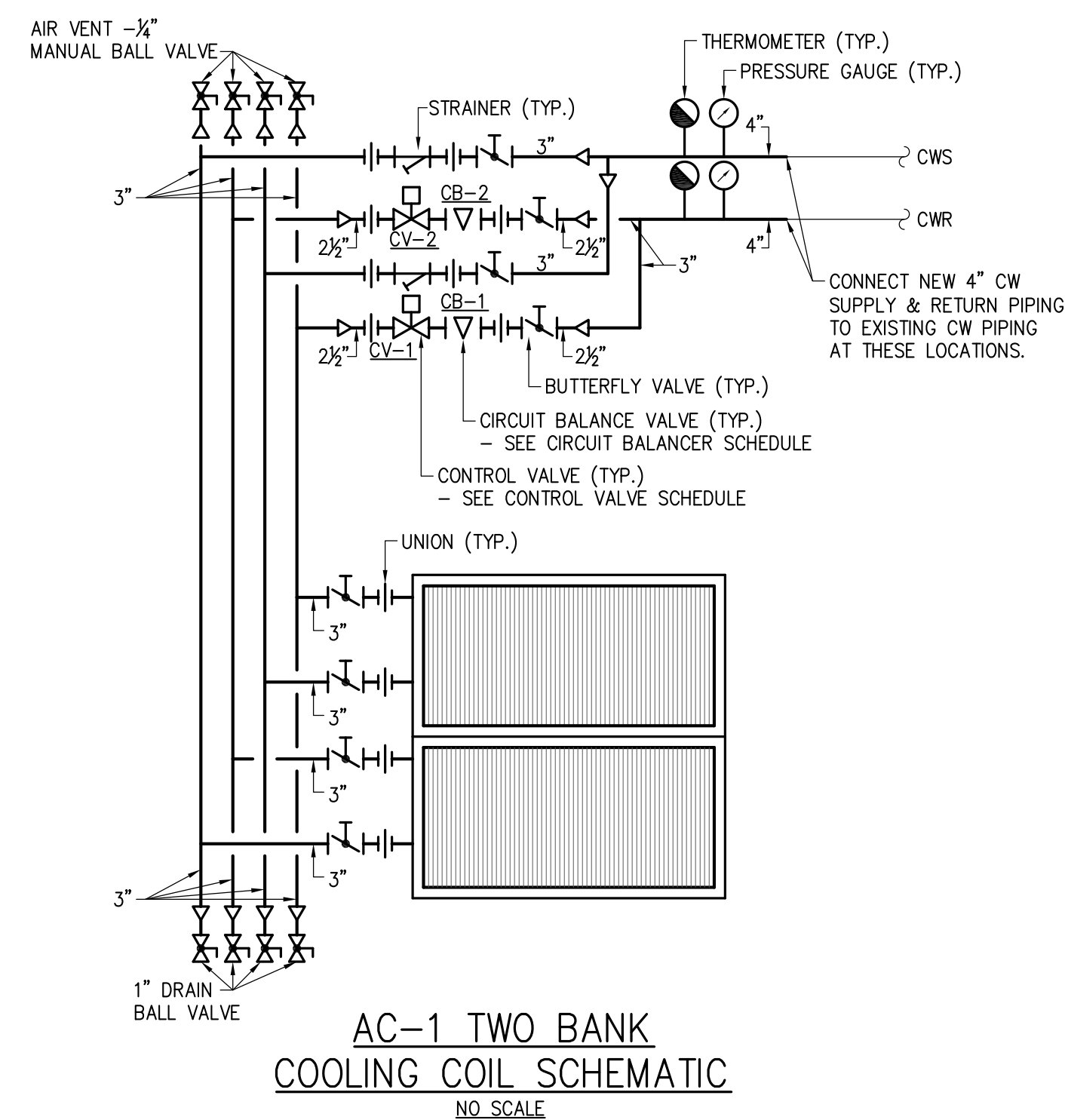
NO SCALE



TYPICAL IN-LINE PUMP PIPING DIAGRAM

NO SCALE

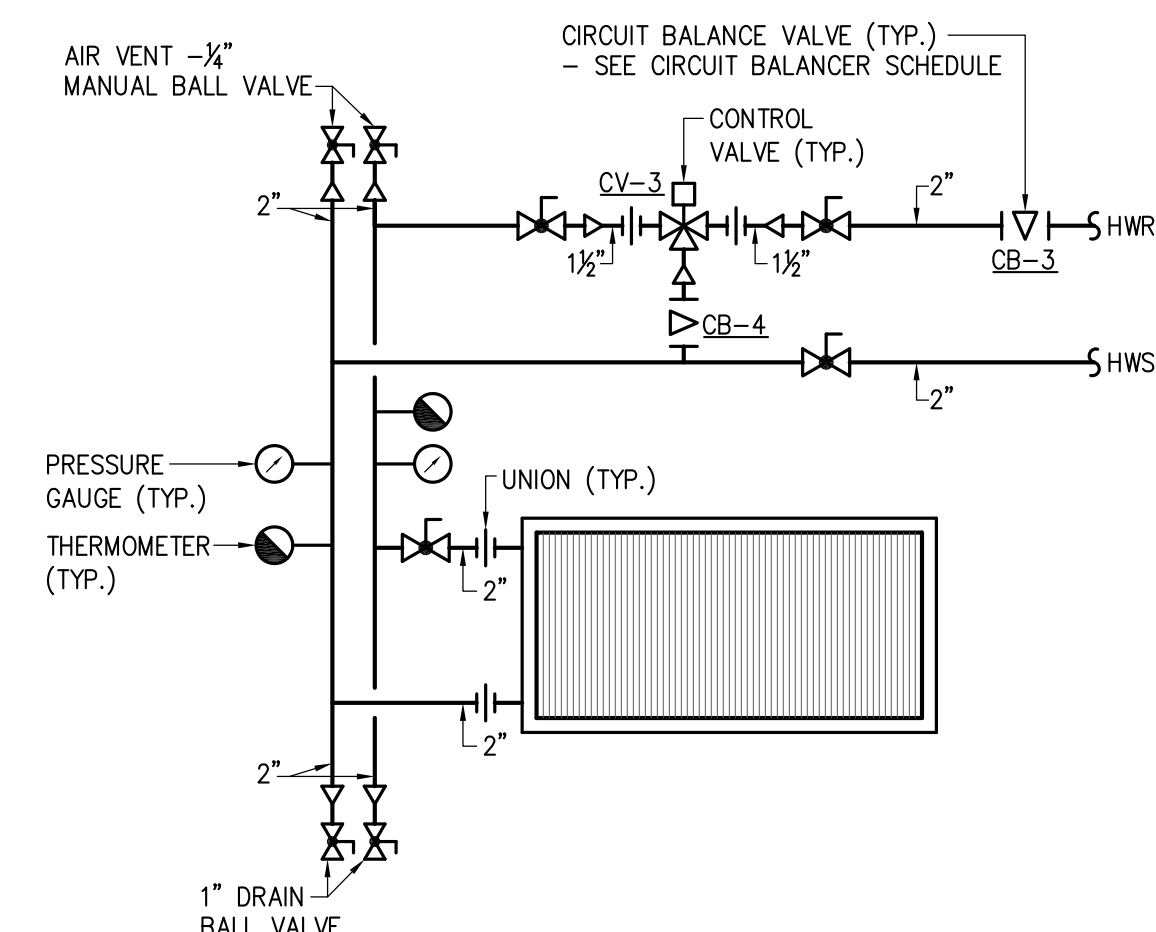
SUPPORT PUMP AND HORIZONTALLY MOUNTED MOTOR PER MANUFACTURER'S RECOMMENDATIONS



AC-1 TWO BANK COOLING COIL SCHEMATIC

NO SCALE

NOTE: USE BALL VALVES FOR PIPING 2½" & SMALLER USE BUTTERFLY VALVES ON PIPING 3" AND GREATER.



AC-1 SINGLE BANK HEATING COIL #2 SCHEMATIC

NO SCALE

NOTE: USE BALL VALVES FOR PIPING 2½" & SMALLER USE BUTTERFLY VALVES ON PIPING 3" AND GREATER.

MECHANICAL LEGEND

SYMBOL	DESCRIPTION
— ECWS —	EXISTING CHILLED WATER SUPPLY PIPING
— ECWR —	EXISTING CHILLED WATER RETURN PIPING
— EHWS —	EXISTING HEATING WATER SUPPLY PIPING
— EHRW —	EXISTING HEATING WATER RETURN PIPING
— CWS —	CHILLED WATER SUPPLY PIPING
— CWR —	CHILLED WATER RETURN PIPING
— D —	DRAIN PIPING
— DCW —	DOMESTIC COLD WATER PIPING
— HWS —	HEATING WATER SUPPLY PIPING
— HRW —	HEATING WATER RETURN PIPING
—	CLEAN OUT (C.O.)
⊘	BALL VALVE
⊘	CHECK VALVE
⊘	STRAINER ASSEMBLY
⊘	CIRCUIT BALANCER
⊘	BUTTERFLY VALVE (LUG BODY)
⊘	2-WAY CONTROL VALVE
⊘	3-WAY CONTROL VALVE
⊘	PRESSURE REDUCING VALVE
⊘	REDUCER
⊘	UNION
⊘	TRIPLE DUTY VALVE
⊘	PRESSURE GAUGE
⊘	THERMOMETER
N.O.	NORMALLY OPEN
N.C.	NORMALLY CLOSED

MECHANICAL GENERAL NOTES

- ALL SCHEDULES SHOWN ARE THE PURPOSE OF AIDING THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CORRECT TOTALS.
- COORDINATE HVAC INSTALLATION WITH ALL OTHER TRADES, INCLUDING ELECTRICAL.
- REFER TO ELECTRICAL DRAWINGS FOR POWER CONNECTION POINTS.
- ALL PIPING INSULATION SHALL COMPLY WITH SECTION 503 OF THE INTERNATIONAL ENERGY CONSERVATION CODE, 2012 EDITION.
- ALL ELECTRICALLY POWERED EQUIPMENT SHALL BE LISTED AND LABELED PER NATIONAL ELECTRICAL CODE, AND INTERNATIONAL MECHANICAL CODE, 2012 EDITION, CHAPTER 3.
- ALL EQUIPMENT SHALL BE ACCESSIBLE PER INTERNATIONAL MECHANICAL CODE 2012 EDITION, CHAPTER 3.
- ALL PIPING ARRANGEMENT AND ROUTING AS SHOWN IS DIAGRAMMATIC AND MAY REQUIRE ALTERATIONS DIFFERENT FROM THAT SHOWN IN ORDER TO ACCOMMODATE STRUCTURE/ARCHITECTURAL FEATURES. CONTRACTOR SHALL FIELD VERIFY AND MAKE ALTERATIONS OR REVISIONS AS REQUIRED.
- THE HORSEPOWERS SHOWN ARE MIN. REQUIRED FOR PRESENT AND/OR FUTURE GROWTH/OPERATION. IN NO CASE WILL ANY MOTOR H.P. REDUCTION FROM THAT SPECIFIED BE ACCEPTED.
- CONTRACTOR SHALL RECEIVE AND OFFLOAD NEW AIR HANDLING UNIT AC-1. COORDINATE EXACT OFFLOADING LOCATION WITH OWNER. CONTRACTOR SHALL PROVIDE FOR THE RIGGING, TRANSPORT, AND PLACEMENT OF NEW AC-1 ON TO EXISTING EQUIPMENT PAD WHEN WORK COMMENCES.

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ARENA HUMIDITY CORRECTION
SC STATE PROJECT #H34-9543-JM
SPARTANBURG, SOUTH CAROLINA**

DESIGN / DRAWN
JCP / TMI

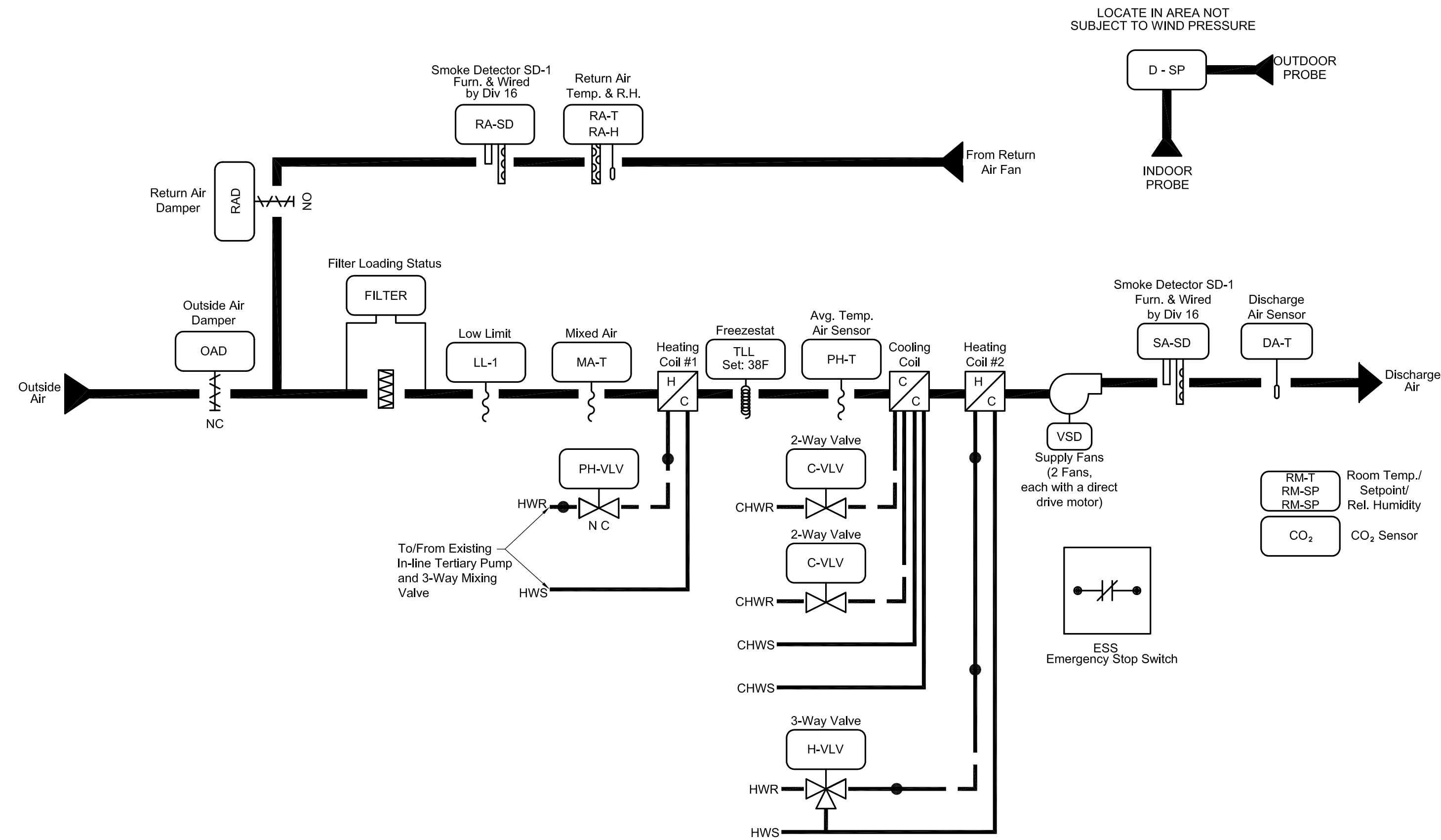
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SHEET
PERITUS #130103

M-2

3 OF 4 SHEETS



AC-1 CONTROL SCHEMATIC
NO SCALE

Air Handling System AC-1 (Mixed Air Single Zone VAV Systems with Return Fan Economizers)

1. GENERAL

The air handling system shall be started and stopped by the existing "Johnson Controls" Building Management System (BMS). The system shall be provided with safety controls and interlocks to comply with national and local governing codes. Low temperature cutout thermostats shall be provided to protect heating and cooling coils and shall adequately protect each square foot of coil area. At a minimum, the following safety controls shall be provided to stop the system in the event an alarm condition occurs.

2. SAFETY CONTROLS

- a. **LOW TEMPERATURE CUTOUT THERMOSTATS** shall be located in the air leaving the heating water coil in the air handling unit. Where more than one low limit thermostat is required, provide additional thermostats wired in series for system shutdown and wired in parallel for system alarming.
- b. **SMOKE DETECTORS** Shall be furnished under Division 16 and mounted in duct by HVAC Contractor and shall have alarm contacts wired in series with the fire alarm contact to shutdown the air handling system with an alarm condition. Smoke detectors shall also signal the BMS. Detectors to have two sets of isolated contacts. One set to be N.C. set for unit shut-down and the other set to be N. O. for monitoring.
- c. Above safety controls, upon activation, shall stop the fans, position control dampers and control valves to their normal fan shutdown position and provide alarm functions to the BMS.
- d. Existing Variable Frequency Drives shall feature the following controls points:

Start-Stop (Enable/Disable)
Safety Shut-down
Monitor Run Status
Monitor By-pass Status
- e. Drives shall allow hand override of BMS provided all safety Controls are in their normal unalarmed condition. BMS control loops shall be enabled for normal occupied operation anytime the drive is running VFD or bypass. Heating, cooling and economizer cooling (as determined by controls and economizer override) shall operate to maintain the space temperature occupied heat cool setpoints.
- f. Shut Down Positions of Devices: Anytime the control system is off, the outside, return air, and relief air dampers and hot water and chilled water valves shall be powered to drive to their normal fan shutdown position. Normal shutdown positions are as follows:

1) Damper	Normal Position
Outside*	Closed
Relief	Closed
Return	Open
*O.A. dampers to have interlock with supply air fan drive.	

- 2) Valves

Hot water valve (Heating coil #1)	Open to coil
Chilled water valve	Closed to coil

3. Preprogrammed occupied sequence shall be activated as determined by program controls and as described under BMS.

- a. **OCCUPIED-UNOCCUPIED MODE CONTROL:** The occupied mode will be scheduled or manually commanded at the BMS. In the unoccupied mode the air handling unit will run continuously. In the unoccupied mode the air handling unit will be off and the room temperature and humidity will be monitored and compared to the night low limit, night high limit, and humidity setpoints. Upon a fall in room temperature below the night low limit setpoint, or a rise in room temperature above the night limit setpoint, or a rise in room relative humidity above setpoint, the air handling unit will be started and remain on until the differential is satisfied. The supply air fan shall be modulated to operate. The return fan shall also operate along with the supply fan.
- b. **START-STOP CONTROL:** The air handling unit will be started and stopped as determined by the Occupied-Unoccupied Mode Control Program. Upon receiving a start command the supply fan and return fans will be started. Supply and return fans shall start at a minimum adjustable frequency drive allowed speed.
- c. **PREHEAT TEMPERATURE CONTROL:** The DDC Controller will enable the inline hot water tertiary pump and modulate open the heating hot water mixing valve at a preset outdoor ambient temperature and modulate the valve as required to maintain space temperature at setpoint.
- d. **MIXED AIR DAMPER CONTROL (OA, RA & EA DAMPERS):** The mixed air dampers will be modulated open on a call for cooling from the space temperature control signal. On a call for cooling, the discharge air temperature setpoint shall be maintained by the chilled water valve and will be modulated open in sequence. A mixed air low limit program will modulate the mixing dampers closed on a fall in mixed air temperature below setpoint (adjustable). The mixing dampers will be modulated open to meet minimum outdoor air requirements by the calculated CO2 differential sensed by a CO2 measuring station in the space and a CO2 sensor in the outside air. The mixed air dampers shall be controlled as defined in the table below:

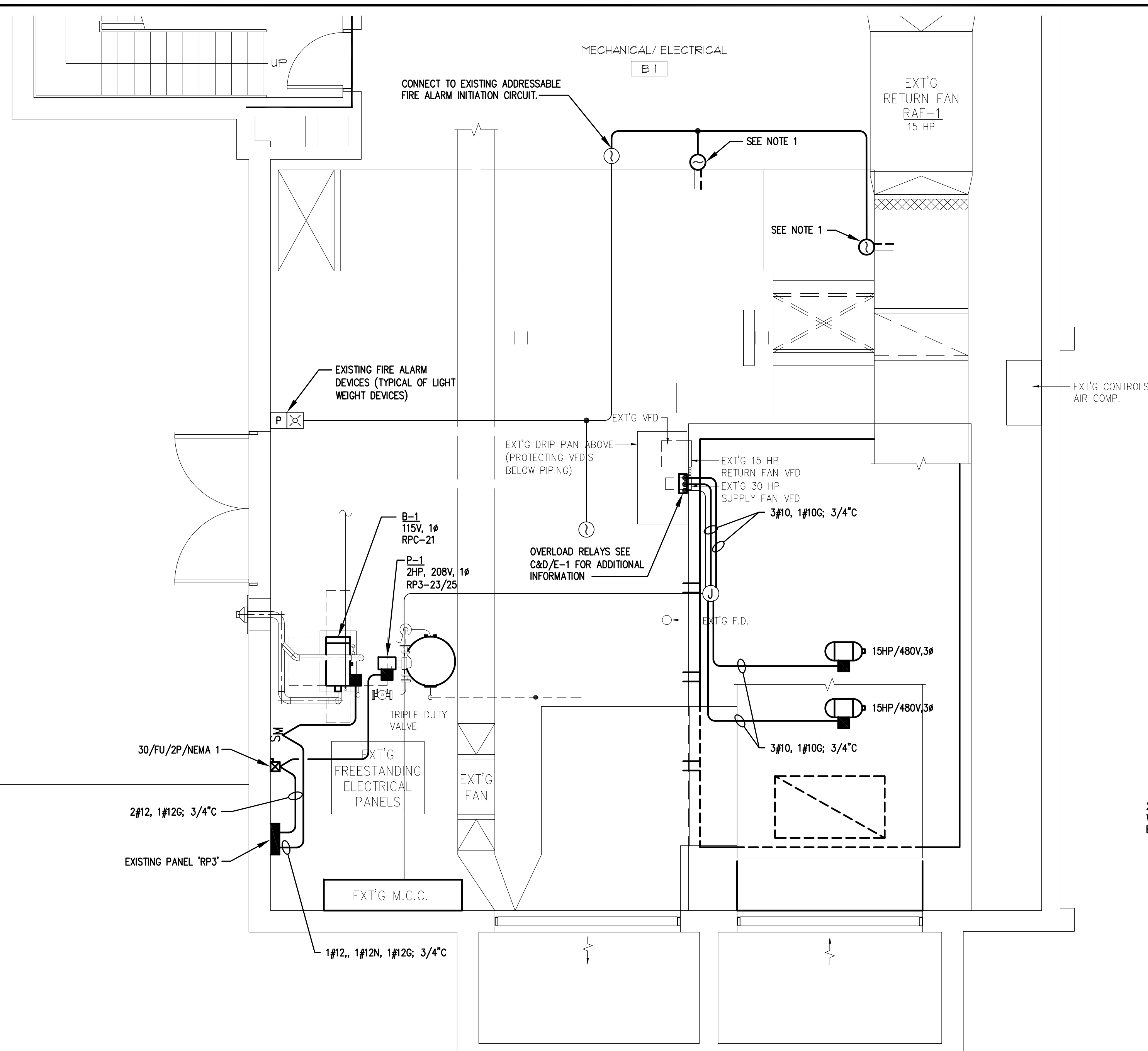
1) CO2 - Differential of Outdoor Air and Space - 350PPM - Damper Position Closed.
2) CO2 - Differential of Outdoor Air and Space - 700PPM - Damper Position at Minimum or CFM as indicated on the AHU Equipment Schedule.

- e. **SPACE TEMPERATURE CONTROL:** The DDC Controller shall modulate the supply fan as required to maintain the space temperature setpoints of 70°F (cooling - adjustable) and 75°F (heating - adjustable). At any time the system is in occupied mode the supply fan shall maintain CFM to meet minimum O/A requirements. In the cooling mode the chilled water valve will be modulated open to 100% then the VFD will ramp in sequence to 100%. There will be a minimum temperature setpoint in the discharge air set at 50°F (adjustable). In the heating mode the heating valve will be modulated open to the 100% then the VFD will ramp up to 100% speed.

- f. **SUPPLY FAN CONTROL:** The supply fan variable speed drive will be modulated as required to maintain space temperature during the cooling cycle and heating cycles.
- g. **RETURN FAN CONTROL:** The DDC controller will sense differential pressure between the conditioned space and the outdoors. The return fan variable speed drive will be modulated as required to maintain the differential pressure of 0.1 in W.G. (adjustable) within the space. The return fan shall run continuously when the supply fan is running. In addition, the supply and return airflow quantities shall be used to establish the control differential between supply fan VFD and return fan VFD.
- h. **FAN SHUTDOWN:** The DDC controller will sense the status of the supply fan via current sensing switches. Upon sensing that the supply fan is off, the DDC controller will close the outside air damper, open the return air damper, close the chilled water valve, open the hot water valve.
- i. **SAFETIES:** A fire alarm shutdown relay will stop the unit upon receiving a signal from the fire alarm system. A temperature low limit will stop the unit upon sensing a fall in temperature below setpoint.
- k. **AIR LOW MEASUREMENT:** The supply air and return air quantities shall be monitored and trended by the Building Management System, and shall be used to establish speed setpoints on the Variable Frequency Drive.
- l. **SPACE RELATIVE HUMIDITY CONTROL:** Upon the call for space dehumidification, the DDC controller shall modulate open the chilled water control valves to provide dehumidification. Heating Coil #2 Control Valve and associated condensing boiler & circulating pump shall control space temperature.

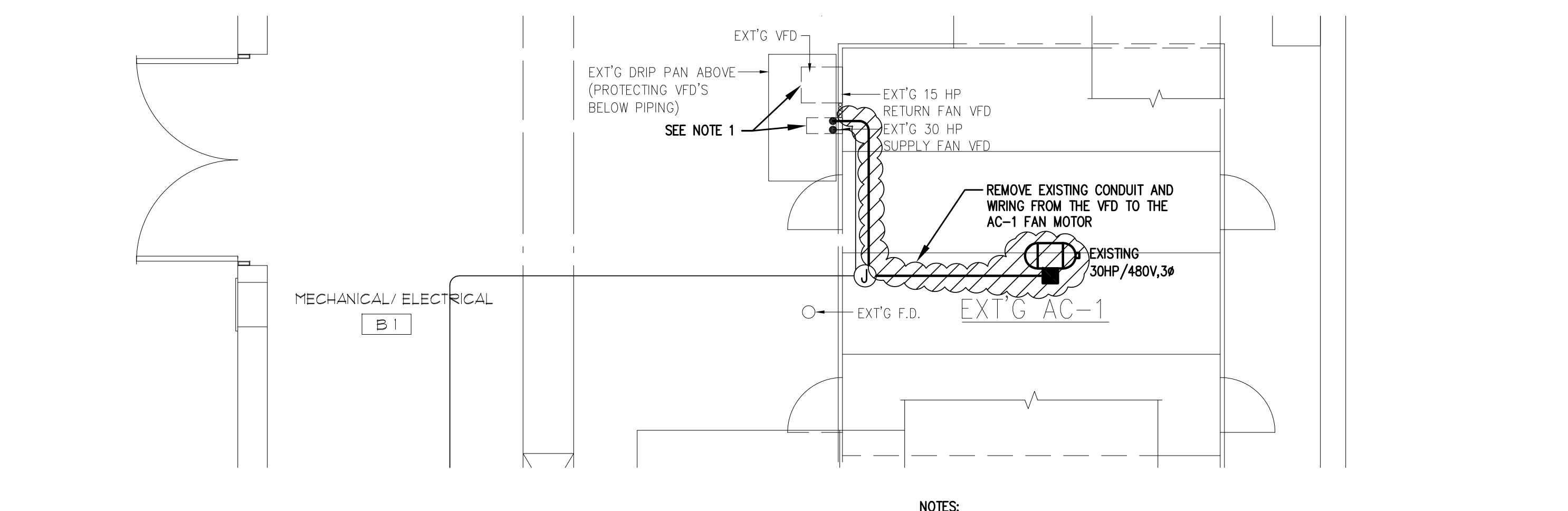
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M-3					
4 OF 4 SHEETS					

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A ELECTRICAL POWER PLAN
 E-1 SCALE: 1/4" = 1'-0"
 PROJECT NORTH

- NOTES:**
- FURNISH NEW PHOTOELECTRIC DUCT DETECTOR. MECHANICAL CONTRACTOR TO INSTALL DUCT DETECTOR AND JOHNSON CONTROLS IS TO INSTALL WIRING FOR SHUTDOWN OF UNIT. OUTSIDE AIR DAMPER IS TO SHUT UPON DUCT DETECTOR ALARM.
 - REINSTALL EXISTING VFD RACK ON NEW AC-1.



B ELECTRICAL DEMOLITION PLAN
 E-1 SCALE: 1/4" = 1'-0"
 PROJECT NORTH

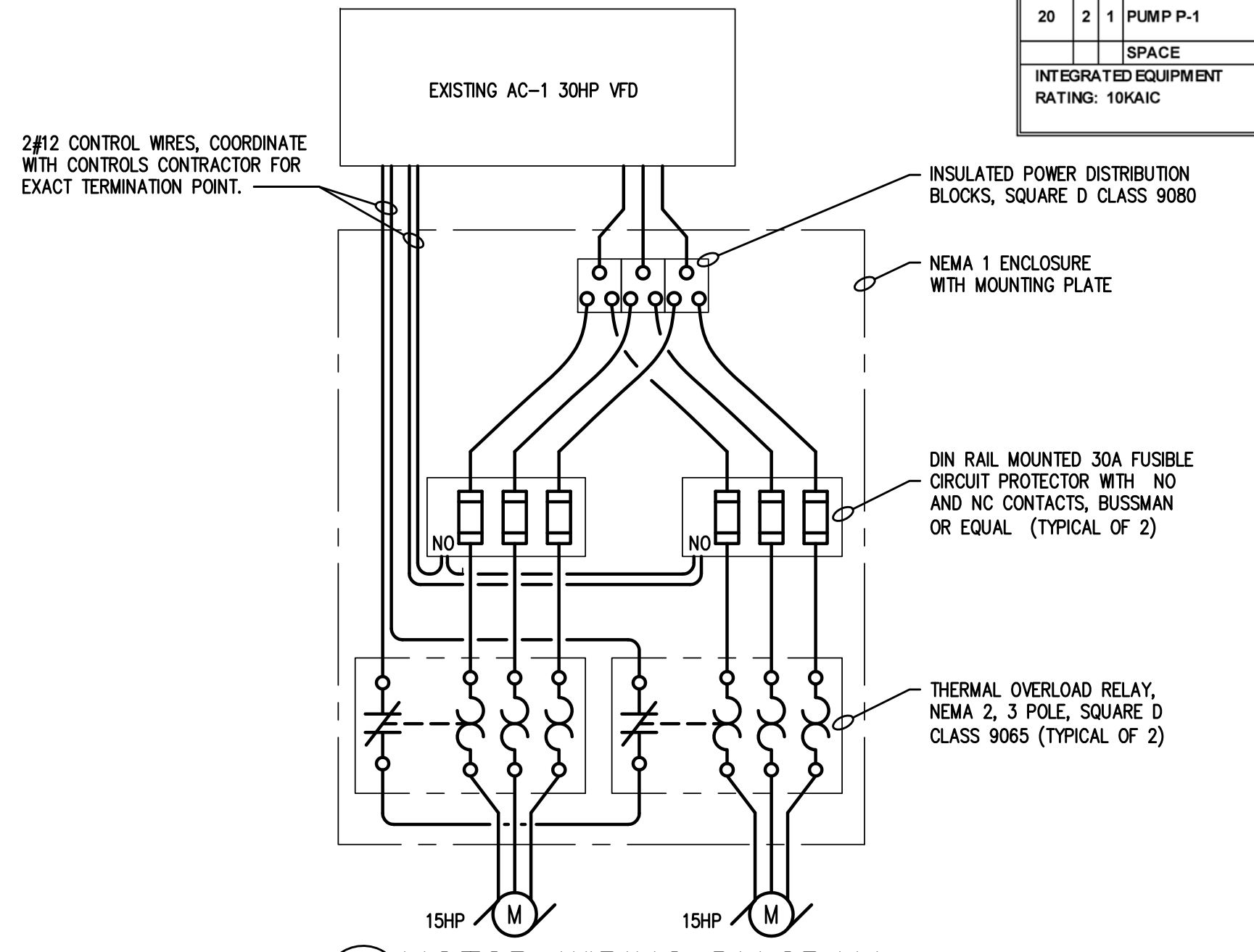
- NOTES:**
- THE EXISTING VFD RACK IS MOUNTED ON AC-1. REMOVE THE EQUIPMENT AND PROTECT WHILE AC-1 IS BEING REMOVED AND REPLACED.

ELECTRICAL GENERAL NOTES:

- INSPECT SITE PRIOR TO SUBMITTING BID. DRAWINGS ARE INTENDED TO COVER THE REQUIRED ELECTRICAL SYSTEMS. DRAWINGS MAY NOT SHOW COMPLETE OR ACCURATE DETAILS OF THE BUILDING OR SYSTEM IN EVERY RESPECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ANY ADDITIONAL INFORMATION AS REQUIRED.
- CONFORM TO THE NATIONAL ELECTRICAL CODE (2011), IBC (2012), IECC (2009), APPLICABLE NEMA, ANSI AND IEEE PUBLICATIONS, U.L. AND ADA STANDARDS AND OSHA REQUIREMENTS. COMPLY WITH LOCAL, COUNTY, STATE AND NATIONAL CODES HAVING JURISDICTION.
- FURNISH AND INSTALL ALL MATERIALS IN A NEAT AND WORKMANLIKE FASHION. ALL MATERIALS SHALL BE NEW, WITH FIRST QUALITY AND UL LABEL.
- VERIFY ALL DIMENSIONS AND CLEARANCES PRIOR TO INSTALLATION OF EQUIPMENT AND RACEWAYS. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF WORK WITH THAT OF ALL OTHER TRADES AS REQUIRED.
- CONDUIT SHALL BE EMT FOR BRANCH CIRCUIT WIRING AS ALLOWED BY NEC, EXCEPT THAT SET SCREW OR CRIMP FITTINGS ARE NOT ALLOWED. WHERE EXPOSED TO PHYSICAL DAMAGE CONDUITS SHALL BE RIGID GALVANIZED STEEL. MINIMUM CONDUIT SIZE SHALL BE 3/4". ALL CONDUCTORS SHALL BE TYPE THIN/THIN, STRANDED 600V COPPER BUILDING WIRE. MINIMUM SIZE SHALL BE #12 AWG COPPER UNLESS NOTED.
- PROVIDE GROUNDING FOR ALL EQUIPMENT IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
- ALL ENCLOSURES SHALL BE OF THE NEMA TYPE WHICH IS SUITABLE FOR THE APPLICATION.
- SEAL ALL CONDUIT PENETRATIONS TO MATCH RATING OF WALL BEING PENETRATED.
- ALL WORK SHALL HAVE PROPER LABELING AND NAMEPLATES. ALL CIRCUITS SHALL BE LABELED AT PANELS AND BOXES AS INDICATED. ALL PANELS AND DISCONNECTS ARE TO BE PERMANENTLY MARKED WITH NAME OR EQUIPMENT SERVED. ALL PANELS ARE TO BE PROVIDED WITH TYPED PANEL SCHEDULES.
- THOROUGHLY CLEAN ALL EQUIPMENT AND SYSTEMS BEFORE PLACING IN OPERATION. RESTORE FINISHED SURFACES IF DAMAGED AND DELIVER THE ENTIRE INSTALLATION IN AN APPROVED CONDITION. INSTRUCT THE OWNER'S PERSONNEL IN THE PROPER OPERATION AND MAINTENANCE OF THE SYSTEMS. FURNISH TO THE OWNER THREE SETS OF OPERATION AND MAINTENANCE MANUALS FOR EACH SYSTEM.
- GUARANTEE THE WORK INSTALLED FOR A PERIOD OF ONE YEAR AFTER DATE OF FINAL ACCEPTANCE. DEFECTS WHICH APPEAR AS A RESULT OF NORMAL USAGE SHALL BE REMEDIED BY THE CONTRACTOR TO THE COMPLETE SATISFACTION OF THE OWNER WITHOUT COST TO THE OWNER.
- CONTRACTOR SHALL KEEP CURRENT A SET OF PLANS FOR THE DURATION OF CONSTRUCTION WITH ALL CHANGES TO WORK NEATLY AND ACCURATELY MARKED IN RED AND SHALL TURN OVER TO OWNER AT COMPLETION OF PROJECT.
- ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED TO MEET SEISMIC REQUIREMENTS OF 2012 IBC AND SHALL BE SUBJECT TO SPECIAL INSPECTION REQUIREMENTS, CHAPTER 17 OF 2012 IBC AS IT RELATES TO ELECTRICAL EQUIPMENT.

SYMBOL	DESCRIPTION
	HOME RUN TO LIGHTING/SERVICE PANEL. HASH MARKS, WHEN SHOWN, INDICATE NUMBERS OF CONDUCTORS. "/> INDICATES HOT WIRE, "N" INDICATES NEUTRAL CONDUCTOR, "G" INDICATES GROUND CONDUCTOR. HOME RUN NOTE INDICATES PANEL NAME AND CIRCUIT NAME OR FEEDER TAG. CONDUCTORS SHALL BE #12 AWG IN 3/4" CONDUIT UNLESS NOTED OTHERWISE. ANY HOME RUN OR CONDUIT WITHOUT HASH MARKS IS TO CONTAIN 3 CONDUCTORS: 1 HOT, 1 NEUTRAL, AND 1 EQUIPMENT GROUND. EACH HOT CIRCUIT SHALL BE PAIRED WITH A SEPARATE NEUTRAL CONDUCTOR. SHARING OF NEUTRAL CONDUCTORS BETWEEN CIRCUITS IS NOT ALLOWED.
	EXPOSED CONDUIT
	CONDUIT JUNCTION IN CONDULET OR JUNCTION BOX.
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	JUNCTION BOX CEILING MOUNTED
	LIGHTING OR SERVICE PANEL, SURFACE MOUNTED (208V)
	MOTOR, HORSEPOWER AS SHOWN.
	COMBINATION STARTER, NEMA SIZE NOTED, WITH FUSED DISCONNECT SIZE SHOWN. STARTER TO BE FVNR, UNLESS NOTED OTHERWISE, WITH HOA SWITCH AND 1-N.O., 1-N.C. AUXILIARY CONTACTS. SQ. D OR EQUAL.
	CONNECTION TO A SPECIFIC PIECE OF EQUIPMENT. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH PROVIDER / INSTALLER OF THE EQUIPMENT.
WIRING DEVICES	
	MANUAL MOTOR STARTER, SQUARE D CLASS 2510

PANEL	VOLTAGE	BRANCH CIRCUIT	CABINET SURFACE MOUNTED		TYPE GEN AB				
			FEEDER	BOTTOM	MAINS 100A MLO	BRANCH CIRCUIT			
NO.	TRIP	DESIGNATION	No.	PHASE LOAD (VOLT-AMPS)	No.	DESIGNATION	NOTES	AMPS	TRIP
30	1	A/C UNIT LIGHTS	1		2	BOILER ROOM REC		1	20
20	1	AFTER DRYER	3		4	TELEPHONE BOARD		1	20
20	1	HOT WATER HEATER CIR. PUMP	5		6	CIR. PUMP		1	20
20	1	UNIT HEATER	7		8	OUTSIDE LIGHT		1	20
20	1	HEAT TAPE	9		10	2ND FLR A/C CONTROL POWER		1	20
20	1	TIME CLOCK	11		12	HVAC TEMP CONTROL		1	20
20	1	FIRE ALARM	13		14	HEAT TAPES		1	20
20	1	FIRE ALARM	15		16	R-FOR CHEMICAL H.T.		1	20
20	1	SPARE	17		18	110V TRAINING RM		1	20
20	1	208V	19		20	SPARE		1	20
20	1	BOILER B-1	21	500	22	SPACE			
20	2	PUMP P-1	23	1373	24	SPACE			
		SPACE	25	1373	26	SPACE			
		SPACE	27		28	SPACE			
INTEGRATED EQUIPMENT RATINGS: 10KVAIC			KVA TOTAL		PANELBOARD KVA LOAD TOTAL:		3.2		

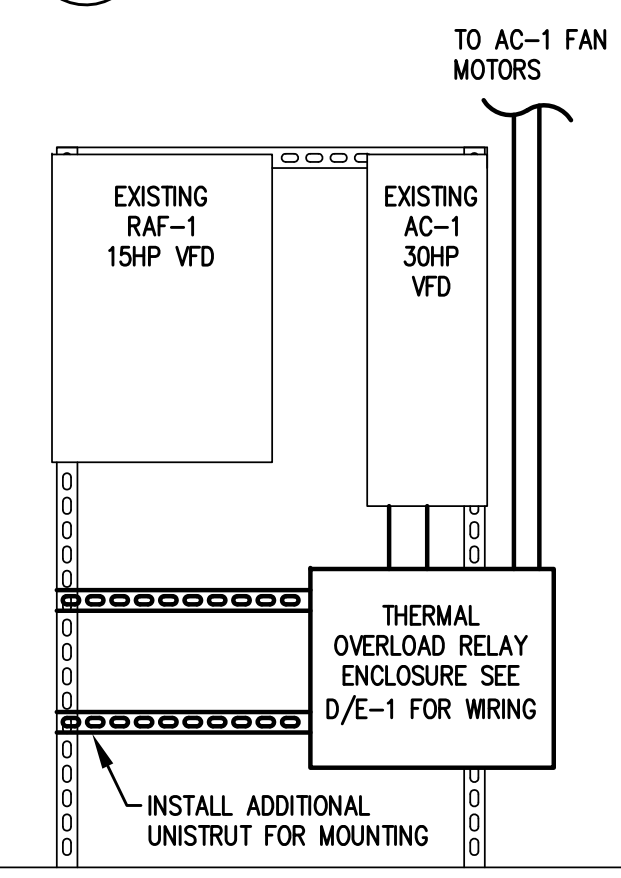


C MOTOR WIRING DIAGRAM
 E-1 SCALE: NTS

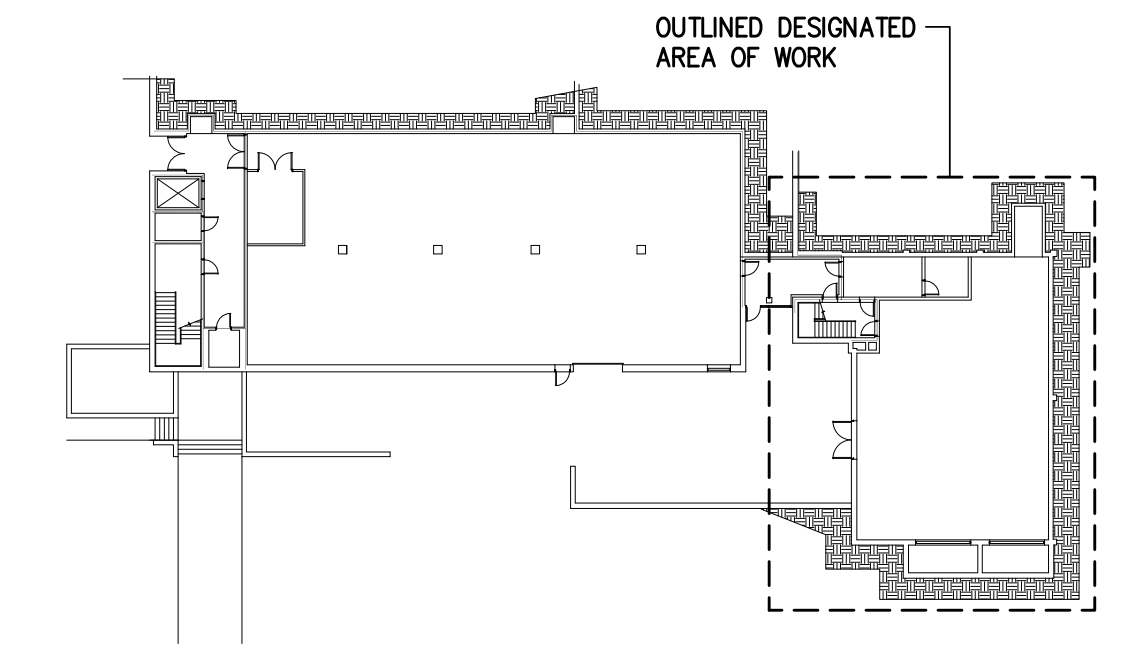
- PANEL NOTES:**
- INSTALL NEW BREAKER IN EXISTING SPACE.

ABBREVIATIONS:

AFF	ABOVE FINISH FLOOR	MLO	MAIN LUGS ONLY
AFG	ABOVE FINISHED GRADE	MCB	MAIN CIRCUIT BREAKER
BKR	BREAKER	MFR	MANUFACTURER
CU	COPPER	NTS	NOT TO SCALE
CKT	CIRCUIT	PH	PHASE
DWG	DRAWING	PNL	PANEL
EC	ELECTRICAL CONTRACTOR	RECP	RECEPTACLE (R.)
FU	FUSE	REQD	REQUIRED
FWE	FURNISHED WITH EQUIPMENT	SW	SWITCH
GFI	GROUND FAULT INTERRUPTER DEVICE	UNO	UNLESS NOTED OTHERWISE
LTC	LIGHTING (L)	UGND	UNDERGROUND
MCC	MOTOR CONTROL CENTER	W/	WITH



D MOUNTING DETAIL
 E-1 SCALE: NTS



KEY PLAN
 NO SCALE

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 EMAIL: Beig@BurdetteEngr.com
 BEI JOB NO. 18808

REVISIONS

NO.	DATE	BY	DESCRIPTION
0	10/10/13	JDV	ISSUE FOR BID

DESIGN: / DRAWN: / TMP
 CHECKED: DJB
 DATE: 9/27/13
 PERITUS #130103
 SHEET E-1
 1 OF 2 SHEETS

DM-12 UPSTATE HODGE CENTER
 ARENA HUMIDITY CORRECTION
 SC STATE PROJECT #H34-9543-JM
 SPARTANBURG, SOUTH CAROLINA

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