

ERROL HASSELL ES HVAC UPGRADE

INDEX OF DRAWINGS

SHEET NO. DRAWING CONTENTS

GENERAL SHEET

G001 COVER SHEET

MECHANICAL SHEETS

M001 MECHANICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES
M002 MECHANICAL SCHEDULES
M003 MECHANICAL SCHEDULES
M004 MECHANICAL SCHEDULES
M105 MECHANICAL DEMOLITION PLANS — MEZZANINE MECH. ROOMS
M201 MECHANICAL PARTIAL FLOOR PLAN
M202 MECHANICAL PARTIAL FLOOR PLAN
M203 MECHANICAL PARTIAL FLOOR PLAN
M204 MECHANICAL PARTIAL FLOOR PLAN
M205 MECHANICAL NEW WORK PLANS — MEZZANINE MECH. ROOMS
M211 MECHANICAL PARTIAL ROOF PLAN
M212 MECHANICAL PARTIAL ROOF PLAN
M213 MECHANICAL PARTIAL ROOF PLAN
M501 MECHANICAL CONTROLS
M502 MECHANICAL CONTROLS
M503 MECHANICAL CONTROLS
M504 MECHANICAL CONTROLS
M601 MECHANICAL DETAILS
M602 MECHANICAL DETAILS

ELECTRICAL SHEETS

E001 ELECTRICAL LEGEND AND ABBREVIATIONS
E105 ELECTRICAL DEMOLITION PLANS — MEZZANINE MECH. ROOMS
E201 ELECTRICAL PARTIAL FLOOR PLAN
E202 ELECTRICAL PARTIAL FLOOR PLAN
E203 ELECTRICAL PARTIAL FLOOR PLAN
E205 ELECTRICAL NEW WORK PLANS — MEZZANINE MECH. ROOMS
E212 ELECTRICAL PARTIAL ROOF PLAN
E213 ELECTRICAL PARTIAL ROOF PLAN
E214 ELECTRICAL ONE LINE DIAGRAM AND ELECTRICAL SUMMARY
E215 ELECTRICAL SCHEDULES
E216 ELECTRICAL SCHEDULES

STRUCTURAL SHEETS

S2.2 STRUCTURAL PARTIAL ROOF PLAN — SECTOR B
S2.3 STRUCTURAL PARTIAL ROOF PLAN — SECTOR C
S5.1 STRUCTURAL DETAILS

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MECHANICAL ENGINEER

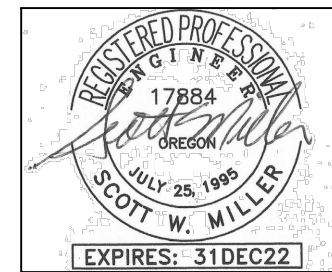
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PROPERTY INFORMATION

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BEAVERTON, OREGON 97007



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BEAVERTON SCHOOL DISTRICT
ERROL HASSELL ES HVAC UPGRADE
18100 SW BANY ROAD
BEAVERTON OREGON
COVER SHEET

PERMIT/BID SET
SEPTEMBER 2021



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SHEET

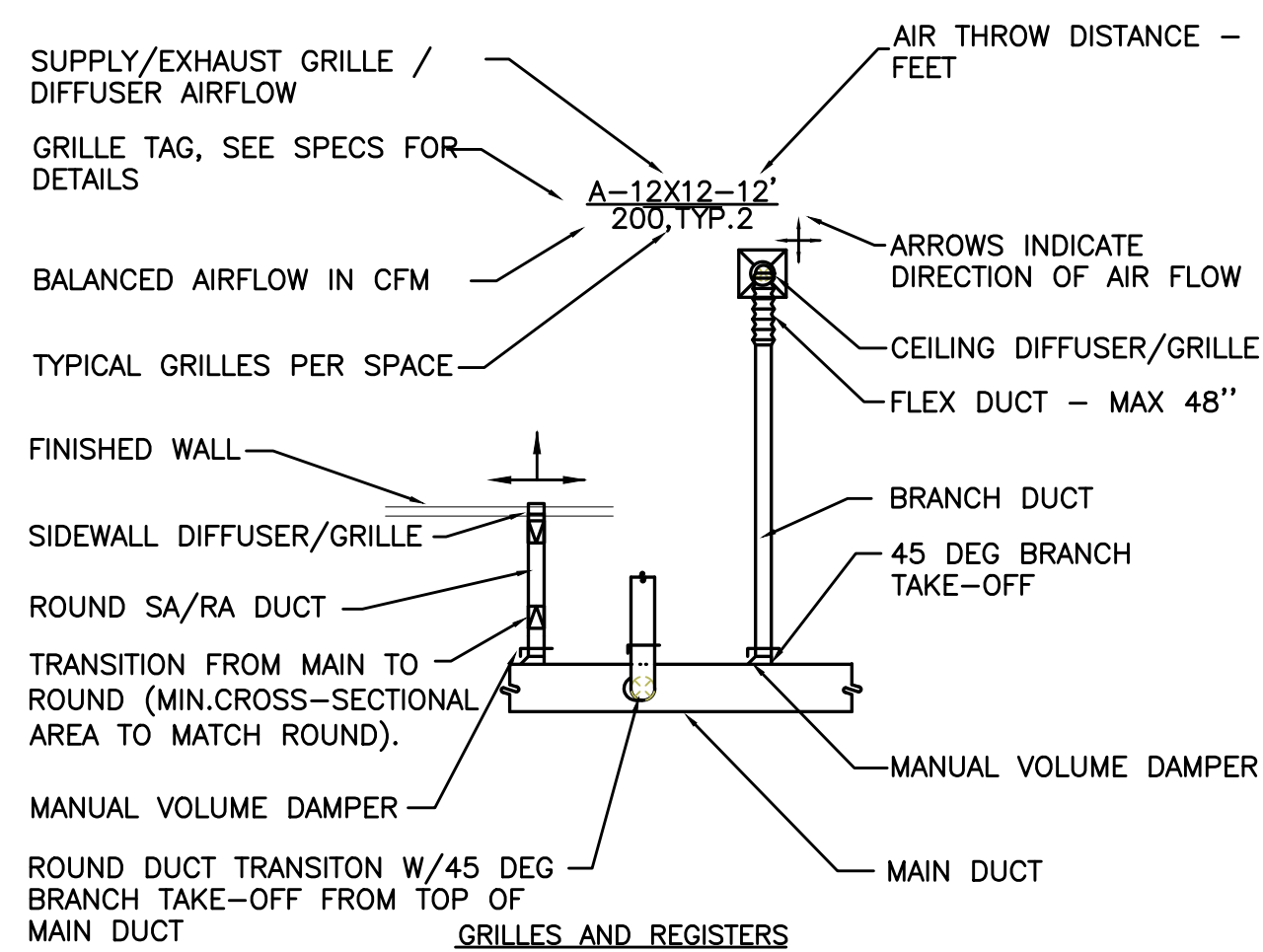
G001

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MECHANICAL LEGEND

	SUPPLY AIR DIFFUSER	AFF	ABOVE FINISH FLOOR
	RETURN AIR DIFFUSER	AHU	AIR HANDLING UNIT
	EXHAUST AIR DIFFUSER	B.D.	BOTTOM OF DUCT
	DIRECTIONAL AIR FLOW	BHP	BRAKE HORSEPOWER
	MANUAL VOLUME DAMPER	BOG	BOTTOM OF GRILLE
	SUPPLY AIR DUCT UP & DOWN	BTU	BRITISH THERMAL UNITS
	RETURN AIR DUCT UP & DOWN	CFM	CUBIC FEET PER MINUTE
	EXHAUST OR OUTSIDE AIR DUCT UP & DOWN	CONN.	CONNECTION
	SUPPLY AIR DUCT UP & DOWN	CONT.	CONTINUATION
	RETURN AIR DUCT UP & DOWN	CW	DOMESTIC COLD WATER
	EXHAUST OR OUTSIDE AIR DUCT UP & DOWN	DB	DRY BULB
	VAV TERMINAL UNIT W/ REHEAT COIL	DIA.	DIAMETER
	DEMOLISH	DIST.	DISTRIBUTION
	EXISTING	EXH	EXHAUST AIR
	CONNECT TO EXISTING	EDB	ENTERING DRY BULB TEMPERATURE
	THERMOSTAT	EWB	ENTERING WET BULB TEMPERATURE
	TEMPERATURE SENSOR	EWT	ENTERING WATER TEMPERATURE
	NOTE	FF	FINISH FLOOR
	EQUIPMENT DESIGNATOR	FIXT.	FIXTURE
	GATE VALVE/SHUT-OFF VALVE SEE SPECS	F.O.B.	FLAT ON BOTTOM
	CHECK VALVE	FPM	FEET PER MINUTE
	BALANCING VALVE	FPS	FEET PER SECOND
	FLOW CONTROL/LIMITING VALVE	FT.	FEET / FOOT
	THERMOMETER	GA.	GAUGE
	DIRECTION OF FLOW	GEXH	GREASE EXHAUST AIR DUCT
	PUMP	GPM	GALLONS PER MINUTE
	STRAINER W/DRAIN VALVE	H	HEIGHT
	PRESSURE GAUGE	HP	HORSEPOWER
	PETE'S PLUG	I.D.	INSIDE DIAMETER
	DOUBLE CHECK ASSEMBLY	IN.	INCHES
	PRESSURE REDUCING VALVE	L	LENGTH
	UNION	LBS.	POUNDS
	2-WAY CONTROL VALVE	LDB	LEAVING DRY BULB
	3-WAY CONTROL VALVE	LWB	LEAVING WET BULB
	TRIPLE DUTY VALVE	LWT	LEAVING WATER TEMPERATURE
	CAP	MA	MAKE UP AIR
	MOTORIZED DAMPER	MAX.	MAXIMUM
	BALL/SHUT-OFF VALVE (SEE SPECS)	MBH	THOUSANDS OF BTUs PER HOUR
	FIRE DAMPER	MD	MOTORIZED DAMPER
	FIRE / SMOKE DAMPER	MIN.	MINIMUM
	SMOKE DAMPER	MVD	MANUAL VOLUME DAMPER
	FAN MOTOR	NC	NOISE CRITERIA
		N.C.	NORMALLY CLOSED
		N.I.M.	NOT IN MECHANICAL
		NO.	NUMBER
		N.O.	NORMALLY OPEN
		O.A.	OUTSIDE AIR
		P	PERSON
		PSI	POUNDS PER SQUARE INCH
		P/T	PRESSURE / TEMPERATURE
		R.A.	RETURN AIR
		RECT.	RECTANGULAR
		REQ'D	REQUIRED
		S.A.	SUPPLY AIR
		S.P.	STATIC PRESSURE
		SQ.	SQUARE
		TEMP.	TEMPERATURE
		TYP.	TYPICAL
		VAV	VARIABLE AIR VOLUME
		W	WIDTH
		WB	WET BULB
		WPD	WATER PRESSURE DROP
		Ø	DIAMETER
			(E) EXISTING
			(D) DEMOLISH
			NEW WORK
			G (G) NATURAL GAS
			CD (CD) CONDENSATE DRAIN
			RF (RF) TWO OR THREE REFRIGERANT LINES
			HWS (HWS) HEATING WATER SUPPLY
			HWR (HWR) HEATING WATER RETURN
			EQUIPMENT MAINTENANCE CLEARANCE AND ACCESS

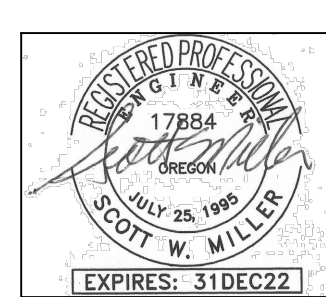
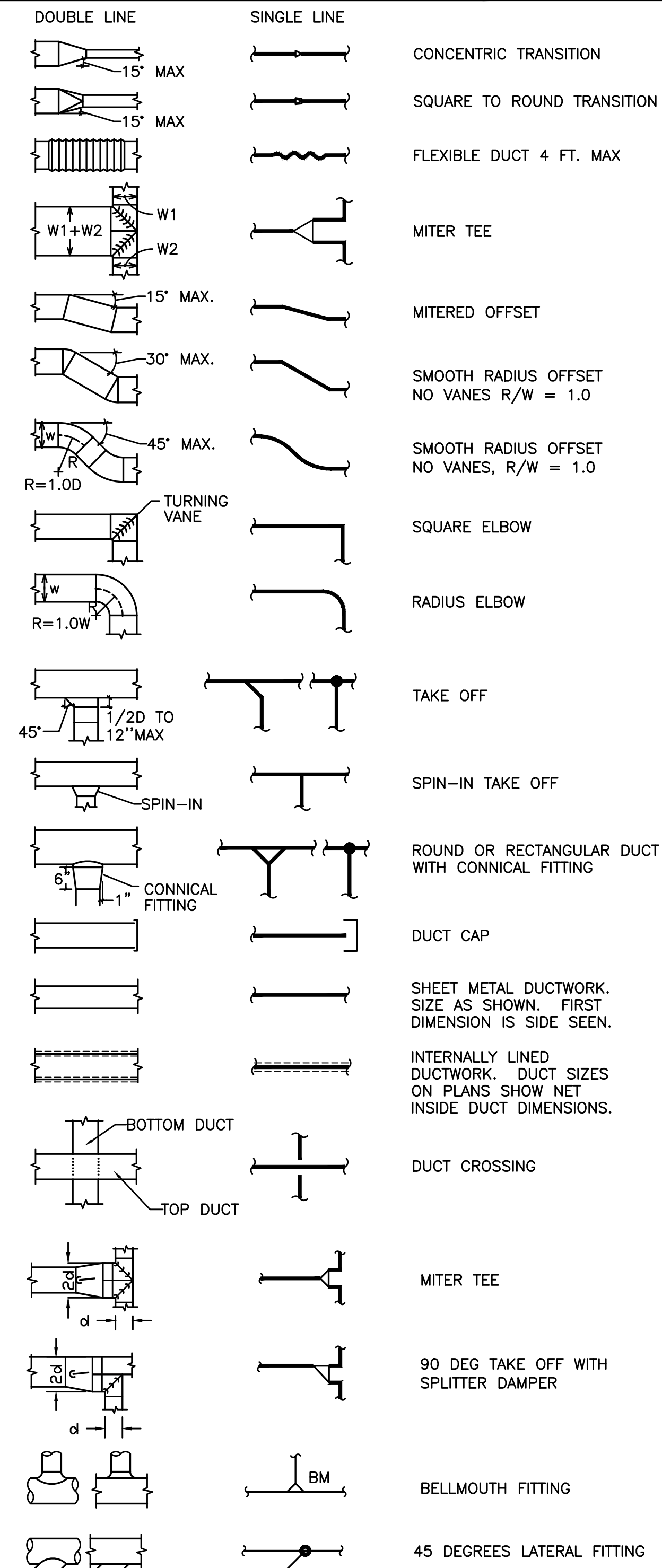
AIR DISTRIBUTION DETAILS



MECHANICAL GENERAL NOTES

- THE DRAWINGS ARE DIAGRAMMATIC. PROVIDE ALL MATERIAL (NEW AND UNDAMAGED) AND LABOR FOR A COMPLETE AND OPERABLE SYSTEM. VERIFY ALL BUILDING MEASUREMENTS DIMENSIONS AND EQUIPMENT LOCATIONS BEFORE PROCEEDING WITH ANY OF THE WORK.
- VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. REPORT DISCREPANCIES BACK TO THE ENGINEER.
- VERIFY INDICATED (E) DUCTWORK/PIPE SIZES PRIOR TO RECONNECTING NEW EQUIPMENT. EQUIPMENT SHALL NOT BE CONNECTED TO EXISTING DUCT/PIPE OF SMALLER DIAMETER THAN NEW DUCT/PIPE. REPORT DISCREPANCIES BACK TO ENGINEER.
- DO NOT FABRICATE EQUIPMENT SUPPORTS/BASES W/O CONFIRMING SPACE EXISTS AND THE BUILDING ATTACHMENT POINTS.
- REFER TO THE MECHANICAL SPECIFICATIONS FOR MATERIALS, EQUIPMENT, AND ADDITIONAL CONSTRUCTION INSTRUCTIONS NOT COVERED BY THESE PLANS.
- ALL INSTALLATIONS SHALL COMPLY WITH APPLICABLE FEDERAL AND STATE CODES INCLUDING, 2019 OREGON STRUCTURAL SPECIALTY CODE (OSSC) INCLUDING APPENDIX N FOR OREGON FIRE CODE REGULATIONS, 2021 OREGON PLUMBING SPECIALTY CODE (OPSC), 2019 OREGON MECHANICAL SPECIALTY CODE (OMSC), 2019 OREGON ENERGY EFFICIENCY SPECIALTY CODE (OEESC), AND NATIONAL FIRE PROTECTION ASSOCIATION (NFPA). WHERE TWO CODES DIFFER THE MORE STRICT OF THE TWO SHALL BE FOLLOWED.
- OBTAIN ALL NECESSARY PERMITS AND INSPECTIONS REQUIRED BY THE GOVERNING AUTHORITIES HAVING JURISDICTION. SUBMIT ALL CERTIFICATES PRIOR TO ACCEPTANCE.
- COORDINATE ALL MECHANICAL AND CONTROL WORK WITH GENERAL CONTRACTOR, CONTROL CONTRACTOR, ELECTRICAL AND ARCHITECTURAL.
- COORDINATE OTHER TRADES FOR PATCH/REPAIR OF WALLS WHERE EXISTING SENSORS ARE REMOVED OR MODIFIED.
- PATCH & REPAIR WALLS / FLOORS / CEILING WHERE OLD DUCTWORK/PIPES HAVE BEEN REMOVED TO MATCH EXISTING FINISHES.
- COORDINATE WITH OTHER CRAFTS AS REQUIRED TO COMPLETE WORK IN ACCORDANCE WITH CONSTRUCTION SCHEDULE.
- PROVIDE OWNER INSTRUCTION BY QUALIFIED PERSONNEL ON EQUIPMENT AND SYSTEMS AT OWNER'S REQUEST.
- ALL DUCTWORK SHALL BE GALVANIZED STEEL, UNLESS OTHERWISE INDICATED, CONFORMING TO LATEST SMACNA, ASHRAE, OMSC, NFPA, AND UL STANDARDS.
- MANUFACTURERS AND MODEL NUMBERS LISTED IN THE EQUIPMENT SCHEDULES ARE THE BASIS OF DESIGN.
- CUT WALLS FOR PROPER EQUIPMENT, DUCT OR PIPE INSTALLATION. FILL HOLES WHICH ARE CUT OVERSIZED FOR A TIGHT FIT AROUND OBJECTS PASSING THROUGH.
- PROVIDE UL LISTED FIRESTOP SYSTEM TO MAINTAIN THE CODE REQUIRED F AND T RATING OF THE CONSTRUCTION ASSEMBLY AT A DUCT/PIPE PENETRATION THROUGH A RATED BUILDING CONSTRUCTION.
- INSTALL LABELS ON ALL MECHANICAL EQUIPMENT. SEE SPECIFICATIONS FOR CRITERIA.
- CONTROLS AND WIRING SHALL MEET ALL ELECTRICAL REQUIREMENTS OF APPLICABLE ELECTRICAL SPECIFICATIONS AND REQUIREMENTS OF OWNER, BUILDING OFFICIALS AND EQUIPMENT SUPPLIERS OF EQUIPMENT INSTALLED ON PROJECT.
- ELECTRIC MOTORS SHALL HAVE BUILT-IN THERMAL OVERLOAD PROTECTION OR BE PROTECTED EXTERNALLY WITH SEPARATE THERMAL OVERLOAD DEVICES, WITH LOW-VOLTAGE RELEASE OR LOCK OUT AS REQUIRED.
- ALL NEW EQUIPMENT, PIPING, CONDUIT, AND DUCTWORK SHALL BE INSTALLED PER CURRENT SEISMIC CODE REQUIREMENTS.
- PROVIDE LOW LEAK AUTOMATIC DAMPERS ON OUTSIDE AIR, EXHAUST AIR AND RELIEF AIR CONTROL DAMPERS WHERE THESE ARE INDICATED.

AIR DISTRIBUTION DETAILS



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DSGN By:	MG
Acad File:	

BEAVERTON SCHOOL DISTRICT
ERROL HASSELL ES HVAC UPGRADE
18100 SW BANY ROAD
BEAVERTON OREGON

MECHANICAL LEGEND, ABBREVIATIONS & GENERAL NOTES

PERMIT/BID SET
SEPTEMBER 2021



Consulting Engineers
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EXISTING AIR HANDLING UNITS SCHEDULE																																												
DESIGN SYMBOL	ASSOCIATED RETURN FAN UNIT	SERVES	OA MIN	OA MAX	SUPPLY FAN				RETURN/EXHAUST FAN				NEW DX COOLING COIL - R410A								HEATING WATER COILS								ZONE	COOLING	UNIT	ELECTRICAL					SEE CNTR'S	NEW DX COIL	REMARKS NOTES	DESIGN BASIS				
					SA	TSP	BHP	HP	RA	TSP	BHP	HP	CAPACITY MBH		EAT F		LAT F		AMBIENT	SA	OSA	CAP MBH	EAT	LAT F	EWT	LWT	FLOW	WTR PD FT H2O				AIR PD IN H2O	T'STAT	ECONO-MIZER	SMOKE DETECT	POWER V/PH/Hz					VFD DRIVE	FUSE AMPS	MCA	EMERG. POWER
													TOTAL	SENS	DB	WB	DB	WB																										
ACU-1A	RF-1A	BLDG 200	2,290	7,330	7,330	2.80			5	7,330	0.6		1.5	260.0	214.9	79.6	63.6	53.0	51.5	88.0/67.0	7,330.0	2288	SEE HEATING COIL SCHEDULE FOR NEW COIL								70	YES	EXISTING	480/3/60	YES			NO	1/M502	CARRIER	1,2,3,4,5,6,7,8,9,16	EXISTING PACE A-20		
ACU-1B	RF-1B	BLDG 200	2,275	7,300	7,300	2.80			5	7,300	0.6		2	259.7	213.9	79.2	63.4	53.0	51.5	88.0/67.0	7,300.0	2275	SEE HEATING COIL SCHEDULE FOR NEW COIL								70	YES	EXISTING	480/3/60	YES			NO	1/M502	CARRIER	1,2,3,4,5,6,7,8,9,16	EXISTING PACE A-20		
ACU-2	RF-2	CAFETERIA	1,070	2,500	2,500	2.00			1.5	2,500	0.5	0.75	80.0	0.0	80.3	64.4	57.0	55.5	88.0/67.0	2,500.0	1070	SEE HEATING COIL SCHEDULE FOR NEW COIL								70	YES	EXISTING	480/3/60	YES			NO	1/M503	CARRIER	1,2,3,4,5,6,7,8,9,10,15	EXISTING PACE A-12			
ACU-3A	RF-3A	BLDG 300	2,870	8,210	8,210	2.80			7.5	8,210	0.6	3	337.0	245.0	79.6	65.3	53.0	51.5	88.0/67.0	8,210.0	2870	SEE HEATING COIL SCHEDULE FOR NEW COIL								70	YES	EXISTING	480/3/60	YES			NO	1/M502	CARRIER	1,2,3,4,5,6,7,8,9,16	EXISTING PACE A-20			
HVU-1	-	GYMNASIUM	1,750	6,100	6,100	1.50			5	6,100			NO COOLING COIL								6,100.0	1750	171.0	56.2	82	140	120	17	4.0	0.2	70	YES	EXISTING	480/3/60	YES			NO	2/M503	CARRIER	1,2,4,5,7,9,11	EXISTING PACE A-16		
HVU-2	-	LOCKER&TOILET	0	1,725	1,725	1.25			1	1,725											1,740.0	0	18.0	65	74	140	120	2	4.0	0.2	70	YES	NO	480/3/60	NO			NO	3/M503	CARRIER	1,2,4,5,7,9,11	EXISTING PACE A-9		
HVU-3	-	KITCHEN	2,800	5,600	5,600	1.25		(2) 2	5,600			5,600.0									5600	350.0	22	79	140	100	18	4.0	0.7	70	YES	EXISTING	480/3/60	YES			NO	4/M503	CARRIER	1,2,4,5,7,9,12	EXISTING PACE B-11			
MZU-1	RF-4	ADMINISTRATION	MZU IS REPLACED BY 3 FCU; SEE SCHED						1,950	0.5		0.75	COIL IS REPLACED SEE FCUs					COIL IS REPLACED SEE FCUs										YES	EXISTING		YES			NO	5/M503	CARRIER	3,7,13,14							
NOTES:																																												
1 REPLACE EXISTING SUPPLY FAN MOTOR WITH NEW MOTOR (VFD CONTROLLED WHERE INDICATED).										5 CLEAN AND INSPECT EXISTING COILS TO REMAIN, SEE SPECS.										9 REPLACE DAMPERS AND DAMPER ACTUATORS.										13 INTERLOCK THE RETURN RF-4 FAN MOTOR W/ THE NEW FAN-COILS FANS.														
2 SERVICE AND CLEAN AIR-HANDLERS; REPLACE FILTERS.										6 REPLACE EXISTING DX COIL WITH NEW DX COIL.										10 REPLACE EXISTING HEATING COIL WITH NEW COIL TO MATCH EXISTING										14 BALANCE RETURN AIR FAN PER PLANS.														
3 REPLACE EXISTING RETURN/RELIEF FAN MOTOR WITH NEW VFD CONTROLLED MOTOR.										7 VERIFY (E)POWER CONNECTION AND MOTOR HP ON SITE PRIOR TO ORDERING EQUIPMENT.										11 PROVIDE NEW 3WAY CONTROL VALVE AT HEATING COIL; SEE DETL 2/M602										15 NEW COIL SIZES SHALL FIT IN CABINET; APPROX 37"W X 27"H. VERIFY ON SITE.														
4 BALANCE WATER FLOW, SUPPLY AIR, RETURN AIR AND OUTSIDE AIR VENTILATION AIRFLOW AS SHOWN.										8 INTERLOCK SUPPLY FAN (SF) MOTOR WITH RETURN/EXHAUST (RF/EF) FAN MOTOR										12 PROVIDE NEW 2WAY CONTROL VALVE AT HEATING COIL. SEE DETL 1/M602										16 NEW COIL SIZES SHALL FIT IN CABINET; APPROX 65"W X 46"H. VERIFY ON SITE.														
UPDATED: 9/22/2021 19:21																																												

NEW LARGE OUTDOOR CONDENSING UNITS SCHEDULE																						
DESIGN SYMBOL	SERVES	COMPRESSOR				REFRIG. CHARGE LBS	DX COOLING								ELECTRICAL				UNIT WEIGHT	INTERLOCK	REMARKS NOTES	DESIGN BASIS
		TYPE DIGITAL SCROLL	AMPS		LOCKED ROTOR		CAPACITY MBH		EVAPORATOR EAT F		EVAPORATOR LAT F		AMB. TEMP DB/WB F	MIN SEER	POWER VOLT/PHASE/HZ	UNIT MCA	UNIT MAX MOCP	EMERGENCY POWER				
			RATED LOAD				TOTAL	SENS	DB	WB	DB	WB										
DXC-1A	ACU-1A	2 STAGE	18.6/18.6	125/125		260.0	214.9	79.6	63.6	53.0	51.5	88.0/67.0	11.0	460/3/60	47.7	60	NO	1131	ACU-1A	1,2,3,4,5	38APD0256H	
DXC-1B	ACU-1B	2 STAGE	18.6/18.6	125/125		259.7	213.9	79.2	63.4	53.0	51.5	88.0/67.0	12.9	460/3/60	47.7	60	NO	1131	ACU-1B	1,2,3,4,5	38APD0256H	
DXC-2	ACU-2	2 STAGE	12.6	100		80.0	0.0	80.3	64.4	57.0	55.5	88.0/67.0	10.8	460/3/60	18	25	NO	391	ACU-2	1,2,3,4,5	38AUZE08A0	
DXC-3A	ACU-3A	2 STAGE	16.9/26.9	179/179		337.0	245.0	79.6	65.3	53.0	51.5	88.0/67.0	11.0	460/3/60	66.3	90	NO	1300	ACU-3A	1,2,3,4,5	38APD0306H	
NOTES:																						
1 DISCONNECT SWITCH BY OTHERS.											4. CONSULT WITH MANUFACTURER AND PROVIDE LIQUID LINE CHECK VALVES.											
2 PROVIDE REFRIGERANT PIPING AND DEVICES PER MANUFACTURER'S RECOMMENDATIONS.											5. CONSULT WITH MANUFACTURER AND PROVIDE DUAL SUCTION RISER AS REQUIRED.											
3 PROVIDE SEISMICALLY RESTRAINT VIBRATION ISOLATION ROOF CURB.																						
UPDATED: 9/22/2021																						

NEW HEATING WATER COILS SCHEDULE																					
NEW DESIGN COIL TAG	EXISTING / REPAVED COIL NUMBER	SYSTEM SERVED	HOT WATER COILS												COIL VOLUME GAL	COIL SIZE W x H	CONTROL VALVE		FOR PIPING CONFIGUR. SEE DET'L	REMARKS NOTES	DESIGN BASIS
			MAX. FLOW (CFM)	MIN FLOW (CFM)	MBH RE'Q'D	ENT AIR MIXED DB	LAT F DB	EWT F	LWT F	FLOW GPM	FACE VELOCITY FPM	PIPE SIZE IN	MAX WPD FT HD	MAX APD IN H2O			NEW OR EXISTING	NEW VALVE TYPE			
			HOT WATER COIL																		HOT WATER COIL
HC-1A	NEW COIL	ACU-1A	7330	7330	80.6	55.0	65	140.0	110.1	5	469	1	3.36	0.05	2.06	42.50x67.25	NEW	3-WAY	2/M602	1,2	HW58CAD06003750003R
HC-1B	NEW COIL	ACU-1B	7300	7300	80.0	55.0	65	140.0	110.1	5	469	1	3.36	0.05	2.06	42.50x67.25	NEW	2-WAY	1/M602	1,2	HW58CAD06003750003R
HC-2	NEW COIL	ACU-2	2500	2500	97.7	49.4	85	140	110	7	500	1	4.00	0.06	2.00	37x27	NEW	3-WAY	2/M602	2,3,4	TO FIT EXISTING CABINET
HC-3A	NEW COIL	ACU-3A	8210	8210	106.4	53.2	65	140.0	109.9	7	469	1	5.2	0.05	2.41	47.00x67.25	NEW	3-WAY	2/M602	1,2	HW58CAE06004200004R
NOTES:																					
1 PROVIDE NEW CASED HEATING COIL INLINE WITH SUPPLY AIR DUCT.																					
2 REBALANCE COIL FLOW AS SHOWN.																					
3 VERIFY EXISTING CABINET SIZE FOR FIT.																					
4 PROVIDE NEW HEATING WATER COIL TO FIT IN PLACE OF THE EXISTING WATER COIL INSIDE A PACE A-12 CABINET, VERIFY SIZE.																					

EXHAUST FANS SCHEDULE																	
EXISTING DESIGN SYMBOL	FAN TYPE	SERVES	MIN CFM	MAX CFM	ESP INCHES	MOTOR						MOUNTING	DAMPER TYPE	OPER. WEIGHT LBS	FOR CONTROL DIAGRAM SEE	REMARKS NOTES	DESIGN BASIS MODEL#
						BHP	HP	RPM	DRIVE TYPE	SPEED CONTROLLER	VOLTS/PHASE /HZ-AMPS						
EF-M	EXISTING	GENERAL EXHAUST	500	500	0.25							(E)ROOF CURB	BACKDRAFT		1/M501	7	EXISTING TO REMAIN
EF-2	EXISTING	GENERAL EXHAUST	330	330	0.50		1/4					(E)ROOF CURB	BACKDRAFT		1/M501	7	EXISTING TO REMAIN
REU-3	NEW	BOILER ROOM	1000	1000	0.25		1/4	1700	DIRECT	DIAL	115/1/60-3.8	(E)ROOF CURB	MOTORIZED	50	1/M501	1,2,3,4	GREENHECK G
REU-4	EXISTING	LOCKERS	1550	1550	0.75		1				460/3/60	(E)ROOF CURB	BACKDRAFT		1/M501	7	EXISTING TO REMAIN
REU-5	NEW GREASE EA	KITCHEN HOOD	2850	5700	0.88		2	1700	DIRECT	DIAL	460/3/60-7.2	(E)ROOF CURB	NONE	150	1/M501	1,2,3,4,6,8	GREENHECK CUE
REU-6	NEW DISHWASH EA	DISHWAHSER HOOD	1100	1100	0.38		1/2	1700	DIRECT	DIAL	115/1/60-6.6	(E)ROOF CURB	MOTORIZED	75	1/M501	1,2,3,4,5	GREENHECK CUE
REU-7	NEW	GENERAL KITCHEN	290	290	0.50		1/6	1700	DIRECT	DIAL	115/1/60-2.8	(E)ROOF CURB	BACKDRAFT	50	1/M501	1,2,3,4	GREENHECK CUE
REU-8	NEW	GENERAL MAINT	500	500	0.25		1/4	1700	DIRECT	DIAL	115/1/60-3.8	(E)ROOF CURB	MOTORIZED	50	1/M501	1,2,3,4	GREENHECK G
REU-9	EXISTING	TOILETS BLDG 300	890	890	0.50		1/3					(E)ROOF CURB	BACKDRAFT		1/M501	7	EXISTING TO REMAIN
CEU-10	EXISTING	PRINCIPAL RM	125	125	0.10		1/50					ABOVE CLG	BACKDRAFT		1/M501	7	EXISTING TO REMAIN
NOTES:																	
		1 REPLACE EXISTING FLEX CONNECTORS WITH NEW.															
		2 PROVIDE NEW ECM MOTOR WITH DIAL ON MOTOR FOR BALANCING.															
		3 DISCONNECT SWITCH BY ELECTRICAL.															
		4 VERIFY (E)POWER CONNECTION AND MOTOR HP ON SITE PRIOR TO ORDERING EQUIPMENT.															
		5 PROVIDE DRAIN CONNECTION															
		6 PROVIDE GREASE TRAP W/DRAIN CONNECTION AND ABSORBENT MATERIAL-FACTORY MOUNTED.															
		7 CLEAN AND SERVICE EXISTING FAN.															
		8 PROVIDE NEW FAN FOR INSTALLATION TO EXISTING VENTED SHAFT.															
UPDATED: 9/22/2021 18:47																	

EXISTING AIR DEVICE SCHEDULE - TERMINAL UNIT																											
TAG	SYSTEM	AIRSIDE DATA										EXISTING REHEAT COIL DATA										SEE DETAILS		CONTROL VALVE		REMARKS NOTES	BASIS OF DESIGN
		MAX FLOW (CFM)	MIN FLOW (CFM)	VENT CFM	UNOCCUPIED MIN FLOW (CFM)	AIR PD STD BOX (IN. WG)	MIN INLET SP.(IN)	MIN INLET SIZE	EAT (F)	LAT MIN (F)	EWT (F)	LWT (F)	MAX FLOW (GPM)	SCH CAP. (MBH)	ROWS EXIST	MAX WPD FT H2O	PIPING RUNOUT (IN)	CONTROL DIAGRAM DETL	PIPING CONFIG DETL	2-WAY	3-WAY						
TU-1-1A	ACU-1A	330	165	230	66	0.25	0.95	6	65	95	180	165	0.7	5.45	1	4	3/4	2/M502	2/M602		X	1,2,3,4	EXISTING				
TU-2-1A	ACU-1A	750	375	400	150	0.16	0.86	9	65	95	180	165	1.7	12.38	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-3-1A	ACU-1A	750	375	390	150	0.16	0.86	9	65	95	180	165	1.7	12.38	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-4-1A	ACU-1A	950	475	290	190	0.23	0.93	10	65	95	180	165	2.1	15.68	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-5-1A	ACU-1A	750	375	390	150	0.16	0.86	9	65	95	180	165	1.7	12.38	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-6-1B	ACU-1B	950	475	290	190	0.23	0.93	10	65	95	180	165	2.1	15.68	1	4	3/4	2/M502	2/M602		X	1,2,3,4	EXISTING				
TU-7-1B	ACU-1B	750	375	400	150	0.16	0.86	9	65	95	180	165	1.7	12.38	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-8-1B	ACU-1B	750	375	400	150	0.16	0.86	9	65	95	180	165	1.7	12.38	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-9-1B	ACU-1B	1,050	525	400	210	0.22	0.92	12	65	95	180	165	2.3	17.33	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-11-1B	ACU-1B	1,050	525	400	210	0.22	0.92	12	65	95	180	165	2.3	17.33	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-12-1B	ACU-1B	750	375	400	150	0.16	0.86	9	65	95	180	165	1.7	12.38	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-13-1B	ACU-1B	1,050	525	400	210	0.22	0.92	12	65	95	180	165	2.3	17.33	1	4	3/4	2/M502	2/M602		X	1,2,3,4	EXISTING				
TU-14-1B	ACU-1B	950	475	290	190	0.23	0.93	10	65	95	180	165	2.1	15.68	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-15-1A	ACU-1A	1,050	525	390	210	0.22	0.92	12	65	95	180	165	2.3	17.33	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-16-1A	ACU-1A	950	475	300	190	0.23	0.93	10	65	95	180	165	2.1	15.68	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-17-1A	ACU-1A	1,050	525	390	210	0.22	0.92	12	65	95	180	165	2.3	17.33	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-18-1A	ACU-1A	750	375	390	150	0.16	0.86	9	65	95	180	165	1.7	12.38	1	4	3/4	2/M502	2/M602		X	1,2,3,4	EXISTING				
TU-19-3A	ACU-3A	540	270	270	108	0.21	0.91	8	65	95	180	165	1.2	8.91	1	4	3/4	2/M502	2/M602		X	1,2,3,4	EXISTING				
TU-20-3A	ACU-3A	885	443	130	177	0.23	0.93	10	65	95	180	165	1.9	14.60	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-21-3A	ACU-3A	330	165	220	66	0.25	0.95	6	65	95	180	165	0.7	5.45	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-22-3A	ACU-3A	750	375	370	150	0.16	0.86	9	65	95	180	165	1.7	12.38	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-23-3A	ACU-3A	750	375	400	150	0.16	0.86	9	65	95	180	165	1.7	12.38	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-24-3A	ACU-3A	750	375	400	150	0.16	0.86	9	65	95	180	165	1.7	12.38	1	4	3/4	2/M502	2/M602		X	1,2,3,4	EXISTING				
TU-25-3A	ACU-3A	900	450	4,250	180	0.23	0.93	10	65	95	180	165	2.0	14.85	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-26-3A	ACU-3A	450	225	80	90	0.27	0.97	7	65	95	180	165	1.0	7.43	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-27-3A	ACU-3A	1,150	575	620	230	0.22	0.92	12	65	95	180	165	2.5	18.98	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-28-3A	ACU-3A	950	475	400	190	0.23	0.93	10	65	95	180	165	2.1	15.68	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-29-3A	ACU-3A	950	475	400	190	0.23	0.93	10	65	95	180	165	2.1	15.68	1	4	3/4	2/M502	1/M602	X		1,2,3,4	EXISTING				
TU-30-3A	ACU-3A	750	375	370	150	0.16	0.86	9	65	95	180	165	1.7	12.38	1	4	3/4	2/M502	2/M602		X	1,2,3,4	EXISTING				
NOTES:																											
1 EXISTING TERMINAL BOX. REBALANCE AIR AND WATER FLOW AS INDICATED.																											
2 REPLACE EXISTING CONTROL VALVE WITH NEW CONTROL VALVE. REPLACE ISOLATION VALVE AND STRAINER.																											
3 CLEAN AND INSPECT COIL.																											
4 REPLACE EXISTING VAV CONTROLLER WITH NEW CONTROLLER																											

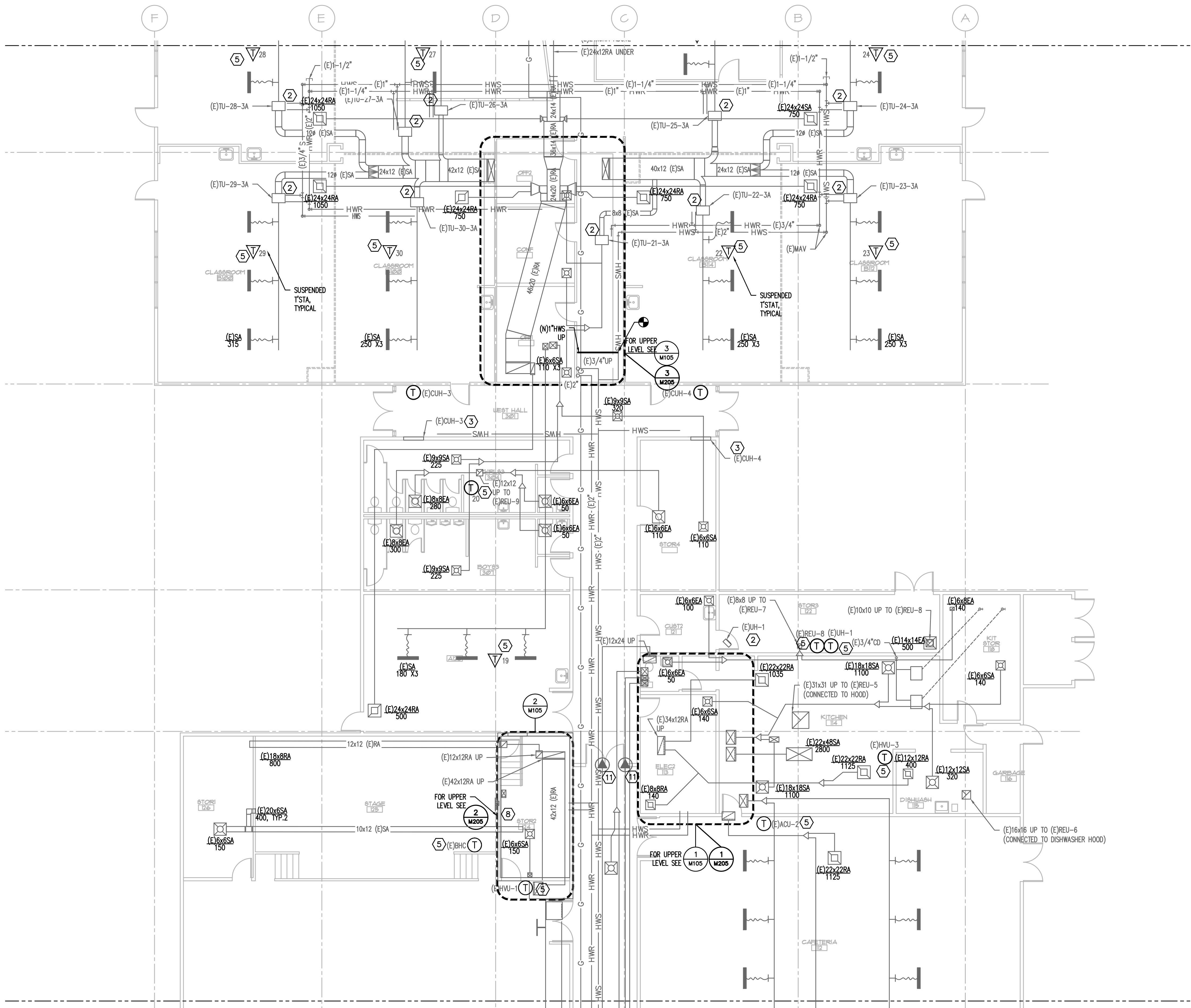
EXISTING CABINET AND UNIT HEATER SCHEDULE														
DESIGN SYMBOL	INSTALLATION	SUPPLY FAN				HOT WATER COIL						POWER VOLT/PHASE/HZ	REMARKS	EXISTING TO REMAIN SEE NOTED DETAILS FOR (N) PIPING CONNECTION & CONTROLS
		SA	ESP	HP	MBH REQ'D MBH	ENT AIR MIXED DB	EWI	LWT	FLOW	MAX WPD FT HD	VAVLE TYPE			
		CFM	IN WG				F	F	GPM					
CUH-1	RECESSED		0.2	1/20	23.0	60	180		2.0	4.0	2W	120/1/60	1,2,3,4,5	3/M602; 5/M501
CUH-2	RECESSED		0.2	1/20	12.0	60	180		1.0	4.0	2W	120/1/60	1,2,3,4,5	3/M602; 5/M501
CUH-3	RECESSED		0.2	1/20	12.0	60	180		1.0	4.0	2W	120/1/60	1,2,3,4,5	3/M602; 5/M501
CUH-4	RECESSED		0.2	1/20	12.0	60	180		1.0	4.0	2W	120/1/60	1,2,3,4,5	3/M602; 5/M501
UH-1	HANGING		0.0	1/40	20.0	60	180		1.5	4.0	2W	120/1/60	1,2,3,4,	4/M602; 4/M501
NOTES:														
1 SERVICE AND CLEAN EQUIPMENT.														
2 REPLACE BELTS														
3 CONTROL FROM DDC SYSTEM.														
4 PROVIDE NEW CONTROL VALVE AS INDICATED.														
5 PROVIDE NEW LARGER ACCESS PANEL IN FIRE RATED WALL FOR VALVES AND DEVICES ACCESS.														

OUTSIDE VENTILAION AIRFLOW MECHANICAL CODE ANALYSIS																												
UNIT	ROOM	REMARKS	MECH CODE CLASSIFICATION	SPACE AREA (FT ²) - Az	OCCUPANCY MAX(PEOPLE / 1000FT ²)	PLUMBING FIXTURES	OA CFM / PERSON (FIXTURE) - Rp	OA CFM/FT ² - Ra	EA REQUIRED CFM / FIXTURE OR SF	CODE PEOPLE	DESIGN ROOM (FIXTURE) Pz	OCCUPANT OSA CFM / PERSON VbSp =Rp/Pz	AREA OSA CFM VbSz =Ra/Az	MECH CODE ROOM EXHAUST CFM	PROVIDED EXHAUST CFM (2)	REQUIRED OA CFM Vbz =Sum(Vbz)	MECH CODE REQUIRED OA CFM Vbz =Vbz/Ez	MAXIMUM PROVIDED ROOM SUPPLY AIR CFM	MINIMUM PROVIDED SUPPLY AIR CFM	ZONE EFFECT. FACTOR. Ez(3)	MAXIMUM OUTDOOR AIR FRACTION Vpz	SYSTEM VENTILATION EFFICIENCY AT MAX Zp - Ev (4)100%DIRECT OA=1	OCCUPANT DIVERSITY - D =Ps/(sum Pz)	UNCORREC OA INTAKE - Vou = D xSum(Rp x Pz)+Sum(Ra x Az)	MIN CODE OUTDOOR AIR CFM - Vol / Ev	OUTDOOR AIR INTAKE CFM - Vol	PROVIDED MINIMUM OSA CFM (1)	
TU-1-1A	200 - HALL		CORRIDOR	233	3		0	0.06	0	0	0	14	0	0	14	18	0	0	0	0.8				30				
TU-3-1A	202A - CLASSROOM		CLASSROOM-8	962	25		10	0.12	0	12	12	120	114	0	0	234	293	750	750	0.8	39.0%			390				
TU-5-1A	204 - CLASSROOM		CLASSROOM-8	959	25		10	0.12	0	12	12	120	115	0	0	235	294	750	750	0.8	39.2%			392				
TU-15-1A	212 - CLASSROOM		CLASSROOM-8	959	25		10	0.12	0	12	12	120	115	0	0	235	294	1050	1050	0.8	28.0%			392				
TU-17-1A	213 - CLASSROOM		CLASSROOM-8	952	25		10	0.12	0	12	12	120	114	0	0	234	293	1050	1050	0.8	27.9%			390				
TU-18-1A	214 - CLASSROOM		CLASSROOM-8	967	25		10	0.12	0	12	12	120	116	0	0	236	295	750	750	0.8	39.3%			-				
ACU-1A	TOTALS			6814						90	90	840	1043	0	330	1883	2354	7330	7330	0.8	40%	0.75	0.8	1715	2287	2287	2,290	
TU-14-1B	201B - LIBRARY		LIBRARY	1202	10		5	0.12	0	6	6	30	144.2	0	0	174.2	218	950	950	0.8	23%			291				
TU-6-1B	201C - LIBRARY		LIBRARY	1202	10		5	0.12	0	6	6	30	144.2	0	0	174.2	218	950	950	0.8	23%			291				
TU-7-1B	205 - CLASSROOM		CLASSROOM-8	959	25		10	0.12	0	12	12	120	120	0	0	240	300	750	750	0.8	40%			400				
TU-8-1B	206 - CLASSROOM		CLASSROOM-8	950	25		10	0.12	0	12	12	120	120	0	0	240	300	750	750	0.8	40%			400				
TU-9-1B	207 - CLASSROOM		CLASSROOM-8	953	25		10	0.12	0	12	12	120	120	0	0	240	300	1050	1050	0.8	29%			400				
TU-11-1B	209 - CLASSROOM		CLASSROOM-8	953	25		10	0.12	0	12	12	120	120	0	0	240	300	1050	1050	0.8	29%			400				
TU-12-1B	210 - CLASSROOM		CLASSROOM-8	955	25		10	0.12	0	12	12	120	120	0	0	240	300	750	750	0.8	40%			400				
TU-13-1B	211 - CLASSROOM		CLASSROOM-8	959	25		10	0.12	0	12	12	120	120	0	0	240	300	1050	1050	0.8	29%			400				
ACU-1B	TOTALS			8133						84	84	780	1008.4	0	0	1788.4	2236	7300	7300	0.8	40%	0.75	0.9	1710	2280	2280	2,275	
	112 - CAFETERIA		CAFETERIA	2335	100		7.5	0.18	0	117	117	877.5	420.3	0	0	1297.8	1622	2500	2500	0.8	65%			1622			2500	
ACU-2	TOTALS			2335						117	117	877.5	420.3	0	0	1297.8	1622	2500	2500	0.8	65%	1	0.74	1070	1070	1070	1070	
TU-19-3A	121 - CUST		UTILITY	107	-	1	0	0	50	0	0	0	0	0	100	0	0	0	0	0.8				-				
TU-20-3A	123 - ARTS		CLASSROOM-8	667	25		10	0.12	0	8	8	80	80	0	0	160	200	540	540	0.8	37.0%			267				
	300A - RR		TOILET	28	20	1	0	0	50	0	0	0	50	0	0	50	0	0	0	0.8				-				
	300B - RR		TOILET	28	20	1	0	0	50	0	0	0	50	0	0	50	0	0	0	0.8				-				
	301 - HALL		CORRIDOR	924	3		0	0.06	0	0	0	60	0	0	0	60	75	320	320	0.8	23%			100				
	303 - STOR		WAREHOUSE	277	2		10	0.06	0	0	0	0	20	0	110	20	25	110	110	0.8	23%			33				
	304 - GIRLS		TOILET	330	20	5	0	0	50	5	5	0	0	250	280	0	0	230	230	0.8				-				
	307 - BOYS		TOILET	330	20	6	0	0	50	6	6	0	0	300	300	0	0	230	230	0.8				-				
TU-27-3A	309 - MULTI-USE		ASSEMBLY-MULTIUSE	789	100		7.5	0.06	0	42	42	320	50	0	0	370	463	1150	1150	0.8	40%			617				
TU-22-3A	310 - CLASSROOM		CLASSROOM-8	843	25		10	0.12	0	11	11	110	110	0	0	220	275	750	750	0.8	37%			367				
TU-23-3A	311 - CLASSROOM		CLASSROOM-8	877	25		10	0.12	0	12	12	120	120	0	0	240	300	750	750	0.8	40.0%			400				
TU-24-3A	313 - CLASSROOM		CLASSROOM-8	979	25		10	0.12	0	12	12	120	120	0	0	240	300	750	750	0.8	40%			400				
TU-26-3A	313B - WORK		OFFICE	605	5		5	0.06	0	2	2	10	40	0	0	50	63	450	450	0.8	14%			84				
TU-28-3A	314 - CLASSROOM		CLASSROOM-8	959	25		10	0.12	0	12	12	120	120	0	0	240	300	950	950	0.8	32%			400				
TU-29-3A	315 - CLASSROOM		CLASSROOM-8	956	25		10	0.12	0	12	12	120	120	0	0	240	300	950	950	0.8	32%			400				
TU-30-3A	316 - CLASSROOM		CLASSROOM-8	863	25		10	0.12	0	11	11	110	110	0	0	220	275	750	750	0.8	37%			367				
TU-21-3A	308 - CORRIDOR		CORRIDOR	1058	3		0	0.06	0	0	0	0	70	0	0	70	88	0	0	0.8				117				
	317A - OFFICE		OFFICE	181	5		5	0.06	0	0	0	25	0	0	0	25	25	110	110	0.8	23%			33				
	317B - CONF		CONFERENCE	144	50		5	0.06	0	4	4	20	10	0	0	30	38	110	110	0.8	35%			51				
	317C - OFFICE		OFFICE	122	5		5	0.06	0	0	0	0	10	0	0	10	13	110	110	0.8	12%			17				
TU-25-3A	320 - CLASSROOM		CLASSROOM-8	684	25		10	0.12	0	9	9	90	90	0	0	180	225	900	900	0.8	25%			300			31%	
ACU-3A	TOTALS			11851						146	146	1220	1150	650	890	2370	2965	8210	8210	0.8	40.3%	0.75	0.8	2126	2835	2835	2870	
	208 - WORK		LIBRARY	740	10		5	0.12	0	4	4	20	88.8	0	0	108.8	136	1600	480	0.8	28%			181				
HP-1	TOTALS			740						4	4	20	88.8	0	0	108.8	136	1600	1600	0.8	28%	0.85	1	136	160	160	450	
	124 - STOR		WAREHOUSE	239	2		10	0.06	0	0	0	0	14.3	0	0	14.3	18	150	150	0.8	12%							
	125 - STAGE		STAGES-STUDIOS	679	70		10	0.06	0	24	24	240	40.7	0	0	280.7	351	800	800	0.8	44%							
	126 - STOR		WAREHOUSE	239	2		10	0.06	0	0	0	0	14.3	0	0	14.3	18	150	150	0.8	12%							
	127 - GYM		PHYSICAL THERAPY	4219	10		20	0.06	0	21	21	420	253.1	0	0	673.1	841	5000	5000	0.8	17%							
HVU-1	TOTALS	[5]		5376						45	45	660	322.4	0	0	982.4	1228	6100	6100	0.8	44%	0.7	1	982	1403	1403	1750	
	101 - CORRIDOR		CORRIDOR	547	3		0	0.06	0	0	2	0	40	0	0	40	40	300	300	1	13%							
	101A - GIRLS		TOILET	28	20	1	0	0	50	0	1	0	0	50	50	0	0	0	0	0.8								
	101B - BOYS		TOILET	28	20	1	0	0	50	0	1	0	0	50	50	0	0	0	0	0.8								
	128 - STOR		WAREHOUSE	79	2		10	0.06	0	0	0	0	4.7	0	0	4.7	6	100	100	0.8	6%							
	128B - RR		TOILET	56	20	1	0	0	50	0	1	0	0	50	50	0	0	0	0	0.8								
	129 - OFFICE		OFFICE	87	5		5	0.06	0	1	0	0	10	0	0	10	13	80	80	0.8	16%							
	130 - LOCKER		LOCKER SPORTS	454	20		0	0	0.5	0	9	0	0	230	400	0	0	330	330	0.8								
	132 - LOCKER		LOCKER SPORTS	456	20		0	0	0.5	0	9	0	0	230	400	0	0	330	330	0.8								
	134 - BOYS		TOILET	282	20	6	0	0	50	0	6	0	0	300	300	0	0	230	230	0.8								
	137 - GIRLS		TOILET	282	20	5	0	0	50	0	6	0	0	300	300	0	0	230	230	0.8								
	138 - ELEC		UTILITY	254	-		0	0	50	0	0	0	0	0	0	0	0	140	140	0.8								
	139 - BOILER		UTILITY	364	-		0	0	50	0	0	0	0	0	0	0	0	0	0	0.8								
HVU-2	TOTALS	[4]		2937						1	35	0	54.7	1210	1550	54.7	59	1740	1740	0.8	16%	0.95	1	55	58	1550	0	
	113 - ELEC		UTILITY	218	-		0	0	50	0	0	0	0	0	0	0	0	140	140	1								
	114 - KITCHEN		KITCHEN	825	20																							



M105

M201



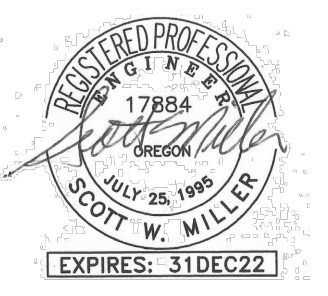
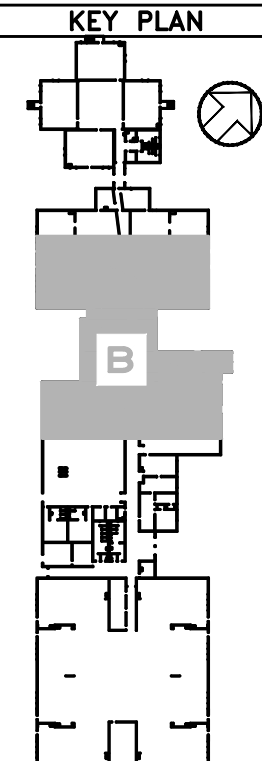
1 PARTIAL MECHANICAL FLOOR PLAN - NEW
M202 SCALE: 1/8" = 1'-0"

GENERAL NOTES

- CONTRACTOR SHALL FIELD VERIFY ON SITE ALL CONDITIONS RELATED TO EQUIPMENT REPLACEMENT, NEW INSTALLATION LOCATIONS AND REFURBISH/REMODEL. NOTIFY ENGINEER FOR ANY MAJOR DISCREPANCIES AS FOUND.
- CONTRACTOR TO PERFORM PRESSURE TESTING OF (E)HEATING & WATER SYSTEM LINES PRIOR TO PLACING INTO SERVICE SYSTEM PER SPECIFICATIONS.
- CONTRACTOR TO COORDINATE ALL UNIT RE-TAGGING AND EQUIPMENT REPLACEMENTS WITH ELECTRICAL CONTRACTOR FOR REVISION AT EXISTING ELECTRICAL PANELS AND ASSOCIATED DESIGNATIONS.
- SEE SPECS. FOR REQUIREMENTS RELATED TO DESIGN OF SEISMIC RESTRAINT AND SUPPORTS.
- OWNER SHALL TAG ANY DEVICES PRIOR TO CONSTRUCTION OR PROVIDE A LIST OF (E) DEVICES THEY WISH THE CONTRACTOR TO SALVAGE & RETURN IN WORKING ORDER TO THEM.
- RE-BALANCE SUPPLY, RETURN AND EXHAUST GRILLES AIRFLOW PER PLANS.

KEYED NOTES

- EXISTING AIR HANDLING UNIT. CLEAN AND SERVICE UNITS PER SPECS. REPLACE SUPPLY AND RETURN/EXHAUST FAN MOTOR, REPLACE DAMPERS AND DAMPER ACTUATORS AND CONTROL DEVICES. RE-BALANCE AIRFLOWS AND WATER FLOW. COORDINATE WITH ELECTRICAL AND CONTROLS. CONFIRM VOLTAGE, PHASE, ROTATION AND HORSEPOWER PRIOR TO SUBMITTAL. SEE SCHEDULE AND DETAIL SHEETS FOR REQUIREMENTS.
- EXISTING TERMINAL UNIT OR UNIT HEATER. REMOVE AND REPLACE VAV CONTROLLER WITH NEW. REMOVE AND REPLACE CONTROL VALVE AND ISOLATION VALVE. REPLACE STRAINER AND ISOLATION VALVES. INSPECT AND CLEAN HEATING COIL. REBALANCE AIRFLOW AND WATERFLOW. SEE SCHEDULES AND DETAIL 1 OR 2/M602 FOR 2W OR 3W VALVE REQUIREMENTS.
- EXISTING CABINET UNIT HEATER. CLEAN UNIT AND SERVICE PER SPECS. REPLACE CONTROL VALVE, ISOLATION VALVES AND STRAINER WITH NEW. REBALANCE AIRFLOW AND WATERFLOW. PROVIDE NEW CONTROLS FOR BLDG DDC INTEGRATION. SEE SCHEDULES AND DETAIL 3/M602 FOR REQUIREMENT.
- EXISTING EXHAUST FAN UNIT TO REMAIN. CLEAN AND SERVICE PER SPECS. REPLACE BDD DAMPER. PROVIDE NEW CONTROLS FOR BLDG DDC INTEGRATION. REBALANCE AIRFLOW. SEE SCHEDULES FOR REQUIREMENT.
- NEW DIGITAL DEVICE. ZONE/SPACE THERMOSTAT TO REPLACE EXISTING IN SAME LOCATION. LABEL WITH ASSOCIATED EQUIPMENT INFORMATION. WHERE OLD SENSOR IS NO LONGER USED PROVIDE A STAINLESS STEEL COVER PLATE OVER HOLE & SECURE & PATCH WALL. PROVIDE FOR BLDG DDC INTEGRATION. REPAIR WALL AROUND NEW SENSOR.
- NEW FAN COIL UNIT. ROUTE (N) REFRIGERANT PIPING TO OUTDOOR CONDENSING UNIT. PROVIDE (N) 3/4" HEATING WATER CONNECTIONS TO COIL. SEE DETAIL 4/M601.
- PROVIDE NEW HEATING COIL INSIDE EXISTING AIR-HANDLING UNIT. SEE DETAIL 1/M602.
- EXISTING HEATING COILS TO REMAIN. INSPECT AND CLEAN COIL. REMOVE AND REPLACE CONTROL VALVE, STRAINER AND ISOLATION VALVE WITH NEW. PROVIDE NEW CONTROLS SEE M5 SERIES FOR BLDG DDC INTEGRATION. REBALANCE AIRFLOW AND WATERFLOW. SEE SCHEDULES AND DETAIL 1 OR 2/M602 FOR 2W OR 2W VALVE REQUIREMENTS.
- EXISTING DIGITAL CONTROL THERMOSTAT TO REMAIN.
- NEW DX COOLING COIL TO REPLACE EXISTING DX COIL INSIDE EXISTING CABINET. ROUTE NEW REFRIGERANT PIPING TO NEW OUTDOOR CONDENSING UNIT. PROVIDE NEW CONDENSATE DRAIN AND CONNECT TO EXISTING. PROVIDE NEW CONTROLS FOR BLDG DDC INTEGRATION. SEE SCHEDULES FOR ADDITIONAL REQUIREMENT.
- EXISTING FUSIBLE LINK FIRE DAMPER TO REMAIN.
- UP TO EXISTING ROOF-TOP UNIT ON ROOF.



Date:	07/21/2021
Proj No:	10181
Drawn By:	MG
Chkd By:	SW
DSN By:	MG
Acad File:	

BEAVERTON SCHOOL DISTRICT
ERROL HASSELL ES HVAC UPGRADE
18100 SW BANY ROAD
BEAVERTON OREGON
PARTIAL MECHANICAL FLOOR PLAN - NEW

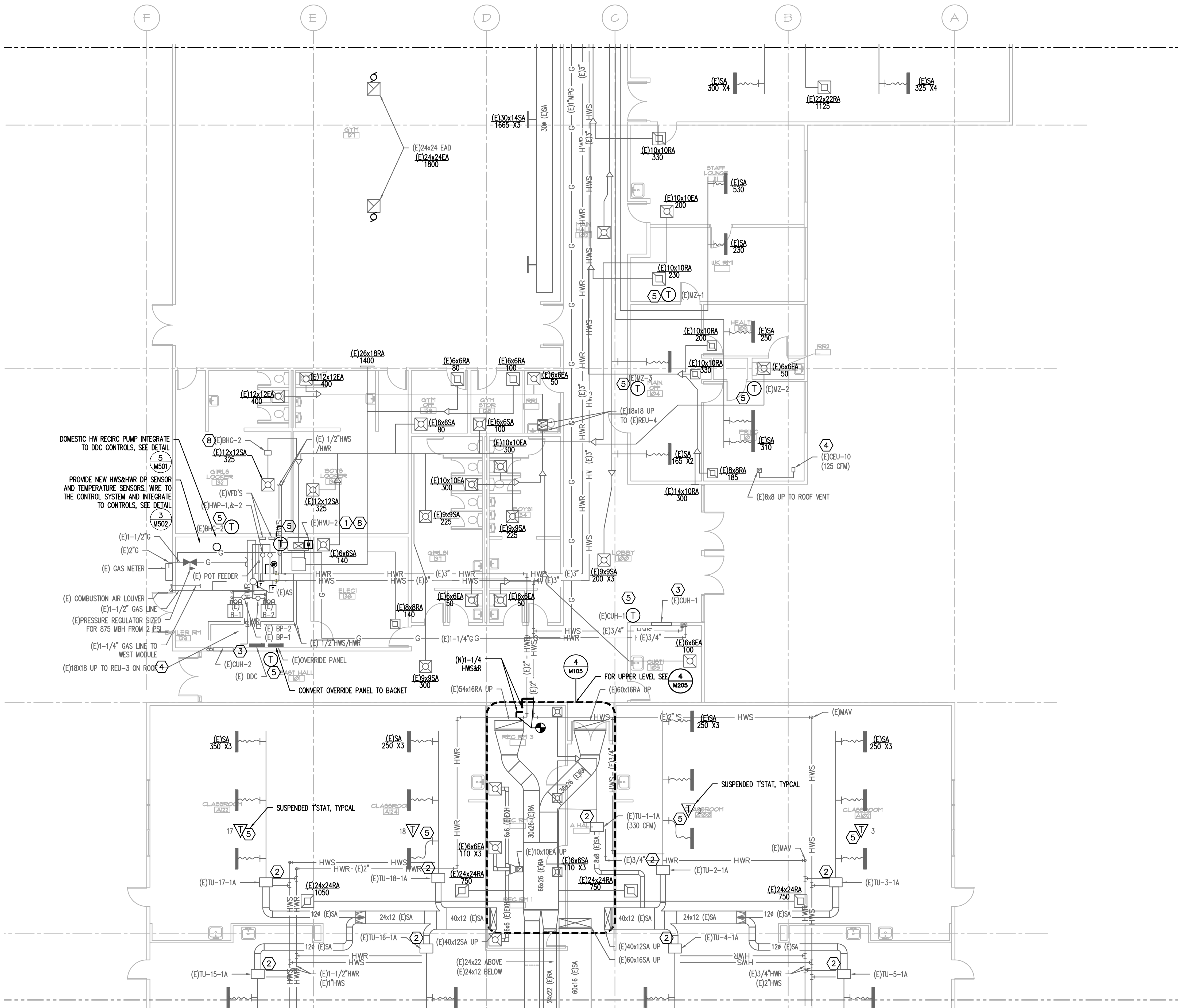
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M202



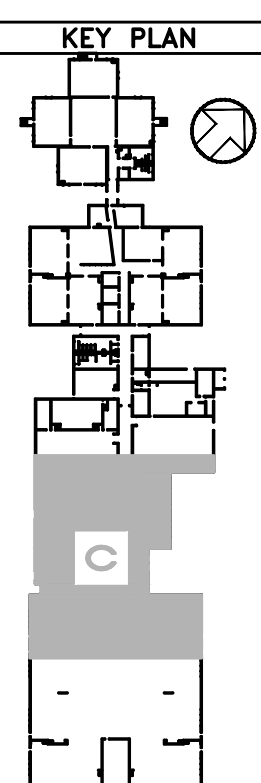
1 PARTIAL MECHANICAL FLOOR PLAN - NEW
M203 SCALE: 1/8" = 1'-0"

GENERAL NOTES

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- UP TO EXISTING ROOF-TOP UNIT ON ROOF.



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Chkd By:	SWM
DSGN By:	MG
Acad File:	

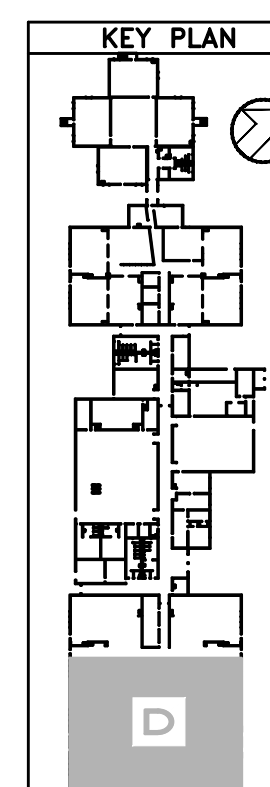
BEAVERTON SCHOOL DISTRICT
ERROL HASSELL ES HVAC UPGRADE
18100 SW BANY ROAD
BEAVERTON OREGON
PARTIAL MECHANICAL FLOOR PLAN - NEW

PERMIT/BID SET
SEPTEMBER 2021



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Date: 07/21/2021
Proj No: 10181
Drawn By: MG
Chkd By: SW
DSGN By: SW
Acad File:

BEAVERTON SCHOOL DISTRICT
ERROL HASSELL ES HVAC UPGRADE
18100 SW BANY ROAD
BEAVERTON OREGON

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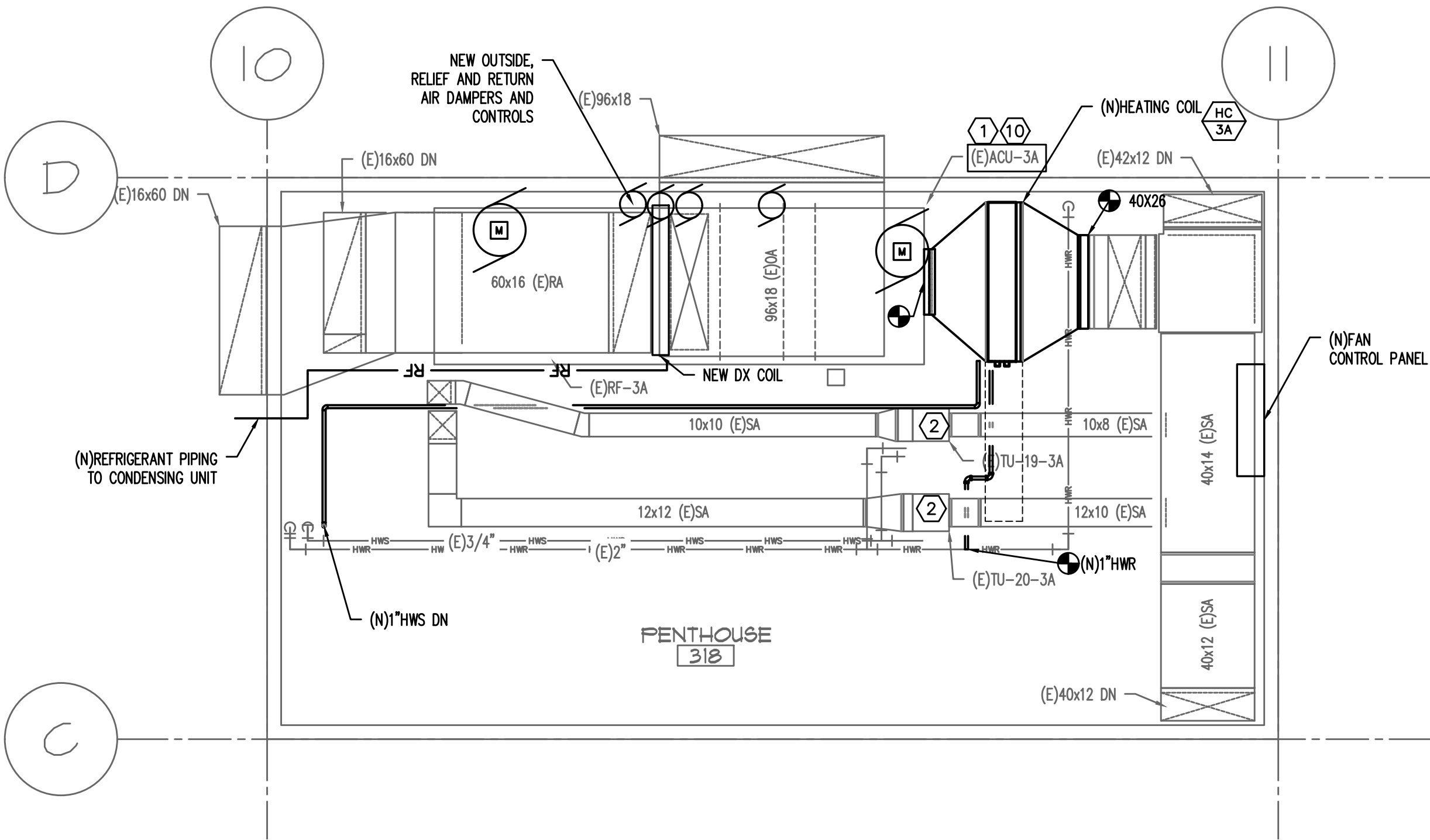
M205

GENERAL NOTES

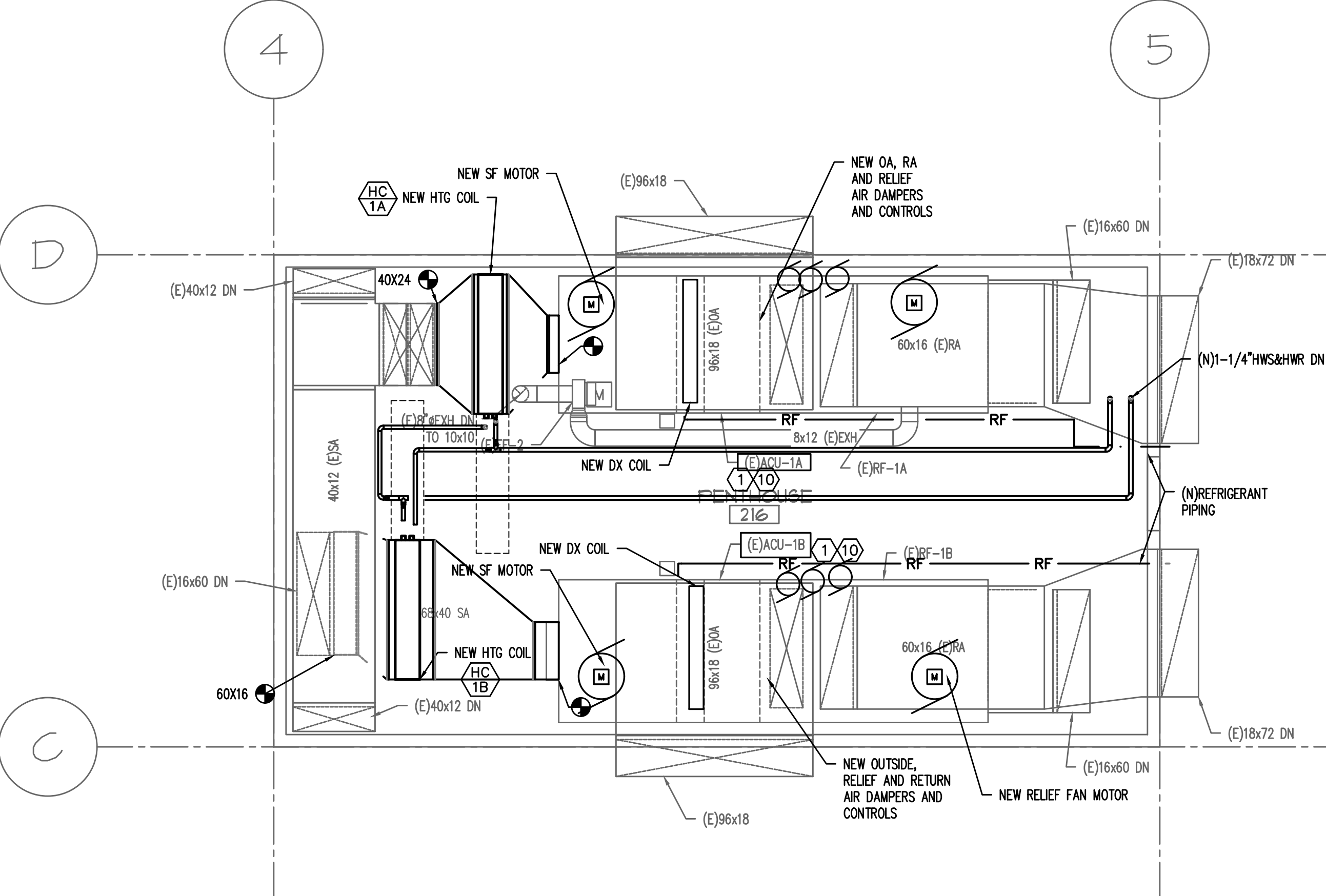
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- F. RE-BALANCE SUPPLY, RETURN AND EXHAUST GRILLES AIRFLOW PER PLANS.

KEYED NOTES

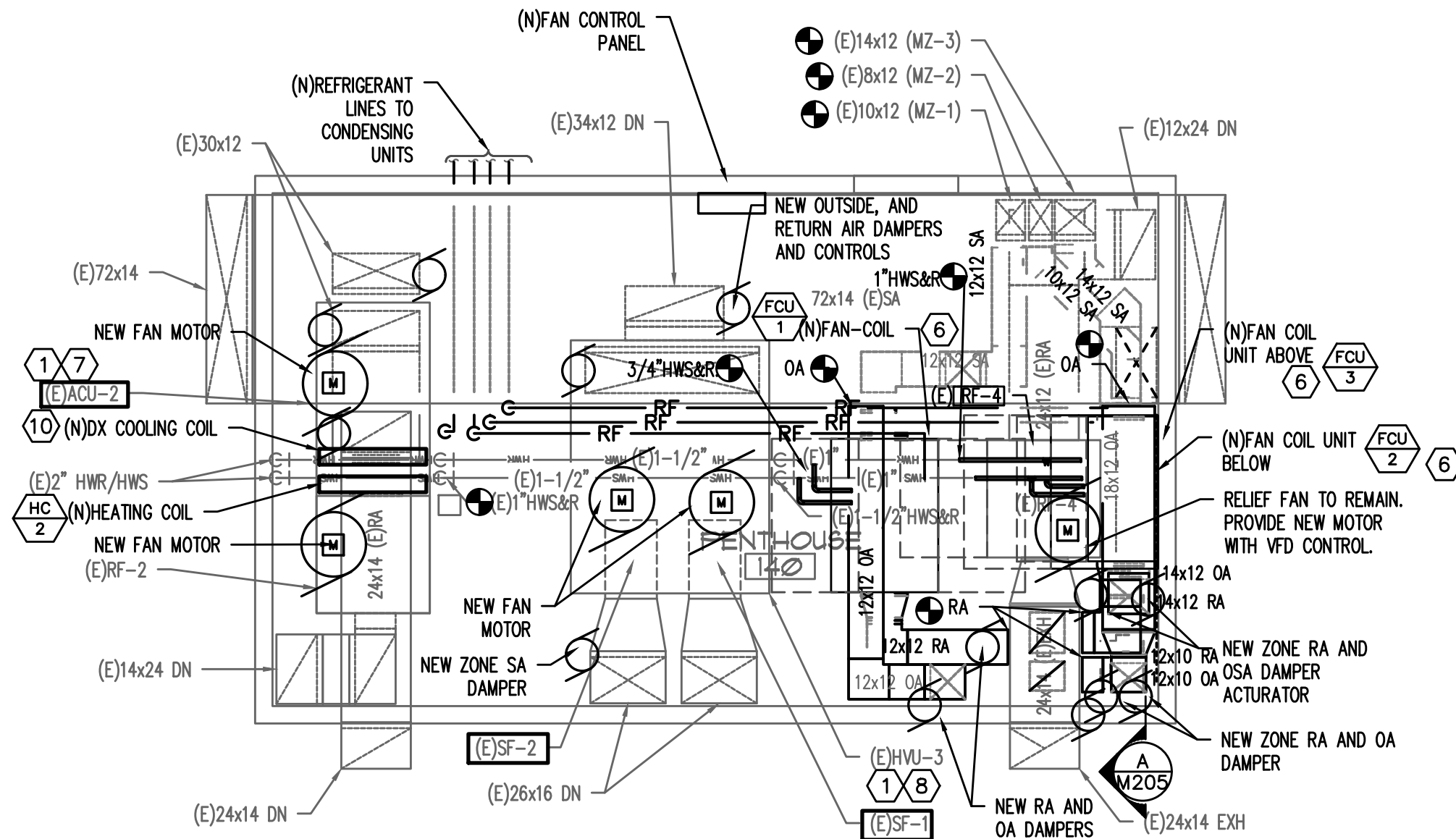
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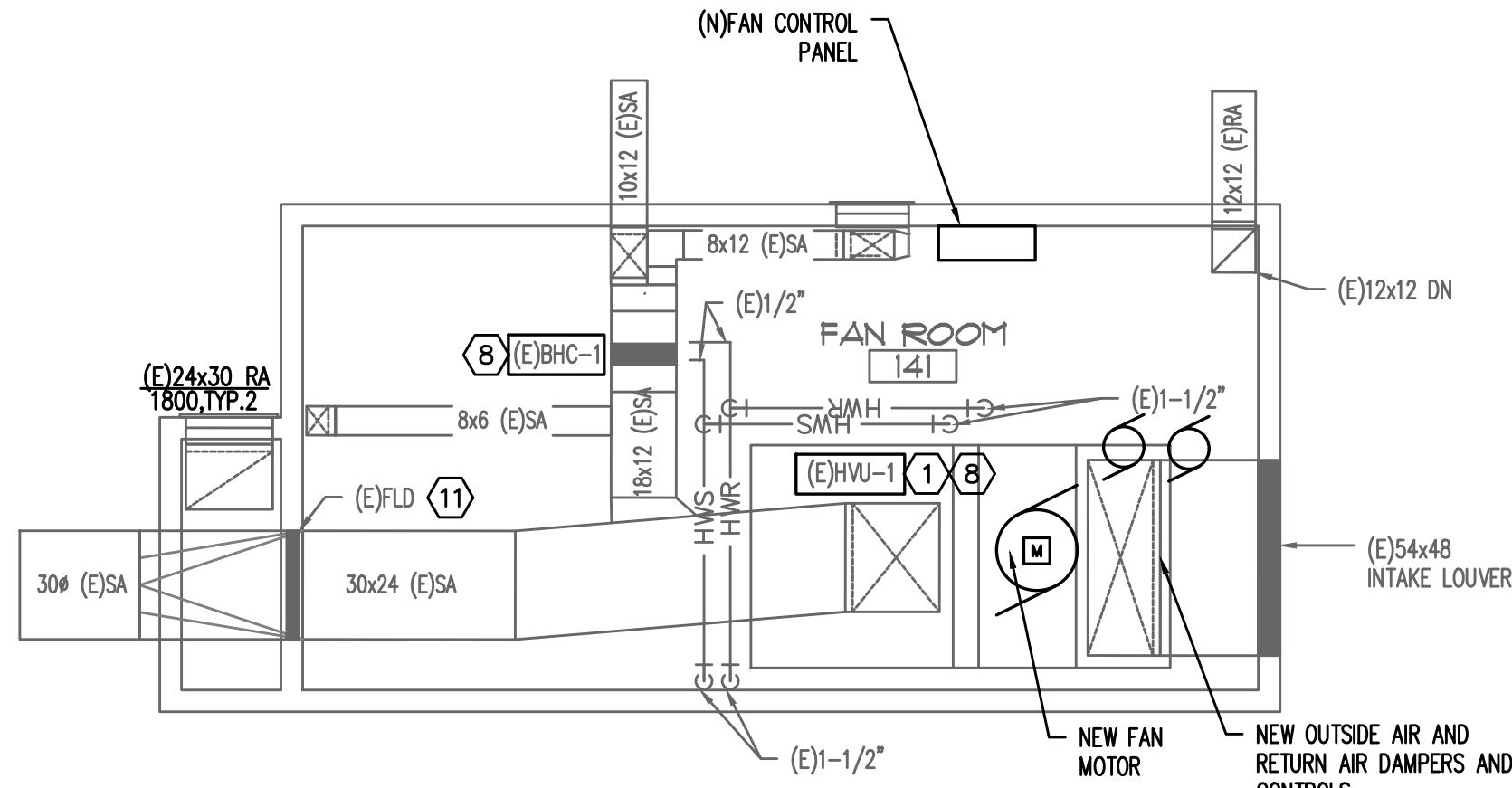
3 ENLARGED MECHANICAL PENTHOUSE 318
M205 SCALE: 1/4" = 1'-0"



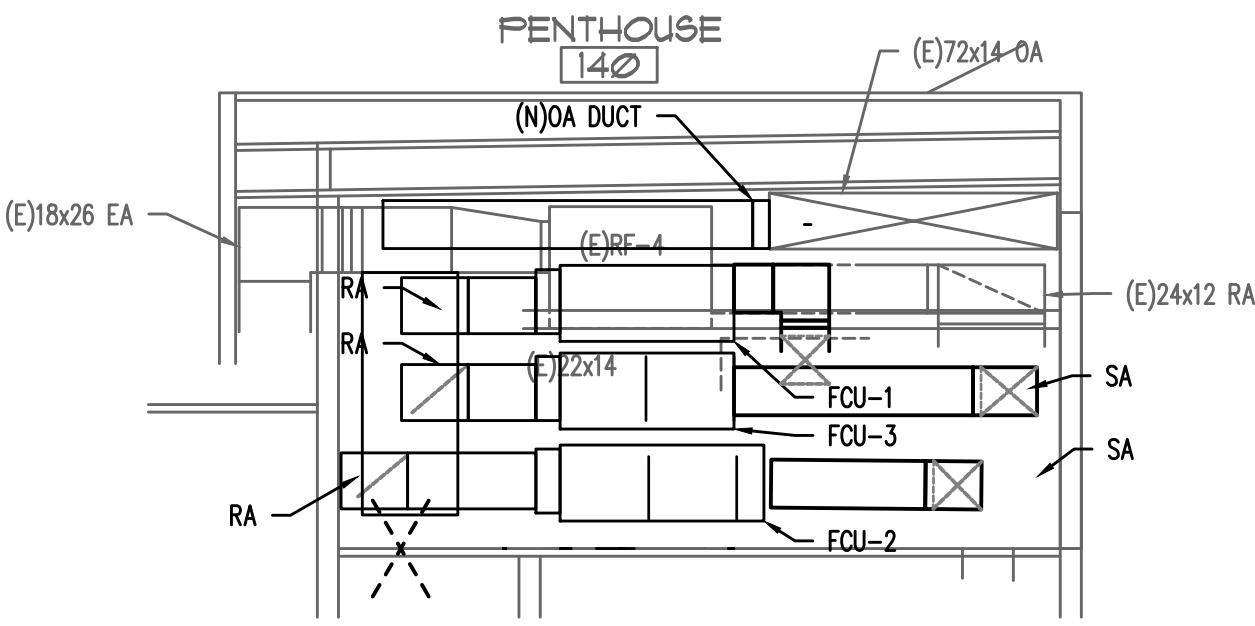
4 ENLARGED MECHANICAL PENTHOUSE 216
M205 SCALE: 1/4" = 1'-0"



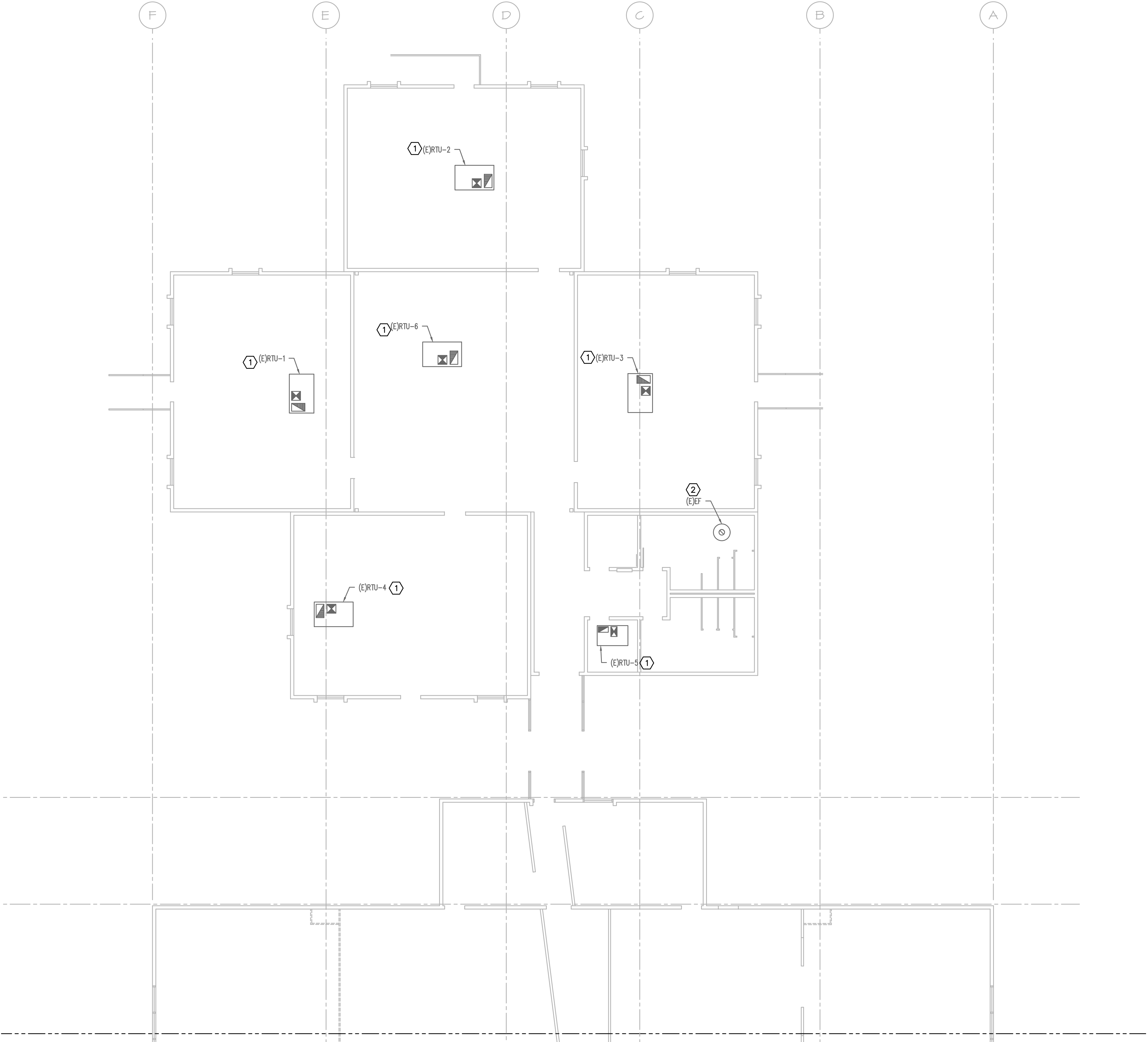
1 ENLARGED MECHANICAL PENTHOUSE 140
M205 SCALE: 1/4" = 1'-0"



2 ENLARGED MECHANICAL FAN ROOM 141
M205 SCALE: 1/4" = 1'-0"



A SECTION A MECHANICAL PENTHOUSE 140
M205 SCALE: 1/4" = 1'-0"



GENERAL NOTES

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- B. FOR ALL MECHANICAL UNITS AND SYSTEMS SERVING THE REMODEL AREA. CLEAN AND SERVICE PER SPECIFICATIONS.
- C. CONTRACTOR TO PERFORM PRESSURE TESTING OF (E)HEATING & WATER SYSTEM LINES PRIOR TO PLACING INTO SERVICE SYSTEM PER SPECIFICATIONS.
- D. CONTRACTOR TO COORDINATE ALL UNIT RE-TAGGING AND EQUIPMENT REPLACEMENTS WITH ELECTRICAL CONTRACTOR FOR REVISION AT EXISTING ELECTRICAL PANELS AND ASSOCIATED DESIGNATIONS.
- E. OWNER SHALL TAG ANY DEVICES PRIOR TO CONSTRUCTION OR PROVIDE A LIST OF (E) DEVICES THEY WISH THE CONTRACTOR TO SALVAGE & RETURN IN WORKING ORDER TO THEM.

KEYED NOTES

- 1. EXISTING ROOF-TOP UNIT TO REMAIN. REPLACE (E)JCI CONTROLLER UNIT WITH CURRENT JCI CONTROLLER. CONVERT COMMUNICATION CABLE TO BACNET. PROVIDE NEW EQUIPMENT TAG. SEE SPECS FOR SERVICING. SEE CONTROL DETAIL 1/M504.
- 2. EXISTING EXHAUST FAN. CLEAN AND SERVICE UNIT PER SPECIFICATIONS. REPLACE CONTROLS FOR BUILDING DDC SYSTEM INTEGRATION. PROVIDE NEW EQUIPMENT TAG. REBALANCE TO THE INDICATED AIRFLOWS.
- 3. EXISTING DX CONDENSER UNIT REPLACE CONTROLS FOR BUILDING DDC SYSTEM INTEGRATION. CLEAN AND SERVICE UNIT AND COILS. EVACUATE AND RECHARGE REFRIGERANT.
- 4. EXISTING RELIEF AIR ROOF HOOD. CLEAN AND SERVICE UNIT PER SPECIFICATION. REPLACE DAMPER AND DAMPER ACTUATOR WITH NEW CONTROL DAMPER AND INTEGRATE TO BLDG DDC CONTROLS. PROVIDE NEW EQUIPMENT TAG.
- 5. EXISTING ROOF-TOP HEAT PUMP UNIT. SEE SPECS FOR SERVICING. PROVIDE NEW CONTROLS FOR BUILDING DDC SYSTEM INTEGRATION. RE-BALANCE TO THE LISTED AIRFLOW. PROVIDE NEW EQUIPMENT TAG.
- 6. NEW CONDENSING UNIT ON NEW VIBRATION ISOLATED AND SEISMIC RESTRAINT ROOF CURB. ROUTE NEW REFRIGERANT PIPING TO NEW DX COOLING COIL INSIDE. INTEGRATE TO BLDG. DDC CONTROLS. PROVIDE EQUIPMENT TAG.
- 6.1. EXISTING DX CONDENSER UNIT TO BE REPLACED. REMOVE PIPING, VALVES AND DEVICES; REMOVE CONTROLS, CONTROL WIRING AND PERTAINING DEVICES. REMOVE ROOF CURB, PATCH AND FINISH ROOF AS REQUIRED TO MATCH EXISTING AND BY THE NEW UNIT LOCATION AND SIZE.
- 7. NEW EXHAUST FAN TO REPLACE EXISTING. REPLACE ON EXISTING ROOF CURB. REPLACE DAMPER AND ACTUATOR WITH NEW. INTEGRATE TO BLDG. DDC CONTROLS. PROVIDE EQUIPMENT TAG.



Date:	07/21/2021	Prof. No:	10181	Drawn By:	MG	Chkd By:	SWM	DSGN By:	MG	Acad. File:	
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BEAVERTON SCHOOL DISTRICT
ERROL HASSELL ES HVAC UPGRADE
18100 SW BANY ROAD
BEAVERTON OREGON

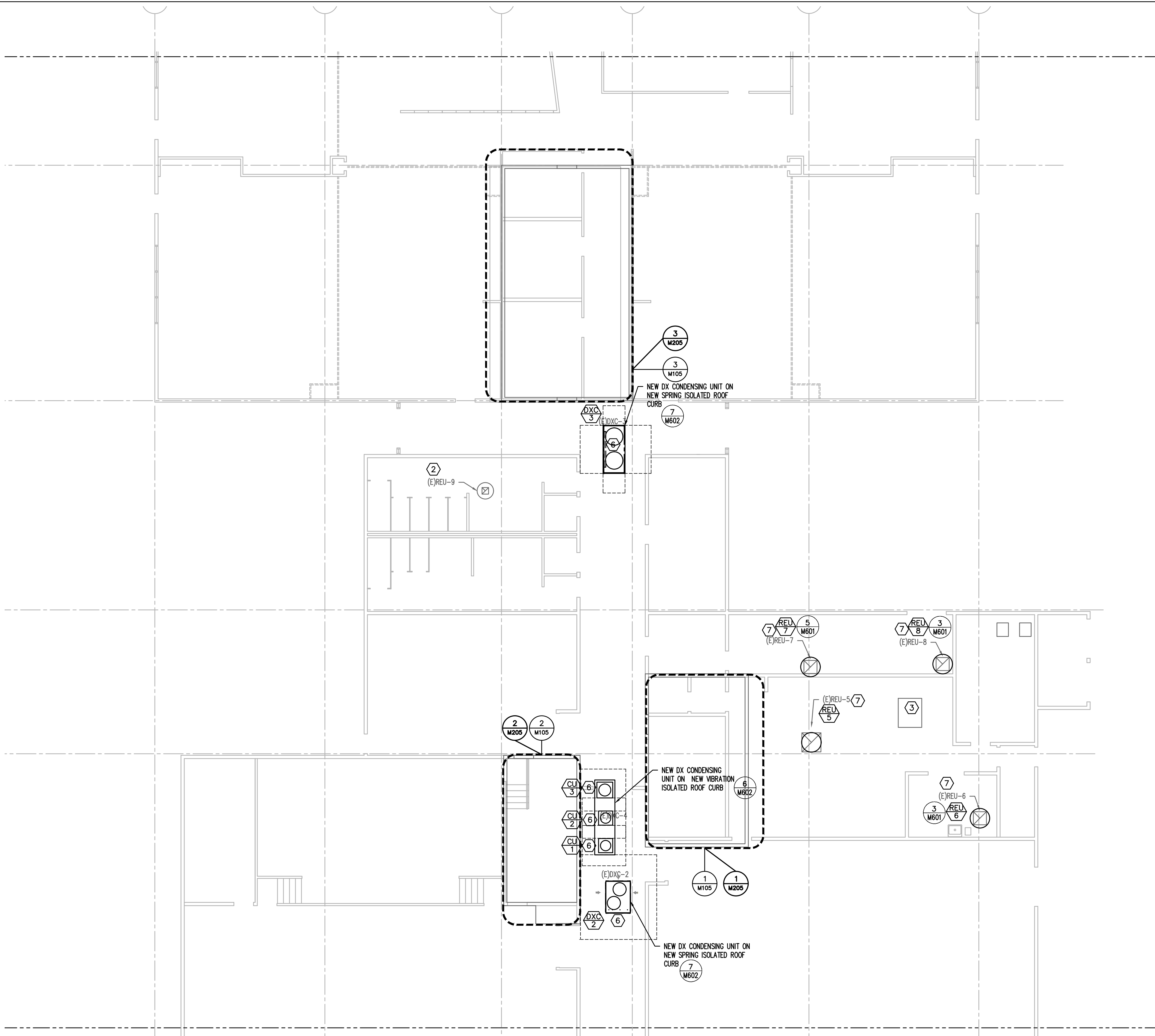
PARTIAL MECHANICAL ROOF PLAN – NEW

PERMIT/BID SET
SEPTEMBER 2021



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M211



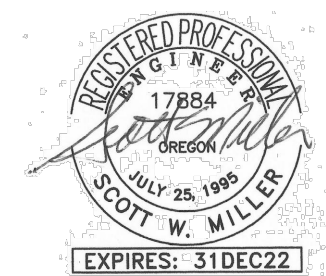
1 PARTIAL MECHANICAL ROOF PLAN
M212 SCALE: 1/8" = 1'-0"

GENERAL NOTES

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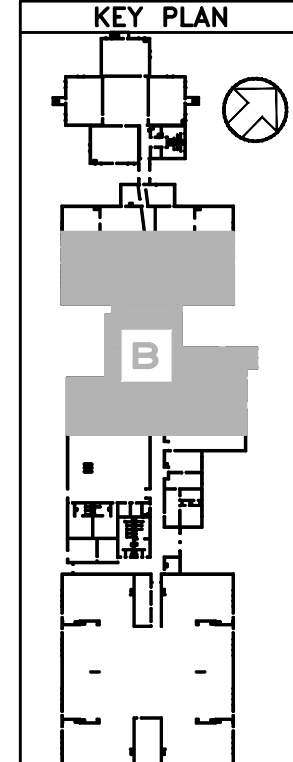
BEAVERTON SCHOOL DISTRICT
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BEAVERTON OREGON
PARTIAL MECHANICAL ROOF PLAN - NEW

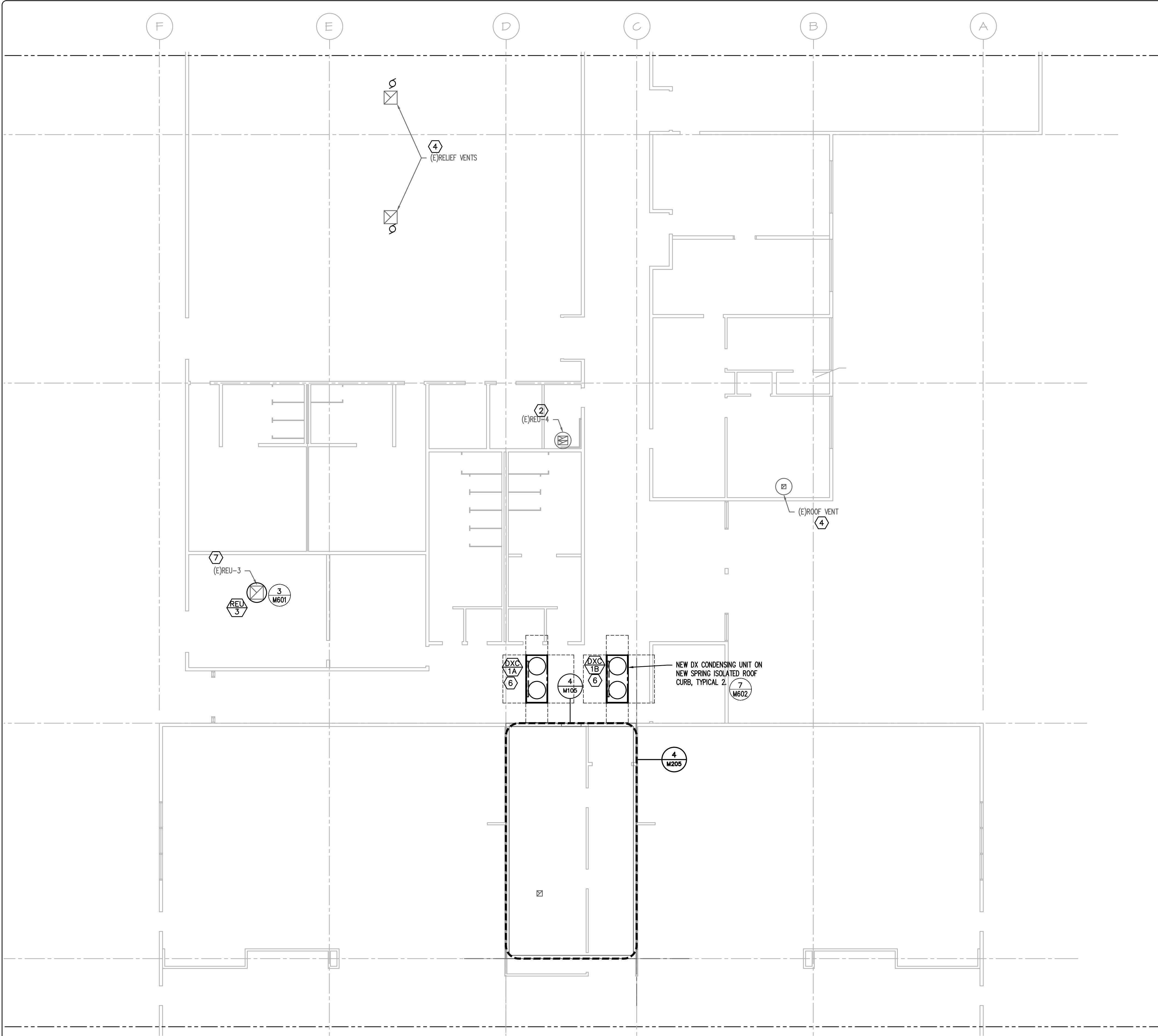
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- 5. EXISTING ROOF-TOP HEAT PUMP UNIT. SEE SPECS FOR SERVICING. PROVIDE NEW CONTROLS FOR BUILDING DDC SYSTEM INTEGRATION. RE-BALANCE TO THE LISTED AIRFLOW. PROVIDE NEW EQUIPMENT TAG.
- 6. NEW CONDENSING UNIT ON NEW VIBRATION ISOLATED AND SEISMIC RESTRAINT ROOF CURB. ROUTE NEW REFRIGERANT PIPING TO NEW DX COOLING COIL INSIDE. INTEGRATE TO BLDG. DDC CONTROLS. PROVIDE EQUIPMENT TAG.
- 6.1. EXISTING DX CONDENSER UNIT TO BE REPLACED. REMOVE PIPING, VALVES AND DEVICES; REMOVE CONTROLS, CONTROL WIRING AND PERTAINING DEVICES. REMOVE ROOF CURB, PATCH AND FINISH ROOF AS REQUIRED TO MATCH EXISTING AND BY THE NEW UNIT LOCATION AND SIZE.
- 7. NEW EXHAUST FAN TO REPLACE EXISTING. REPLACE DAMPER AND ACTUATOR WITH NEW. INTEGRATE TO BLDG. DDC CONTROLS. PROVIDE EQUIPMENT TAG.



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BEAVERTON SCHOOL DISTRICT
ERROL HASSELL ES HVAC UPGRADE
18100 SW BANY ROAD
BEAVERTON OREGON

PARTIAL MECHANICAL ROOF PLAN – NEW

PERMIT/BID SET
SEPTEMBER 2021

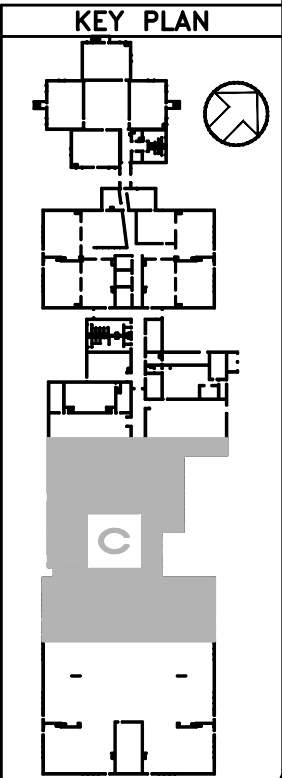


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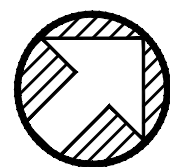
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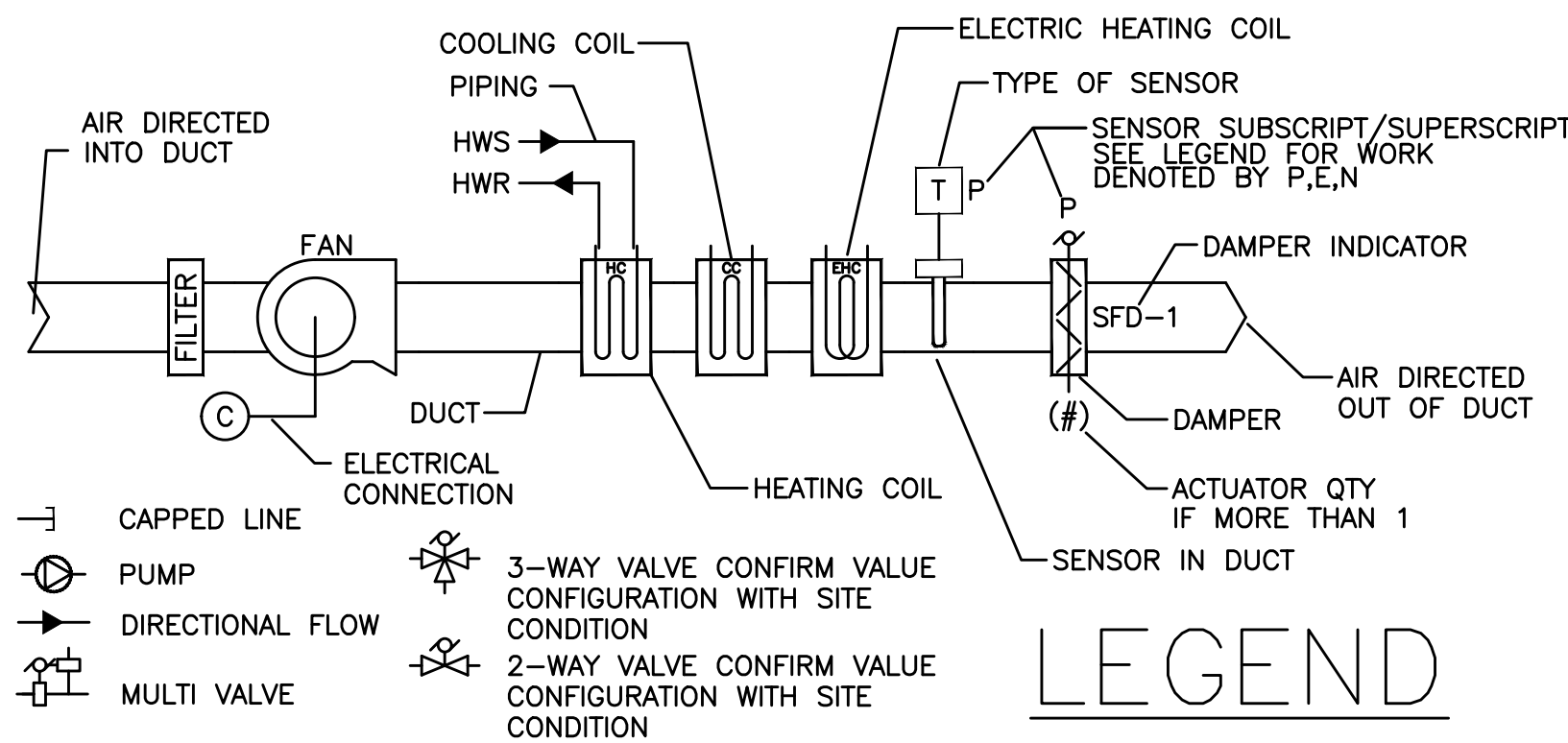
M213

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1 PARTIAL MECHANICAL ROOF PLAN
M213 SCALE: 1/8" = 1'-0"





LEGEND

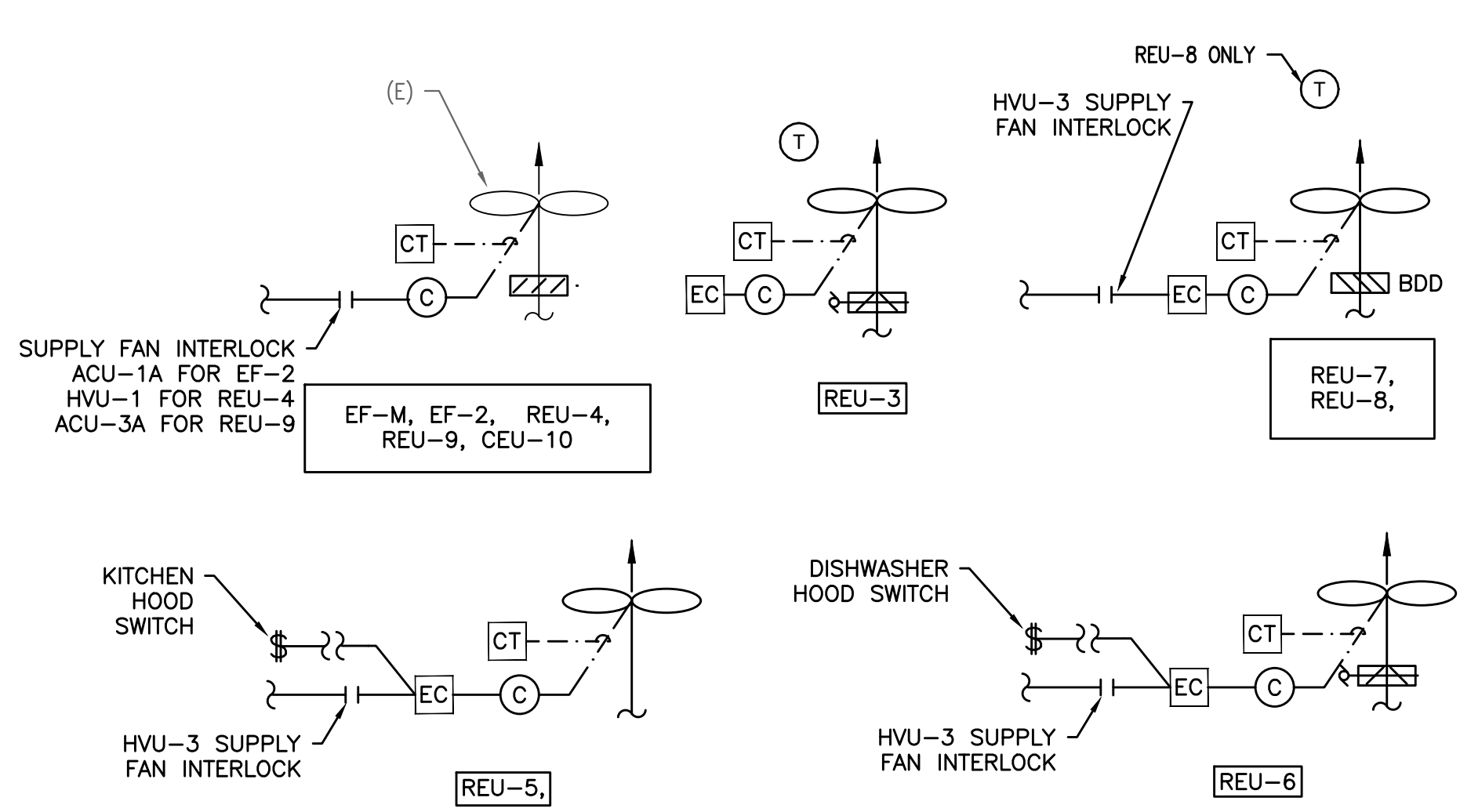
— HWS — (HWS) HEATING WATER SUPPLY — (N) NEW WORK
— HWR — (HWR) HEATING WATER RETURN — (E) EXISTING
- - - - - (D) DEMOLISH
- - - - - (E) EXISTING

- EQUIPMENT ABBREVIATIONS :**
- | | |
|---|----------------------------------|
| P - PUMP | SD - SMOKE DAMPER |
| SP - SUMP PUMP | SFD - FIRE SMOKE COMBO DAMPER |
| BP - BOOSTER PUMP | H - HUMIDIFIER |
| HWP - HEATING WATER PUMP | V - VALVE |
| CHP - CHILLED WATER PUMP | WH - WATER HEATER |
| CWP - CONDENSING WATER PUMP | BAS - BUILDING AUTOMATION SYSTEM |
| CSP - COOLING TOWER SUMP PUMP | CW - COLD WATER |
| HWRP - DOMESTIC HOT WATER RECIRCULATION | MZU - MULTI ZONE UNIT |
| VFD - VARIABLE FREQUENCY DRIVE | CEU - CABINET EXH. UNIT |
| CT - CONTACTOR | HVU - HEATING VENTILATION UNIT |
| CC - CONTROL COMPRESSOR | CFU - CEILING FAN UNIT |
| CH - CHILLER | REU - ROOF EXH. UNIT |
| B - BOILER | HC - HEATING COIL |
| EF - EXHAUST FAN | ST - STEAM |
| RF - RETURN/RELIEF FAN | CD - CONDENSATE RETURN |
| AH - AIR HANDLER | HWS - HEATING WATER SUPPLY |
| VAV - VARIABLE AIR VOLUME DAMPER BOX | HWR - HEATING WATER RETURN |
| AD - AREA DAMPER | |
- PIPEING ABBREVIATIONS:**
- HWS - HEATING WATER SUPPLY
HWR - HEATING WATER RETURN
HW - DOMESTIC HOT WATER
CW - DOMESTIC COLD WATER
GPM - GALLONS PER MINUTE
DB - DOUBLE VALVE OPERATOR

- CONTROL SUBSCRIPTS AND SUPERSSCRIPTS:**
- (R) - REMOVE (E) DEVICE TO BE REPLACED WITH DIGITAL CONTROL DEVICE.
(E) - ELECTRONIC CONTROL DEVICE MAYBE RE-USED AT CONTRACTOR'S OPTION. OR REPLACE WITH DIGIT CONTROL SYSTEM COMPATIBLE DEVICE, UNLESS NOTED OTHERWISE.
(N) - NEW, IF DEVICE HAS NO SUPER SCRIPT DEVICE IS NEW
- PIPING ABBREVIATIONS:**
- HWS - HEATING WATER SUPPLY
HWR - HEATING WATER RETURN
HW - DOMESTIC HOT WATER
CW - DOMESTIC COLD WATER
GPM - GALLONS PER MINUTE
DB - DOUBLE VALVE OPERATOR
- KEYED NOTES: (#)**
- (E) SMOKE DETECTOR TO REMAIN. PROVIDE CONNECTION TO DEVICE & TIE TO DDC FOR SUPPLY AND RETURN FAN SHUT-DOWN OPERATION AS REQ'D.
 - REMOVE DEVICE & PATCH CABINET / DUCTWORK.
 - MODIFY (E) STARTER/CONTACTOR TO OPERATE FROM DIGITAL SIGNAL.
 - EXISTING CONTROL FROM FIRE FIGHTERS CONTROL PANEL SHALL REMAIN AS PER EXISTING OPERATION.

CONTROL INPUT/OUTPUT SCHEDULE					
POINT NAME	HARDWARE POINTS		ALARM	TREND	SHOW ON GRAPHIC
	INPUT TO CONTROL	OUTPUT TO SYSTEM			
	DIGITAL	ANALOG	DIGITAL	ANALOG	
GENERAL CONDITIONS-EXISTING POINTS					
OUTSIDE AIR TEMP		X			15 MIN X
OUTSIDE AIR HUMIDITY		X			15 MIN X
FIRE ALARM PANEL	X			X	COV X
EXHAUST FAN: GENERAL EXHAUST 1/M501					
FAN MOTOR START/STOP					
FAN MOTOR STATUS PROOF	X		X		COV X
ZONE TEMPERATURE (REU-3, REU-8 ONLY)		X			COV X
SWITCH ENABLED (REU-5, REU-6 ONLY)	X				COV X
CONTROL DAMPER (REU-3, REU-6 ONLY)		X			
DAMPER POSITION O/C (REU-3, REU-6 ONLY)	X				15 MIN X
FAN SPEED (REU-5)			X		DCV X
DUCT HEATING COIL 2/M501					
ZONE TEMPERATURE		X			15 MIN X
DISCHARGE AIR TEMP		X			15 MIN X
HEATING VALVE			X		15 MIN X
CABINET UNIT HEATER 3/M501					
FAN MOTOR START/STOP			X		COV X
ZONE TEMPERATURE		X			15 MIN X
FAN MOTOR STATUS PROOF	X			X	COV X
HEATING VALVE			X		15 MIN X
UNIT HEATER 4/M501					
ZONE TEMPERATURE		X			15 MIN X
HEATING VALVE			X		15 MIN X
DOMESTIC HOT WATER RECIRC 5/M501					
RETURN WATER TEMPERATURE		X			15 MIN X
RECIRC PUMP START/STOP			X		15 MIN X
DEFINITIONS					
AI ANALOG INPUT TO CONTROL					
DI DIGITAL INPUT TO CONTROL					
AO ANALOG OUTPUT TO SYSTEM					
DO DIGITAL OUTPUT TO SYSTEM					
AV ANALOG VALUE.					
DVC DIGITAL VALUE.					
COV CHANGE OF VALUE FOR DIGITAL POINTS.					
DCV DIFFERENTIAL VALUE CHANGE FOR ANALOG POINTS.					

0 HVAC SYSTEM - ENVIRONMENTAL CONDITIONS
M501 SCHEMATIC

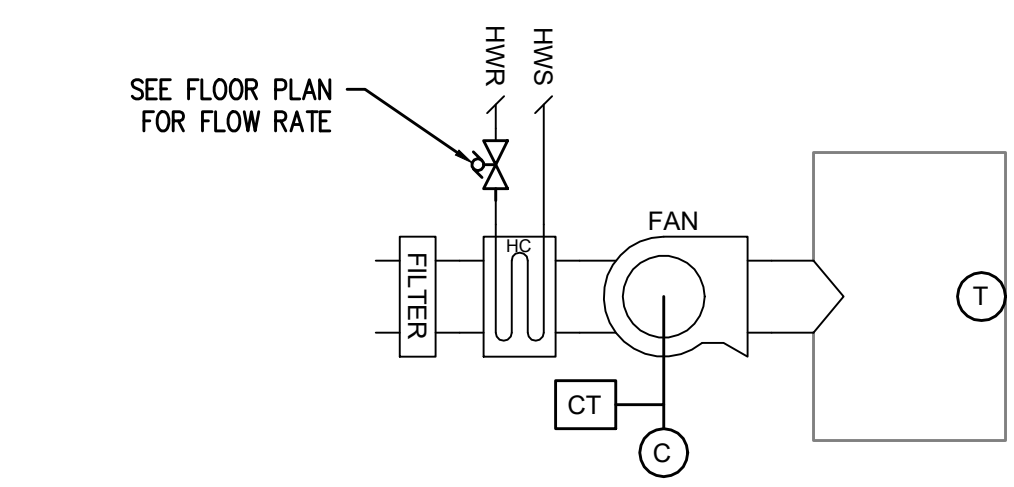


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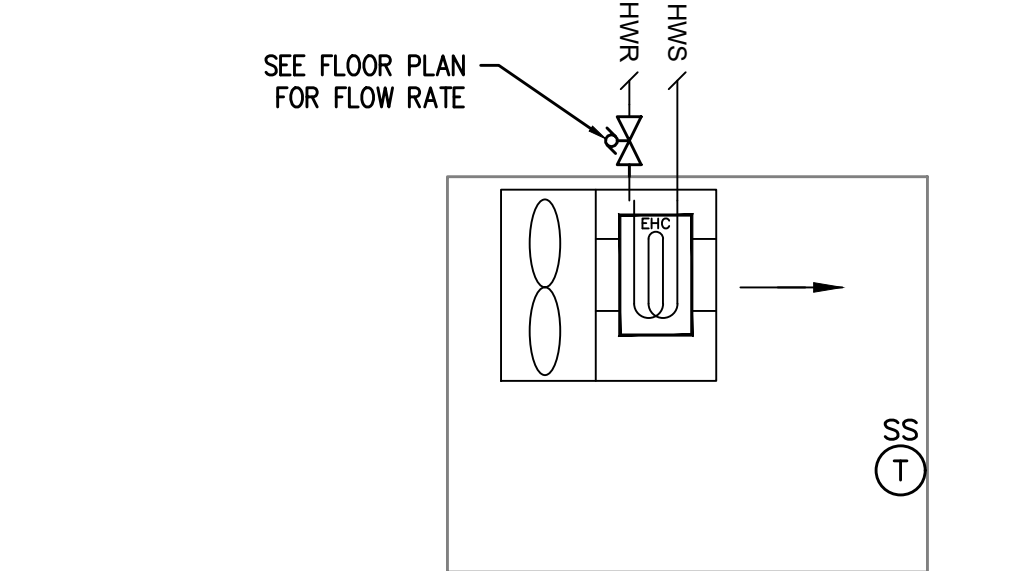
- SEE SCHEDULE FOR ASSOCIATED AIR HANDLER AND MEANS OF CONTROL.
-

1 EXHAUST FAN CONTROL DIAGRAM
M501 SCHEMATIC

2 DUCT BOOSTER HEATING COIL
M501 SCHEMATIC

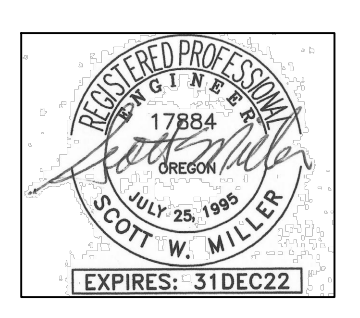
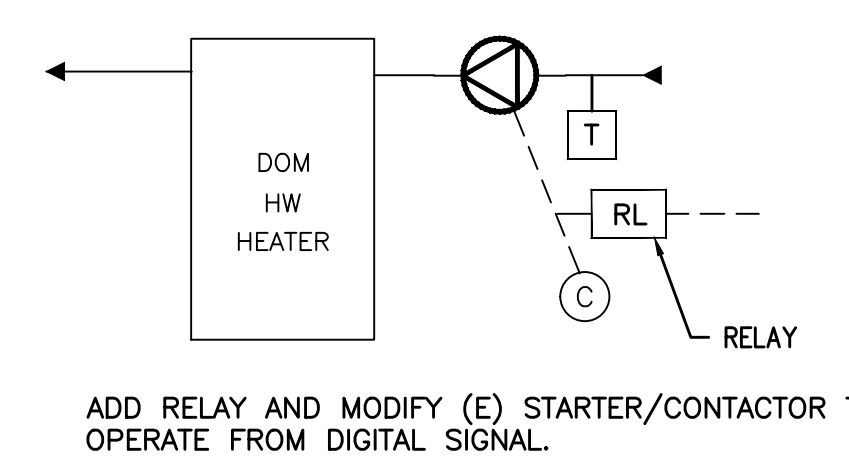


3 CABINET UNIT HEATER
M501 SCHEMATIC



4 UNIT HEATER
M501 SCHEMATIC

5 DOMESTIC HOT WATER
M501 NOT TO SCALE



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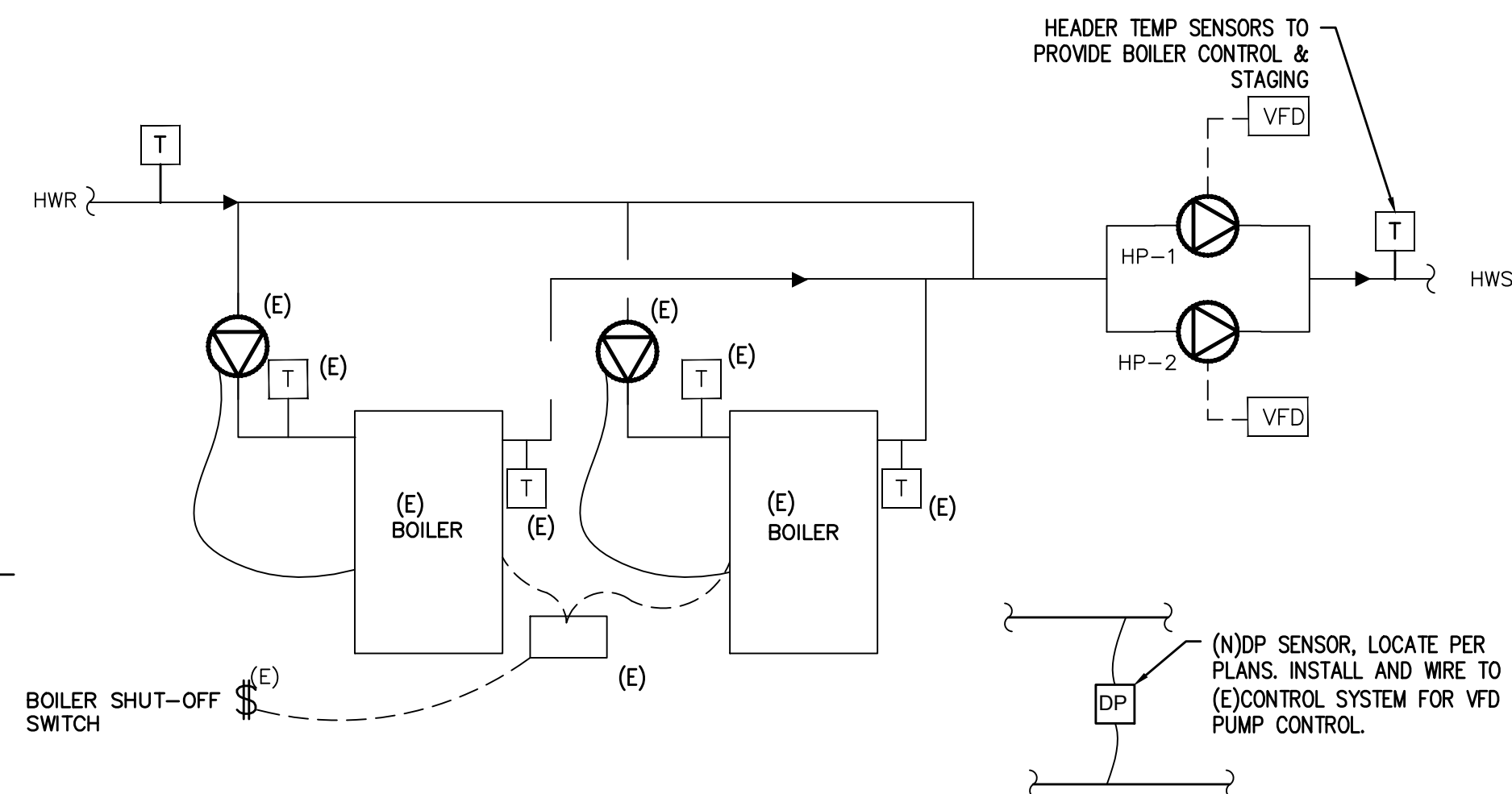
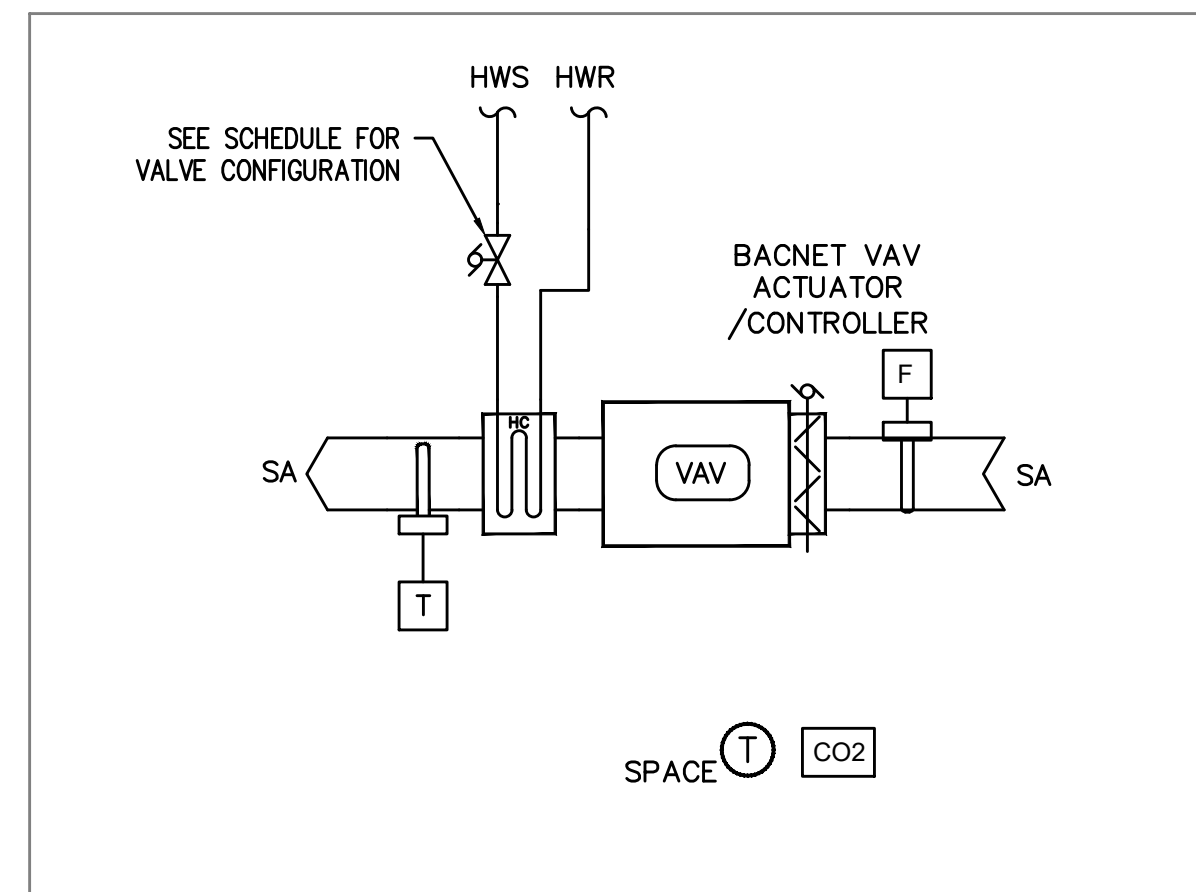
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MECHANICAL CONTROLS

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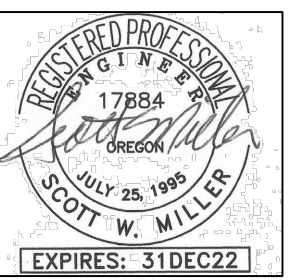


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M501



CONTROL INPUT/OUTPUT SCHEDULE							
POINT NAME	HARDWARE POINTS				ALARM	TREND	SHOW ON GRAPHIC
	INPUT TO CONTROL		OUTPUT TO SYSTEM				
	DIGITAL	ANALOG	DIGITAL	ANALOG			
GENERAL POINT							
FIRE ALARM SMOKE RELAY	X				X	COV	
AIR HANDLING UNITS: TYP: ACU-1A,-1B,&-3A; SEE 1/M502							
OUTSIDE AIR TEMP		X				15 MIN	X
RETURN AIR TEMP		X				15 MIN	X
MIXED AIR TEMP		X				15 MIN	X
DISCHARGE AIR TEMP		X				15 MIN	X
OUTSIDE AIR DAMPER				X		15 MIN	X
RETURN AIR DAMPER				X		15 MIN	X
RELIEF DAMPER				X		15 MIN	X
SUPPLY FAN STATUS	X					COV	X
SUPPLY FAN START/STOP			X			COV	X
SUPPLY FAN SPEED				X		DCV	X
RETURN FAN STATUS	X					COV	X
RETURN FAN START/STOP			X			COV	X
RETURN FAN SPEED				X		DCV	X
HIGH DUCT STATIC, TYP.2	X				X	COV	X
SUPPLY DUCT DIFFERENTIAL PRESSURE		X			X	DCV	X
[E]SMOKE DETECTOR	X				X	COV	X
CONDENSING UNIT WITH 2 COMPRESSORS							
CONDENSING UNIT COMPRESSOR STATUS	X				X	COV	X
CONDENSING UNIT COMPRESSOR START/STOP			X			COV	X
CONDENSING UNIT COMPRESSOR SPEED				X		DCV	X
VAV TERMINAL UNITS: TYPICAL, SEE 2/M502							
ZONE TEMPERATURE		X				15 MIN	X
TERMINAL UNIT AIRFLOW		X				DCV	X
DAMPER POSITION				X		15 MIN	X
HEATING VALVE				X		15 MIN	X
SPACE CO2 LEVEL		X			X	15 MIN	X
DISCHARGE AIR TEMP		X				15 MIN	X
CONTROLS FOR BOILER SYSTEM, SEE 3/M502							
OUTSIDE AIR TEMP	X				X	COV	X
BOILER START/STOP (TYP.2)			X			COV	X
BOILER STATUS (TYP.2)	X					COV	X
BOILER ALARM (TYP.2)	X				X	COV	X
HEATING SYSTEM ENABLE [*]			X			COV	X
HWS RESET [*]				X		15 MIN	X
HEATING SYSTEM ALARM/FAULT [*]	X				X		X
BOILER SUPPLY WATER TEMPERATURE (TYP.2) [*]		X				15 MIN	X
SYSTEM SUPPLY WATER TEMPERATURE [*]		X				15 MIN	X
SYSTEM RETURN WATER TEMPERATURE		X				15 MIN	X
SYSTEM DIFFERENTIAL PRESSURE		X				15 MIN	X
BOILER SHUT-OFF SWITCH (TYP.2)	X				X		X
BOILER PUMP START/STOP (TYP.2)			X			COV	X
BOILER PUMP STATUS (TYP.2)	X				X	COV	X
HW PUMP VFD START/STOP (TYP.2)			X			COV	X
HW PUMP VFD STATUS (TYP.2)		X			X	COV	X
HW PUMP VFD SPEED CONTROL (TYP.2)				X		DCV	X
NOTES:							
[*] VALUES TO/FROM BOILER CONTROLLER							
DEFINITIONS							
AI	ANALOG INPUT TO CONTROL		AV	ANALOG VALUE.			
DI	DIGITAL INPUT TO CONTROL		DVC	DIGITAL VALUE.			
AO	ANALOG OUTPUT TO SYSTEM		COV	CHANGE OF VALUE FOR DIGITAL POINTS.			
DO	DIGITAL OUTPUT TO SYSTEM		DCV	DIFFERENTIAL VALUE CHANGE FOR ANALOG POINTS.			



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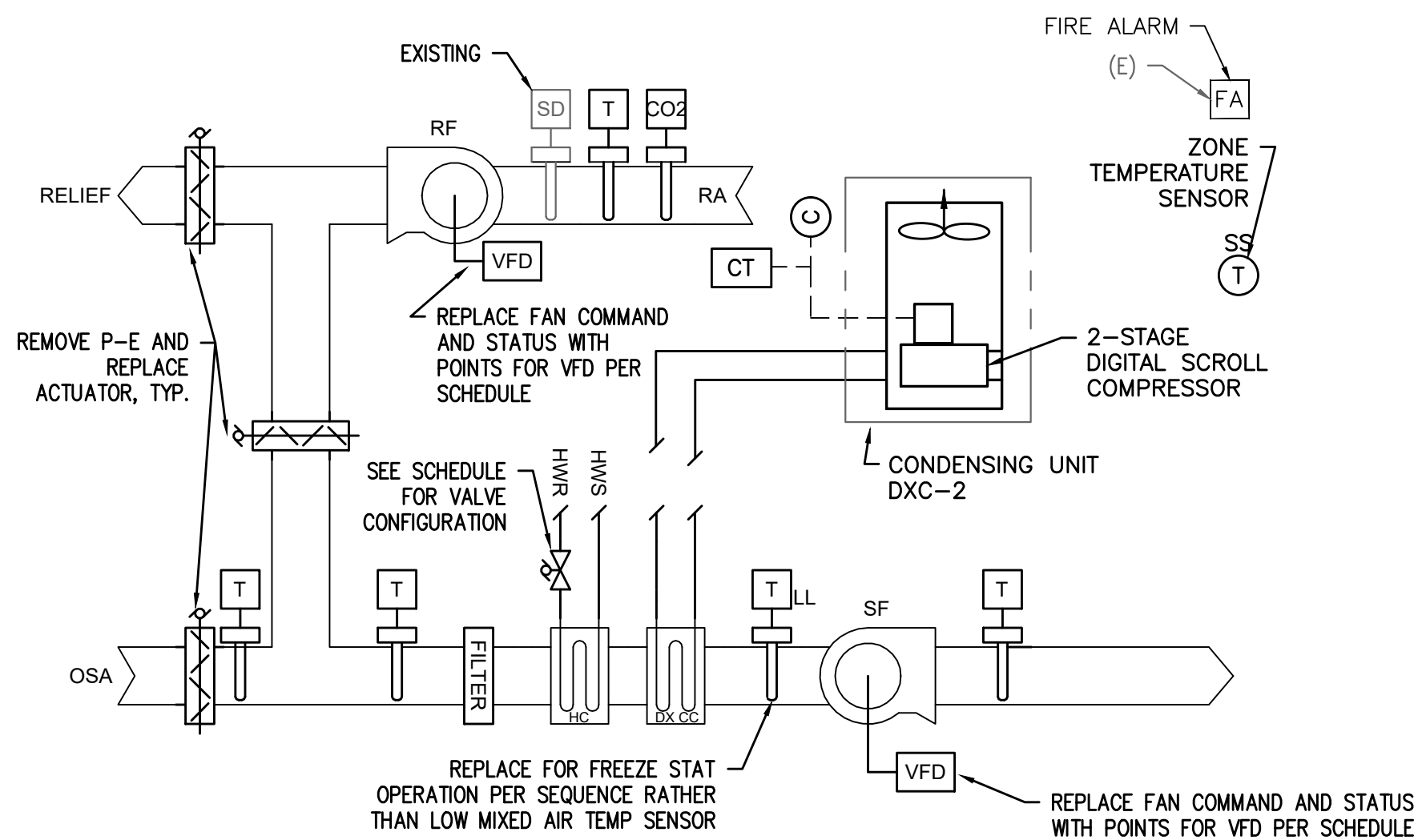
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BEAVERTON OREGON
MECHANICAL CONTROLS

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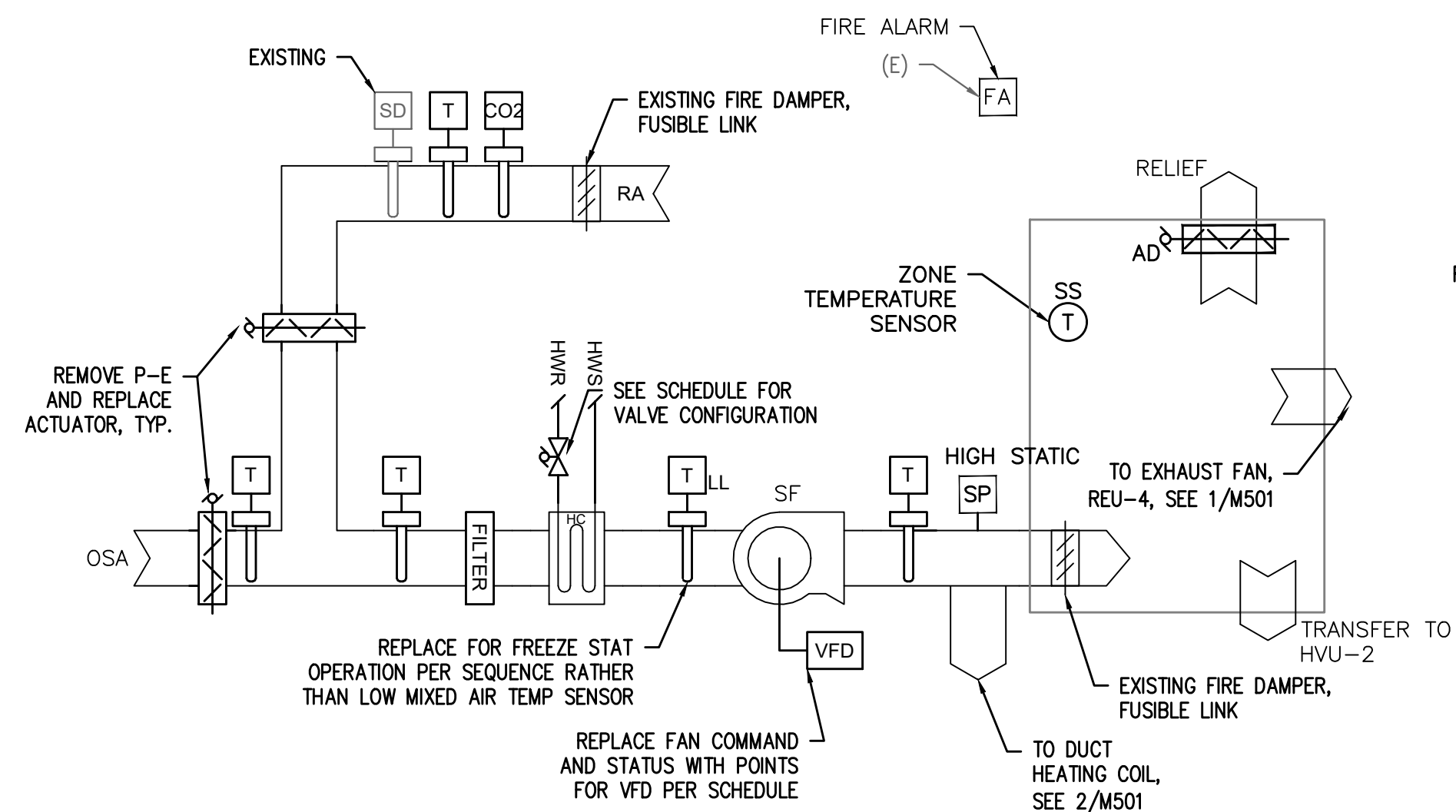
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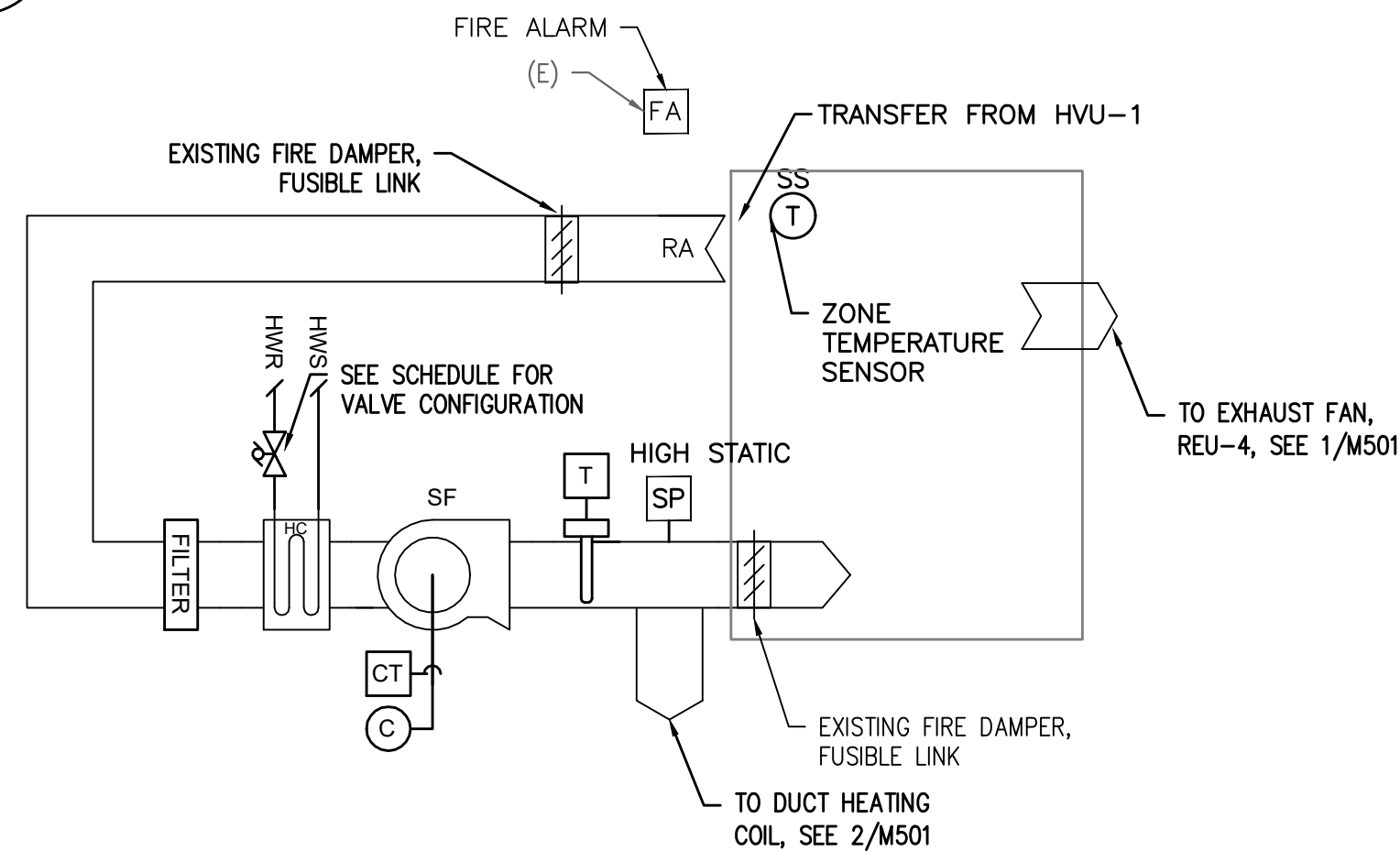
M502



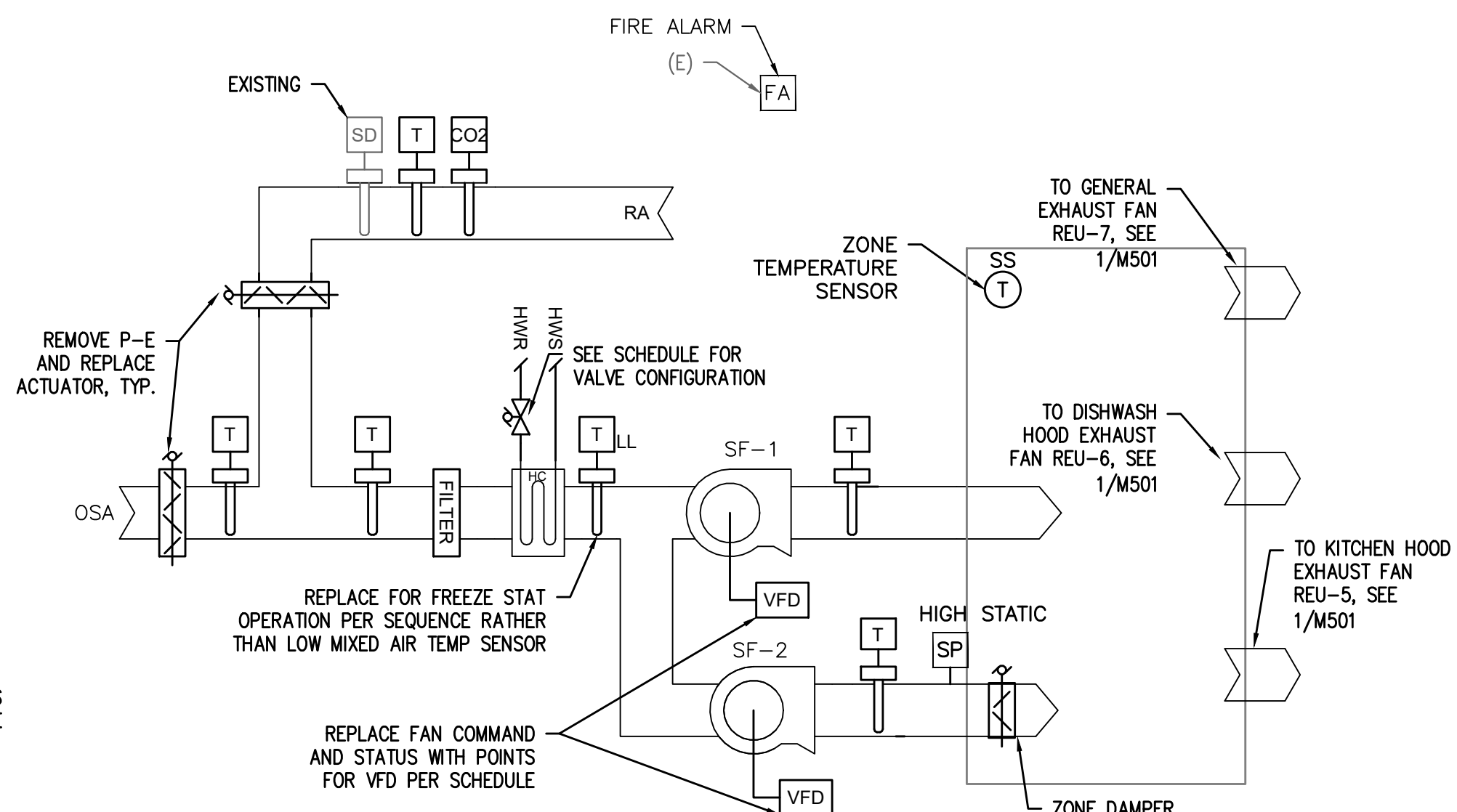
1 (E)AIR HANDLING UNITS W/HTG AND DX CLG COIL
M503 SCHEMATIC VAV SINGLE ZONE AIR-HANDLING UNIT: ACU-2



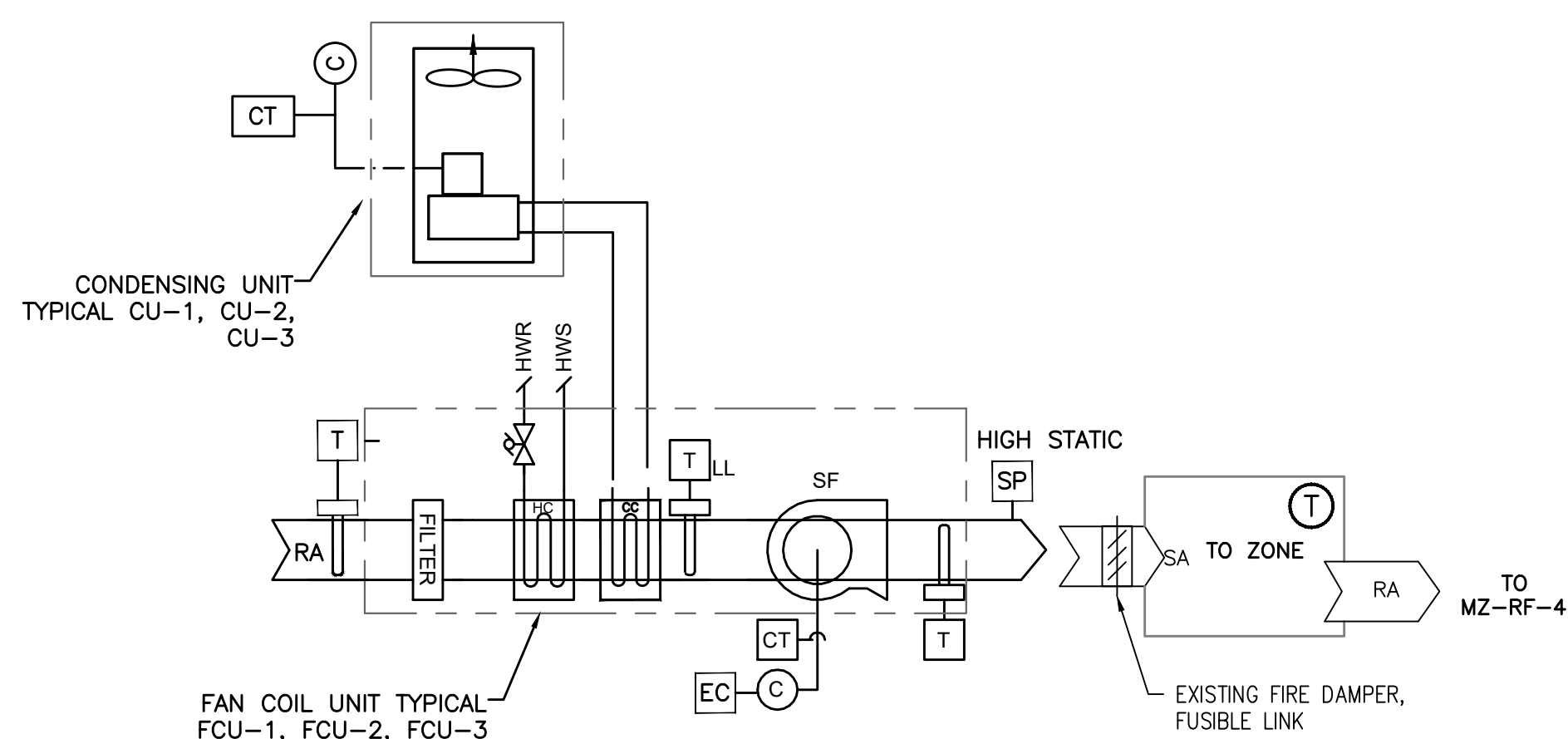
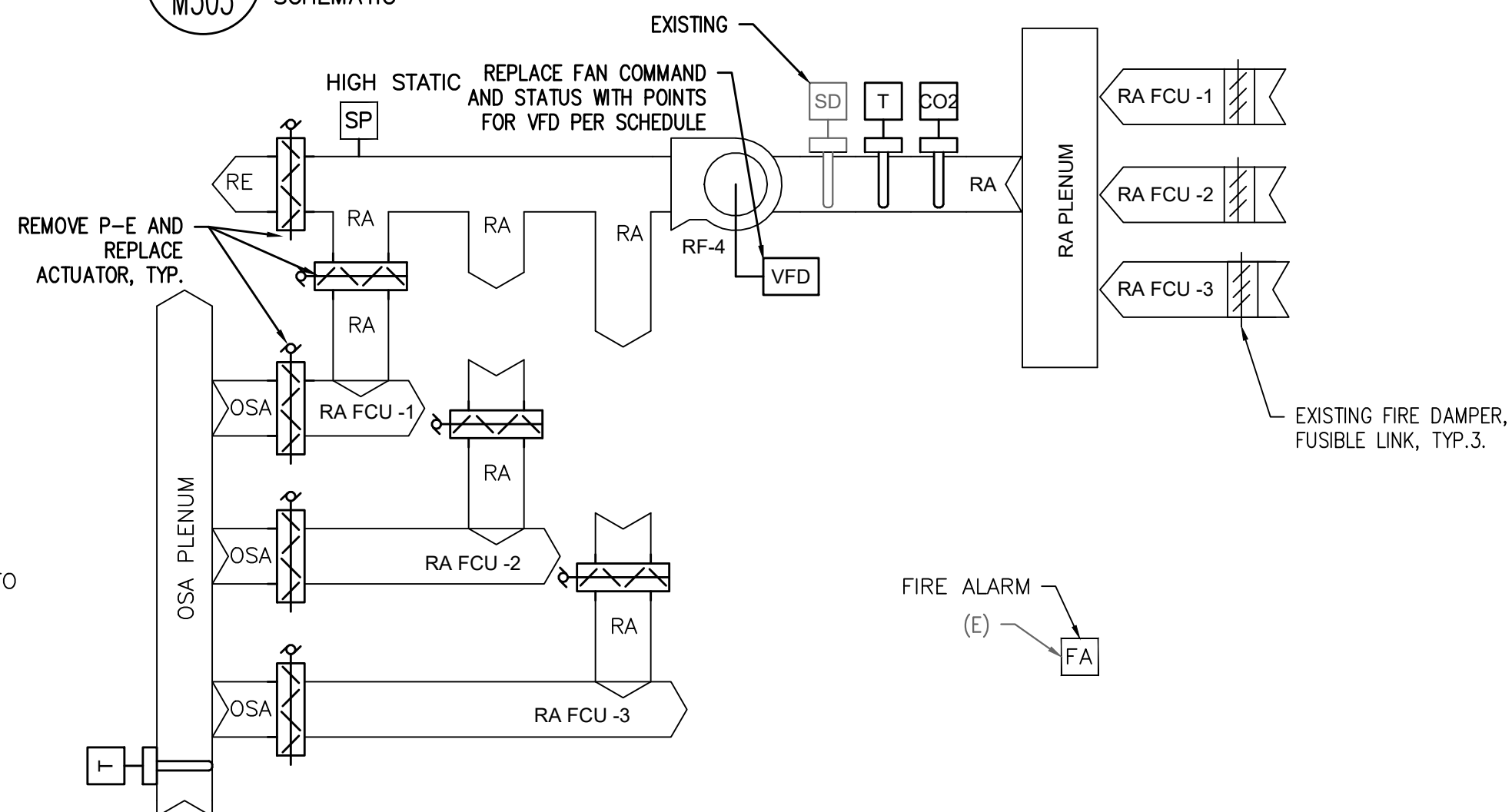
2 (E)HEATING AND VENTILATING UNIT, HVU-1
M503 SCHEMATIC



3 (E)HEATING AND VENTILATING UNIT, HVU-2
M503 SCHEMATIC

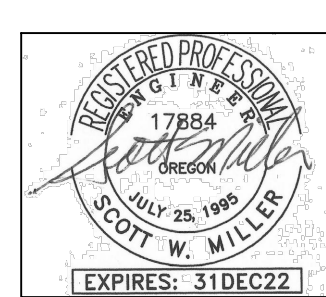


4 (E)HEATING & VENTILATING UNIT, HVU-3
M503 SCHEMATIC



5 (N)DX FAN COIL UNITS AND MZU-RF-4
M503 SCHEMATIC FAN COIL UNIT WITH DX COOLING AND HYDRONIC HEATING COIL

CONTROL INPUT/OUTPUT SCHEDULE									
POINT NAME	HARDWARE POINTS				ALARM	TREND	SHOW ON GRAPHIC		
	INPUT TO CONTROL		OUTPUT TO SYSTEM						
	DIGITAL	ANALOG	DIGITAL	ANALOG					
AIR HANDLER UNITS: TYP: ACU-2, SEE 1/M503									
SUPPLY FAN VFD STATUS	X					COV	X		
SUPPLY FAN VFD START/STOP			X			COV	X		
SUPPLY FAN VFD SPEED				X		DCV	X		
RETURN/RELIEF FAN VFD STATUS	X					COV	X		
RETURN/RELIEF FAN VFD START/STOP			X			COV	X		
RETURN/RELIEF FAN VFD SPEED				X		COV	X		
OUTSIDE AIR TEMP		X				15 MIN	X		
MIXED AIR TEMP		X				15 MIN	X		
DISCHARGE AIR TEMP		X				15 MIN	X		
RETURN AIR TEMP		X				15 MIN	X		
RETURN AIR CO2 LEVEL		X			X	15 MIN	X		
LOW TEMPERATURE LIMIT	X				X	COV	X		
[E]SMOKE DETECTOR	X				X	COV	X		
OUTSIDE AIR DAMPER POSITION				X		15 MIN	X		
EXHAUST AIR DAMPER POSITION				X		15 MIN	X		
RETURN AIR DAMPER POSITION			X			15 MIN	X		
ZONE DAMPER POSITION			X			COV	X		
HEATING WATER VALVE			X			15 MIN	X		
SPACE TEMPERATURE		X				15 MIN	X		
CONDENSING UNIT COMPRESSOR STATUS	X				X	COV	X		
CONDENSING UNIT COMPRESSOR START/STOP			X			COV	X		
CONDENSING UNIT COMPRESSOR SPEED				X		DCV	X		
HEATING AND VENTILATING UNITS: TYP: HVU-1, SEE 2/M503									
SUPPLY FAN VFD STATUS	X					COV	X		
SUPPLY FAN VFD START/STOP			X			COV	X		
SUPPLY FAN VFD SPEED				X		DCV	X		
OUTSIDE AIR TEMP		X				15 MIN	X		
MIXED AIR TEMP		X				15 MIN	X		
DISCHARGE AIR TEMP		X				15 MIN	X		
RETURN AIR TEMP		X				15 MIN	X		
RETURN AIR CO2 LEVEL		X			X	15 MIN	X		
LOW TEMPERATURE LIMIT	X				X	COV	X		
[E]SMOKE DETECTOR	X				X	COV	X		
OUTSIDE AIR DAMPER POSITION				X		15 MIN	X		
RELIEF AIR DAMPER POSITION, TYP. 2			X			15 MIN	X		
RETURN AIR DAMPER POSITION				X		15 MIN	X		
HEATING WATER VALVE				X		15 MIN	X		
HIGH DUCT STATIC	X				X	COV	X		
SPACE TEMPERATURE		X				15 MIN	X		
HEATING AND VENTILATING UNITS: TYP: HVU-2, SEE 3/M503									
SUPPLY FAN STATUS	X					COV	X		
SUPPLY FAN START/STOP			X			COV	X		
DISCHARGE AIR TEMP		X				15 MIN	X		
HEATING WATER VALVE				X		15 MIN	X		
HIGH DUCT STATIC	X				X	COV	X		
SPACE TEMPERATURE		X				15 MIN	X		
HEATING AND VENTILATING UNITS: TYP: HVU-3, SEE 4/M503									
SUPPLY FAN VFD STATUS, TYP. 2	X					COV	X		
SUPPLY FAN VFD START/STOP, TYP. 2			X			COV	X		
SUPPLY FAN VFD SPEED, TYP. 2				X		DCV	X		
OUTSIDE AIR TEMP		X				15 MIN	X		
MIXED AIR TEMP		X				15 MIN	X		
DISCHARGE AIR TEMP, TYP. 2		X				15 MIN	X		
RETURN AIR TEMP		X				15 MIN	X		
RETURN AIR CO2 LEVEL		X			X	15 MIN	X		
LOW TEMPERATURE LIMIT	X				X	COV	X		
[E]SMOKE DETECTOR	X				X	COV	X		
OUTSIDE AIR DAMPER POSITION				X		15 MIN	X		
RETURN AIR DAMPER POSITION				X		15 MIN	X		
HEATING WATER VALVE				X		15 MIN	X		
HIGH DUCT STATIC	X				X	COV	X		
SPACE TEMPERATURE		X				15 MIN	X		
DX FAN COIL UNITS & MZU-RF-4, SEE 5/M503									
RETURN/RELIEF FAN VFD STATUS	X					COV	X		
RETURN/RELIEF FAN VFD START/STOP			X			COV	X		
RETURN/RELIEF FAN VFD SPEED				X		COV	X		
OUTSIDE AIR TEMP		X				15 MIN	X		
HIGH DUCT STATIC	X				X	COV	X		
[E]SMOKE DETECTOR	X				X	COV	X		
RETURN AIR TEMP		X				15 MIN	X		
RETURN AIR CO2 LEVEL		X			X	15 MIN	X		
EXHAUST AIR DAMPER POSITION				X		15 MIN	X		
FAN-COIL UNIT, TYPICAL 3									
SPACE TEMP		X				15 MIN	X		
DISCHARGE AIR TEMP		X				15 MIN	X		
SUPPLY FAN STATUS	X					COV	X		
SUPPLY FAN START/STOP			X			COV	X		
LOW LIMIT AIR TEMP	X					15 MIN	X		
HEATING WATER VALVE				X		15 MIN	X		
MIXED AIR TEMP		X				15 MIN	X		
OSA DAMPER				X		15 MIN	X		
RA DAMPER				X		15 MIN	X		
HIGH DUCT STATIC	X				X	COV	X		
CONDENSING UNIT TYPICAL 3									
CONDENSING UNIT STATUS	X				X	COV	X		
CONDENSING UNIT START/STOP			X			COV	X		
DEFINITIONS									
AI	ANALOG INPUT TO CONTROL		AV	ANALOG VALUE					
DI	DIGITAL INPUT TO CONTROL		DVC	DIGITAL VALUE					
AO	ANALOG OUTPUT TO SYSTEM		COV	CHANGE OF VALUE FOR DIGITAL POINTS					
DO	DIGITAL OUTPUT TO SYSTEM		DCV	DIFFERENTIAL VALUE CHANGE FOR ANALOG POINTS					



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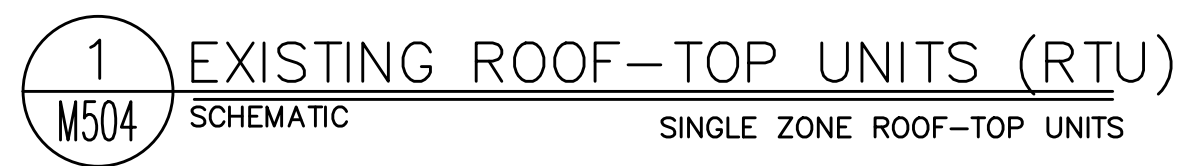
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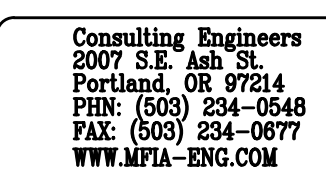
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OREGON
JULY 25, 1995
SCOTT W. MILLER
EXPIRES: 31DEC22

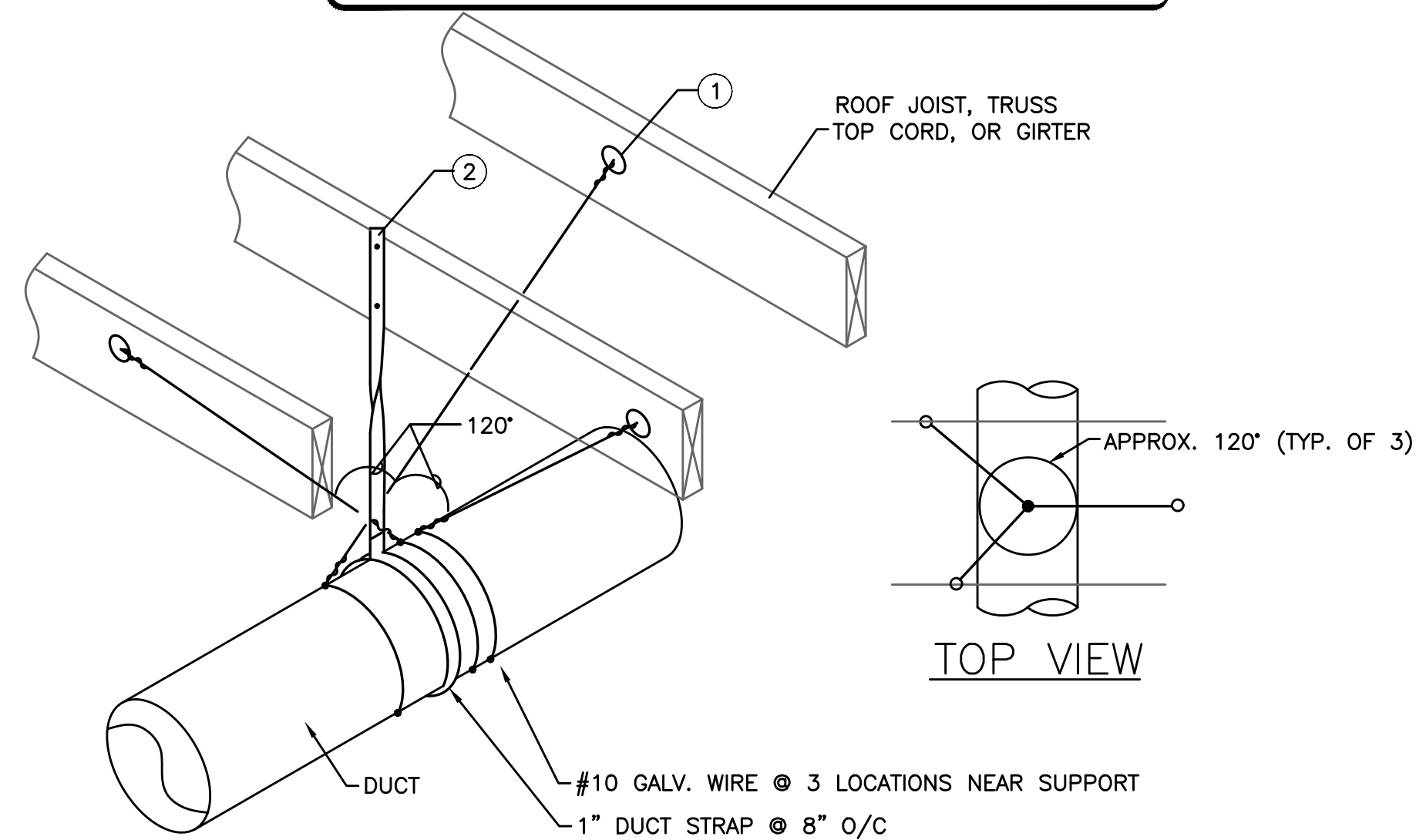
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M504

DETAIL NOTES

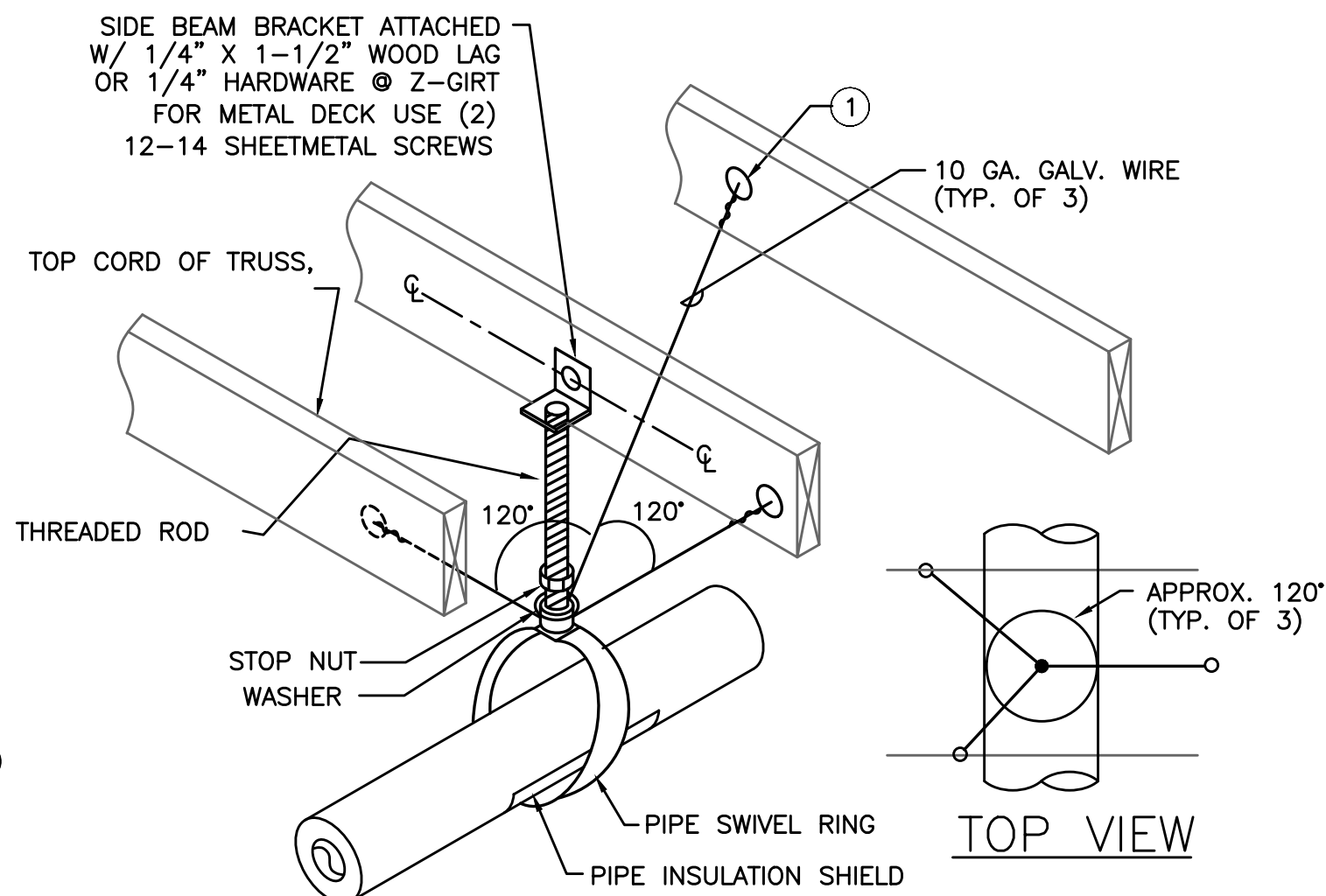
- ① - 1/4" GALV. THREADED EYE BOLT @ CENTER OF WOOD MEMBER (TYP. OF 3). FOR Z-GIRT USE MACHINE THREAD EYE BOLT W/ JAMB NUT & 1/4" WASHER @ EACH SIDE OF GIRT. FOR METAL DECK USE 12 SHEETMETAL SCREWS & 16 GA. MIN STRUT ANGLE CLIP
- ② - ATTACH TO TOP CORD. OF TRUSS ONLY OR WOOD JOIST W/ #12 X 1-5/8 DECK SCREW @ MIN. 1" FROM WOOD MATERIAL EDGE. ATTACH TO Z-GIRT W/ (2) #12 TEK SCREWS. FOR METAL DECK USE (2) 12-14 SHEETMETAL SCREWS



- FOR SHEETMETAL DUCTS 11" TO 27" IN DIAMETER & ALL SQUARE OR RECTANGULAR DUCTS (STRAP ALONE IS SUFFICIENT FOR DUCTS SMALLER THAN 11" IN DIAMETER)
- STRAP INTERVAL MAY BE DECREASED (LESS THAN 96" O/C TO REDUCE THE NEED FOR WIRE TIES AS DETAILED. CONSULT ENGINEER OR SMACNA STANDARDS)

1 DUCT SUPPORT

M601 SCALE: DETAIL



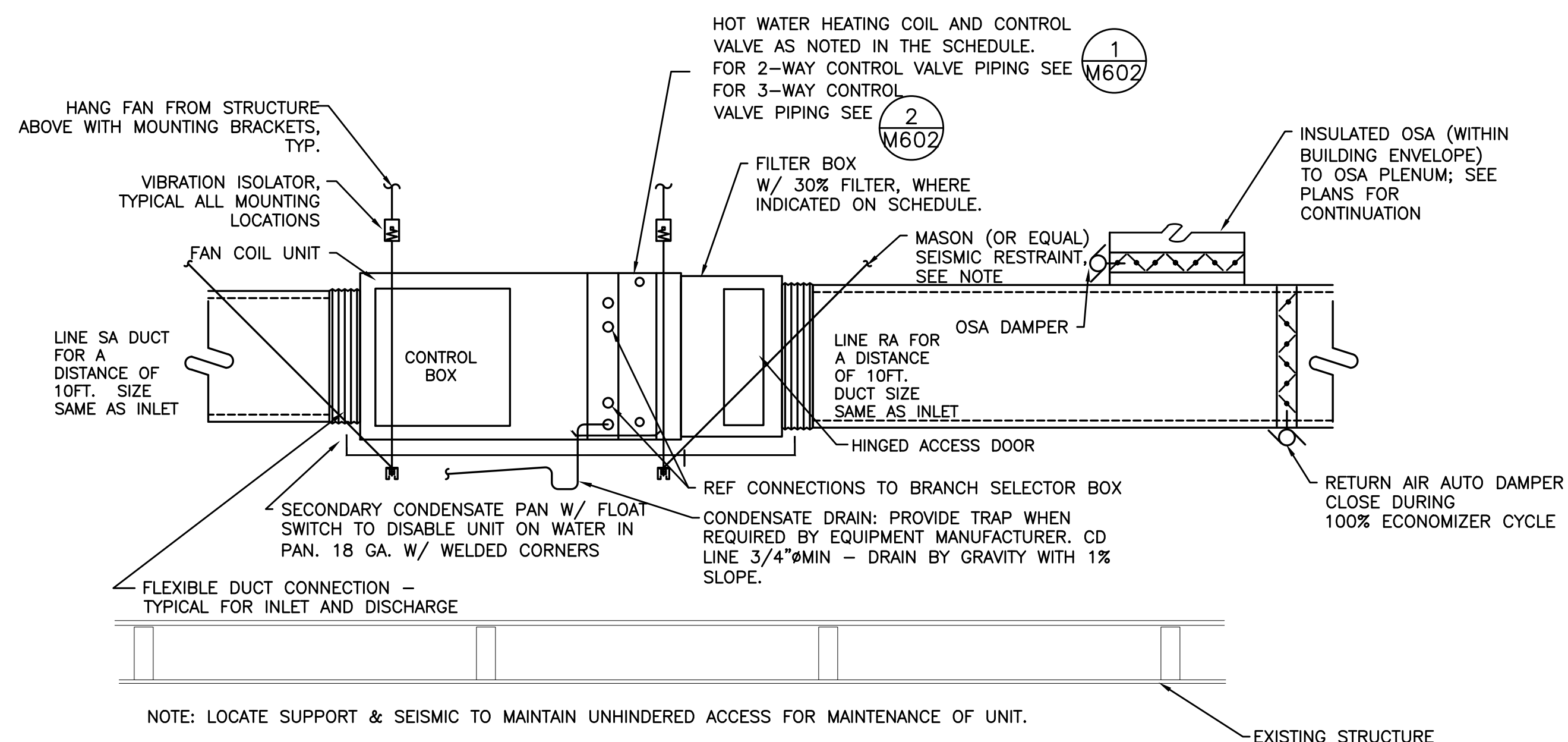
DETAIL NOTES

- ① - 1/4" GALV. THREADED EYE BOLT @ CENTER OF WOOD MEMBER (TYP. OF 3). FOR 2 GIRT USE MACHINE THREAD EYE BOLT W/ JAMB NUT & 1/4" WASHER @ EACH SIDE OF GIRT. USE 12 SHEETMETAL SCREWS & 16 GA. MIN. 16 GA. MIN STRUT ANGLE CLIP

- FOR SINGLE 1-1/2" TO 3" STEEL LINES
- FOR SINGLE 2" COPPER LINES

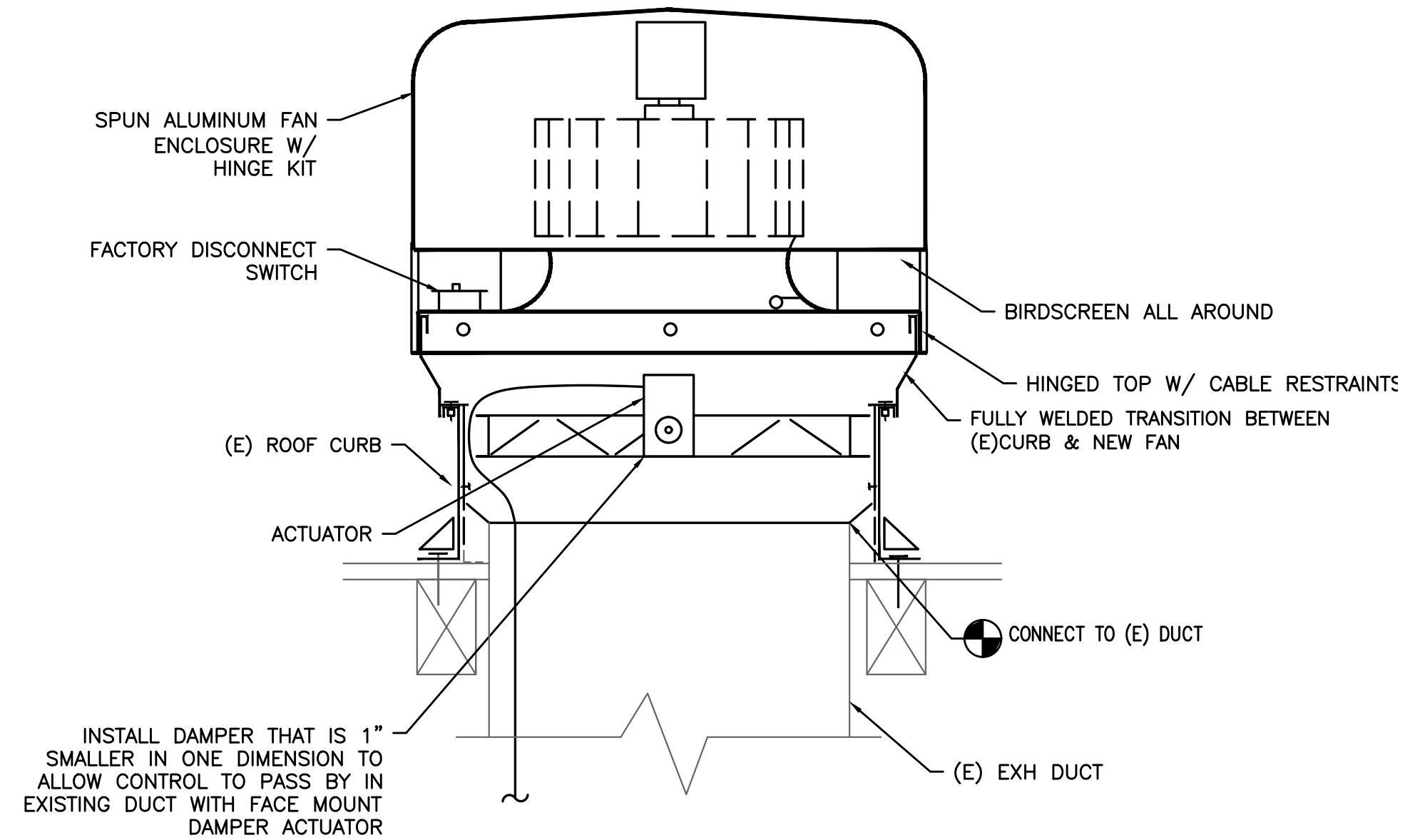
2 PIPE SUPPORT

M601 SCALE: DETAIL



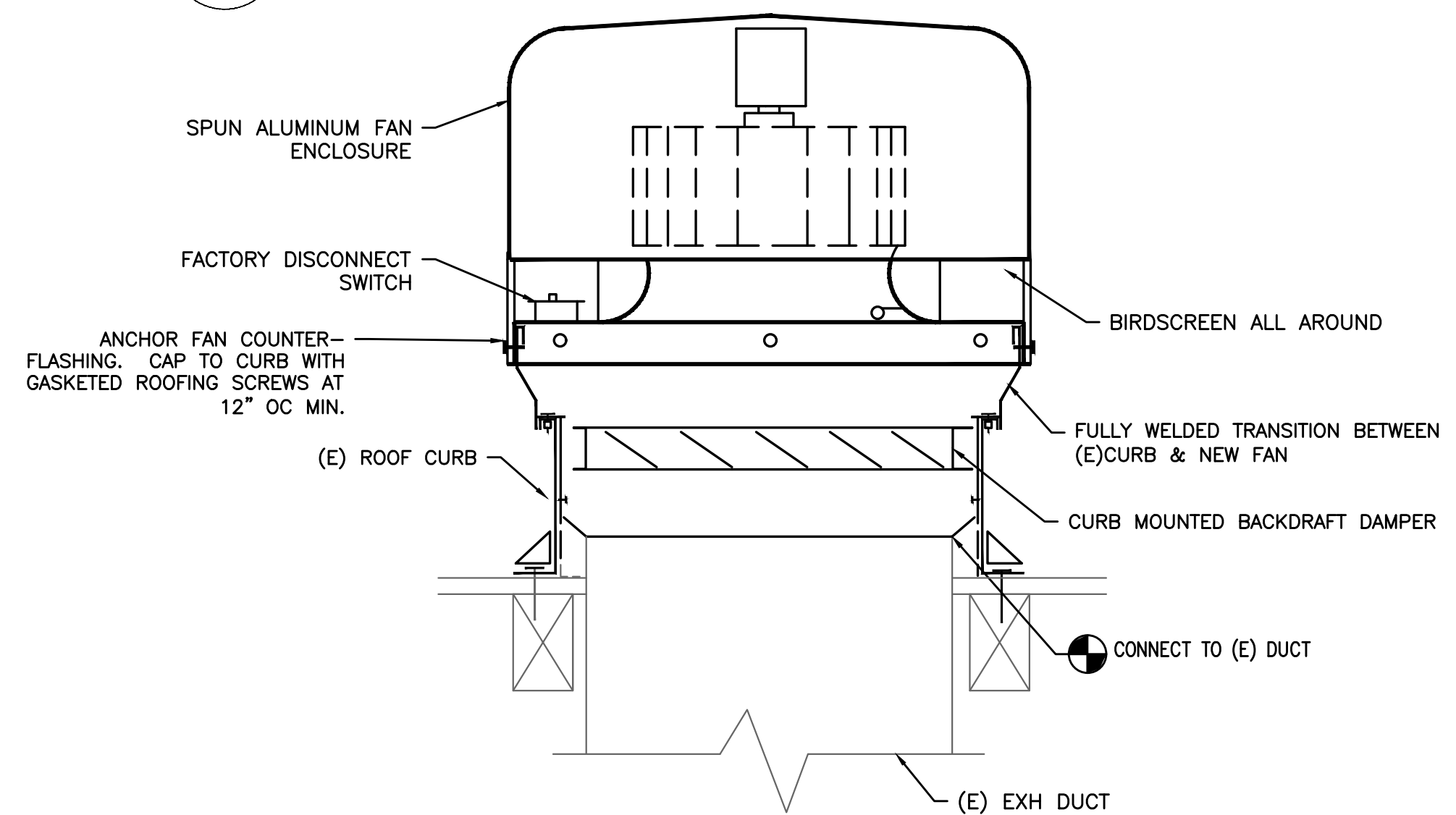
4 FAN COIL UNIT

M601 SCALE: DETAIL



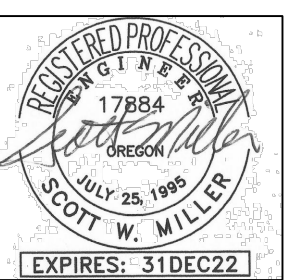
3 NEW EXHAUST FAN W/AUTO DAMPER ON (E) CURB

M601 SCALE: DETAIL



5 NEW EXHAUST FANS ON (E) CURB

M601 SCALE: DETAIL



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 Chkd By: SWM
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 Acad File:

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ERROL HASSELL ES HVAC UPGRADE
 18100 SW BANY ROAD
 BEAVERTON OREGON

MECHANICAL DETAILS

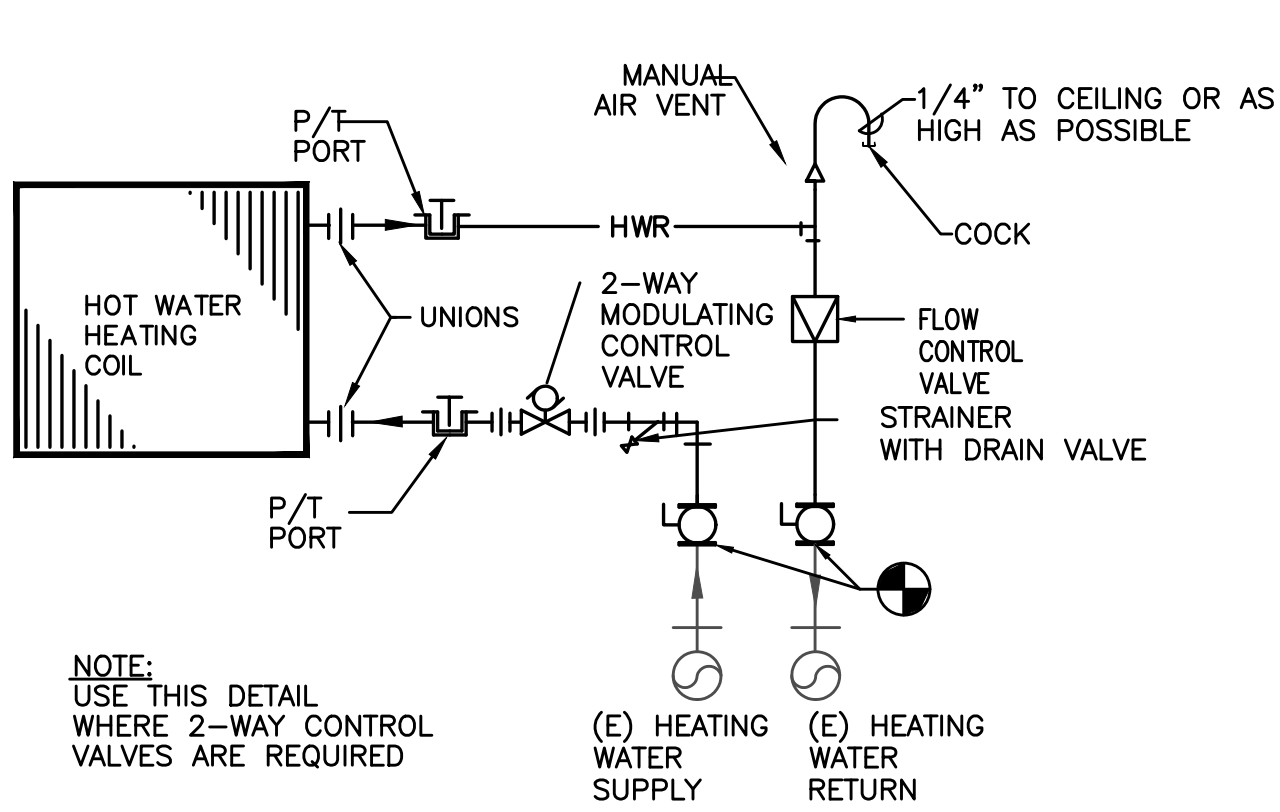
PERMIT/BID SET
 SEPTEMBER 2021



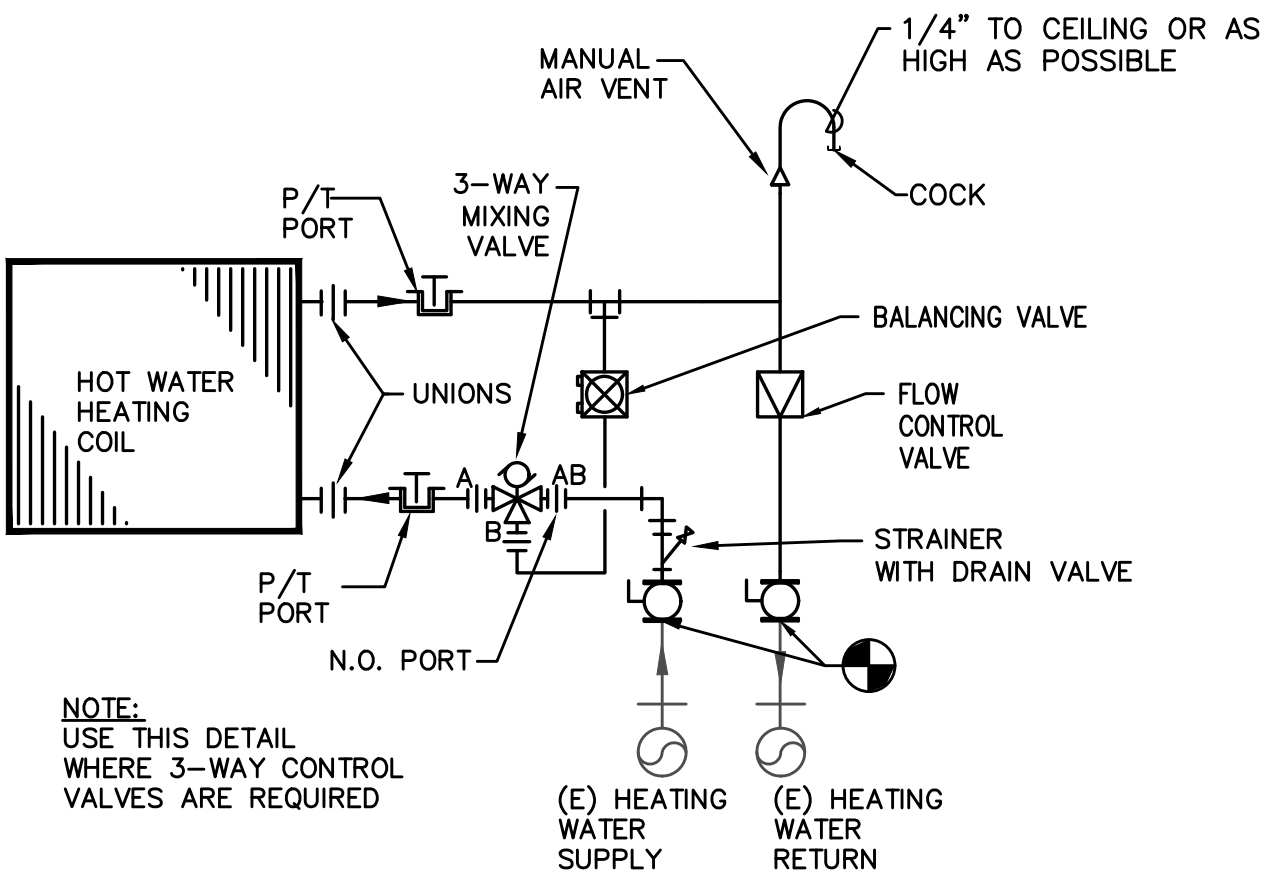
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SHEET

M601



2-WAY CONTROL VALVE



3-WAY MIXING VALVE

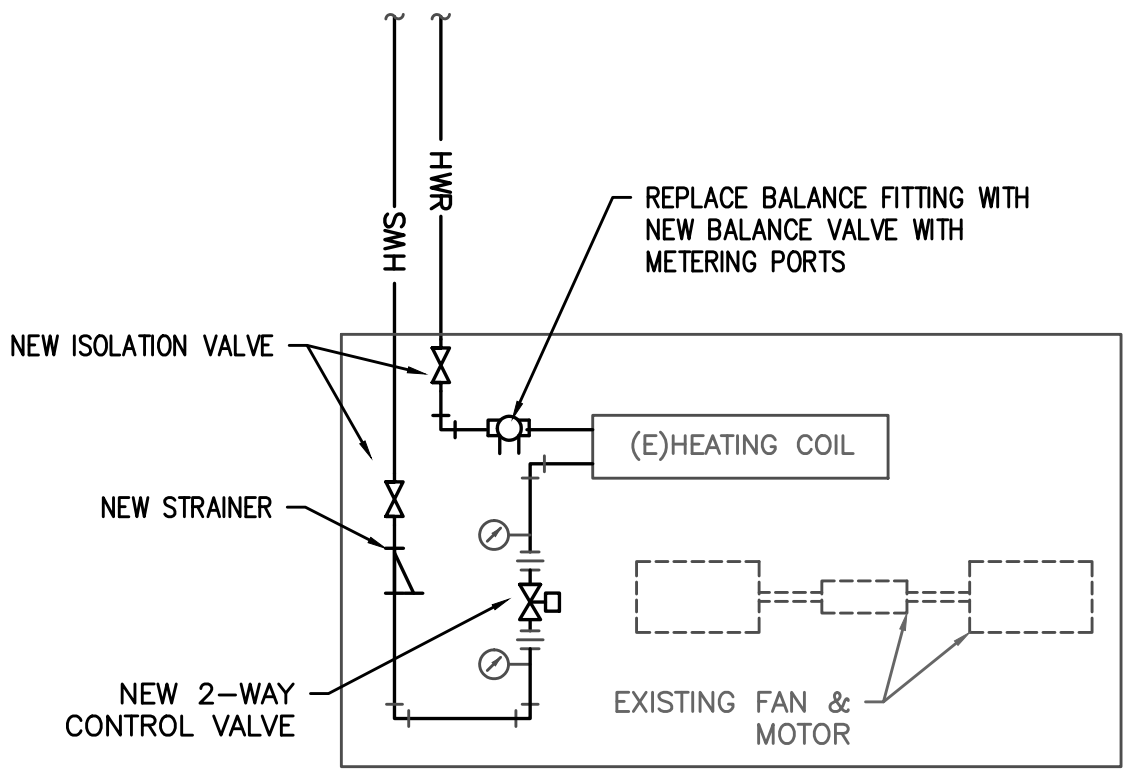


DIAGRAM NOTES:

1. REMOVE EXISTING STRAINER SCREEN, CLEAN AND REINSTALL.

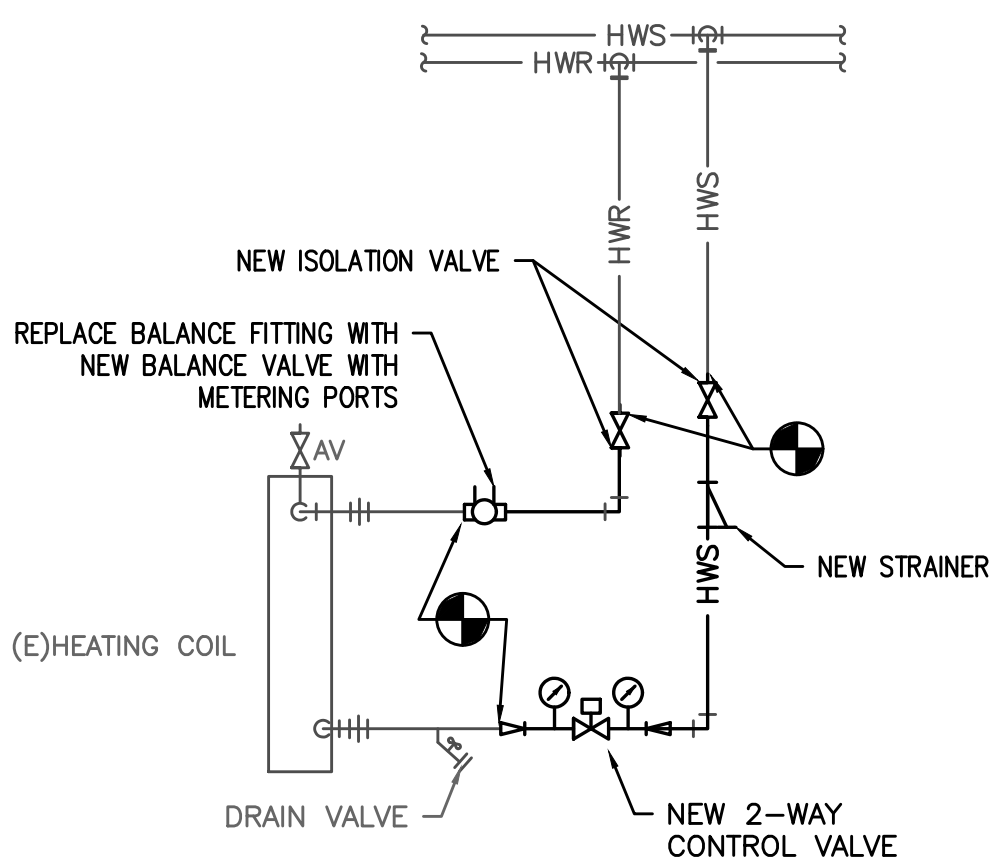


DIAGRAM NOTES:

1. UNIT HEATER COIL AND DUCT COILS DIAGRAM
2. REPLACE STRAINERS.

1 COIL PIPING DIAGRAM

SCALE: DETAIL

2 COIL PIPING DETAIL

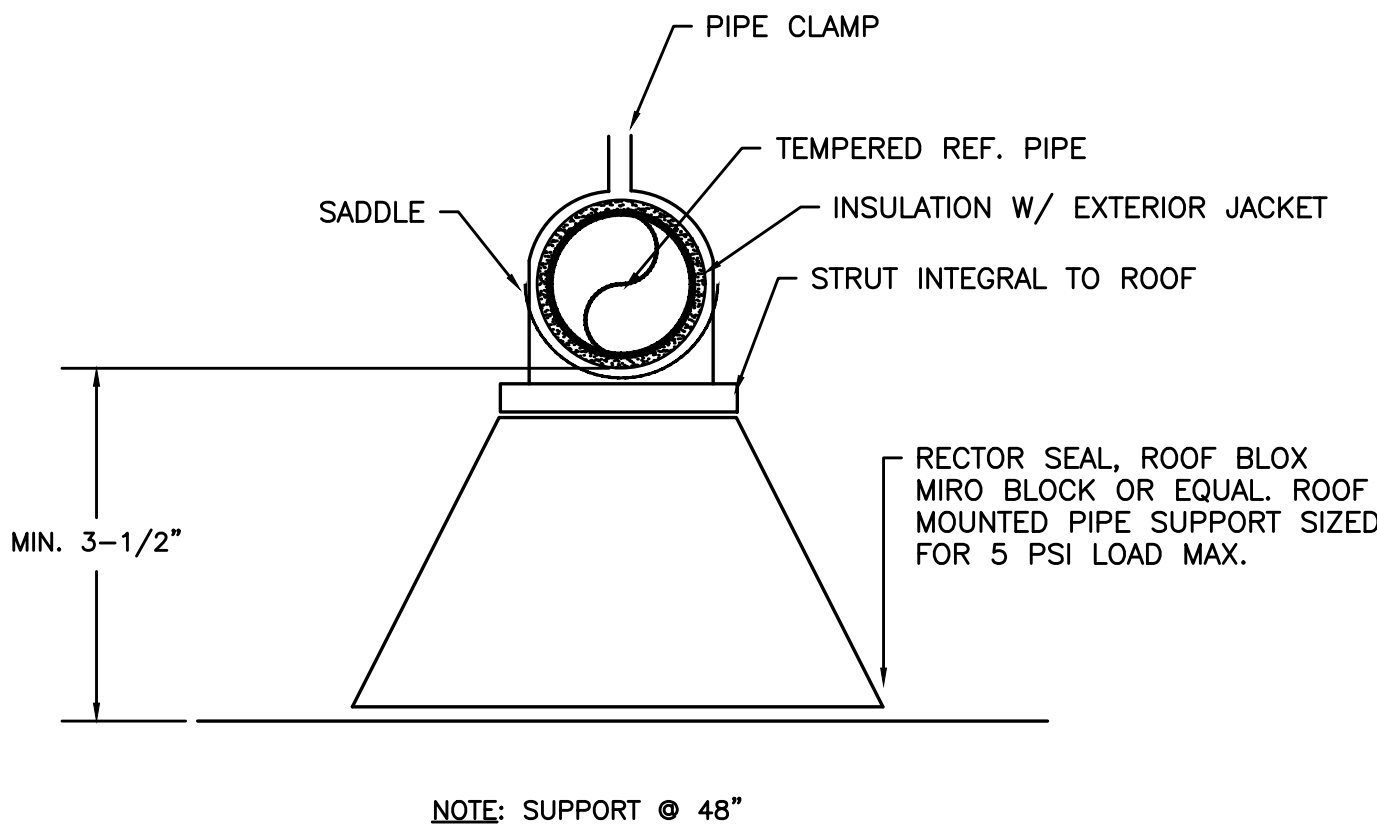
SCALE: DETAIL

3 (E) PIPING DIAGRAM TYP CUH

SCALE: DETAIL

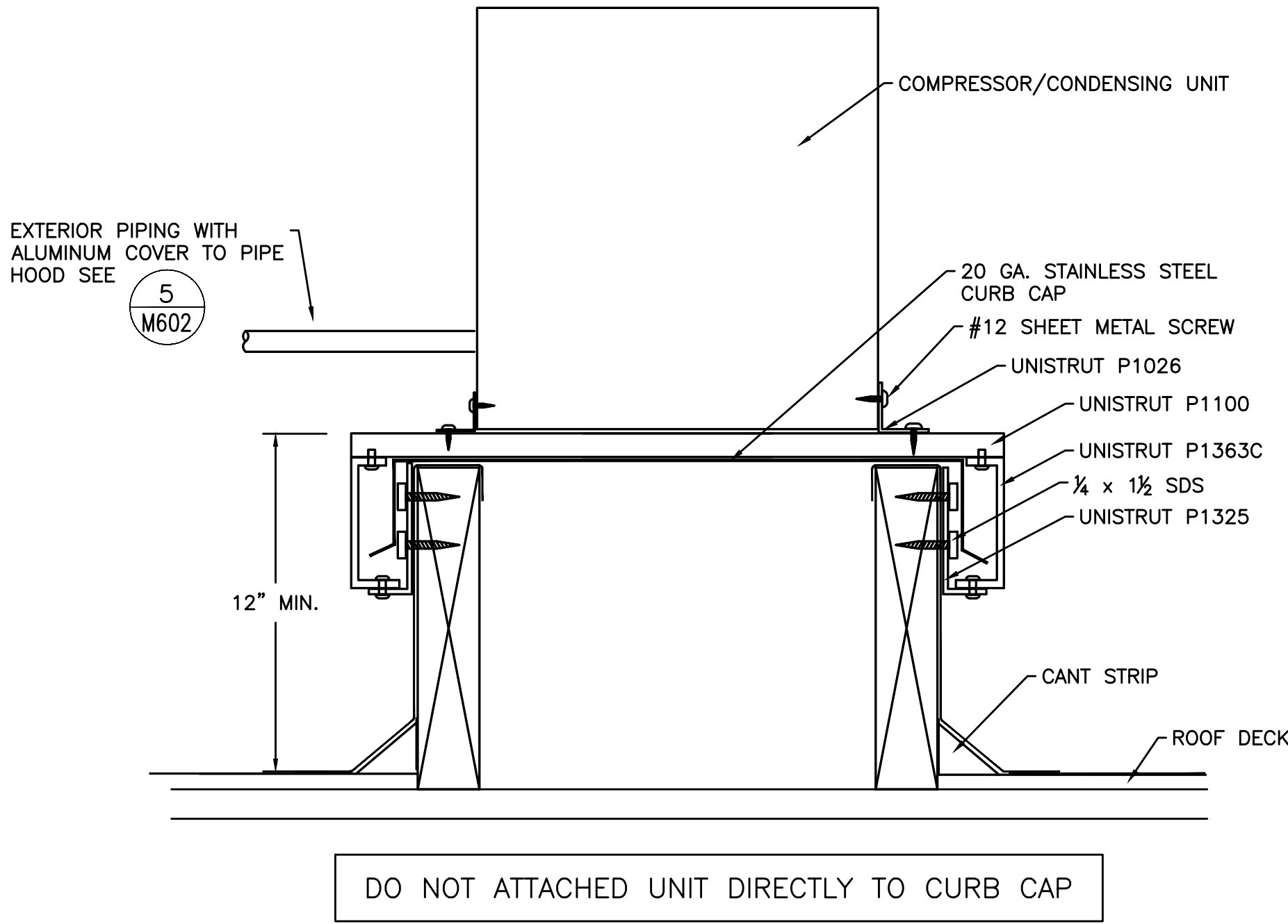
4 (E) HEATING COIL WITH 2-WAY VALVE

SCALE: DETAIL



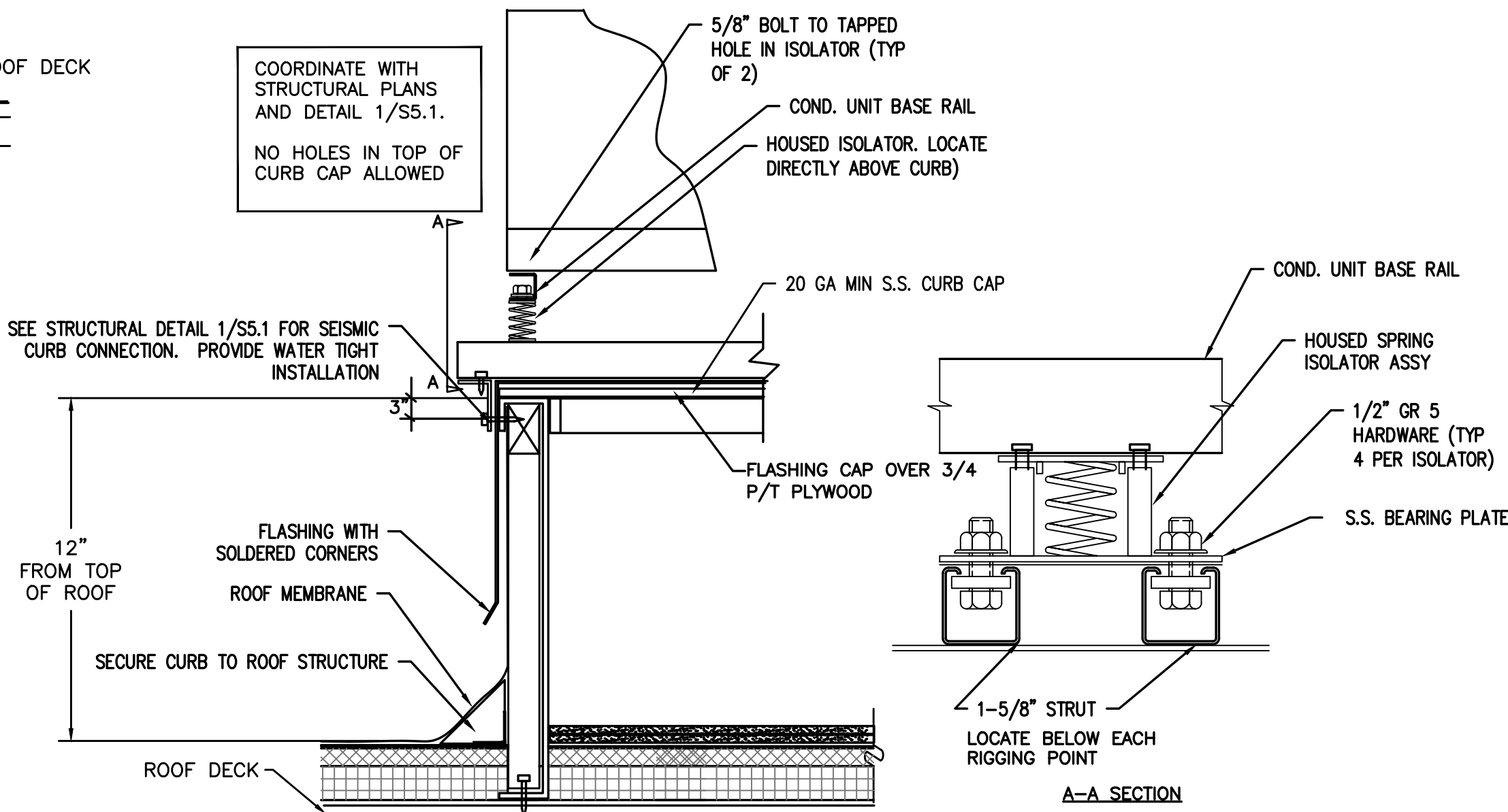
5 ROOF MOUNTED REFRIGERANT PIPE

SCALE: DETAIL



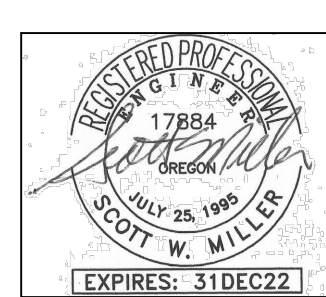
6 SMALL CONDENSING UNIT DETAIL

NOT TO SCALE



7 CURB DETAIL FOR CONDENSING UNITS LARGER THAN 5-TON

SCALE: DETAIL

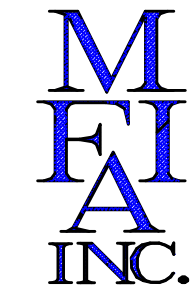


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ERROL HASSELL ES HVAC UPGRADE
18100 SW BANY ROAD
BEAVERTON OREGON

MECHANICAL DETAILS

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ELECTRICAL SYMBOL LIST

LIGHTING SYMBOLS

	LED LAY-IN LIGHT FIXTURE
	SURFACE MOUNTED LED
	RECESSED LIGHT FIXTURE
	DECORATIVE PENDANT FIXTURE
	WALL-MOUNTED FIXTURE
	HEAT LAMP/ FAN / LIGHT
	WALL MOUNTED LIGHT FIXTURE
	EXIT SIGN, UNIVERSAL MOUNT, W/ DIRECTIONAL ARROW
	EXIT SIGN, WALL MOUNT, +8'-0" A.F.F.

SWITCH SYMBOLS

\$	SWITCH, SPST +48" A.F.F.
\$ ₂	SWITCH, DPST +48" A.F.F.
\$ ₃	SWITCH, 3-WAY +48" A.F.F.
\$ ₄	SWITCH, 4-WAY +48" A.F.F.
\$ _E	SWITCH, EMERGENCY LIGHTING +48" A.F.F.
\$ _D	SWITCH, DIMMER +48" A.F.F.
\$ _P	SWITCH, SPST, W/PILOT LIGHT +48" A.F.F.
3\$ _P	SWITCH, 3-WAY, W/PILOT LIGHT +48" A.F.F.
\$ _K	SWITCH, KEY-OPERATED +48" A.F.F.
\$ _T	SWITCH, TIMED +48" A.F.F.
\$	EXISTING SWITCH, SPST +48" A.F.F.
DS	DAYLIGHT SENSOR
OW	OCCUPANCY SENSOR WALL MOUNTED
OC	OCCUPANCY SENSOR CEILING MOUNTED

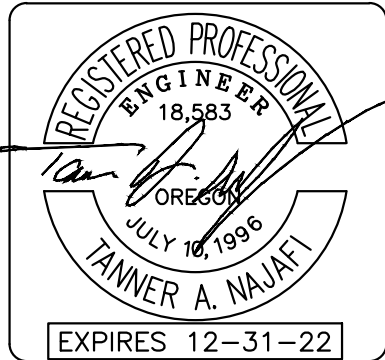
POWER SYMBOLS

	RECEPTACLE NEMA 5-20R, DUPLEX +24" A.F.F.
	RECEPTACLE NEMA 5-20R, QUAD +24" A.F.F.
	RECEPTACLE NEMA 5-20R, DUPLEX +6" ABV COUNTER (44" AFF TO CENTER)
	RECEPTACLE NEMA 5-20R, QUAD +6" ABV COUNTER
	RECEPTACLE NEMA 5-20R, DUPLEX +24" A.F.F. (TAMPER RESISTANT)
	RECEPTACLE NEMA 5-20R, DUPLEX, PEDESTAL MOUNT
	RECEPTACLE NEMA 5-20R, DUPLEX, FLUSH FLOOR MOUNT
	RECEPTACLE NEMA 5-20R, QUAD, FLUSH FLOOR MOUNT
	RECEPTACLE, SPECIAL (COORDINATE WITH EQUIPMENT SERVED)
	POWER POLE
	MAGNETIC MOTOR STARTER
	PUSHBUTTON STATION
	JUNCTION BOX
	RELAY
	ELECTRICAL DISTRIBUTION PANEL, RECESSED
	ELECTRICAL DISTRIBUTION PANEL, SURFACE
	THERMOSTAT
	TRANSFORMER
	DISCONNECT, NON-FUSED
	DISCONNECT, FUSED
	ELECTRICAL CONNECTION
	ELECTRICAL CONNECTION, SINGLE MOTOR
	ELECTRICAL CONNECTION, MULTI-MOTOR
	EXISTING RECEPTACLE
	SMOKE DETECTOR, PHOTO TYPE
	FIRE ALARM HORN, +80" A.F.F.
	FIRE ALARM HORN/STOBE, +80" A.F.F.

ABBREVIATIONS

'A'	LIGHT FIXTURE TYPE (SEE FIXTURE LIST)
AFF	ABOVE FINISHED FLOOR
ATS	TRANSFER SWITCH, AUTOMATIC
C (C/W)CONDUIT-	(C/W DENOTES CONDUIT AND WIRE)
CO	CONDUIT ONLY
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CCT.	CIRCUIT (CCT'G DENOTES CIRCUITING)
CCTV	CLOSED CIRCUIT TELEVISION
CF/CI	CONTRACTOR FURNISHED/CONTRACTOR INSTALLED
CLG	CEILING
CT	CURRENT TRANSFORMER
(E)	EXISTING
EG	EQUIPMENT GROUND
FACP	FIRE ALARM CONTROL PANEL
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
HID	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
IG	ISOLATED GROUND
JB	JUNCTION BOX
LCP	LIGHTING CONTROL PANEL
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUGS ONLY
MTS	TRANSFER SWITCH, MANUAL
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
OF/CI	OWNER FURNISHED/CONTRACTOR INSTALLED
OF/OI	OWNER FURNISHED/OWNER INSTALLED
PA	PUBLIC ADDRESS
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
WP	WEATHERPROOF

ALL MOUNTING HEIGHTS ARE AS SHOWN ABOVE UNLESS OTHER ELECTRICAL SHEETS SPECIFY DIFFERENT MOUNTING HEIGHTS.



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ELECTRICAL LEGEND

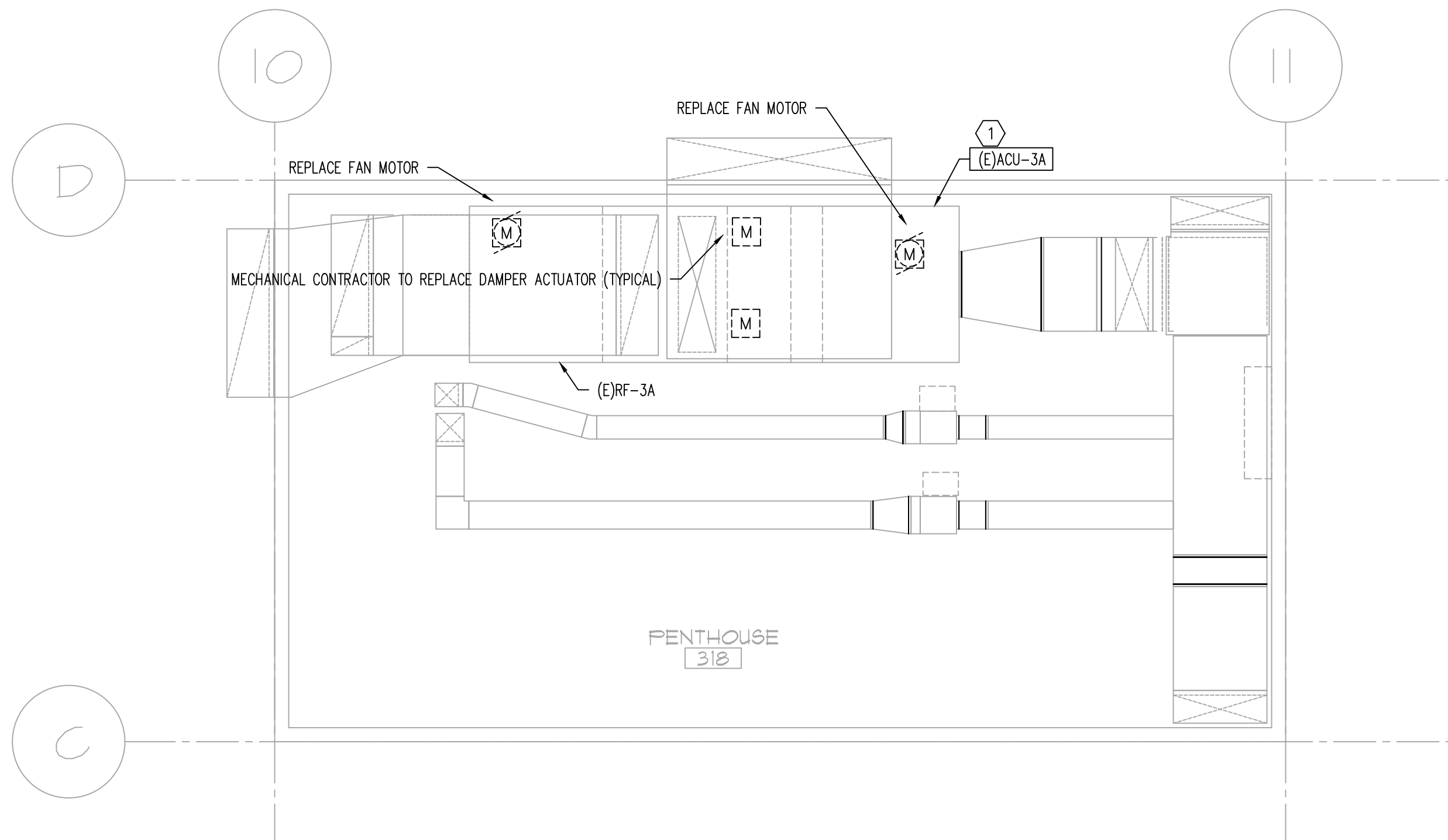
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JULY 2021



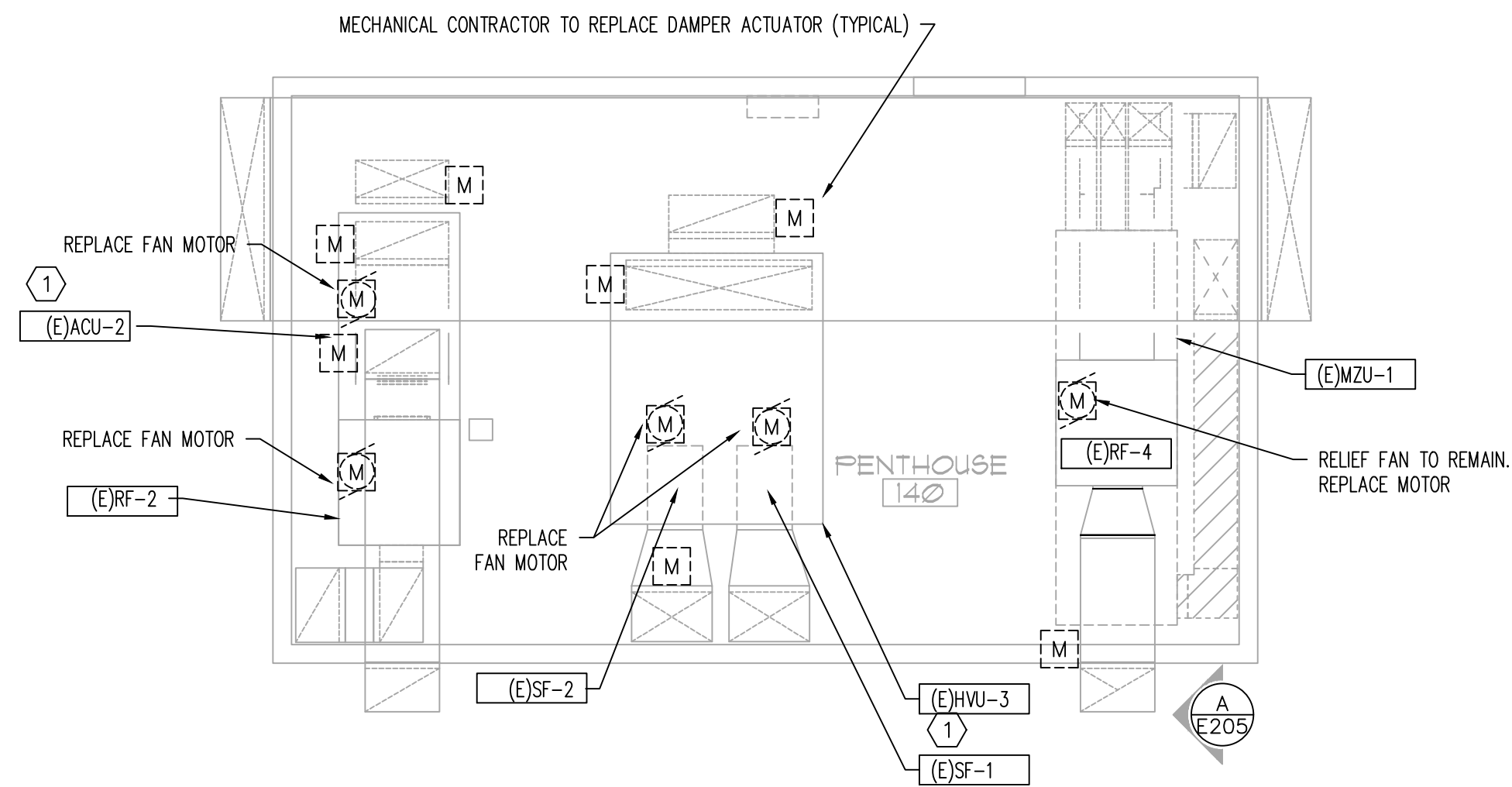
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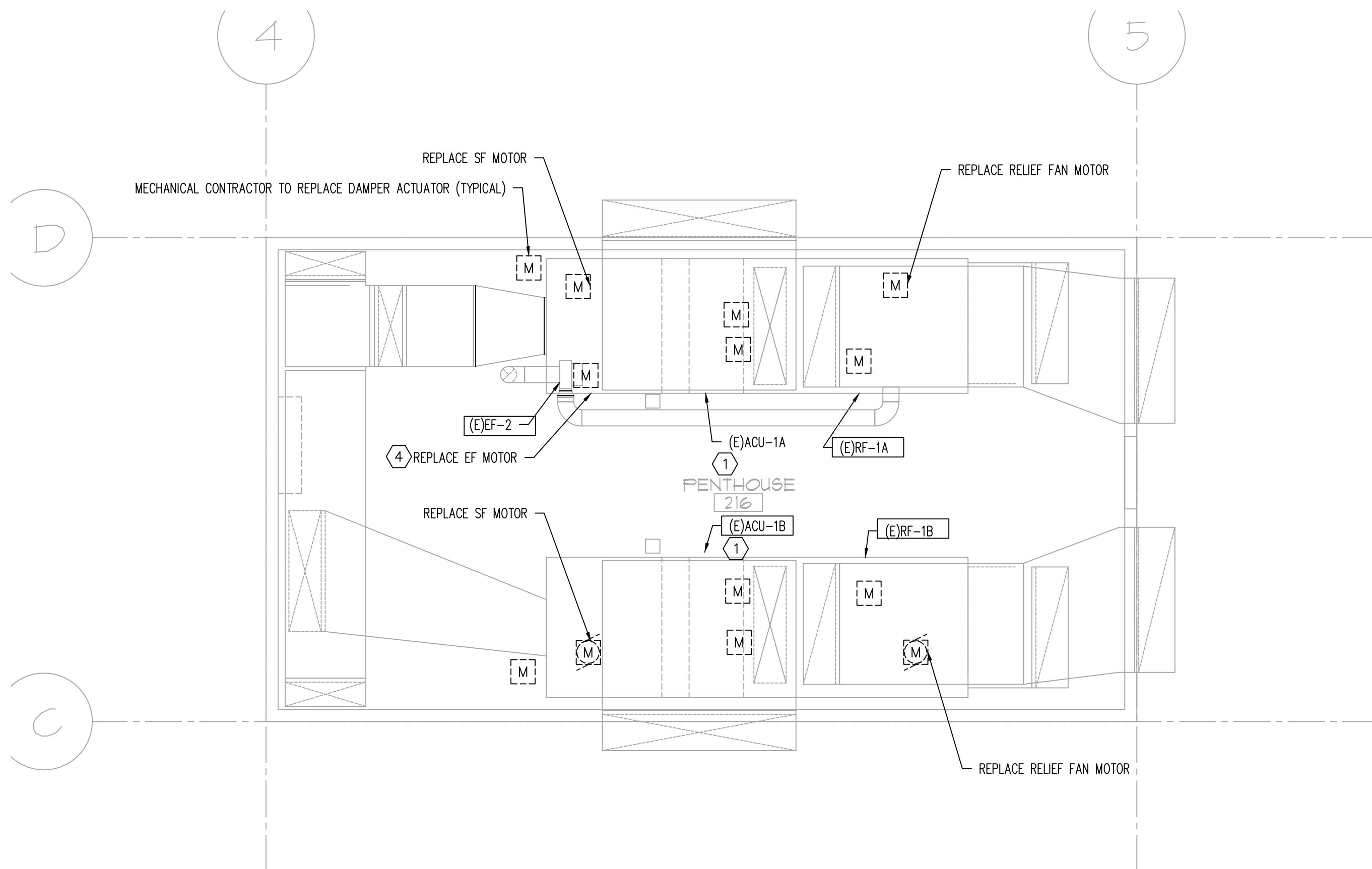
E100



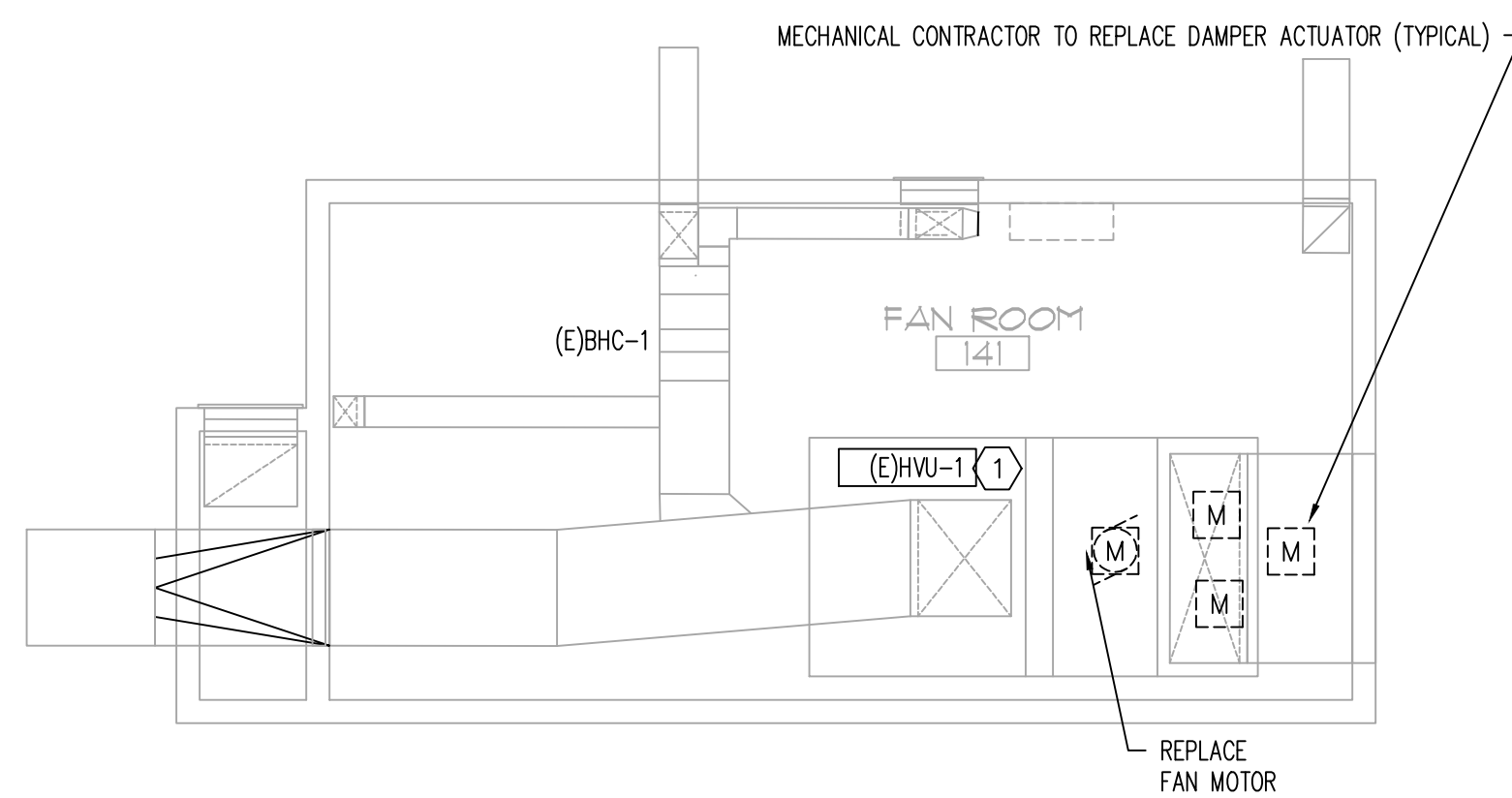
3 ENLARGED ELECTRICAL PENTHOUSE 318
E105 SCALE: 1/4" = 1'-0"



1 ENLARGED ELECTRICAL PENTHOUSE 140
E105 SCALE: 1/4" = 1'-0"



4 ENLARGED ELECTRICAL PENTHOUSE 216
E105 SCALE: 1/4" = 1'-0"



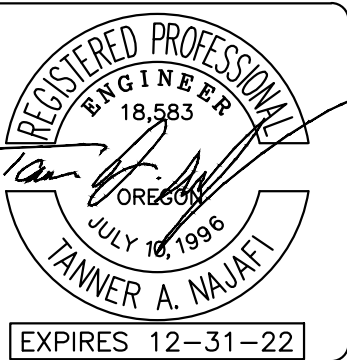
2 ENLARGED ELECTRICAL FAN ROOM 141
E105 SCALE: 1/4" = 1'-0"

GENERAL DEMO NOTES

- CONTRACTOR SHALL FIELD VERIFY ON SITE ALL CONDITIONS RELATED TO EQUIPMENT REPLACEMENT, NEW INSTALLATION LOCATIONS AND REFURBISH/REMODEL. NOTIFY ENGINEER FOR ANY MAJOR DISCREPANCIES AS FOUND.
- CONTRACTOR TO COORDINATE ALL UNIT RE-TAGGING AND EQUIPMENT REPLACEMENTS WITH MECHANICAL CONTRACTOR FOR REVISION AT EXISTING ELECTRICAL PANELS AND ASSOCIATED DESIGNATIONS.
- OWNER SHALL TAG ANY DEVICES PRIOR TO CONSTRUCTION OR PROVIDE A LIST OF (E) DEVICES THEY WISH THE CONTRACTOR TO SALVAGE & RETURN IN WORKING ORDER TO THEM.
- SEE HVAC CONDUIT & WIRE SCHEDULE SHEET E215 FOR CONDUIT AND WIRE SIZE AND PROVIDE LOCAL DISCONNECT SWITCH FOR ALL HVAC UNITS AND MAKE FINAL CONNECTION FROM HVAC UNIT TO THE DESIGNATED PANEL. (NEMA 3R IF UNIT IS OUTSIDE)

KEYED DEMO NOTES

- EXISTING AIR HANDLING UNIT TO REMAIN. FOR NEW WORK SEE E2 SERIES DRAWINGS.
- NOT USED.
- NOT USED.
- EXISTING EXHAUST FAN UNIT TO REMAIN REPLACE MOTOR AND DAMPER ACTUATOR. SEE NEW WORK FOR REFURBISHMENT.
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- EXISTING DX COOLING COIL TO BE REPLACED WITH NEW. FOR NEW WORK SEE E2 SERIES PLANS.
- NOT USED.



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ENLARGED ELECTRICAL PLANS

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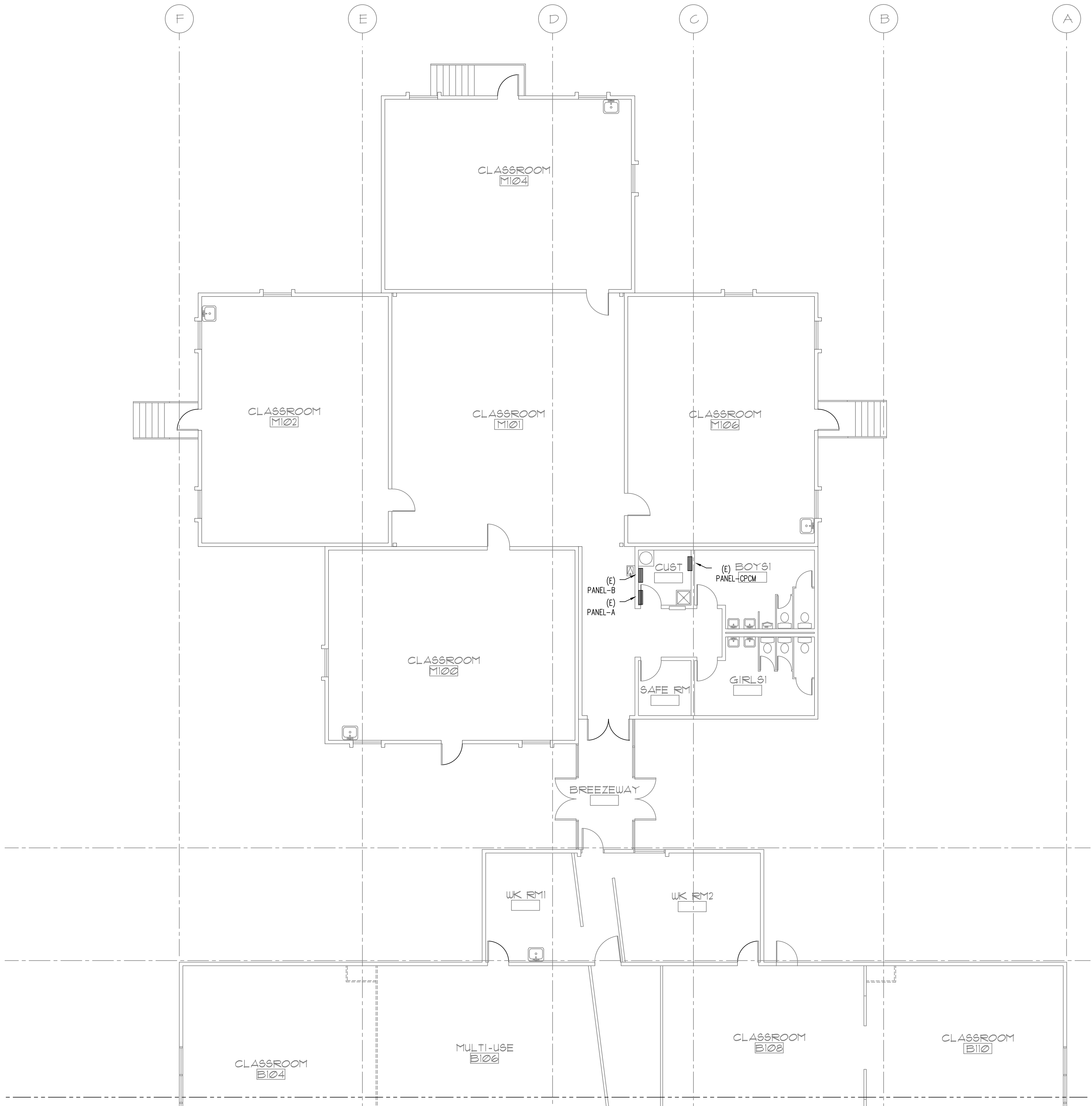
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A
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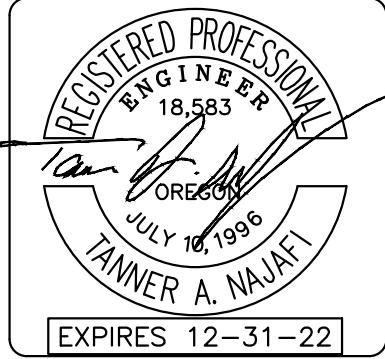
E105

02 OF 11



- GENERAL NOTES**
- A. CONTRACTOR SHALL FIELD VERIFY ON SITE ALL CONDITIONS RELATED TO EQUIPMENT REPLACEMENT, NEW INSTALLATION LOCATIONS AND REFURBISH/REMODEL. NOTIFY ENGINEER FOR ANY MAJOR DISCREPANCIES AS FOUND.
 - B. CONTRACTOR TO COORDINATE ALL UNIT RE-TAGGING AND EQUIPMENT REPLACEMENTS WITH MECHANICAL CONTRACTOR FOR REVISION AT EXISTING ELECTRICAL PANELS AND ASSOCIATED DESIGNATIONS.
 - C. OWNER SHALL TAG ANY DEVICES PRIOR TO CONSTRUCTION OR PROVIDE A LIST OF (E) DEVICES THEY WISH THE CONTRACTOR TO SALVAGE & RETURN IN WORKING ORDER TO THEM.
 - D. SEE HVAC CONDUIT & WIRE SCHEDULE SHEET E215 FOR CONDUIT AND WIRE SIZE AND PROVIDE LOCAL DISCONNECT SWITCH FOR ALL HVAC UNITS AND MAKE FINAL CONNECTION FROM HVAC UNIT TO THE DESIGNATED PANEL. (NEMA 3R IF UNIT IS OUTSIDE)

- # KEYED NOTES**
- 1. EXISTING AIR HANDLING UNIT. MAKE POWER CONNECTION TO REPLACED SUPPLY AND RETURN/EXHAUST FAN MOTOR.
 - 2. NOT USED.
 - 3. NOT USED.
 - 4. NOT USED.
 - 5. NOT USED.
 - 6. NEW FAN COIL UNIT. MAKE POWER CONNECTION TO UNIT.
 - 7. NOT USED
 - 8. NOT USED.
 - 9. NOT USED.
 - 10. NEW DX COOLING COIL. MAKE POWER CONNECTION TO UNIT.
 - 11. NOT USED.
 - 12. EXISTING ROOF-TOP UNIT.



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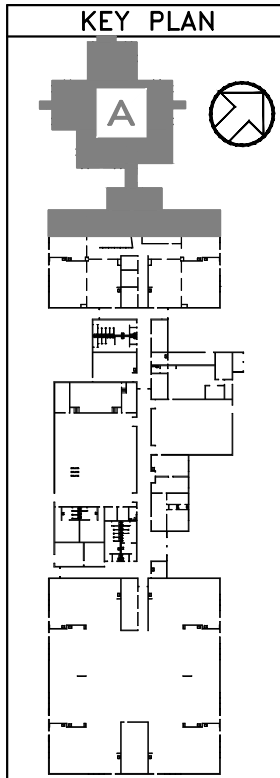
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ERROL HASSELL ES HVAC UPGRADE
18100 SW BANY ROAD
BEAVERTON OREGON

PARTIAL ELECTRICAL FLOOR PLAN – NEW

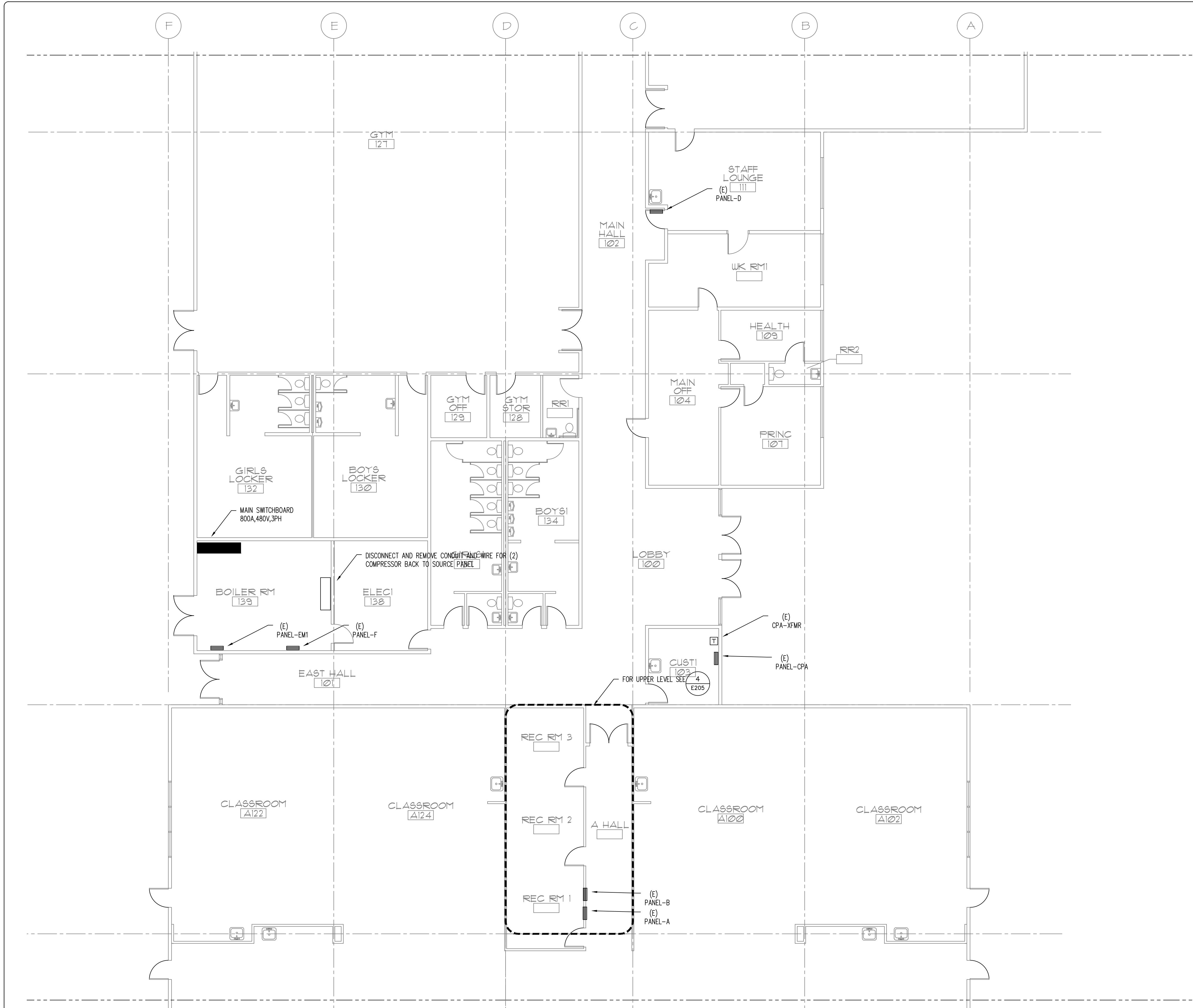
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1 PARTIAL ELECTRICAL FLOOR PLAN – NEW
E201 SCALE: 1/8" = 1'-0"



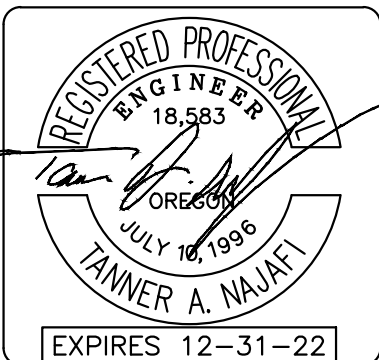
1 PARTIAL ELECTRICAL FLOOR PLAN – NEW
E203 SCALE: 1/8" = 1'-0"

GENERAL NOTES

- CONTRACTOR SHALL FIELD VERIFY ON SITE ALL CONDITIONS RELATED TO EQUIPMENT REPLACEMENT, NEW INSTALLATION LOCATIONS AND REFURBISH/REMODEL. NOTIFY ENGINEER FOR ANY MAJOR DISCREPANCIES AS FOUND.
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- OWNER SHALL TAG ANY DEVICES PRIOR TO CONSTRUCTION OR PROVIDE A LIST OF (E) DEVICES THEY WISH THE CONTRACTOR TO SALVAGE & RETURN IN WORKING ORDER TO THEM.
- SEE HVAC CONDUIT & WIRE SCHEDULE SHEET E215 FOR CONDUIT AND WIRE SIZE AND PROVIDE LOCAL DISCONNECT SWITCH FOR ALL HVAC UNITS AND MAKE FINAL CONNECTION FROM HVAC UNIT TO THE DESIGNATED PANEL. (NEMA 3R IF UNIT IS OUTSIDE)

KEYED NOTES

- EXISTING AIR HANDLING UNIT. MAKE POWER CONNECTION TO REPLACED SUPPLY AND RETURN/EXHAUST FAN MOTOR.
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- NEW FAN COIL UNIT. MAKE POWER CONNECTION TO UNIT.
- NOT USED.
- NOT USED.
- NOT USED.
- NEW DX COOLING COIL. MAKE POWER CONNECTION TO UNIT.
- NOT USED.
- EXISTING ROOF-TOP UNIT.



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PARTIAL ELECTRICAL FLOOR PLAN – NEW

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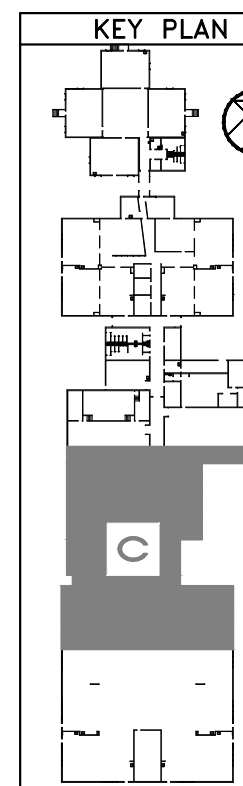


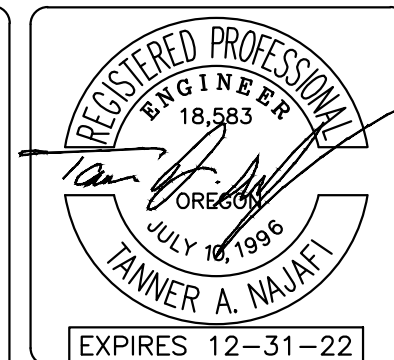
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E203

05 OF 11





GENERAL NOTES

- A. CONTRACTOR SHALL FIELD VERIFY ON SITE ALL CONDITIONS RELATED TO EQUIPMENT REPLACEMENT, NEW INSTALLATION LOCATIONS AND REFURBISH/REMODEL. NOTIFY ENGINEER FOR ANY MAJOR DISCREPANCIES AS FOUND.
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KEYED NOTES

- 1. EXISTING AIR HANDLING UNIT. MAKE POWER CONNECTION TO REPLACED SUPPLY AND RETURN/EXHAUST FAN MOTOR.
- 2. NOT USED.
- 3. NOT USED.
- 4. NOT USED.
- 5. NOT USED.
- 6. NEW FAN COIL UNIT. MAKE POWER CONNECTION TO UNIT.
- 7. NOT USED
- 8. NOT USED.
- 9. NOT USED.
- 10. NEW DX COOLING COIL. MAKE POWER CONNECTION TO UNIT.
- 11. NOT USED.
- 12. EXISTING ROOF-TOP UNIT.
- 13. DISCONNECT AND REMOVE EXISTING DUCT DETECTOR IN "SA" DUCT.
- 14. EXISTING DUCT DETECTOR IN "RA" TO REMAIN AS IS.

BEAVERTON SCHOOL DISTRICT
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ENLARGED ELECTRICAL PLANS

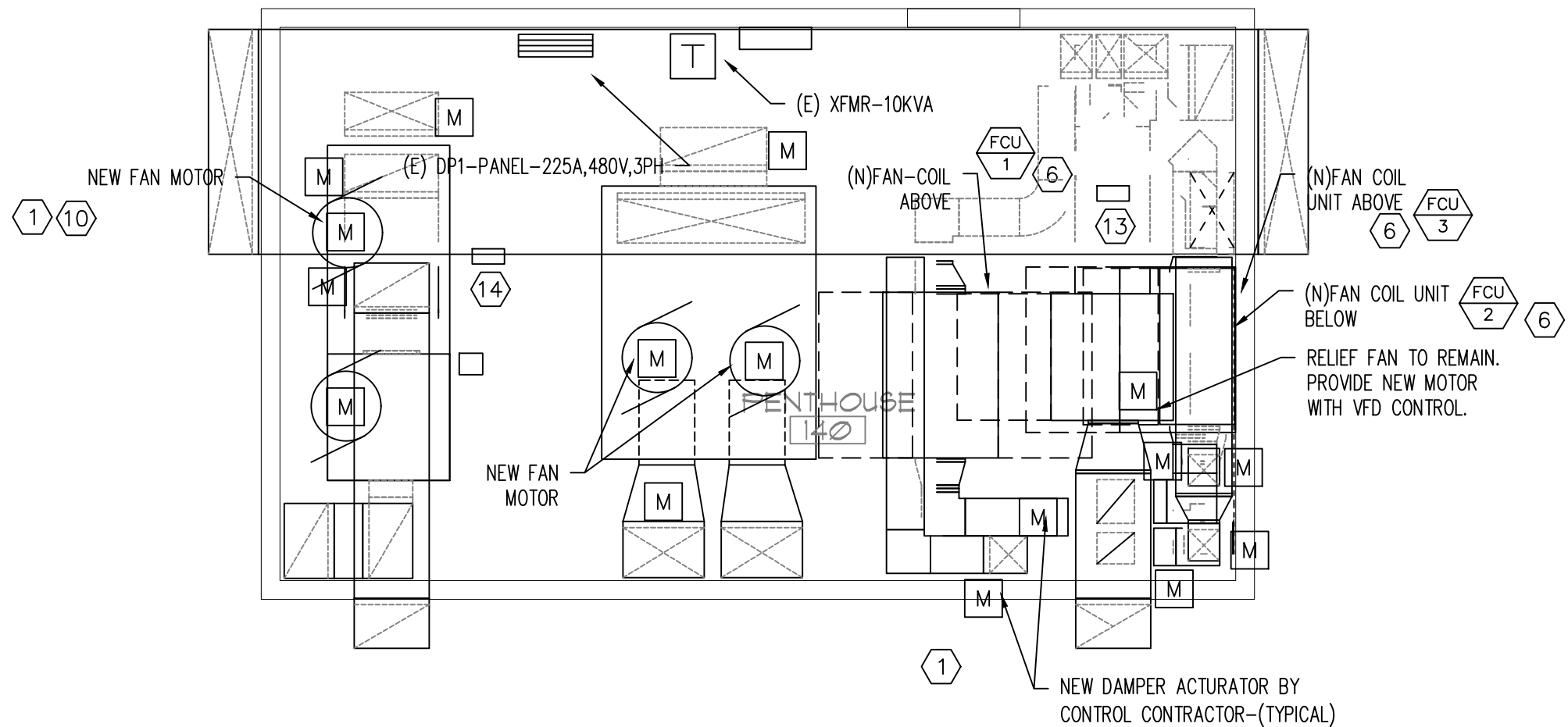
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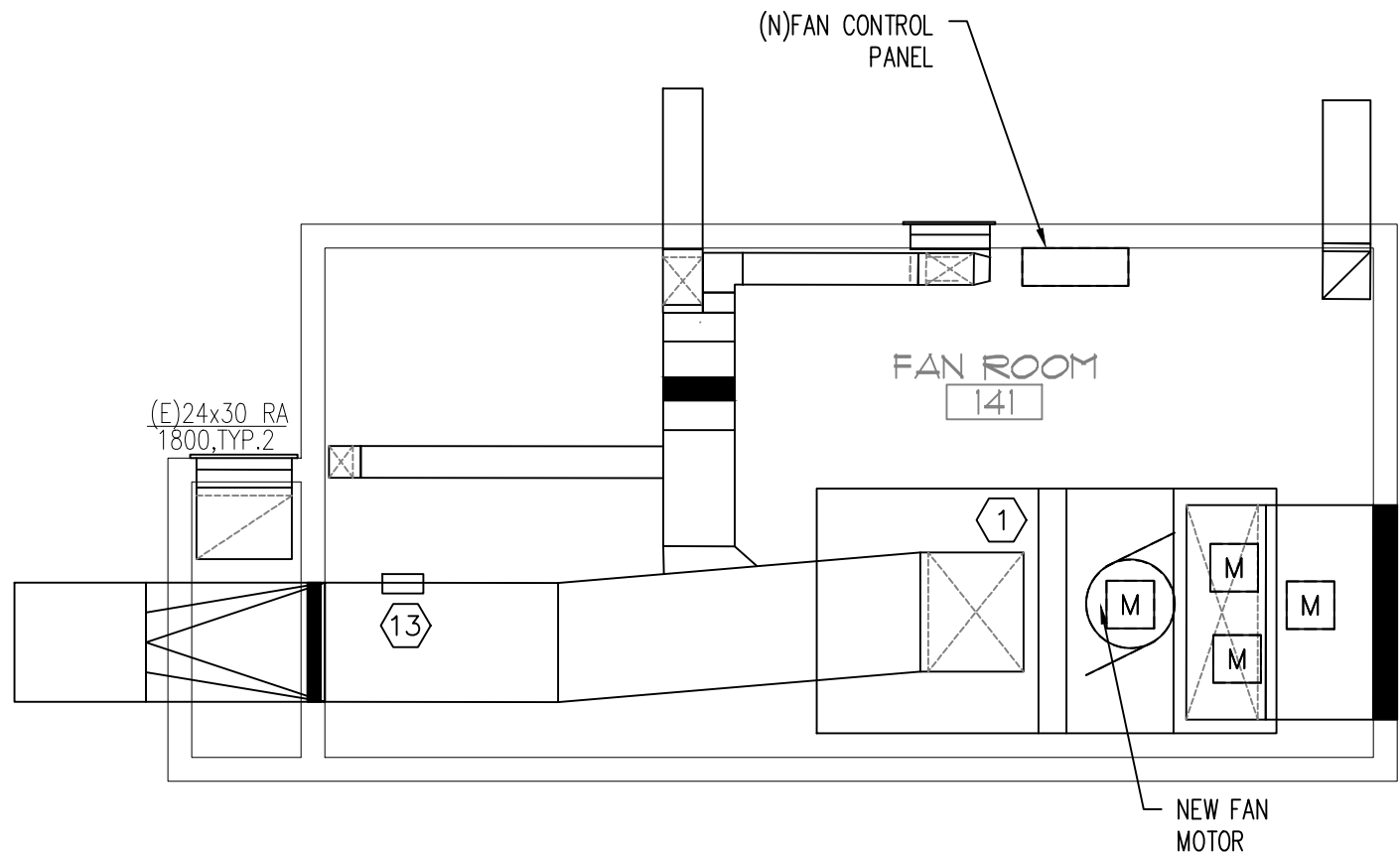
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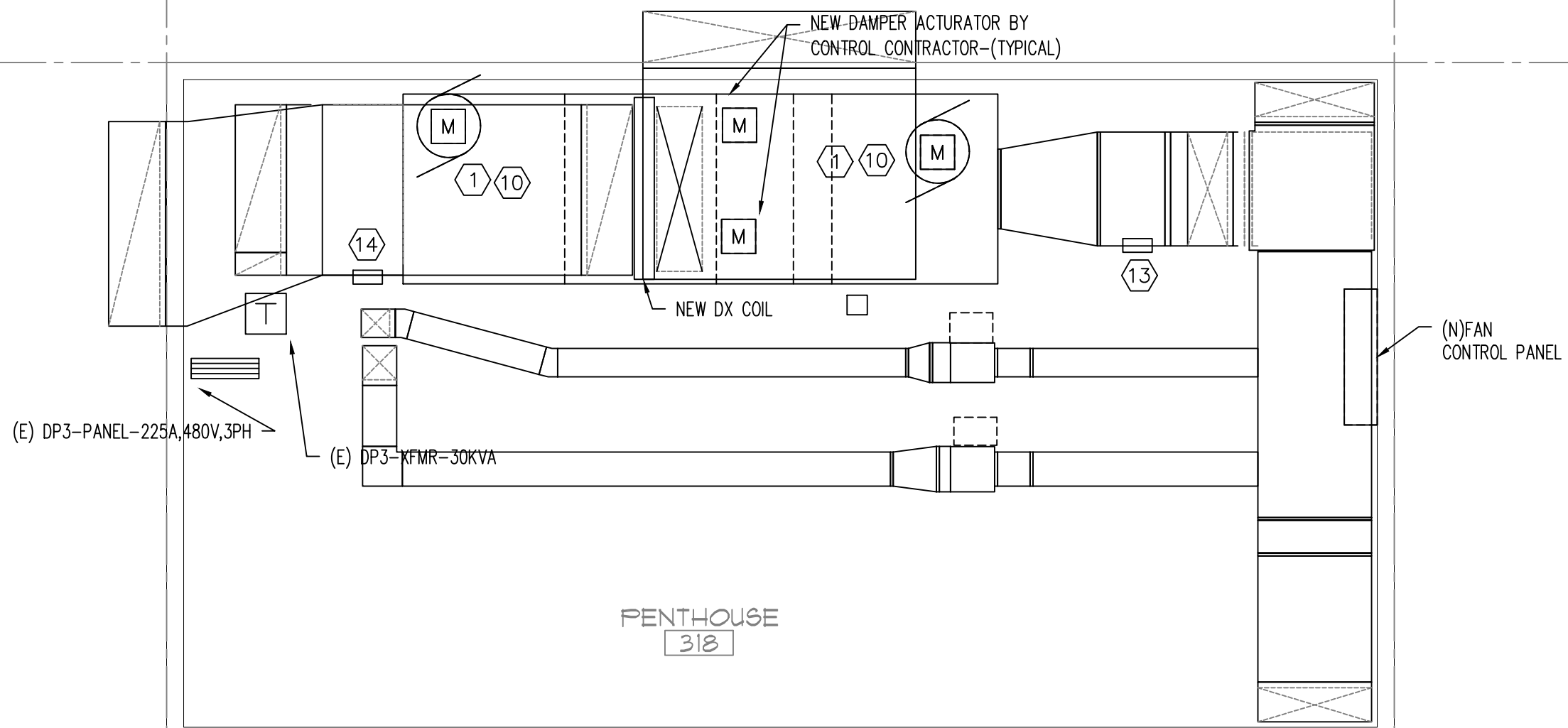
E205



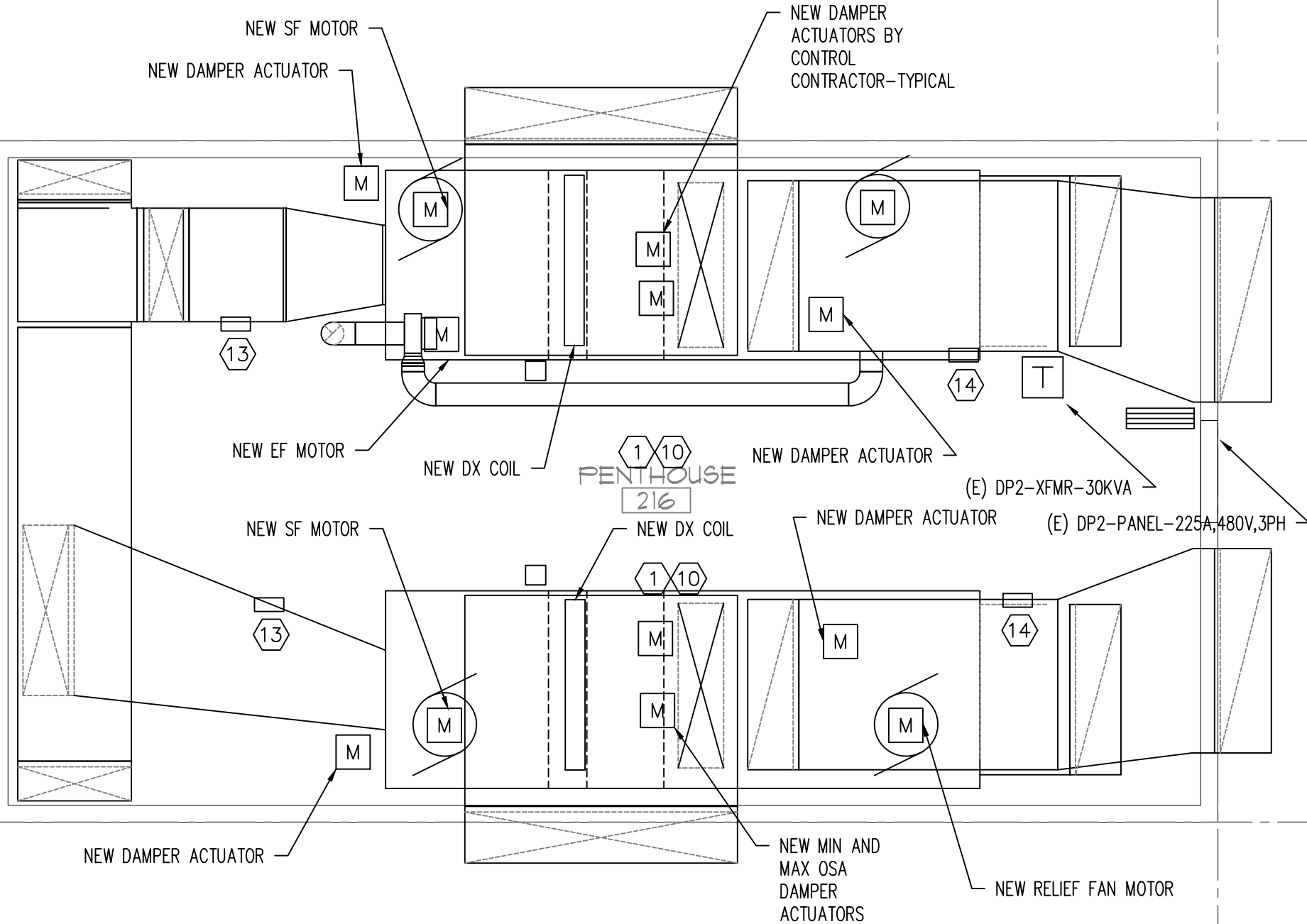
1 ENLARGED ELECTRICAL PENTHOUSE 140
E205 SCALE: 1/4" = 1'-0"



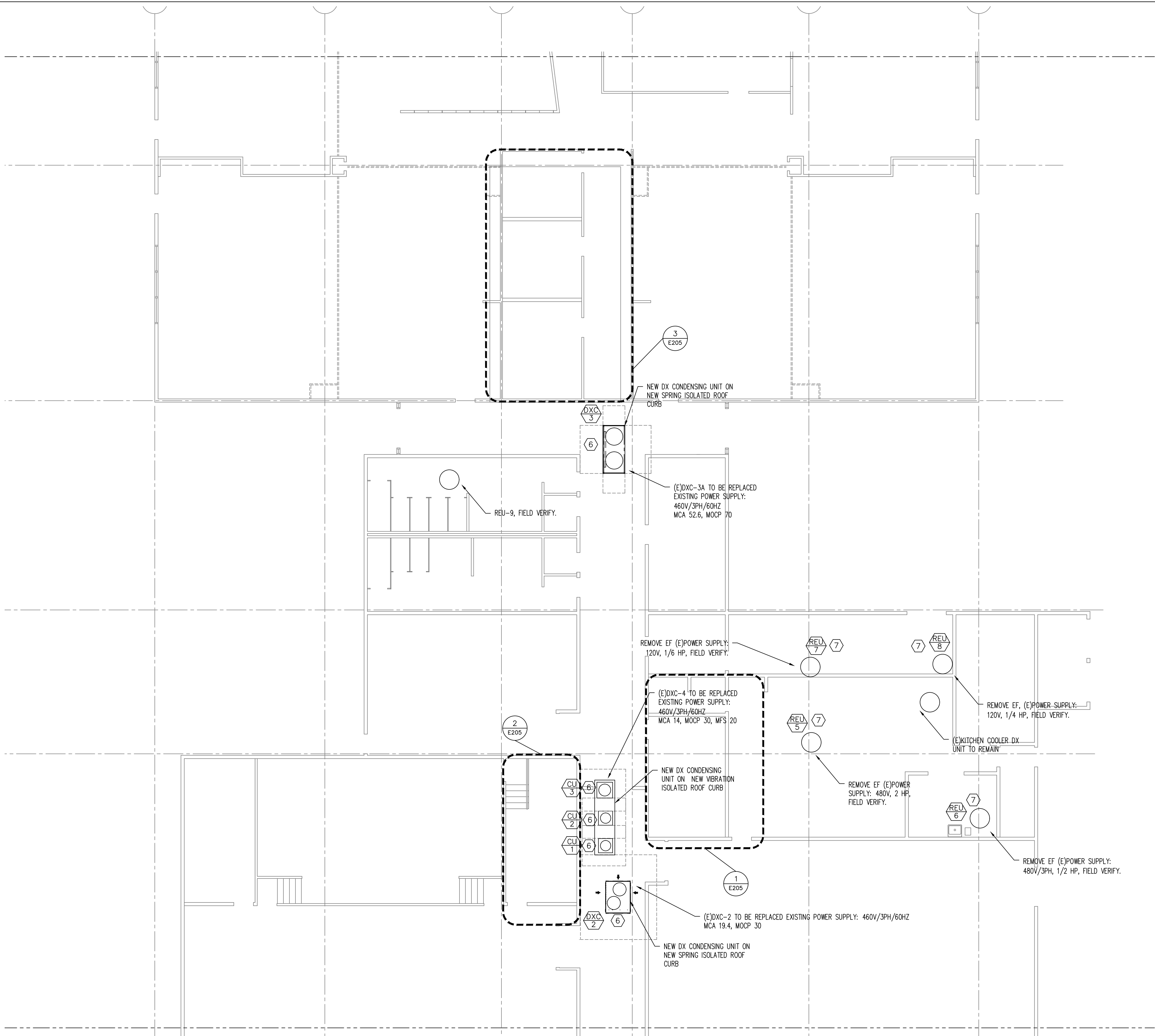
2 ENLARGED ELECTRICAL FAN ROOM 141
E205 SCALE: 1/4" = 1'-0"



3 ENLARGED ELECTRICAL PENTHOUSE 318
E205 SCALE: 1/4" = 1'-0"



4 ENLARGED ELECTRICAL PENTHOUSE 216
E205 SCALE: 1/4" = 1'-0"

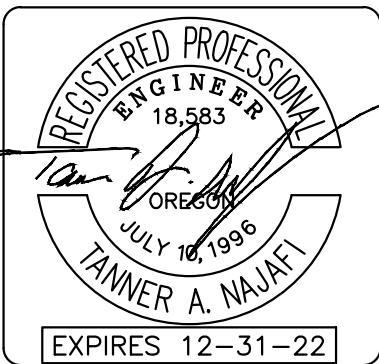


GENERAL NOTES

- A. CONTRACTOR SHALL FIELD VERIFY ON SITE ALL CONDITIONS RELATED TO EQUIPMENT REPLACEMENT, NEW INSTALLATION LOCATIONS AND REFURBISH/REMODEL. NOTIFY ENGINEER FOR ANY MAJOR DISCREPANCIES AS FOUND.
- B. CONTRACTOR TO COORDINATE ALL UNIT RE-TAGGING AND EQUIPMENT REPLACEMENTS WITH MECHANICAL CONTRACTOR FOR REVISION AT EXISTING ELECTRICAL PANELS AND ASSOCIATED DESIGNATIONS.
- C. OWNER SHALL TAG ANY DEVICES PRIOR TO CONSTRUCTION OR PROVIDE A LIST OF (E) DEVICES THEY WISH THE CONTRACTOR TO SALVAGE & RETURN IN WORKING ORDER TO THEM.
- D. SEE HVAC CONDUIT & WIRE SCHEDULE SHEET EXX FOR CONDUIT AND WIRE SIZE AND PROVIDE LOCAL DISCONNECT SWITCH FOR ALL HVAC UNITS AND MAKE FINAL CONNECTION FROM HVAC UNIT TO THE DESIGNATED PANEL. (NEMA 3R IF UNIT IS OUTSIDE)

KEYED NOTES

- 1. NOT USED.
- 2. NOT USED.
- 3. NOT USED.
- 4. NOT USED.
- 5. NOT USED.
- 6. NEW CONDENSING UNIT PROVIDE NEW POWER CONNECTION. EXISTING DX CONDENSER UNIT TO BE REPLACED. PROVIDE NEW POWER CONNECTION.
- 7. NEW EXHAUST FAN TO REPLACE EXISTING. PROVIDE POWER CONNECTION.



Date:	07/21/2021
Proj No:	10181
Drawn By:	TN
Chkd By:	TN
DSGN By:	TN
Acad File:	

BEAVERTON SCHOOL DISTRICT
ERROL HASSELL ES HVAC UPGRADE
18100 SW BANY ROAD
BEAVERTON OREGON
PARTIAL ELECTRICAL ROOF PLAN – NEW

100% CD SET
JULY 2021

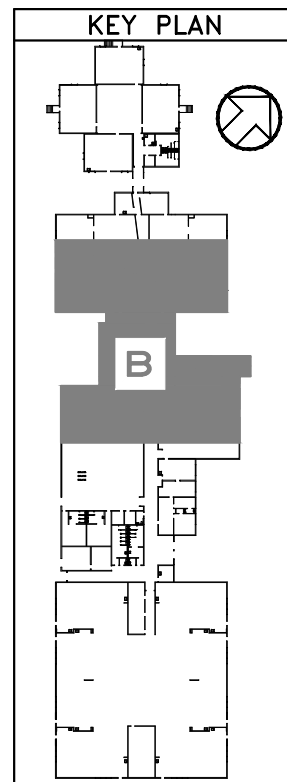


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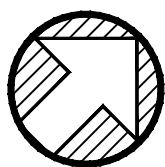
SHEET

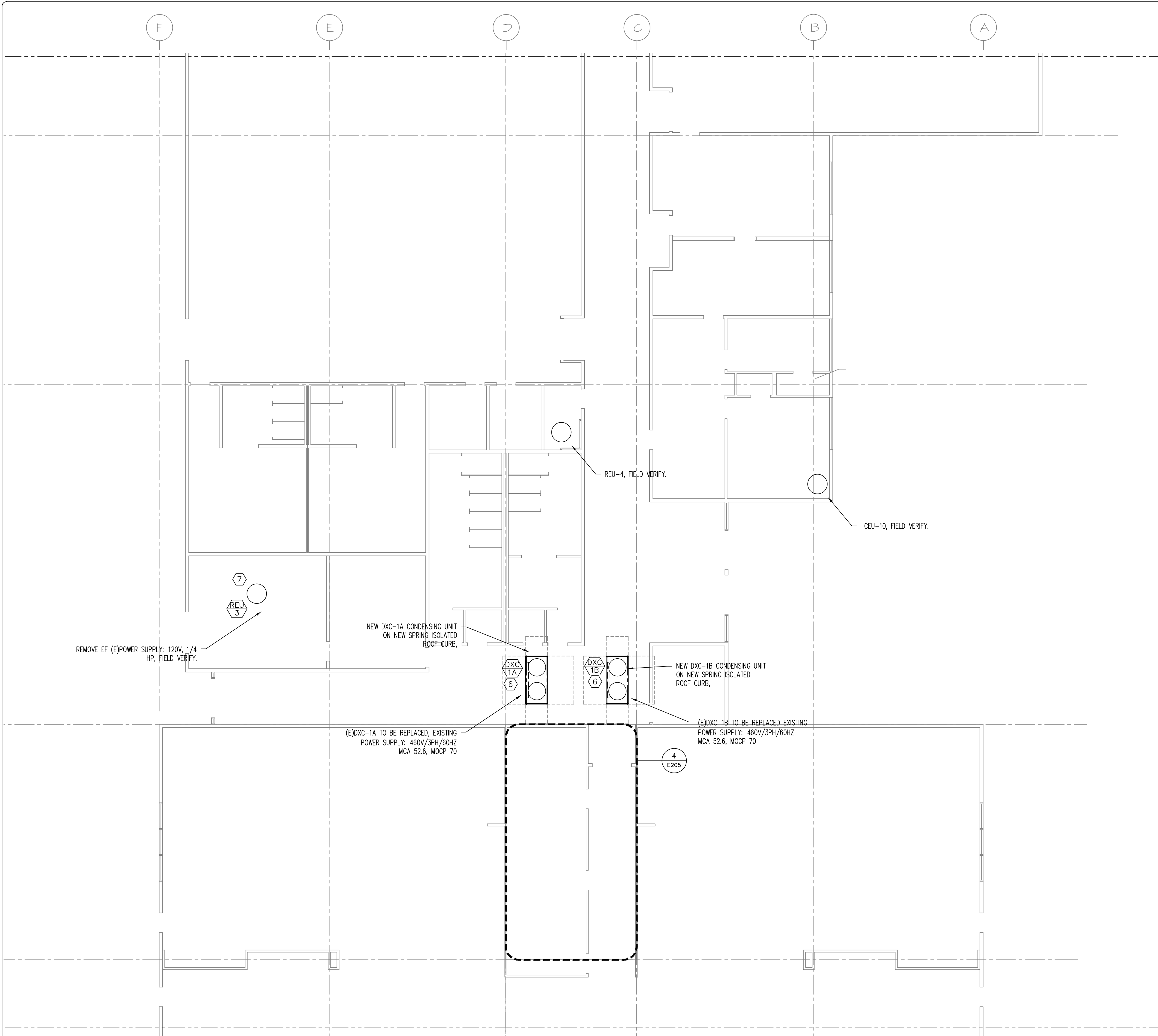
E212

07 OF 11



1 PARTIAL ELECTRICAL ROOF PLAN – NEW
E212 SCALE: 1/8" = 1'-0"



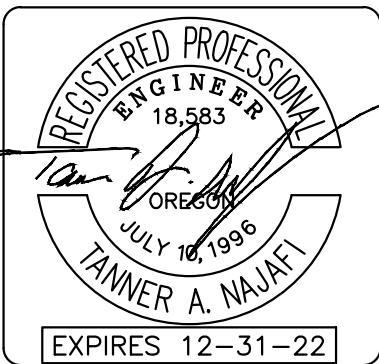


GENERAL NOTES

- A. CONTRACTOR SHALL FIELD VERIFY ON SITE ALL CONDITIONS RELATED TO EQUIPMENT REPLACEMENT, NEW INSTALLATION LOCATIONS AND REFURBISH/REMODEL. NOTIFY ENGINEER FOR ANY MAJOR DISCREPANCIES AS FOUND.
- B. CONTRACTOR TO COORDINATE ALL UNIT RE-TAGGING AND EQUIPMENT REPLACEMENTS WITH MECHANICAL CONTRACTOR FOR REVISION AT EXISTING ELECTRICAL PANELS AND ASSOCIATED DESIGNATIONS.
- C. OWNER SHALL TAG ANY DEVICES PRIOR TO CONSTRUCTION OR PROVIDE A LIST OF (E) DEVICES THEY WISH THE CONTRACTOR TO SALVAGE & RETURN IN WORKING ORDER TO THEM.
- D. SEE HVAC CONDUIT & WIRE SCHEDULE SHEET EXX FOR CONDUIT AND WIRE SIZE AND PROVIDE LOCAL DISCONNECT SWITCH FOR ALL HVAC UNITS AND MAKE FINAL CONNECTION FROM HVAC UNIT TO THE DESIGNATED PANEL. (NEMA 3R IF UNIT IS OUTSIDE)

KEYED NOTES

- 1. NOT USED.
- 2. NOT USED.
- 3. NOT USED.
- 4. NOT USED.
- 5. NOT USED.
- 6. NEW CONDENSING UNIT PROVIDE NEW POWER CONNECTION. EXISTING DX CONDENSER UNIT TO BE REPLACED. PROVIDE NEW POWER CONNECTION.
- 7. NEW EXHAUST FAN TO REPLACE EXISTING. PROVIDE POWER CONNECTION.



Date:	07/21/2021
Proj No:	10181
Drawn By:	TN
Chkd By:	TN
DSGN By:	TN
Acad File:	

BEAVERTON SCHOOL DISTRICT
ERROL HASSELL ES HVAC UPGRADE
18100 SW BANY ROAD
BEAVERTON OREGON
PARTIAL ELECTRICAL ROOF PLAN – NEW

100% CD SET
JULY 2021

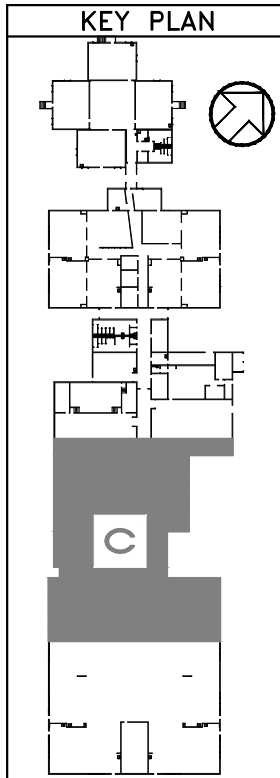


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E213

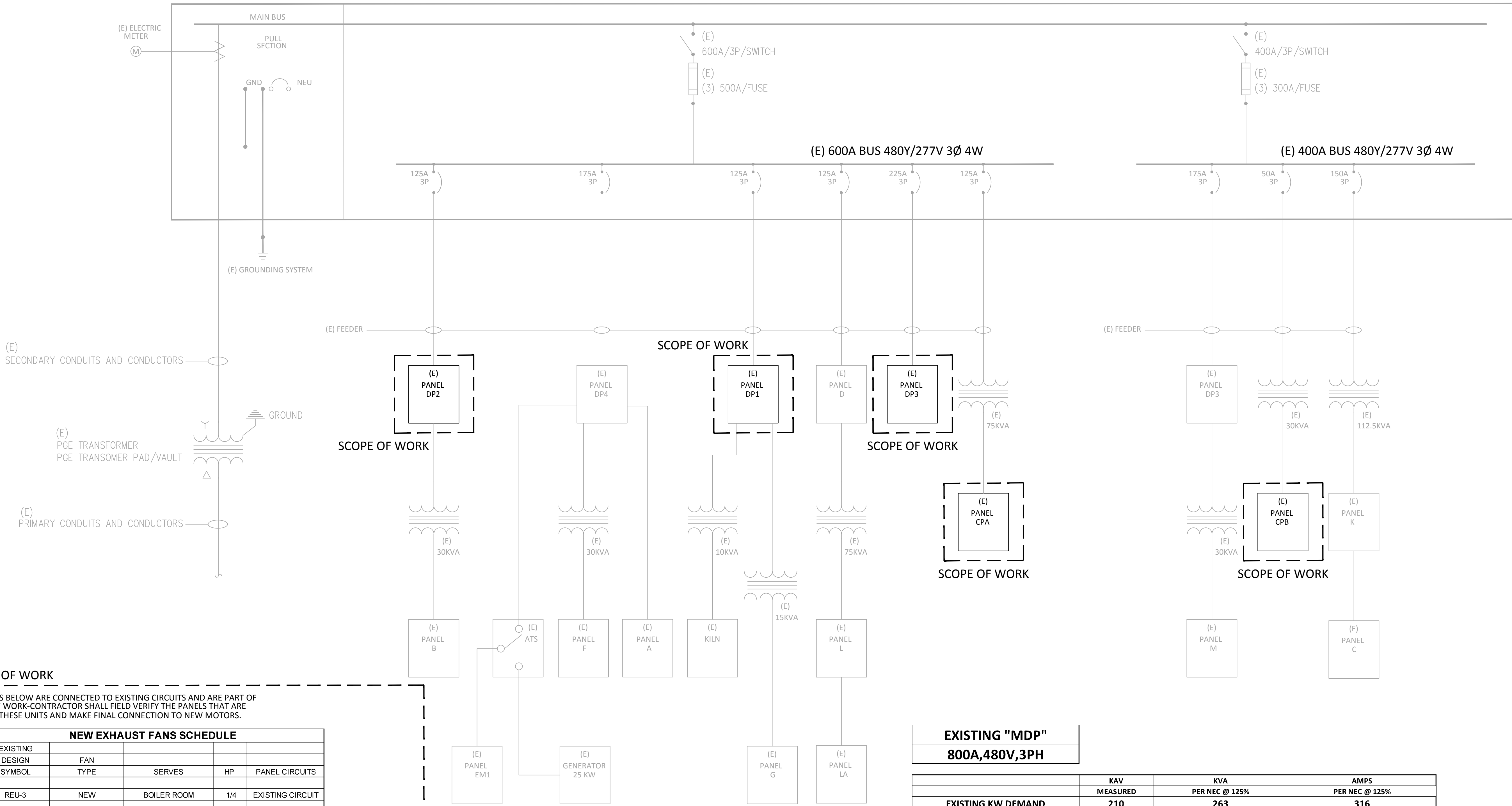
08 OF 11



1 PARTIAL ELECTRICAL ROOF PLAN – NEW
E213 SCALE: 1/8" = 1'-0"

SCOPE OF WORK

'MDP' MAIN DISTRIBUTION PANEL
(E) 800A BUS 480Y/277V 3Ø 4W



SCOPE OF WORK

THE UNITS BELOW ARE CONNECTED TO EXISTING CIRCUITS AND ARE PART OF SCOPE OF WORK-CONTRACTOR SHALL FIELD VERIFY THE PANELS THAT ARE FEEDING THESE UNITS AND MAKE FINAL CONNECTION TO NEW MOTORS.

NEW EXHAUST FANS SCHEDULE				
EXISTING DESIGN SYMBOL	FAN TYPE	SERVES	HP	PANEL CIRCUITS
REU-3	NEW	BOILER ROOM	1/4	EXISTING CIRCUIT
REU-6	NEW DISHWASH EA	DISHWAHSER HOOD	1/2	EXISTING CIRCUIT
REU-7	NEW	GENERAL KITCHEN	1/6	EXISTING CIRCUIT
REU-8	NEW	GENERAL MAINT	1/4	EXISTING CIRCUIT

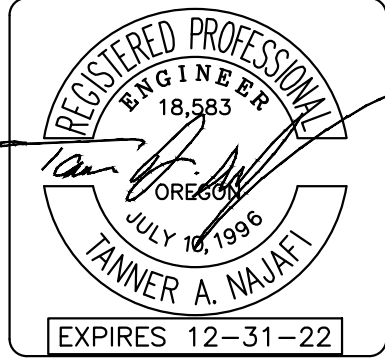
EXISTING AIR HANDLING UNITS SCHEDULE WITH NEW VFDS					
DESIGN SYMBOL	ASSOCITED RETURN	SERVES	SUPPLY FAN HP	RETURN/EXHAUST FAN HP	PANEL CIRCUIT
	FAN UNIT				
ACU-1A	RF-1A	BLDG 200	5	1.5	EXISTING CIRCUIT
ACU-1B	RF-1B	BLDG 200	5	2	EXISTING CIRCUIT
ACU-2	RF--2	CAFETERIA	1.5	0.75	EXISTING CIRCUIT
ACU-3A	RF-3A	BLDG 300	7.5	3	EXISTING CIRCUIT
HVU-1	-	GYMNASIUM	5	FIELD VERIFY	EXISTING CIRCUIT
HVU-2	-	LOCKER&TOILET	1	FIELD VERIFY	EXISTING CIRCUIT
HVU-3	-	KITCHEN	(2) 2	FIELD VERIFY	EXISTING CIRCUIT
MZU-1	RF--4	ADMINISTRATION	FIELD VERIFY	0.75	EXISTING CIRCUIT

EXISTING "MDP"
800A,480V,3PH

	KAV MEASURED	KVA PER NEC @ 125%	AMPS PER NEC @ 125%
EXISTING KW DEMAND	210	263	316

	KAV CALCULATED	AMPS CALCULATED
NET LOADS		
NET PANEL DP1	-7	-8
NET PANEL DP2	-8	-10
NET PANEL DP3	11	14
NET PANEL CPA	10	12
NET PANEL CPB	2	3
NET LOADS ADDED	9	11

	TOTAL KVA CALCULATED + MEASURED	TOTAL AMPS CALCULATED + MEASURED
TOTAL NEW & EXISTING LOADS	271	326



Date: 07/21/2021
Proj No: 10181
Drawn By: TN
Chkd By: TN
DSGN By: TN
Acad File:

BEAVERTON SCHOOL DISTRICT
ERROL HASSELL ES HVAC UPGRADE
18100 SW BANY ROAD
BEAVERTON OREGON
ELECTRICAL ONE LINE DIAGRAM

100% CD SET
JULY 2021



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E214

09 OF 11

NEW SMALL OUTDOOR CONDENSING UNITS SCHEDULE												
DESIGN SYMBOL	SERVES	COMPRESSOR			ELECTRICAL				INTERLOCK	PANEL CIRCUITS	CONDUIT & CONDUCTORS	NOTES
		NUMBER	AMPS		POWER	UNIT	UNIT MAX OVERCURRENT PROTECTION	EMERGENCY POWER				
			RATED LOAD	LOCKED ROTOR								
CU-1	FCU-1	1	13.5	58.3	208-230/1/60	17.6	30	NO	FCU-1	CPA-32,34	3/4"C, 2 #10 & 1 #10 GND	1
CU-2	FCU-2	1	9	47.5	208-230/1/60	12	20	NO	FCU-2	CPA-36,38	3/4"C, 2 #10 & 1 #10 GND	1
CU-3	FCU-3	1	14.1	77	208-230/1/60	18.6	30	NO	FCU-3	CPA-40,42	3/4"C, 2 #10 & 1 #10 GND	1
NOTES:												
1 PROVIDE DISCONNECT SWITCH												

NEW FAN COIL UNITS SCHEDULE					
DESIGN SYMBOL	PANEL CIRCUITS	CONDUIT & CONDUCTORS	POWER VOLT/PHASE/HZ	MCA/MOCP	NOTES
FCU-1	CPB-20	1/2"C, 2 #12 & 1 #12 GND.	120/1/60	5.5 / 15	1
FCU-2	CPB-22	1/2"C, 2 #12 & 1 #12 GND.	120/1/60	5.5 / 15	1
FCU-3	CPB-24	1/2"C, 2 #12 & 1 #12 GND.	120/1/60	8 / 15	1
NOTES: 1 PROVIDE DISCONNECT SWITCH					

NEW LARGE OUTDOOR CONDENSING UNITS SCHEDULE												
DESIGN SYMBOL	SERVES	COMPRESSOR			ELECTRICAL				INTERLOCK	PANEL CIRCUITS	CONDUIT & CONDUCTORS	NOTES
		TYPE DIGITAL SCROLL	AMPS		POWER	UNIT	UNIT MAX MOCP	EMERGENCY POWER				
			RATED LOAD	LOCKED ROTOR								
DXC-1A	ACU-1A	2 STAGE	18.6/18.6	125/125	460/3/60	47.7	60	NO	ACU-1A	DP2-14,16,18	1" C, 3 #6 & 1 #10 GND.	1,2
DXC-1B	ACU-1B	2 STAGE	18.6/18.6	125/125	460/3/60	47.7	60	NO	ACU-1B	DP2-20,22,24	1" C, 3 #6 & 1 #10 GND.	1,2
DXC-2	ACU-2	2 STAGE	12.6	100	460/3/60	18	25	NO	ACU-2	DP1-19,21,23	3/4" C, 3 #10 & 1 #10 GND.	1,2
DXC-3A	ACU-3A	2 STAGE	16.9/26.9	179/179	460/3/60	66.3	90	NO	ACU-3A	DP3-8,10,12	1 1/4" C, 3 #4 & 1 #8 GND.	1,2
NOTES: 1 PROVIDE DISCONNECT SWITCH 2 NEW HVAC UNIT IN EXISTING PANEL-SEE REVISED PANEL SCHEDULES												
UPDATED:										UPDATED:		7/15/2021

EXISTING AIR HANDLING UNITS SCHEDULE WITH NEW VFDS												
DESIGN SYMBOL	ASSOCIATED RETURN FAN UNIT	SERVES	SUPPLY FAN HP	RETURN/EXHAUST FAN HP	UNIT SMOKE DETECT	ELECTRICAL			REMARKS NOTES	PANEL CIRCUIT	CONDUIT & CONDUCTORS	
						POWER V/PH/Hz	VFD DRIVE	EMERG. POWER				
ACU-1A	RF-1A	BLDG 200	5	1.5	EXISTING	480/3/60	YES	NO	1,2,3,4,5,6	EXISTING CIRCUIT	3/4"C, 3 #12 & 1 #12 GND.	
ACU-1B	RF-1B	BLDG 200	5	2	EXISTING	480/3/60	YES	NO	1,2,3,4,5,6	EXISTING CIRCUIT	3/4"C, 3 #12 & 1 #12 GND.	
ACU-2	RF--2	CAFETERIA	1.5	0.75	EXISTING	480/3/60	YES	NO	1,2,3,4,5,6	EXISTING CIRCUIT	3/4"C, 3 #12 & 1 #12 GND.	
ACU-3A	RF-3A	BLDG 300	7.5	3	EXISTING	480/3/60	YES	NO	1,2,3,4,5,6	EXISTING CIRCUIT	3/4"C, 3 #10 & 1 #10 GND.	
HVU-1	-	GYMNASIUM	5	FIELD VERIFY	EXISTING	480/3/60	YES	NO	1,2,3,4,5,6	EXISTING CIRCUIT	3/4"C, 3 #12 & 1 #12 GND.	
HVU-2	-	LOCKER&TOILET	1	FIELD VERIFY	NO	480/3/60	YES	NO	1,2,3,4,5,6	EXISTING CIRCUIT	3/4"C, 3 #12 & 1 #12 GND.	
HVU-3	-	KITCHEN	(2) 2	FIELD VERIFY	EXISTING	480/3/60	YES	NO	1,2,3,4,5,6	EXISTING CIRCUIT	3/4"C, 3 #12 & 1 #12 GND.	
MZU-1	RF--4	ADMINISTRATION	FIELD VERIFY	0.75	EXISTING	480/3/60	YES	NO	1,2,3,4,5,6	EXISTING CIRCUIT	3/4"C, 3 #12 & 1 #12 GND.	
NOTES:												
1 PROVIDE NEW CONDUIT & CONDUCTORS FOR SUPPLY FAN MOTOR WITH NEW VFD CONTROLLED MOTOR.												
2 PROVIDE NEW CONDUIT & CONDUCTORS FOR RETURN/RELIEF FAN MOTOR WITH NEW VFD CONTROLLED MOTOR.												
3 CONTRACTOR HAS THE OPTION OF RE-USING EXISTING CONDUITS AND CONDUCTORS IF THERE ARE IN GOOD WORKING CONDITION.												
4 VERIFY (E)POWER CONNECTION AND MOTOR HP ON SITE PRIOR TO ORDERING EQUIPMENT.												
5 VERIFY (E)POWER CONNECTION AND MOTOR HP ON SITE PRIOR TO ORDERING EQUIPMENT.												
6 INTERLOCK SUPPLY FAN (SF) MOTOR WITH RETURN/EXHAUST (RF/EF) FAN MOTOR												
UPDATED: 7/15/2021 14:36												

NEW EXHAUST FANS SCHEDULE								
EXISTING DESIGN SYMBOL	FAN TYPE	SERVES			INTER-LOCK / CONTROL WITH	REMARKS NOTES	PANEL CIRCUITS	CONDUIT & CONDUCTORS
			HP	VOLTS/PHASE /HZ-AMPS				
REU-3	NEW	BOILER ROOM	1/4	115/1/60-3.8	T'STAT	1,2,3,4	EXISTING CIRCUIT	1/2"C, 2 #12 & 1 #12 GND
REU-5	NEW GREASE EA	KITCHEN HOOD	2	460/3/60-7.2	HOOD	1,3,4,5	DP1-20,22,24	3/4"C, 3 #12 & 1 #12 GND
REU-6	NEW DISHWASH EA	DISHWAHSER HOOD	1/2	115/1/60-6.6	DISHWASH	1,2,3,4	EXISTING CIRCUIT	1/2"C, 2 #12 & 1 #12 GND
REU-7	NEW	GENERAL KITCHEN	1/6	115/1/60-2.8	AHU	1,2,3,4	EXISTING CIRCUIT	1/2"C, 2 #12 & 1 #12 GND
REU-8	NEW	GENERAL MAINT	1/4	115/1/60-3.8	AHU	1,2,3,4	EXISTING CIRCUIT	1/2"C, 2 #12 & 1 #12 GND
NOTES: 1 PROVIDE NEW CONDUIT & CONDUCTORS 2 CONTRACTOR HAS THE OPTION OF RE-USING EXISTING CONDUITS AND CONDUCTORS IF THER ARE IN GOOD WORKING CONDITION. 3 PROVIDE DISCONNECT SWITCH 4 VERIFY (E)POWER CONNECTION AND MOTOR HP ON SITE PRIOR TO MAKING FINAL CONNECTION AND ORDERING DEVICES 5 DISCONNECT AND REMOVE 30A/3P CB FOR DCX-4 AND PROVIDE NEW 20A/3P CB FOR KITCHEN HOOD								
UPDATED: 7/15/2021 14:37								



Date: 07/21/2021
Prof No: 10181
Drawn By: TN
Chkd By: TN
DSGN By: TN
Acad File:

BEAVERTON SCHOOL DISTRICT
ERROL HASSELL ES HVAC UPGRADE
18100 SW BANY ROAD
BEAVERTON OREGON
ELECTRICAL SCHEDULES

100% CD SET
JULY 2021



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SHEET

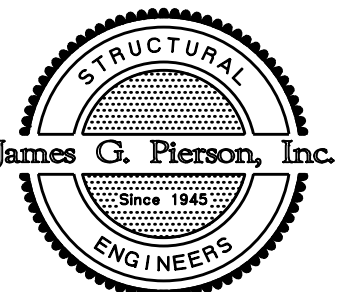
E215

10 OF 11

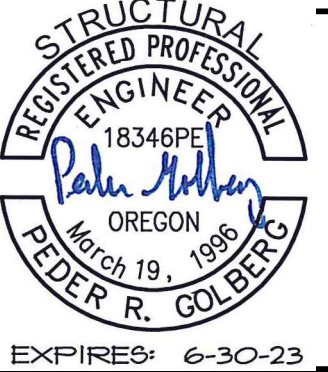
		PANEL		CPB		EXISTING		ELEC 113				
		208Y/120 VOLT		100 AMP				3 PHASE		4 WIRE		
CONDITION	CIR #	BREAKER	A	P	LOAD TYPE	DESCRIPTION	LOAD					
							B	C				
	(E)	1	20	1	R	RECS	1,080					
	(E)	3	20	1	R	RECS		1,080				
	(E)	5	20	1	R	RECS			1,080			
	(E)	7	20	1	R	RECS	1,080					
	(E)	9	20	1	R	RECS		1,080				
	(E)	11	20	1	R	RECS			1,080			
	(E)	13	20	1	R	RECS	1,080					
	(E)	15	20	1	R	RECS		1,080				
		17										
		19										
		21										
		23										
		25										
		27										
		29										
		31					NO SPACE					
		33					NO SPACE					
		35					NO SPACE					
		37					NO SPACE					
		39					NO SPACE					
		41					NO SPACE					
	(E)	2	20	1	R	RECS	1,080					
	(E)	4	20	1	R	RECS		1,080				
	(E)	6	20	1	R	RECS			1,080			
	(E)	8	20	1	R	RECS	1,080					
	(E)	10	20	1	R	RECS		1,080				
	(E)	12	20	1	R	RECS			1,080			
	(E)	14	20	1	R	RECS	1,080					
	(E)	16	20	1	R	RECS		1,080				
	(E)	18	20	1	R	RECS			1,080			
	(N)	20	15	1	M	FCU-1	660					
	(N)	22	15	1	M	FCU-2		660				
	(N)	24	15	1	M	FCU-3			660			
		26										
		28										
		30										
		32					NO SPACE					
		34					NO SPACE					
		36					NO SPACE					
		38					NO SPACE					
		40					NO SPACE					
		42										
	TOTAL KVA 20.64							7.140	7.140	6.360		
	TOTAL AMPS 57.33							59.50	59.50	53.00		
	MAIN BKR. 100A		MCB		FEEDER							
	BOTTOM TOP		X		SURFACE FLUSH		AIC RATING:		SOLID NEU I.G. BUS			

PANEL		DP2			EXISTING		LOCATION: PENTHOUSE-216					
480Y/277 VOLT		225 AMP						3 PHASE		4 WIRE		
CIR #	A	BREAKER	P.	LOAD TYPE	DESCRIPTION		A	LOAD	B	C		
1	20	3	M		RF-1B		4.155					
3	-	-	M		*			4.155				
5	-	-	M		*				4.155			
7	20	3	M		RF-1A		4.155					
9	-	-	M		*			4.155				
11	-	-	M		*				4.155			
13	50	3	G		PANEL-B		8.310					
15	-	-	G		*			8.310				
17	-	-	G		*				8.310			
19	20	3			SPARE							
21	-	-			SPARE							
23	-	-			SPARE							
25												
27												
29												
31												
33												
35												
37												
39												
41												
2	20	3	M		ACU-1B		3.324					
4	-	-	M		*			3.324				
6	-	-	M		*				3.324			
8	20	3	M		ACU-1A		3.324					
10	-	-	M		*			3.324				
12	-	-	M		*				3.324			
14	70	3	M		DXC-1A		14.570					
16	-	-	M		*			14.570				
18	-	-	M		*				14.570			
20	70	3	M		DXC-1B		14.570					
22	-	-	M		*			14.570				
24	-	-	M		*				14.570			
26												
28												
30												
32												
34												
36												
38												
40												
42												
TOTAL KVA/ 157.23							52.408	52.408	52.408			
TOTAL AMPS/ 189.20							189.20	189.20	189.20			
MAIN BKR. 225A		MLO		FEEDER								
BOTTOM TOP		X		SURFACE FLUSH		A/C RATING:		SOLID NEU I.G. BUS				

		PANEL CPA EXISTING				CUST 103						
		208Y/120 VOLT		200 AMP					3 PHASE		4 WIRE	
CONDITION	CIR #	BREAKER	A	P	LOAD TYPE	DESCRIPTION	LOAD					
							A	B	C			
	(E)	1	20	1	R	RECS	1,080					
	(E)	3	20	1	R	RECS		1,080				
(E)	5	20	1	R	RECS				1,080			
(E)	7	20	1	R	RECS	1,080						
(E)	9	20	1	R	RECS		1,080					
(E)	11	20	1	R	RECS				1,080			
(E)	13	20	1	R	RECS	1,080						
(E)	15	20	1	R	RECS		1,080					
(E)	17	20	1	R	RECS				1,080			
(E)	19	20	1	R	RECS	1,080						
(E)	21											
(E)	23	20	1	R	RECS				1,080			
(E)	25											
(E)	27	60	3			RTU-EAST		4,800				
(E)	29	-	-			*				4,800		
(E)	31	-	-			*	4,800					
(E)	33											
(E)	35											
(E)	37											
(E)	39											
(E)	41											
(E)	2	20	1	R		RECS	1,080					
(E)	4	20	1	R		RECS		1,080				
(E)	6	20	1	R		RECS				1,080		
(E)	8	20	1	R		RECS	1,080					
(E)	10	20	1	R		RECS		1,080				
(E)	12	20	1	R		RECS				1,080		
(E)	14	20	1	R		RECS	1,080					
(E)	16	20	1	R		RECS		1,080				
(E)	18	20	1	R		RECS				1,080		
(E)	20				R	RECS	1,080					
(E)	22	20	1	R		RECS		1,080				
(E)	24	20	1	R		RECS				1,080		
(E)	26	15	2	R		RECS	1,000					
(E)	28	-	-	R		RECS		1,000				
(E)	30	20	1									
(N)	32	30	2	M		CU-1	1,830					
(N)	34	-	-	M		*		1,830				
(N)	36	20	2	M		CU-2				1,248		
(N)	38	-	-	M		*	1,248					
(N)	40	30	2	M		CU-3		1,934				
(N)	42			-	M	*				1,934		
TOTAL KVA 51.27												
TOTAL AMPS 142.40							17.518	17.125	16.622			
MAIN BKR 200A							145.99	142.71	138.52			
MCB												
FEEDER												
SURFACE												
AC RATING:												
SOLID NEU												
TOP												
FLUSH												
I.G. BUS												



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- # KEYED NOTES
- 1. EXISTING ROOF-TOP UNIT.
 - 2. EXISTING EXHAUST FAN.
 - 3. EXISTING DX CONDENSER UNIT REPLACE CONTROLS FOR BUILDING DDC SYSTEM INTEGRATION. CLEAN AND SERVICE UNIT AND COILS, EVACUATE AND RECHARGE REFRIGERANT.
 - 4. EXISTING RELIEF AIR ROOF HOOD
 - 5. EXISTING ROOF-TOP HEAT PUMP UNIT.
 - 6. NEW CONDENSING UNIT ON NEW VIBRATION ISOLATED AND SEISMIC RESTRAINT ROOF CURB.
 - 6.1 EXISTING DX CONDENSER UNIT TO BE REPLACED.
 - 7. NEW EXHAUST FAN TO REPLACE EXISTING.

Date:	07/21/2021
Proj No:	10181
Drawn By:	PRG
Chkd By:	—
DSGN By:	PRG
Acad File:	

BEAVERTON SCHOOL DISTRICT
ERROL HASSELL ES HVAC UPGRADE
18100 SW BANY ROAD
BEAVERTON OREGON
PARTIAL MECHANICAL ROOF PLAN — NEW

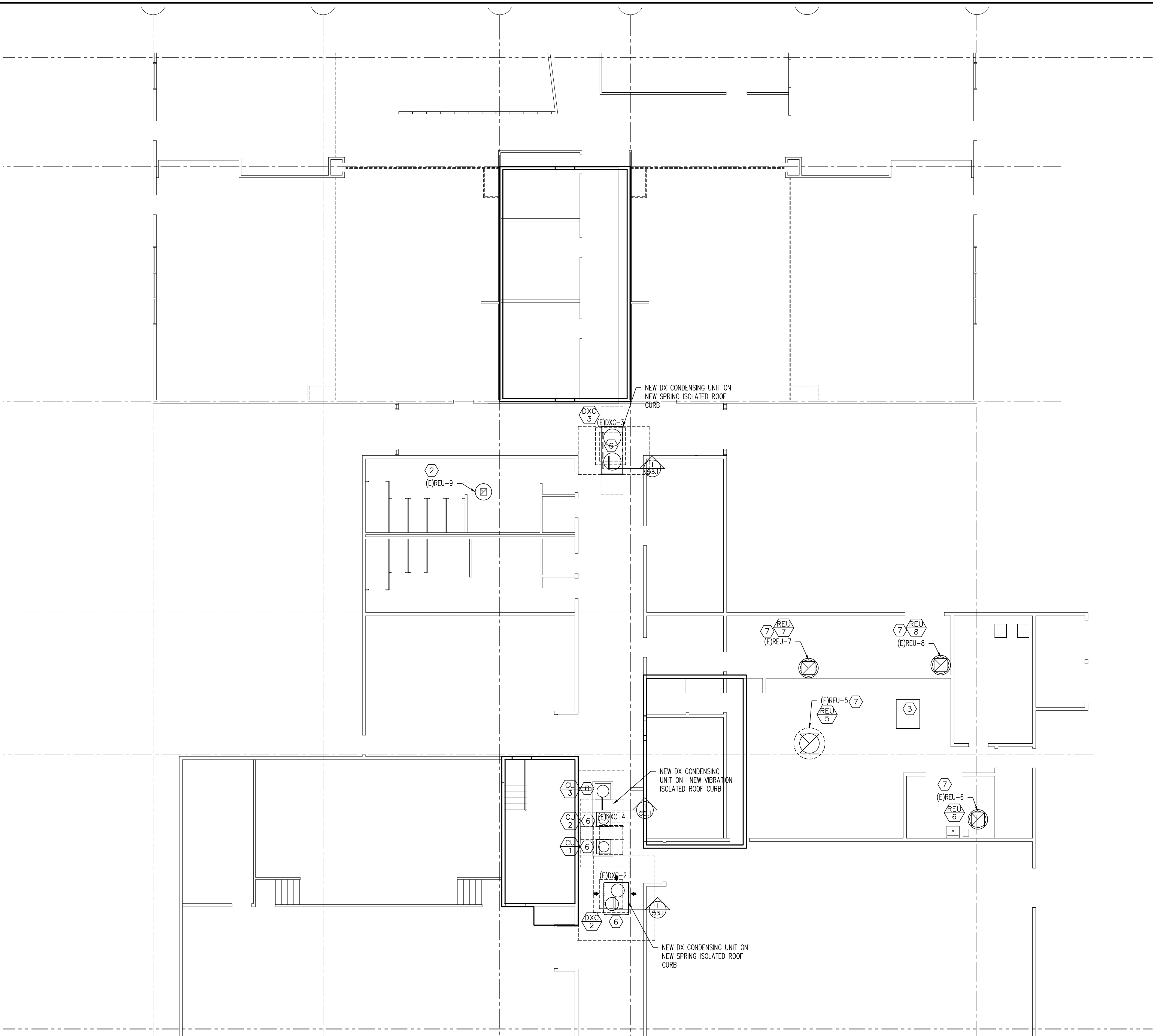
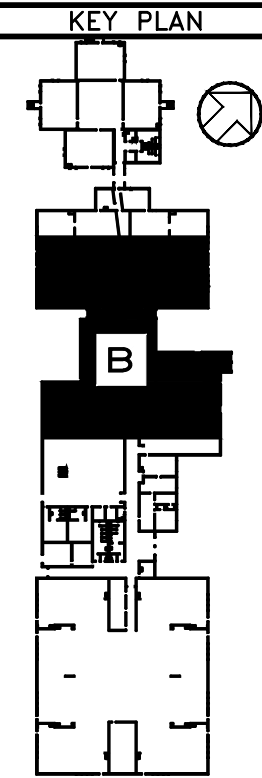
100% CD SET
JULY 2021



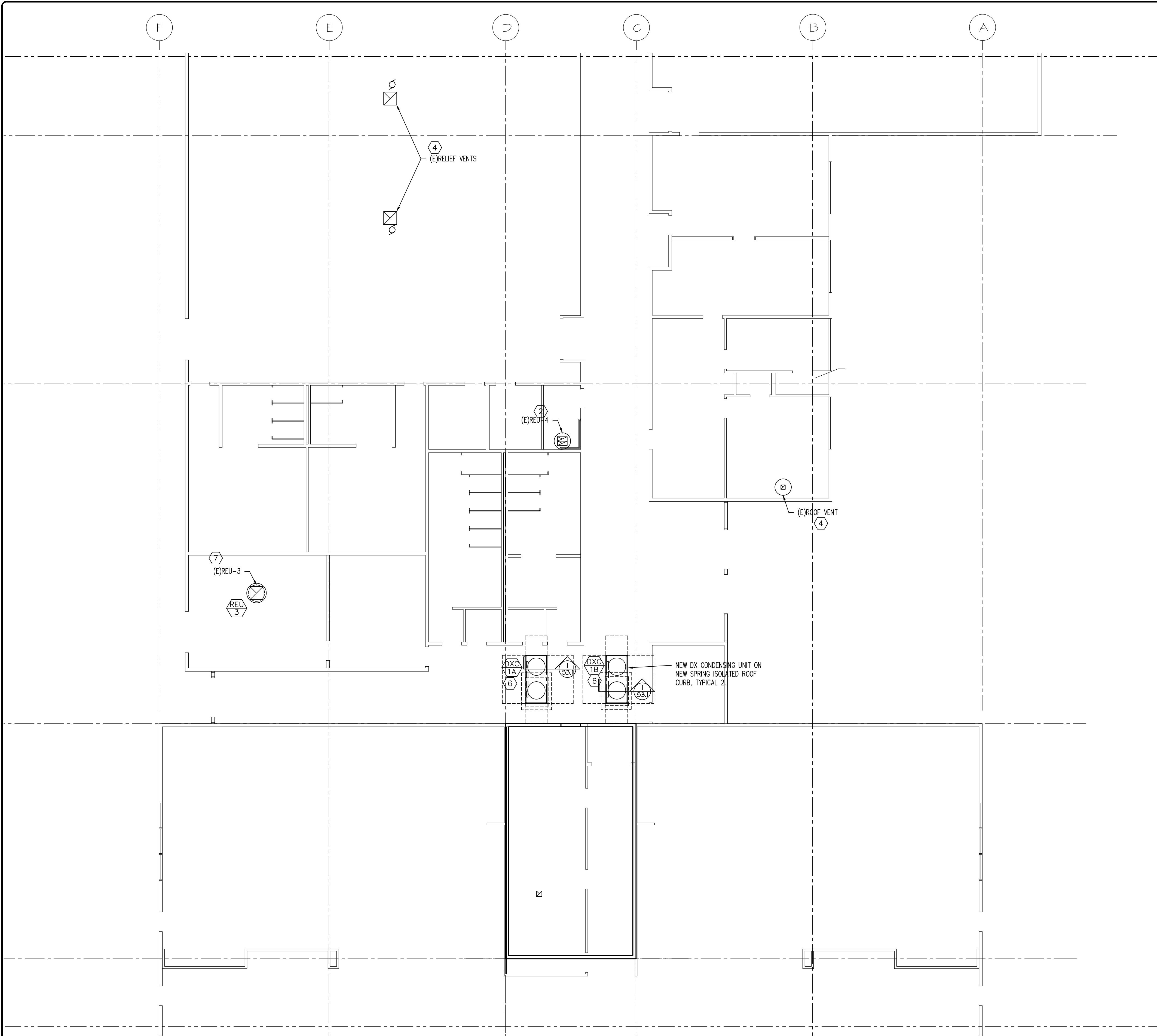
Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
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FAX: (503) 234-0677
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SHEET

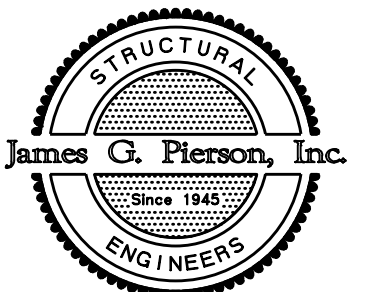
S2.2



1 PARTIAL ROOF PLAN — SECTOR B
S2.2 SCALE: 1/8" = 1'-0"



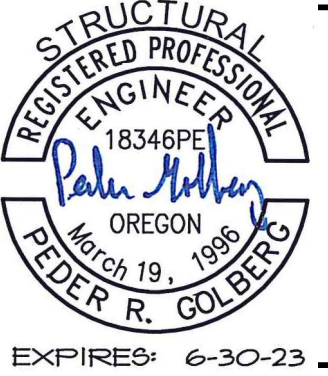
1 PARTIAL ROOF PLAN - SECTOR C
S2.3 SCALE: 1/8" = 1'-0"



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EXPIRES: 6-30-23

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PARTIAL MECHANICAL ROOF PLAN - NEW

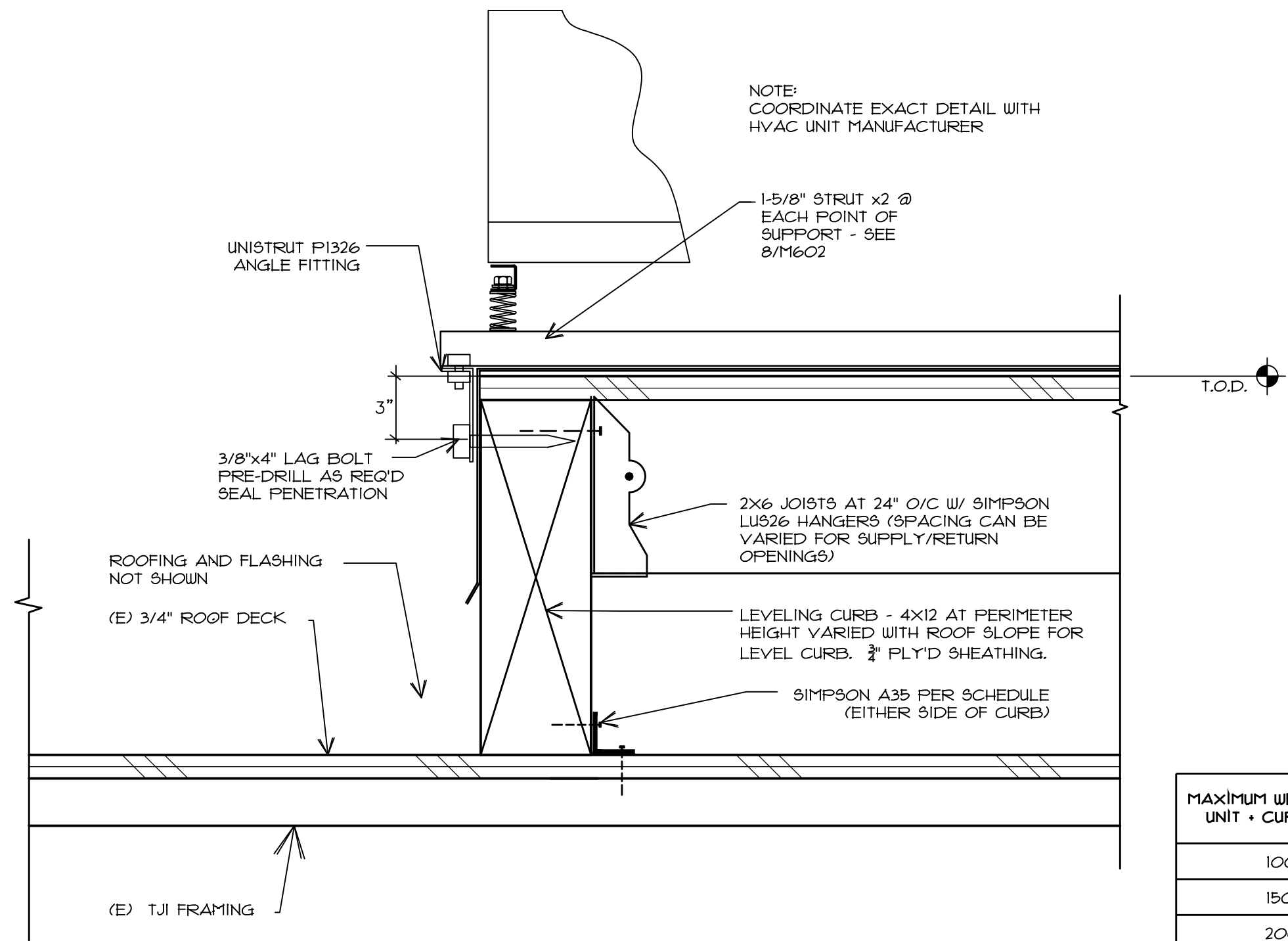
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S2.3



MAXIMUM WEIGHT OF MECH. UNIT + CURB (POUNDS)	MINIMUM NUMBER OF SCREWS OR LAGS FROM UNIT CURB TO WOOD CURB	SIMPSON A35/S FOR LEVELING CURB TO ROOF STRUCTURE
1000	4	4
1500	6	6
2000	6	6

CONNECTORS ARE TO BE INSTALLED THROUGH THE BOTTOM FLANGE OF THE STEEL CURB SECTION THROUGH THE ROOF PLYWOOD SHEATHING AND INTO A WOOD FRAMING MEMBER (OR WOOD BLOCKING) BELOW. VERTICAL SUPPORT OF THE WEIGHT OF THE MECHANICAL UNIT IS A SEPARATE CONSIDERATION, AND SHALL BE PROVIDED FOR BY ARRANGEMENT OF ROOF STRUCTURAL FRAMING NOT SHOWN SPECIFICALLY BY THIS TABLE OR DETAIL. APPROVED CONNECTORS INCLUDE THE FOLLOWING - LARGER SIZES MAY BE USED.

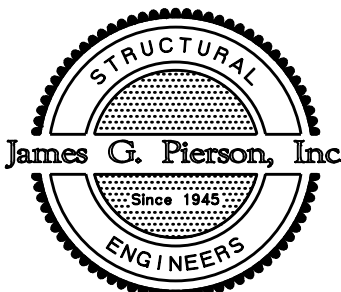
#14 X 2 1/2" MINIMUM LENGTH CUT THREAD WOOD SCREW

1

S5.1

SEISMIC CONNECTION FOR ROOFTOP MECH. UNIT

3" x 1'-0"



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BEAVERTON SCHOOL DISTRICT

ERROL HASSELL ES HVAC UPGRADE

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MECHANICAL DETAILS

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S5.1

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