

30' - 0"

30' - 0"

30' - 0"

ENLARGED MECHANICAL ROOM PLAN M1.11 SCALE: 1/4" = 1'-0"

GENERAL NOTES

- A SEE SHEET M0.01 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
- TEMPORARILY HANG DIFFUSERS WITH WIRE IN AREAS WHERE THERE WILL NOT BE A CEILING UNTIL THE TENANT IMPROVEMENT PHASE. LOCATIONS CAN BE APPROXIMATE.

KEYED NOTES

- FIRE/SMOKE DAMPER WILL BE INSTALLED.
- 2 PROVIDE VOLUME DAMPER AND BALANCE TO 1,500 CFM.

FUTURE EXIT CORRIDOR WALL AT THIS LOCATION. FUTURE

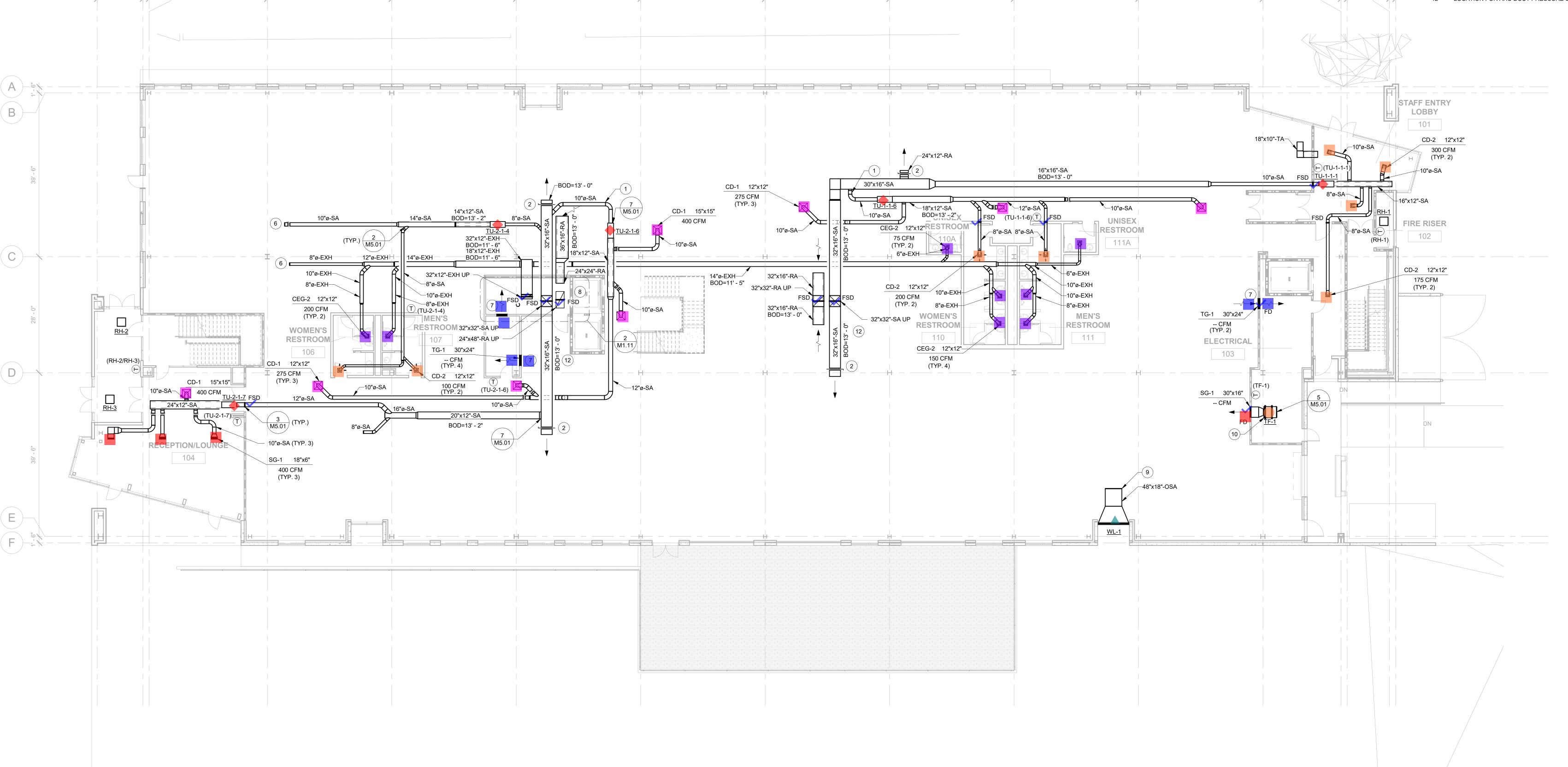
- ROUTE 3"-HWS AND 3"-HWR PIPING UP IN SHAFT. PIPING CONTINUES ON SHEET M1.21.
- PLUMBING EQUIPMENT SHOWN FOR COORDINATION.
- CONNECT 1"-CW TO DOMESTIC COLD WATER PIPING IN MECHANICAL ROOM. PROVIDE SHUTOFF VALVE, REDUCED PRESSURE BACKFLOW DEVICE, AND PRESSURE REDUCING VALVE. SET PRV TO 48 PSI.
- 6 PROVIDE VOLUME DAMPER AND BALANCE TO 400 CFM.
- MOUNT TRANSFER GRILLE 12" BELOW STRUCTURE.
- EXTEND DUCT 10" DOWN BELOW CEILING. PROVIDE WIRE.
- 9 CAP DUCT FOR FUTURE EXTENSION.

10.9 (11) 11.9 (12)

18' - 10" 1' - 6" 10' - 2" 1' - 6"

30' - 0"

- 10 MOUNT FAN 12" BELOW STRUCTURE.
- 11 CAP PIPES FOR FUTURE EXTENSION TO KITCHEN MAKEUP AIR.
- 12 LOCATION FOR AHU DUCT PRESSURE SENSOR.



M1.11 | SCALE: 3/32" = 1'-0"

MECHANICAL FIRST LEVEL PLAN

30' - 0"

30' - 0"

30' - 0"

30' - 0"

Sheet Title: MECHANICAL FIRST LEVEL PLAN



CORBIN

Beaverton, OR (503)645-0176 Tempe, AZ (480)535-9375 www.corbinengineering.com

LYNN STA

EXPIRES: 06/30/2024



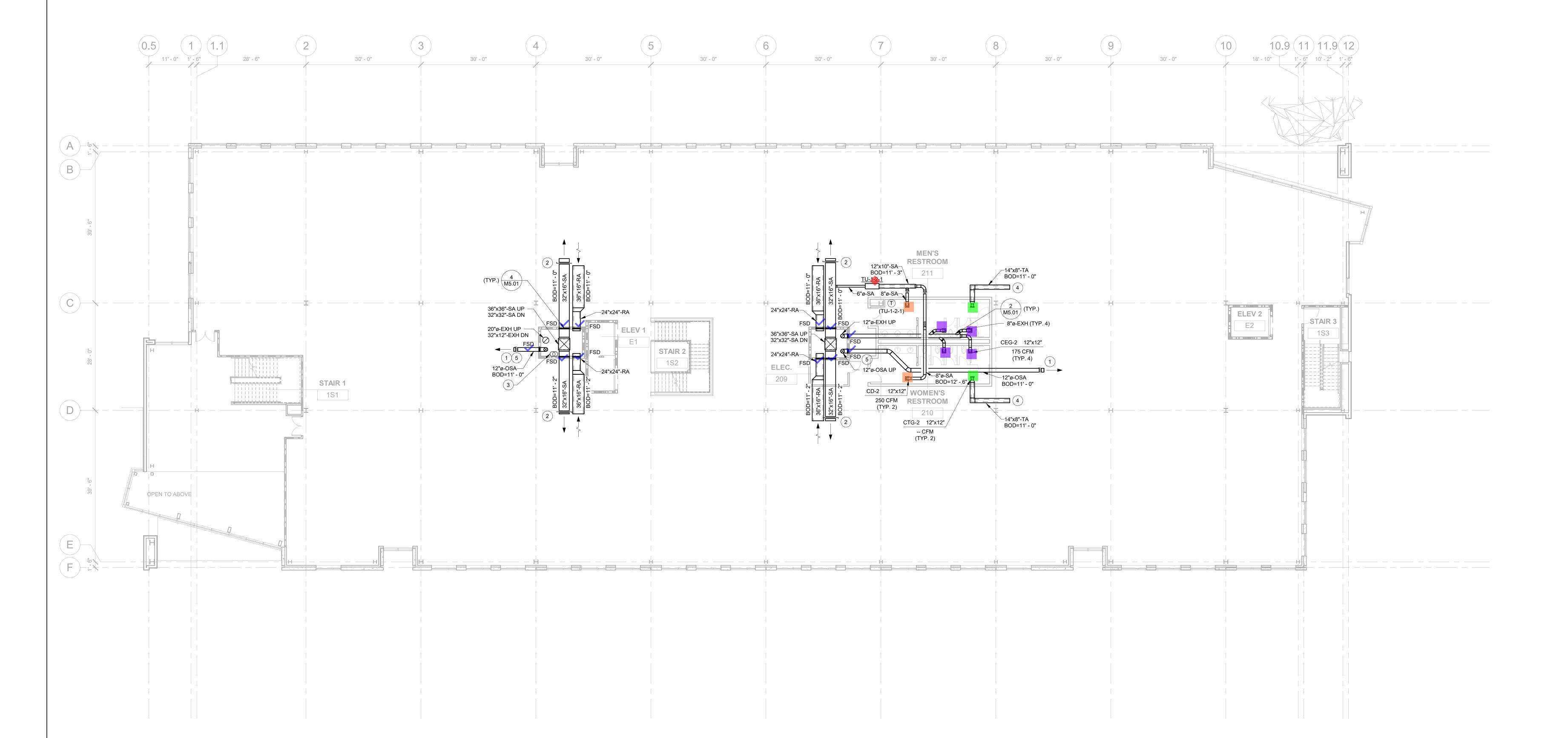
EXPIRES: 06/30/2024

GENERAL NOTES

A SEE SHEET M0.01 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.

KEYED NOTES

- 1 PROVIDE VOLUME DAMPER AND BALANCE TO 600 CFM.
- PROVIDE VOLUME DAMPER AND BALANCE TO 1,500 CFM.
- ROUTE BOTH 3"-HWR PIPING UP IN SHAFT. PIPING CONTINUES ON SHEET M1.31. ROUTE BOTH 3"-HWR PIPING DOWN THROUGH BOTTOM OF SHAFT AND INTO MECHANICAL ROOM ON SHEET M1.11.
- 4 TRANSFER AIR DUCT TERMINATES 6" BELOW STRUCTURE.
- 5 LOCATION FOR DOAS DUCT PRESSURE SENSOR.



Sheet Title:
MECHANICAL
SHOW DESCRIPTION

O ISSUED FOR PERMIT

12/20/22

1 MECHANICAL SECOND LEVEL PLAN M1.21



Sheet Number

M1.21
Proj No: CC22450B

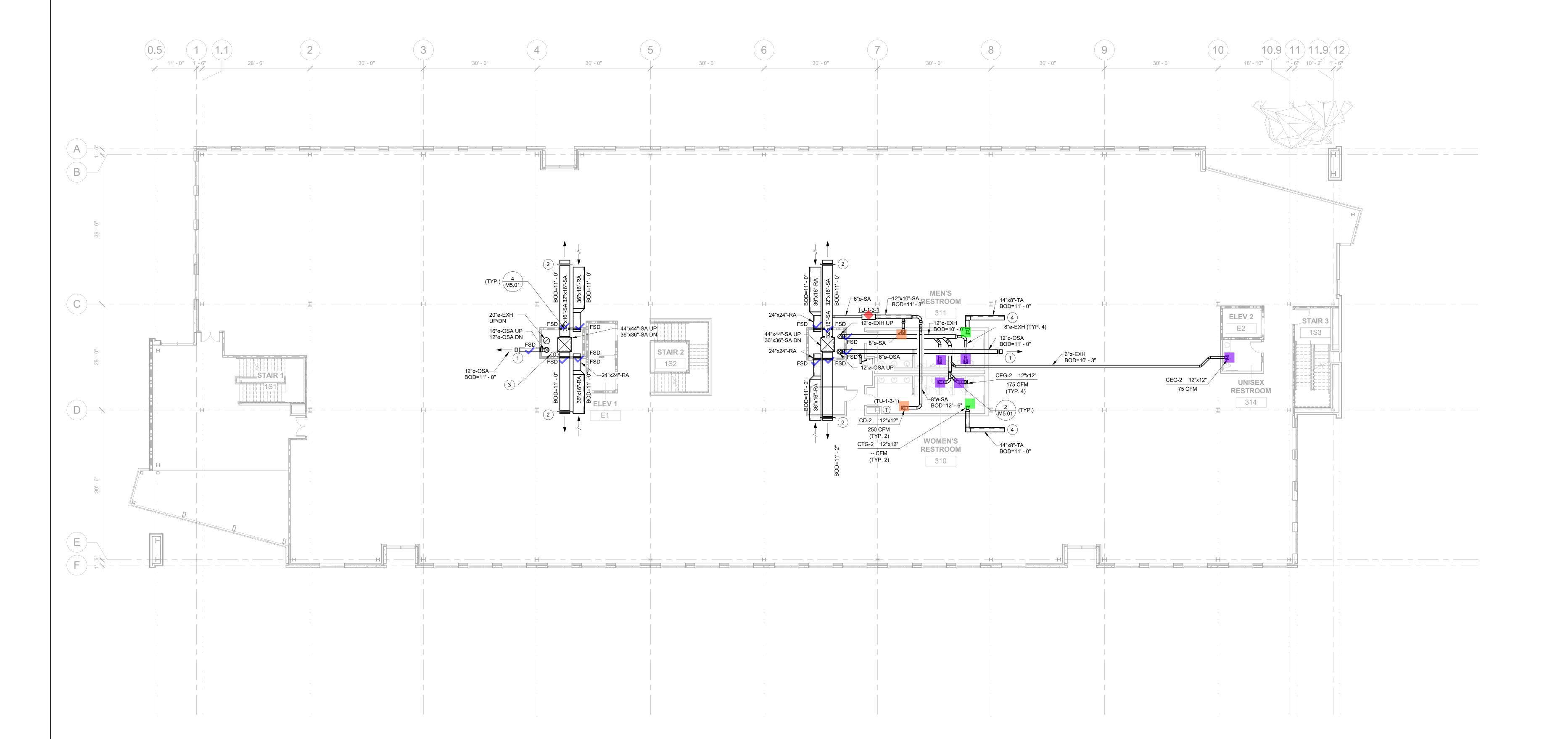


GENERAL NOTES

A SEE SHEET M0.01 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.

KEYED NOTES

- 1 PROVIDE VOLUME DAMPER AND BALANCE TO 600 CFM.
- PROVIDE VOLUME DAMPER AND BALANCE TO 1,500 CFM.
- ROUTE BOTH 3"-HWR PIPING UP/DOWN IN SHAFT. PIPING CONTINUES ON SHEETS M1.21 AND M1.31.
- 4 TRANSFER AIR DUCT TERMINATES 6" BELOW STRUCTURE.



BAR SCALE

0 2 4 8 16 20
SCALE: 3/32" = 1'-0"
WHEN PRINTED ON 30"x42" SHEET

Sheet Nu

Sheet Title: MECHANICAL THIRD LEVEL PLAN

MECHANICAL THIRD LEVEL PLAN





GENERAL NOTES

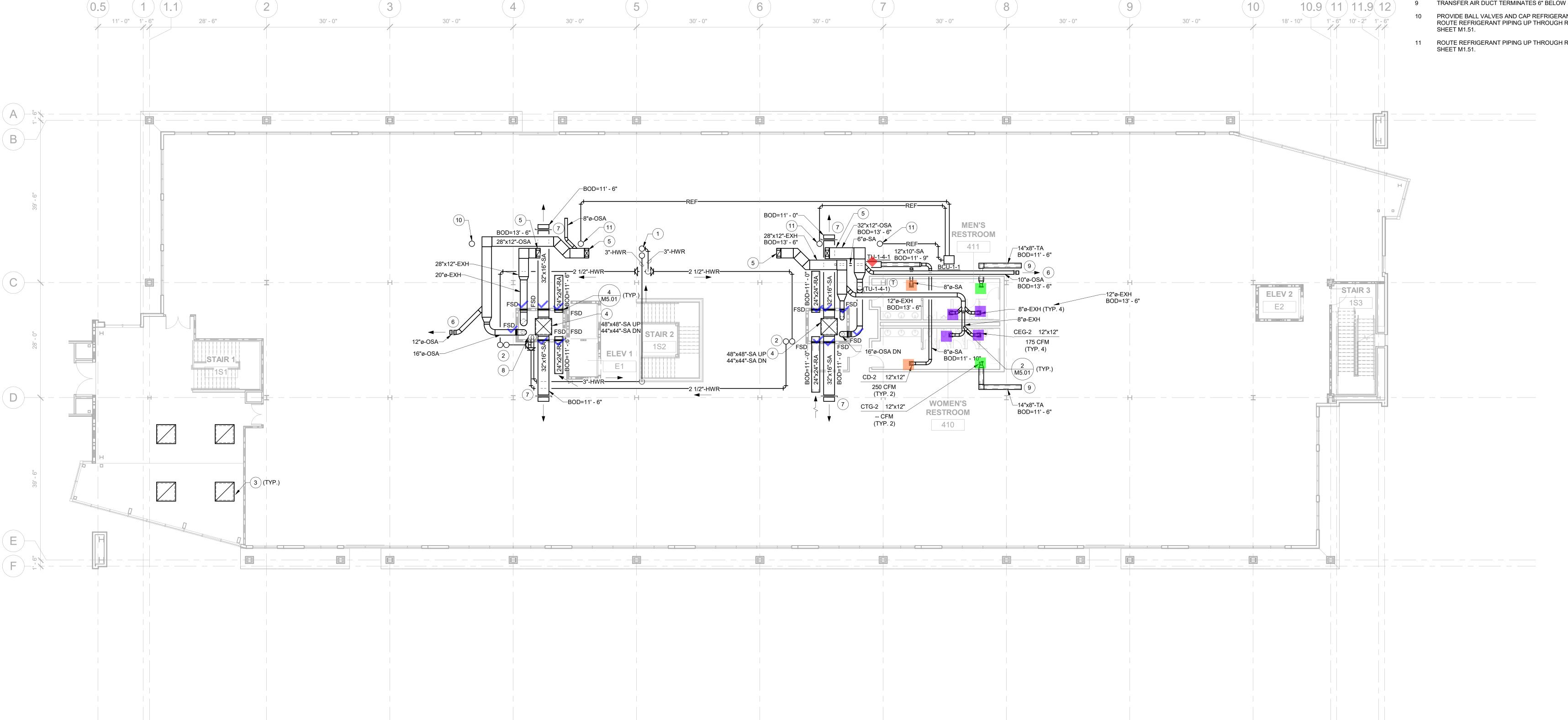
A SEE SHEET M0.01 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.

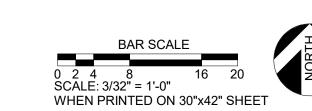
KEYED NOTES

- 1 ROUTE 3"-HWS/R THROUGH ROOF. SEE SHEET M1.51 FOR CONTINUATION.
- ROUTE 2 1/2"-HWS THROUGH ROOF. SEE SHEET M1.51 FOR CONTINUATION.
- 50"x50" EXHAUST UP. TERMINATE 6" BELOW ROOF DECK. SEE ROOF
- 4 ROUTE 48"x48" SUPPLY AIR DUCT UP THROUGH ROOF TO AHU. SEE SHEET M1.51 FOR CONTINUATION.
- ROUTE OSA AND EXHAUST DUCTS UP THROUGH ROOF TO DOAS UNIT. SEE SHEET M1.51 FOR CONTINUATION.
- 6 PROVIDE VOLUME DAMPER AND BALANCE TO 600 CFM.

PLAN FOR LOCATION.

- 7 PROVIDE VOLUME DAMPER AND BALANCE TO 1,500 CFM.
- ROUTE BOTH 3"-HWR PIPING DOWN IN SHAFT. PIPING CONTINUES ON SHEETS M1.31.
- 9 TRANSFER AIR DUCT TERMINATES 6" BELOW STRUCTURE.
- PROVIDE BALL VALVES AND CAP REFRIGERANT PIPING BELOW DECK. ROUTE REFRIGERANT PIPING UP THROUGH ROOF AND CONTINUE ON
- ROUTE REFRIGERANT PIPING UP THROUGH ROOF AND CONTINUE ON SHEET M1.51.







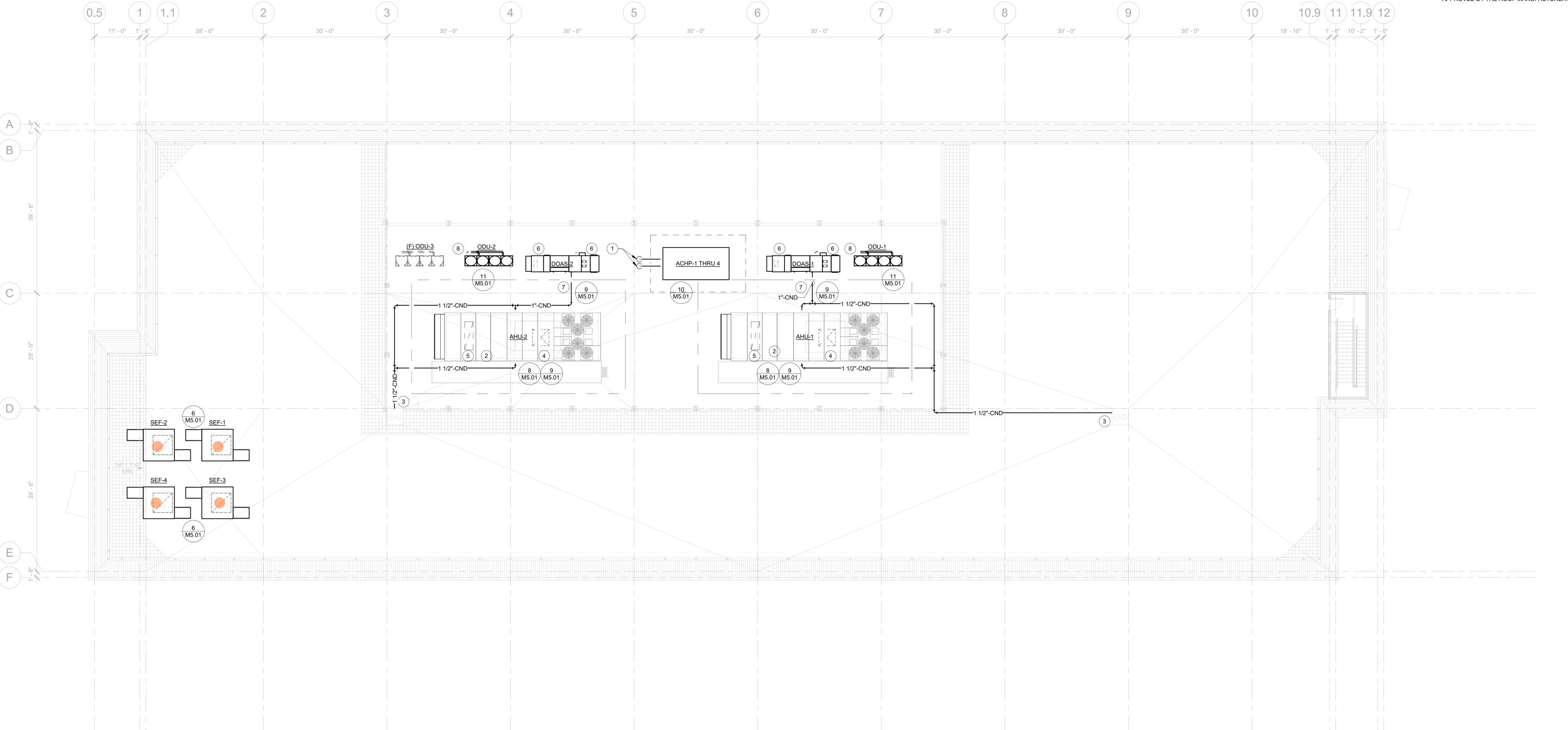
EXPIRES: 06/30/2024

GENERAL NOTES

A SEE SHEET M0.01 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.

KEYED NOTES

- 1 CONNECT 6"-HWS/R TO ACHP-1. TRANSITION TO 3", ELBOW DOWN, AND PENETRATE ROOF. SEE SHEET M1.41 FOR CONTINUATION.
- 2 CONNECT 1 1/2"-HWS/R TO AHU-1&2. TRANSITION TO 2 1/2", ELBOW DOWN, AND PENETRATE ROOF WITH FLASHING APPROVED BY THE ROOF MANUFACTURER. SEE SHEET M1.41 FOR CONTINUATION.
- 3 TERMINATE CONDENSATE NEAR ROOF DRAINS.
- 4 ROUTE 48"x48" SUPPLY AIR DUCT DOWN IN SHAFT AND CONTINUE ON SHEET M1.41. TRANSITION AND MAKE CONNECTION TO UNIT.
- 5 RETURN AIR CONNECTION ON UNIT OPEN TO PLENUM BENEATH UNIT.
- 6 ROUTE OSA AND EXHAUST DUCTS DOWN THROUGH ROOF AND CONTINUE ON SHEET M1.41.
- 7 CONNECT TO (3) CONDENSATE DRAINS ON THIS UNIT.
- 8 ROUTE REFRIGERANT PIPING DOWN THROUGH ROOF WITH FLASHING APPROVED BY THE ROOF MANUFACTURER.



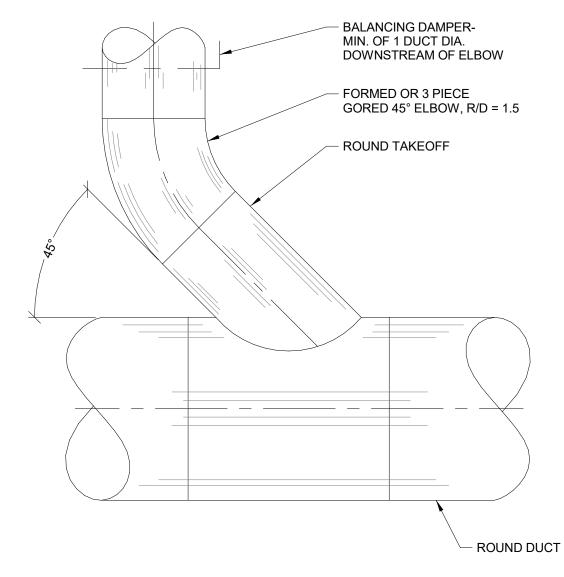
1 MECHANICAL ROOF PLAN M1.51



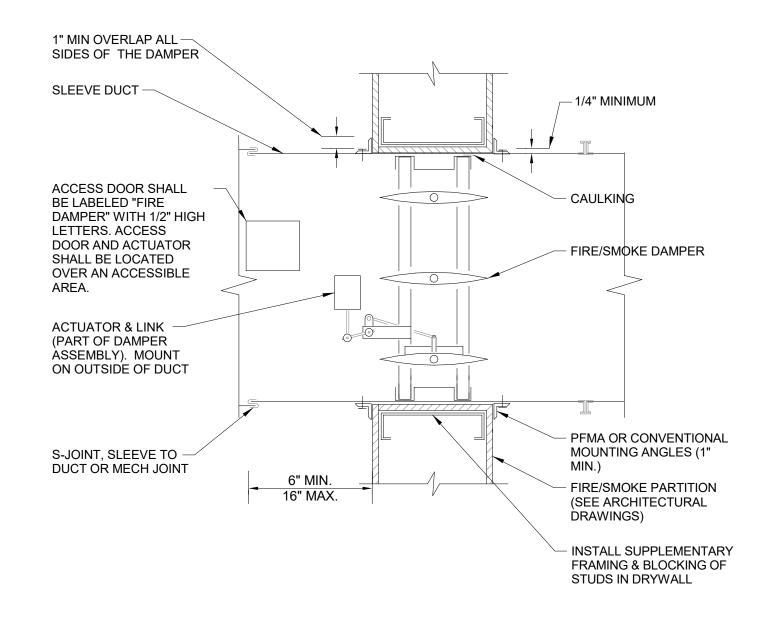
Sheet Number

M1.51
Proj No: CC22450B





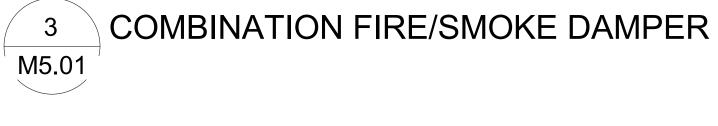
SUPPLY BRANCH - ROUND TO ROUND

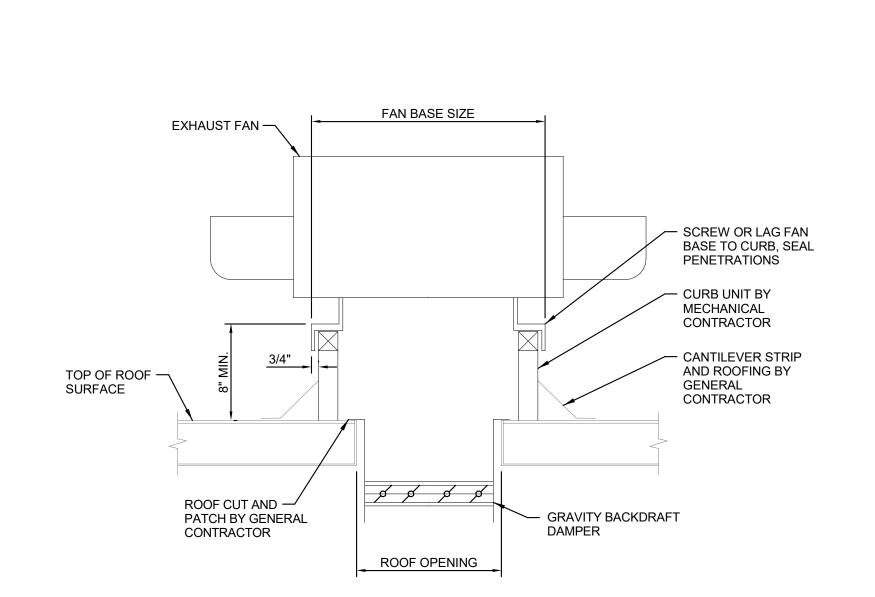


1 DAMPERS SHALL BE INSTALLED IN ACCORDANCE WITH THE CONDITIONS OF THEIR LISTING & MANUFACTURER'S INSTALLATION INSTRUCTIONS.

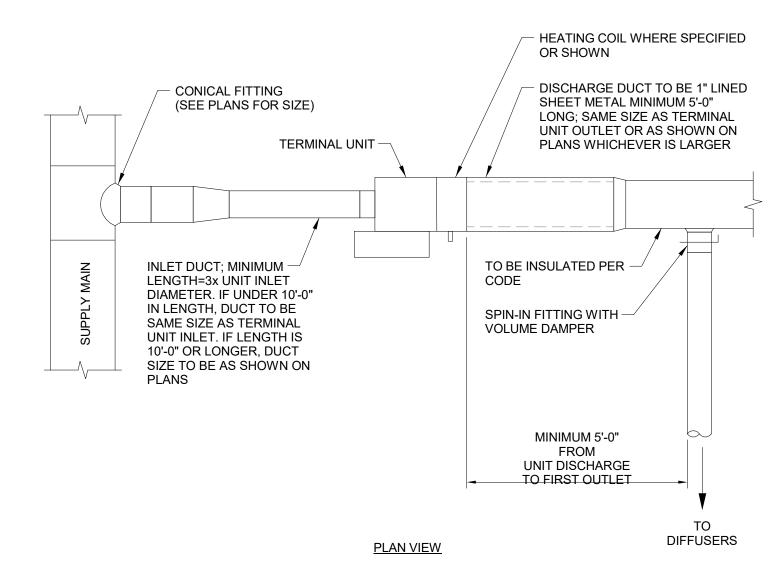


GENERAL NOTES A SEE SHEET M0.01 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.



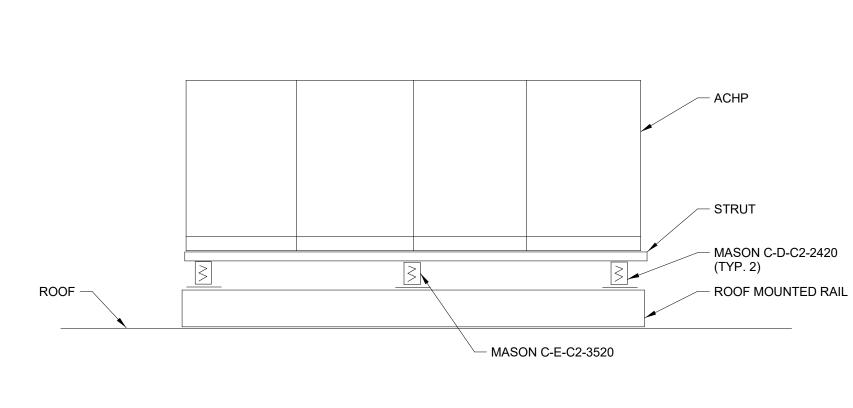


SMOKE EXHAUST FAN

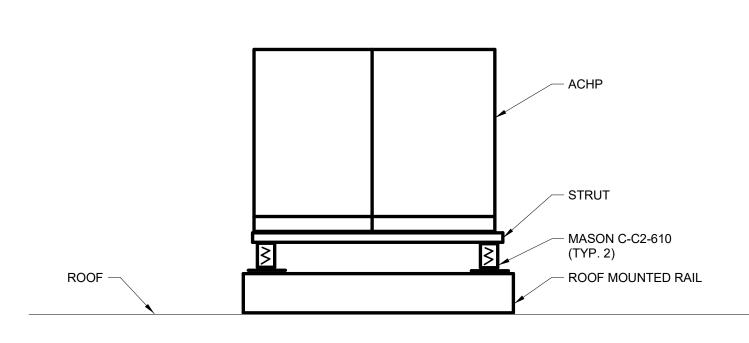


DUCTWORK SHALL BE BRACED AND GUYED DOWNSTREAM FROM TERMINAL UNIT. SWAY BRACING SHALL EXTEND AROUND PERIMETER OF DUCT AND PREVENT LATERAL AND HORIZONTAL SWING.

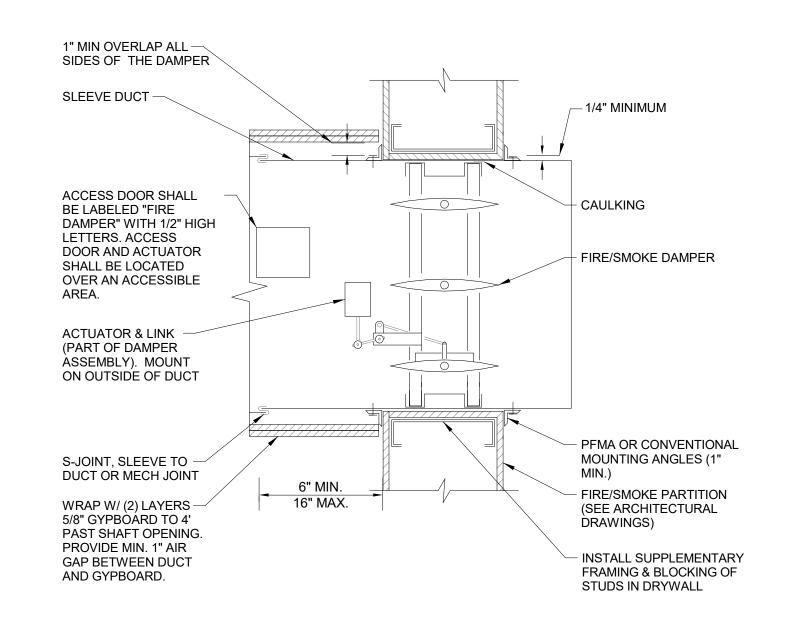




1 SEE STRUCTURAL DRAWINGS FOR ATTACHMENT DETAILS.

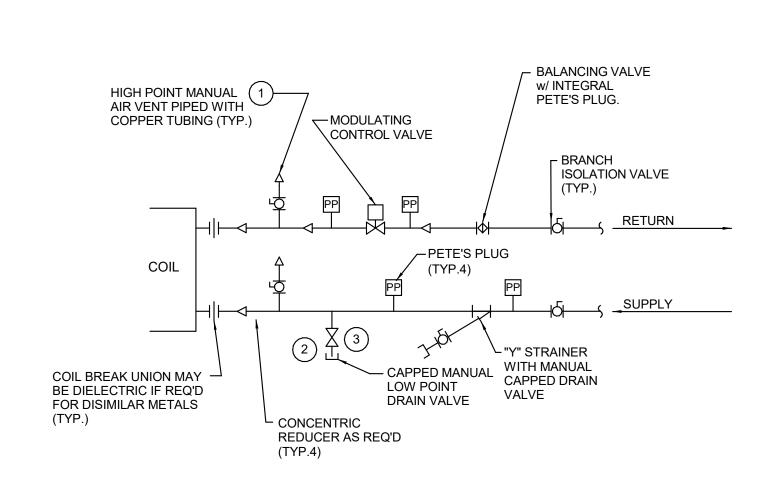






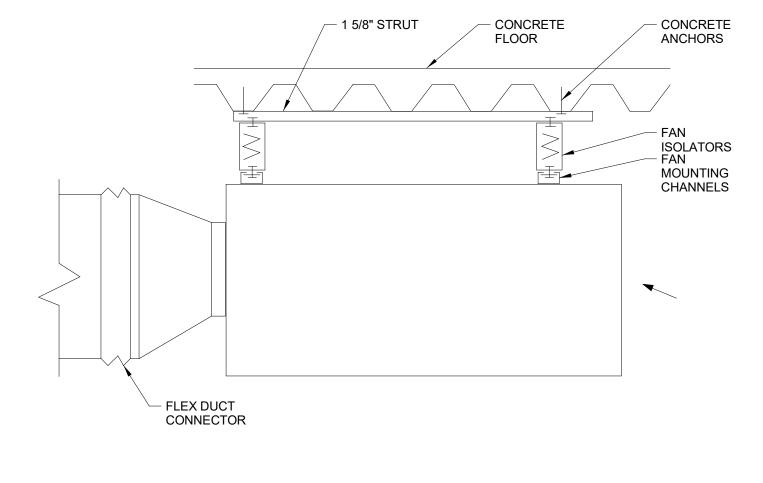
1 DAMPERS SHALL BE INSTALLED IN ACCORDANCE WITH THE CONDITIONS OF THEIR LISTING & MANUFACTURER'S INSTALLATION INSTRUCTIONS. 2 LEAVE OPENING IN GYPBOARD FOR DUCT ACCESS AND ACTUATOR.

COMBINATION FIRE/SMOKE DAMPER

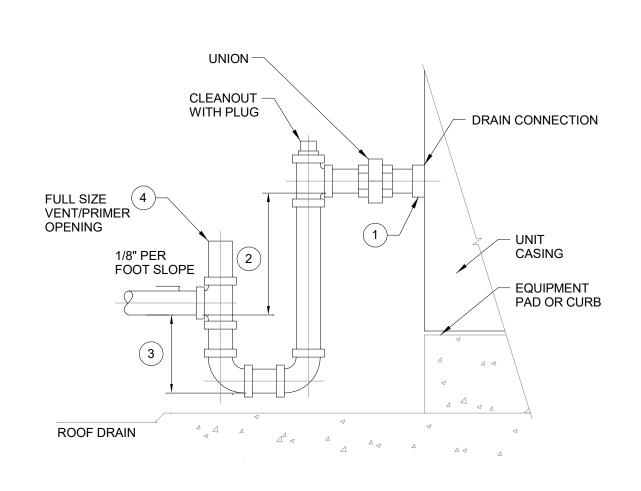


1 CAN REPLACE WITH COIL HIGH POINT VENT AND BALL VALVE. AIR VENTS TO BE READILY ACCESSIBLE (ACCESS REQUIRES NO MORE THAN A LADDER). 2 CAN REPLACE WITH COIL LOW POINT DRAIN AND BALL VALVE.3 INCLUDE CAP AND CHAIN.



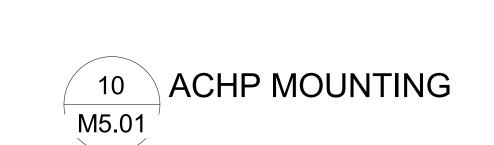


TRANSFER FAN



MINIMUM DRAIN PIPE SIZE EQUAL TO CONNECTION PROVIDED WITH EQUIPMENT.
MINIMUM DISTANCE EQUAL TO NEGATIVE STATIC PRESSURE (IN. W.C.)+1" OR 1/2 POSITIVE STATIC PRESSURE (IN. W.C.) +1". DISTANCE EQUAL TO 1/2 NEGATIVE STATIC PRESSURE (IN. W.C.)+1" OR POSITIVE STATIC PRESSURE (IN. WC.) +1". SEE MECH. SCHEDULES FOR STATIC PRESSURE INFORMATION. TRAP PRIMÈR NOT REQUIRED FOR AHU'S OR NON-CLEAN MAU'S.







Sheet Number: M5.01Proj No: CC22450B

4. PROVIDE WITH 1 1/4" MODULATING HOT WATER VALVE. 5. EWT = 120F, LWT = 100F, 30% GLYCOL MIX. 6. PROVIDE WITH HIGH CAPACITY EVAPORATIVE COIL. 7. PROVIDE WITH HIGH SCCR. SEE SCHEDULE FOR VALUE. 8. PROVIDE WITH SPINGLE POINT CONNECTION WITH UNIT DISCONNECT. 9. PROVIDE 2" INSULATED DOUBLE WALL CABINET. 11. PROVIDE HIGHED ACCESS PANELS. 12. PROVIDE ENTROPY ECONOMIZER WITH FAULT DETECTION.

13. PROVIDE WITH BUILDING PRESSURIZATION CONTROL ON RETURN/EXHAUST FAN.

14. PROVIDE WITH FACTORY MOUNTED CONVENIENCE OUTLET.

																								DC)AS	UNIT	SCH	HED	ULE																			
TAG	SERVICE	AIR				SU	IPPLY	FAN							DX CC	IL (HEA	AT PUM	P) COOL	ING				DX C	OIL (HEA	T PUMP)	HEATING				E	LECTR	RICAL				FILT	ER					BA	SIS OF DESIG	GN			REMARKS	
		FLOW (CFM)	ESP (INWC	QTY	TYP	E S	SIZE	DRIVE	Ē R	PM I	BHP H	⊃ T((N	OTAL MBH)	SENSIBL (MBH)	E R	PE	EAT (°F) DB/WB	LAT (°F) DB/WB	VELOCITED FPM	Y SEER EER RATING		NSIBLE MBH)	REF. TYPE	EAT (°F) DB/WI	LAT (°F) B DB/W			COP NATING	VOLTS	Ø FL/	A N	MCA I	MOCP	SCCR		H (IN)	ENSIONS W (IN)	D (IN)	H (IN) (N I	D N	EIGHT LBS	MFG	i	MOD	EL		
DOAS-1	VENTILATION	2,000	1	1	PLEN	UM 1	2.25	DIREC	T 36	500	2.14 3	6	69.2	69.2	R4	10a 8	86/56.3	55/42.1	443	-	6	69.2	R410a	87/56.	4 55/42.	1 443		-	460	6.1	1	7.3	15	5KA	4	16	20	2	75	14 1	94 3	3,450	TRANI	E	CSAA	.004	1, 2, 3, 4, 5, 6, 7, 8, 9	10, 11
DOAS-2	VENTILATION	2,000	1	1	PLEN	UM 1	2.25	DIREC	T 36	600	2.14 3	6	69.2	69.2	R4	10a 8	86/56.3	55/42.1	443	-	6	69.2	R410a	87/56.	4 55/42.	1 443		-	460	6.1		7.3	15	5KA	4	16	20	2	75	14 1	94 3	3,450	TRANI	E	CSAA	.004	1, 2, 3, 4, 5, 6, 7, 8, 9	10, 11

1. PROVIDE WITH MULTIPLE POINT ELECTRICAL CONNECTION. 2. DEDICATED 115V/1PH, 15A CIRCUIT FOR MOUNTED RECEPTACLE.

3. VFD MOUNTED IN CONTROL CABINET.

4. PROVIDE WITH SUPPLY FAN AND EXHAUST FAN.

NOTES:

5. PROVIDE WITH 2" FOAM INSULATED CABINET. 6. PROVIDE WITH FLAT PLAT HEAT EXCHANGER.

7. PROVIDE WITH FIELD SUPPLIED TRANE/MITSUBISHI VRF LEV KIT PAC-LV96AC-1. 8. PROVIDE WITH DDC CONTROLLER FOR INTERFACE WITH TRANE TRACER SC+ DDC SYSTEM.

9. PROVIDE WITH STANDARD 14" ROOF CURB.

10. PROVIDE WITH PREMINUM EFFICENCY MOTORS.

11. SEE ODU SCHEDULES FOR SEER/EER/COP EFFICIENCY DATA.

												Α	IR C	OOL	ED I	_IQUI	ID C	HILL	ER/H	EAT	PUM	P SC	HEDU	JLE		
TAG	SERVICE	LOCATION		REFRIGERAN	Т		EVAPORAT	OR			COM	PRESSO	R			EL	LECTRIC	AL						BASIS OF DESIGN		REMARKS
			TONS	TYPE	EWT LW °F °F		WPD (FTWG)	FOULING FACTOR	CAP. (MBH)	QTY TYP	E STEF	PS K	(°)	AT HP	V	Ø FLA	MCA	MOCP		DIMENSION W	D	EFF. COP	WEIGHT LBS	MFG	MODEL	
HP-1	AHU-1, AHU-2	ROOF	30	R410a	100 120	0 117	3.93	.00010	278.5	2 SCRO	DLL 4	1	142 10	5 -	460	3 63.2	2 72.0	100	65KA 8	88 95	48	2.11	3,000	TRANE	AXM030	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
HP-2	AHU-1, AHU-2	ROOF	30	R410a	100 120	0 117	3.93	.00010	278.5	2 SCRO	DLL 4	1	142 10	15 -	460	3 63.2	2 72.0	100	65KA 8	88 95	48	2.11	3,000	TRANE	AXM030	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
IP-3	AHU-1, AHU-2	ROOF	30	R410a	100 120	0 117	3.93	.00010	278.5	2 SCRO	DLL 4	1	142 10	15 -	460	3 63.2	2 72.0	100	65KA 8	88 95	48	2.11	3,000	TRANE	AXM030	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
HP-4	AHU-1, AHU-2	ROOF	30	R410a	100 120	0 117	3.93	.00010	278.5	2 SCRO	DLL 4	1	142 10	5 -	460	3 63.2	72.0	100	65KA 8	88 95	48	2.11	3,000	TRANE	AXM030	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
NH-1	DOMESTIC WATER HEATING	1ST FLOOR MECH RM	10	R-134a	110 120	0 40	3.6		206.4	1 SCRO) 1		- 7	2	460	3 36.5	. 45	50	EKV V	3 45	73		1.400	AO SMITH	AHPA-185	12, 13, 14

NOTES: 1. PROVIDE MODULAR 30 NOMINAL TON AIR SOURCE HEAT PUMP.

2. PROVIDE FORMED GALVANIZED SHEET METAL FRAME POWDER COATED WITH AN OVEN BAKED FINISH.

3. PROVIDE WITH POWDER COATED STEEL SHEET METAL CABINET PANELS THAT ARE EASILY REMOVABLE.

4. PROVIDE 15 HP SCROLL COMPRESSOR ON EACH REFRIGERATION CIRCUIT EACH WITH SERVICE VALVES, CRANKCASE HEATER, SOLID STATE OVERLOAD PROTECTION AND IN-LINE CIRCUIT BREAKER. 5. PROVIDE DUAL CIRCUIT, BRAZED PLATE HEAT EXCHANGER IN EACH HEAT PUMP MODULE FOR USE AS AN EVAPORATOR OR CONDENSER DEPENDING ON THE OPERATING MODE.

7. PROVIDE REFRIGERATION REVERSING VALVE ON EACH REFRIGERATION CIRCUIT. 8. PROVIDE WITH DDC CONTROLLER FOR INTERFACE WITH TRANE TRACER SC+ DDC SYSTEM.

9. PROVIDE A SMART OPERATOR 7" TOUCH SCREEN GRAPHICAL INTERFACE DISPLAY.

10. PROVIDE ELECTRONIC MODULATING VALVE AND MANUAL ISOLATION VALVE ON EACH HEAT EXCHANGER. 11. SINGLE POINT CONNECTION FOR SYSTEM BANK: 253.0 FLA, 261.0 MCA, 300 MOCP.

12. PROVIDE WITH MULTI-PASS CONFIGURATION. 13. PROVIDE WITH DOUBLE WALL HEAT EXCHANGER FOR USE WITH POTABLE WATER SYSTEM. 14. PROVIDE WITH 24VDC CONTROLS.

												IND	OOR VRF	FAN (COIL	SCHED	JLE					
TAG	SERVICE	TYPE	MAX O	SA		COOLING				HEATING			ELECTRICAL	REFRI	GERANT	SOUND			BASIS OF DESIGN		SERVED BY	REMARKS
			CFM (C	TC (M	OTAL SENSIBLE (MBH) (MBH)	REF. TYPE	EAT (°F) DB/WB	LAT (°F) DB/WB	МВН	EAT (°F)	LAT (°F)	V	Ø MCA MOCP	LIQUID DIA (IN)	SUCTION DIA (IN)	MAXIMUM (DB)	DIMENSIONS H W [IN] (IN) (II	WEIGHT (LBS)	T MFG	MODEL	OUTDOOR UNIT	
BCU-1-1	DOAS-1/DOAS-2	CONTROLLER/SELECTOR BOX	-	. 3	336 -	R410A	-	-	336	-	-	208	1 1.3 -	1/2	1 1/8	50	12 45 1	200	MITSUBISHI/TRANE	TCMBM108JA11N4	ODU-1	1, 2, 3

1. PROVIDE WITH PIPE JOINT KITS. 2. PROVIDE WITH FULL PORT BALL VALVES.

1. PROVIDE WITH FACTORY INTEGRATED DDC CONTROLS.

2. PROVIDE WITH 110 VOLT TRANSFORMER FOR CONTROLS.

4. PROVIDE CUSTOM SIZE. DIMENSIONS ARE APPROXIMATE. FIELD MEASURE BEFORE ORDERING.

3. CONNECTED RATED CAPACITY

3. PROVIDE WITH 5kA SCCR.

PROVIDE WITH INSECT SCREEN.

3. PROVIDE WITH STANDARD FRAME

TAG	LOCATION		COOLING		HE	EATING		REFRIGERAN	IT.	E	LECTR	ICAL	SOUND				BA	SIS OF DESIGN		REMARKS
		NOMINAL (MBH)	MIN OSA (°F DB)	IEER / EER RATING	NOMINAL (MBH)	MIN OSA (°F DB)	COP LIQU	DIA	REF. TYPE	V	Ø MC	MOCP	(DBA)	DIM H (IN)	IENSIO W (IN)	DNS D (IN)	WEIGHT (LBS)	MFG	MODEL	
DU-01	ROOF	336	105	22.5/10.5	378	19	3.2 7/	1 1/8	R410A	5	SEE NO	TE 1	84	72	138	30	1650	TRANE	TURYE3364BN40AN	1, 2, 3
DU-02	ROOF	336	105	22.5/10.5	378	19	3.2 7/	1 1/8	R410A	5	SEE NO	TE 1	84	72	138	30	1650	TRANE	TURYE3364BN40AN	1, 2, 3

TAG	AREA SERVED	INLET	MAX	HTG	MIN	WATE	R COIL			ELECTRIC	COIL		LAT	DESIG	N BASIS	REMARK
NUMBER		(IN)	CFM	CFM	CFM	MBH	GPM	KW	VOLT	PHASE	STEPS	SCCR	°F	MFG	MODEL	
TU-1-1-1	EAST LOBBY	10	950	400	300	-	-	5	277	1	3	5K	95	TRANE	VCEF	1, 2
TU-1-1-6	CORRIDOR/TOILET ROOMS	10	1225	-	375	-	-	-	-	-	-	-	-	TRANE	VCCF	1, 2
TU-2-1-4	TOILET/SHOWER	8	800	325	250	-	-	2	277	1	3	5K	74	TRANE	VCCF	1, 2
TU-2-1-6	CORRIDOR	10	1225	-	375	-	-	-	-	-	-	-	-	TRANE	VCCF	1, 2
TU-2-1-7	WEST LOBBY	12	1600	650	500	-	-	8	277	1	3	5K	94	TRANE	VCEF	1, 2
TU-1-2-1	2ND FLOOR TOILET ROOMS	6	500	-	150	-	-	-	-	-	-	-	-	TRANE	VCCF	1, 2
TU-1-3-1	3RD FLOOR TOILET ROOMS	6	500	-	150	-	-	-	-	-	-	-	-	TRANE	VCCF	1, 2
TU-1-4-1	4TH FLOOR TOILET ROOMS	6	500	-	150	-	-	-	-	-	-	-	-	TRANE	VCCF	1, 2

ΓAG	LOCATION	SERVICE	AIR	FACE	FREE	P.D.	MATERIAL	FINISH	QTY.				DESIGN BASIS		REMARKS
			FLOW (CFM)	VELOCITY (FPM)	AREA (SF)	(IN.WG)				DIN	/ENSIO	NS	MFG	MODEL	
			(0)	(,	(5.)					H (IN)	W (IN)	D (IN)			
VL-1	KITCHEN	OSA	8000	988	8.1	0.12	ALUMINUM	70% PVDF	1	36	88	2	RUSKIN	ELF211	1, 2, 3, 4

								FAN	SCH	ED	UL	.E							
TAG NUMBER	LOCATION	SERVICE	TYPE	FAN	CFM	TSP	FAN	E	LECTRICA	L		DRIVE	VIB. ISOL	ATION		С	ESIGN BASIS		REMARKS
				CLASS		(IN WG)	RPM	MOTOR HP	MAX MOTOR BHP	٧	Ø		TYPE	DEF. (IN)	WEIGHT (LBS)	MAX dBA	MFG.	MODEL	
SEF-1	ATRIUM	SMOKE CONTROL	ROOF	1	30,000	0.50	1725	7.50	7.43	460	3	BELT	-	-	1,600	75	COOK	490LPB	1, 2, 3, 4, 5, 6,
SEF-2	ATRIUM	SMOKE CONTROL	ROOF	1	30,000	0.50	1725	7.50	7.43	460	3	BELT	-	-	1,600	75	COOK	490LPB	1, 2, 3, 4, 5, 6
SEF-3	ATRIUM	SMOKE CONTROL	ROOF	1	30,000	0.50	1725	7.50	7.43	460	3	BELT	-	-	1,600	75	COOK	490LPB	1, 2, 3, 4, 5, 6
SEF-4	ATRIUM	SMOKE CONTROL	ROOF	1	30,000	0.50	1725	7.50	7.43	460	3	BELT	-	-	1,600	75	COOK	490LPB	1, 2, 3, 4, 5, 6
TF-1	ELECTRICAL	COOLING	INLINE	0	3,000	0.25	476	0.50	0.46	115	1	BELT	SPRING	2.0	150	59	COOK	15DB	8, 9

TF-1	ELECTRICAL	COOLING	INLINE	0	3,000	0.25	476	0.50	0.46	115	1	BELT	SPRING	2.0	150	59	COOK	15DB	8, 9
NOTES:																			
1.	FAN OPERATES BY	FIRE ALARM SYSTE	EM.																
2.	PROVIDE WITH GRA	AVITY BACKDRAFT I	DAMPER.																
3.	PROVIDE WITH HIN	IGED WHEEL AND R	EMOVABI	LE HOOD).														
4.	PROVIDE UL LISTEI	D SMOKE EXHAUST	FAN.																
5.	PROVIDE 1.5 SERV	ICE FACTOR.																	
6.	PROVIDE WITH PRE	EMIUM EFFICIENCY	MOTOR.																
7.	PROVIDE WITH U	JPBLAST DIVERTE	RS.																
8.	PROVIDE WITH \	VARI-FLOW COMI	PATIBLE	мото	R.														
		VARI-FLOW CONT				TAT.													

TAG	LOCATION	HEAT			ELEC	TRICAL						DESIGN BASIS		REMARKS
		MBH	V	Ø	HZ MC	CA MOCP	l l	WEIGHT	D	IMENSION	IS	MFG	MODEL	1
							SCCR	LBS	Н	W	D			
									(IN)	(IN)	(IN)			
RH-1	RISER ROOM	1.28	277	1	60 4.6	60 -	5K	25	1	24	24	QMARK	ATM24247A (CP3757)	1
RH-2	WEST VESTIBULE	1.28	277	1	60 4.6	- 08	5K	25	1	24	24	QMARK	ATM24247A (CP3757)	1
RH-3	WEST VESTIBULE	1.28	277	1	60 4.6	- 08	5K	25	1	24	24	QMARK	ATM24247A (CP3757)	1
		•		•										
NOTES:														
1.	PROVIDE WITH RECESSED MO	UNTING F	RAME.											

					AIR SI	EPARA	TOR	SCH	IEDL	JLE					
TAG NUMBER	LOCATION	SERVICE	TYPE	FLOW	PRESSURE	MATERIAL	MAX	MAX			С	ESIGN BA	SIS		REMARKS
				(GPM)	DROP (FTWC)		TEMP. (°F)	PRESS. (PSIG)	DIA (IN)	LENGTH (IN)	WEIGHT (LBS)	SYST. CON.	MFG.	MODEL	
AS-1	MECHANICAL ROOM	ACHP	TANGENTIAL	105	0.7	STEEL	140	125	10	23	60	3	AMTROL	3-ASL	1, 2
	PROVIDE ASME RATED VI		MENDATIONS.									·			

					EXPA	NSION	IAN	IK SC	HE	JULE	•				
AG NUMBER	LOCATION	SERVICE	CAPACITY	ACCEPTANCE	MAT	ERIAL	MAX	MAX			[DESIGN BA	SIS		REMARKS
			(GAL)	VOLUME (GAL)	SHELL	BLADDER	TEMP. (°F)	PRESS. (PSIG)	DIA (IN)	LENGTH (IN)	WEIGHT (LBS)	SYST. CON.	MFG.	MODEL	
ET-2	MECHANICAL ROOM	ACHP	10	10	STEEL	BUTYL	140	50	10	37	70	3"	AMTROL	35BLC	1, 2, 3
NOTES:															
1.	PROVIDE WITH SCHRADE	R VALVE.													
2.	PROVIDE ASME RATED M	ODEL.													
3	INSTALL PER MANUFACTU	IRER'S RECOM	MENDATIONS												

						PUI	MP S	CHE	EDL	JL	E					
TAG	LOCATION	SERVICE	FLOW	TDH	MIN	NPSH	MO	TOR	E	ELE	CTRIC	CAL		DESIGN E	BASIS	REMARKS
			(GPM)	(FT)	EFF %	REQ	HP	RPM	V	Ø	HZ	SCCR	WEIGHT	MFG	MODEL	
HWP-1	MECHANICAL ROOM	ACHP-1 THRU 4	105	45	73	2	3	1760	460	3	60	10K	175	TACO	SCI2007D-A-4P-PD	1, 2, 3, 4
HWP-2	MECHANICAL ROOM	ACHP-1 THRU 4	105	45	73	2	3	1760	460	3	60	10K	175	TACO	SCI2007D-A-4P-PD	1, 2, 3, 4
NOTES:																
1.	PROVIDE WITH TEFC MOTO	OR.														
2.	PROVIDE WITH STANDARD	ANSI CLASS 125.														
3.	PROVIDE CAST IRON CASI	NG, BRONZE IMPELLER,	STEEL SHAF	T, BRONZE	SLEEVE A	ND CERAM	IC/EPT S	EAL.								
4.	PROVIDE WITH VFD WITH	OPTIONAL DISCONNECT														

SYMBOL	TYPE	MATERIAL	FRAME	FINISH	DAMPER	BLOW PATTERN	NECK SIZE	DESIGN BASIS			REMARKS
								MAX NC	MFG	MODEL	
CD-1	CEILING DIFFUSER	ALUMINIUM	T-BAR	WHITE	NONE	HORIZONTAL	SEE PLANS	25	TITUS	TDCA-A	1
CD-2	CEILING DIFFUSER	ALUMINIUM	SURFACE	WHITE	OBD	HORIZONTAL	SEE PLANS	25	TITUS	TDCA-A	1
SG-1	SUPPLY REGISTER	ALUMINIUM	SURFACE	WHITE	NONE	NONE	SEE PLANS	25	TITUS	300FL	
TG-1	SUPPLY REGISTER	ALUMINIUM	SURFACE	WHITE	NONE	NONE	SEE PLANS	25	TITUS	300FL	
CEG-2	CEILING EXHAUST	ALUMINIUM	SURFACE	WHITE	OBD	NONE	SEE PLANS	25	TITUS	50F	
CTG-2	CEILING TRANSFER	ALUMINIUM	SURFACE	WHITE	NONE	NONE	SEE PLANS	25	TITUS	50F	

					TANK	SCHEDU	JLE			
TAG	SERVICE	TANK	WORKING	DIAMETER	PRESSURE	VACUUM	MATERIAL	DESIGN BASIS		REMARKS
		VOLUME (GALLONS)	VOLUME (GALLONS)	(IN)	RATING (PSI)	RATING (INWC)		MFG	MODEL	
ST-2	HYDRONIC HEATING	350	350	42	160	-	STEEL	AO SMITH	TJV-350A	1, 2, 3
NOTES:	DDOWDE ASME DATED TANK									
	PROVIDE ASME RATED TANK. PROVIDE R12.5 INSULATION TO ME	EET ASHRAE 90.1.								
3.	PROVIDE GLASS LINED WITH CATI	HOIC PROTECTION.								





Beaverton, OR (503)645-0176

A SEE SHEET M0.01 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.

SEQUENCE OF OPERATIONS

AHUS FOR VAV OPERATION (AHU-1, AHU-2)

MULTIPLE ZONE AIR HANDLING UNIT OPERATES AT VARIABLE VOLUME. DX COOLING SYSTEM CONTROLLED BY AIR HANDLING UNIT MANUFACTURER PROVIDED CONTROLS.

SCHEDULE OF OPERATION: --24 HOURS A DAY, 7 DAYS A WEEK

--OCCUPIED SETPOINTS: COOLING=68F; HEATING =60F (OR HEATING DISABLED IF AN OPTION) --SETBACK SETPOINTS: COOLING=85F; HEATING=55F (OR HTG DISABLED IF AN OPTION)

--OCCUPIED FAN: FAN=ON --SETBACK SETPOINTS: COOLING=85F; HEATING=55F (OR HTG DISABLED IF AN OPTION) --UNOCCUPIED FAN: FAN=AUTO

THE FINAL SCHEDULE AND SETPOINTS FOR THE AHU UNITS ARE TO BE COORDINATED WITH AND APPROVED BY LAM. STAGING OF INTERNAL COMPRESSOR/CONDENSER FANS ARE TO BE VIA THE FACTORY CONTROLS. NO THERMOSTAT OR AHU NETWORKING IS REQUIRED. EACH AHU IS TO ENABLE ECONOMIZER WHEN THEN OUTSIDE TEMPERATURE IS LESS THAN 60F AND WHEN THERE IS COOLING DEMAND. POWER EXHAUST IS TO BE INTERLOCKED WITH ECONOMIZER OPERATION. FACTORY CONTROLS ARE TO BE UTILIZED FOR ECONOMIZER AND POWER EXHAUST CONTROL. REVIEW FACTORY ECONOMIZER CONTROLS TO VERIFY COOLING STAGES ARE NOT ENTIRELY LOCKED OUT DURING ECONOMIZER MODE. SOME FACTORY CONTROLS ALLOW ECONOMIZER MODE WITH SOME COMPRESSOR OPERATION TO DELIVER THE NEEDED 55F SAT. IF THE FACTORY ECONOMIZER CONTROLS LOCK OUT ALL COOLING STAGES DURING ECONOMIZER MODE, SET THE ECONOMIZER ENABLE SETPOINT AT 55F.

AIR COOLED HEAT PUMPS (ACHP-1, ACHP-2, ACHP-3, ACHP-4)

ACHPs MODULATE TO MAINTAIN LOOP SUPPLY TEMPERATURE SETPOINT. OPERATE 24 HOURS A DAY, 7 DAYS A WEEK. OPERATES WHEN COMMANDED BY CONTROL SYSTEM.

STARTUP IN OCCUPIED MODE WITH LEAD ACHP ISOLATION VALVE OPEN. LEAD PUMP OPERATES AT MINIMUM SPEED.

HYDRONIC PUMPS (HWP-1, HWP-2)

PUMPS DISABLED WHEN OUTDOOR AIR TEMPERATURE IS ABOVE 70 DEGREES F.

SYSTEM DIFFERENTIAL PRESSURE SETPOINT IS ESTABLISHED AS PART OF THE TESTING. ADJUSTING, AND BALANCING OF THE SYSTEM TO ACHIEVE THE DESIGN FLOW RATE OF THE CRITICAL BRANCH. DIFFERENTIAL PRESSURE SETPOINT RESET PROVIDED BY TRIM AND RESPOND LOGIC TO THE LOWEST POSSIBLE VALUE WHILE MAINTAINING THE MOST OPEN CONTROL VALVE AT TERMINAL EQUIPMENT 90%

PUMP SPEED MODULATES TO MAINTAIN SYSTEM DIFFERENTIAL PRESSURE SETPOINT. HOLD PUMP SPEED CONSTANT WHEN ACHPS STAGING ON/OFF.

LEAD LAG SEQUENCE: WHEN LEAD PUMP REACHES 60% SPEED FOR 2 MINUTES THE LAG PUMP STARTS. LEAD AND LAG PUMP OPERATE IN UNISON TO MAINTAIN SYSTEM DIFFERENTIAL SETPOINT. WHEN LEAD PUMP FAILS THE LAG PUMP OPERATES TO MAINTAIN SYSTEM DIFFERENTIAL PRESSURE SETPOINT. FAILED PUMP IS DISABLED UNTIL RE-ENABLED BY CONTROL SYSTEM USER.

DOAS WITH HEAT RECOVERY (DOAS-1, DOAS-2)

SCHEDULE OF OPERATION:

--24 HOURS A DAY, 7 DAYS A WEEK --OCCUPIED SETPOINTS: COOLING=68F; HEATING =60F (OR HEATING DISABLED IF AN OPTION) --SETBACK SETPOINTS: COOLING=85F; HEATING=55F (OR HTG DISABLED IF AN OPTION)

--OCCUPIED FAN: FAN=ON --SETBACK SETPOINTS: COOLING=85F; HEATING=55F (OR HTG DISABLED IF AN OPTION) --UNOCCUPIED FAN: FAN=AUTO

THE FINAL SCHEDULE AND SETPOINTS FOR THE A/C UNITS ARE TO BE COORDINATED WITH AND APPROVED BY LAM. STAGING OF INTERNAL COMPRESSOR/CONDENSER FANS ARE TO BE VIA THE FACTORY CONTROLS. NO THERMOSTAT OR A/C UNIT NETWORKING IS REQUIRED.

VRF SYSTEM (ODU-1, ODU-2)

OUTDOOR UNITS ACTIVATE IN RESPONSE TO SYSTEM DEMAND AT FCU ZONES. THERMOSTATS LOCATED AT APPROPRIATE LOCATIONS WITHIN ZONES ACCORDING TO LAM STANDARDS.

TERMINAL UNITS WITH REHEAT

TERMINAL UNIT OPERATES AS VARIABLE VOLUME TO MAINTAIN ZONE TEMPERATURE AND CARBON DIOXIDE SETPOINTS. TERMINAL UNIT SCHEDULE MATCHES ASSOCIATED AIR HANDLER SEQUENCE OF OPERATION.

IN OCCUPIED MODE: --WHEN ZONE TEMPERATURE IS BELOW THE HEATING SETPOINT: THE FIRST STAGE OF HEATING INCREASES SUPPLY AIR TEMPERATURE, SECOND STAGE OF HEATING INCREASES SUPPLY AIRFLOW. LEAVING AIR TEMPERATURE SETPOINT SET TO MAXIMUM VALUE. HEATING COIL MODULATES TO MAINTAIN

LEAVING AIR TEMPERATURE SETPOINT. DAMPER MODULATES TO MAINTAIN MINIMUM AIRFLOW RATE. IF ZONE TEMPERATURE BELOW HEATING SETPOINT FOR 5 MINUTES, DAMPER MODULATES CLEARLY BETWEEN MINIMUM AIRFLOW RATE AND HEATING AIRFLOW RATE TO MAINTAIN ZONE HEATING SETPOINT. WHEN ZONE TEMPERATURE IS EQUAL TO HEATING SETPOINT, REVERSE AFOREMENTIONED SEQUENCE. --WHEN ZONE TEMPERATURE IS BETWEEN HEATING AND COOLING SETPOINTS: LEAVING AIR TEMPERATURE SETPOINT SET TO ASSOCIATED AIR HANDLER LEAVING AIR TEMPERATURE. HEATING COIL TURNED OFF. DAMPER MODULATES TO MAINTAIN LOW MINIMUM AIRFLOW RATE. --WHEN ZONE TEMPERATURE IS ABOVE THE COOLING SETPOINT, LEAVING AIR TEMPERATURE SETPOINT SET TO ASSOCIATED AIR HANDLER LEAVING AIR TEMPERATURE. HEATING COIL TURNED OFF. DAMPER MODULATES LINEARLY BETWEEN MINIMUM AIRFLOW RATE AND MAXIMUM AIRFLOW RATE TO MAINTAIN ZONE COOLING SETPOINT. WHEN ZONE TEMPERATURE IS EQUAL TO COOLING SETPOINT, REVERSE AFOREMENTIONED SEQUENCE. --ZONE CARBON DIOXIDE CONTROL: DAMPER MODULATES LINEARLY BASED ON CARBON DIOXIDE LEVEL.

WHEN LEVEL FALLS TO 400 PPM OR LESS, DAMPER MODULATES TO MAINTAIN LOW MINIMUM AIRFLOW RATE. WHEN CARBON DIOXIDE LEVEL AT SETPOINT OR HIGH, DAMPER MODULATES TO MAINTAIN MINIMUM AIRFLOW RATE.

IN UNOCCUPIED MODE: HEATING COIL OFF. DAMPER OPEN.

LOW AIRFLOW ALARM WHEN AIRFLOW RATE IS LESS THAN 50% OF SETPOINT FOR 5 MINUTES. LOW LEAVING AIR TEMPERATURE ALARM WHEN LEAVING AIR TEMPERATURE IS MORE THAN 10 DEGREES ABOVE SETPOINT FOR 5 MINUTES.

MONITORING POINTS INCLUDE DAMPER POSITION AND HEATING COIL VALVE POSITION.

SETPOINTS AND VARIABLES ARE TO BE INDIVIDUALLY ADJUSTABLE THROUGH CONTROL SYSTEM GRAPHICAL USER INTERFACE.

TERMINAL UNITS WITHOUT REHEAT

TERMINAL UNIT OPERATES AS VARIABLE VOLUME TO MAINTAIN ZONE TEMPERATURE AND CARBON DIOXIDE SETPOINTS. TERMINAL UNIT SCHEDULE MATCHES ASSOCIATED AIR HANDLER SEQUENCE OF OPERATION.

--WHEN ZONE TEMPERATURE IS BELOW THE HEATING SETPOINT: DAMPER MODULATED TO MAINTAIN LOW MINIMUM AIRFLOW RATE. --WHEN ZONE TEMPERATURE IS BETWEEN HEATING AND COOLING SETPOINTS: DAMPER MODULATES TO MAINTAIN LOW MINIMUM AIRFLOW RATE. --WHEN ZONE TEMPERATURE IS ABOVE THE COOLING SETPOINT, LEAVING AIR TEMPERATURE SETPOINT SET TO ASSOCIATED AIR HANDLER LEAVING AIR TEMPERATURE. HEATING COIL TURNED OFF. DAMPER MODULATES LINEARLY BETWEEN MINIMUM AIRFLOW RATE AND MAXIMUM AIRFLOW RATE TO MAINTAIN ZONE COOLING SETPOINT. WHEN ZONE TEMPERATURE IS EQUAL TO COOLING SETPOINT, REVERSE

AFOREMENTIONED SEQUENCE. --ZONE CARBON DIOXIDE CONTROL: DAMPER MODULATES LINEARLY BASED ON CARBON DIOXIDE LEVEL. WHEN LEVEL FALLS TO 400 PPM OR LESS, DAMPER MODULATES TO MAINTAIN LOW MINIMUM AIRFLOW RATE. WHEN CARBON DIOXIDE LEVEL AT SETPOINT OR HIGH, DAMPER MODULATES TO MAINTAIN MINIMUM AIRFLOW RATE.

IN UNOCCUPIED MODE: DAMPER OPEN.

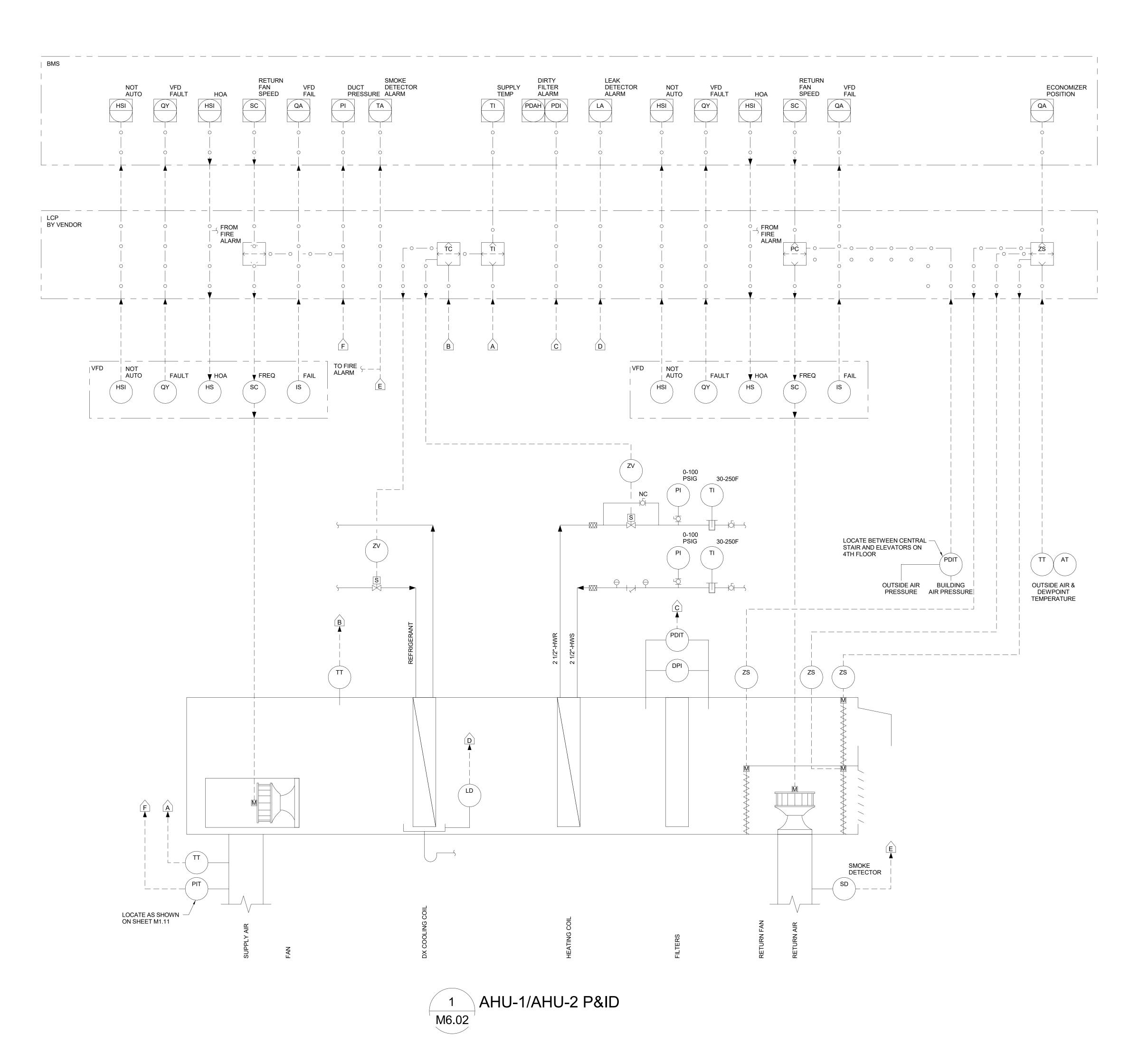
LOW AIRFLOW ALARM WHEN AIRFLOW RATE IS LESS THAN 50% OF SETPOINT FOR 5 MINUTES. MONITORING POINTS INCLUDE DAMPER POSITION AND HEATING COIL VALVE POSITION.

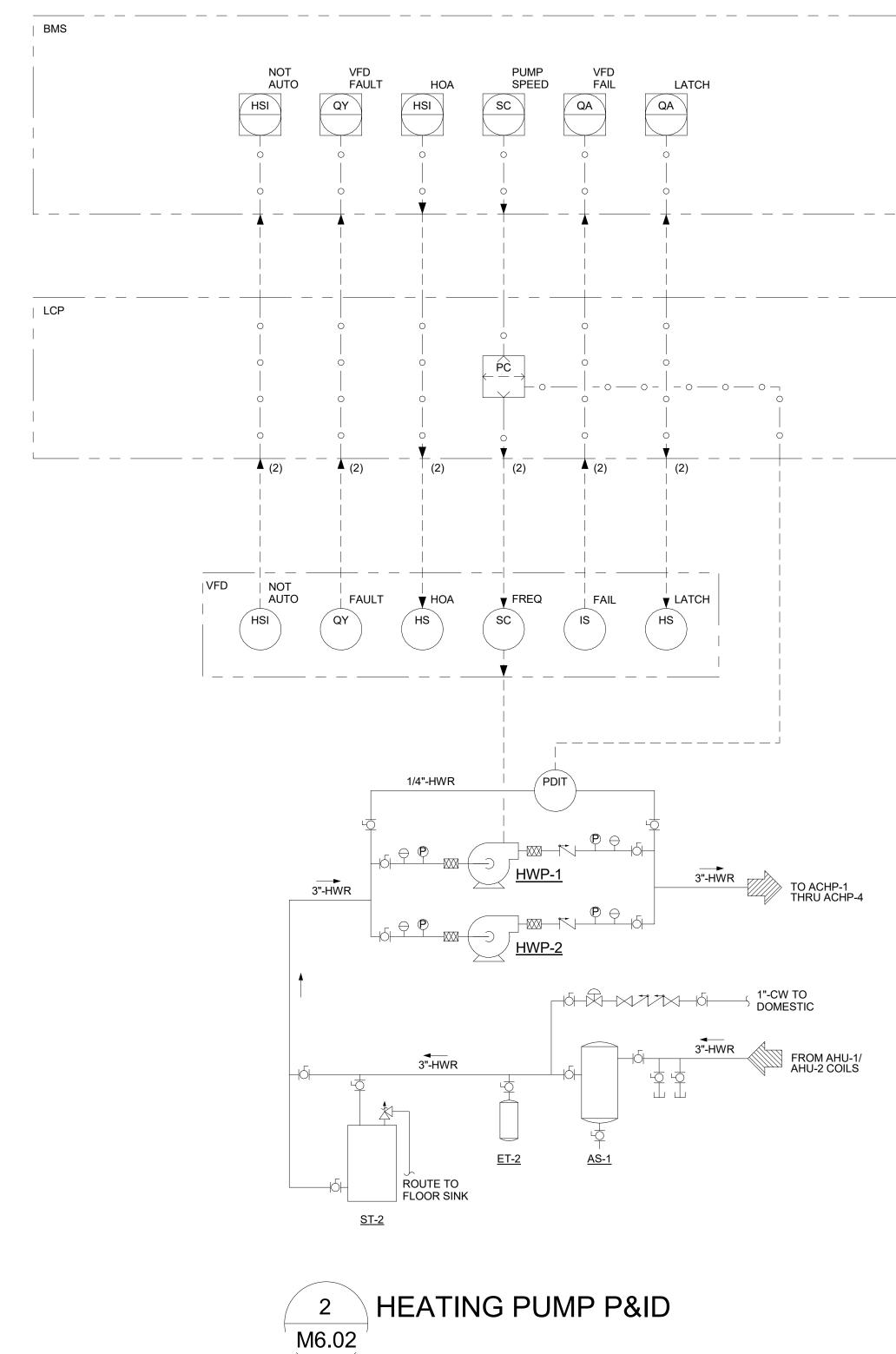
SETPOINTS AND VARIABLES ARE TO BE INDIVIDUALLY ADJUSTABLE THROUGH CONTROL SYSTEM GRAPHICAL USER INTERFACE.

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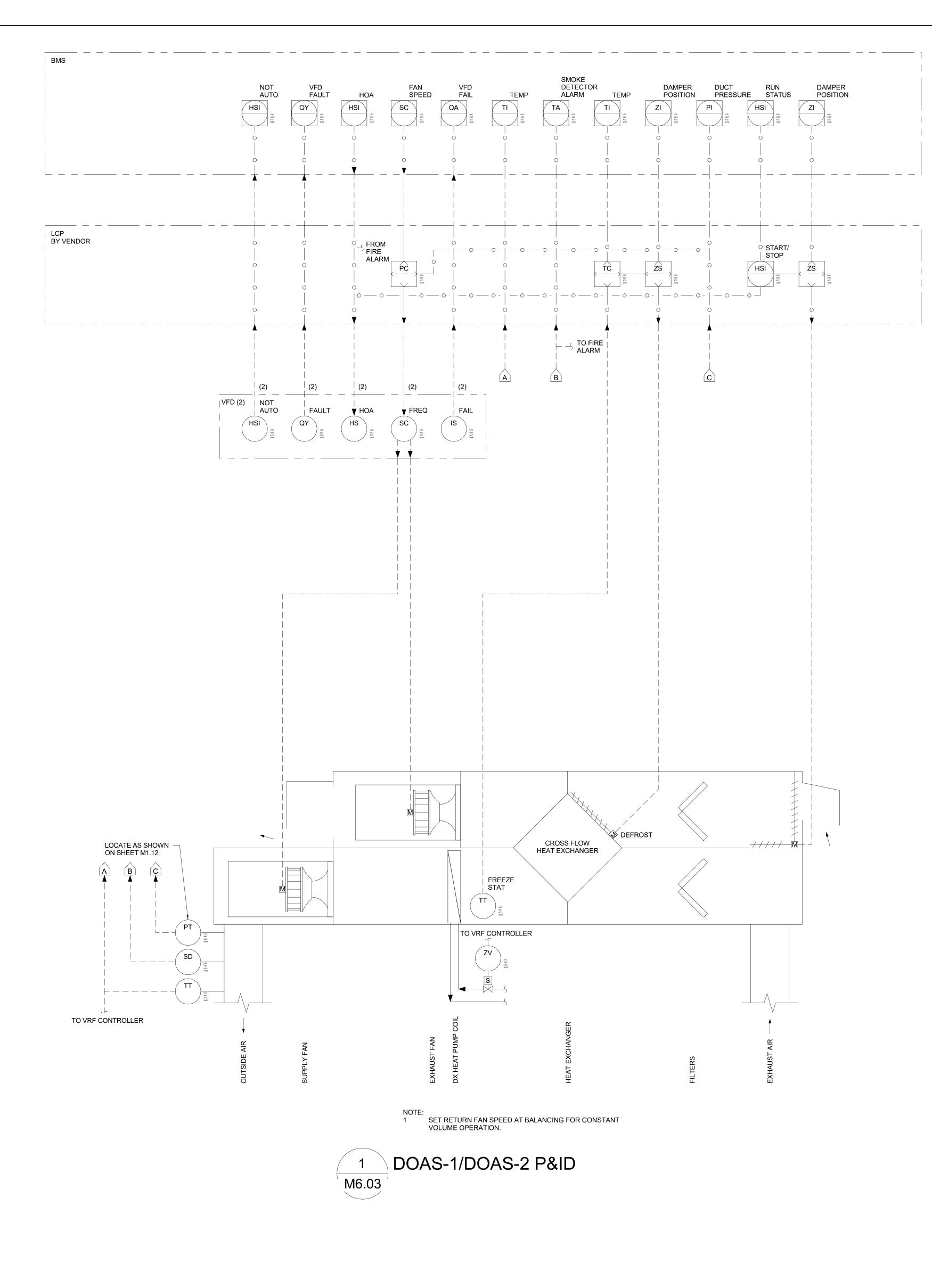
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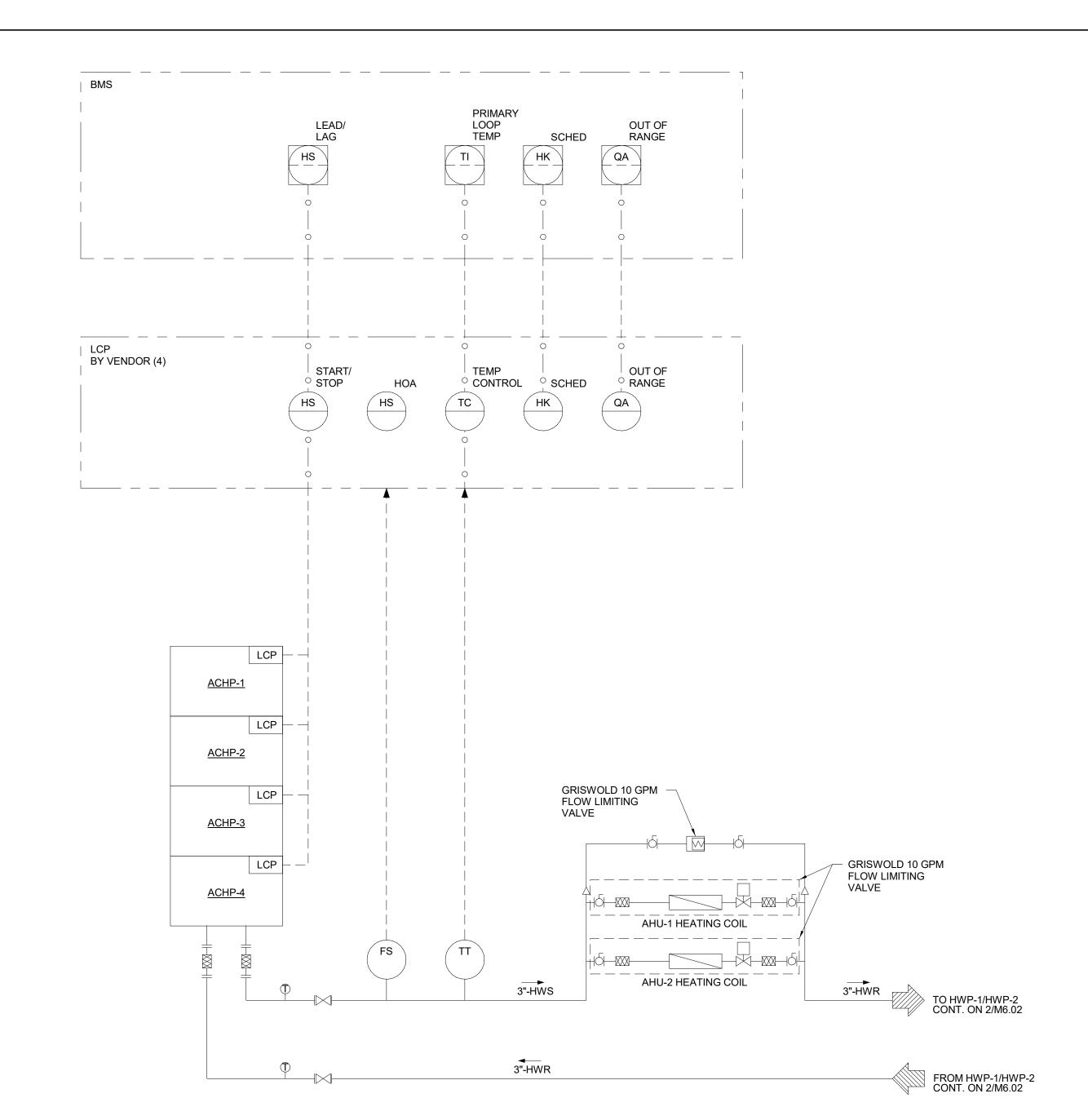
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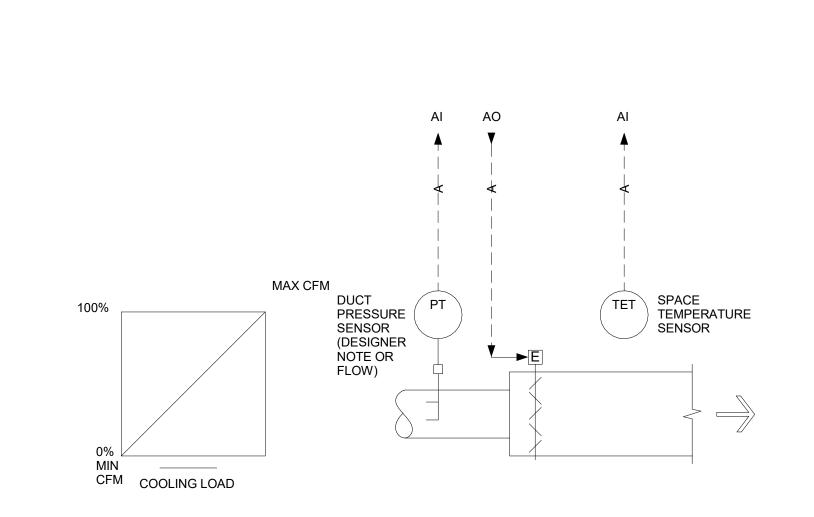
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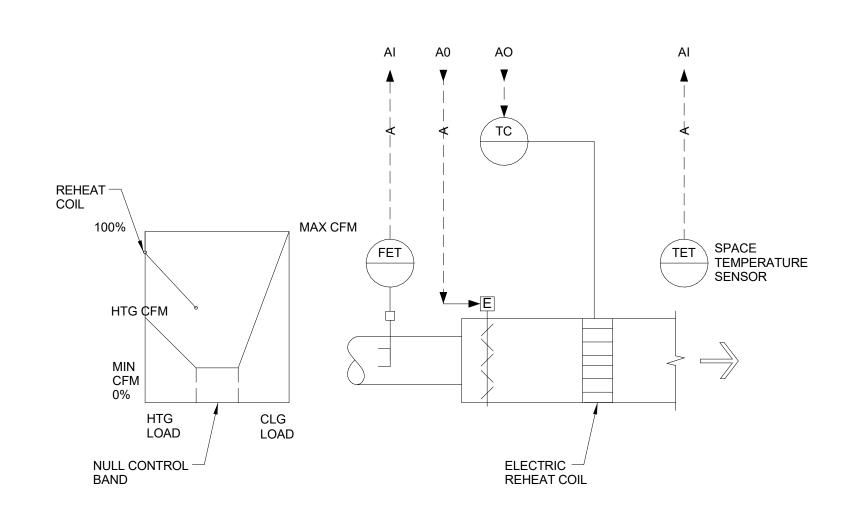




2 ACHP-1 THRU ACHP-4 P&ID M6.03

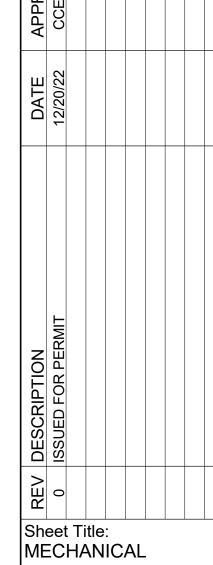












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