GENERAL MECHANICAL NOTES

- 1. ALL WORK SHALL BE IN COMPLIANCE WITH STATE AND LOCAL CODES.
- 2. THE CONTRACTOR SHALL PAY FOR ALL FEES, PERMITS, LICENSES, ETC., NECESSARY FOR PROPER COMPLETION OF THE WORK.
- 3. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. 4. VERIFY ALL EXISTING CONDITIONS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN CONTRACT DRAWINGS AND ACTUAL CONDITIONS.
- 5. THESE DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. ADDITIONAL DATA SHALL BE FROM THE ENGINEER THROUGH WRITTEN CLARIFICATION ONLY. VERIFY ALL EXISTING CONDITIONS, ELEVATIONS, AND DIMENSIONS BEFORE PROCEEDING WITH ANY PORTION OF ANY WORK. THE CONTRACTOR SHALL PROVIDE ALL OFFSETS AND TRANSITIONS REQUIRED TO MEET EXISTING CONDITIONS.
- 6. THE CONTRACTOR SHALL PERFORM WORK IN A SKILLED AND PROFESSIONAL MANNER.
- 7. ALL CONTRACTORS ARE RESPONSIBLE TO FIELD COORDINATE WORK SCHEDULE WITH OWNER REPRESENTATIVE.
- 8. THE CONTRACTOR SHALL WORK AND COORDINATE WITH THE OTHER TRADES.
- 9. ALL EQUIPMENT SHALL BE NEW AND IN UNDAMAGED CONDITION. ANY EQUIPMENT FOUND DEFECTIVE SHALL BE IMMEDIATELY REMOVED FROM THE PROJECT.
- 10. DUCT MATERIAL SHALL BE GALVANIZED OR ALUMINUM CONSTRUCTED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARD 2005 AND SMACNA HVAC AIR DUCT LEAKAGE MANUAL 2012 FOR THE PRESSURE AND SEAL CLASS LISTED IN THE PROJECT DUCTWORK/INSULATION SCHEDULE.
- 11. DUCT SIZES LISTED ON PLANS ARE THE REQUIRED CLEAR INTERIOR DIMENSIONS.

- 12. SUPPLY AND RETURN BRANCH DUCTS MAY BE INSULATED FLEX DUCT IF THE RUN IS LESS THAN 3 FEET IN LENGTH. ANY LENGTHS OVER 3 FEET SHALL BE RIGID DUCTWORK, DUCT SHALL BE THE SAME SIZE AS THE LISTED DIFFUSER THROAT UNLESS NOTED OTHERWISE.
- 13. PROVIDE VOLUME CONTROL DAMPERS WHERE INDICATED AND AT ALL TAKEOFFS, BOTH SUPPLY AND RETURN SYSTEMS, AND MAJOR DUCT RUNS. DAMPERS SHALL BE FACTORY-FABRICATED WITH ZINC-PLATED, DIE-CAST CONTROL HARDWARE. CONTROL HARDWARE SHALL INCLUDE HEAVY GAUGE DIAL AND HANDLE WITH ELEVATED PLATFORM FOR INSULATED DUCT MOUNTING.
- 14. PROVIDE TURNING VANES IN ALL RECTANGULAR ELBOWS CONFORMING TO SMACNA HVAC DUCT CONSTRUCTION STANDARD 2005 FIG. 4-2 TYPE RE-3 WITH STANDARD RADIUS. WHERE SPACE PERMITS, PROVIDE RADIUSED ELBOWS IN ACCORDANCE WITH FIGURES 4-2, TYPE RE-1.
- 15. ALL RECTANGULAR MAIN TO RECTANGULAR BRANCH CONNECTIONS, BOTH CONVERGING AND DIVERGING CONFIGURATIONS, SHALL HAVE A 45 DEG. ENTRY TAP CONSTRUCTED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARD 2005 FIG. 4-6.
- 16. MECHANICAL CONTRACTOR TO REPAIR ANY DAMAGE DONE TO THE FIRE PROOFING WHILE INSTALLING THE MECHANICAL TRADES. SEAL ALL PENETRATIONS THROUGH RATED STRUCTURES WITH UL LISTED FIRE SEAL DESIGNED FOR THE SPECIFIED APPLICATION.
- 17. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES TO PROTECT THE PUBLIC AND ADJACENT PROPERTIES FROM DAMAGE THROUGHOUT CONSTRUCTION.
- 18. UPON PROJECT COMPLETION, RECORD (AS-BUILT) DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR TO THE OWNER AND ENGINEER. ALL CHANGES IN PIPING AND DUCTWORK ARRANGEMENTS SHALL BE NOTED ON THE RECORD DRAWINGS.

				AHU-1				
					SBS TABI	LE 364.0403 (WI. CODE)		
ROOM OR SPACE DESIGNATION	OCCUPANCY CLASSIFICATION	FLOOR AREA (square feet)	PEOPLE/ 1000 SQ.FT.	# OF OCCUPANTS	EXHAUST (CFM/NET SQ. FT. FLOOR AREA)	PEOPLE OUTDOOR AIR RATE (CFM/PERSON)	TOTAL EXHAUST (CFM)	TOTAL OUTDOO AIR (CFM)
017 Customer Service*	Main Entry Lobbies	1508	30	16	NR	7.5	0	120
013 Large Conference Room*	Conference	840	50	16	NR	7.5	0	120
024 Facilities/ Laundry	Office Space	509	7	4	NR	7.5	0	30
031 Circulation and	Corridors	1040	0	0	NR	7.5	0	0
015 Small Conference Room*	Conference	155	7	4	NR	7.5	0	30
044 Open Office and Circulation	Office Space	1172	7	8	NR	7.5	0	60
033 Planning Director	Office Space	254	7	2	NR	7.5	0	15
032 Open Office and Copy Room	Office Space	1777	7	12	NR	7.5	0	90
034 TPP Office	Office Space	132	7	1	NR	7.5	0	8
035 House Inspection Supervisor	Office Space	128	7	1	NR	7.5	0	8
036 NCSP Office	Office Space	128	7	1	NR	7.5	0	8
037 CDPI Office	Office Space	129	7	1	NR	7.5	0	8
040 Office	Office Space	132	7	1	NR	7.5	0	8
041 Office	Office Space	131	7	1	NR	7.5	0	8
042 B.I Director	Office Space	208	7	1	NR	7.5	0	8
043 Office	Office Space	207	7	1	NR	7.5	0	8
032 Open Office	·	207	7	·	NR	7.5	-	113
•	Office Space			15	NR NR	7.5	0	
147 Manager	Office Space	141	7	1			0	8
141 Control Room and Open Office	Office Space	1063	7	7	NR	7.5	0	53
140 Open Office and Kitchenette	Office Space	1153	7	8	NR	7.5	0	60
108 M Credit Union	Office Space	354	7	2	NR	7.5	0	15
143 Manager	Office Space	138	7	1	NR	7.5	0	8
144 Manager	Office Space	144	7	1	NR	7.5	0	8
145 Manager	Office Space	145	7	1	NR	7.5	0	8
151 TEPU Director	Office Space	227	7	2	NR	7.5	0	15
150 Medium Conference Room	Conference	227	50	11	NR	7.5	0	83
109 Customer Service	Office Space	733	7	5	NR	7.5	0	38
169 Corridor	Corridors	670	0	0	NR	7.5	0	0
132 Staff	Corridors	614	0	0	NR	7.5	0	0
130 Open Office	Office Space	827	7	6	NR	7.5	0	45
110 Medium Conference Room	Conference	318	50	16	NR	7.5	0	120
111 Conference Room and Storage	Conference	1163	50	58	NR	7.5	0	435
129 OOD Director	Office Space	225	7	2	NR	7.5	0	15
126 Small Conference	Conference	182	50	9	NR	7.5	0	68
125 Interview Room*	Office Space	95	7	2	NR	7.5	0	15
112 Reception and Circulation*	Main Entry Lobbies	714	30	9	NR	7.5	0	68
124 Interview Room*	Office Space	94	7	2	NR	7.5	0	15
121 Office	Office Space	124	7	1	NR	7.5	0	8
123 Interview Room*	Office Space	81	7	2	NR	7.5	0	15
120 HOD Director	Office Space	201	7	1	NR	7.5	0	8
122 Interview Room*	Office Space	144	7	6	NR	7.5	0	45
118 Open Office	Office Space	469	7	3	NR	7.5	0	23
027 Mens	Toilet Room	235	-	3	75 / fixture	-	225	-
026 WC	Toilet Room	78	-	1	75 / fixture	-	75	
030 Janitor	Janitor	43	-	1	75 / sink	-	75	-
025 Womens	Toilet Room	230	-	2	75 / fixture	-	150	-
				1	75 / fixture		75	
012 WC	Toilet Room	33	-	•		-		-
011 WC	Toilet Room	39	-	1	75 / fixture	-	75	-
139 Womens	Toilet Room	294	-	3 fixtures	75 / fixture	-	225	-

* # of occupants is determined by number of seats in space for Wisconsin code.

TOTAL EXHAUST (CFM)	975	
TOTAL OUTSIDE AIR (CFM)		1688

				AHU-2						
			SBS TABLE 364.0403 (WI. CODE)							
ROOM OR SPACE DESIGNATION	OCCUPANCY CLASSIFICATION	FLOOR AREA (square feet)	PEOPLE/ 1000 SQ.FT.	# OF OCCUPANTS	EXHAUST (CFM/ NET SQ. FT. FLOOR AREA)	PEOPLE OUTDOOR AIR RATE (CFM/PERSON)	TOTAL EXHAUST (CFM)	TOTAL OUTDOOR AIR (CFM)		
006 Facilities Storage	Storage	402	0	0	NR	7.5	0	0		
020 Utility Room	Storage	260	0	0	NR	7.5	0	0		
022 Large conference Room*	Conference	414	50	14	NR	7.5	0	105		
043 Open Office	Office Space	757	7	5	NR	7.5	0	38		
043 Open Office	Office Space	717	7	5	NR	7.5	0	38		
043 Open Office	Office Space	702	7	5	NR	7.5	0	38		
043 Open Office*	Office Space	629	7	10	NR	7.5	0	75		
032 Open Office	Office Space	608	7	4	NR	7.5	0	30		
032 Open Office*	Office Space	1194	7	18	NR	7.5	0	135		
106 Medium Conference Room	Conference	208	50	10	NR	7.5	0	75		
105 Small Conference Room	Conference	110	50	6	NR	7.5	0	45		
101 Lobby	Corridor	1299	0	0	NR	7.5	0	0		
101 Lobby	Corridor	1338	0	0	NR	7.5	0	0		
103 Small Conference Room	Conference	109	50	5	NR	7.5	0	38		
104 Medium Conference Room*	Conference	204	50	4	NR	7.5	0	30		
119 Office	Office Space	130	7	1	NR	7.5	0	8		
118 Office	Office Space	826	7	6	NR	7.5	0	45		
118 Office	Office Space	1404	7	10	NR	7.5	0	75		
132 Staff	Main Entry Lobby	371	50	6	NR	7.5	0	45		
133 Breakout Vestible*	Break Room	528	0	12	NR	7.5	0	90		
136 Comfort*	Office Space	83	7	1	NR	7.5	0	8		
140 Open Office*	Office Space	743	7	11	NR	7.5	0	83		
140 Open Office*	Office Space	908	7	13	NR	7.5	0	98		
146 Manager	Office Space	137	7	1	NR	7.5	0	8		
107 Men	Toilet Room	161	-	3 fixtures	75 / fixture	-	225	-		
115 Women	Toilet Room	197	-	3 fixtures	75 / fixture	-	225	-		
137 Men	Toilet Room	274	-	3 fixtures	75 / fixture	-	225	-		

* # of occupants is determined by number of seats in space for Wisconsin

TOTAL EXHAUST (CFM)	675	
TOTAL OUTSIDE AIR (CFM)	·	1103

	MECHANICAL	HVAC LEGEND
\sim	EXHAUST AIR DUCT (DOWN)	ACC AIR COOLED CHILLER
\boxtimes	EXHAUST AIR DUCT (UP)	AD ACCESS DOOR AF AIR FILTER
~	RETURN AIR DUCT (DOWN)	AHU AIR HANDLING UNIT B BOILER
	RETURN AIR DUCT (UP)	BDD BACK DRAFT DAMPER CD CEILING DIFFUSER
\boxtimes	OUTSIDE OR SUPPLY AIR DUCT (UP)	CR CEILING REGISTER CWBT CHILLED WATER BUFFER TANK EF EXHAUST FAN
<u>><</u>	OUTSIDE OR SUPPLY AIR DUCT (DOWN)	EG EXHAUST GRILLE ERV ENERGY RECOVERY VENTILATOR ET EXPANSION TANK
24x12	DUCT SIZE	FD FIRE DAMPER
	NEW DUCTWORK	HX HEAT EXCHANGER
 	FLEX DUCT	L LOUVER MD MOTOR OPERATED DAMPER NC NORMALLY CLOSED
	EXISTING DUCTWORK	NO NORMALLY OPEN OA OUTSIDE AIR
	DEMOLITION LINETYPE	OED OPEN END DUCT RA RETURN AIR RF RETURN FAN
\boxtimes	SUPPLY AIR CEILING DIFFUSER	RG RETURN AIR GRILLE RH HOT WATER RE-HEAT RTU ROOFTOP UNIT
\boxtimes	CEILING DIFFUSER W/BLANKOFF	SA SUPPLY AIR SAT SOUND ATTENUATORS
	RETURN AIR GRILLE	SF SUPPLY FAN SG SUPPLY GRILLE SR SUPPLY REGISTER
\boxtimes	EXHAUST AIR GRILLE	TG TRANSFER GRILLE UH UNIT HEATER
DIFFUSER, (CALL-OUT/SIZE CFM	
	MANUAL BALANCING DAMPER	
*	FIRE RATED WALL	
	FIRE DAMPER (X=F) SMOKE DAMPER (X=S) FIRE/SMOKE DAMPER (X=C)	
+	MOTORIZED DAMPER	
$\frac{1}{2}$	SCHEDULED EQUIPMENT TAG	
\bigcirc	THERMOSTAT	
lacksquare	HUMIDISTAT	
©	CO2 SENSOR	
0	OCCUPANCY SENSOR	
S	REMOTE SENSOR	
\$	DUCT SMOKE DETECTOR	
		I and the second

DOUBLE ELBOW DOWN	-161-	ξ+	DOUBLE ELBOW DOWN (AT CORNER)
ELBOW DOWN	G T	O+	ELBOW UP
TEE	 		TEE DOWN
	++- t .	 131 	
ELBOW	+		TEE UP
ELBOW DOWN TO TEE	-┯-		END CAP
TYPICAL TEE CONNECTION (PLANS ONLY)			REDUCER NEW TO EXISTING PIPE CONNECTION
AUTOMATIC AIR VENT	모		FLOW DIRECTION ARROW
WATER FLOW MEASURING DEVICE	₩	}	MANUAL AIR VENT (MAV)
PIPE ANCHOR	~	0	PRESSURE GAUGE
PIPE GUIDE / SLEEVE	 -		
BALANCING VALVE	—₹—	 	UNION
CIRCUIT SETTER	-	🏧	PRESSURE RELIEF VALVE
PRESSURE REDUCING VALVE	-₩-	PT ⊠	PRESSURE/TEMPERATURE PORT
BALL VALVE/SHUT-OFF VALVE	-ស-		AIR SEPARATOR
SILENT CHECK VALVE	7	- ₹	PUMP
GLOBE VALVE	- >><	-	OR PUMP
TWO-WAY VALVE	-\$-	- 	FLEX CONNECTION
THREE-WAY VALVE	-₩-		THERMOMETER
SHUT-OFF COCK	^Т _ス		001
STRAINER			COIL PIPE VIEW
		Al	ANALOG INPUT
STRAINER WITH BLOWDOWN	- No.) @	ANALOG OUTPUT
SUCTION DIFFUSER W/ STRAINER AND BLOWDOWN			DIGITAL INPUT
DRAIN VALVE	**	(a)	DIGITAL OUTPUT
			DIGITAL COTFOT
VACUUM BREAKER			
FLOW CONTROL VALVE W/ PRESSURE DIFFERENTIAL SENSOR			
DIFFERENTIAL PRESSURE SENSOR	_ODP		

				AHU-3				
					SBS TABLE	364.0403 (WI. CODE)		
ROOM OR SPACE DESIGNATION	OCCUPANCY CLASSIFICATION	FLOOR AREA (square feet)	PEOPLE/ 1000 SQ.FT.	# OF OCCUPANTS	EXHAUST (CFM/NET SQ. FT. FLOOR AREA)	PEOPLE OUTDOOR AIR RATE (CFM/PERSON)	TOTAL EXHAUST (CFM)	TOTAL OUTDOOR AIR (CFM)
218 Manager	Office Space	164	7	1	NR	7.5	0	8
217 Office	Office Space	124	7	1	NR	7.5	0	8
215 Office	Office Space	124	7	1	NR	7.5	0	8
214 Office	Office Space	127	7	1	NR	7.5	0	8
213 Office	Office Space	126	7	1	NR	7.5	0	8
12 Office	Office Space	127	7	1	NR	7.5	0	8
211 Office	Office Space	127	7	1	NR	7.5	0	8
210 Manager	Office Space	170	7	1	NR	7.5	0	8
216 HR South	Corridor	425	0	0	NR	7.5	0	0
63 Historic Corridor	Corridor	1150	0	0	NR	7.5	0	0
66 Testing and File Rooms*	Office Space	276	7	4	NR	7.5	0	30
68 Kitchenette/ Staff	Break Room	173	0	2	NR	7.5	0	15
61 Final Prep kitchen	Office Space	369	7	3	NR	7.5	0	23
60 Meeting Space*	Conference	2298	50	75	NR	7.5	0	563
72 Office	Office Space	137	7	1	NR	7.5	0	8
71 HR Open Office	Office Space	594	7	4	NR	7.5	0	30
73 Office	Office Space	126	7	1	NR	7.5	0	8
74 Office	Office Space	126	7	1	NR	7.5	0	8
76 HR Director	Office Space	182	7	1	NR	7.5	0	8
277 Office	Office Space	117	7	1	NR	7.5	0	8
78 Manager	Office Space	159	7	1	NR	7.5	0	8
75 Office	Office Space	138	7	1	NR	7.5	0	8
04 EDD/CDD Open Office*	Office Space	1300	7	15	NR	7.5	0	113
08 Office	Office Space	125	7	1	NR	7.5	0	8
04 EDD/CDD Open Office*	Office Space	1130	7	16	NR	7.5	0	120
10 CDD director	Office Space	194	7	1	NR	7.5	0	8
15 Kitchenette	Office Space	184	7	1	NR	7.5	0	8
CDD Open Office*	Office Space	1145	7	12	NR	7.5	0	90
19 Medium Conference Room*	Conference	259	50	8	NR	7.5	0	60
18 Office*	Office Space	27	7	1	NR	7.5	0	8
270 Womens	Toilet Room	172	-	3 fixtures	75 / fixture	-	225	-
	T 11 15	1					1	†

314 Womens * # of occupants is determined by number of seats in space for Wisconsin code.

NEW TO EXISTING

TOTAL EXHAUST (CFM) 450 TOTAL OUTSIDE AIR (CFM) 1185

3 fixtures

75 / fixture

				AHU-4				
					SBS TABL	E 364.0403 (WI. CODE)		
ROOM OR SPACE DESIGNATION	OCCUPANCY CLASSIFICATION	FLOOR AREA (square feet)	PEOPLE/ 1000 SQ.FT.	# OF OCCUPANTS	EXHAUST (CFM/ NET SQ. FT. FLOOR AREA)	PEOPLE OUTDOOR AIR RATE (CFM/PERSON)	TOTAL EXHAUST (CFM)	TOTAL OUTDOOR AIR (CFM)
226 Expansion Space	Office Space	1408	7	10	NR	7.5	0	75
221 Storage and Comfort*	Office Space	878	7	1	NR	7.5	0	8
202 Large Conference Room*	Conference	519	50	18	NR	7.5	0	135
205 Training Room*	Conference	631	50	20	NR	7.5	0	150
207 Large Conference Room	Conference	961	50	48	NR	7.5	0	360
263 Historic Corridor	Corridor	1150	0	0	NR	7.5	0	0
324 Small Conference Room	Conference	109	50	5	NR	7.5	0	38
323 Office	Office Space	124	7	1	NR	7.5	0	8
325 Open Office	Office Space	1450	7	10	NR	7.5	0	75
326 Kitchenette	Office Space	201	7	1	NR	7.5	0	8
302 Large Conference Room*	Conference	512	50	16	NR	7.5	0	120
304 EDD/CDD Open Office	Office Space	1175	7	8	NR	7.5	0	60
305 EDD Director	Office Space	192	7	1	NR	7.5	0	8
306 Office	Office Space	125	7	1	NR	7.5	0	8
307 Office	Office Space	125	7	1	NR	7.5	0	8
303 Small Conference Room	Conference	103	50	5	NR	7.5	0	38
201 Mens	Toilet Room	209	-	4 fixtures	75 / fixture	-	300	-
327 Mens	Toilet Room	206	-	4 fixtures	75 / fixture	-	300	

* # of occupants is determined by number of seats in space for Wisconsin code.

TOTAL EXHAUST (CFM)	600	
TOTAL OUTSIDE AIR (CFM)		1095

	ABBREV	<u> </u>	
	AMP	IN	INCH
	ADDENDUM ADDITIONAL	INSUL	INSULATION
ADJ	ADJUSTABLE	J-BOX	JUNCTION BOX
	ABOVE FINISH FLOOR		LEAVING AID TEMPERATURE
-	ABOVE FINISH GRADE AIR HANDLER UNIT	LAT LB	LEAVING AIR TEMPERATURE POUND
	ANALOG INPUT	LLT	LEAVING LIQUID TEMPERATURE
ALT	ALTERNATE		LOCATION
	ANNUNCIATOR ANALOG OUTPUT		LOW PRESSURE RETURN LOW PRESSURE STEAM
	APPROXIMATE	LV	LOW VOLTAGE
	ARCHITECT, ARCHITECTURAL		LEAVING WATER TEMPERATURE
חחם	BACK DRAFT DAMPER	MA	MAKE-UP AIR OR MIXED AIR
	BUILDING	MA MAX	MAXIMUM
	BLACK IRON	MBH	1000 BTU PER HOUR
	BOTTOM OF DUCTWORK	MC	MECHANICAL CONTRACTOR
	BOTTOM OF PIPE BOTTOM	MCA MECH	MINIMUM CIRCUIT AMPS MECHANICAL
	BASEMENT	MIN	MINIMUM
-	BRITISH THERMAL UNIT PER HOUR	MFR	MANUFACTURER
BTWN	BETWEEN	NFC	NOT FOR CONSTRUCTION
С	CENTER	NIC	NOT IN CONTRACT
	CEILING DIFFUSER	NTS	NOT TO SCALE
	CUBIC FEET PER MINUTE CHARACTERISTICS	O4	OLITCIDE AID
	CAST IRON	OA OC	OUTSIDE AIR ON CENTER
CIRC	CIRCUIT	OED	OPEN END DUCT
	CLEAR		OPENING
-	CLEAR CLEAN OUT	UPP	OPPOSITE
	COLUMN	Р	PUMP
	COMPRESSOR	PC	PLUMBING CONTRACTOR
	CONCRETE CONDENSATE		PERPENDICULAR PLUMBING
	CONTINUOUS	PLBG	PANEL
	COEFFICIENT OF PERFORMANCE	PPH	POUNDS PER HOUR
	CEILING REGISTER		PRESSURE
	CHILLED/COLD WATER COLD WATER RETURN	PSF PSI	POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH
	COLD WATER SUPPLY		POUNDS PER SQUARE INCH GAUG
DD	DDV DUI D	PWR	POWER
	DRY BULB DEGREE	QTY	QUANTITY
	DEPARTMENT	Q11	QO/WITT
	DETAIL	R	RADIUS
	DRINKING FOUNTAIN DOOR GRILLE	RA RD	RETURN AIR ROOF DRAIN
DI	DIGITAL INPUT	REL	RELIEF
	DIAMETER		REQUIRED
	DIMENSION DOWN	REV RG	REVERSE OR REVISION RETURN AIR GRILLE
	DIGITAL OUTPUT		REVOLUTIONS PER MINUTE
	DEIONIZED WATER	RTU	ROOF TOP UNIT
DWG	DRAWING	SA	SUPPLY AIR
EA	EXHAUST AIR	SAN	SANITARY
	ENTERING AIR TEMPERATURE	SCH	SCHEDULE
	ELECTRICAL CONTRACTOR ELECTRONIC CONTROL MODULE	SECT SEP	SECTION SEPARATOR
	ENERGY EFFICIENCY RATIO	SF	SQUARE FEET
	EXHAUST FAN	SG	SUPPLY GRILLE
	EXHAUST GRILLE ELEVATION	SHT	
	ELECTRICAL	SHWR	SHOWER SIMILAR
ELEV	ELEVATOR	SP	STATIC PRESSURE
	ENTERING LIQUID TEMPERATURE		SPECIFICATIONS
	EQUAL EQUIPMENT	SQ SS	SQUARE STAINLESS STEEL
			O 17 MINELOU O I ELE
	EXTERNAL STATIC PRESSURE	T&B	TEST AND BALANCE OR TOP AND
	ESTIMATE OR ESTIMATED	T&P	BOTTOM TEMPERATURE AND PRESSURE
EST	DIAPHRACIM EYDANISIONI TANIZ	IAT	RELIEF VALVE
EST ET	DIAPHRAGM EXPANSION TANK EXISTING TO REMAIN		\
EST ET ETR EWT	EXISTING TO REMAIN ENTERING WATER TEMPERATURE		TEMPERATURE OR TEMPORARY
EST ET ETR EWT	EXISTING TO REMAIN	TG	TEMPERATURE OR TEMPORARY TRANSFER GRILLE
EST ET ETR EWT EXIST	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING		TEMPERATURE OR TEMPORARY
EST ET ETR EWT EXIST	EXISTING TO REMAIN ENTERING WATER TEMPERATURE	TG	TEMPERATURE OR TEMPORARY TRANSFER GRILLE
EST ET ETR EWT EXIST F&T FA FCO	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT	TG TYP UNO	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE
EST ET ETR EWT EXIST F&T FA FCO FD	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN	TG TYP UNO V	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT
EST ET ETR EWT EXIST F&T FA FCO FD FLR	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT	TG TYP UNO V VAR	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE
EST ET ETR EWT EXIST F&T FA FCO FD FLR	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN FLOOR	TG TYP UNO V VAR VEL VERT	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT VARIABLE OR VARIES VELOCITY VERTICAL
EST ET ETR EWT EXIST F&T FA FCO FD FLR FPM FT	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN FLOOR FEET PER MINUTE FOOT (FEET)	TG TYP UNO V VAR VEL VERT VFD	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT VARIABLE OR VARIES VELOCITY VERTICAL VARIABLE FREQUENCY DRIVE
EST ET ETR EWT EXIST F&T FA FCO FD FLR FPM FT	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN FLOOR FEET PER MINUTE	TG TYP UNO V VAR VEL VERT VFD VOL	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT VARIABLE OR VARIES VELOCITY VERTICAL
EST ET ETR EWT EXIST F&T FA FCO FD FLR FPM FT GAL GAL GALV	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN FLOOR FEET PER MINUTE FOOT (FEET) GAUGE/GAGE GALLON GALVANIZED	TG TYP UNO V VAR VEL VERT VFD VOL VS	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT VARIABLE OR VARIES VELOCITY VERTICAL VARIABLE FREQUENCY DRIVE VOLUME
EST ET ETR EWT EXIST F&T FA FCO FD FLR FPM FT GAL GALV GC	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN FLOOR FEET PER MINUTE FOOT (FEET) GAUGE/GAGE GALLON GALVANIZED GENERAL CONTRACTOR	TG TYP UNO V VAR VEL VERT VFD VOL VS VTR	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT VARIABLE OR VARIES VELOCITY VERTICAL VARIABLE FREQUENCY DRIVE VOLUME VENT STACK VENT THRU ROOF
EST ET ETR EWT EXIST F&T FA FCO FD FLR FPM FT GAL GALV GC GPM	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN FLOOR FEET PER MINUTE FOOT (FEET) GAUGE/GAGE GALLON GALVANIZED GENERAL CONTRACTOR GALLONS PER MINUTE	TG TYP UNO V VAR VEL VERT VFD VOL VS VTR	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT VARIABLE OR VARIES VELOCITY VERTICAL VARIABLE FREQUENCY DRIVE VOLUME VENT STACK VENT THRU ROOF
EST ET ETR EWT EXIST F&T FA FCO FD FLR FPM FT GAL GALV GC GPM	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN FLOOR FEET PER MINUTE FOOT (FEET) GAUGE/GAGE GALLON GALVANIZED GENERAL CONTRACTOR	TG TYP UNO V VAR VEL VERT VFD VOL VS VTR	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT VARIABLE OR VARIES VELOCITY VERTICAL VARIABLE FREQUENCY DRIVE VOLUME VENT STACK VENT THRU ROOF
EST ET ETR EWT EXIST F&T FA FCO FD FLR FPM FT GA GAL GALV GC GPM GYP HB	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN FLOOR FEET PER MINUTE FOOT (FEET) GAUGE/GAGE GALLON GALVANIZED GENERAL CONTRACTOR GALLONS PER MINUTE GYPSUM HOSE BIB	TG TYP UNO V VAR VEL VERT VFD VOL VS VTR W/N W/O WB	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT VARIABLE OR VARIES VELOCITY VERTICAL VARIABLE FREQUENCY DRIVE VOLUME VENT STACK VENT THRU ROOF WITH WITHIN WITH OUT WET BULB
EST ET ETR ETR EWT EXIST F&T FA FCO FD FLR FPM FT GA GALV GC GPM GYP HB HORIZ	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN FLOOR FEET PER MINUTE FOOT (FEET) GAUGE/GAGE GALLON GALVANIZED GENERAL CONTRACTOR GALLONS PER MINUTE GYPSUM HOSE BIB HORIZONTAL	TG TYP UNO V VAR VEL VERT VFD VOL VS VTR W/IN W/O WB	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT VARIABLE OR VARIES VELOCITY VERTICAL VARIABLE FREQUENCY DRIVE VOLUME VENT STACK VENT THRU ROOF WITH WITHIN WITH OUT WET BULB WATER COLUMN (INCHES OF)
EST ET ETR ETR EWT EXIST F&T FA FCO FD FLR FPM FT GA GAL GGLV GC GPM GYP HB HORIZ HP	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN FLOOR FEET PER MINUTE FOOT (FEET) GAUGE/GAGE GALLON GALVANIZED GENERAL CONTRACTOR GALLONS PER MINUTE GYPSUM HOSE BIB	TG TYP UNO V VAR VEL VERT VFD VOL VS VTR W/IN W/O WB	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT VARIABLE OR VARIES VELOCITY VERTICAL VARIABLE FREQUENCY DRIVE VOLUME VENT STACK VENT THRU ROOF WITH WITHIN WITH OUT WET BULB
EST ET ET ETR EWT EXIST F&T FA FCO FD FLR FPM FT GA GALV GC GPM GYP HB HORIZ HP HT HW	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN FLOOR FEET PER MINUTE FOOT (FEET) GAUGE/GAGE GALLON GALVANIZED GENERAL CONTRACTOR GALLONS PER MINUTE GYPSUM HOSE BIB HORIZONTAL HORSEPOWER HEIGHT HOT WATER	TG TYP UNO V VAR VEL VERT VFD VOL VS VTR W/ W/IN W/O WB WC WCO WG WP	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT VARIABLE OR VARIES VELOCITY VERTICAL VARIABLE FREQUENCY DRIVE VOLUME VENT STACK VENT THRU ROOF WITH WITHIN WITH OUT WET BULB WATER COLUMN (INCHES OF) WALL CLEANOUT WATER GAUGE WEATHER PROOF
EST ET ETR ETR EWT EXIST F&T FA FCO FD FLR FPM FT GA GALV GC GPM GYP HB HORIZ HP HT HW HWR	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN FLOOR FEET PER MINUTE FOOT (FEET) GAUGE/GAGE GALLON GALVANIZED GENERAL CONTRACTOR GALLONS PER MINUTE GYPSUM HOSE BIB HORIZONTAL HORSEPOWER HEIGHT HOT WATER HOT WATER RETURN	TG TYP UNO V VAR VEL VERT VFD VOL VS VTR W/IN W/O WB WC WCO WG WP WP	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT VARIABLE OR VARIES VELOCITY VERTICAL VARIABLE FREQUENCY DRIVE VOLUME VENT STACK VENT THRU ROOF WITH WITHIN WITH OUT WET BULB WATER COLUMN (INCHES OF) WALL CLEANOUT WATER GAUGE WEATHER PROOF WORKING PRESSURE
EST ET ETR ETR EWT EXIST F&T FA FCO FD FLR FPM FT GA GALV GC GPM GYP HB HORIZ HP HT HW HWR	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN FLOOR FEET PER MINUTE FOOT (FEET) GAUGE/GAGE GALLON GALVANIZED GENERAL CONTRACTOR GALLONS PER MINUTE GYPSUM HOSE BIB HORIZONTAL HORSEPOWER HEIGHT HOT WATER	TG TYP UNO V VAR VEL VERT VFD VOL VS VTR W/ W/IN W/O WB WC WCO WG WP	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT VARIABLE OR VARIES VELOCITY VERTICAL VARIABLE FREQUENCY DRIVE VOLUME VENT STACK VENT THRU ROOF WITH WITHIN WITH OUT WET BULB WATER COLUMN (INCHES OF) WALL CLEANOUT WATER GAUGE WEATHER PROOF
EST ET ETR EWT EXIST F&T FA FCO FD FLR FPM FT GAL GALV GC GPM GYP HB HORIZ HP HT HW HWR	EXISTING TO REMAIN ENTERING WATER TEMPERATURE EXISTING FLOAT AND THERMOSTATIC FRESH AIR FLOOR CLEANOUT FLOOR DRAIN FLOOR FEET PER MINUTE FOOT (FEET) GAUGE/GAGE GALLON GALVANIZED GENERAL CONTRACTOR GALLONS PER MINUTE GYPSUM HOSE BIB HORIZONTAL HORSEPOWER HEIGHT HOT WATER HOT WATER RETURN	TG TYP UNO V VAR VEL VERT VFD VOL VS VTR W/IN W/O WB WC WCO WG WP WP	TEMPERATURE OR TEMPORARY TRANSFER GRILLE TYPICAL UNLESS NOTED OTHERWISE VOLT VARIABLE OR VARIES VELOCITY VERTICAL VARIABLE FREQUENCY DRIVE VOLUME VENT STACK VENT THRU ROOF WITH WITHIN WITH OUT WET BULB WATER COLUMN (INCHES OF) WALL CLEANOUT WATER GAUGE WEATHER PROOF WORKING PRESSURE

MD100 GROUND LEVEL MECHANICAL DEMOLITION PLAN MD101 LEVEL ONE MECHANICAL DEMOLITION PLAN MD102 LEVEL TWO MECHANICAL DEMOLITION PLAN MD103 LEVEL THREE MECHANICAL DEMOLITION PLAN MD104 ROOF ATTIC MECHANICAL DEMOLITION PLAN MD105 ROOF MECHANICAL DEMOLITION PLAN MD200 MECHANICAL DEMOLITION PHOTOS M100 GROUND LEVEL MECHANICAL DUCTWORK PLAN M101 LEVEL ONE MECHANICAL DUCTWORK PLAN M101 LEVEL ONE MECHANICAL DUCTWORK PLAN M102 LEVEL THREE MECHANICAL DUCTWORK PLAN M103 LEVEL THREE MECHANICAL DUCTWORK PLAN M104 ROOF ATTIC MECHANICAL DUCTWORK PLAN M105 ROOF MECHANICAL DUCTWORK PLAN M106 ROOF MECHANICAL DUCTWORK PLAN M107 ROOF MECHANICAL DUCTWORK PLAN M108 ROOF MECHANICAL DUCTWORK PLAN M200 GROUND LEVEL MECHANICAL HYDRONIC PLAN M201 LEVEL ONE MECHANICAL HYDRONIC PLAN M202 LEVEL TWO MECHANICAL HYDRONIC PLAN M203 LEVEL THREE MECHANICAL HYDRONIC PLAN M204 ROOF ATTIC MECHANICAL HYDRONIC PLAN M205 ROOF MECHANICAL HYDRONIC PLAN M206 ROOF MECHANICAL HYDRONIC PLAN M207 ROOF ATTIC MECHANICAL HYDRONIC PLAN M208 GROUND LEVEL MECHANICAL ROOM ELEVATIONS M400 ENLARGED GROUND LEVEL MECHANICAL ROOM PLAN M401 GROUND LEVEL MECHANICAL ROOM ELEVATIONS M402 GROUND LEVEL MECHANICAL ROOM ELEVATIONS M403 GROUND LEVEL MECHANICAL ROOM ELEVATIONS M404 GOOT MECHANICAL PROPERTIONS M405 GROUND LEVEL MECHANICAL ROOM ELEVATIONS M410 ENLARGED LEVEL THREE EAST MECHANICAL ROOM PLAN M411 LEVEL THREE EAST MECHANICAL ROOM PLAN M412 LEVEL THREE EAST MECHANICAL ROOM PLAN M414 LEVEL THREE EAST MECHANICAL ROOM PLAN M415 MECHANICAL DETAILS M450 MECHANICAL DETAILS M451 MECHANICAL DETAILS M452 MECHANICAL DETAILS M500 MECHANICAL CONTROL DIAGRAMS M501 MECHANICAL CONTROL DIAGRAMS M502 MECHANICAL CONTROL DIAGRAMS M503 MECHANICAL CONTROL DIAGRAMS M504 MECHANICAL SCHEDULES			
MD101 LEVEL ONE MECHANICAL DEMOLITION PLAN MD102 LEVEL TWO MECHANICAL DEMOLITION PLAN MD103 LEVEL THREE MECHANICAL DEMOLITION PLAN MD104 ROOF ATTIC MECHANICAL DEMOLITION PLAN MD105 ROOF MECHANICAL DEMOLITION PLAN MD105 ROOF MECHANICAL DEMOLITION PHOTOS M100 GROUND LEVEL MECHANICAL DUCTWORK PLAN M101 LEVEL ONE MECHANICAL DUCTWORK PLAN M101 LEVEL TWO MECHANICAL DUCTWORK PLAN M102 LEVEL TWO MECHANICAL DUCTWORK PLAN M103 LEVEL THREE MECHANICAL DUCTWORK PLAN M104 ROOF ATTIC MECHANICAL DUCTWORK PLAN M105 ROOF MECHANICAL DUCTWORK PLAN M106 ROOF MECHANICAL DUCTWORK PLAN M107 ROOF MECHANICAL DUCTWORK PLAN M108 ROOF MECHANICAL DUCTWORK PLAN M109 GROUND LEVEL MECHANICAL HYDRONIC PLAN M200 GROUND LEVEL MECHANICAL HYDRONIC PLAN M201 LEVEL THREE MECHANICAL HYDRONIC PLAN M202 LEVEL THREE MECHANICAL HYDRONIC PLAN M203 LEVEL THREE MECHANICAL HYDRONIC PLAN M204 ROOF ATTIC MECHANICAL HYDRONIC PLAN M205 ROOF MECHANICAL HYDRONIC PLAN M206 ROOF MECHANICAL HYDRONIC PLAN M207 ROOF MECHANICAL HYDRONIC PLAN M208 GROUND LEVEL MECHANICAL ROOM PLAN M400 ENLARGED GROUND LEVEL MECHANICAL ROOM PLAN M401 GROUND LEVEL MECHANICAL ROOM ELEVATIONS M402 GROUND LEVEL MECHANICAL ROOM ELEVATIONS M403 GROUND LEVEL THREE EAST MECHANICAL ROOM PLAN M410 ENLARGED LEVEL THREE EAST MECHANICAL ROOM PLAN M411 LEVEL THREE EAST MECHANICAL ROOM PLAN M411 LEVEL THREE EAST MECHANICAL ROOM PLAN M412 LEVEL THREE EAST MECHANICAL ROOM PLAN M413 LEVEL THREE EAST MECHANICAL ROOM PLAN M414 LEVEL THREE EAST MECHANICAL ROOM PLAN M415 MECHANICAL DETAILS M450 MECHANICAL DETAILS M451 MECHANICAL DETAILS M452 MECHANICAL DETAILS M452 MECHANICAL CONTROL DIAGRAMS M500 MECHANICAL CONTROL DIAGRAMS M501 MECHANICAL CONTROL DIAGRAMS M500 MECHANICAL CONTROL DIAGRAMS M500 MECHANICAL CONTROL DIAGRAMS M600 MECHANICAL SCHEDULES		MECHANICAL TITLE SHEET	
MD102 LEVEL TWO MECHANICAL DEMOLITION PLAN MD103 LEVEL THREE MECHANICAL DEMOLITION PLAN MD104 ROOF ATTIC MECHANICAL DEMOLITION PLAN MD105 ROOF MECHANICAL DEMOLITION PLAN MD200 MECHANICAL DEMOLITION PHOTOS M100 GROUND LEVEL MECHANICAL DUCTWORK PLAN M101 LEVEL ONE MECHANICAL DUCTWORK PLAN M102 LEVEL TWO MECHANICAL DUCTWORK PLAN M103 LEVEL TWO MECHANICAL DUCTWORK PLAN M104 ROOF ATTIC MECHANICAL DUCTWORK PLAN M105 ROOF MECHANICAL DUCTWORK PLAN M106 ROOF MECHANICAL DUCTWORK PLAN M107 ROOF MECHANICAL DUCTWORK PLAN M200 GROUND LEVEL MECHANICAL HYDRONIC PLAN M201 LEVEL ONE MECHANICAL HYDRONIC PLAN M201 LEVEL TWO MECHANICAL HYDRONIC PLAN M202 LEVEL TWO MECHANICAL HYDRONIC PLAN M203 LEVEL THREE MECHANICAL HYDRONIC PLAN M204 ROOF ATTIC MECHANICAL HYDRONIC PLAN M205 ROOF MECHANICAL HYDRONIC PLAN M206 ROOF MECHANICAL HYDRONIC PLAN M207 ROOF MECHANICAL HYDRONIC PLAN M208 ROOF MECHANICAL HYDRONIC PLAN M209 GROUND LEVEL MECHANICAL ROOM PLAN M200 ENLARGED GROUND LEVEL MECHANICAL ROOM PLAN M301 GROUND LEVEL MECHANICAL ROOM ELEVATIONS M302 GROUND LEVEL MECHANICAL ROOM ELEVATIONS M303 GROUND LEVEL MECHANICAL ROOM ELEVATIONS M304 GROUND LEVEL THREE EAST MECHANICAL ROOM PLAN M311 LEVEL THREE EAST MECHANICAL ROOM PLAN M312 LEVEL THREE EAST MECHANICAL ROOM PLAN M313 LEVEL THREE EAST MECHANICAL ROOM PLAN M314 LEVEL THREE EAST MECHANICAL ROOM PLAN M315 LEVEL THREE EAST MECHANICAL ROOM PLAN M316 ENLARGED LEVEL THREE WEST MECHANICAL ROOM PLAN M317 LEVEL THREE EAST MECHANICAL ROOM PLAN M318 LEVEL THREE EAST MECHANICAL ROOM PLAN M319 MECHANICAL DETAILS M350 MECHANICAL DETAILS M351 MECHANICAL DETAILS M352 MECHANICAL CONTROL DIAGRAMS M350 MECHANICAL CONTROL DIAGRAMS			
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PERFORMANCE R ATER FURN PPLY	P PUMP PC PLUMBING CONTRACTOR PERP PERPENDICULAR PLBG PLUMBING PNL PANEL PPH POUNDS PER HOUR PRES PRESSURE PSF POUNDS PER SQUARE FOOT PSI POUNDS PER SQUARE INCH PSIG POUNDS PER SQUARE INCH GAUGE PWR POWER QTY QUANTITY R RADIUS	Lighting Designer Gallina Design 30232 County 7 Chatfield, MN 55923 507.867.1628 tel Preservation Architect Charles Quagliana, Al 5641 Willoughby Rd Mazomanie, WI 53560
AIN	RA RETURN AIR RD ROOF DRAIN REL RELIEF REQD REQUIRED REV REVERSE OR REVISION RG RETURN AIR GRILLE RPM REVOLUTIONS PER MINUTE	Building Envelope Consultant Insite Consulting Arch 115 E. Main Street, Suite 200
MPERATURE TRACTOR ITROL MODULE NCY RATIO TEMPERATURE RY UNIT C PRESSURE FIMATED ANSION TANK IAIN R TEMPERATURE	RTU ROOF TOP UNIT SA SUPPLY AIR SAN SANITARY SCH SCHEDULE SECT SECTION SEP SEPARATOR SF SQUARE FEET SG SUPPLY GRILLE SHT SHEET SHWR SHOWER SIM SIMILAR SP STATIC PRESSURE SPEC SPECIFICATIONS SQ SQUARE SS STAINLESS STEEL T&B TEST AND BALANCE OR TOP AND BOTTOM T&P TEMPERATURE AND PRESSURE RELIEF VALVE TEMP TEMPERATURE OR TEMPORARY	Madison, WI 53703 608.204.0825 tel Fire & Code Sonsultant Summit Fire Consultin 575 Minnehaha Ave. W. St. Paul, MN 55103 651.251.1879 tel Acoustical Consultant KRA 4826 Chicago Avenue South, Suite 206 Minneapolis, MN 55417 612.374.3800 tel
MOSTATIC T	TG TRANSFER GRILLE TYP TYPICAL UNO UNLESS NOTED OTHERWISE V VOLT VAR VARIABLE OR VARIES VEL VELOCITY VERT VERTICAL	Civil Engineers VIERBICHER 999 Fourier Drive, Suite 201 Madison WI 53717
ACTOR NUTE JRN PLY	VFD VARIABLE FREQUENCY DRIVE VOL VOLUME VS VENT STACK VTR VENT THRU ROOF W/ WITH W/IN WITHIN W/O WITH OUT WB WET BULB WC WATER COLUMN (INCHES OF) WCO WALL CLEANOUT WG WATER GAUGE WP WEATHER PROOF WP WORKING PRESSURE WT WEIGHT	Municipal Renovation
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ECHANICAL ROOM ECHANICAL ROOM	PLAN PLAN DRK PLAN PLAN PLAN PLAN PLAN PLAN PLAN IC PLAN AN LAN PLAN PLAN PLAN PLAN PLAN PLA	I hereby certify that this plan, specification or me or under my direct supervision and that I a Engineer under the Laws of the State of Wiscons ENGINEER SEAL Signature: Print Names: Date: License No: ISSUE MARK DATE DESCRIPTION 24.03.2017 BID SET
L DIAGRAMS L DIAGRAMS L DIAGRAMS		PROJECT NO.

MSR 710 South 2nd Street, 8th Floor Minneapolis, Minnesota 55401–2282 Architecture 612 375 0336 tel

Interiors and 612 342 2216 fax Urban Design www.msrdesign.com Civil Engineering and Landscape Architects

Ken Saiki Design, Inc 303 South Paterson St Madison, WI 53703 608.251.3600 tel Structural Engineering, Technology, AV KJWW

1800 Deming Way, Suite 200 Middleton, WI 53713 608.223.9600 tel

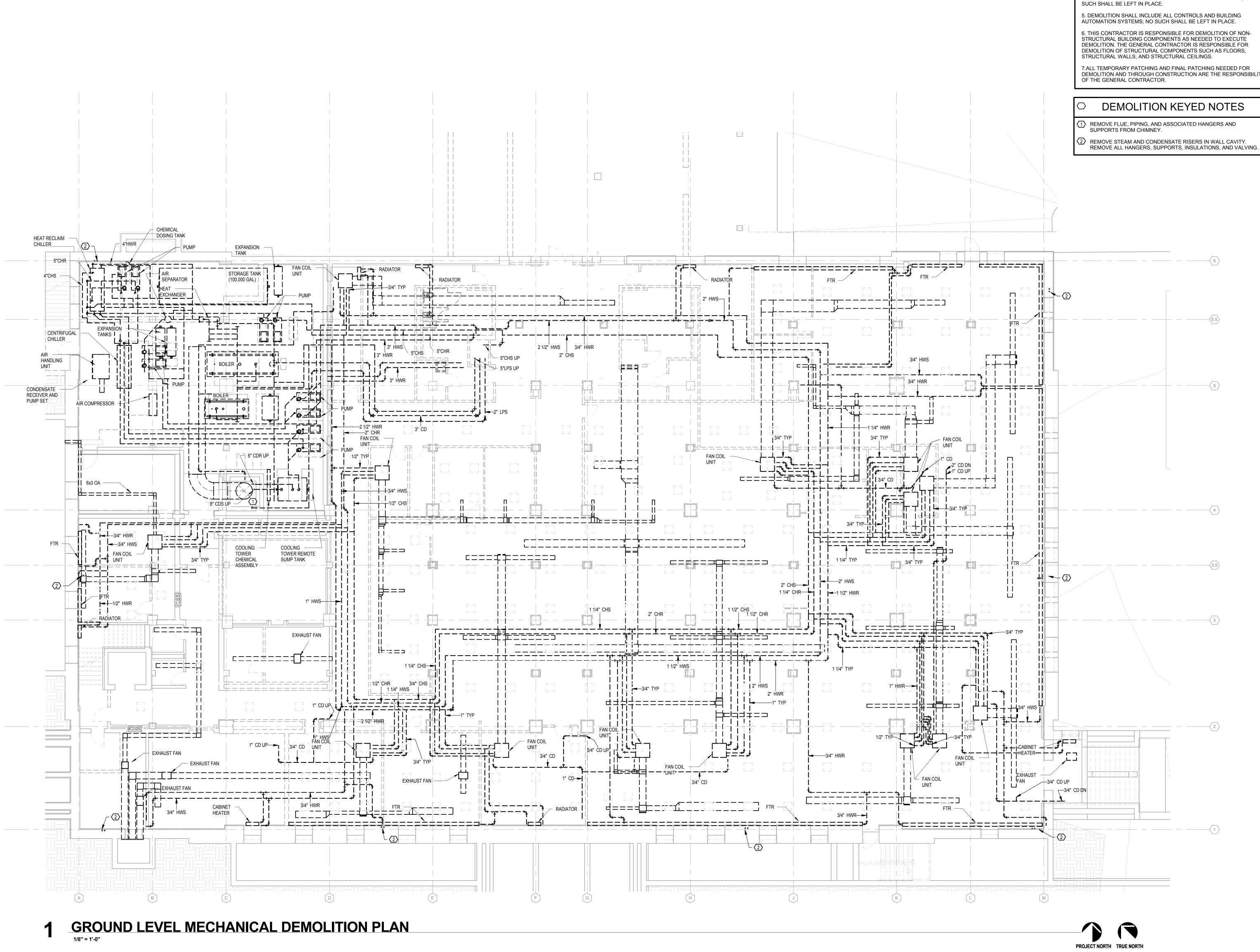
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chitects

or report was prepared by I am a duly Licensed

PROJECT NO. 2014057 **BID SET** DRAWN BY: CHECKED BY:
ALH/BTB/JTG RCA

MECHANICAL TITLE SHEET



GENERAL DEMOLITION NOTES

1. ALL EQUIPMENT, DUCTWORK, AND PIPING SHOWN OR NOT SHOWN SHALL BE DEMOLISHED UNLESS OTHERWISE NOTED. 2. CONTRACTOR SHALL REMOVE ALL EQUIPMENT, PIPING, AND DUCTWORK SHOWN DASHED. UNLESS OTHERWISE NOTED,

CONTRACTOR SHALL REMOVE ALL SUCH FROM SITE AND DISPOSE OF AS REQUIRED BY CODE. CONTRACTOR SHALL RECYCLE ALL POSSIBLE MATERIALS AND COORDINATE RECYCLING WITH GENERAL CONTRACTOR.

3. DUCT RUN-OUTS, DIFFUSERS, ETC, ARE NOT SHOWN; ALL SUCH SHALL BE REMOVED. PIPING RUN-OUTS ARE NOT SHOWN; ALL SUCH SHALL BE REMOVED.

4. DEMOLITION SHALL INCLUDE ALL HANGERS AND SUPPORTS; NO

DEMOLITION AND THROUGH CONSTRUCTION ARE THE RESPONSIBILITY

Gallina Design 30232 County 7 Chatfield, MN 55923 507.867.1628 tel

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608.204.0825 tel

4826 Chicago Avenue South, Suite 206 Minneapolis, MN 55417 612.374.3800 tel

VIERBICHER 999 Fourier Drive, Suite 201

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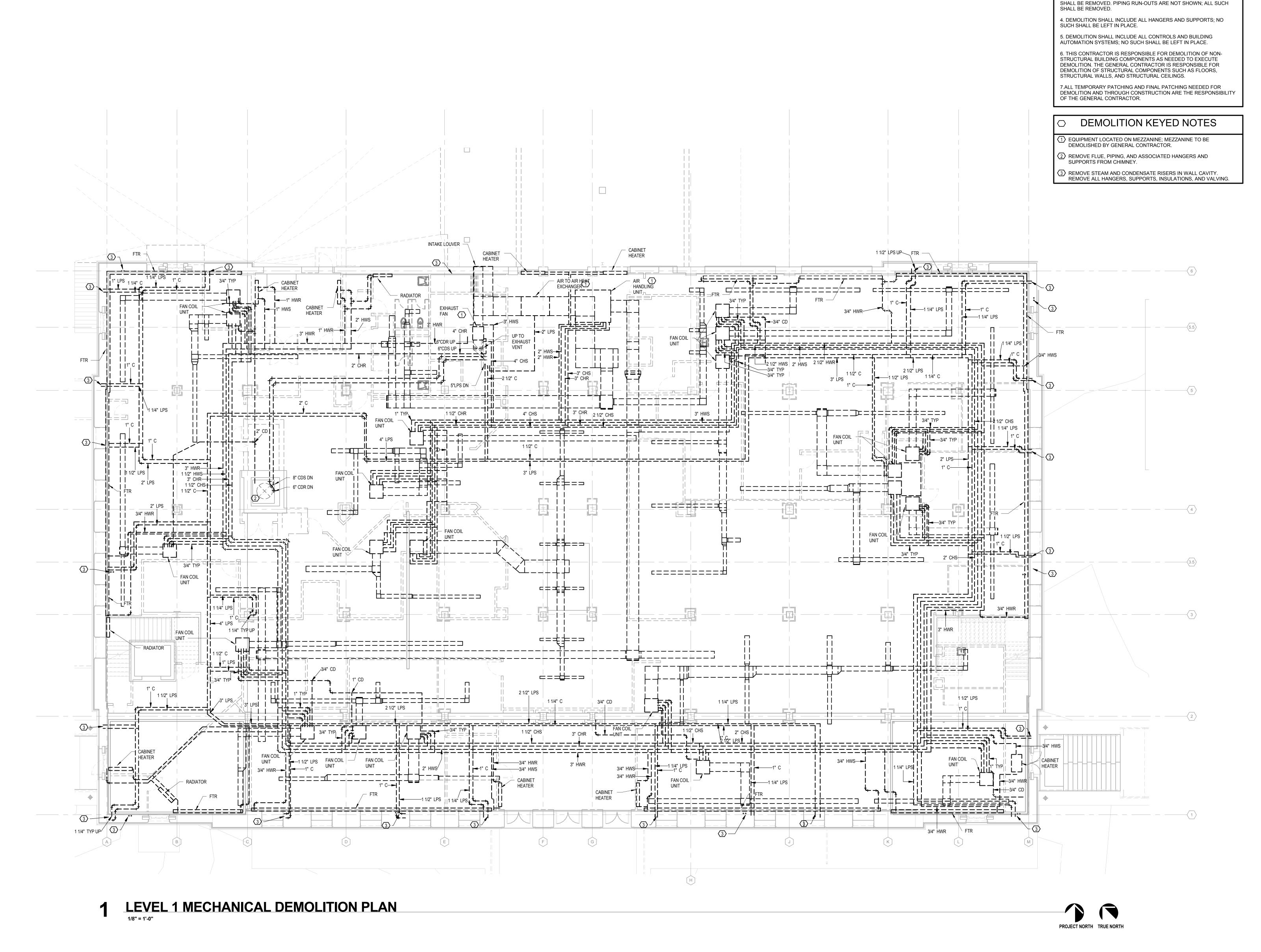
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GROUND LEVEL MECHANICAL DEMOLITION PLAN

EXHIBIT I



GENERAL DEMOLITION NOTES

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MATERIALS AND COORDINATE RECYCLING WITH GENERAL

SHALL BE DEMOLISHED UNLESS OTHERWISE NOTED.

CONTRACTOR.

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Minneapolis, Minnesota 55401–2282

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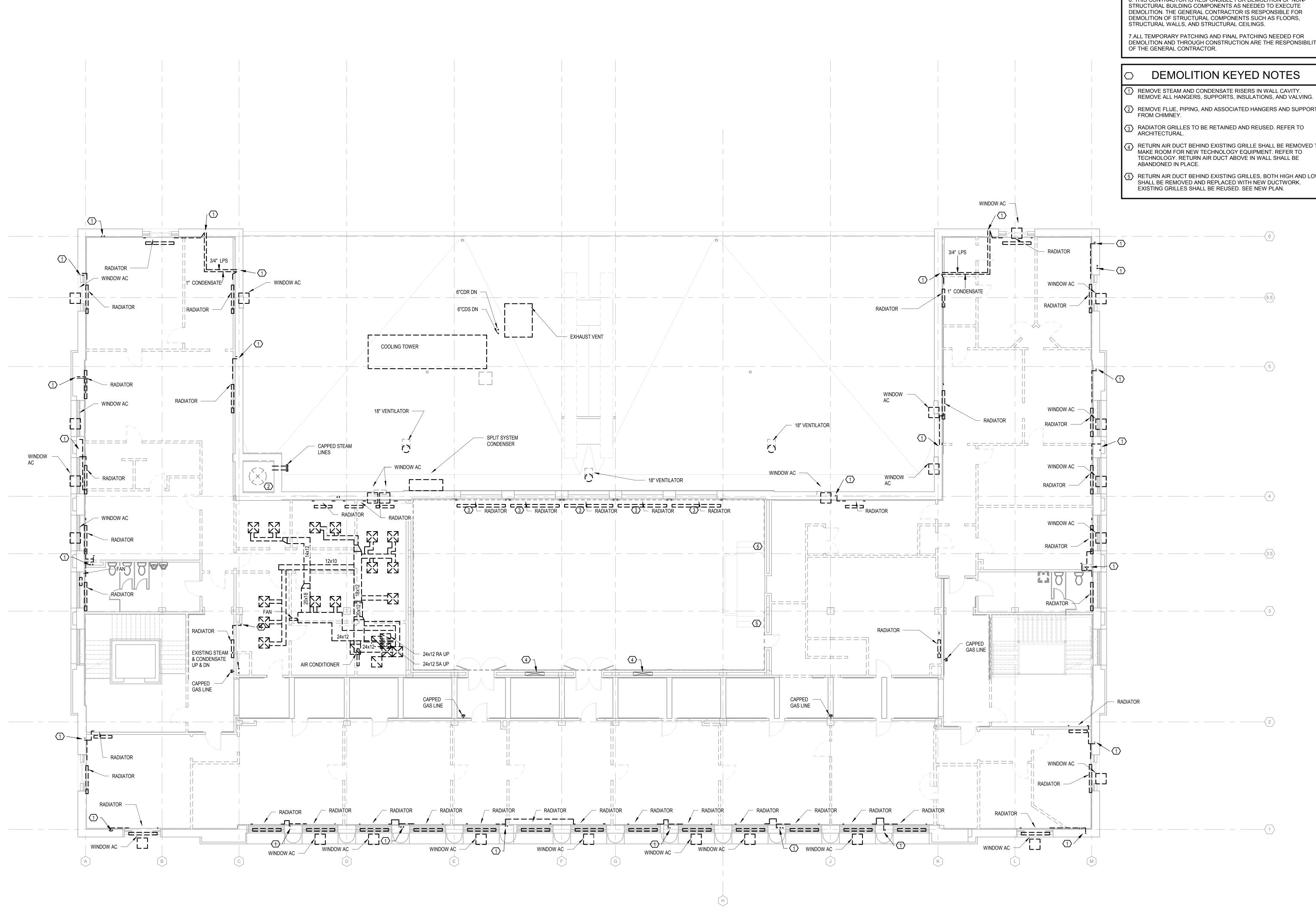
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LEVEL ONE **MECHANICAL DEMOLITION PLAN**

EXHIBIT I



LEVEL 2 MECHANICAL DEMOLITION PLAN

GENERAL DEMOLITION NOTES

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4. DEMOLITION SHALL INCLUDE ALL HANGERS AND SUPPORTS; NO SUCH SHALL BE LEFT IN PLACE.

5. DEMOLITION SHALL INCLUDE ALL CONTROLS AND BUILDING AUTOMATION SYSTEMS; NO SUCH SHALL BE LEFT IN PLACE. 6. THIS CONTRACTOR IS RESPONSIBLE FOR DEMOLITION OF NON-

DEMOLITION AND THROUGH CONSTRUCTION ARE THE RESPONSIBILITY

- (2) REMOVE FLUE, PIPING, AND ASSOCIATED HANGERS AND SUPPORTS
- (4) RETURN AIR DUCT BEHIND EXISTING GRILLE SHALL BE REMOVED TO MAKE ROOM FOR NEW TECHNOLOGY EQUIPMENT. REFER TO
- (5) RETURN AIR DUCT BEHIND EXISTING GRILLES, BOTH HIGH AND LOW,

Gallina Design 30232 County 7 Chatfield, MN 55923 507.867.1628 tel

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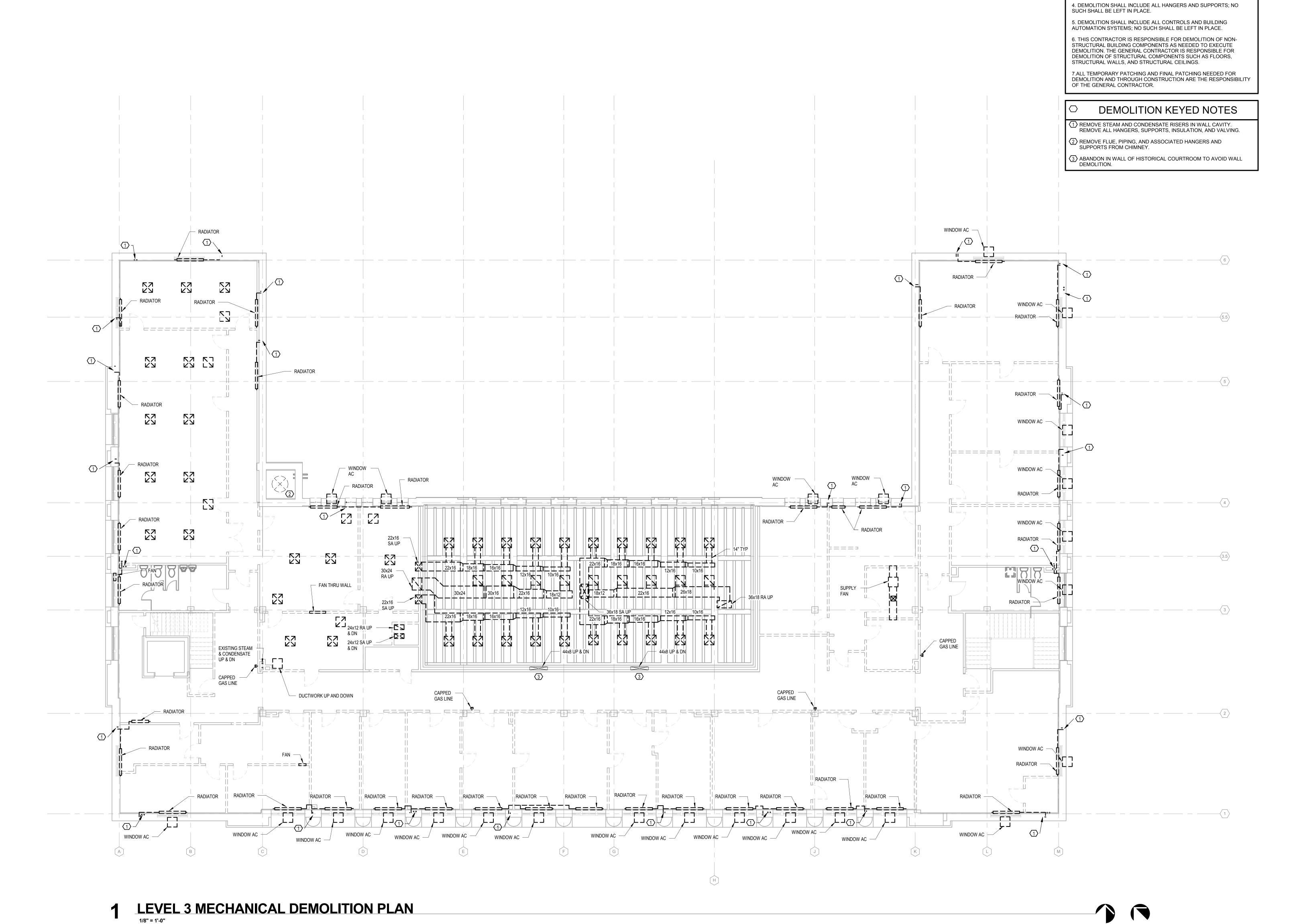
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LEVEL TWO MECHANICAL DEMOLITION PLAN

EXHIBIT I



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MATERIALS AND COORDINATE RECYCLING WITH GENERAL

CONTRACTOR.

SHALL BE REMOVED.

SHALL BE DEMOLISHED UNLESS OTHERWISE NOTED.

Civil Engineering and Landscape Architects

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Madison, WI 53703
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Structural Engineering, Technology, AV

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Insite Consulting Architects

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Civil Engineers

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Madison
WI 53717

Madison Municipal Building Renovation

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Signature: ______

Print Names: _____ License No: _____

ISSUE

MARK DATE DESCRIPTION

24.03.2017 BID SET

PROJECT NO.

201405
PROJECT PHASE

BID SET

DRAWN BY: CHECKED BY:
ALH/BTB/JTG RCA

Drawing 2016 Conviolat Never, Scherer & Rockcastle, Ltd.

LEVEL THREE
MECHANICAL
DEMOLITION PLAN

EXHIBIT I

GENERAL DEMOLITION NOTES

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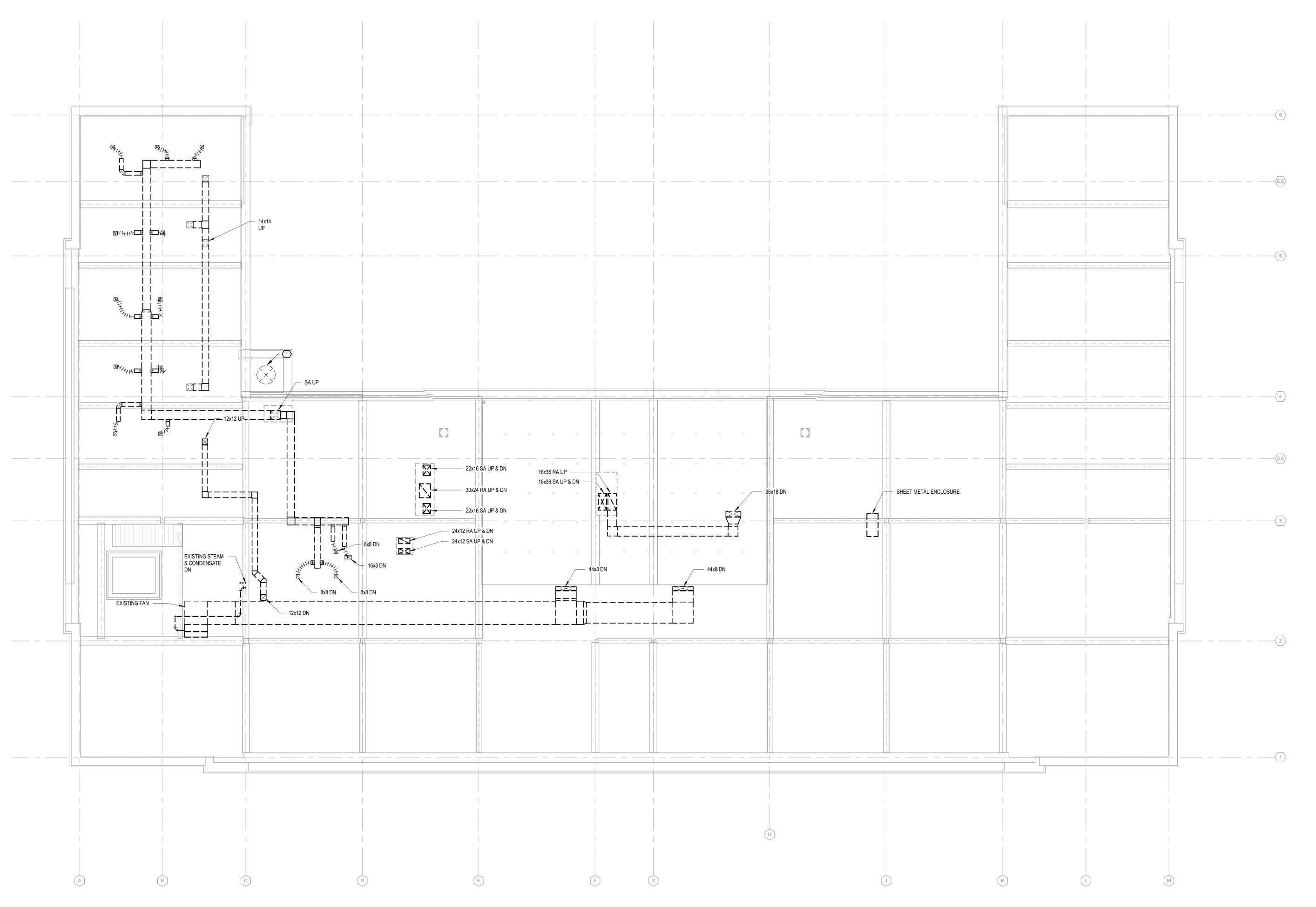
5. DEMOLITION SHALL INCLUDE ALL CONTROLS AND BUILDING AUTOMATION SYSTEMS; NO SUCH SHALL BE LEFT IN PLACE.

6. THIS CONTRACTOR IS RESPONSIBLE FOR DEMOLITION OF NON-STRUCTURAL BUILDING COMPONENTS AS NEEDED TO EXECUTE DEMOLITION. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR DEMOLITION OF STRUCTURAL COMPONENTS SUCH AS FLOORS, STRUCTURAL WALLS, AND STRUCTURAL CEILINGS.

7.ALL TEMPORARY PATCHING AND FINAL PATCHING NEEDED FOR DEMOLITION AND THROUGH CONSTRUCTION ARE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

□ DEMOLITION KEYED NOTES

1 REMOVE FLUE, PIPING, AND ASSOCIATED HANGERS AND SUPPORTS FROM CHIMNEY.



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Madison

Madison Municipal Building Renovation

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ENGINEER SEAL

Signature: ______

Print Names: _____ License No: _____

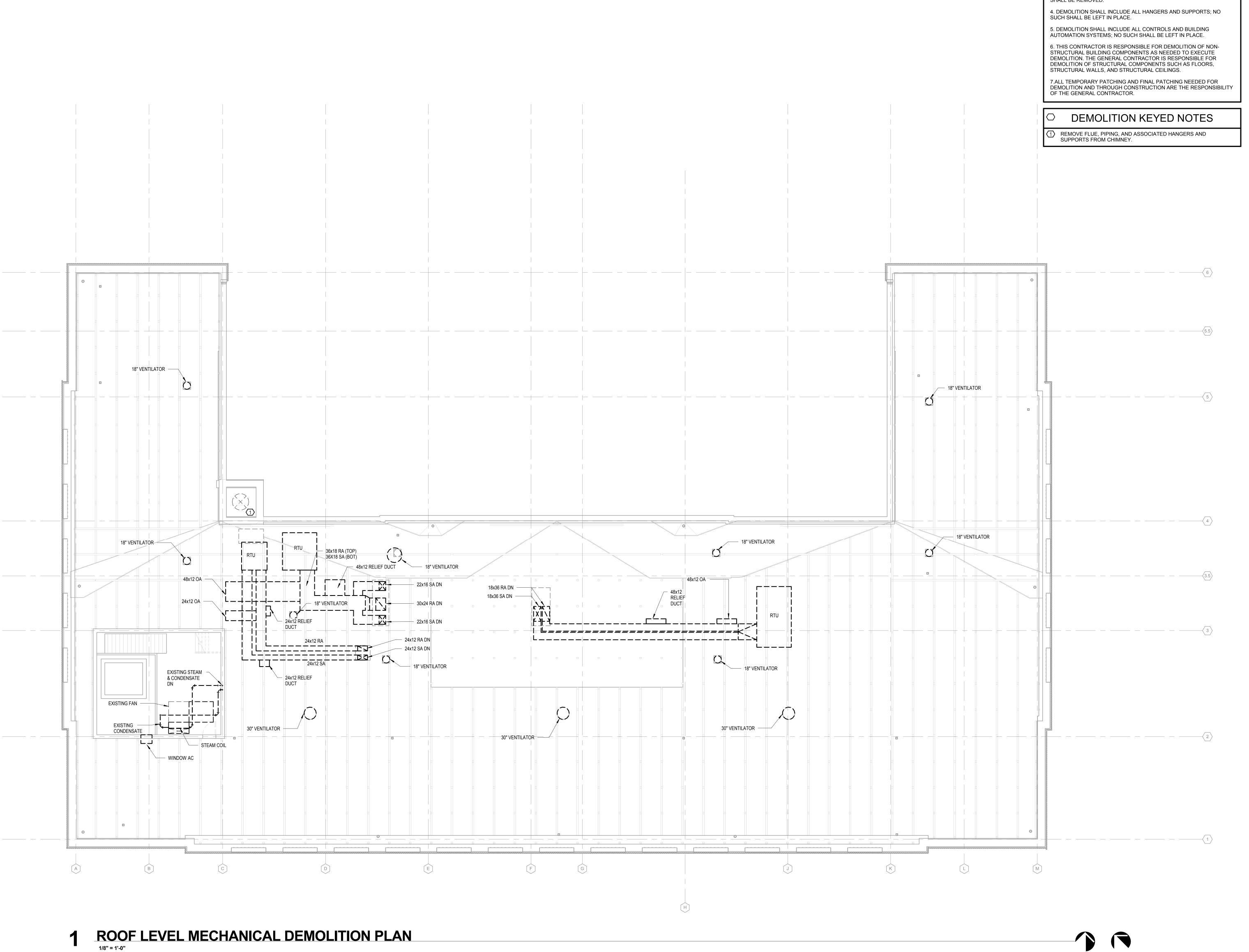
MARK DATE DESCRIPTION
24.03.2017 BID SET

PROJECT NO.

PROJECT PHASE
BID SET

DRAWN BY: CHECKED BY: Checker

ROOF ATTIC MECHANICAL DEMOLITION PLAN



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Gallina Design

30232 County 7 Chatfield, MN 55923 507.867.1628 tel

Lighting Designer

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Madison Building F

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Print Names:_

2014057

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ROOF MECHANICAL DEMOLITION PLAN

6 COOLING TOWER PUMPS



5 HEAT RECLAIM CHILLER



4 CHILLED WATER PUMPS



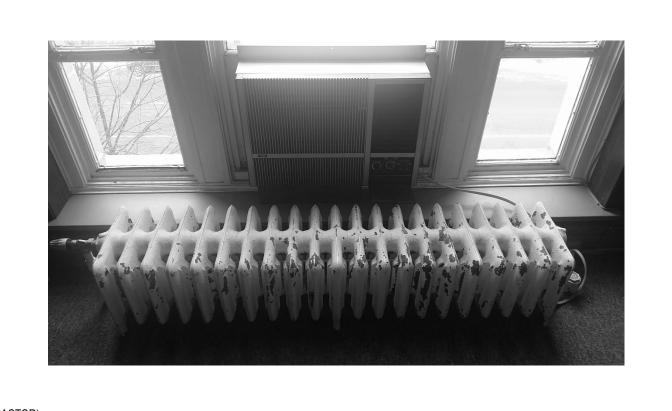
3 HOT WATER PUMPS





NOTES:

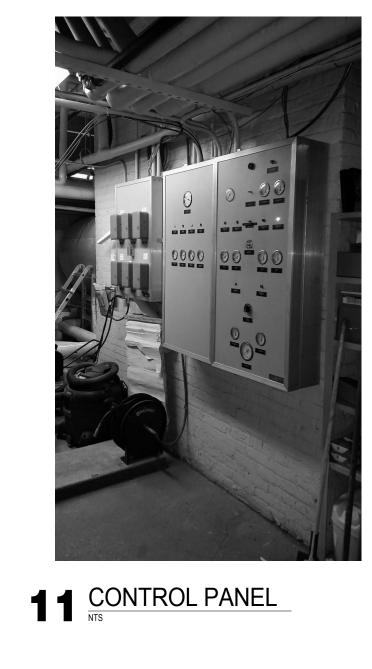
1. RADIATION (BEHIND GRILLE) TO BE REMOVED. GRILLE SHALL BE RETAINED FOR RE-USE AND RE-INSTALLATION (BY GENERAL CONTRACTOR)



1 TYPICAL OFFICE RADIATOR AND WINDOW AC



12 HOT WATER PUMPS





10 CONDENSATE RECEIVER





7 MEZZANINE EXHAUST FAN



20 BOILER

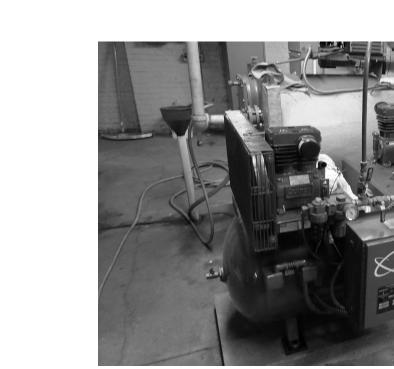
24 MEZZANINE AHU

19 STAIRWELL RADIATOR
18 VESTIBULE CABINET UNIT HEATER



8 ROOFTOP UNIT AND VENTILATORS

1 4 COOLING TOWER STORAGE TANK



13 AIR COMPRESSOR





15 100,000 GALLON STORAGE TANK









23 ELEVATOR EQUIPMENT ROOM FAN



21 ROOFTOP UNITS, DUCTWORK, AND VENTILATORS 22 CENTRIFUGAL CHILLER



4. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID AND VERIFY EXISTING CONDITIONS AND SCOPE OF WORK.

NOTES:

1. DEMOLISH ALL MECHANICAL EQUIPMENT SHOWN IN PHOTOS, UNLESS STATED OTHERWISE.
2. COORDINATE FOR DEMOLITION OF ALL PLUMBING AND ELECTRICAL; REFER TO ASSOCIATED DISCIPLINE PLANS. IN ANY EVENT, NO PLUMBING OR ELECTRICAL ITEMS ASSOCIATED WITH MECHANICAL ITEMS TO BE 3. PHOTOS ARE PROVIDED FOR REFERENCE, AND DO NOT INDICATE ALL EQUIPMENT/ITEMS TO BE DEMOLISHED.

EXHIBIT I MD200

2014057

BID SET

MECHANICAL

DEMOLITION

PHOTOS

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PROJECT NO.

PROJECT PHASE

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ENGINEER SEAL

VIERBICHER

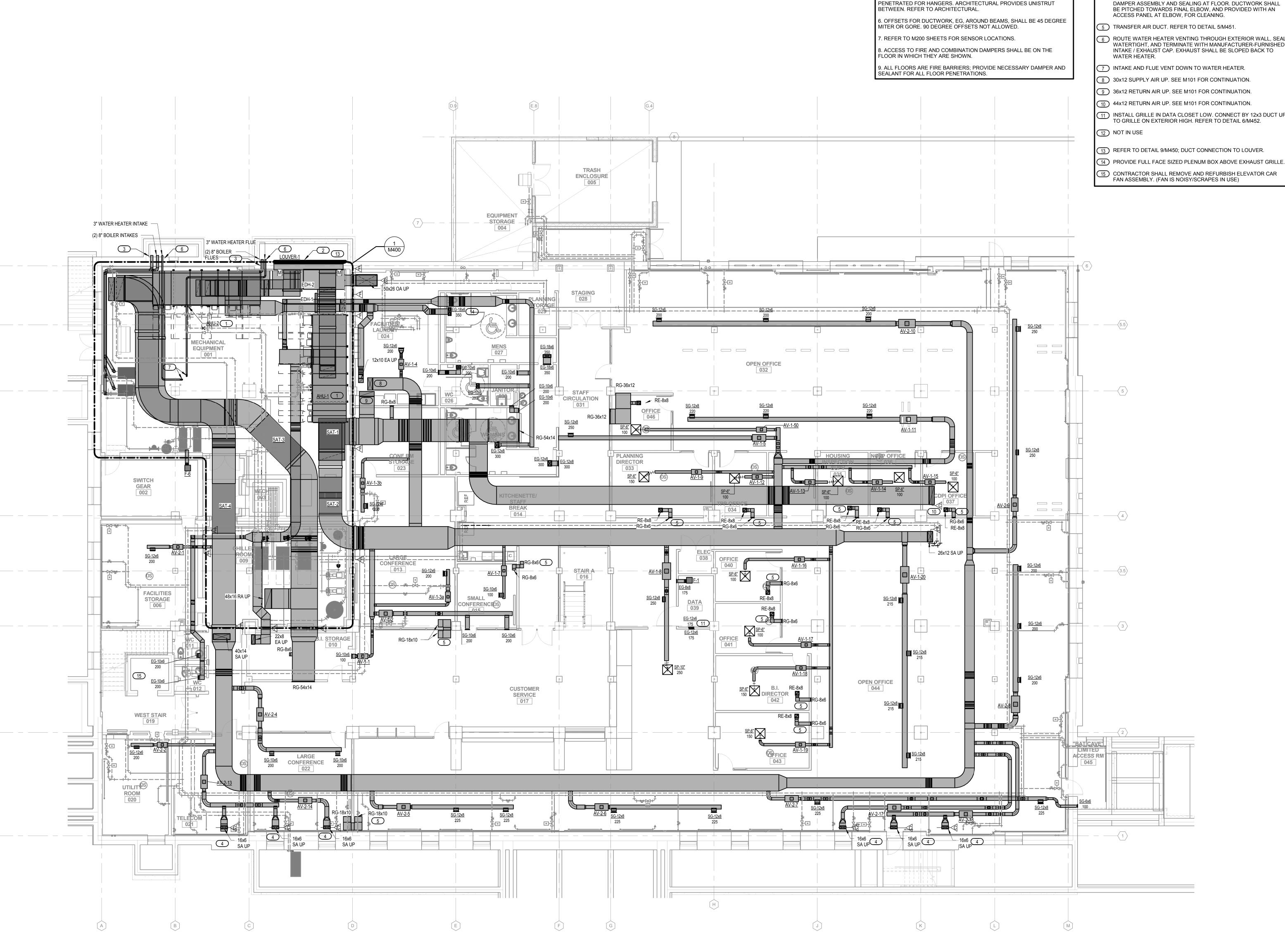
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Charles Quagliana, AIA

Insite Consulting Architects

Summit Fire Consulting

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GROUND LEVEL MECHANICAL DUCTWORK PLAN

KEYED NOTES

1 AIR HANDLERS ARE TO BE SHIPPED DISASSEMBLED, FOR ENTRY INTO BUILDING. THIS CONTRACTOR SHALL ENGAGE FACTORY-

GENERAL NOTES

2. HYDRONIC PIPING AND EQUIPMENT IS SHOWN ON DUCTWORK PLAN

FOR REFERENCE ONLY. REFER TO M200 SERIES FOR HYDRONIC PLANS.

3. ALL EXPOSED TO VIEW DUCTWORK SHALL BE UNINSULATED, AND PREPPED FOR PAINTING.

4. NOTE THAT HISTORICAL / ARCHITECTURAL CONCERNS DICTATE NO

REFER TO ARCHITECTURAL PLANS FOR COORDINATION OF "EXCLUSION

PIPING, PLUMBING, OR HVAC ELEMENTS APPEAR IN CERTAIN AREAS.

5. COMPOUND CEILING PANELS SHOULD GENERALLY NOT BE

1. ALL PROVIDED DETAILS APPLY; REFER TO DETAIL SHEET.

AUTHORIZED PERSONNEL TO ASSIST IN ASSEMBLY. 2 LOUVER IS BY ARCHITECTURAL. CONTRACTOR SHALL COORDINATE

WORK AND MAKE CONNECTION, PER DETAIL. 3 ROUTE BOILER VENTING THROUGH EXTERIOR WALL, SEAL WATERTIGHT, AND TERMINATE WITH MANUFACTURER-FURNISHED INTAKE / EXHAUST CAP. EXHAUST SHALL BE SLOPED BACK TO

4 FLOOR DIFFUSER LOCATIONS MUST COORDINATE WITH STRUCTURAL. REFER TO STRUCTURAL PLANS. INCLUDE FIRE DAMPER ASSEMBLY AND SEALING AT FLOOR. DUCTWORK SHALL BE PITCHED TOWARDS FINAL ELBOW, AND PROVIDED WITH AN

5 TRANSFER AIR DUCT. REFER TO DETAIL 5/M451.

6 ROUTE WATER HEATER VENTING THROUGH EXTERIOR WALL, SEAL WATERTIGHT, AND TERMINATE WITH MANUFACTURER-FURNISHED INTAKE / EXHAUST CAP. EXHAUST SHALL BE SLOPED BACK TO

7) INTAKE AND FLUE VENT DOWN TO WATER HEATER.

8 30x12 SUPPLY AIR UP. SEE M101 FOR CONTINUATION.

9 36x12 RETURN AIR UP. SEE M101 FOR CONTINUATION.

11 INSTALL GRILLE IN DATA CLOSET LOW. CONNECT BY 12x3 DUCT UP TO GRILLE ON EXTERIOR HIGH. REFER TO DETAIL 6/M452.

13) REFER TO DETAIL 9/M450; DUCT CONNECTION TO LOUVER.

15 CONTRACTOR SHALL REMOVE AND REFURBISH ELEVATOR CAR

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n Municipal Renovation Madison Building F

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BPW Project #7939 Martin Luther King, Jr. Madison, WI 53703

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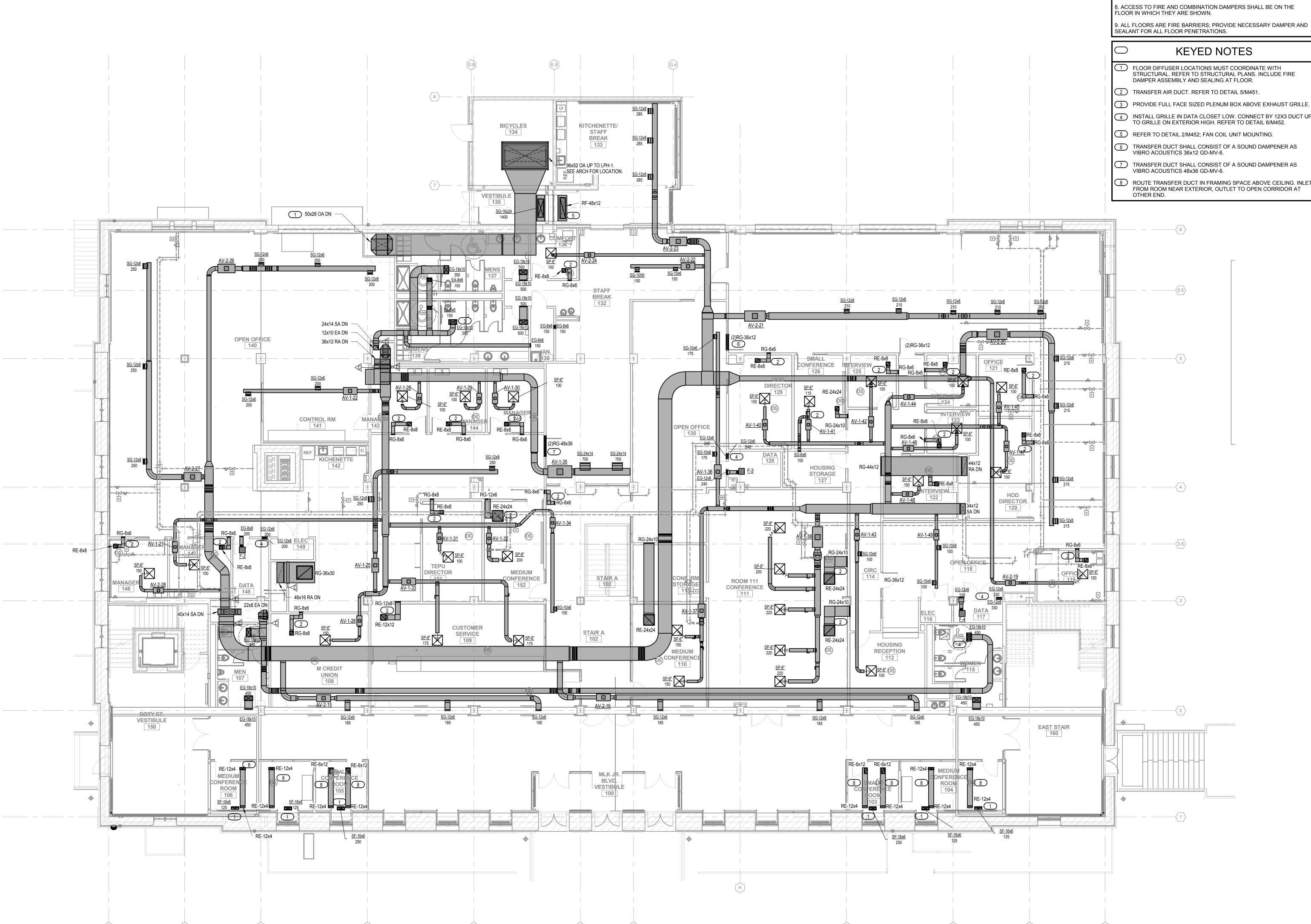
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GROUND LEVEL MECHANICAL

DUCTWORK PLAN

EXHIBIT I



GENERAL NOTES

1. ALL PROVIDED DETAILS APPLY; REFER TO DETAIL SHEET.

2. HYDRONIC PIPING AND EQUIPMENT IS SHOWN ON DUCTWORK PLAN FOR REFERENCE ONLY. REFER TO M200 SERIES FOR HYDRONIC PLANS. 3. ALL EXPOSED TO VIEW DUCTWORK SHALL BE UNINSULATED, AND

PREPPED FOR PAINTING. 4. NOTE THAT HISTORICAL / ARCHITECTURAL CONCERNS DICTATE NO PIPING, PLUMBING, OR HVAC ELEMENTS APPEAR IN CERTAIN AREAS.

REFER TO ARCHITECTURAL PLANS FOR COORDINATION OF "EXCLUSION

5. COMPOUND CEILING PANELS SHOULD GENERALLY NOT BE PENETRATED FOR HANGERS. ARCHITECTURAL PROVIDES UNISTRUT BETWEEN. REFER TO ARCHITECTURAL.

6. OFFSETS FOR DUCTWORK, EG, AROUND BEAMS, SHALL BE 45 DEGREE MITER OR GORE. 90 DEGREE OFFSETS NOT ALLOWED. 7. REFER TO M200 SHEETS FOR SENSOR LOCATIONS.

8. ACCESS TO FIRE AND COMBINATION DAMPERS SHALL BE ON THE

9. ALL FLOORS ARE FIRE BARRIERS; PROVIDE NECESSARY DAMPER AND

 FLOOR DIFFUSER LOCATIONS MUST COORDINATE WITH STRUCTURAL. REFER TO STRUCTURAL PLANS. INCLUDE FIRE DAMPER ASSEMBLY AND SEALING AT FLOOR.

3 PROVIDE FULL FACE SIZED PLENUM BOX ABOVE EXHAUST GRILLE.

5 REFER TO DETAIL 2/M452; FAN COIL UNIT MOUNTING.

6 TRANSFER DUCT SHALL CONSIST OF A SOUND DAMPENER AS

8 ROUTE TRANSFER DUCT IN FRAMING SPACE ABOVE CEILING. INLET FROM ROOM NEAR EXTERIOR, OUTLET TO OPEN CORRIDOR AT

608.204.0825 tel Fire & Code Sonsultant

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Civil Engineers VIERBICHER 999 Fourier Drive, Suite 201 Madison WI 53717

on Municipal y Renovation Madison Building F

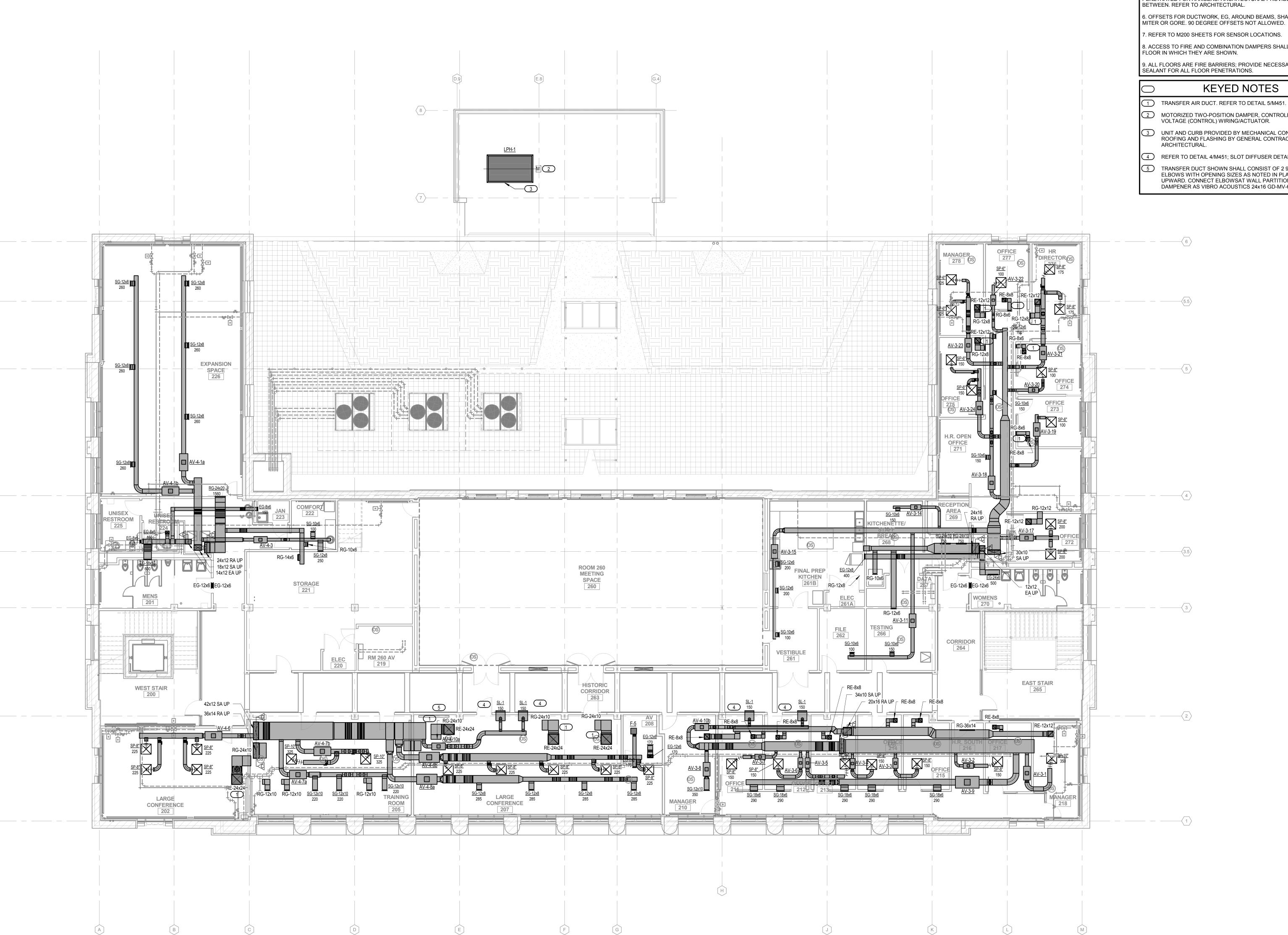
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BPW Project #7939 Martin Luther King, Jr. Madison, WI 53703

2014057 PROJECT PHASE

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> LEVEL ONE MECHANICAL **DUCTWORK PLAN**



LEVEL 2 MECHANICAL DUCTWORK PLAN

GENERAL NOTES

1. ALL PROVIDED DETAILS APPLY; REFER TO DETAIL SHEET. 2. HYDRONIC PIPING AND EQUIPMENT IS SHOWN ON DUCTWORK PLAN FOR REFERENCE ONLY. REFER TO M200 SERIES FOR HYDRONIC PLANS.

3. ALL EXPOSED TO VIEW DUCTWORK SHALL BE UNINSULATED, AND PREPPED FOR PAINTING.

4. NOTE THAT HISTORICAL / ARCHITECTURAL CONCERNS DICTATE NO PIPING, PLUMBING, OR HVAC ELEMENTS APPEAR IN CERTAIN AREAS.
REFER TO ARCHITECTURAL PLANS FOR COORDINATION OF "EXCLUSION

5. COMPOUND CEILING PANELS SHOULD GENERALLY NOT BE PENETRATED FOR HANGERS. ARCHITECTURAL PROVIDES UNISTRUT BETWEEN. REFER TO ARCHITECTURAL.

6. OFFSETS FOR DUCTWORK, EG, AROUND BEAMS, SHALL BE 45 DEGREE

7. REFER TO M200 SHEETS FOR SENSOR LOCATIONS. 8. ACCESS TO FIRE AND COMBINATION DAMPERS SHALL BE ON THE FLOOR IN WHICH THEY ARE SHOWN.

9. ALL FLOORS ARE FIRE BARRIERS; PROVIDE NECESSARY DAMPER AND SEALANT FOR ALL FLOOR PENETRATIONS.

KEYED NOTES

1 TRANSFER AIR DUCT. REFER TO DETAIL 5/M451.

2 MOTORIZED TWO-POSITION DAMPER, CONTROLLED BY LOW VOLTAGE (CONTROL) WIRING/ACTUATOR.

3 UNIT AND CURB PROVIDED BY MECHANICAL CONTRACTOR. ROOFING AND FLASHING BY GENERAL CONTRACTOR. REFER TO

4 REFER TO DETAIL 4/M451; SLOT DIFFUSER DETAIL.

5 TRANSFER DUCT SHOWN SHALL CONSIST OF 2 90 DEGREE ELBOWS WITH OPENING SIZES AS NOTED IN PLANS DIRECTED UPWARD. CONNECT ELBOWSAT WALL PARTITION WITH SOUND DAMPENER AS VIBRO ACOUSTICS 24x16 GD-MV-6.

30232 County 7 Chatfield, MN 55923 507.867.1628 tel Preservation Architect

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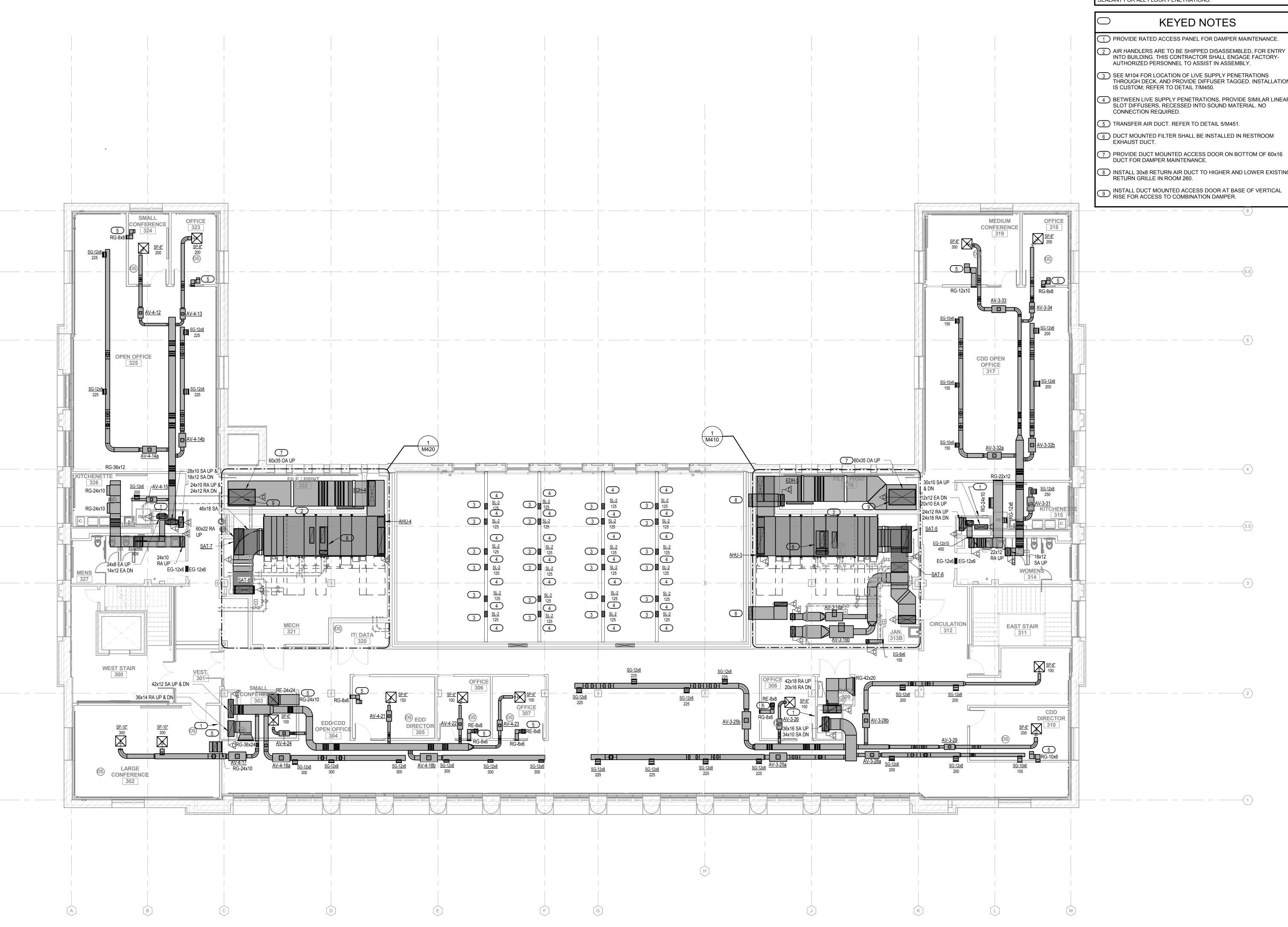
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MECHANICAL **DUCTWORK PLAN**

EXHIBIT I



LEVEL 3 MECHANICAL DUCTWORK PLAN

GENERAL NOTES

1. ALL PROVIDED DETAILS APPLY; REFER TO DETAIL SHEET.

2. HYDRONIC PIPING AND EQUIPMENT IS SHOWN ON DUCTWORK PLAN FOR REFERENCE ONLY. REFER TO M200 SERIES FOR HYDRONIC PLANS. 3. ALL EXPOSED TO VIEW DUCTWORK SHALL BE UNINSULATED, AND PREPPED FOR PAINTING.

4. NOTE THAT HISTORICAL / ARCHITECTURAL CONCERNS DICTATE NO PIPING, PLUMBING, OR HVAC ELEMENTS APPEAR IN CERTAIN AREAS. REFER TO ARCHITECTURAL PLANS FOR COORDINATION OF "EXCLUSION

5. COMPOUND CEILING PANELS SHOULD GENERALLY NOT BE PENETRATED FOR HANGERS. ARCHITECTURAL PROVIDES UNISTRUT BETWEEN. REFER TO ARCHITECTURAL.

6. OFFSETS FOR DUCTWORK, EG, AROUND BEAMS, SHALL BE 45 DEGREE MITER OR GORE. 90 DEGREE OFFSETS NOT ALLOWED. 7. REFER TO M200 SHEETS FOR SENSOR LOCATIONS. 8. ACCESS TO FIRE AND COMBINATION DAMPERS SHALL BE ON THE

FLOOR IN WHICH THEY ARE SHOWN.

PROJECT NORTH TRUE NORTH

9. ALL FLOORS ARE FIRE BARRIERS; PROVIDE NECESSARY DAMPER AND SEALANT FOR ALL FLOOR PENETRATIONS.

2) AIR HANDLERS ARE TO BE SHIPPED DISASSEMBLED, FOR ENTRY

THROUGH DECK, AND PROVIDE DIFFUSER TAGGED. INSTALLATION

4 BETWEEN LIVE SUPPLY PENETRATIONS, PROVIDE SIMILAR LINEAR

8 INSTALL 30x8 RETURN AIR DUCT TO HIGHER AND LOWER EXISTING

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Gallina Design

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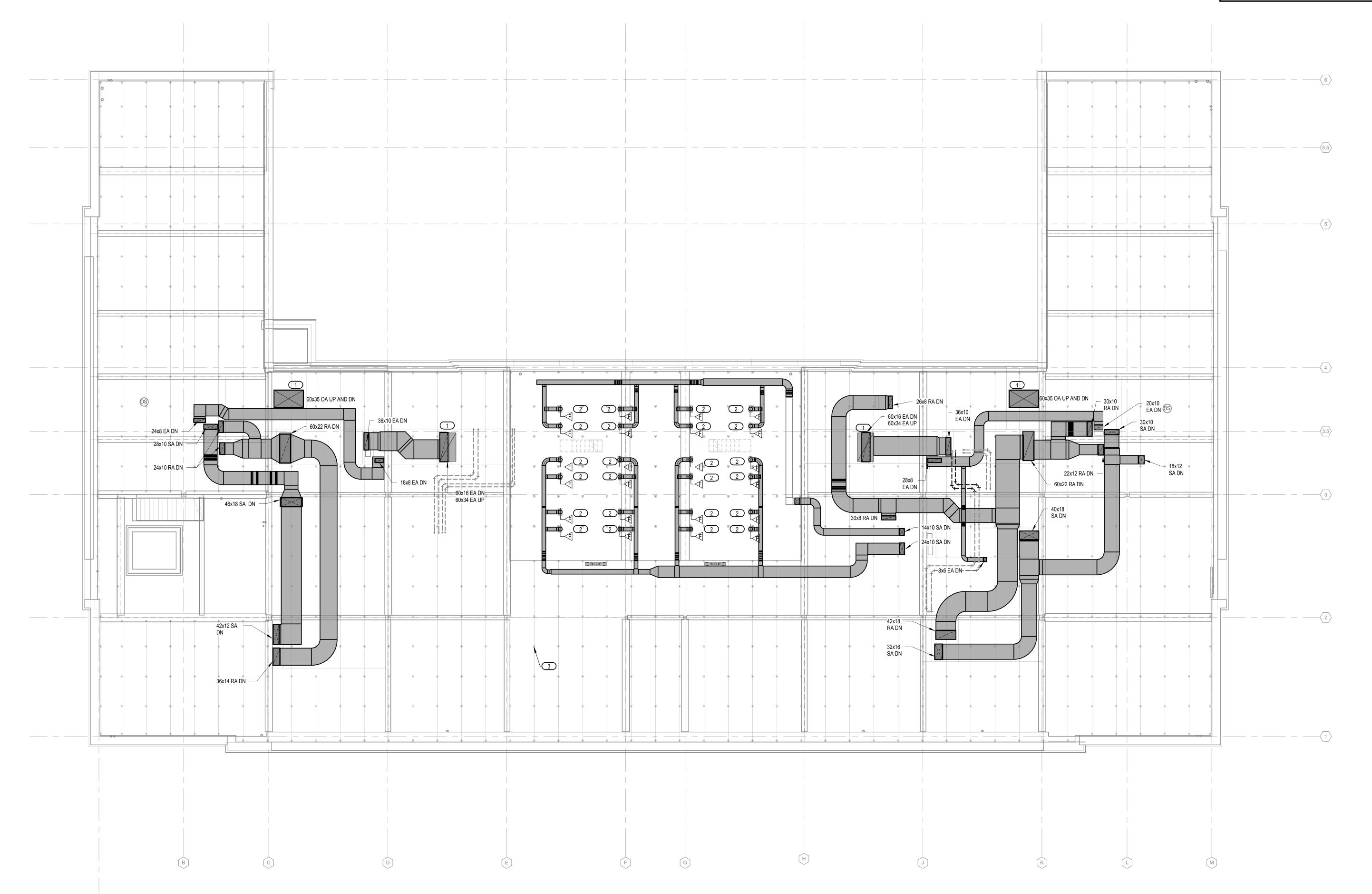
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LEVEL THREE MECHANICAL **DUCTWORK PLAN**

GENERAL NOTES 1. ALL PROVIDED DETAILS APPLY; REFER TO DETAIL SHEET. 2. HYDRONIC PIPING AND EQUIPMENT IS SHOWN ON DUCTWORK PLAN FOR REFERENCE ONLY. REFER TO M200 SERIES FOR HYDRONIC PLANS. 3. ALL EXPOSED TO VIEW DUCTWORK SHALL BE UNINSULATED, AND PREPPED FOR PAINTING. 4. NOTE THAT HISTORICAL / ARCHITECTURAL CONCERNS DICTATE NO PIPING, PLUMBING, OR HVAC ELEMENTS APPEAR IN CERTAIN AREAS. REFER TO ARCHITECTURAL PLANS FOR COORDINATION OF "EXCLUSION 5. COMPOUND CEILING PANELS SHOULD GENERALLY NOT BE PENETRATED FOR HANGERS. ARCHITECTURAL PROVIDES UNISTRUT BETWEEN. REFER TO ARCHITECTURAL. 6. OFFSETS FOR DUCTWORK, EG, AROUND BEAMS, SHALL BE 45 DEGREE MITER OR GORE. 90 DEGREE OFFSETS NOT ALLOWED. 7. REFER TO M200 SHEETS FOR SENSOR LOCATIONS. 8. ACCESS TO FIRE AND COMBINATION DAMPERS SHALL BE ON THE FLOOR IN WHICH THEY ARE SHOWN. 9. ALL FLOORS ARE FIRE BARRIERS; PROVIDE NECESSARY DAMPER AND SEALANT FOR ALL FLOOR PENETRATIONS.

KEYED NOTES

- 1 CONNECT DUCT TO LOUVERED PENTHOUSE THROAT SIZE PLENUM BOX; REFER TO SCHEDULE. INCLUDE FIRE DAMPER AT ATTIC SPACE DECK, SHOWN BELOW.
- 2 SUPPLY DUCT PENETRATION THROUGH DECK SHALL INCLUDE FIRE DAMPER, AS SHOWN. PENETRATION MUST BE COORDINATED WITH STRUCTURAL; REFER TO STRUCTURAL PLANS. INSTALLATION IS CUSTOM; REFER TO DETAIL 7/M450.
- 3 4x4 POSTS SHOWN FOR REFERENCE ONLY. EXACT LOCATION SHALL BE VERIFIED IN FIELD. CONTRACTOR SHALL LAY OUT DUCT TO AVOID. WHERE NECESSARY, COORDINATE RELOCATION/ALTERATION OF POSTS WITH GENERAL CONTRACTOR. REFER TO STRUCTUAL DRAWINGS.



1 ATTIC SPACE MECHANICAL DUCTWORK PLAN

1/8" = 1'-0"

PROJECT NORTH TRUE NORTH

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ENGINEER SEAL

Signature: _____

PROJECT NO.

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PROJECT PHASE
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DRAWN BY:

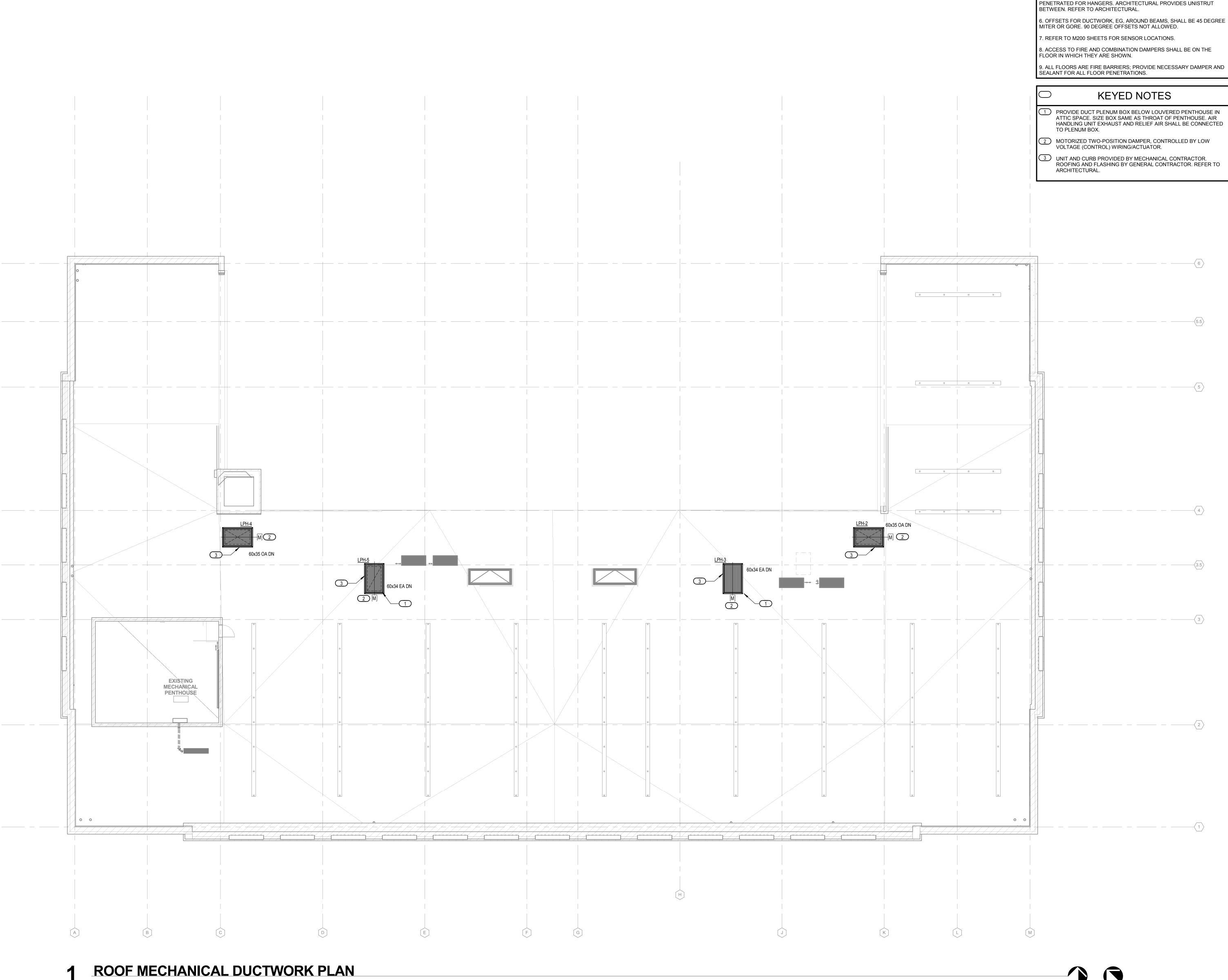
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RCA

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ROOF ATTIC MECHANICAL DUCTWORK PLAN

EXHIBIT I



GENERAL NOTES

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Lighting Designer

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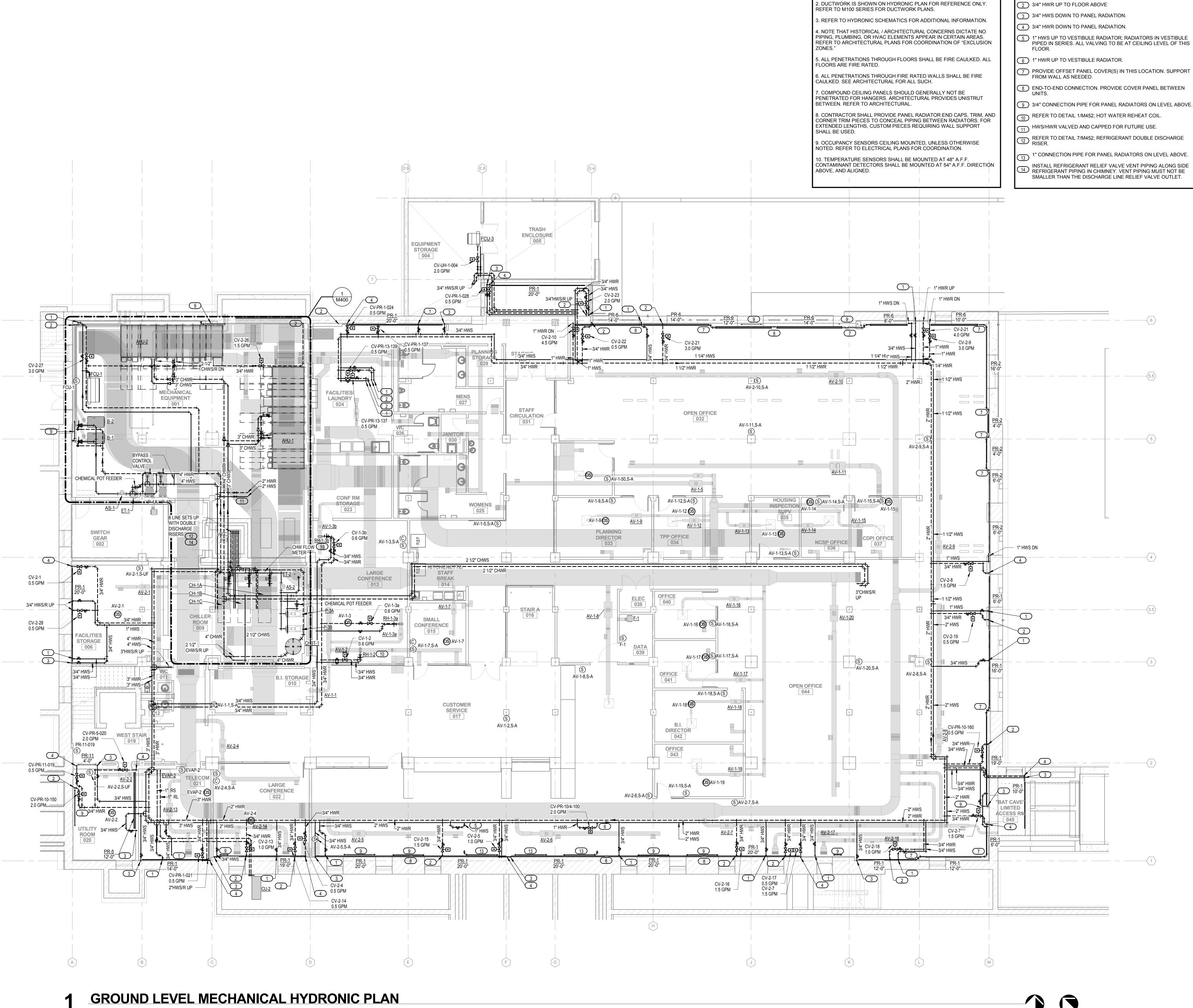
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2014057

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> **ROOF MECHANICAL DUCTWORK PLAN**



KEYED NOTES

1 3/4" HWS UP TO FLOOR ABOVE.

PROJECT NORTH TRUE NORTH

GENERAL NOTES

1. ALL PROVIDED DETAILS APPLY; REFER TO DETAIL SHEET.

Lighting Designer Gallina Design

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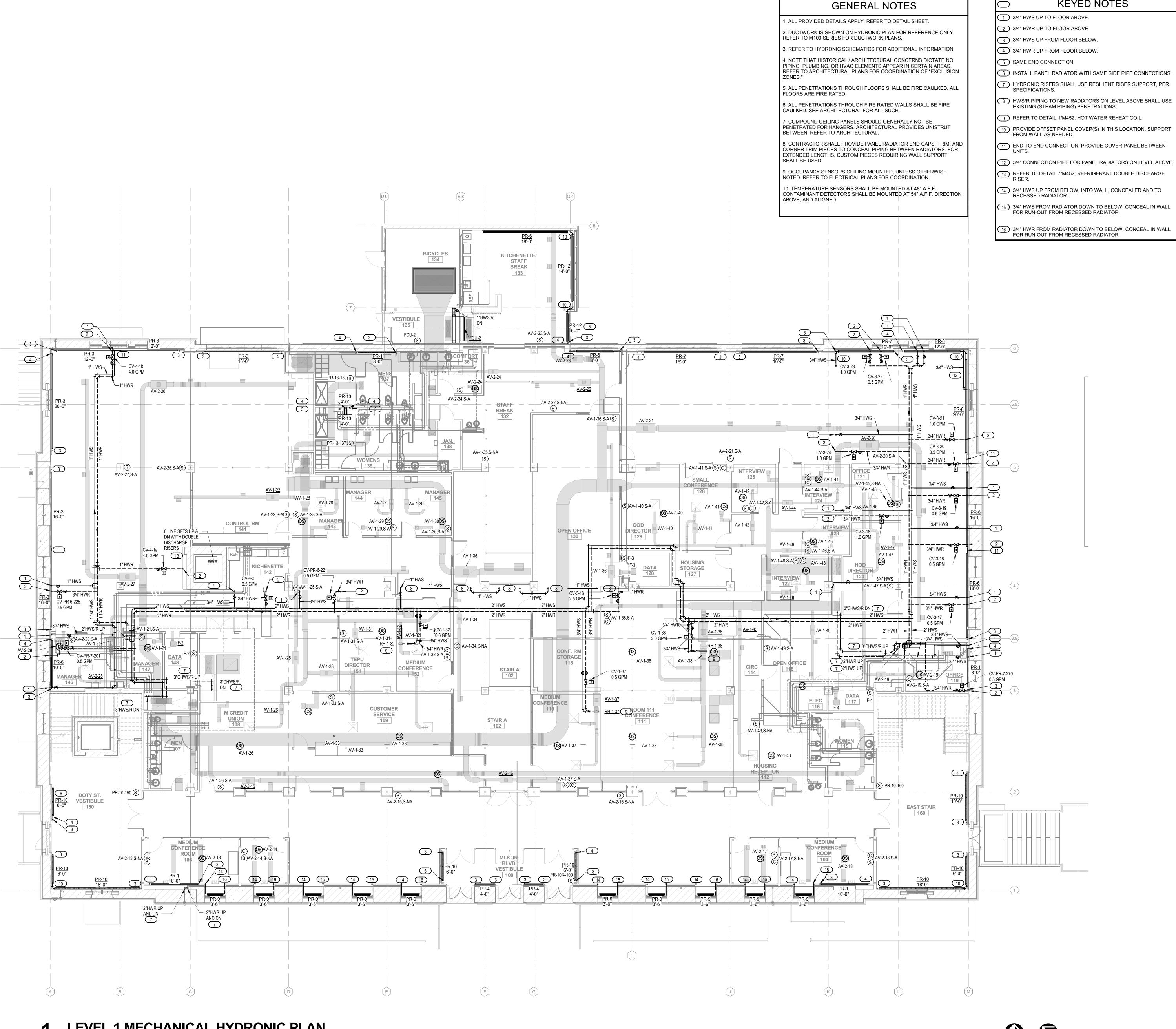
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> **GROUND LEVEL MECHANICAL** HYDRONIC PLAN

> > **EXHIBIT I**



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KEYED NOTES

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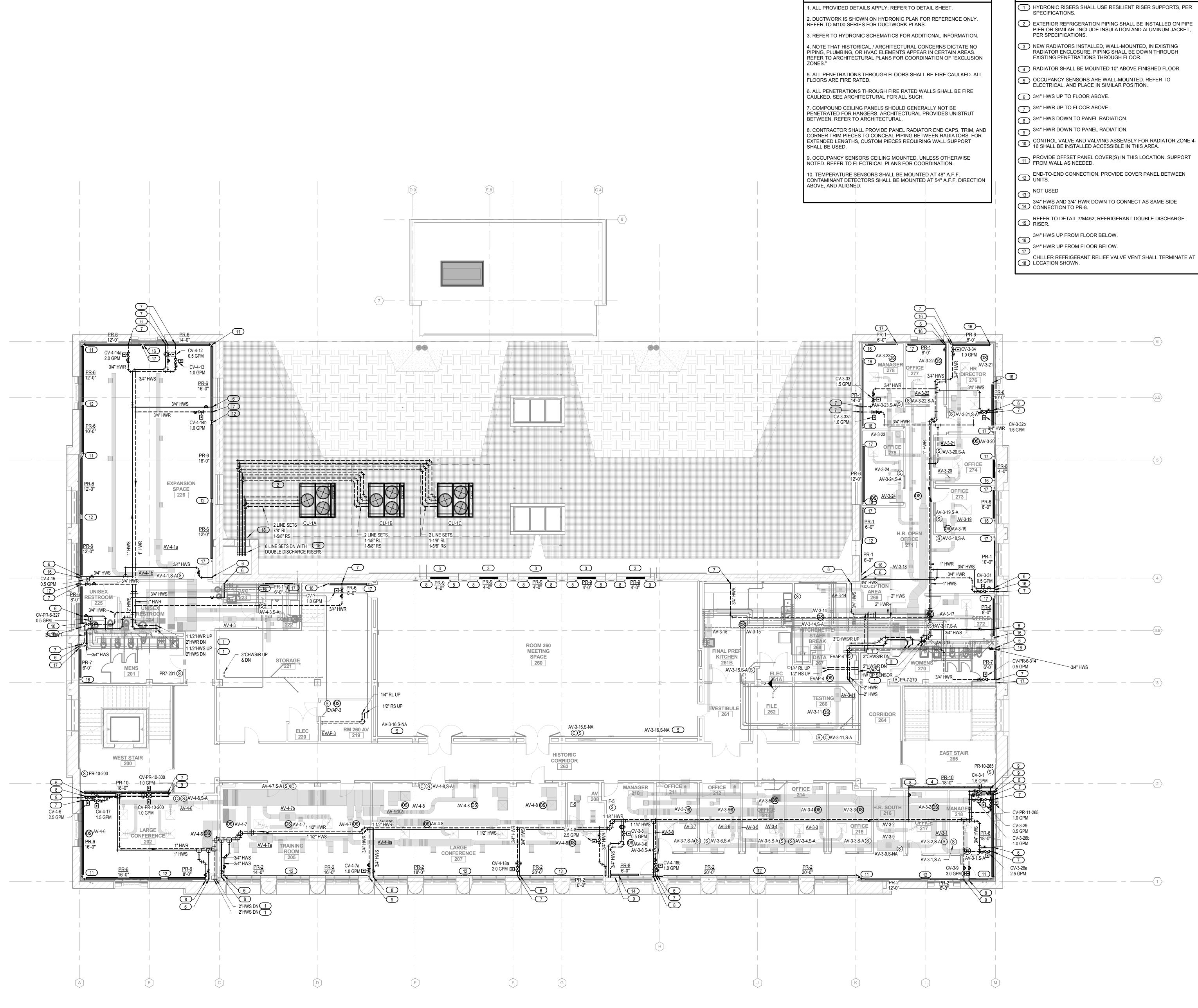
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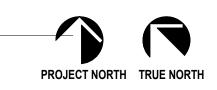
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LEVEL ONE **MECHANICAL** HYDRONIC PLAN

EXHIBIT I



1 LEVEL 2 MECHANICAL HYDRONIC PLAN



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Civil Engineering and Landscape Architects

Ken Saiki Design, Inc

KEYED NOTES

GENERAL NOTES

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Madison, WI 53703

Madison, WI 53703

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ENGINEER SEAL

Signature: ______
Print Names: ______ License No: ______
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PROJECT NO. 2014057

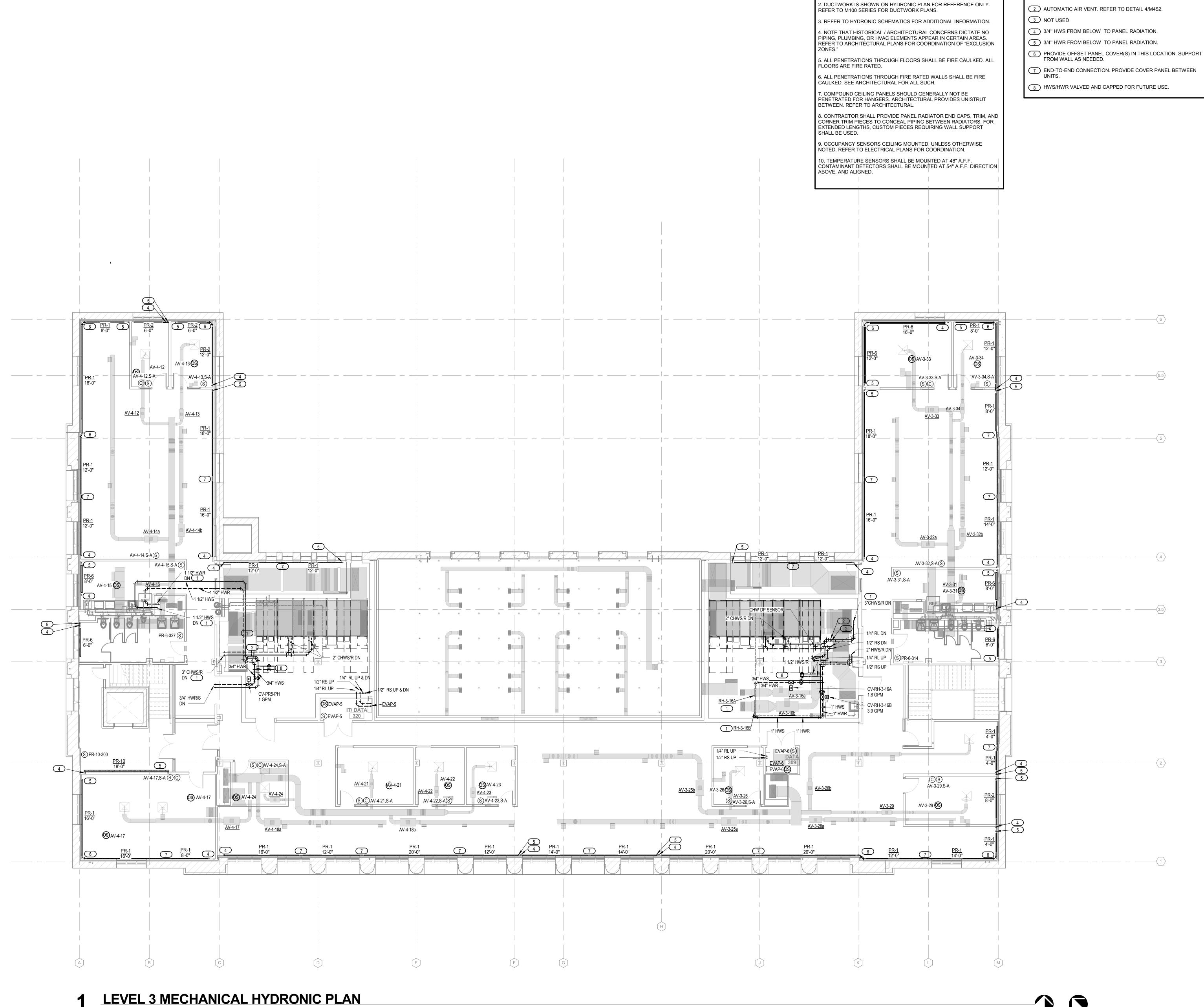
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LEVEL TWO MECHANICAL HYDRONIC PLAN

EXHIBIT I



KEYED NOTES

1 HYDRONIC RISERS SHALL USE RESILIENT RISER SUPPORTS, PER

GENERAL NOTES

1. ALL PROVIDED DETAILS APPLY; REFER TO DETAIL SHEET.

SPECIFICATIONS.

2 AUTOMATIC AIR VENT. REFER TO DETAIL 4/M452.

Structural Engineering, Technology, AV KJWW

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LEVEL THREE MECHANICAL HYDRONIC PLAN

EXHIBIT I

• • • • • • • • - - - - - - - - - - 5 1/2" RS UP TO CONDENSER -1/4" RL UP TO CONDENSER -1/2" RS UP TO CONDENSER — 1/4" RL UP TO CONDENSER -1/4" RL UP TO CONDENSER -1/2" RS UP TO CONDENSER 1/2" RS UP TO CONDENSER 3/4" HWR/S UP & DN — 1/4" RL DN — ر المراجعة المراجعة 1/4" RL DN ATTIC SPACE MECHANICAL HYDRONIC PLAN 1/8" = 1'-0"

GENERAL NOTES

1. ALL PROVIDED DETAILS APPLY; REFER TO DETAIL SHEET.

2. DUCTWORK IS SHOWN ON HYDRONIC PLAN FOR REFERENCE ONLY. REFER TO M100 SERIES FOR DUCTWORK PLANS.

3. REFER TO HYDRONIC SCHEMATICS FOR ADDITIONAL INFORMATION. 4. NOTE THAT HISTORICAL / ARCHITECTURAL CONCERNS DICTATE NO PIPING, PLUMBING, OR HVAC ELEMENTS APPEAR IN CERTAIN AREAS.
REFER TO ARCHITECTURAL PLANS FOR COORDINATION OF "EXCLUSION

5. ALL PENETRATIONS THROUGH FLOORS SHALL BE FIRE CAULKED. ALL

FLOORS ARE FIRE RATED.

6. ALL PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE FIRE CAULKED. SEE ARCHITECTURAL FOR ALL SUCH.

7. COMPOUND CEILING PANELS SHOULD GENERALLY NOT BE PENETRATED FOR HANGERS. ARCHITECTURAL PROVIDES UNISTRUT BETWEEN. REFER TO ARCHITECTURAL.

8. CONTRACTOR SHALL PROVIDE PANEL RADIATOR END CAPS, TRIM, AND CORNER TRIM PIECES TO CONCEAL PIPING BETWEEN RADIATORS. FOR EXTENDED LENGTHS, CUSTOM PIECES REQUIRING WALL SUPPORT

9. OCCUPANCY SENSORS CEILING MOUNTED, UNLESS OTHERWISE NOTED. REFER TO ELECTRICAL PLANS FOR COORDINATION.

SHALL BE USED.

10. TEMPERATURE SENSORS SHALL BE MOUNTED AT 48" A.F.F. CONTAMINANT DETECTORS SHALL BE MOUNTED AT 54" A.F.F. DIRECTION ABOVE, AND ALIGNED.

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Acoustical Consultant

651.251.1879 tel

4826 Chicago Avenue South, Suite 206 Minneapolis, MN 55417 612.374.3800 tel

Civil Engineers VIERBICHER 999 Fourier Drive, Suite 201 Madison WI 53717

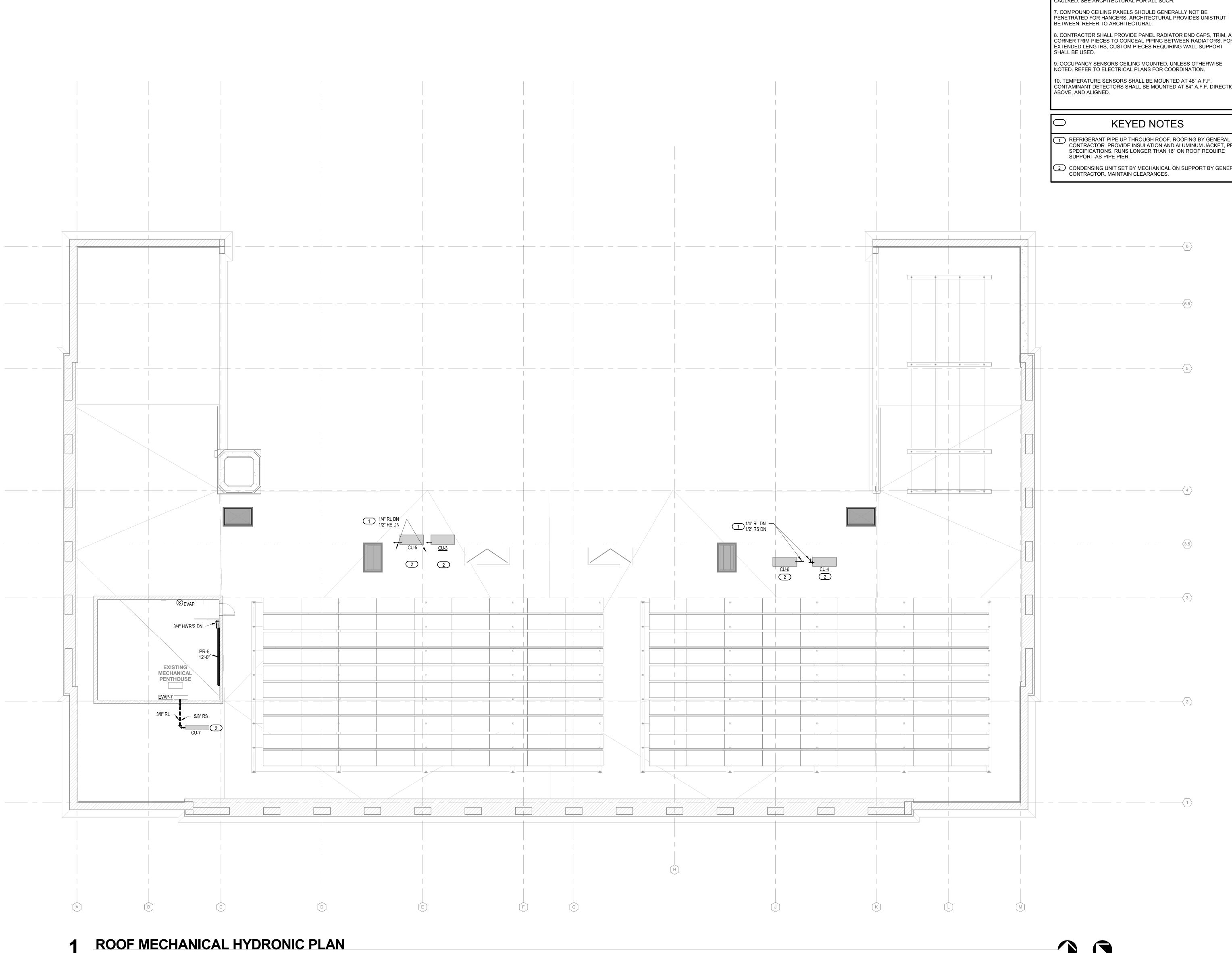
Madison Municipal Building Renovatior

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DRAWN BY: CHECKED BY:
ALH/BTB/JTG Checker

ROOF ATTIC MECHANICAL HYDRONIC PLAN

EXHIBIT I



GENERAL NOTES

1. ALL PROVIDED DETAILS APPLY; REFER TO DETAIL SHEET.

2. DUCTWORK IS SHOWN ON HYDRONIC PLAN FOR REFERENCE ONLY. REFER TO M100 SERIES FOR DUCTWORK PLANS.

3. REFER TO HYDRONIC SCHEMATICS FOR ADDITIONAL INFORMATION. 4. NOTE THAT HISTORICAL / ARCHITECTURAL CONCERNS DICTATE NO PIPING, PLUMBING, OR HVAC ELEMENTS APPEAR IN CERTAIN AREAS. REFER TO ARCHITECTURAL PLANS FOR COORDINATION OF "EXCLUSION

5. ALL PENETRATIONS THROUGH FLOORS SHALL BE FIRE CAULKED. ALL FLOORS ARE FIRE RATED.

6. ALL PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE FIRE CAULKED. SEE ARCHITECTURAL FOR ALL SUCH.

8. CONTRACTOR SHALL PROVIDE PANEL RADIATOR END CAPS, TRIM, AND CORNER TRIM PIECES TO CONCEAL PIPING BETWEEN RADIATORS. FOR EXTENDED LENGTHS, CUSTOM PIECES REQUIRING WALL SUPPORT

CONTAMINANT DETECTORS SHALL BE MOUNTED AT 54" A.F.F. DIRECTION

(1) REFRIGERANT PIPE UP THROUGH ROOF. ROOFING BY GENERAL CONTRACTOR. PROVIDE INSULATION AND ALUMINUM JACKET, PER SPECIFICATIONS. RUNS LONGER THAN 16" ON ROOF REQUIRE

PROJECT NORTH TRUE NORTH

2 CONDENSING UNIT SET BY MECHANICAL ON SUPPORT BY GENERAL

Preservation Architect Charles Quagliana, AIA

MSR 710 South 2nd Street, 8th Floor Minneapolis, Minnesota 55401–2282

Architecture 612 375 0336 tel

Civil Engineering and Landscape Architects

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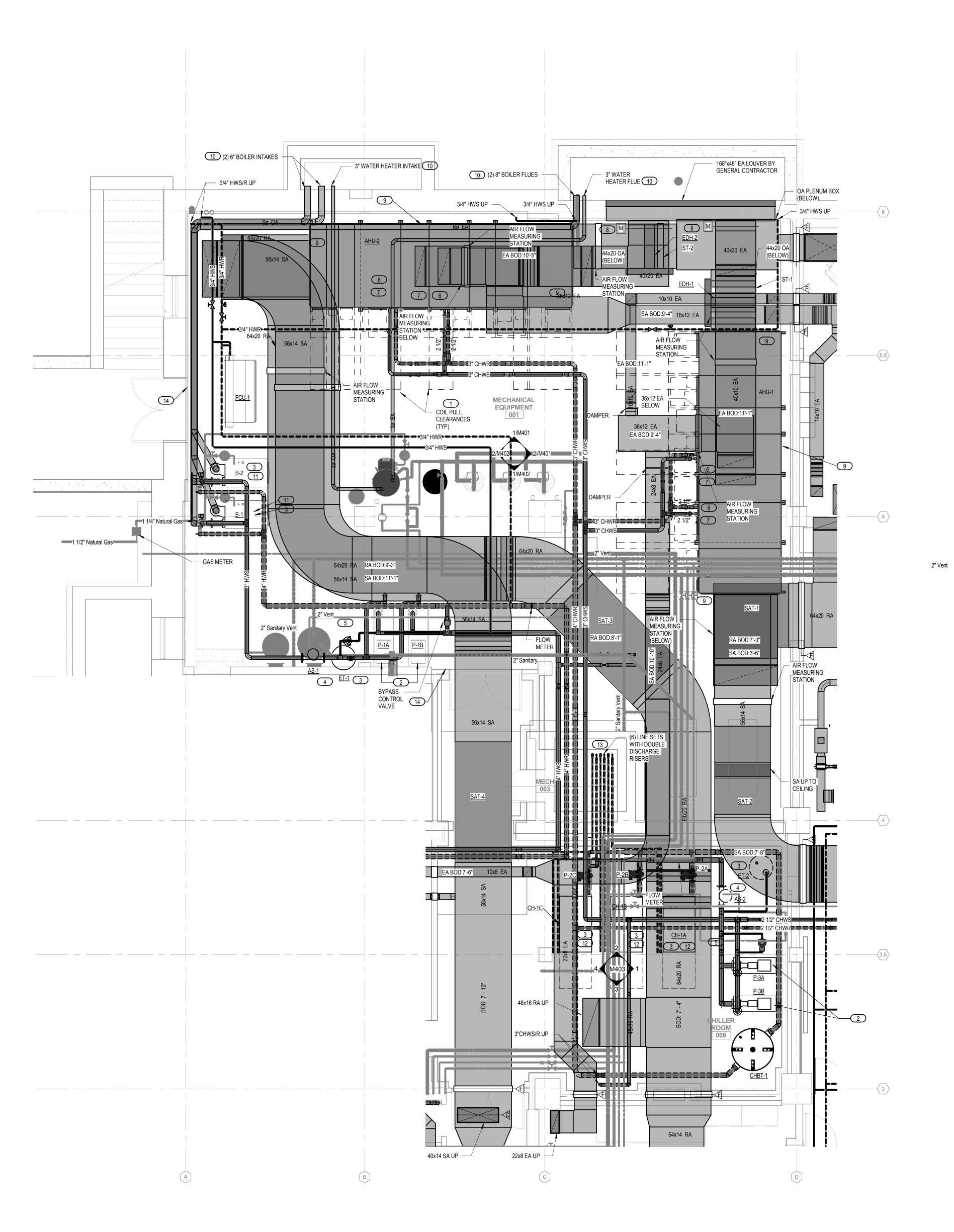
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ROOF MECHANICAL HYDRONIC PLAN



ENLARGED GROUND LEVEL MECHANICAL ROOM

1. ALL DUCTWORK IN THIS VIEW SHALL BE HUNG WITH SPRING HANGERS. 2. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE HUNG WITH SPRING

4. FOR ALL EQUIPMENT, MAINTAIN ACCESS/CLEARANCE REQUIREMENTS.

1) COIL PULL SPACES AND ACCESS SHOWN DASHED, FOR REFERENCE.

5 REFER TO DETAIL 3/M450; CHEMICAL BATCH FEEDER PIPING.

7 REFER TO DETAIL 4/M450; NEGATIVE PRESSURE CONDENSATE DRAIN.

9 FINAL CONNECTION TO AHU SHALL MATCH AHU OPENING DIMENSIONS OR CONTRACTOR SHALL PROVIDE BLANK-OFF DUCT CONNECTIONS, INSULATED.

MANUFACTURER FURNISHED TERMINATION KITS. BY MECHANICAL.

11) REFER TO DETAIL 8/M451; BOILER DETAIL.

13) REFER TO DETAIL 6/M451; REFRIGERANT PIPING DIAGRAM. REFER TO DETAIL 7/M452 FOR DOUBLE DISCHARGE DETAIL.

GENERAL NOTES

3. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE PROVIDED WITH PVC JACKET, PER SPECIFICATIONS.

Civil Engineering and Landscape Architects FOR DUCT-MOUNTED EQUIPMENT, ENSURE PULL SPACE HORIZONTAL OR Ken Saiki Design, Inc VERTICAL, AS REQUIRED BY SPACE CONSTRAINTS.

KEYED NOTES

2 PUMP, INSTALLED ON INERTIAL BASE, BY MECHANICAL. REFER TO

3 CONCRETE PAD, BY MECHANICAL CONTRACTOR. 4 REFER TO DETAIL 3/M452; EXPANSION TANK/AIR SEPERATOR

6 REFER TO DETAIL 6/M450; 2-WAY AHU COOLING COIL.

8 MOTORIZED 2-POSITION DAMPER, CONTROLLED BY LOW VOLTAGE (CONTROL) WIRING/ACTUATOR.

10 TERMINATE FLUES AND COMBUSTION INTAKES WITH

12) REFER TO DETAIL 7/M451; MODULAR SPLIT AIR COOLED CHILLER.

PROVIDE REMOTE SHUT-DOWN DEVICE OF BOILER, AS REQUIRED BY CODE. COORDINATE WITH ELECTRICAL.

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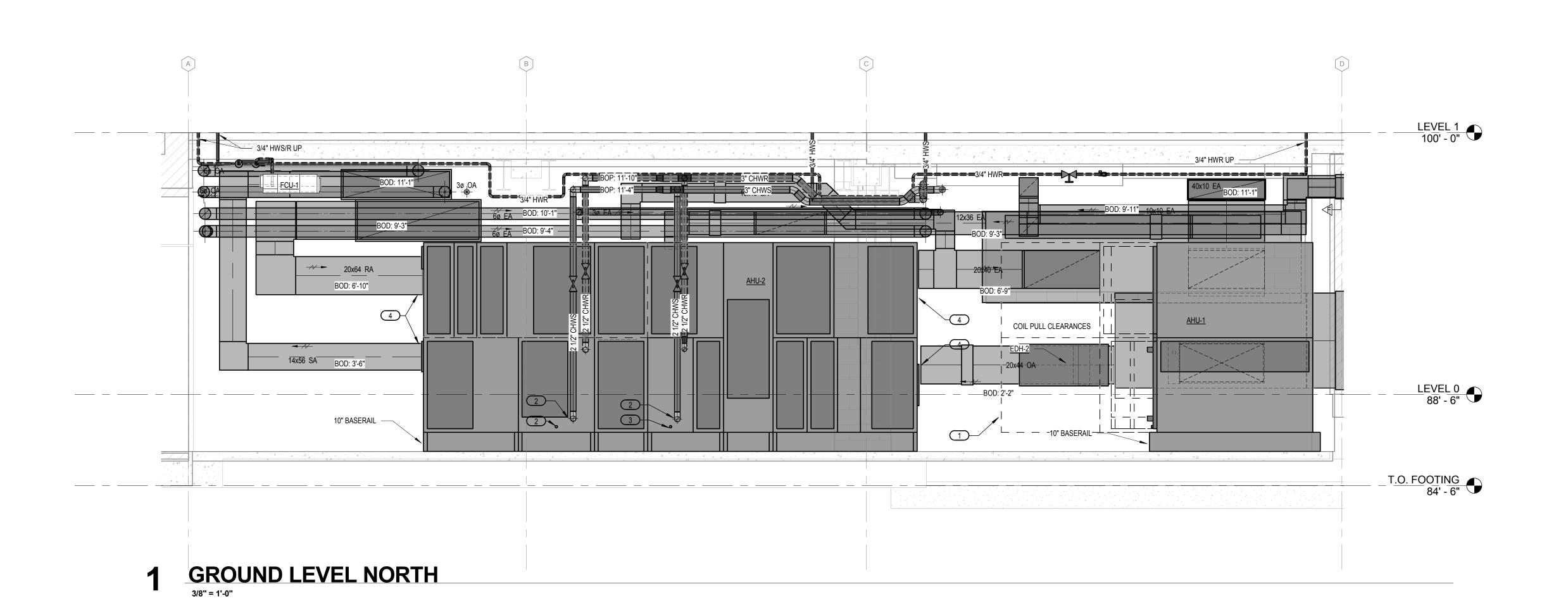
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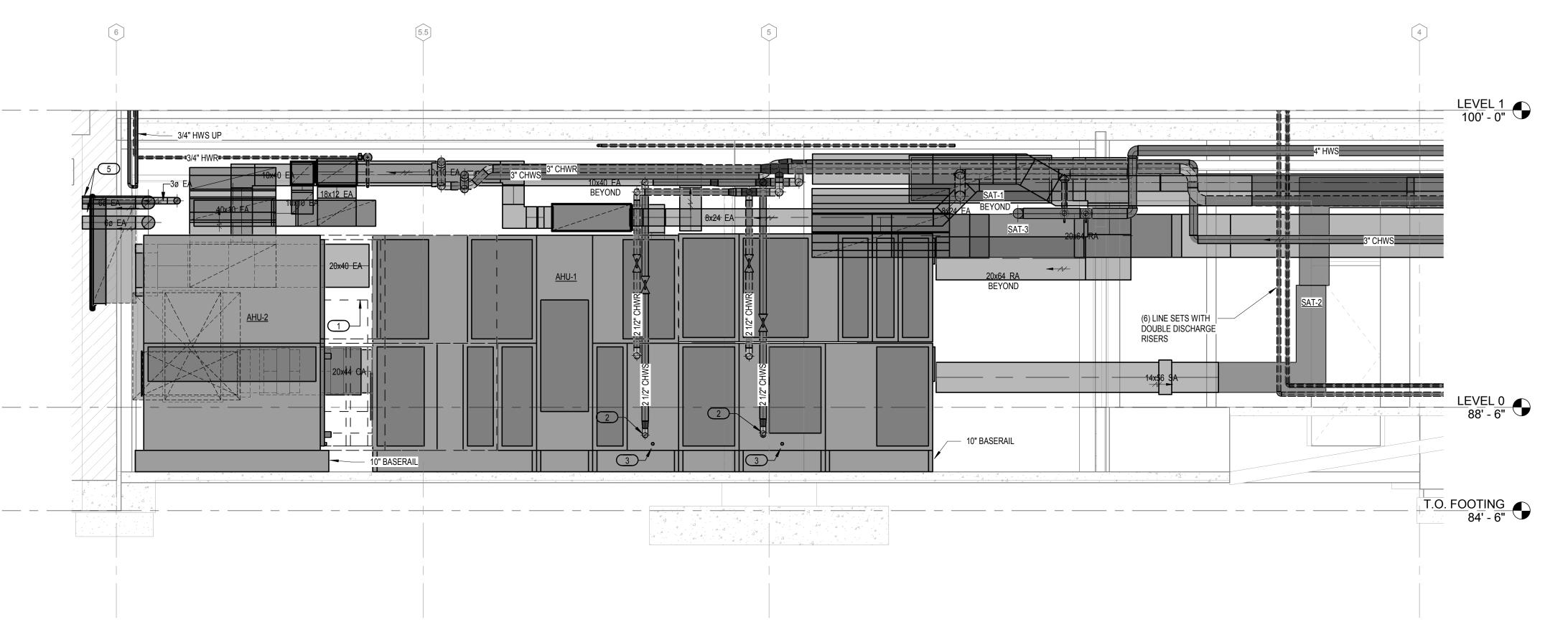
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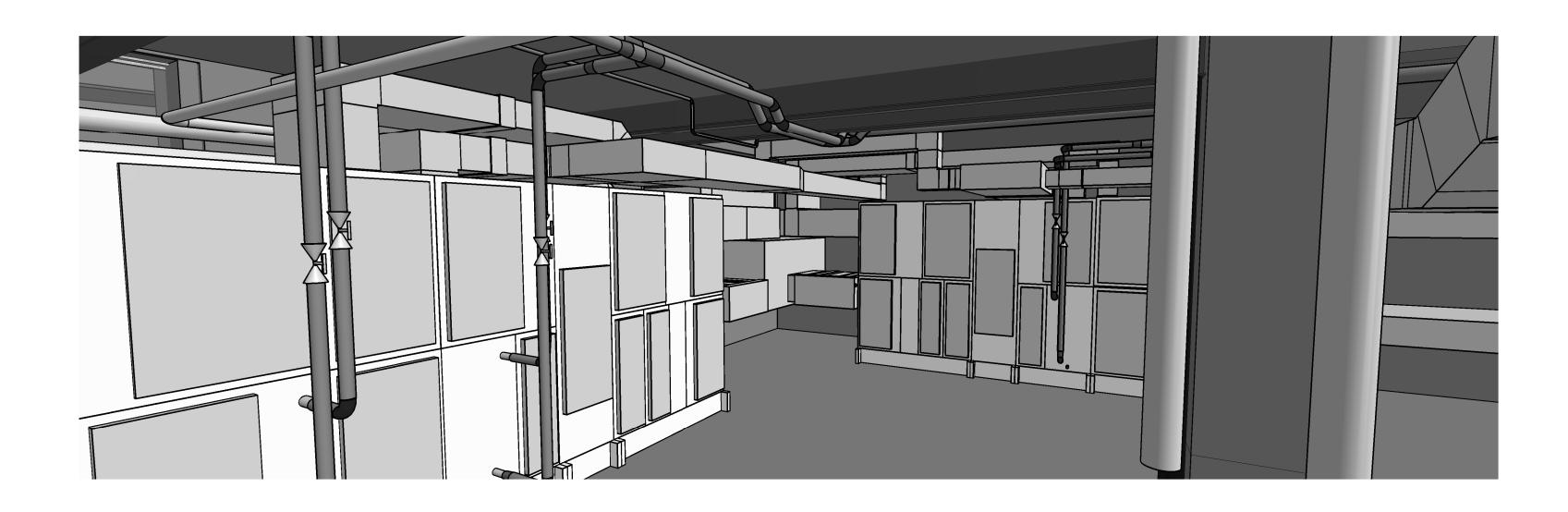
ENLARGED **GROUND LEVEL** MECHANICAL **ROOM PLAN**

EXHIBIT I





2 GROUND LEVEL EAST
3/8" = 1'-0"





GENERAL NOTES

1. ALL DUCTWORK IN THIS VIEW SHALL BE HUNG WITH SPRING HANGERS. 2. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE HUNG WITH SPRING HANGERS.

3. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE PROVIDED WITH PVC JACKET, PER SPECIFICATIONS.

4. FOR ALL EQUIPMENT, MAINTAIN ACCESS/CLEARANCE REQUIREMENTS. FOR DUCT-MOUNTED EQUIPMENT, ENSURE PULL SPACE HORIZONTAL OR VERTICAL, AS REQUIRED BY SPACE CONSTRAINTS.

KEYED NOTES

1 COIL PULL SPACES AND ACCESS SHOWN DASHED, FOR REFERENCE.

2 REFER TO DETAIL 6/M450; 2-WAY AHU COOLING COIL.

3 REFER TO DETAIL 4/M450; NEGATIVE PRESSURE CONDENSATE

4 FINAL CONNECTION SIZED TO AIR HANDLER PER DETAIL 8/M452.

5 TERMINATE FLUES AND COMBUSTION INTAKES WITH MANUFACTURER FURNISHED TERMINATION KITS. BY MECHANICAL.

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Acoustical Consultant

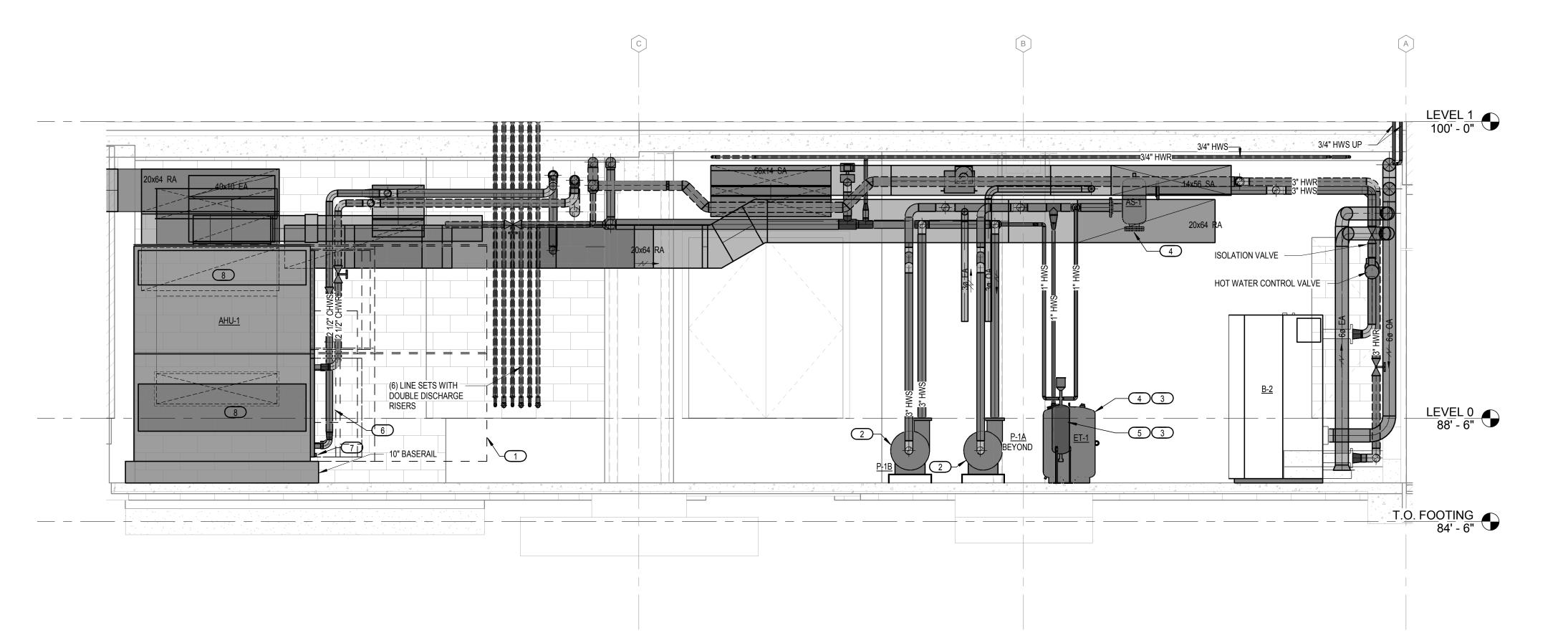
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GROUND LEVEL MECHANICAL **ROOM ELEVATIONS**



GENERAL NOTES

1. ALL DUCTWORK IN THIS VIEW SHALL BE HUNG WITH SPRING HANGERS. 2. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE HUNG WITH SPRING

3. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE PROVIDED WITH PVC JACKET, PER SPECIFICATIONS. 4. FOR ALL EQUIPMENT, MAINTAIN ACCESS/CLEARANCE REQUIREMENTS. FOR DUCT-MOUNTED EQUIPMENT, ENSURE PULL SPACE HORIZONTAL OR

KEYED NOTES

1 COIL PULL SPACES AND ACCESS SHOWN DASHED, FOR REFERENCE.

2 PUMP, INSTALLED ON INERTIAL BASE, BY MECHANICAL. REFER TO DETAIL 5/M452.

3 CONCRETE PAD, BY MECHANICAL CONTRACTOR.

VERTICAL, AS REQUIRED BY SPACE CONSTRAINTS.

4 REFER TO DETAIL 3/M452; EXPANSION TANK/AIR SEPERATOR

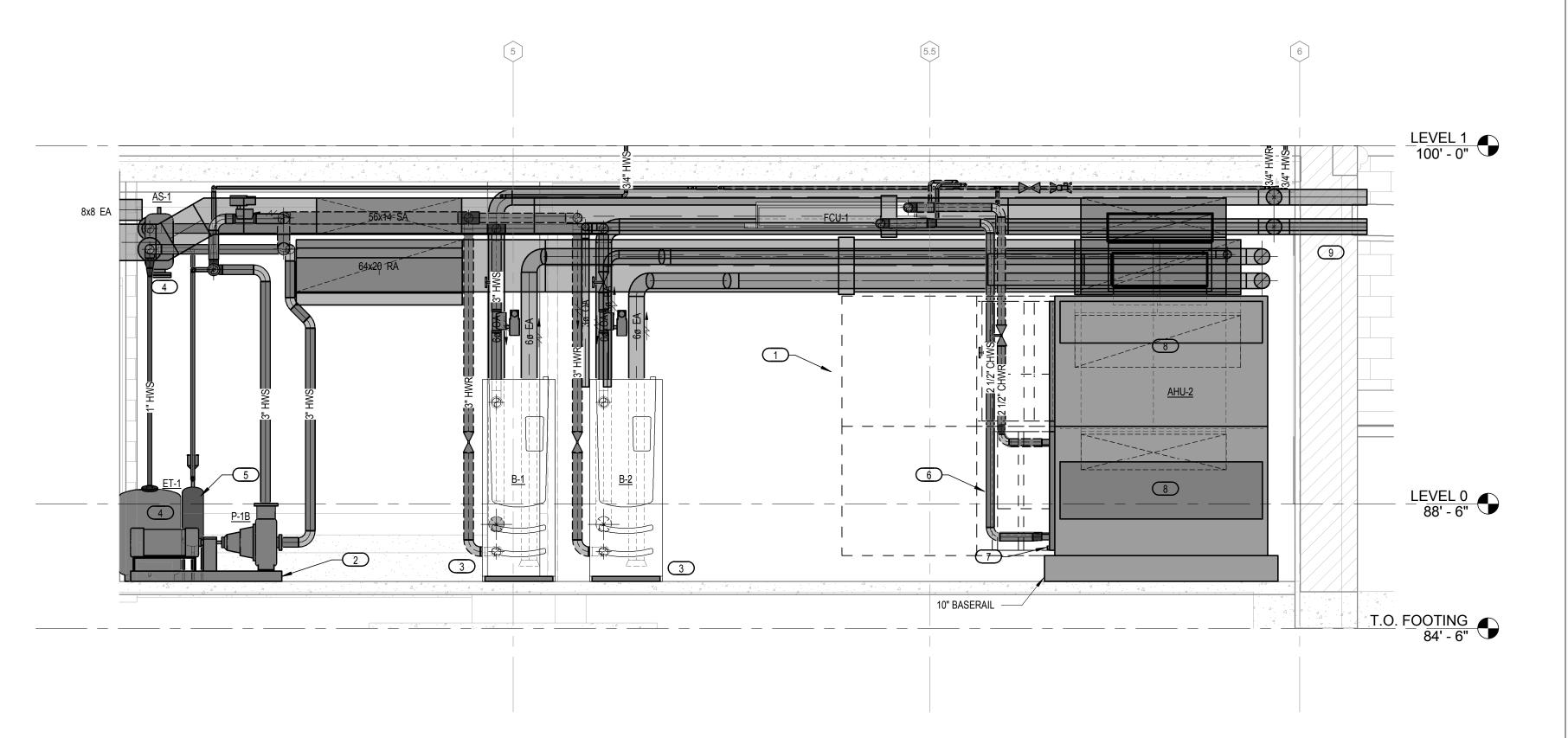
5 REFER TO DETAIL 3/M450; CHEMICAL BATCH FEEDER PIPING. 6 REFER TO DETAIL 6/M450; 2-WAY AHU COOLING COIL.

7) REFER TO DETAIL 4/M450; NEGATIVE PRESSURE CONDENSATE

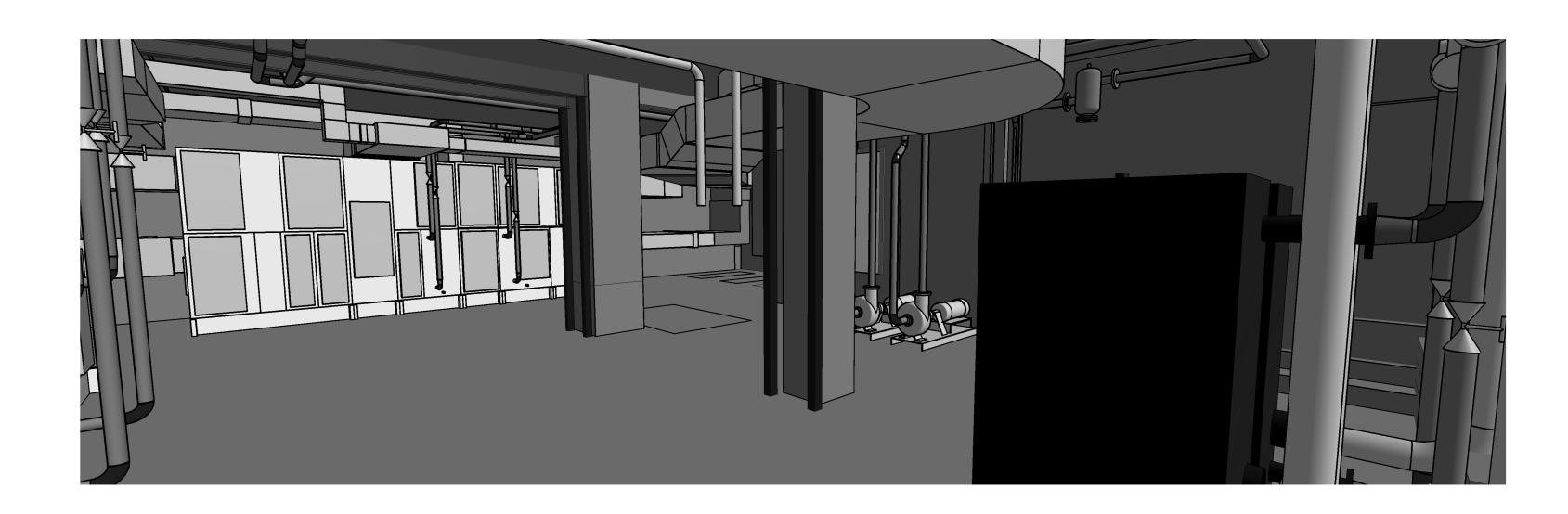
8 FINAL CONNECTION SIZED TO AIR HANDLER PER DETAIL 8/M452.

TERMINATE FLUES AND COMBUSTION INTAKES WITH
 MANUFACTURER FURNISHED TERMINATION KITS. BY MECHANICAL.

GROUND LEVEL SOUTH



GROUND LEVEL WEST





2. CUSTOM INSTALLATION REQUIRED TO MATCH FIRE DAMPER CONNECTION AND STRUCTURAL RESTRICTIONS. SEE DETAIL 7/M450. 3. WHERE INSTALLED ON VERTICAL SURFACE, ORIENT BLADES TO BLOCK VIEW THROUGH (IE: BLADES UP FOR HIGH INSTALL).

4 GROUND LEVEL MECHANICAL ROOM SOUTH-EAST CORNER

GROUND LEVEL MECHANICAL ROOM SOUTH-WEST CORNER

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Civil Engineers VIERBICHER 999 Fourier Drive, Suite 201

Madison Building F

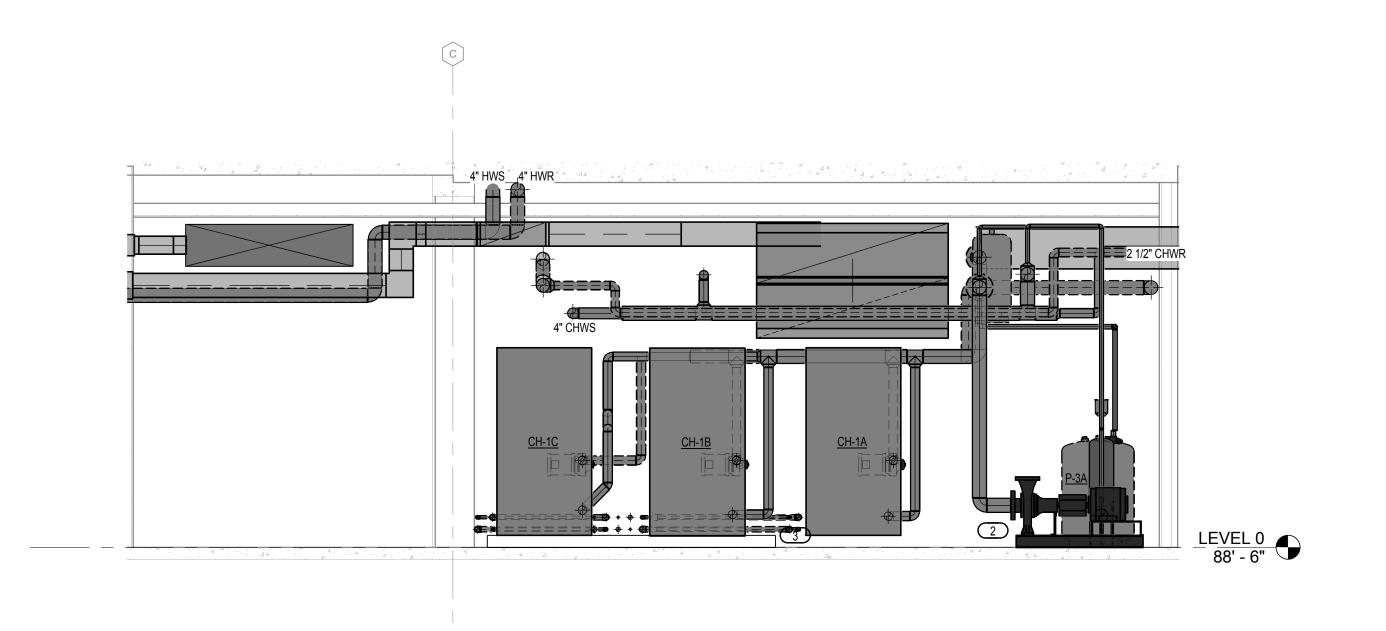
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ENGINEER SEAL

2014057 DRAWN BY: CHECKED BY:
ALH/BTB/JTG RCA

GROUND LEVEL MECHANICAL **ROOM ELEVATIONS**

EXHIBIT I



LEVEL 1 100' - 0" CHW FLOW METER CHBT-1

1. ALL DUCTWORK IN THIS VIEW SHALL BE HUNG WITH SPRING HANGERS 2. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE HUNG WITH SPRING 3. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE PROVIDED WITH PVC JACKET, PER SPECIFICATIONS. 4. FOR ALL EQUIPMENT, MAINTAIN ACCESS/CLEARANCE REQUIREMENTS. FOR DUCT-MOUNTED EQUIPMENT, ENSURE PULL SPACE HORIZONTAL OR VERTICAL, AS REQUIRED BY SPACE CONSTRAINTS.

GENERAL NOTES

KEYED NOTES 1 CHILLER CLEARANCES AND ACCESS SHOWN DASHED, FOR

2 PUMP, INSTALLED ON INERTIAL BASE, BY MECHANICAL. REFER TO DETAIL 5/M452.

3 SUPPORT FRAME AND CONCRETE PAD, BY MECHANICAL CONTRACTOR.

4 REFER TO DETAIL 3/M452; EXPANSION TANK/AIR SEPERATOR

5 REFER TO DETAIL 3/M450; CHEMICAL BATCH FEEDER PIPING. REFER TO DETAIL 7/M452; REFRIGERANT DOUBLE DISCHARGE RISER.

> Lighting Designer Gallina Design 30232 County 7 Chatfield, MN 55923 507.867.1628 tel

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n Municipal Renovation Madison Building F

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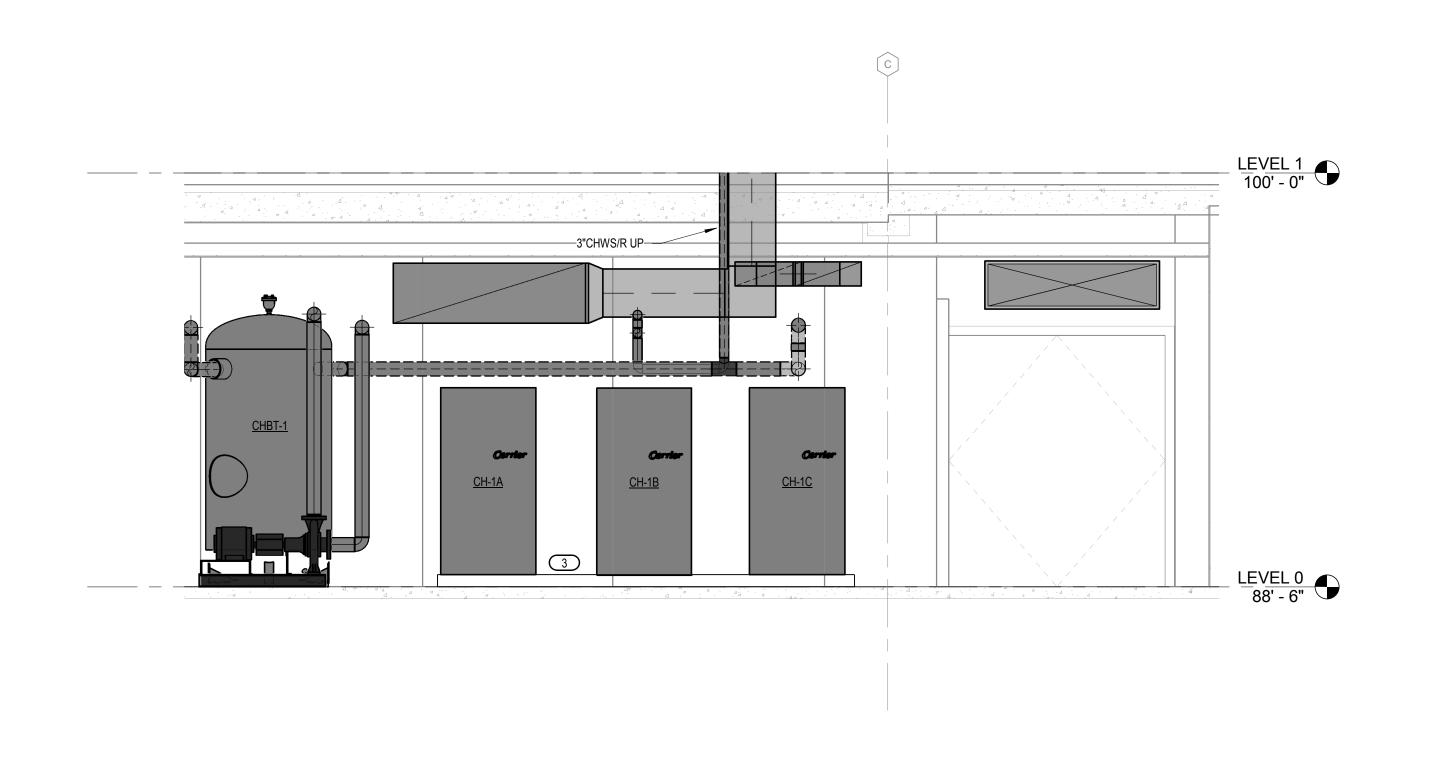
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> **GROUND LEVEL** CHILLER ROOM **ELEVATIONS**

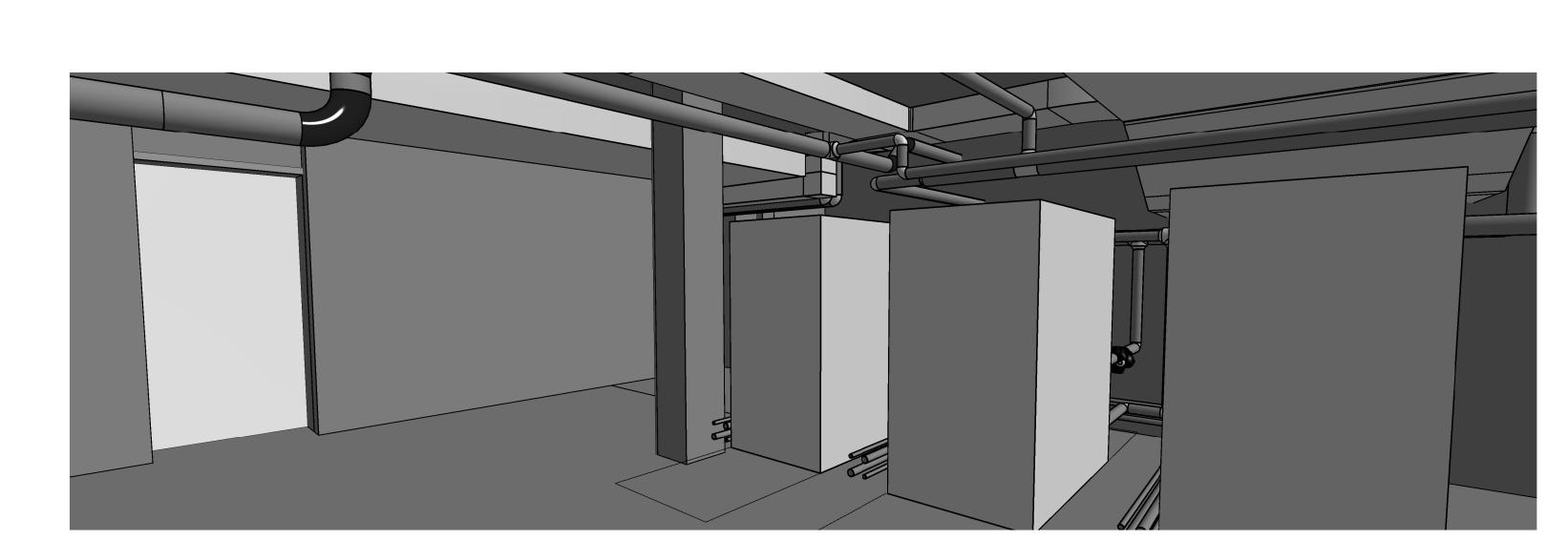
> > EXHIBIT I

M403

CHILLER ROOM EAST
3/8" = 1'-0"



CHILLER ROOM SOUTH
3/8" = 1'-0"

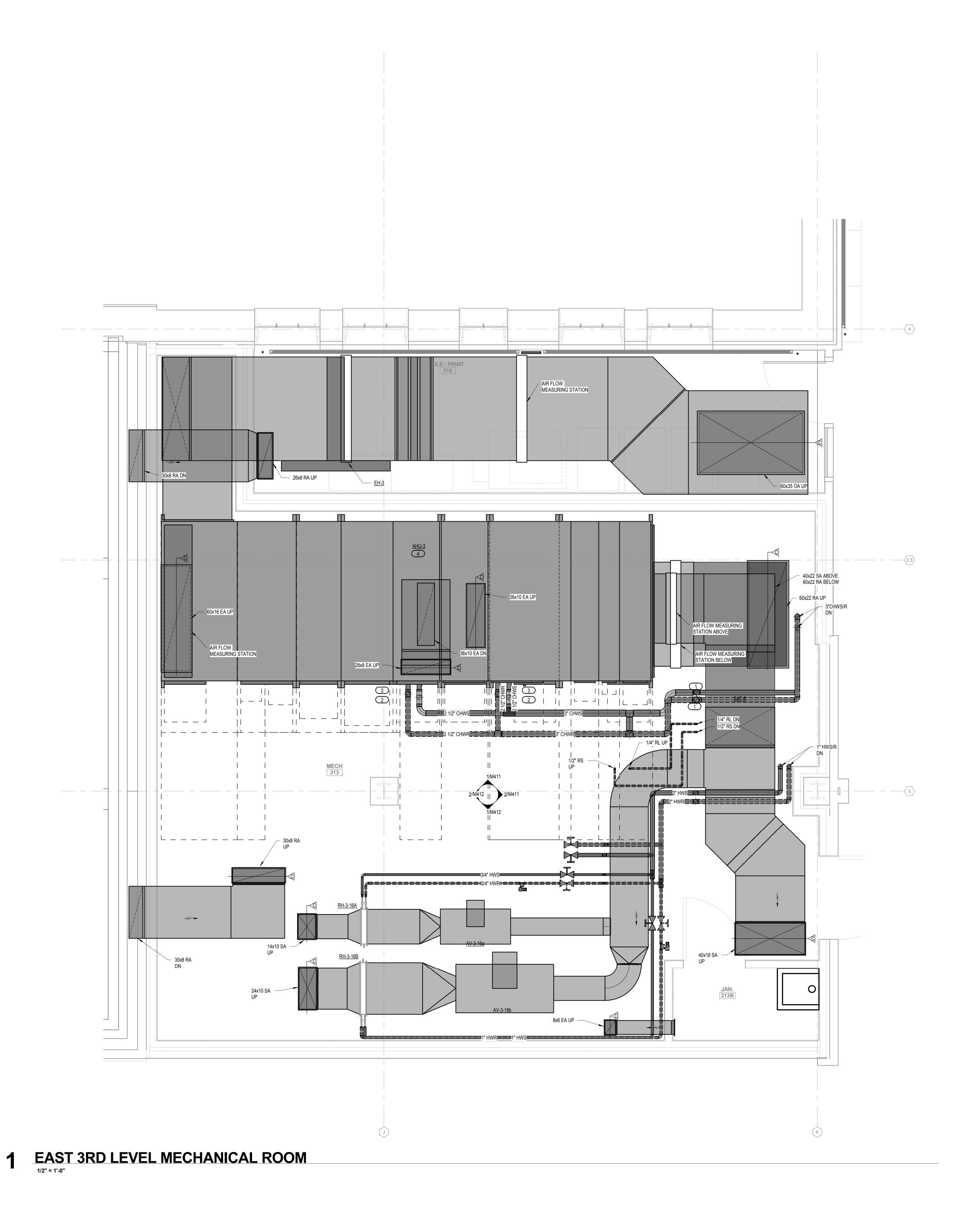


6 LINE SETS WITH — DOUBLE DISCHARGE

5 CHILLER ROOM NORTH-WEST CORNER

4 CHILLER ROOM WEST

3/8" = 1'-0"



GENERAL NOTES

1. ALL DUCTWORK IN THIS VIEW SHALL BE HUNG WITH SPRING HANGERS. 2. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE HUNG WITH SPRING

3. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE PROVIDED WITH PVC JACKET, PER SPECIFICATIONS.

4. FOR ALL EQUIPMENT, MAINTAIN ACCESS/CLEARANCE REQUIREMENTS. FOR DUCT-MOUNTED EQUIPMENT, ENSURE PULL SPACE HORIZONTAL OR VERTICAL, AS REQUIRED BY SPACE CONSTRAINTS.

KEYED NOTES

1 REFER TO DETAIL 4/M452; AUTOMATIC AIR VENT ASSEMBLY.

2 REFER TO DETAIL 6/M450; 2-WAY AHU COOLING COIL

3 REFER TO DETAIL 4/M450; NEGATIVE PRESSURE CONDENSATE

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FINAL CONNECTION TO AHU SHALL MATCH AHU OPENING DIMENSIONS OR CONTRACTOR SHALL PROVIDE BLANK-OFF DUCT CONNECTIONS, INSULATED.

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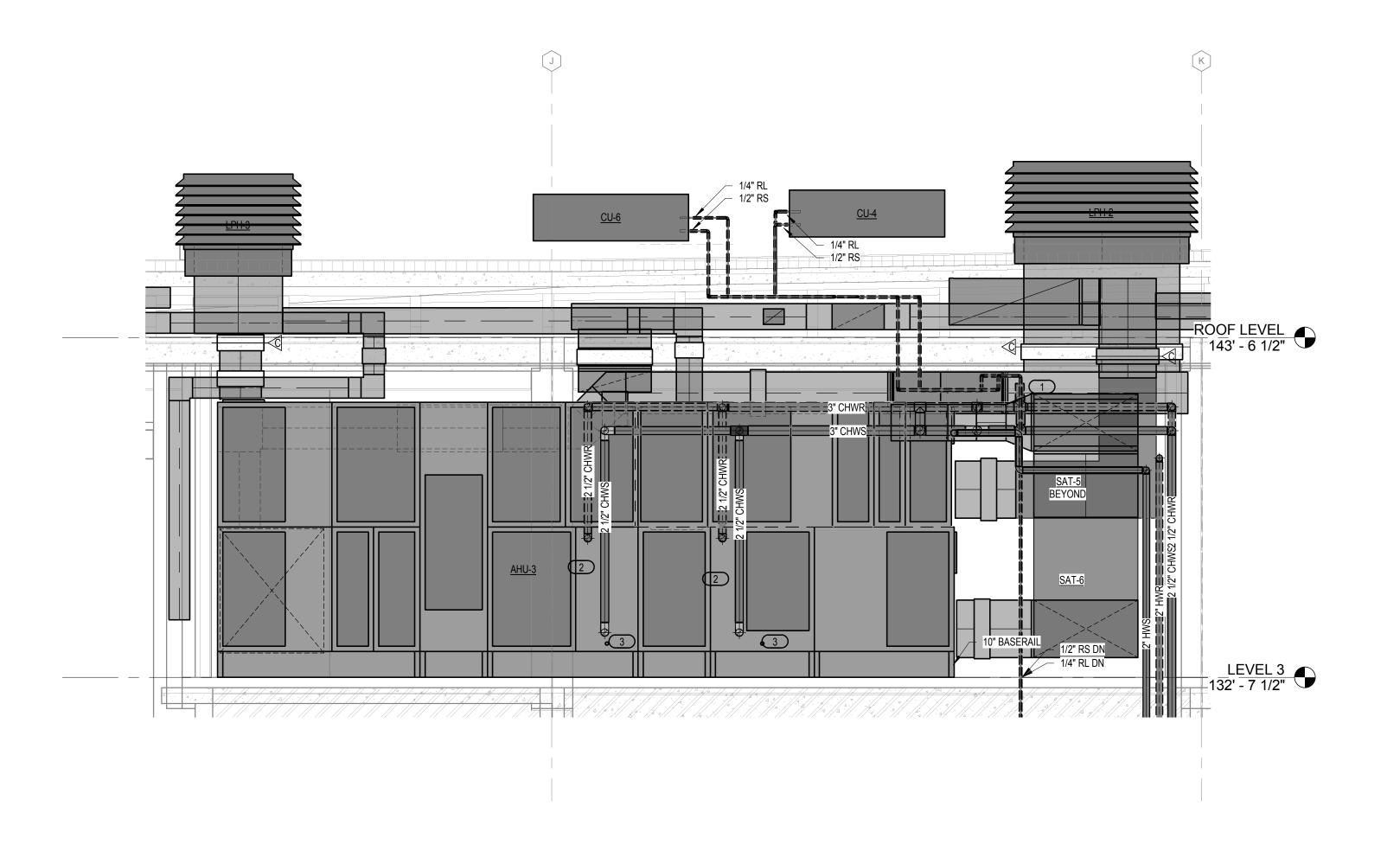
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BPW Project #7939 5 Martin Luther King, Jr. E Madison, WI 53703

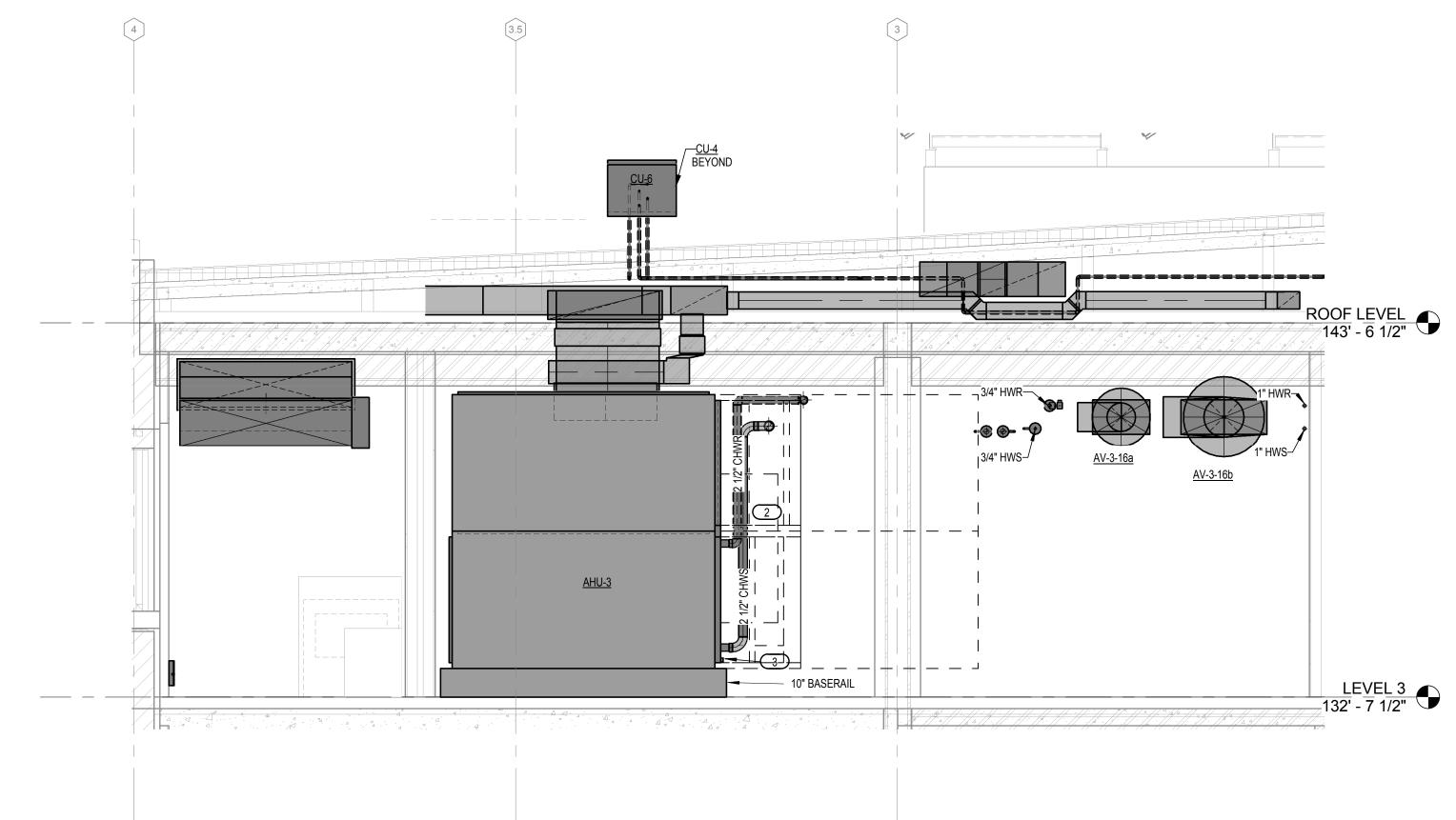
Print Names:_

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ALH/BTB/JTG Checker ENLARGED LEVEL

THREE EAST MECHANICAL **ROOM PLAN**



3RD LEVEL EAST MECHANICAL ROOM - NORTH 3/8" = 1'-0"



2 3RD LEVEL EAST MECHANICAL ROOM - EAST 3/8" = 1'-0"



3 3RD LEVEL EAST MECHANICAL ROOM NORTH-EAST CORNER

GENERAL NOTES

1. ALL DUCTWORK IN THIS VIEW SHALL BE HUNG WITH SPRING HANGERS. 2. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE HUNG WITH SPRING

3. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE PROVIDED WITH PVC JACKET, PER SPECIFICATIONS.

4. FOR ALL EQUIPMENT, MAINTAIN ACCESS/CLEARANCE REQUIREMENTS. FOR DUCT-MOUNTED EQUIPMENT, ENSURE PULL SPACE HORIZONTAL OR

KEYED NOTES

VERTICAL, AS REQUIRED BY SPACE CONSTRAINTS.

1 REFER TO DETAIL 4/M452; AUTOMATIC AIR VENT ASSEMBLY.

3 REFER TO DETAIL 4/M450; NEGATIVE PRESSURE CONDENSATE

2 REFER TO DETAIL 6/M450; 2-WAY AHU COOLING COIL.

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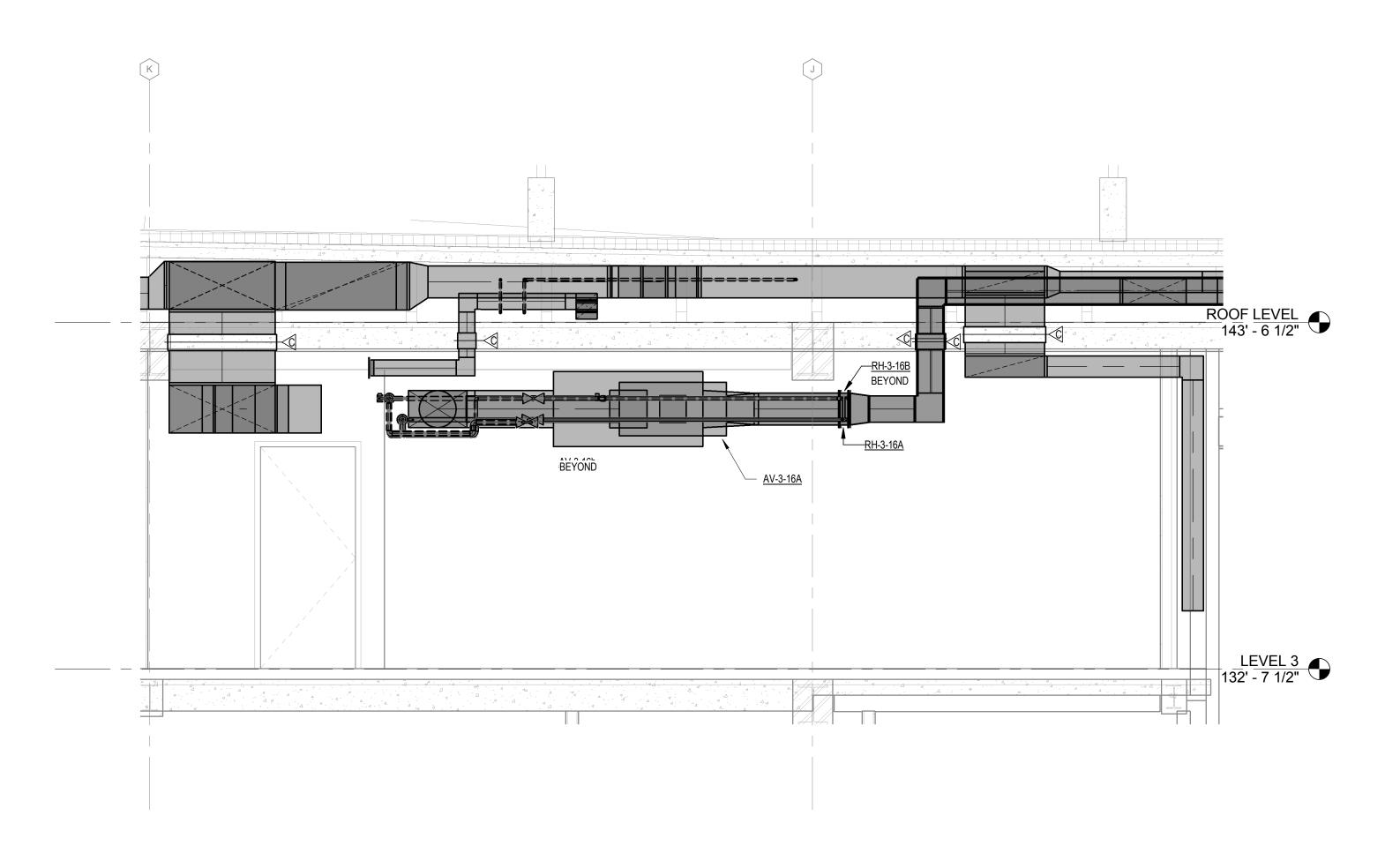
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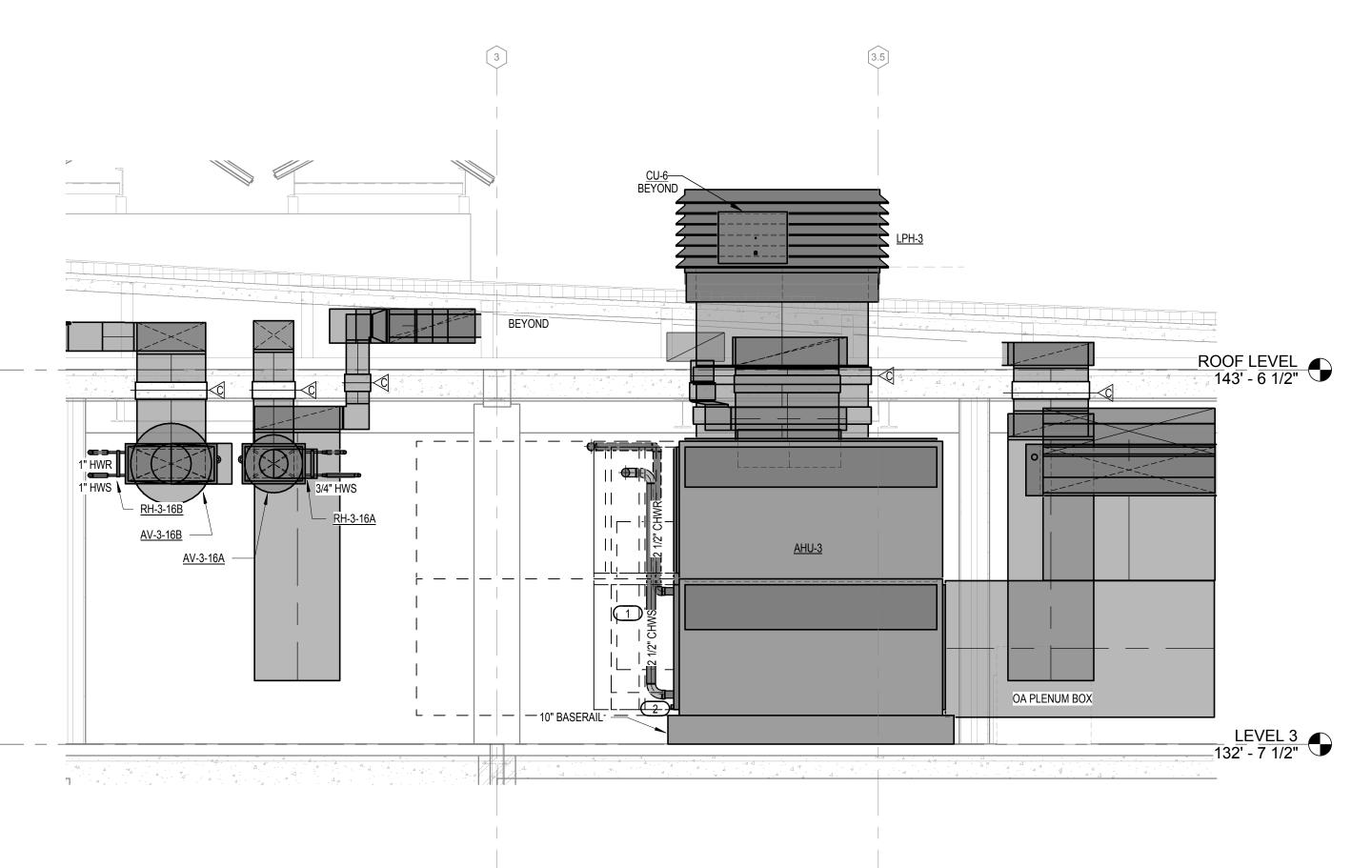
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LEVEL THREE EAST MECHANICAL **ROOM ELEVATIONS**

EXHIBIT I



1 3RD LEVEL EAST MECHANICAL ROOM - SOUTH
3/8" = 1'-0"



2 3RD LEVEL EAST MECHANICAL ROOM - WEST
3/8" = 1'-0"

GENERAL NOTES

ALL DUCTWORK IN THIS VIEW SHALL BE HUNG WITH SPRING HANGERS.
 ALL HYDRONIC PIPING IN THIS VIEW SHALL BE HUNG WITH SPRING HANGERS.
 ALL HYDRONIC PIPING IN THIS VIEW SHALL BE PROVIDED WITH PVC JACKET, PER SPECIFICATIONS.
 FOR ALL EQUIPMENT, MAINTAIN ACCESS/CLEARANCE REQUIREMENTS.

4. FOR ALL EQUIPMENT, MAINTAIN ACCESS/CLEARANCE REQUIREMENTS.
FOR DUCT-MOUNTED EQUIPMENT, ENSURE PULL SPACE HORIZONTAL OR
VERTICAL, AS REQUIRED BY SPACE CONSTRAINTS.

KEYED NOTES

1 REFER TO DETAIL 6/M450; 2-WAY AHU COOLING COIL.

2 REFER TO DETAIL 4/M450; NEGATIVE PRESSURE CONDENSATE

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Madison Municipal Building Renovation

#7939 King, Jr. 53703

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ENGINEER SEAL

Signature: ——
Print Names: —

Date: License No:

ISSUE

MARK DATE DESCRIPTION

PROJECT NO. 2014057

DRAWN BY:

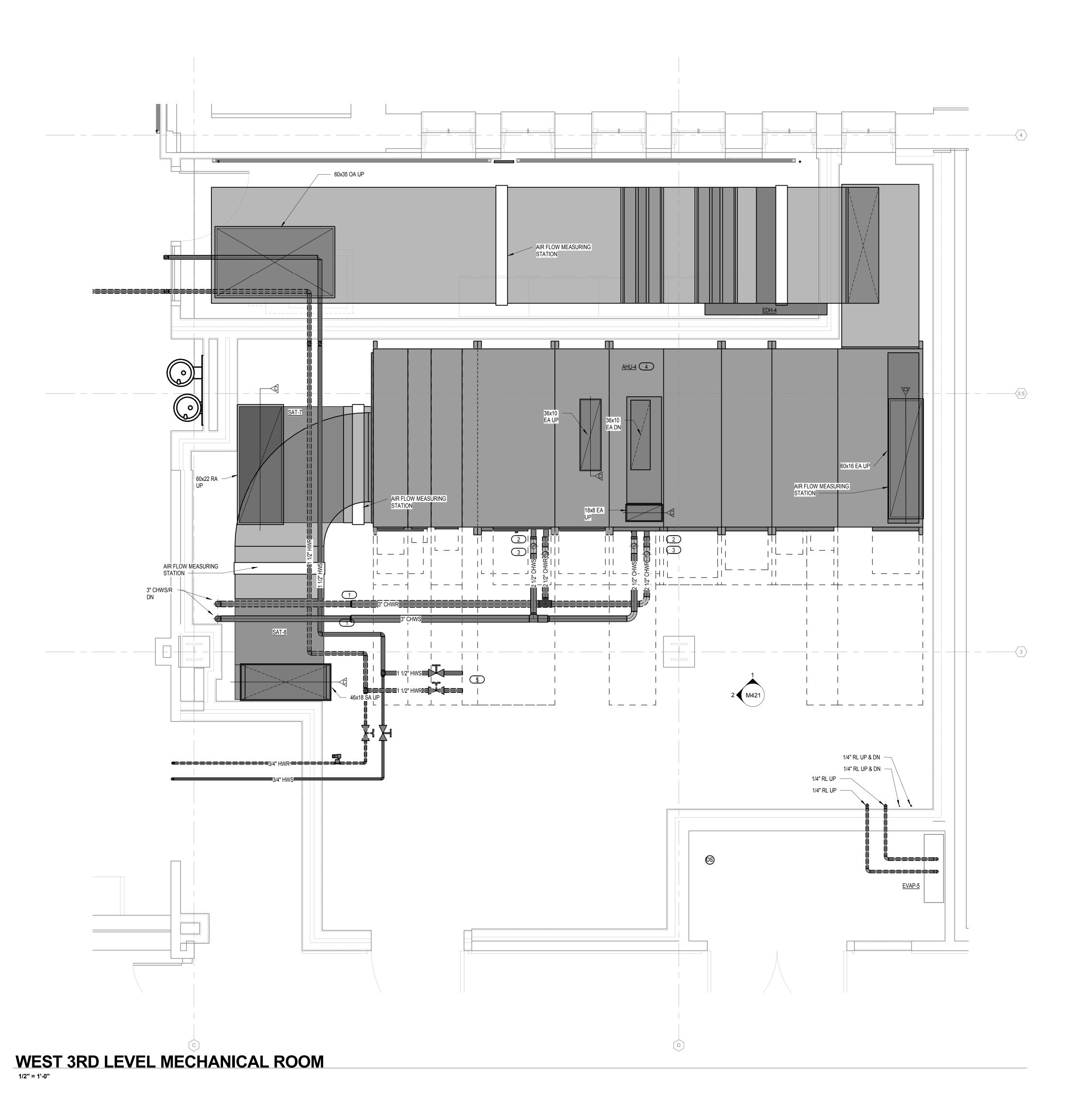
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Checker

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LEVEL THREE EAST MECHANICAL ROOM ELEVATIONS

EXHIBIT I



GENERAL NOTES

2. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE HUNG WITH SPRING

3. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE PROVIDED WITH PVC JACKET, PER SPECIFICATIONS.

4. FOR ALL EQUIPMENT, MAINTAIN ACCESS/CLEARANCE REQUIREMENTS. FOR DUCT-MOUNTED EQUIPMENT, ENSURE PULL SPACE HORIZONTAL OR VERTICAL, AS REQUIRED BY SPACE CONSTRAINTS.

KEYED NOTES

1 REFER TO DETAIL 4/M452; AUTOOMATIC AIR VENT ASSEMBLY.

2 REFER TO DETAIL 6/M450; 2-WAY AHU COOLING COIL. 3 REFER TO DETAIL 4/M450; NEGATIVE PRESSURE CONDENSATE

FINAL CONNECTION TO AHU SHALL MATCH AHU OPENING DIMENSIONS OR CONTRACTOR SHALL PROVIDE BLANK-OFF DUCT CONNECTIONS, INSULATED.

5 HWS/HWR VALVED AND CAPPED FOR FUTURE USE.

1. ALL DUCTWORK IN THIS VIEW SHALL BE HUNG WITH SPRING HANGERS.

Civil Engineering and Landscape Architects

Ken Saiki Design, Inc 303 South Paterson St Madison, WI 53703 608.251.3600 tel

MSR 710 South 2nd Street, 8th Floor Minneapolis, Minnesota 55401–2282

Architecture 612 375 0336 tel

Interiors and 612 342 2216 fax Urban Design www.msrdesign.com

Structural Engineering, Technology, AV

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MEP Engineers **MEP Associates** 860 Blue Gentian Road, Suite 175 Eagan, MN 55121 651.379.9120 tel

Lighting Designer

Gallina Design 30232 County 7 Chatfield, MN 55923 507.867.1628 tel

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KRA

4826 Chicago Avenue South, Suite 206 Minneapolis, MN 55417 612.374.3800 tel

Civil Engineers VIERBICHER 999 Fourier Drive, Suite 201

Acoustical Consultant

Madison Municipal Building Renovatior

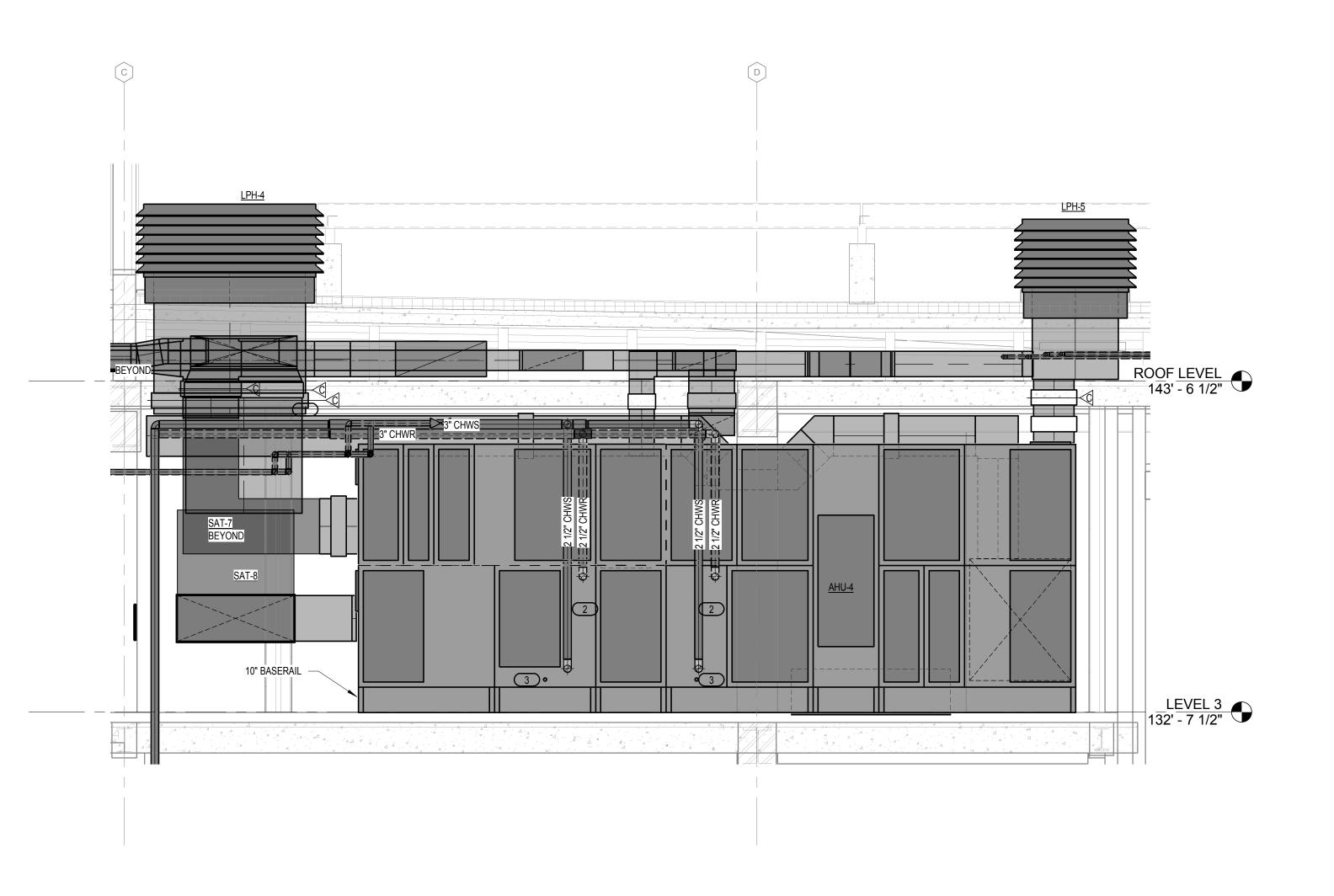
I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Engineer under the Laws of the State of Wisconsin. ENGINEER SEAL

BID SET

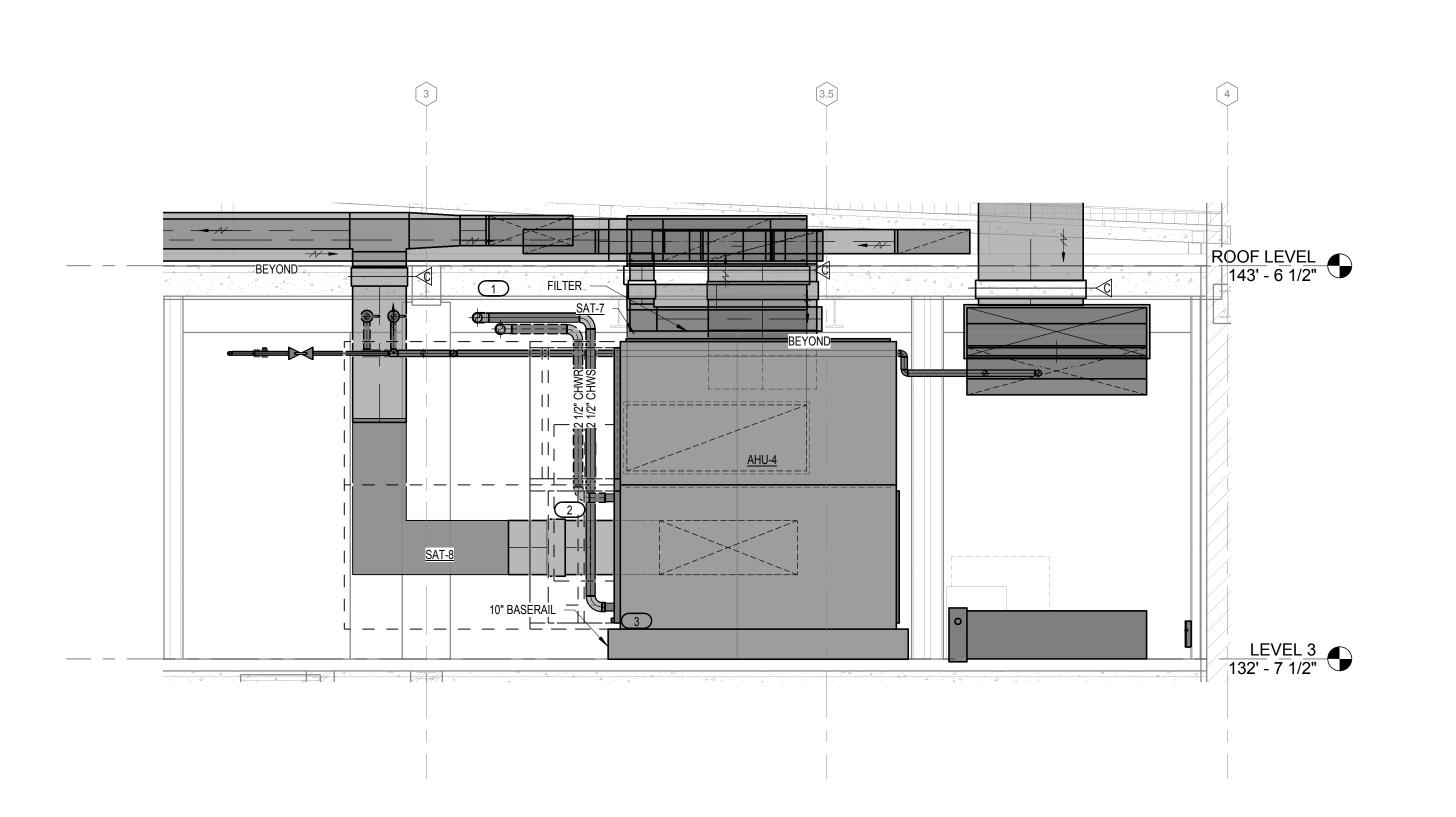
DRAWN BY: CHECKED BY:
ALH/BTB/JTG Checker ENLARGED LEVEL

THREE WEST MECHANICAL **ROOM PLAN**

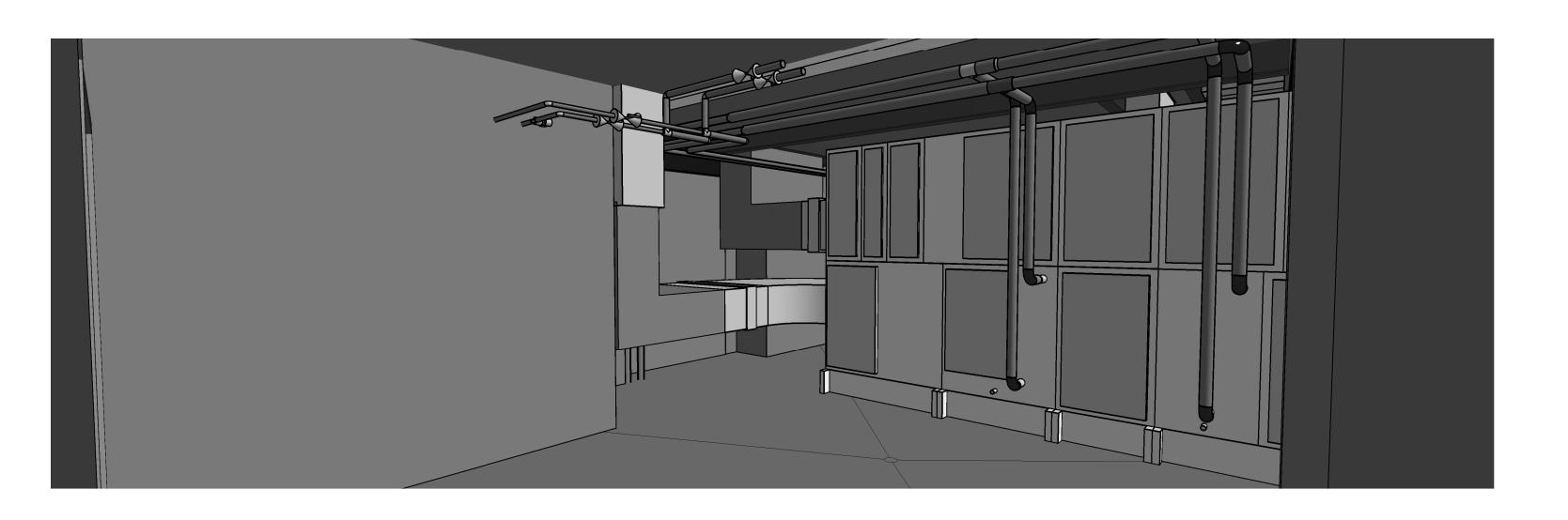
EXHIBIT I



3RD LEVEL WEST MECHANICAL ROOM - NORTH



2 3RD LEVEL WEST MECHANICAL ROOM - WEST
3/8" = 1'-0"



3 3RD LEVEL WEST MECHANICAL ROOM NORTH-WEST CORNER

GENERAL NOTES

1. ALL DUCTWORK IN THIS VIEW SHALL BE HUNG WITH SPRING HANGERS. 2. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE HUNG WITH SPRING

3. ALL HYDRONIC PIPING IN THIS VIEW SHALL BE PROVIDED WITH PVC JACKET, PER SPECIFICATIONS.

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2 REFER TO DETAIL 6/M450; 2-WAY AHU COOLING COIL.

3 REFER TO DETAIL 4/M450; NEGATIVE PRESSURE CONDENSATE

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VIERBICHER 999 Fourier Drive, Suite 201

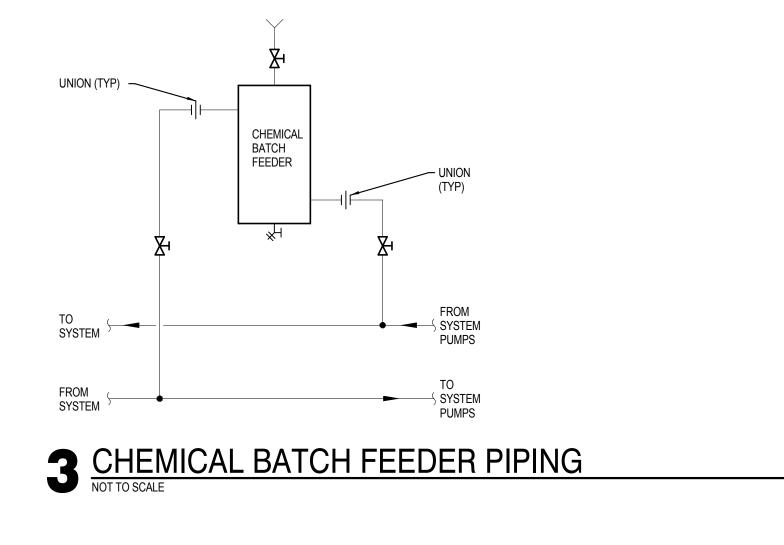
on Municipal y Renovation Madison Building F

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DRAWN BY: CHECKED BY: Checker

LEVEL THREE WEST MECHANICAL **ROOM ELEVATIONS**

EXHIBIT I



— MANUAL AIR VENT

PRESSURE GUAGE —

WATER FLOW IS COUNTER TO AIR FLOW, OFFSET PIPING FOR SERVICE. TYPICAL ALL HEATING AND COOLING COILS EXCEPT AS NOTED.

ALL VALVES AND CONTROL DEVICES TO BE FULL PORT UNLESS APPROVED BY

2. FOR 3-WAY VALVES, PROVIDE BALANCE VALVES IN BYPASS.

6 2-WAY AHU COOLING COIL DETAIL
NOT TO SCALE

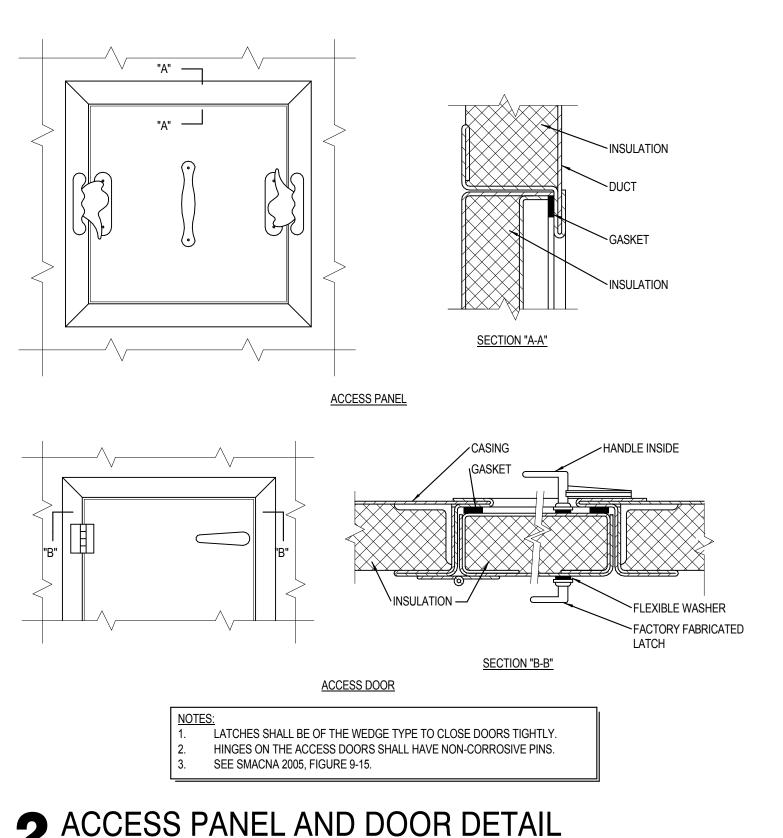
4. IF NO VENT PORT ON COIL, ADD ONE IN PIPE.

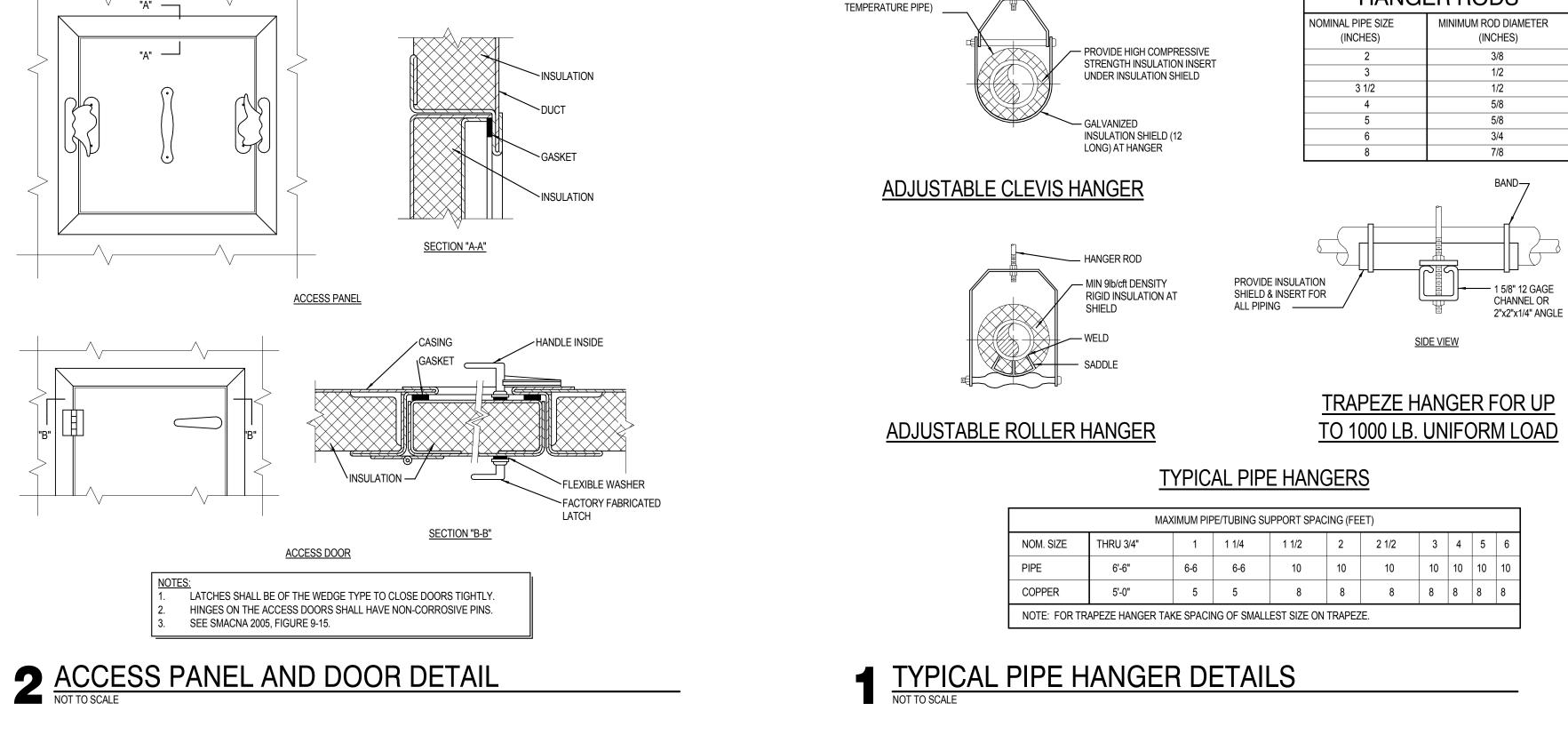
DRAIN VALVE W/ HOSE-END DRAIN

CAP AND CHAIN

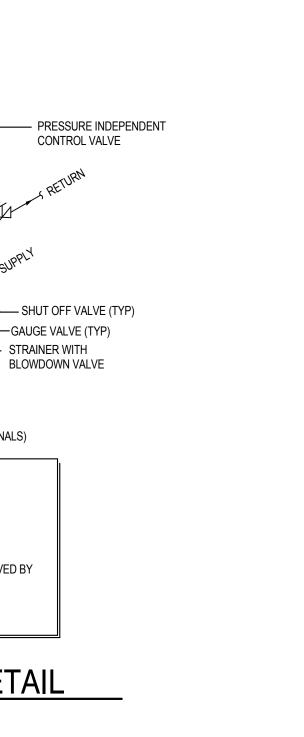
FITTING W/ SCREWED

ENGINEER.





INSULATION (VAPOR BARRIER TYPE IS REQUIRED FOR LOW

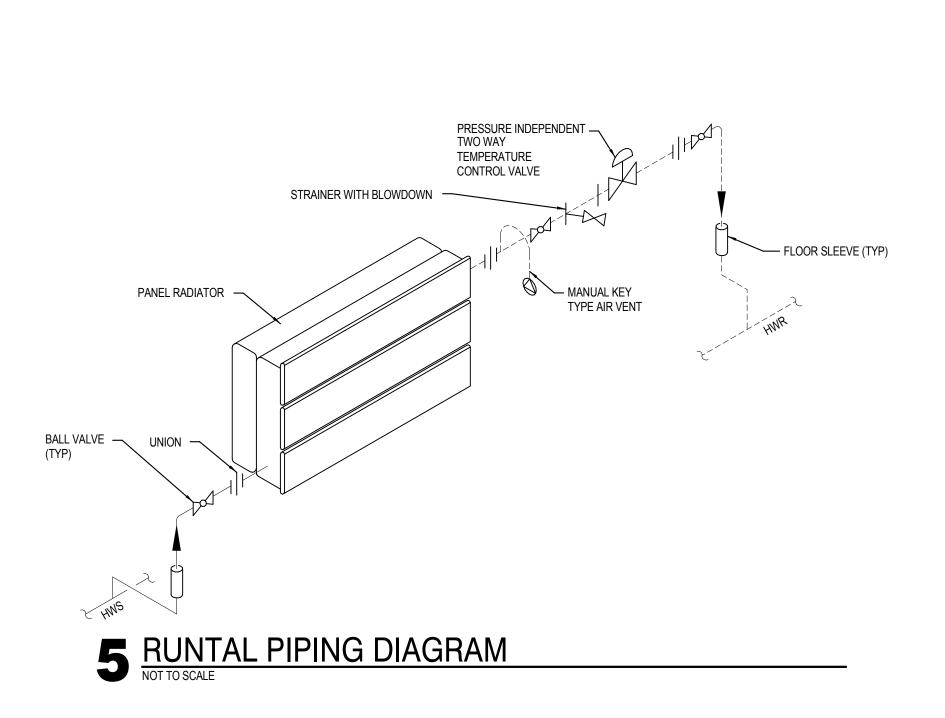


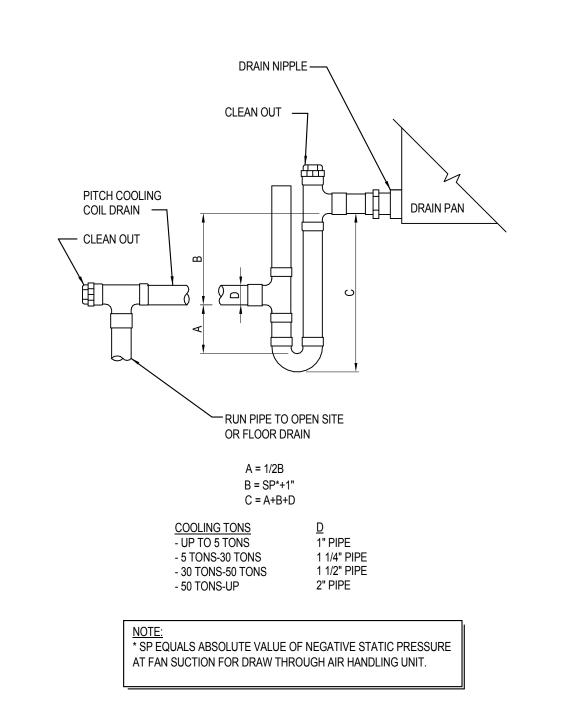
STRAINER WITH

-FLEXIBLE CONNECTION

(NOT REQ'D ON AIR TERMINALS)

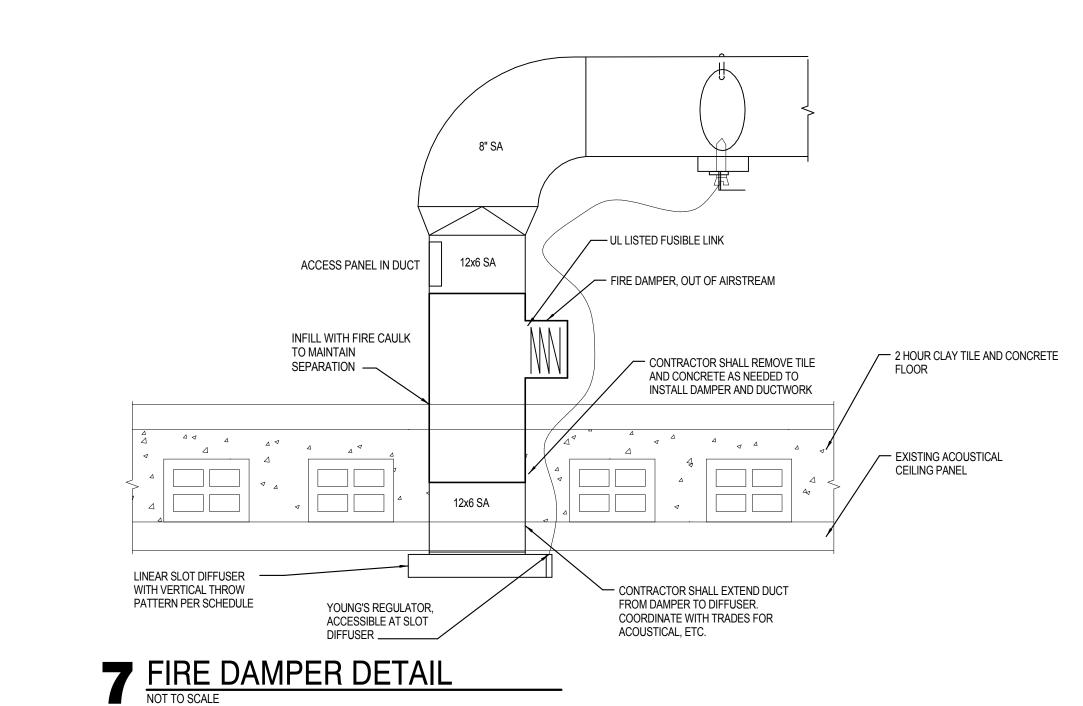
PER SPECIFICATIONS

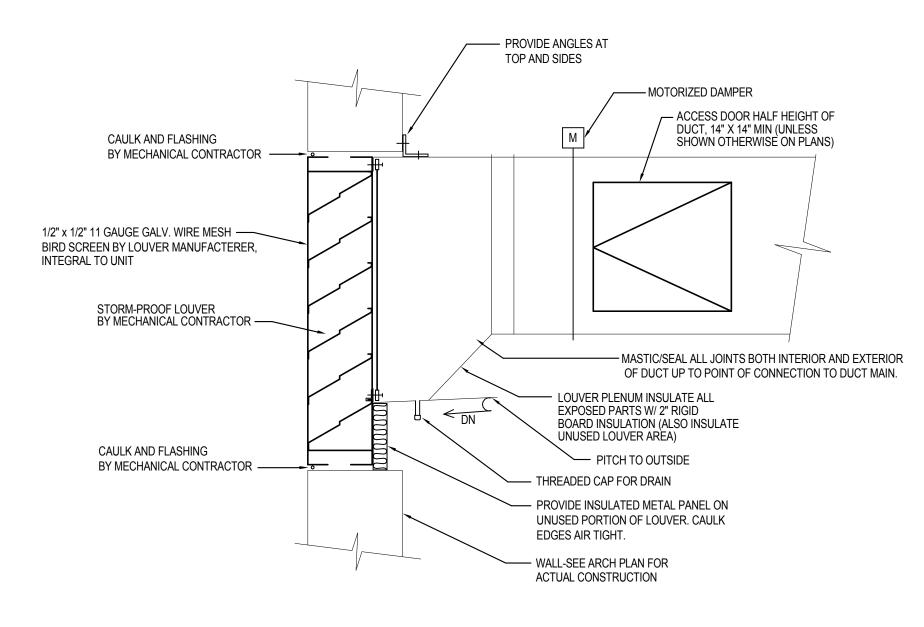




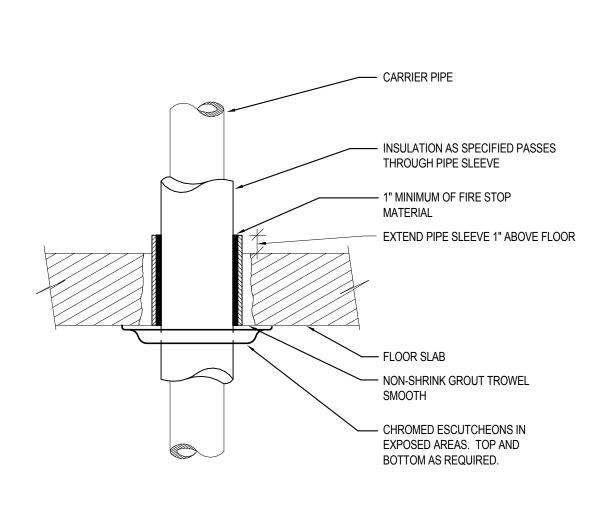
HANGER RODS







9 DUCT CONNECTION TO LOUVER
NOT TO SCALE



8 PIPE FLOOR SLAB PENETRATION DETAIL
NOT TO SCALE

EXHIBIT I M450

2014057

BID SET

MECHANICAL

DETAILS

CHECKED BY:

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Acoustical Consultant

612.374.3800 tel

Civil Engineers

Municipal

Madisor Building

Print Names:

PROJECT NO.

PROJECT PHASE

ALH/BTB/JTG

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VIERBICHER

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Charles Quagliana, AIA

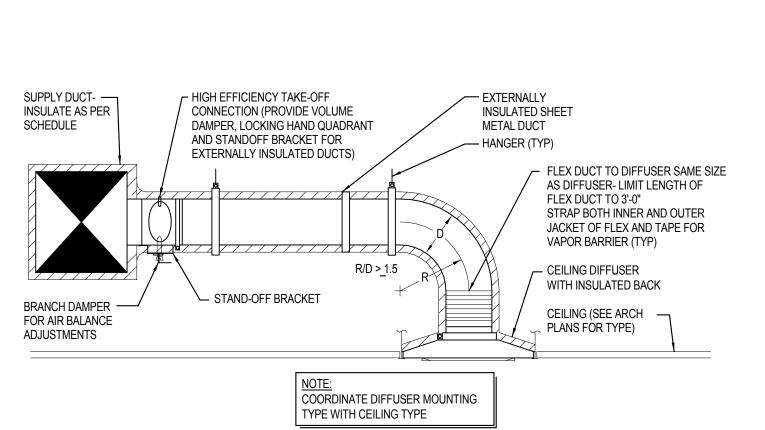
Insite Consulting Architects

Summit Fire Consulting

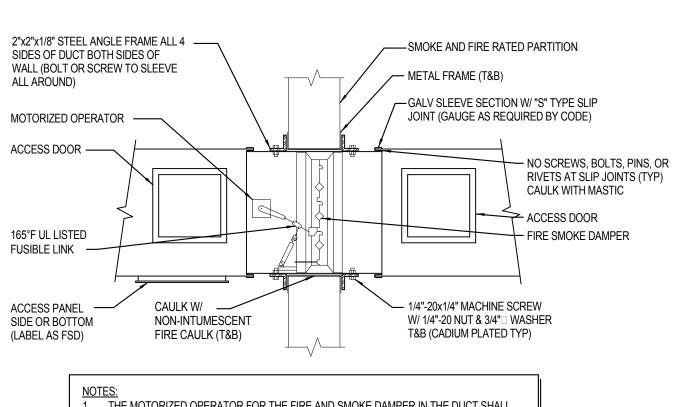
4826 Chicago Avenue South, Suite 206 Minneapolis, MN 55417

Gallina Design

Minneapolis, Minnesota 55401–2282



3 CEILING DIFFUSER DETAIL
NOT TO SCALE



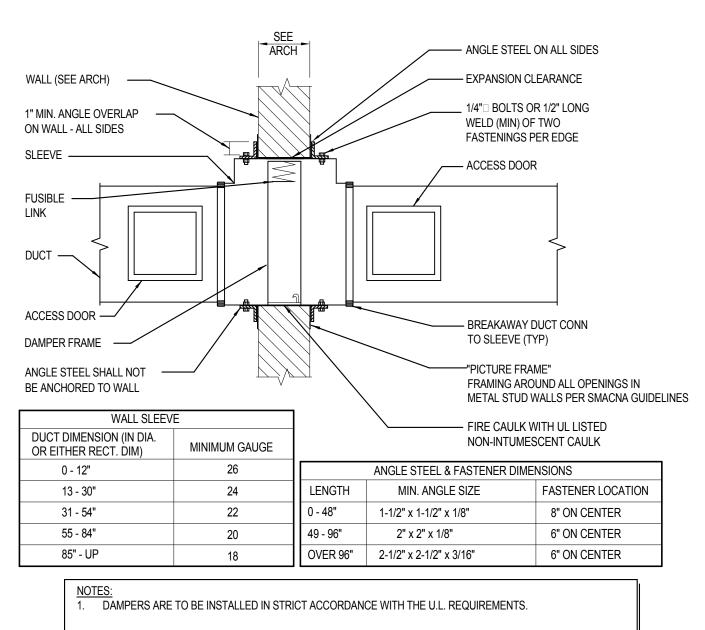
THE MOTORIZED OPERATOR FOR THE FIRE AND SMOKE DAMPER IN THE DUCT SHALL BE CONNECTED TO THE SAME BRANCH AS ITS RESPECTIVE FAN. . SMOKE DAMPER INSTALLATION IS SIMILAR BUT WITHOUT 165°F FUSIBLE LINK. WALL OPENINGS TO BE DUCT DIMENSIONS PLUS 5/8". ALL SMOKE DAMPERS AND THEIR RESPECTIVE DAMPER OPERATOR MECHANISMS SHALL BE UL LABELED AND TESTED AS AN ASSEMBLY WITH THE DAMPER OPERATOR MECHANISM FASTENED TO THE DAMPER SLEEVE. DAMPERS SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S INSTALLATION REQUIREMENTS. (SUBMIT WITH SHOP DRAWINGS) PRODUCT TO MEET REQUIREMENTS SET IN UL LISTINGS 555 AND 555S. HORIZONTAL AND VERTICAL INSTALLATION. AFTER A MINIMUM OF 24 HOURS OF BEING ENERGIZED, TEST DAMPER IN PRESENCE OF OWNER AND FIRE MARSHALL IF REQUIRED. RECORD RESULTS FOR SUBMITTAL TO

MAXIMIZE ACCESS PANEL SIZE. VERTICAL DIMENSION NO LESS THAN DUCT HEIGHT

MINUS 2". HORIZONTAL DIMENSION NO LESS THAN 12" WHERE POSSIBLE.

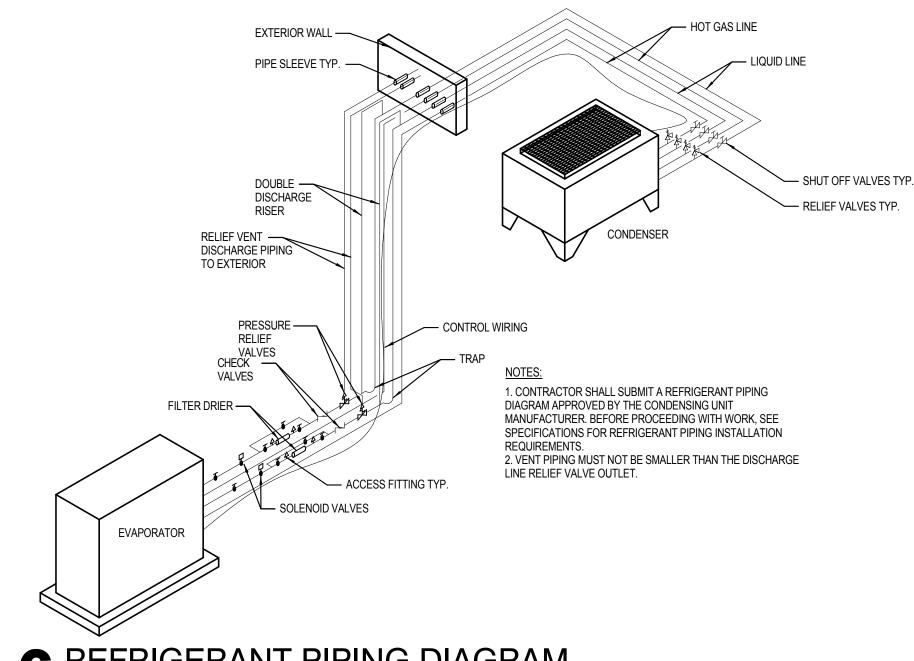
2 COMBINATION FIRE SMOKE DAMPER DETAIL

NOT TO SCALE

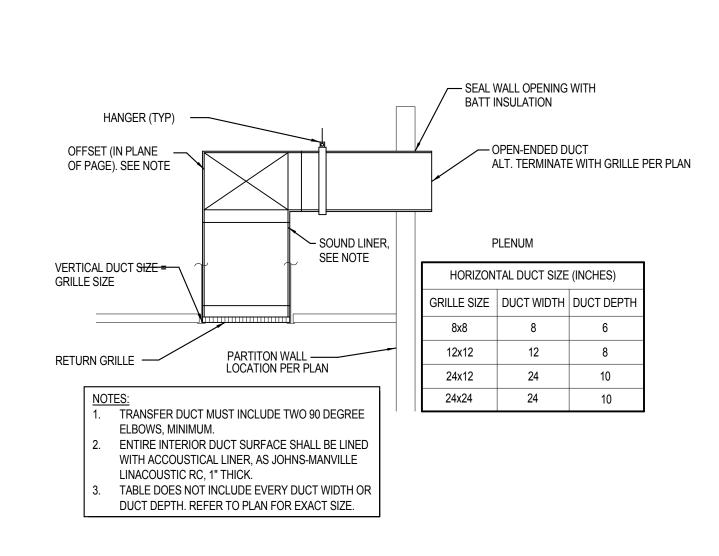


- VERTICAL DAMPER SHOWN HORIZONTAL INSTALLATION SIMILAR EXCEPT WITH SPRING LOADED DAMPER.
- PRODUCT TO MEET REQUIREMENTS SET IN ULLISTING 555. ALL DAMPERS TO BE DYNAMIC TESTED.
- DAMPERS SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S INSTALLATION REQUIREMENTS.
- STEEL ANGLES AROUND DAMPER SHALL OVERLAP "PICTURE FRAME" IN WALL STUDS BY A MINIMUM OF 1".
- CONTRACTOR TO TEST DAMPERS IN PLACE AND RECORD RESULTS FOR SUBMITTAL TO ENGINEER.
- MAXIMIZE ACCESS PANEL SIZE. VERTICAL DIMENSION NO LESS THAN DUCT HEIGHT MINUS 2". HORIZONTAL DIMENSION NO LESS THAN 12" WHERE POSSIBLE.

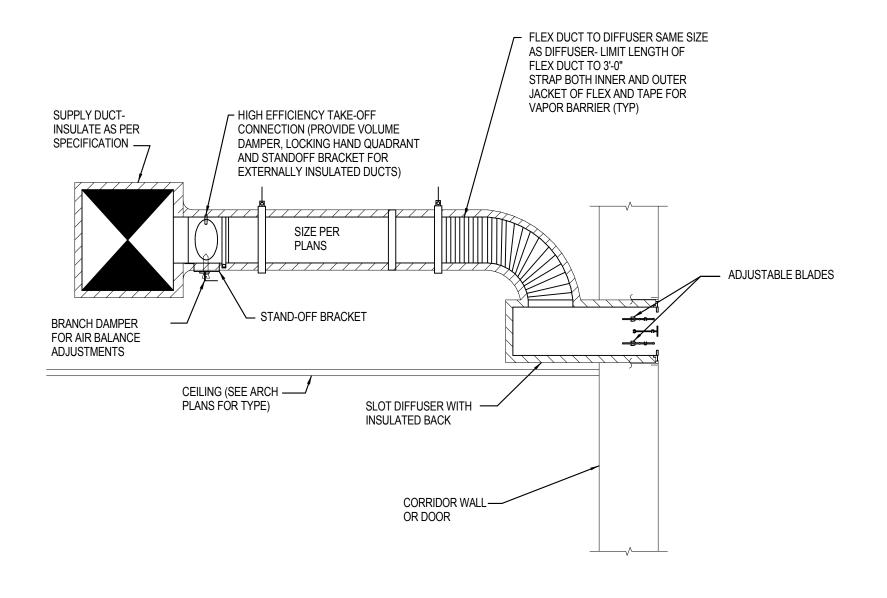
1 TYPE-B FIRE DAMPER DETAIL (VERTICAL)
NOT TO SCALE



6 REFRIGERANT PIPING DIAGRAM
NOT TO SCALE

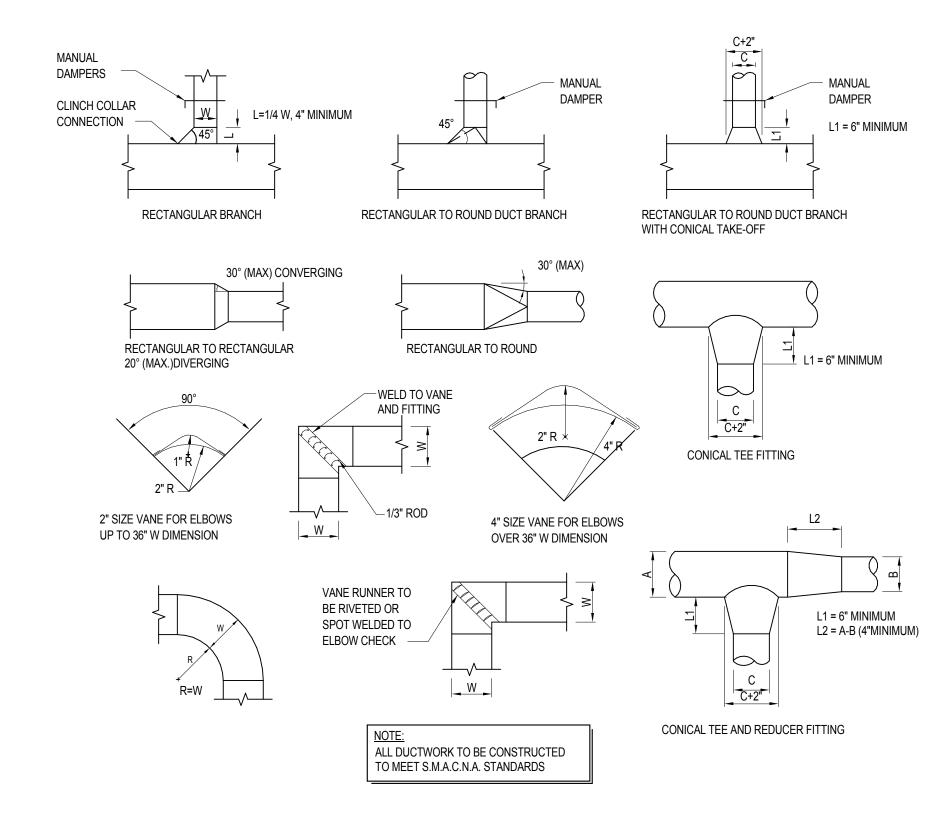


5 RETURN/TRANSFER GRILLE DETAIL



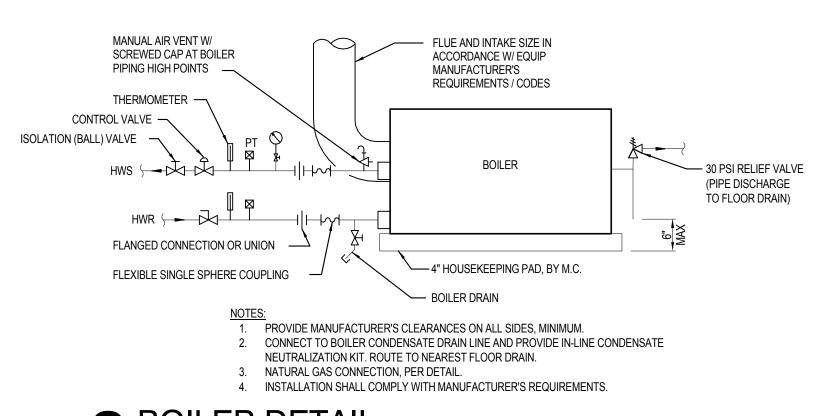
4 SLOT DIFFUSER DETAIL

NOT TO SCALE

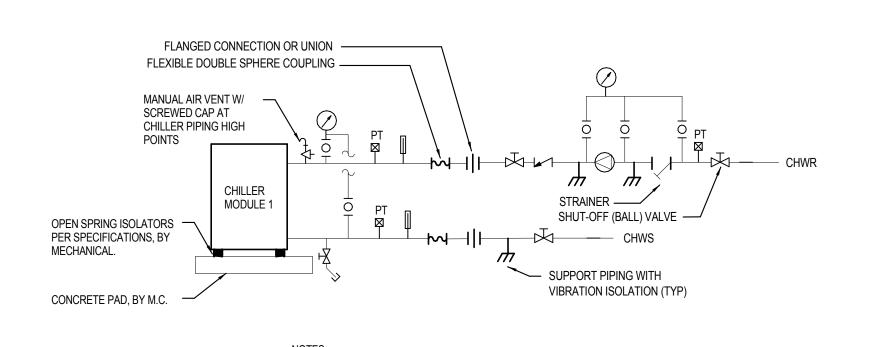


9 TYPICAL DUCTWORK DETAILS

NOT TO SCALE



8 BOILER DETAIL
NOT TO SCALE



1. PROVIDE MANUFACTURER'S CLEARANCES ON ALL SIDES, MINIMUM. 2. INSTALLATION SHALL COMPLY WITH MANUFACTURER'S REQUIREMENTS.

7 MODULAR SPLIT AIR COOLED CHILLER
NOT TO SCALE

30232 County 7 Chatfield, MN 55923 507.867.1628 tel Preservation Architect Charles Quagliana, AIA 5641 Willoughby Rd Mazomanie, WI 53560 608.449.9589 tel Building Envelope Consultant Insite Consulting Architects 115 E. Main Street, Suite 200 Madison, WI 53703 608.204.0825 tel Fire & Code Sonsultant Summit Fire Consulting 575 Minnehaha Ave, W. St. Paul, MN 55103 651.251.1879 tel Acoustical Consultant KRA 4826 Chicago Avenue South, Suite 206 Minneapolis, MN 55417 612.374.3800 tel Civil Engineers VIERBICHER 999 Fourier Drive, Suite 201 Madison WI 53717	Chatfield, MN 55923 507.867.1628 tel Preservation Architect Charles Quagliana, AIA 5641 Willoughby Rd Mazomanie, WI 53560 608.449.9589 tel Building Envelope Consultant Insite Consulting Architects 115 E. Main Street, Suite 200 Madison, WI 53703 608.204.0825 tel Fire & Code Sonsultant Summit Fire Consulting 575 Minnehaha Ave. W. St. Paul, MN 55103 651.251.1879 tel Acoustical Consultant KRA 4826 Chicago Avenue South, Suite 206 Minneapolis, MN 55417 612.374.3800 tel Civil Engineers VIERBICHER 999 Fourier Drive, Suite 201 Madison
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Minneapolis, Minnesota 55401–2282

Print Names: PROJECT NO. 2014057 PROJECT PHASE **BID SET** CHECKED BY: RCA ALH/BTB/JTG

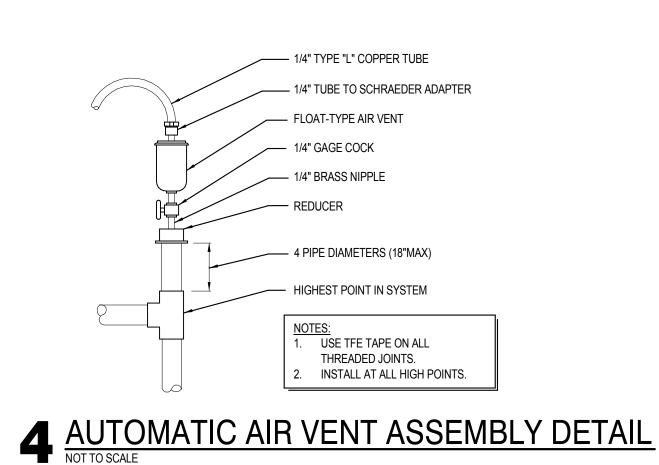
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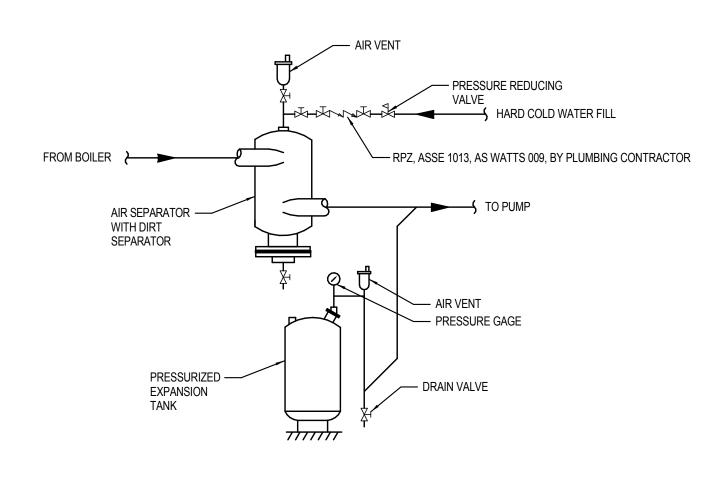
Engineer under the Laws of the State of Wisconsin.

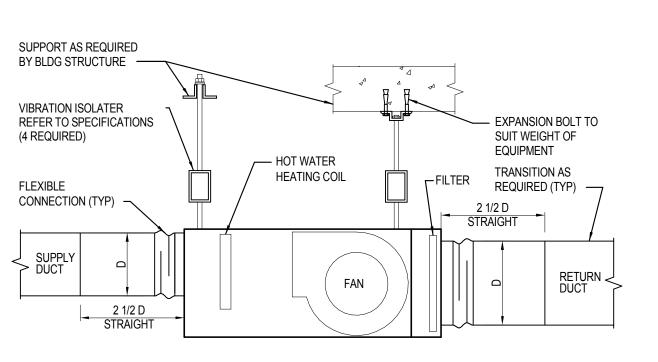
ENGINEER SEAL

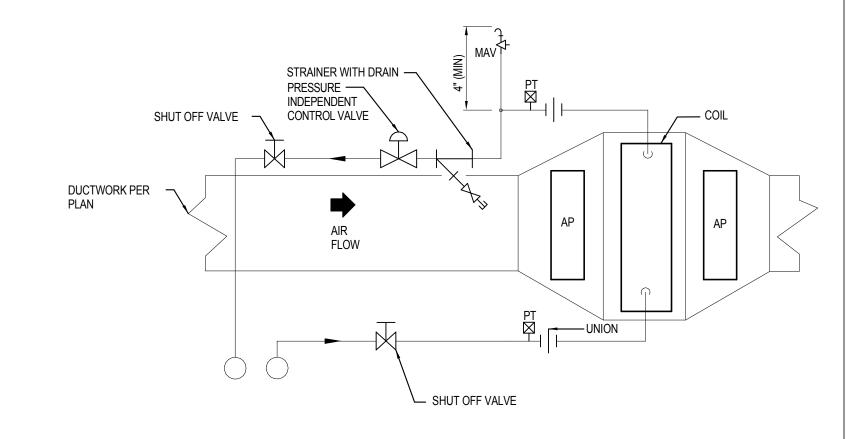
MECHANICAL DETAILS

EXHIBIT I









IF COILS ARE MULTI-ROW, PIPE COUNTER FLOW OF AIR.
 ALL VALVES AND CONTROL DEVICES TO BE FULL PORT UNLESS APPROVED BY ENGINEER.

3 EXPANSION TANK/AIR SEPARATOR ASSEMBLY NOT TO SCALE

STREET ELBOWS

7/8"—

45 DEGREE

STREET ELBOWS

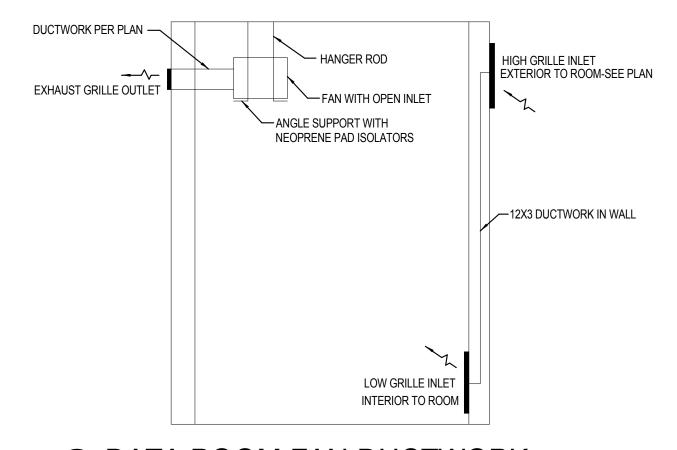
7 REFRIGERANT DOUBLE DISCHARGE RISER

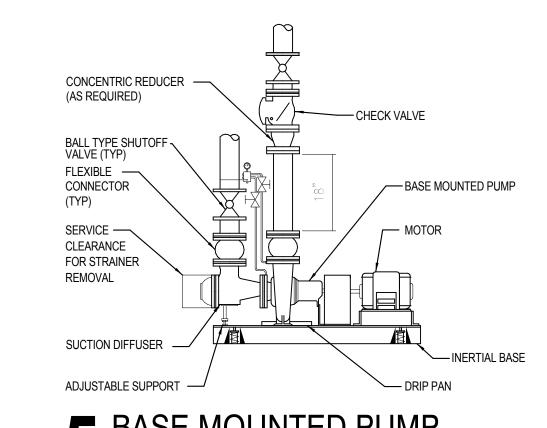
REDUCING TEE —

FROM CHILLER

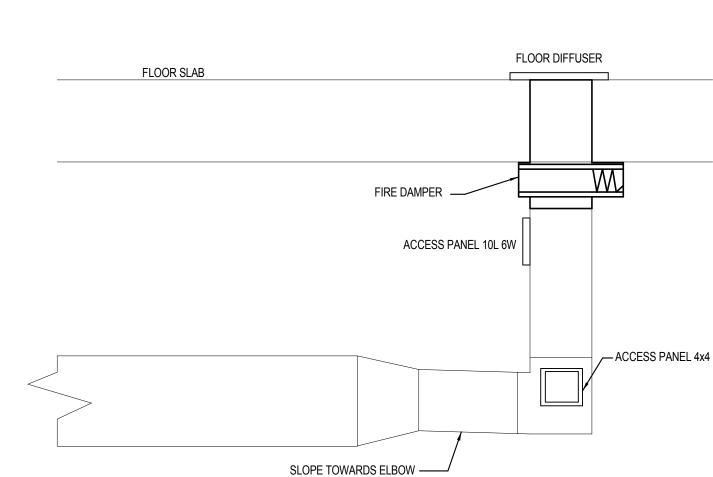
2 FAN COIL UNIT MOUNTING DETAIL - BLOW THRU
NOT TO SCALE

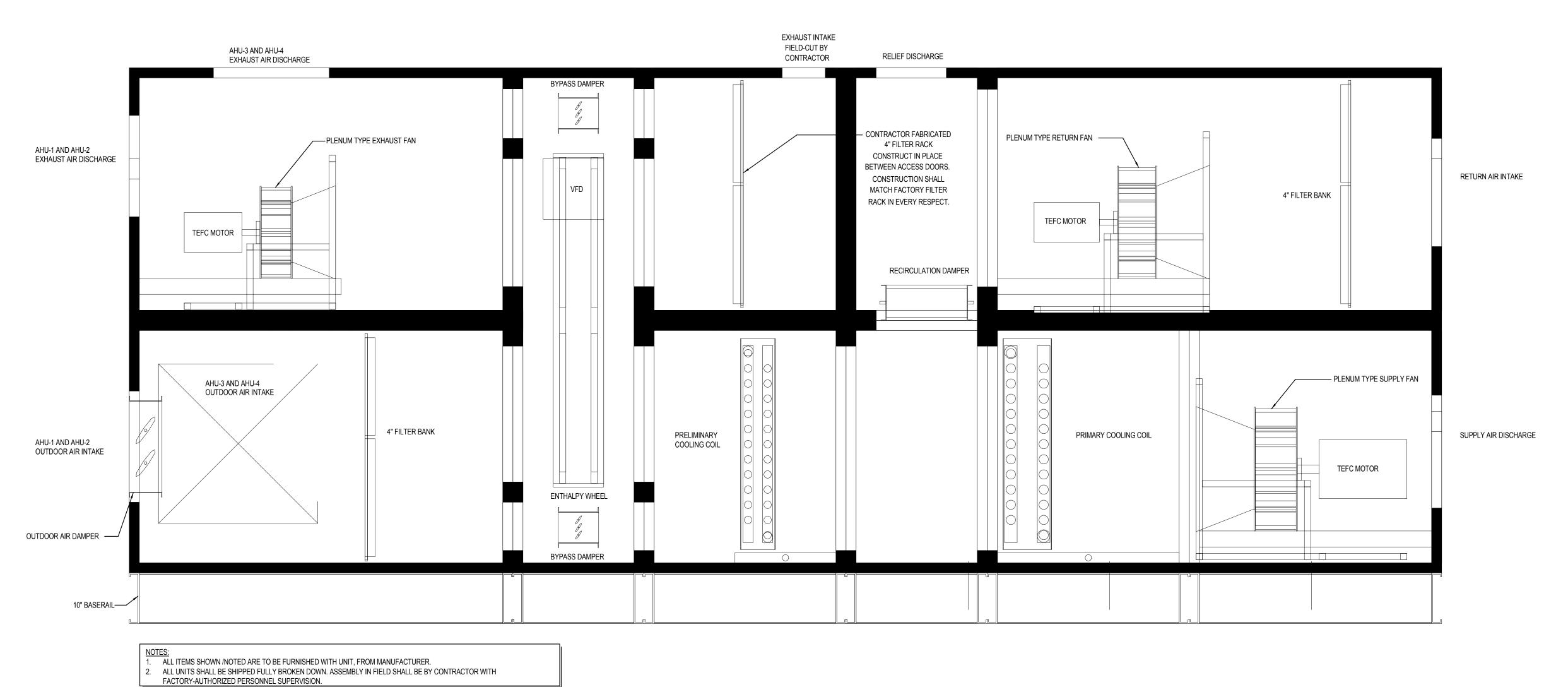
1 HOT WATER REHEAT COIL DETAIL (2-WAY)
NOT TO SCALE





6 DATA ROOM FAN DUCTWORK
NOT TO SCALE





8 AIR HANDLING UNITS 1, 2, 3, 4 SECTION/GENERAL ARRANGEMENT

9 FLOOR DIFFUSER INSTALLATION
NOT TO SCALE

MECHANICAL DETAILS

2014057

BID SET

DRAWN BY: CHECKED BY: ALH/BTB/JTG RCA

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Civil Engineers

Madison WI 53717

Municipal Renovation

Madison Building

ENGINEER SEAL

Print Names:

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#7939 ing, Jr 3703

VIERBICHER

999 Fourier Drive, Suite 201

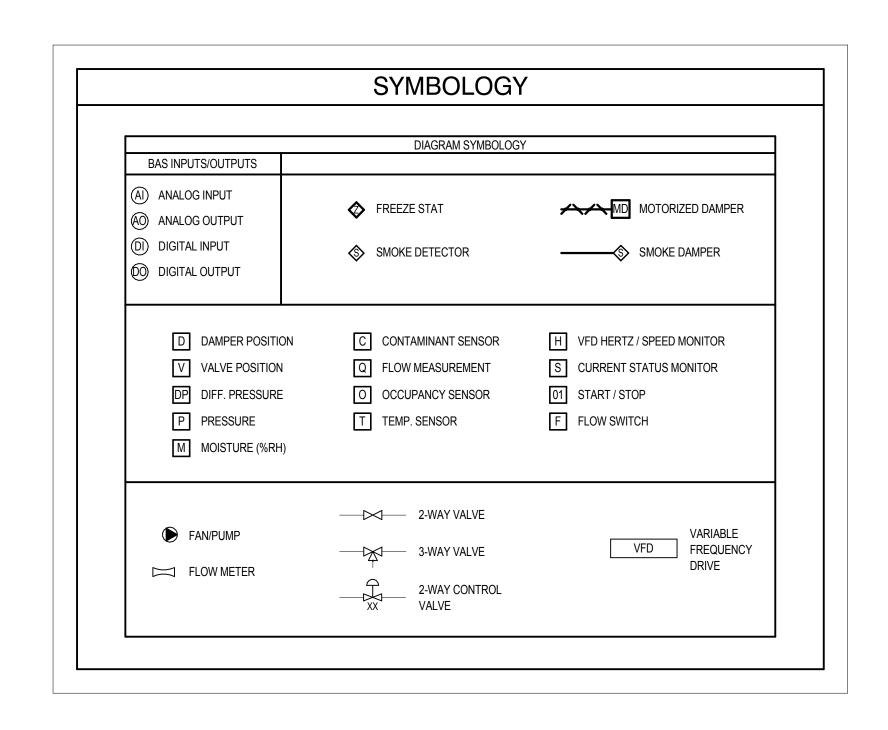
KRA

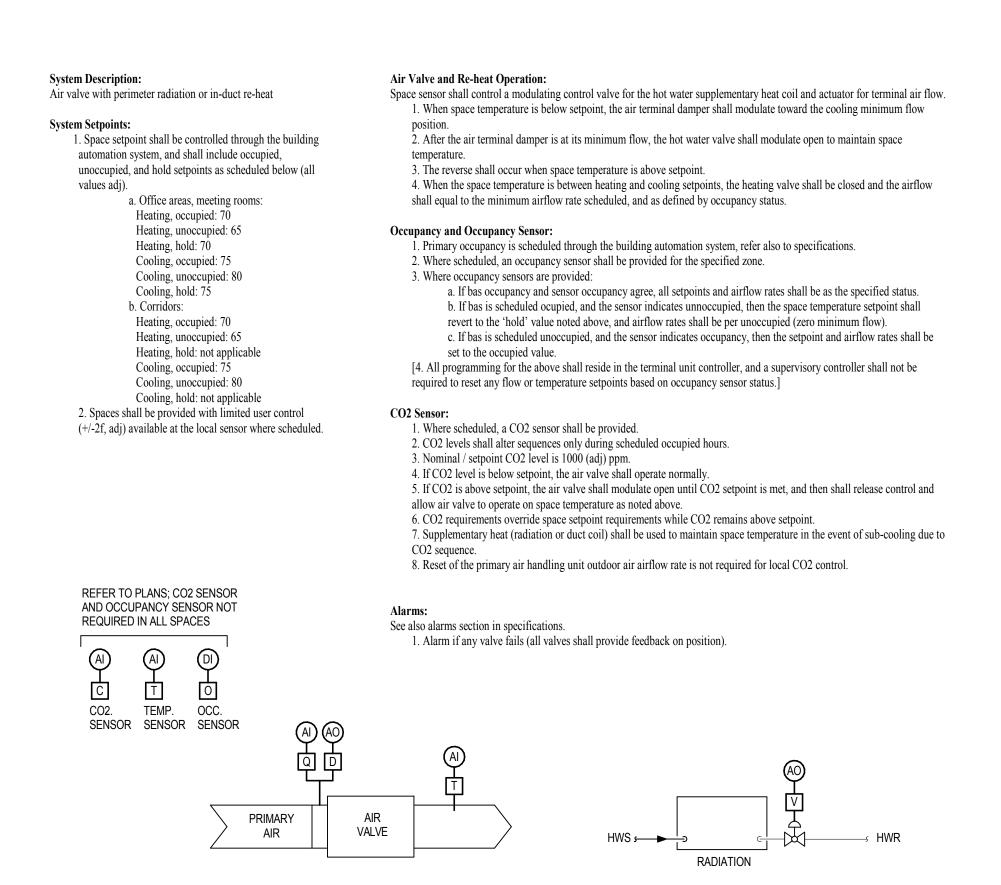
Charles Quagliana, AIA

Insite Consulting Architects

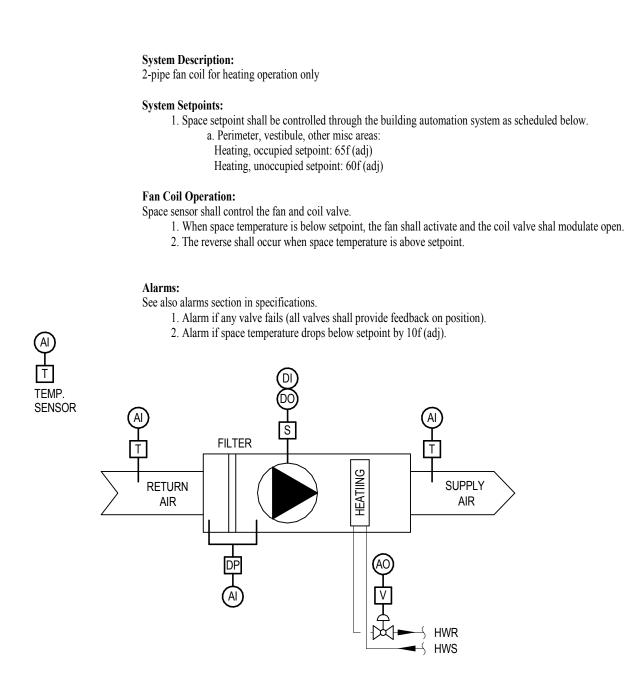
Summit Fire Consulting

4826 Chicago Avenue South, Suite 206 Minneapolis, MN 55417

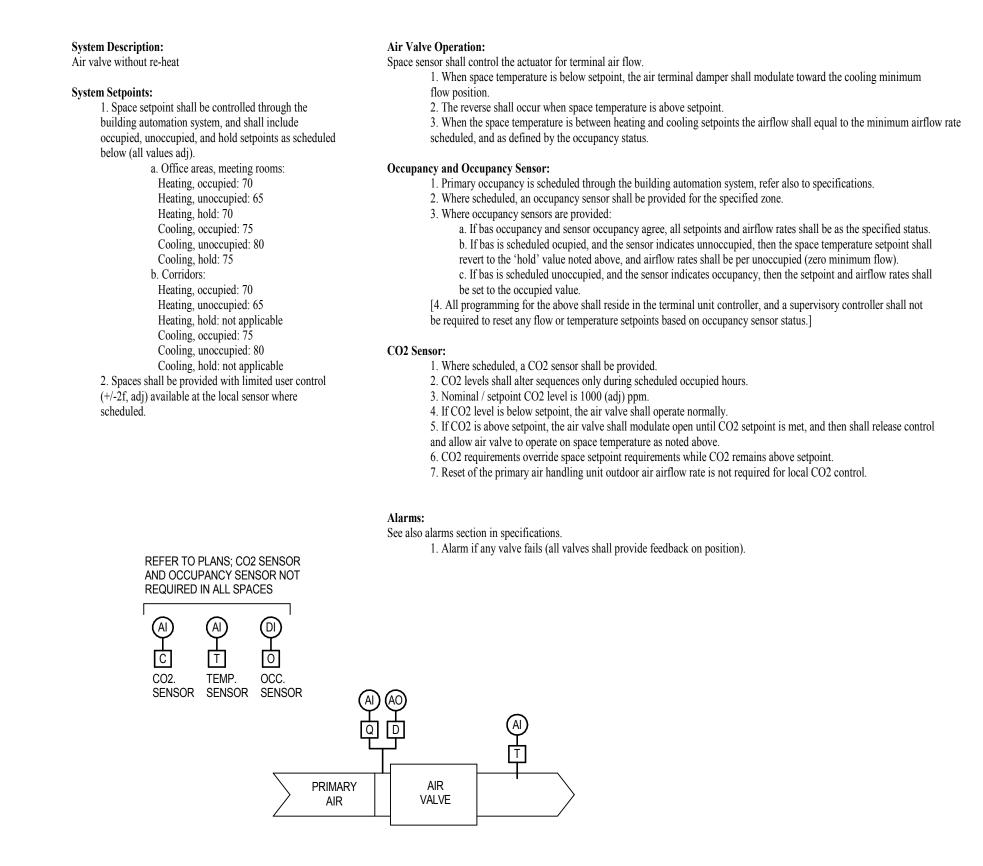




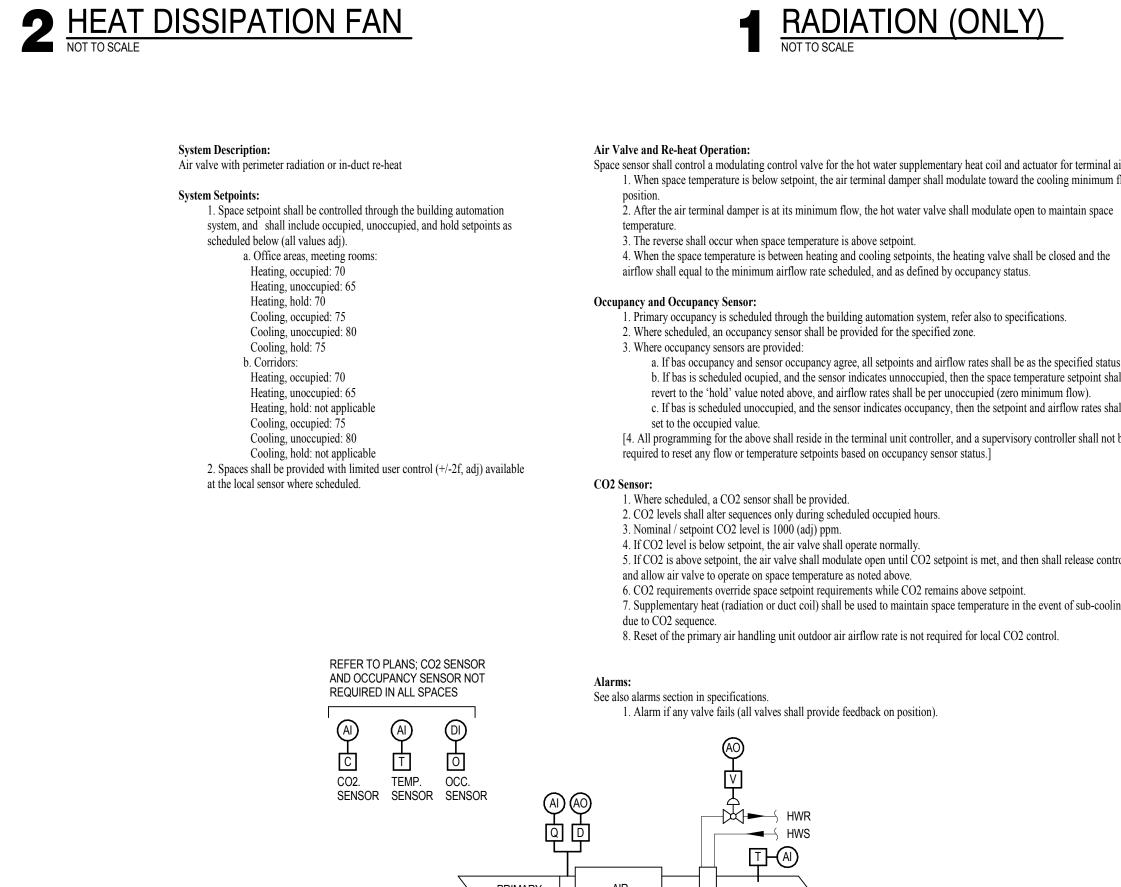
6 VAV WITH SUPPLEMENTARY HEAT CONTROL DIAGRAM
NOT TO SCALE



3 TWO-PIPE HEATING FAN COIL UNIT CONTROL DIAGRAM



5 VAV CONTROL DIAGRAM - NO HEATING



System Description:

Fan Operation:

Transfer fan for heat dissipation

Space sensor shall control the fan.

See also alarms section in specifications.

TEMP.

SENSOR

ROOM

1. Space setpoint shall be controlled through the building automation system as scheduled below.

OUT TO ADJACENT

a. Electrical, it, and av rooms with internal heat gain:

Cooling, occupied setpoint: 85f (adj)

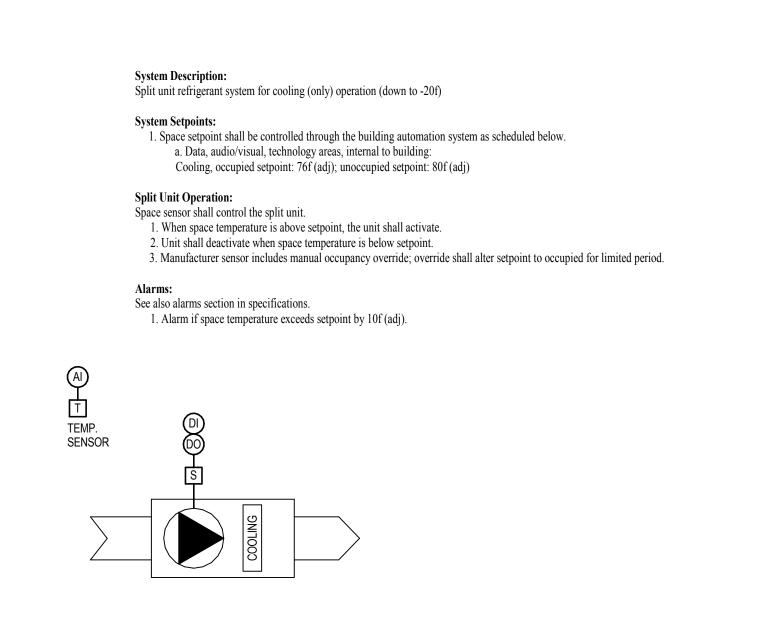
Cooling, unoccupied setpoint: 85f (adj)

1. When space temperature is above setpoint, the fan shall activate.

2. The reverse shall occur when space temperature is below setpoint.

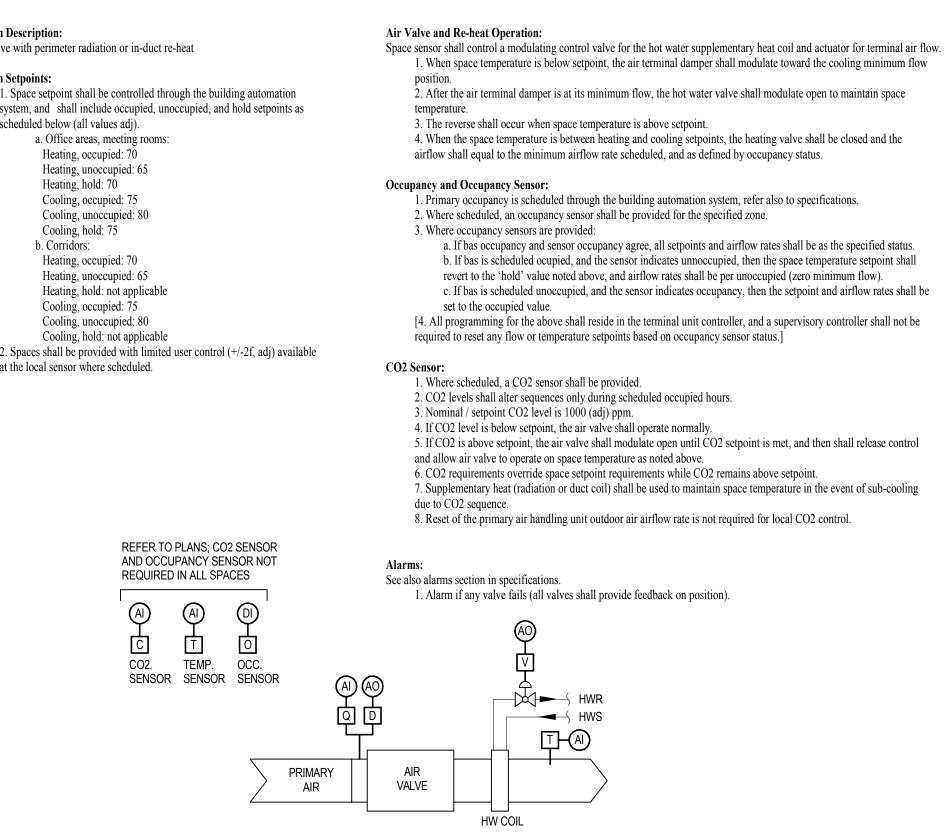
1. Alarm if space temperature exceeds setpoint by 5f (adj).

4 VAV WITH RE-HEAT CONTROL DIAGRAM NOT TO SCALE



7 SPLIT UNIT - COOLING ONLY

System Description: Heating only radiation zones **System Setpoints:** 1. Space setpoint shall be controlled through the building automation system as scheduled below. a. Entry vestibules, stairwells, and storage areas: Heating, occupied setpoint: 65f (adj) Heating, unoccupied setpoint: 60f (adj) **Radiation Operation:** Space sensor shall control the radiation. 1. When space temperature is below setpoint, the radiation valve shall modulate open. 2. The reverse shall occur when space temperature is above setpoint. See also alarms section in specifications. 1. Alarm if space temperature is 10f (adj) or more below setpoint. SENSOR



Madison Building I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Engineer under the Laws of the State of Wisconsin.

ENGINEER SEAL

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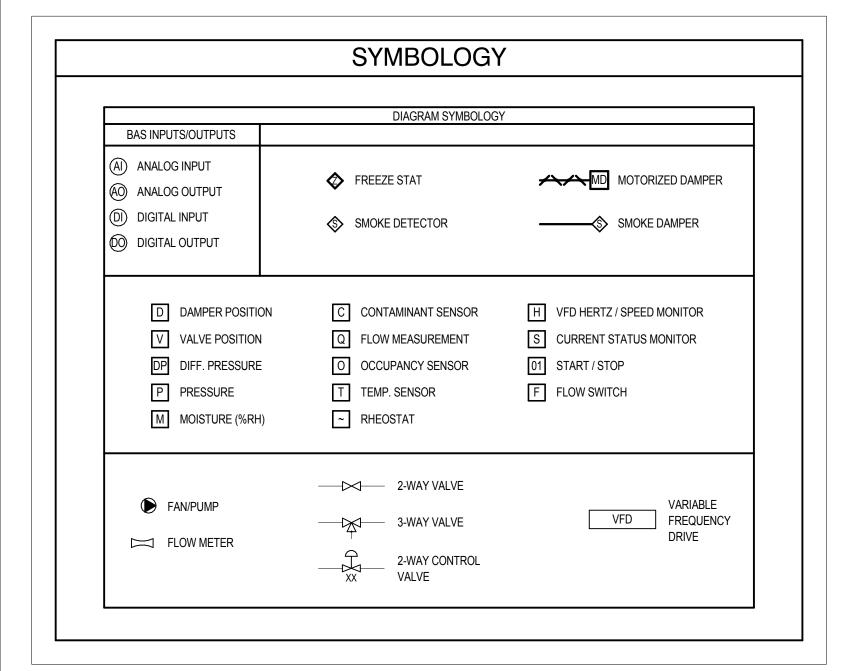
Gallina Design

Print Names: License No:

2014057 **BID SET** DRAWN BY: CHECKED BY:
ALH/BTB/JTG RCA

> **MECHANICAL** CONTROL **DIAGRAMS**

EXHIBIT I



Modular variable air volume air handler with enthalpy wheel, supply fan, exhaust fan, return fan, and two cooling coils.

Air handler shall be scheduled through the BAS and shall operate under either occupied or unoccupied modes.

2. The following sequences apply to occupied mode unless specifically noted otherwise.

Occupied / Unoccupied Modes: 1. During unoccupied mode:

- a. Unit shall be off (all dampers and valves shall be closed, all fans and the enthalpy wheel shall be off) unless 3 (adj) or more zones exceed their setpoint. Then unit shall enter unoccupied cooling mode. For purposes of this sequence, only zones receiving airflow from the air handler shall be considered; no zones with dedicated cooling systems, heat only systems, or pass-through air only, shall be counted. b. In unoccupied cooling mode, if conditions do not allow for economizer operation, the recirculation damper shall open and all other dampers shall remain closed. The exhaust fan shall be off. The supply fan and primary cooling coil shall all operate as specified for occupied mode. The return fan shall operate to maintain a flow rate equal to the supply fan. All air valves shall be commanded to a minimum of 5% (adj) airflow, in order to ensure sufficient airflow in the system for proper fan operation.
- c. In unoccupied cooling mode, if conditions allow for economizer mode, the unit shall enter economizer mode, modified as follows. The exhaust fan and enthalpy wheel shall remain off, and the exhaust damper shall be closed. The return air fan shall operate to maintain a flow rate equal to the supply fan. All air valves shall be commanded to a minimum of 5% (adj) airflow, in order to ensure sufficient airflow in the system for proper fan operation.

Cooling Start-up Mode: Optimized start to allow morning cool-down

- 1. This cycle overrides the unoccupied schedule. If unit was operating in unoccupied cooling or in economizer mode at calculated start time, unit shall continue to do so.
- 2. The DDC system shall measure zone air temperatures associated with air valves and measure outdoor air temperature to determine the minimum runtime required to reach setpoint. Time shall be based on history of similar conditions. Under no circumstances shall the minimum cooling start-up mode runtime be allowed to exceed 120 (adj) minutes. 3. When the start time is reached, the unit shall operate in unoccupied cooling mode, or economizer mode if conditions allow.

4. When occupied time is reached, the unit shall switch to occupied mode.

Supply Fan: Fan operates to maintain duct static, with reset.

- 1. Fan shall modulate speed to maintain 1.3" w.c. (adj) at the duct static pressure sensor. Final nominal setpoint shall be confirmed and set by the balancing contractor. 2. Static pressure setpoint shall be reset using a trim and response logic, within the bounds of 0.7" w.c. (adj) and 1.7" w.c. (adj). Final maximum and minimum setpoints shall be confirmed and set by the balancing
- contractor based on a worst-case test (i.e. To satisfy worst case zone when all air valves at minimum and at maximum design condition). 3. Trim and response is as follows:
- a. Poll all air valves. Bas shall allow for any zone to be removed from poll or added to poll through interface of air valve page. b. A zone pressure request is generated when an air valve is 95% (adj) or greater than maximum flow. The request is eliminated at 80% (adj) or below of flow. c. Fan shall adjust speed every 10 (adj) minutes. If more than 3 (adj) zones are sending a pressure request, the setpoint shall be increased by 0.04" wc (adj). If less than 3 (adj) zones are sending a pressure
- request, the setpoint shall be decreased by 0.04" wc (adj). If 3 (adj) zones are sending a pressure request, the setpoint shall not change. d. The controls contractor shall tune the reset after the building has been occupied to eliminate instability, and shall provide a trend graph to show stability.

Fan operates to exhaust airflow equal to the outdoor airflow.

1. Fan shall modulate speed to exhaust airflow (as measured at the exhuast airflow measuring station) equal to the outdoor airflow rate (as measured at the outdoor airflow measuring station). 2. This sequence applies in occupied economizer or ocupied non-economizer operation.

3. During unoccupied operation, the exhaust fan shall be off.

Fan operates to return an airflow rate equal to supply airflow less outdoor air 1. Fan shall modulate speed to return airflow (as measured at the return airflow measuring station) equal to the supply air minus the outdoor airflow rate (as measured at the outdoor airflow measuring station).

2. This sequence applies in occupied economizer or ocupied non-economizer operation. 3. During unoccupied operation, as noted in that section above, shall operate to maintain an airflow equal to supply air.

Discharge Air Temperature Control:

Unit DAT is based on OAT, with reset. 1. Discharge air setpoint reset control shall operate within the following parameters.

- 2. If outdoor air temperature is 60f (adj) or below, minimum unit discharge temperature shall be 55f (adj); and maximum discharge air temperature shall be 65f (adj). At initial start 3. If outdoor air temperature is above 60f (adj), minimum unit discharge temperature shall be 53f (adj); and maximum discharge air temperature shall be 56f (adj).
- 4. Discharge air setpoint shall be reset as follows. a. Poll all air valves. A request for cooling is generated if the air valve is above 99% (adj) of flow and the zone remains above setpoint.
- b. Every 10 (adj) minutes, decrease the discharge air setpoint by 0.2f (adj) if there are greater than 3 (adj) cooling requests. If there are less than 3 (adj) requests, increase the discharge air setpoint by 0.2f (adj). If there are 3 (adj) requests, discharge air shall remain at current setpoint.
- 5. At system start-up, discharge air will be set to the maximum temperature allowed based on outdoor air, as noted above.

Outdoor Chilled Water Coil:

Cooling coil operats as pre-treat to primary cooling coil. 1. If outdoor air is above 70f (adj), the outdoor air cooling coil shall modulate to maintain a 55f (adj) discharge at the sensor immediately downstream (but prior to recirculation damper). 2. If outdoor air is below 70f (adj), the outdoor air cooling coil shall not activate.

Primary Chilled Water Coil:

Cooling coil is last stage to meet discharge air temperature if economizer, energy recovery, nor outdoor air cooling coil can do so. 1. If discharge air temperature is above setpoint, and economizer is disabled or is at 100%, or enthalpy wheel is at full speed, then modulate valve open to achieve discharge air setpoint.

2. If discharge air temperature is below setpoint, and the valve is open, then modulate valve closed to achieve discharge air setpoint. 3. The cooling coil shall be locked out below 50f (adj) outdoor air temperature.

Economizer Operation: Economizer is a floating dry-bulb type.

1. Economizer will be enabled when the outdoor air temperature is less than 65f (adj).

2. When enabled, the economizer shall open the by-pass dampers, and modulate the outdoor air damper concurrently and inversely to the recirculation damper to achieve the discharge air setpoint. 3. Economizer mode damper operations shall not allow outdoor air to drop below minimum outdoor air airflow rates scheduled. 4. The lower limit for discharge air temperature during economizer mode is 50f (adj).

Enthalpy Wheel Operation:

Variable speed total energy recovery between exhaust and outdoor air. 1. Energy recovery wheel shall be enabled whenever economizer is not.

2. Energy recovery will be used to achieve discharge air setpoint.

3. If outdoor air is less than discharge air setpoint, the wheel speed will increase speed until discharge air setpoint is met. a. If wheel speed is at minimum, and if the wheel increases temperature beyond setpoint, the outdoor air wheel by-pass damper shall modulate open to further reduce post-wheel temperature, and

4. If outdoor air is greater than return air, the enthalpy wheel shall operate at full speed.

5. Wheel speed shall be continuously adjusted in either case to achieve setpoint.

6. Purge control: when enthalpy wheel is deactivated, but fans are active, the wheel shall run for 20 (adj) seconds at minimum speed every 30 (adj) minutes to keep the rotor surface clean. 7. Frost control: If exhaust air temperature (after the wheel) reaches 15f (adj) and if the enthalpy wheel differential pressure is greater than 0.5 (adj) inch water column, the electric heating coil provided in the outdoor air

stream shall be activated and pre-heat the outdoor air to 15f (adj).

Ventilation Air Control:

achieve setpoint.

Resets ventilation air at air handler based on return air CO2 levels. 1. Sequence applies only during occupied mode.

2. At the zone level: refer to air valve sequence. 3. At the air handler level:

a. The air handler shall be programmed with minimum and reset outdoor air values. Refer to AHU schedule.

b. Nominal / setpoint CO2 level is 1000 (adj) ppm. c. If CO2 level is below setpoint, the air handler shall operate to maintain the minimum outdoor airflow rate scheduled at the outdoor airflow sensor.

d. If CO2 is above setpoint, the air handler shall revise the outdoor airflow rate from minimum value to scheduled maximum outdoor airflow until the return air CO2 level drops below setpoint, and then shall return to minimum outdoor airflow.

Damper Operations:

Unit includes modulating outdoor air damper (at unit), two-position exhaust air damper (at louver), modulating recirculation damper (in unit), and two-position energy recovery by-pass dampers (in unit).

a. Outdoor air damper shall be closed when the unit is in unoccupied mode, unless the unoccupied economizer operation is active. b. During occupied hours, if the unit is not in economizer mode, the outdoor air damper shall modulate to maintain the minimum outdoor airflow rate scheduled.

c. If the unit is in economizer mode (occupied or unoccupied), the outdoor air damper shall operate as described in the economizer section.

2. Exhaust air damper a. The exhaust air damper shall be closed when the unit is in unoccupied mode.

b. During occupied hours, and during economizer operation, the relief air damper shall be open.

4. Recirculation damper shall at all times operate concurrently to, and in opposition to, the outdoor air damper. 5. Energy recovery by-pass dampers shall be open when the unit is in economizer mode. Otherwise, they shall be closed.

Room 260 After-hours Operations – Specific to AHU-3 and AHU-4:

Sequence allows for after-hours operation of building for special events 1. If local occupancy sensor or local sensor override indicate use of room 260 air handlers AHU-3 and AHU-4 shall enter occupied mode. All sequences, including use of exhaust fan, enthalpy wheel, cooling coils, etc, shall

See also alarms section in specifications. 1. Alarm if any valve fails (all valves shall provide feedback on position).

2. Alarm if any damper fails (all dampers shall provide feedback on position). 3. Alarm if supply air temperature setpoint cannot be achieved (+/- 2f (adj) within 5 minutes (adj) of setpoint adjustment

4. Alarm if any filter differential pressure exceeds 1" w.c. (adj) 5. Alarm if any safety is tripped.

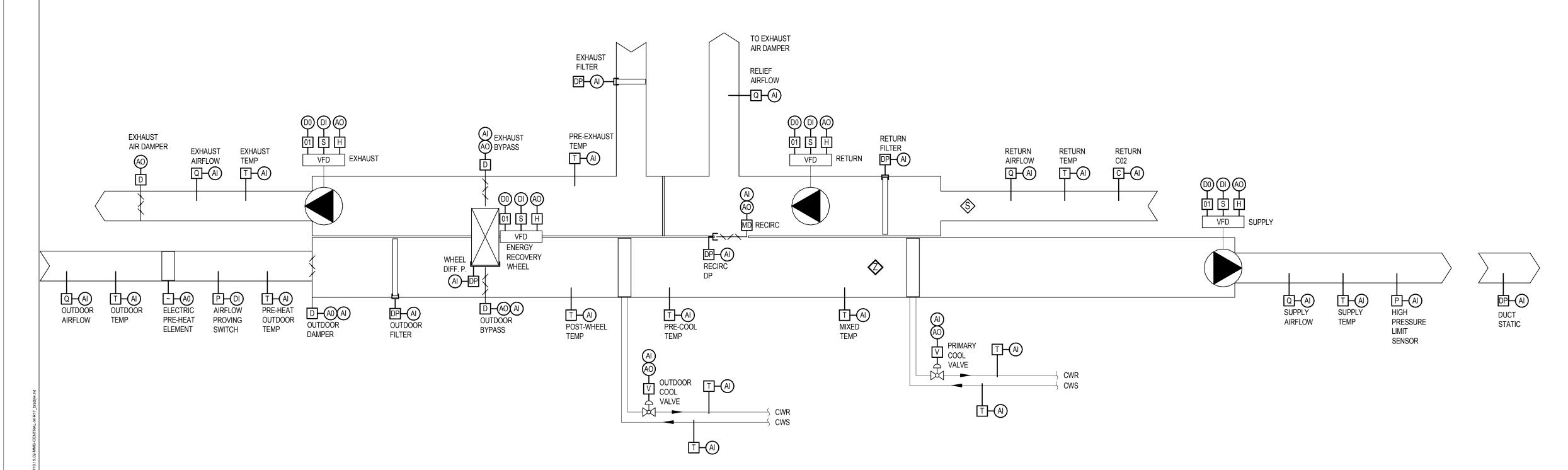
6. Enthalpy wheel rotation alarm: the heat wheel includes a factory-furnished proximity switch. Controls contractor shall provide a dry contact input to the bas. If the wheel is indexed to run and 2 (adj) closures are not seen in 10 (adj) minutes, an alarm shall be sent to signal wheel failure.

All safeties shall be wired to the supply, return, and exhaust fan starters of the VFD safety circuits. If any safety is tripped, the starters shall not function in any mode (hand, off, auto). Similarly, VFDs shall not function in any mode (hand, off, auto) or in by-pass mode if a safety is tripped.

1. Freezestat: freezstat shall trip if temperature drops below 35f (adj). Reset of freezstat is manual.

2. Supply fan high pressure limit: high pressure limit shall trip if the duct-mounted static pressure probe exceeds setpoint, 8" w.c. (adj). Reset of high pressure limit is manual. 3. Exhaust fan low pressure limit: low pressure limit shall trip if the duct-mounted static pressure probe drops below setpoint, -4" w.c. (adj). Reset of low pressure limit is manual.

4. Return fan low pressure limit: low pressure limit shall trip if the duct-mounted static pressure probe drops below setpoint, -4" w.c. (adj). Reset of low pressure limit is manual. 5. Fire alarm: shall trip upon activation of duct smoke detectors. Reset of fire alarm is manual.



■ MODULAR AHU WITH ENTHALPY RECOVERY

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Municipa 00 D Madisc Building

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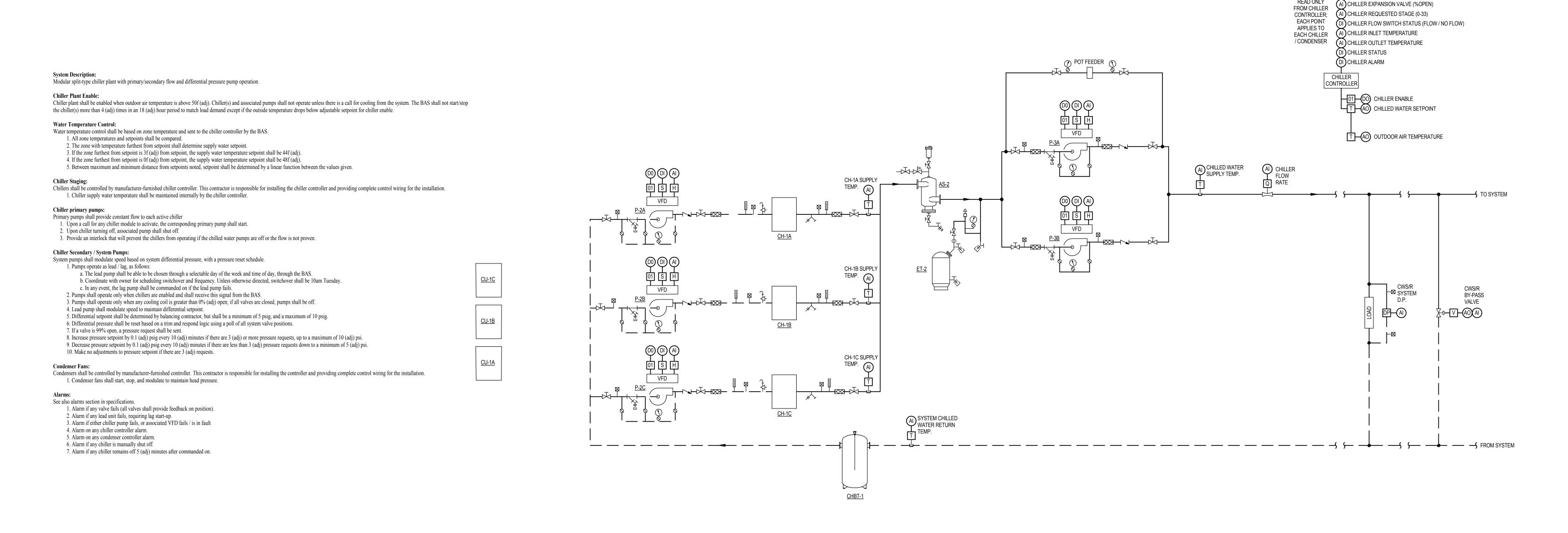
939 g, Jr 703

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Engineer under the Laws of the State of Wisconsin.

DRAWN BY: CHECKED BY:
ALH/BTB/JTG RCA

MECHANICAL CONTROL DIAGRAMS

EXHIBIT I



MODULAR CHILLER, REMOTE CONDENSER, CONTROL DIAGRAM NOT TO SCALE

Boiler plant shall be enabled when outdoor air temperature is below 60f (adj) and a mininum of 3 (adj) zones are calling for heat. When outdoor air temperature is less than 35f (adj), the plant shall be enabled with 0 calls for heat.

Two boiler plant with variable primary flow and differential pressure pump operation

Boiler Plant Enable:

BAS INPUTS/OUTPUTS

(AI) ANALOG INPUT

(AO) ANALOG OUTPUT

(DI) DIGITAL INPUT

(DO) DIGITAL OUTPUT

D DAMPER POSITION

V VALVE POSITION

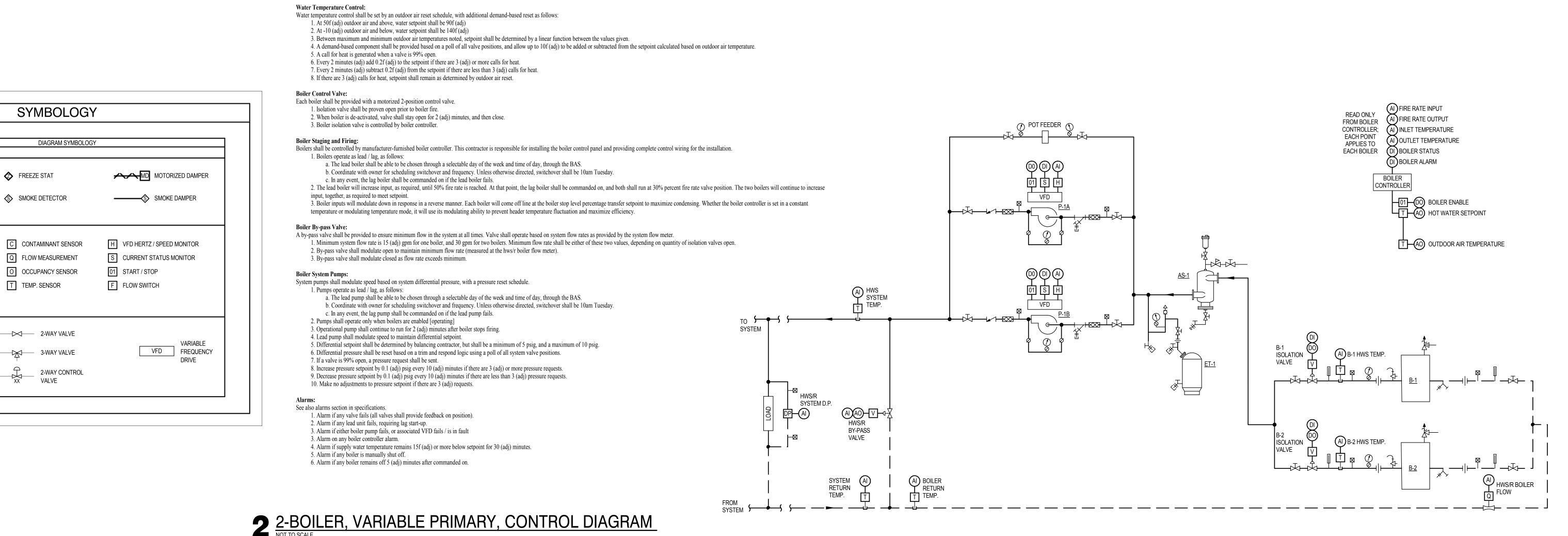
DP DIFF. PRESSURE

M MOISTURE (%RH)

P PRESSURE

FAN/PUMP

FLOW METER



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DI CONDENSER STATUS
DI CONDENSER ALARM

M502

CONTROL

DIAGRAMS

												AIR HAND	LER UNIT II													
						PRE	-COOLING COIL													PRIMARY COOL	LING COIL					
AHU#	AIRFLOW (CFM)	ENTERING DRY BULI	B ENTERING WET BULB (°F)	LEAVING DRY BULB (°F)	LEAVING WET BULB (°F)		ENTERING WATER (°F)	LEAVING WATER (°F)	FLOW RATE (GPM)	ROWS	FACE VELOCITY MAXIMUM (FPM)	WATER-SIDE PRESSURE DROP (FOH)	AIRSIDE PRESSURE DROP (IN W.C)	AIRFLOW (CFM)	ENTERING DRY BULB (°F)	ENTERING WET BULB (°F	LEAVING DR BULB (°F)	Y LEAVING WET BULB (°F)	FLUID	ENTERING WATER (°F)	LEAVING WATER (°F)	FLOW RATE (GPM)	ROWS	FACE VELOCITY MAXIMUM (FPM)	WATER-SIDE PRESSURE DROP (FOH)	AIRSIDE PRESSURE DROP (IN W.C
AHU-1	3000	79	67	55	54	100% WATER	44	60	14	4	161	2.5	0.49	10,000	69	60	55	54	100% WATER	44	60	23	6	535	8.3	0.63
AHU-2	2500	79	67	55	54	100% WATER	44	60	12	4	174	3.0	0.74	10,000	70	60	55	54	100% WATER	44	60	23	6	535	8.9	0.63
AHU-3	2500	79	67	55	54	100% WATER	44	60	12	4	152	3.3	0.67	11,000	70	60	55	54	100% WATER	44	60	26	6	514	11.6	0.59
AHU-4	2500	79	67	55	54	100% WATER	44	60	12	5	152	1.9	0.87	11,000	70	60	55	54	100% WATER	44	60	26	6	514	11.6	0.59

																AIR HANDLE	ER UNIT III															
		FILTERS							SUPF	LY FAN								EXHAUST FAN								RETURN F	AN					
					MINIMUM OUTDOOR	MAXIMUM	EXTERNAL				MOTOR		MINIMUM	MAXIMUM EXHAUST AIRFLOW (CFM)	EXTERNAL					MOTOR			EXTERNAL	_			MO	TOR				
				SUPPLY AIRFLOW	OUTDOOR	OUTDOOR	STATIC		FAN				EXHAUST AIRFLOW (CFM)	EXHAUST	STATIC							RETURN AIRFLOW	STATIC									
		RETURN AIR FILTER	OUTDOOR AIR FILTER(TYPE/SIZE)	AIRFLOW	AIRFLOW	AIRFLOW	PRESSURE		SPEED				AIRFLOW	AIRFLOW	PRESSURE (IN		FAN SPEED					AIRFLOW	PRESSURE	(IN	FAN SPEED)	BRAKE					
AHU#	(TYPE/SIZE)	(TYPE/SIZE)	FILTER(TYPE/SIZE)	(CFM)	(CFM)	(CFM)	(IN W.C.)	TYPE	(RPM)	HP	BHP V/H	z/Ph RPN	(CFM)	(CFM)	W.C.)	TYPE	(RPM)	HP	BHP	V/Hz/Ph	RPM	(CFM)	W.C.)	TYPE	(RPM)	HP	HORSEPOWER	V/Hz/Pz	SPEED (RPM)) MANUFACTURER	MODEL	NOTES
										<u>.</u>									_													
AHU-1	MERV 8 / 4" PLEATED	MERV 11 / 4" PLEATED	MERV 11 / 4" PLEATED	10,000	2000	3000	5.0	PLENUM	2048	20 1	460/6)/3 1750	2000	3000	4.0	PLENUM	2507	5	3	460/60/3	1750	10,000	2.0	PLENUM	1711	7.5	5	460/60/3	1750	DAIKIN APPLIED	VISION	ALL NOTES APPLY
AHU-2	MERV 8 / 4" PLEATED	MERV 11 / 4" PLEATED	MERV 11 / 4" PLEATED	10,000	1500	2500	5.0	PLENUM	2054	20 1	7 460/6)/3 1750	1500	2500	3.5	PLENUM	2273	3	3	460/60/3	1750	10,000	2.0	PLENUM	1785	7.5	6	460/60/3	1750	DAIKIN APPLIED	VISION	ALL NOTES APPLY
AHU-3			MERV 11 / 4" PLEATED	1 '	1500	2500	5.0	PLENUM	1841	25 1	9 460/6)/3 1750	1500	2500	2.0	PLENUM	1901	2	1	460/60/3	1750	11,000	2.5	PLENUM	1987	10.0	8	460/60/3	1750	DAIKIN APPLIED	VISION	ALL NOTES APPLY
AHU-4	MERV 8 / 4" PLEATED	MERV 11 / 4" PLEATED	MERV 11 / 4" PLEATED	11,000	1500	2500	5.0	PLENUM	1842	25 1	9 460/6)/3 1750	1500	2500	2.0	PLENUM	1901	3	1	460/60/3	1750	11,000	2.5	PLENUM	1987	10.0	8	460/60/3	1750	DAIKIN APPLIED	VISION	ALL NOTES APPLY

NOTES:
1. UNIT SHALL BE SHIPPED TO SITE BROKEN DOWN TO ALLOW FOR ENTRY INTO BUILDING; CONTRACTOR SHALL COORDINATE WITH MANUFACTURER ON-SITE SUPERVISION FOR ASSEMBLY.

2. SINGLE CHILLED WATER COIL (NOT FACE SPLIT). 3. CHILLED WATER FLUID SHALL BE 100% WATER.

4. NO HOT WATER COIL SHALL BE PROVIDED. 5. UNIT SHALL HAVE VARIABLE SPEED DRIVES ON SUPPLY, RETURN, AND EXHAUST FANS; DRIVES ARE FURNISHED BY CONTROLS CONTRACTOR WITH INTERNAL DISCONNECT. INSTALLED BY ELECTRICAL.

6. UNIT SHALL HAVE VARIABLE SPEED DRIVE FOR ENERGY RECOVERY WHEEL; DRIVE FURNISHED BY AHU MANUFACTURER WITH INTERNAL DISCONNECT. INSTALLED BY ELECTRICAL/ 7. REFER TO ELECTRICAL SCHEDULE FOR ADDITIONAL COORDINATION INFORMATION REQUIRED FOR BID.

8. INCLUDE STAINLESS STEEL DRAIN PAN, CONFORMING TO ASHRAE 62 REQUIREMENTS, AND EXTENDING TO A DISTANCE HALF OF THE HEIGHT OF THE COIL FROM THE FACE OF THE COIL.

9. CONCRETE PAD FOR AIR HANDLER IS BY MECHANICAL CONTRACTOR, PER SPECIFICATIONS. 10. INSTALL PIPING AND DUCTWORK IN AREA OF AIR HANDLER TO ALLOW FOR ACCESS AS REQUIRED BY MANUFACTURER. COILS, FILTERS, FANS, AND ENTHALPY WHEEL SHALL BE REMOVABLE WITHOUT NEED FOR DUCTWORK OR PIPING DISCONNECTION.

11. TRAP CONDENSATE OUTLET; CONDENSATE TRAP SHALL BE COPPER. REFER TO DETAIL 4/M450. 12. COORDINATE FLOOR DRAIN LOCATION WITH CONDENSATE / COOLING COIL SECTION BASED ON FINAL AHU SELECTION AND LOCATION.

13. COILS SHALL BE FULLY DRAINABLE; REFER TO DETAIL. 14. DUCT SMOKE DETECTOR PROVIDED (FURNISH AND INSTALL) BY ELECTRICAL. COORDINATE INSTALLATION. 15. ELECTRICAL DISCONNECTS BY ELECTRICAL. COORDINATE.

									;	SPLIT AIR C	OOLED CHILLER											
		CC	NDENSER								Е	VAPORATOR									ВОТН	
CONDENSER				CAPACITY			CHILLER				CAPACITY		EWT	LWT	FLOW RATE	WATERSIDE PRESSURE		WEIGHT		EFFICIENCY		
#	LOCATION	MANUFACTUR	ER MODEL	(NOMINAL TONS)) V/Φ/Hz	WEIGH	Г #	LOCATION	MANUFACTURER	MODEL	(NOMINAL TONS)	FLUID TYPE	(°F)	(°F)	(GPM)	DROP (FT W.G.)	V/Ф/Hz	(LBS)	NOTES	(EER)	IPLV (EER)	REFIGERANT TYPE
•	,																					
CU-1A	2ND FLOOR ROOF	CARRIER	090DPM050	42.5	460/3/60	1438	CH-1A	MECHANICAL 009	CARRIER	30MPA045	42.5	WATER	60	44	64	4.5	460/3/60	1134	1-8	10.47	15.28	R-410A
CU-1B	2ND FLOOR ROOF	CARRIER	090DPM050	42.5	460/3/60	1438	CH-1B	MECHANICAL 009	CARRIER	30MPA045	42.5	WATER	60	44	64	4.5	460/3/60	1134	1-8	10.47	15.28	R-410A
CU-1C	2ND FLOOR ROOF	CARRIER	090DPM050	42.5	460/3/60	1438	CH-1C	MECHANICAL 009	CARRIER	30MPA045	42.5	WATER	60	44	64	4.5	460/3/60	1134	1-8	10.47	15.28	R-410A

NOTES:

1. CONDENSING UNIT AND CHILLERS ARE A MATCHED SYSTEM AND SHALL BE PROVIDED BY THE SAME MANUFACTURER. 2. CONTRACTOR SHALL EVACUATE, FILL, AND TEST THE REFRIGERANT PIPING PRIOR TO START-UP.

3. CONCRETE PAD FOR CHILLERS IS BY MECHANICAL CONTRACTOR, PER SPECIFICATIONS.

4. MECHANICAL CONTRACTOR SHALL PROVIDE OPEN SPRING ISOLATION MOUNTS FOR CHILLERS. 5. PROVIDE MANUFACTURER OPTIONS: SOUND ENCLOSURE PANELS, BAG AND COMPRESSOR INSULATION, AND REMOTE MONITORING PANEL.

6. UNITS ARE PROVIDED WITH DIGITAL SCROLL COMPRESSORS.

7. SYSTEM EFFECIENCY IS WITHOUT THE PUMP. 8. DISCONNECT BY ELECTRICAL, COORDINATE.

	GRILLE, REGISTER & DIFFUSER												
PLAN SYMBOL	DISCRIPTION	MANUFACTURER	MODEL NUMBER	MATERIAL	NOISE CRITERIA	NOTES							
EG-(LxW)	STEEL BAR GRILLE; DOUBLE DEFLECTION; BLADES AT 3/4" SPACING.	TITUS	350RL	STEEL	<20	1,3							
RE-(LxW)	ALUMINUM EGGCRATE STYLE GRILLE	TITUS	50F	ALUMINUM	<20	1							
RF-(LxW)	HEAVY DUTY FILTERED RETURN GRILLE; 1/2" BLADE SPACING; 38 DEGREE DEFLECTION	TITUS	33 RFL	STEEL	<20	1							
RG-(LxW)	STEEL BAR GRILLE; 35 DEGREE DEFLECTION; BLADES AT 3/4" SPACING.	TITUS	350RL	STEEL	<20	1,3							
SF-(LxW)	LINEAR BAR DIFFUSER; 7/32" BARS; 0 DEGREE DEFLECTION	TITUS	CT-PP-0	ALUMINUM	<30	1							
SG-(LxW)	STEEL BAR GRILLE; DOUBLE DEFLECTION; BLADES AT 3/4" SPACING.	TITUS	300RL	STEEL	<20	1,3							
SL-1	2 FOOT LONG LINEAR SLOT SUPPLY WITH (1) 1-1/2" SLOT; INCLUDE INSULATED PLENUM BOX FROM MANUFACTURER.	TITUS	FL-15-JT	ALUMINUM	<20	1							
SL-2	1 FOOT LONG LINEAR SLOT SUPPLY WITH (2) 1" SLOT	TITUS	FL-10-JT	ALUMINUM	<20	1,2							
SP_(I \v\V) -NOTES:	STEEL PLAQUE STYLE DIFFUSER; 24"X24"	TITUS	OMNI	STEEL	<20	1							

1. SEE PLANS FOR SPECIFIC SIZE 2. CUSTOM INSTALLATION REQUIRED TO MATCH FIRE DAMPER CONNECTION AND STRUCTURAL RESTRICTIONS. SEE DETAIL 7/M450.

3. WHERE INSTALLED ON VERTICAL SURFACE, ORIENT BLADES TO BLOCK VIEW THROUGH (IE: BLADES UP FOR HIGH INSTALL).

						HVAC EXPANS	SION TANK						
				SIZE		CAPACITY							
					ACCEPT.			MAXIMUM					
EXPANSION			HEIGHT	DIAMETER	VOLUME	MIN. TANK VOLUME	PRE-CHARGE	PRESSURE IN	SYSTEM WATER	SYSTEM CONNECTION			
TANK#	SYSTEM	LOCATION	(IN)	(IN)	(GAL.)	(GAL)	(PSIG)	TANK (PSI)	VOLUME (GAL)	SIZE (IN)	MANUFACTURER	MODEL	NOTES
	•	•	•	•		•		•	•	.	1		
ET-1	HEATING HOT WATER	MECHANICAL 001	37	24	53	53	12	30	410	1	Bell & Gossett	B-200	1,2
ET-2	CHILLED WATER	MECHANICAL 009	37	24	53	53	12	30	852	1	Bell & Gossett	B-200	1,2

NOTES:
1. REFER TO DETAIL 3/M452. 2. ASME-RATED BLADDER-TYPE VESSEL 3. INCLUDE OPTIONAL SIGHT GLASS.

							PANEL RADIATORS													
DADIATOD #		LENCTH (ET)	WIDTH	LIEICLIT		EWT	1)A/T (E)	CDM	MOUNT	DTU/UD DED UNEAD ET	MANUICACTUDED	MODEL	NOTES							
RADIATOR #	ROOM NUMBER	LENGTH (FT)	(INCH)	HEIGHT	EAT (F)	(F)	LWT (F)	GPM	MOUNT	BTU/HR PER LINEAR FT	MANUFACTURER	MODEL	NOTES							
PR-1	SEE PLANS	SEE PLANS	2"	8 5/8"	65	140	110	SEE PLANS	SEE NOTES	300	Runtal Radiators	RF-3	1-6							
PR-2	SEE PLANS	SEE PLANS	2"	14 3/8"	65	140	110	SEE PLANS	SEE NOTES	461	Runtal Radiators	RF-5	1-6							
PR-3	SEE PLANS	SEE PLANS	2"	17 1/4"	65	140	110	SEE PLANS	SEE NOTES	532	Runtal Radiators	RF-6	1-6							
PR-4	SEE PLANS	SEE PLANS	2"	49 3/8"	65	140	110	SEE PLANS	SEE NOTES	911	Runtal Radiators	RV-17	1-6							
PR-5		SEE PLANS	5"								Runtal Radiators	R2F-3								
PR-6	SEE PLANS	SEE PLANS	5"	8 5/8"	65	140	110	SEE PLANS	SEE NOTES	691	Runtal Radiators	R3F-3	1-6							
PR-7	SEE PLANS	SEE PLANS	5"	11 1/2"	65	140	110	SEE PLANS	SEE NOTES	828	Runtal Radiators	R3F-4	1-6							
PR-8	SEE PLANS	SEE PLANS	5"	14 3/8"	65	140	110	SEE PLANS	SEE NOTES	1017	Runtal Radiators	R3F-5	1-6							
PR-9	SEE PLANS	SEE PLANS	5	29"	65	140	110	SEE PLANS	SEE NOTES	1528	Runtal Radiators	R3F-10	1-6							
PR-10	SEE PLANS	SEE PLANS	4"	23 5/8"	65	140	110	SEE PLANS	SEE NOTES	516	Runtal Radiators	RS2-24	1-6							
PR-11	SEE PLANS	SEE PLANS	4"	35 5/8"	65	140	110	SEE PLANS	SEE NOTES	710	Runtal Radiators	RS2-36	1-6							
PR-12	SEE PLANS	SEE PLANS	5"	5 3/4"	65	140	110	SEE PLANS	SEE NOTES	541	Runtal Radiators	R3F-2	1-6							
PR-13	SEE PLANS	SEE PLANS	3"	4 3"	65	140	110	SEE PLANS	SEE NOTES	1398	Runtal Radiators	VTR 5223	1-6							

NOTES:

1. RADIATORS TO BE WALL MOUNTED UNLESS STATED OTHERWISE ON PLAN.

2. PROVIDE FACTORY WALL MOUNT FOR INSTALLATION, MIN 4" AFF TO BOTTOM OF UNIT UNLESS OTHERWISE NOTED.
3. REFER TO MANUFACTURER REQUIREMENTS FOR SUPPORT INSTALLATION DISTANCE REQUIREMENTS.

4. REFER TO PLANS FOR TUBE SUPPLY AND RETURN CONNECTION REQUIREMENTS AND LOCATIONS ON UNITS. CONNECTIONS TO BE 1/2" NPT. 5. PROVIDE COLOR MATCH TRIM FOR CONNECTION CONCEALMENT, CONTRACTOR TO VERIFY REQUIRED LENGTH IN FIELD. PROVIDE TRIM SUPPORTS AS PER MANUFACTURER RECOMMENDATIONS.

6. ZONING TO MATCH AIRSIDE, PER PLANS.

SERVES	SIZE W" x H"	CFM	LOUVER FACE VELOCITY (FPM)	TYPE	MANUFACTURER	MODEL	NOTES
	SERVES	SERVES SIZE W" x H"			LOUVER FACE	LOUVER FACE	LOUVER FACE

NOTES:

1. LOUVERS SPECIFIED IN DIV 8. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.

2. FACE VELOCITY AT MAXIMUM AHU AIRFLOW.

AIR STRAIGHTENER SCHEDULE													
LOCATION	MANUFACTURER	MODEL	SIZE										
MECHANICAL ROOM 001	RUSKIN	AS100	44x20										
MECHANICAL ROOM 001	RUSKIN	AS100	44x20										
_	LOCATION ECHANICAL ROOM 001		LOCATION MANUFACTURER MODEL ECHANICAL ROOM 001 RUSKIN AS100										

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Madison Municipal Building Renovatior

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47939 ing, Jr 3703

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Engineer under the Laws of the State of Wisconsin. ENGINEER SEAL

Print Names:_ __ License No:__

ARK DATE DESCRIPTION
24.03.2017 BID SET MARK DATE

PROJECT NO. 2014057

BID SET DRAWN BY: CHECKED BY:
ALH/BTB/JTG RCA

SCHEDULES

MECHANICAL

LOCATION		MARK
AREA WELL ROOF TOP		CU-2 CU-3
ROOF TOP		CU-4 CU-5
ROOF TOP		CU-6 CU-7
Y ELECTRICAL, CO	CT BY	OTES: DISCONNEC
JFACTURER THER RICAL CONDUIT T	1anuf	OVIDE MA
FAN# RO		[
	F-1 F-2	
B DATA	F-3 F-4	
AV 208	F-5	
OTES:	F-6 NOT	
REFER TO DETAIL PROVIDE SENSOR	1.RE 2.PR	
DISCONNECT BY E	3.DI	
SAT#		
SAT-1 SAT-2		
SAT-3 SAT-4		
SAT-5 SAT-6		
SAT-7 SAT-8		
NOTES:		
1.CONTRA 2.CONTRA		
3.FOR NO		

SPLIT SYSTEM COOLING UNITS INTERIOR EXTERIOR COOLING CAPACITY (NOMINAL CAPACITY(NO **EFFICIENCY** MINAL TONS) V/ø/Hz MODEL TONS) LOCATION MODEL MANUFACTURER V/ø/Hz MANUFACTURER (SEER) REFRIGERANT NOTES MITSUBISHI ELECTRIC
MITSUBISHI ELECTRIC 021 TELECOM MITSUBISHI ELECTRIC PUY-A12NHA6 PKA-A12HA6 208/1/60 EVAP-3 219 AV FOR ROOM 260 MITSUBISHI ELECTRIC 208/1/60 R410A PUY-A12NHA6 PKA-A12HA6 1,2,3 208/1/60 MITSUBISHI ELECTRIC PUY-A12NHA6 208/1/60 EVAP-4 267 DATA MITSUBISHI ELECTRIC PKA-A12HA6 15.2 R410A 1,2,3 MITSUBISHI ELECTRIC 320 IT/DATA 208/1/60 PUY-A12NHA6 208/1/60 EVAP-5 MITSUBISHI ELECTRIC PKA-A12HA6 R410A 1,2,3 MITSUBISHI ELECTRIC 309 DATA MITSUBISHI ELECTRIC 208/1/60 R410A PUY-A12NHA6 208/1/60 EVAP-6 PKA-A12HA6 MITSUBISHI ELECTRIC PUY-A36NHA6 208/1/60 EVAP-7 PENTHOUSE MITSUBISHI ELECTRIC PKA-A36KA6 208/1/60 R410A COORDINATE.

IERMOSTAT, MODEL PAR31MAA FOR EACH SYSTERM. T THROUGH WALL SEPERATELY FROM REFRIGERANT. COORDINATE WITH ELECTRICAL.

	HVAC FANS														
FAN#	ROOM LOCATION	SYSTEM	AIRFLO W (CFM)	STATIC PRESSURE (IN W.G)	WHEEL TYPE & SIZE	RPM	V/ø/Hz	AMPS	BACK DRAFT DAMPER	DRIVE	FAN TYPE	WEIGHT	MANUFACTURER	MODEL	NOTES
F-1	DATA 039	TRANSFER AIR	174	0.1	FORWARD CURVE	509	115/1/60	3.4	INTEGRAL	DIRECT	CEILING MOUNT	42	GREENHECK	CSP-A510-VG	1,2,3
F-2	DATA 148	TRANSFER AIR	199	0.1	FORWARD CURVE	542	115/1/60	3.4	INTEGRAL	DIRECT	CEILING MOUNT	42	GREENHECK	CSP-A510-VG	1,2,3
F-3	DATA 128	TRANSFER AIR	242	0.1	FORWARD CURVE	601	115/1/60	3.4	INTEGRAL	DIRECT	CEILING MOUNT	42	GREENHECK	CSP-A510-VG	1,2,3
F-4	DATA 117	TRANSFER AIR	328	0.1	FORWARD CURVE	735	115/1/60	3.4	INTEGRAL	DIRECT	CEILING MOUNT	42	GREENHECK	CSP-A510-VG	1,2,3
F-5	AV 208	TRANSFER AIR	168	0.1	FORWARD CURVE	503	115/1/60	3.4	INTEGRAL	DIRECT	CEILING MOUNT	42	GREENHECK	CSP-A510-VG	1,2,3
F-6	SWITCH GEAR 002	TRANSFER AIR	500	0.1	FORWARD CURVE	1045	115/1/60	3.4	INTEGRAL	DIRECT	CEILING MOUNT	42	GREENHECK	CSP-A510-VG	1,2,3
NOTES:			· · · · · · · · · · · · · · · · · · ·		1	-						-		1	

FOR TYPICAL DATA/AV ROOM INSTALL

TREFER TO DETAIL FOR TYPICAL DATAVAY ROOM INSTALL.	
2.PROVIDE SENSOR, PER CONTROLS SCHEMATIC, TO ACTIVATE UPON RISE	IN TEMP.
3.DISCONNECT BY ELECTRICAL, COORDINATE.	

									SOUND	ATTENU	ATOR								
							DYNA	AMIC INS	ERTION	LOSS			FACE						
SAT#	LOCATION	SERVICE	TYPE	(CFM)	63	125	250	500	1000	2000	4000	8000	VELOCITY (FT/MIN)	MAXIMUM AIR PD (FT)	LENGTH (IN)	DIMENSIONS (WxH) (IN)	MANUFACTURER	MODEL	NOTES
	1		·		•	•		•		•	'							-	•
SAT-1	MECHANICAL 001	AHU-1 RETURN AIR	DOUBLE ELBOW	10000	8	12	23	32	44	44	29	18	-1125	0.27	108	64x20	Vibro-Acoustics	DRED-XV-FX	1,2,3
SAT-2	MECHANICAL 001	AHU-1 SUPPLY AIR	DOUBLE ELBOW	10000	13	30	36	41	40	40	31	31	1837	0.25	168	56x14	Vibro-Acoustics	DEXRED-XV-FX	1,2,3
SAT-3	MECHANICAL 001	AHU-2 RETURN AIR	STRAIGHT	10000	5	11	22	39	50	46	29	18	-1125	0.26	60	64x20	Vibro-Acoustics	RD-XV-FX	1,2,3
SAT-4	MECHANICAL 001	AHU-2 SUPPLY AIR	STRAIGHT	10000	5	6	15	30	46	39	26	16	1837	0.18	60	56x14	Vibro-Acoustics	RD-XV-FX	1,2,3
SAT-5	MECHANICAL 313	AHU-3 RETURN AIR	ELBOW	11000	7	9	17	23	38	34	25	19	-1200	0.25	72	60x22	Vibro-Acoustics	RED-XV-FX	1,2,3
SAT-6	MECHANICAL 313	AHU-3 SUPPLY AIR	ELBOW	11000	7	9	15	22	38	39	25	19	1800	0.3	84	40x22	Vibro-Acoustics	RED-XV-FX	1,2,3
SAT-7	MECHANICAL 320	AHU-4 RETURN AIR	ELBOW	11000	7	9	17	23	38	34	25	19	-1200	0.25	72	60x22	Vibro-Acoustics	RED-XV-FX	1,2,3
SAT-8	MECHANICAL 320	AHU-4 SUPPLY AIR	ELBOW	11000	7	9	15	22	38	39	25	19	1913	0.31	84	46x18	Vibro-Acoustics	RED-XV-FX	1,2,3

TRACTOR/SILENCER MANUFACTURER SHALL PROVIDE ACOUSTICAL CALCULATIONS WITH PE STAMP FOR BREAKOUT/DUCT BORNE NOISE TO CERTIFY NC 30 IN THE SPACE. TRACTOR/SILENCER MANUFACTURER SHALL PROVIDE ACOUSTICAL CALCULATIONS WITH PE STAMP TO CERTIFY THE PRESSURE DROP INCLUDING SYSTEM EFFECTS AS SCHEDULED AT THE TIME OF SUBMITTALS. ION-BASIS OF DESIGN PRODUCTS PROVIDED, CONTRACTOR IS FINANCIALLY RESPONSIBLE TO ENSURE THE REQUIRED NOISE CONTROL SOLUTION IS DELIVERED TO MEET NC 30 CRITERIA.

						LOUVERE	ED PENTHOUSE							
LOUVER#	SERVES	THROAT WIDTH (IN)	THROAT LENGTH (IN)	LOUVER HEIGHT (IN)	LOUVERS HIGH	CURB CAP WIDTH (IN)	CURB CAP LENGTH (IN)	THROAT FREE AREA (FT^2)	THROAT VELOCITY (FPM)	LOUVER FACE VELOCITY (FPM)	WEIGHT (LBS)	MANUFACTURER	MODEL	NOTES
			,	, ,		,			,	, ,				
LPH-1	AHU-1,2 OUTDOOR AIR	52	96	39	10	60	104	33.7	723	600	331	GREENHECK	WIH	1,2,3,4,5
LPH-2	AHU-3 OUTDOOR AIR	35	60	27	7	43	68	16.2	723	680	172	GREENHECK	WIH	1,2,3,4,5
_PH-3	AHU-3 EXHAUST AIR	34	60	27	7	42	68	16.1	811	690	170	GREENHECK	WRH	1,2,3,4,5
_PH-4	AHU-4 OUTDOOR AIR	35	60	27	7	43	68	16.2	723	680	172	GREENHECK	WIH	1,2,3,4,5
LPH-5	AHU-4 EXHAUST AIR	34	60	27	7	42	68	16.1	811	690	170	GREENHECK	WRH	1,2,3,4,5

NOTES:
1.PENTHOUSE SHALL BE PROVIDED WITH MOTORIZED DAMPERS, FROM THE MANUFACTURER. COORDINATE WITH CONTROLS CONTRACTORS.

3.PROVIDE MANUFACTURER CURB: 12" HIGH FOR EXHAUST, 18" HIGH FOR INTAKE. 4.HOOD AND CURB SHALL BE PROVIDED WITH MANUFACTURER INSULATION. 5.FACE VELOCITY AT MAXIMUM AHU AIRFLOW.

					DUC	T HEATER SCHEDULE					
UNIT#	LOCATION	AIR FLOW RATE (CFM)	EAT (F)	LAT (F)	kW	V/ø/Hz	PRESSURE DROP	UNIT SIZE	MANUFACTURER	MODEL	NOTES
EDH-1	MECHANICAL 001	3000 CFM	-15	6	20	480/3/60	0.05	44X20	INDEECO	QUA	1-3
EDH-2	MECHANICAL 001	2500 CFM	-15	10	20	480/3/60	0.05	44X20	INDEECO	QUA	1-3
EDH-3	MECHANICAL 313	2500 CFM	-15	10	20	480/3/60	0.05	60X16	INDEECO	QUA	1-3
EDH-4	MECHANICAL 321	2500 CFM	-15	10	20	480/3/60	0.05	60X16	INDEECO	QUA	1-3

NOTES:

1. UNIT PROVIDED BY MECHANICAL CONTRACTOR; WIRING AND DISCONNECT BY ELECTRICAL 2. UNIT SHALL BE REMOVABLE FROM DUCT, VERTICALLY OR HORIZONTALLY 3. PROVIDE ACCESS PANELS UPSTREAM AND DOWNSTREAM, PER SPECIFICATIONS

								AN COIL I										
FANI			MINI	EXTERNAL					AIR PRESS.	НОТ	WATER	1						
FAN COIL UNIT#	LOCATION (ROOM NO.)	SUPPLY (CFM)	MIN OA (CFM)	STATIC PRESS.	V/ø/Hz	AMPS	EAT (°F)	LAT (°F)	DROP IN	EWT (°F)	LWT (°F)	WATER PRESS. DROP (FT)	MBH	GPM	ROWS	MANUFACTURER	MODEL	NOTES
FCU-1	MECHANICAL EQUIPMENT 001	1426	NA	0.15	115/1/60	5.2	60	85.4	0.22	140	110	8.85	4	2.70	2	ENVIRO-TEC	HPP12	2,3,4,5
	VESTIBULE 135	1426	NA			5.2	60	85.4	0.22	140		8.85	4	2.70	2	ENVIRO-TEC	HPP12	1,2,3,4,5
FCU-3	EQUIPMENT STORAGE 004	1426	NA	0.15	115/1/60	5.2	60	85.4	0.22	140	110	8.85	4	2.70	2	ENVIRO-TEC	HPP12	2,3,4,5

NOTES:

1.FCU-2 SHALL HAVE FILTERED RETURN GRILLE. NO FILTER REQUIRED IN UNIT. 2.HOT WATER FLUID IS 100% WATER.

3.INSTALL UNIT ON ELASTOMERIC VIBRATION ISOLATION HANGERS. 4. DISCONNECT BY ELECTRICAL, COORDINATE.

5.ECM MOTORS REQUIRED.

					1	BUFFER TANK						
						BUFFER TANK						
	DIMENSIONS											
BUFFER			VOLUME	DIAMETER	HEIGHT	WEIGHT	OPENING	OPENING				
TANK#	SYSTEM	LOCATION	(GAL)	(IN)	(IN)	(LBS)	(IN)	TYPE	DRAIN (IN)	MANUFACTURER	MODEL	NOTES
								•	•		•	
CHBT-1	CHILLED WATER	MECHANICAL 009	500	42	90	5700	4	FLANGE	1.5	CEMLINE CORPORATION	V500CWB4	1,2,3,4,5

NOTES:

1. TANK SIZE BASED ON CHILLER MANUFACTURER REQUIRED 6 GALLONS PER TON OF CAPACITY.

2. TANK SHALL INCLUDE BAFFLES, INTERNAL.

3. INSULATE TANK PER SPECIFICATIONS (TANK INSULATION BY MANUFACTURER IS AN ACCEPTABLE ALTERNATE IF IN COMPLIANCE WITH SPECIFICATION). 4.INCLUDE BAS TEMPERATURE PROBE. 5.HOUSEKEEPING PAD BY MECHANICAL.

						HVA	C PUMP								
				DESIGN			МС	OTOR		Pl	JMP SIZE				
PUMP#	LOCATION	SERVES	PUMP TYPE	FLOW (GPM)	HEAD (FT)	FLUID	V/Φ/HZ	HP	RPM	SUCTION (IN)	DISCHARGE (IN)	IMPELLER (IN)	MANUFACTURER	MODEL	NOTES
D 4 A	MECHANICAL 004	LIEATING LIOT WATER	DACE MOUNT	140	150	NA/ATED	400/0/00		4750	0.5		7.05	Dall 9 Casatt	E 4540 0DD	1.004
	MECHANICAL 001		BASE-MOUNT	1	50		460/3/60	3		2.5	2	7.25	Bell & Gossett	E-1510-2BD	1,2,3,4
P-1B	MECHANICAL 001	HEATING HOT WATER	BASE-MOUNT	110	50	WATER	460/3/60	3	1750	2.5	2	7.25	Bell & Gossett	E-1510-2BD	1,2,3,4
P-2A	CHILLER ROOM 009	CHILLED WATER	IN-LINE	65	12	WATER	460/3/60	0.5	1725	2	2	4.13	Bell & Gossett	E-90-2AAC	2,3
P-2B	CHILLER ROOM 009	CHILLED WATER	IN-LINE	65	12	WATER	460/3/60	0.5	1725	2	2	4.13	Bell & Gossett	E-90-2AAC	2,3
P-2C	CHILLER ROOM 009	CHILLED WATER	IN-LINE	65	12	WATER	460/3/60	0.5	1725	2	2	4.13	Bell & Gossett	E-90-2AAC	2,3
P-3A	CHILLER ROOM 009	CHILLED WATER	BASE-MOUNT	200	55	WATER	460/3/60	5	1750	2.5	2	8.25	Bell & Gossett	E-1510-2BD	1,2,3,4
P-3B	CHILLER ROOM 009	CHILLED WATER	BASE-MOUNT	200	55	WATER	460/3/60	5	1750	2.5	2	8.25	Bell & Gossett	E-1510-2BD	1,2,3,4

NOTES.

1.INSTALL PUMP ON INERTIAL BASE FRAME WITH OPEN SPRING VIBRATION ISOLATION.

2.PUMP SHALL BE VARIABLE SPEED; VARIABLE SPEED DRIVE SHALL BE PROVIDED BY CONTROLS CONTRACTOR (WITH INTERNAL DISCONNECT); VFD INSTALLED BY ELECTRICAL. 3.PROVIDE GROUNDING RINGS FOR USE WITH VARIABLE DRIVES. 4.REFER TO DETAIL 5/M452.

							ВС	DILER						
BOILER #	MANUFACTURER	MODEL	LOCATION	INPUT MBH	OUTPUT MBH	LWT (F)	EWT (F)	FLOW RATE (GPM)	WATER-SIDE PRESSURE DROP (FT OF HEAD)	COMBUSTION INTAKE		ELECTRICAL	EFFICIENCY (%)	NOTES
				1000	968	140	110	90	8.10	6	6		96.8	1,2,3,4
B-2	AERCO	BMK1000	MECHANICAL 001	1000	968	140	110	90	8.10	6	6	120/1/60	96.8	1,2,3,

NOTES:

1. MECHANICAL CONTRACTOR SHALL PROVIDE ACID NEUTRALIZATION IN-LINE OF CONDENSATE DISCHARGE, PRIOR TO TERMINATION AT FLOOR DRAIN.

2. CONCRETE PAD FOR BOILERS IS BY MECHANICAL CONTRACTOR, PER SPECIFICATIONS. 3. REFER TO SPECIFICATION FOR COMBUSTION AND EXHAUST MATERIALS. ROUTE AS SHOWN ON PLAN, AND PROVIDE MANUFACTURER TERMINATION KITS.
4. DISCONNECT BY ELECTRICAL, COORDINATE.

			AIR SEP	ARATOR				
AIR SEPARATOR #	LOCATION	SYSTEM	GPM	PRESS. DROP (FEET)	SIZE (IN)	MANUFACTURER	MODEL	NO
AS-1	MECHANICAL 001	HEATING HOT WATER	140	1.6	3	SPIROTHERM	VDN-300	1,2,3,
AS-2	MECHANICAL 009	CHILLED WATER	200	1.4	4	SPIROTHERM	VDN-400	1,2,3

NOTES:

1. UNIT IS COMBINATION AIR ELIMINATOR AND DIRT SEPARATOR.

2. REFER TO DETAIL. 3. WITH REMOVABLE HEAD 4. TRANSITION TO CONNECTION SIZE 12" BEFORE/AFTER UNIT.
5. THREADED OR FLANGED CONNECTION ACCEPTABLE.

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I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Engineer under the Laws of the State of Wisconsin. ENGINEER SEAL

Print Names:_ __ License No:__

PROJECT NO. 2014057 **BID SET** DRAWN BY: CHECKED BY:
ALH/BTB/JTG RCA

> MECHANICAL SCHEDULES

							DUCT REHE	EAT COIL							
MARK	AIR VALVE#	COIL SIZE (IN)	MAX AIRFLOW (CFM)	MIN AIRFLOW (CFM)	REHEAT AIRFLOW (CFM)	AIR-SIDE PRESSURE DROP (IN. W.C)	ENTERING AIR (F)	LEAVING AIR (F)	ENTERING WATER (F)	LEAVING WATER (F)	CAPACITY (BTUH)	WATER FLOW (GPM)	FLUID	WATER-SIDE PRESSURE DROP (FOH)	NOTES
RH-1-2	AV-1-2	10X10	400	400	400	0.15	55	80	140	110	10,800	0.6	WATER	0.5	1
RH-1-3a	AV-1-3a	9X8	200	200	200	0.07	55	80	140	110	5,400	0.6	WATER	0.2	1
RH-1-3b	AV-1-3b	9X8	200	200	200	0.07	55	80	140	110	5,400	0.6	WATER	0.2	1
RH-1-32	AV-1-32	9X8	200	200	200	0.07	55	80	140	110	5,400	0.6	WATER	0.2	1
RH-1-37	AV-1-37	10X8	300	300	300	0.13	55	80	140	110	8,300	0.5	WATER	0.3	1
RH-1-38	AV-1-38	20X18	1100	1100	1100	0.11	55	80	140	110	30,100	2.0	WATER	3.2	1
RH-3-16A	AV-3-16a	20X12	1000	1000	1000	0.20	55	80	140	110	27,400	1.8	WATER	2.3	1
RH-3-16B	AV-3-16b	30X12	2000	2000	2000	0.52	55	80	140	110	56,900	3.8	WATER	0.6	1

NOTES: 1. REFER TO DETAIL 1/M452

						AIR VALVE	SCHEDULE								
VAV#	LOCATION	SERVES	COOLING MAX (CFM)	OCCUPIE HEATING MAX CO	OLING MIN	HEATING MIN (CFM)			CUPIED COOLING MIN (CFM)	HEATING MIN (CFM)	INLET SIZE	TOTAL ▲P IN W.G.	MANUFACTURER	MODEL	NOTES
.V-1-1	CUSTOMER SERVICE 017	017,010	100	40 40	4	40	100	40	0	0	6	0.05	ACCUTROL	AV3142-XX-I	1,2,3
V-1-2 V-1-3a V-1-3b	LARGE CONFERENCE 013 LARGE CONFERENCE 013 LARGE CONFERENCE 013	017 013 013	200 200	160 160 70 70 70 70	7	160 70 70	400 200 200	160 70 70	0	0 0		0.1 0.2 0.2	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3,4 1,2,3,4
V-1-4 V-1-5	FACILITIES/LAUNDRY 024 OPEN OFFICE 032	024 031	200 250	50 50 80 80	3	50 80	250		0	0		0.2 0.05	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3
/-1-7 /-1-8 /-1-9	SMALL CONFERENCE 015 OPEN OFFICE 044 PLANNING DIRECTOR 033	015 044 033	100 600 150	30 30 160 160 55 55	,	30 160 55	100 600 150	30 160 55	0 0	0 0 0	10	0.05 0.1 0.1	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3,4 1,2,3 1,2,3
V-1-11 V-1-12	OPEN OFFICE 032 TPP OFFICE 034	032 034	660	160 160 30 30	,	160 30	660	160 30	0	0 0	10		ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3
V-1-13 V-1-14	OPEN OFFICE 032 NCSP OFFICE 036	035 036	100	30 30 30 30	3	30 30	100	30	0	0	6	0.05 0.05	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3
V-1-15 V-1-16 V-1-17	OPEN OFFICE 044 OPEN OFFICE 044	037 040 041	100 100 100	30 30 30 30 30 30	3	30 30 30	100	30 30 30	0 0	0 0	6	0.05 0.05 0.05	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3
/-1-18 /-1-19	BI DIRECTOR 042 OFFICE 043	042 043	150 150	40 40 40 40	2	40 40	150 150		0	0	6	0.1	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3
/-1-20 /-1-21 /-1-22	OPEN OFFICE 044 MANAGER 147 CONTROL ROOM 141	044 147 141,140	860 100 400	225 225 30 30 100 100	3	225 30 100		225 30 100	0	0	6	0.2 0.05 0.1	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3
/-1-25 /-1-26	OPEN OFFICE 140 M CREDIT UNION 108	140	500 150	120 120 40 40	,	120 40	500	120 40	0	0 0	8		ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3
/-1-28 /-1-29	MANAGER 143 MANAGER 144	143 144	100	30 30 30 30	3	30 30	100	30	0	0	6	0.05 0.05	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3
/-1-30 /-1-31 /-1-32	MANAGER 145 TEPU DIRECTOR 152 MEDIUM CONFERENCE 153	145 152 153	100 100 200	30 30 30 30 65 65	3	30 30 65	100	30 30 65	0	0 0		0.05 0.05 0.2	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3,4
'-1-33 '-1-34	CUSTOMER SERVICE 109 STAIR A 102	109 102	350 100	85 85 45 45	2	85 45	350 100	85 45	0	0 0		0.1 0.05	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3
'-1-35 '-1-36	OPEN OFFICE 130	132 130	350 300	340 340 85 85 85 85	3	340 85	350	340 85 85	0	0	8	0.1	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3
/-1-37 /-1-38 /-1-40	MEDIUM CONFERENCE ROOM 110 CONFERENCE 111 OOD DIRECTOR 129	110 111 129	1100 150	330 330 40 40) 3	85 330 40	1100	330 40	0 0	0	12	0.075 0.2 0.1	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3,4 1,2,3,4 1,2,3
-1-41 -1-42	SMALL CONFERENCE 128 INTERVIEW 125	128 125	115 100	40 40 30 30	3	40 30	100	40 30	0	0		0.075 0.05	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3,4
-1-43 -1-44 -1-45	CIRCULATION 114 INTERVIEW 124 OFFICE 121	114 124 121	200 100 100	50 50 30 30 30 30	3	50 30 30	100	50 30 30	0	0 0		0.2 0.05 0.05	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3,4 1,2,3
'-1-46 '-1-47	CIRCULATION 114 HOD DIRECTOR 120	123 120	100	30 30 30 30	3	30 30	100	30 30	0	0 0	6	0.05 0.05	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3,4
'-1-48 '-1-49 '-1-50	OPEN OFFICE 118 OPEN OFFICE 032	122 118 046	150 200 100	40 40 55 55 30 30	Ę	40 55 30	200	40 55 30	0	0	6	0.1 0.2 0.05	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3,4 1,2,3 1,2,3
-1-50 -2-1 -2-2	FACILITIES STORAGE 006 UTILITY ROOM 020	046 006 020	200	55 55 40 40	į	55	200	55	0	0	6	0.05	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3
-2-4 -2-5	CUSTOMER SERVICE 017 OPEN OFFICE 044	022 044	400 450	115 115 110 110	, ·	115 110	400 450	115 110	0	0	8	0.1 0.15	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3,4 1,2,3
-2-6 -2-7 -2-8	OPEN OFFICE 044 OPEN OFFICE 044 OPEN OFFICE 044	044 044 044	450 450 600	110 110 110 110 145 145	,	110 110 145	450 450 600	110 110 145	0	0	8	0.15 0.15 0.1	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3
-2-9 -2-10	OPEN OFFICE 032 OPEN OFFICE 032	032	500 600	120 120 170 170	,	120 170	500 600	120 170	0	0	8	0.2	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3
-2-13 -2-14	TELECOM 021 LARGE CONFERENCE 022	106 105	250 250	80 80 80 80 407 407	3		250	80 80	0	0	8	0.05 0.05	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3,4
-2-15 -2-16 -2-17	M CREDIT UNION 108 STAIR A 102 OPEN OFFICE 044	101 101 103	555 555 250	135 135 135 135 80 80	,	135 135 80	555 555 250	135 135 80	0 0	0 0	8	0.2 0.2 0.05	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3,4
'-2-18 '-2-19	OPEN OFFICE 044 OPEN OFFICE 118	104 119	250 150	80 80 40 40	3	80 40	250	80 40	0	0 0	8	0.05 0.1	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3,4
/-2-20 /-2-21 /-2-22	OPEN OFFICE 118 OPEN OFFICE 118 STAFF BREAK 132	118 118 132	860 1050 300	210 210 255 255 80 80	5 2	210 255 80	1050	210 255 80	0			0.1 0.15 0.075	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3
/-2-22 /-2-23 /-2-24	BREAKOUT VESTIBULE 133 STAFF BREAK 132	132 133 136	855 100	205 205 30 30	5 2	205 30	855	205	0	0 0	10	0.075 0.2 0.05	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3
7-2-26 7-2-27	OPEN OFFICE 140 OPEN OFFICE 140	140 140	600 750	145 145 180 180	, ·	145 180	600 750	145 180	0	•	10 10	0.1 0.15	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3
-2-28 -3-1 -3-2	MANAGER 146 MANAGER 218 HR SOUTH 216	146 218 217	350 150	40 40 85 85 40 40	3	40 85 40	350	40 85 40	0	0	8	0.1 0.1 0.1	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3
'-3-3 '-3-4	OFFICE 214 OFFICE 213	215 214	150 150	40 40 40 40	4	40 40	150	40 40	0	0 0	6	0.1	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3
'-3-5 '-3-6	OFFICE 212 OFFICE 212	213 212	150 150	40 40 40 40	4	40 40	150	40 40	0	0	6	0.1 0.1	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3
-3-7 -3-8 -3-9	OFFICE 211 MANAGER 210 HR SOUTH 216	211 210 216	150 350 1450	40 40 85 85 345 345	3	40 85 345	350	40 85 345	0 0	0 0	8	0.1 0.1 0.1	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3
-3-11 -3-14	TESTING 266 KITCHENETTE/STAFF BREAK 268	266,262 268	250 150	80 80 40 40	3	80 40	250	80 40	0	0 0	8	0.05 0.1	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3,4
-3-15 -3-16a	FINAL PREP KITCHEN 261 MECHANICAL 313	261 260	500 1000	120 120 200 200 400 400) 2	120 200		120 200	0 0	_		0.2	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3
'-3-16b '-3-17 '-3-18	MECHANICAL 313 OFFICE 272 HR OPEN OFFICE 271	260 272 271	2000 400 450	400 400 100 100 110 110	,	400 100 110	2000 400 450	400 100 110	0	0 0	8	0.25 0.1 0.15	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3
-3-19 -3-20	OFFICE 273 OFFICE 274	273 274	100 100	30 30 30 30	3	30 30	100 100	30 30	0	0	6 6	0.05 0.05	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3
-3-21 -3-22 -3-23	OFFICE 274 OFFICE 277 OFFICE 275	276 277 278	350 100 300	85 85 30 30 80 80	3	85 30 80	100	85 30 80	0	0	6	0.1 0.05 0.075	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3
-3-23 -3-24 -3-25a	OFFICE 275 OFFICE 275 EDD/CDD OPEN OFFICE 304	275 304	300 900	80 80 220 220	3	80 220	300	80 220	0	0 0		0.075 0.2	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3
-3-25b -3-26	EDD/CDD OPEN OFFICE 304 OFFICE 308	304 308	900	220 220 30 30	3	30	100	220 30	0	0	6	0.2	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3
-3-28a -3-28b -3-29	EDD/CDD OPEN OFFICE 304 EDD/CDD OPEN OFFICE 304 CDD DIRECTOR 310	304 304 310	500 500 200	120 120 120 120 50 50	,		500 500 200		0 0	0 0	8	0.2 0.2 0.2	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3,4
-3-31 -3-32a	KITCHENETTE 315 CDD OPEN OFFICE 317	315 317	250 250 425	80 80 105 105	3				0	0 0	8	0.05 0.15	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3
-3-32b -3-33	CDD OPEN OFFICE 317 CDD OPEN OFFICE 317	317 319	425 350	105 105 85 85	3			105 85	0	0	8	0.15	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3
-3-34 -4-1a -4-1b	CDD OPEN OFFICE 317 EXPANSION SPACE 226 EXPANSION SPACE 226	318 226 226	780 780	50 50 190 190 190 190	,	50 190 190	200780780	50 190 190	0		10	0.2 0.15 0.15	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3
-4-3 -4-6	HISTORIC CORRIDOR 263 LARGE CONFERENCE ROOM 202	221,222 202	350 900	85 85 180 180) {	85 180	350 900	85 180	0	0	8 10	0.1 0.2	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3,4
-4-7a -4-7b	TRAINING ROOM 205 TRAINING ROOM 205	205 205	655 655	135 135 135 135	;	135 135	655 655	135 135	0	0	10 10	0.1 0.1	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3,4 1,2,3,4
′-4-8a ′-4-8b ′-4-10a	LARGE CONFERNCE 207 LARGE CONFERNCE 207 LARGE CONFERNCE 207	207 207 263	1125 1140 300	230 230 230 230 75 75) 2	230 230 75	1140	230 230 75	0 0		12	0.2 0.2 0.075	ACCUTROL ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3,4 1,2,3,4 1,2,3
-4-10b -4-12	MANAGER 210 OPEN OFFICE 325	263 263 324	300 300 200	75 75 75 40 40	7	75 40	300 200	75 75 40	0 0	0		0.075 0.2	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3,4
-4-13 -4-14a	OPEN OFFICE 325 OPEN OFFICE 325	323 325	200 450	50 50 110 110)	50 110	200 450	110	0	0	8	0.2 0.15	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3
-4-14b -4-15 -4-17	OPEN OFFICE 325 KITCHENETTE 326 EDD/CDD OPEN OFFICE 304	325 326 302	450 200 600	110 110 50 50 120 120		110 50 120	450 200 600	110 50 120	0 0	0 0	6	0.15 0.2 0.1	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3
-4-17 -4-18a -4-18b	EDD/CDD OPEN OFFICE 304 EDD/CDD OPEN OFFICE 304 EDD/CDD OPEN OFFICE 304	302 304 304	900	220 220 220 220) 2		900	220 220	0 0	0	10	0.1	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3 1,2,3
'-4-21 '-4-22	EDD DIRECTOR 305 OFFICE 306	305 306	150 100	40 40 30 30	3	40 30	150 100	40 30	0	0	6 6	0.1 0.05	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3,4 1,2,3
-4-23 -4-24	OFFICE 307 SMALL CONFERENCE 303	307 303	100	30 30 35 35		30 25		30 25	0	<u>0</u>		0.05 0.05	ACCUTROL ACCUTROL	AV3142-XX-I AV3142-XX-I	1,2,3 1,2,3,4

NOTES:

1. PROVIDE WITH FACTORY OPTION FOR PRE-INSULATED, ALUMINUM CONSTRUCTION, AND DRAWBANDS.
2. UNITS TAGGED WITH a AND b SUFFIXES ARE CONTROLLED FROM A SINGLE SENSOR. SEE PLAN.
3. REFER TO PLAN FOR SENSOR TYPE ASSOCIATED WITH EACH ZONE. SENSOR 'A' (HONEYWELL TR-71) IS USED IN OCCUPIED AREAS. SENSOR 'NA' (HONEYWELL TR-23) IN UNOCCUPIED SPACES.
4. ROOM CO2 SENSOR

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Madison Municipal Building Renovation

BPW Project #7939 5 Martin Luther King, Jr. E Madison, WI 53703 215

Blvd

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Engineer under the Laws of the State of Wisconsin.

ENGINEER SEAL

Print Names: __

2014057 **BID SET** DRAWN BY: CHECKED BY: ALH/BTB/JTG RCA

> MECHANICAL SCHEDULES

> > EXHIBIT I