

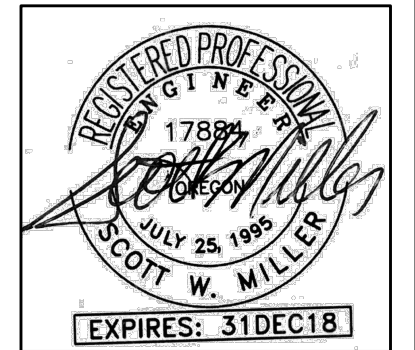
OREGON CONVENTION CENTER - CHILLER PLANT RE-DESIGN

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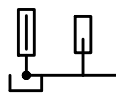
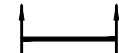
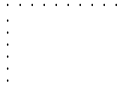
OREGON CONVENTION CENTER
CHILLER PLANT REDESIGN
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COVER SHEET

Issuance
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SHEET
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MECHANICAL LEGEND	
(E) -----	EXISTING
(N) -----	NEW
(D) -----	DEMOLISH
(R) -----	REPLACE
	CONNECT TO EXISTING
 AC-4	THERMOSTAT OR TEMP. SENSOR
	NOTE
	EQUIPMENT DESIGNATOR
	THERMOMETER
	PRESSURE GAUGE
T	PETE'S PLUG
 VB	VACUUM BREAKER
	DIRECTION OF FLOW
 A	AUTOMATIC AIR VENT
	MANUAL AIR VENT
	PUMP
	PUMP
	FLEX CONNECTOR
	FLOW METER
	PRESSURE RELIEF
	STRAINER
	UNION
	CAP
	PIPE SIZE REDUCER
	SAFETY VALVE
	BUTTERFLY VALVE
	GLOVE VALVE
	BALL VALVE
	GATE VALVE
	CHECK VALVE
	BALANCING VALVE
	BALANCING W/MEMORY STOP
	PRESSURE REDUCING VALVE
	2-WAY CONTROL VALVE
	3-WAY CONTROL VALVE
	DOUBLE CHECK ASSEMBLY
SEISMIC BRACING	
	LATERAL BRACING
	LONGITUDINAL BRACING
	LONGITUDINAL & LATERAL BRACING
	EQUIPMENT REQUIRED CLEARANCE SPACE FOR MAINTENANCE AND FUNCTIONALITY
AFF	ABOVE FINISH FLOOR
AHU	AIR HANDLING UNIT
B.D.	BOTTOM OF DUCT
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNITS
CFM	CUBIC FEET PER MINUTE
CONN.	CONNECTION
CONT.	CONTINUATION
CW	DOMESTIC COLD WATER
DB	DRY BULB
DIA.	DIAMETER
DIST.	DISTRIBUTION
EA	EXHAUST AIR
EDB	ENTERING DRY BULB TEMPERATURE
EWB	ENTERING WET BULB TEMPERATURE
EWI	ENTERING WATER TEMPERATURE
FF	FINISH FLOOR
FIXT.	FIXTURE
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT.	FEET / FOOT
GA.	GAUGE
GPM	GALLONS PER MINUTE
H	HEIGHT
HP	HORSEPOWER
I.D.	INSIDE DIAMETER
IN.	INCHES
L	LENGTH
LBS.	POUNDS
LDB	LEAVING DRY BULB
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MAX.	MAXIMUM
MBH	THOUSANDS OF BTUs PER HOUR
MIN.	MINIMUM
NC	NOISE CRITERIA
N.C.	NORMALLY CLOSED
N.I.M.	NOT IN MECHANICAL
NO.	NUMBER
N.O.	NORMALLY OPEN
OA	OUTSIDE AIR
P	PERSON
PSI	POUNDS PER SQUARE INCH
P/T	PRESSURE / TEMPERATURE
RA	RETURN AIR
RE	RELIEF AIR
RECT.	RECTANGULAR
REQ'D	REQUIRED
SA	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
----- CHWS -----	NEW COOLING CHILL WATER SUPPLY
----- CHWR -----	NEW COOLING CHILL WATER RETURN
----- CHWS -----	EXISTING COOLING CHILL WATER SUPPLY
----- CHWR -----	EXISTING COOLING CHILL WATER RETURN
----- PWS -----	NEW PROCESS WATER SUPPLY
----- PWR -----	NEW PROCESS WATER RETURN
----- PWS -----	EXISTING PROCESS WATER SUPPLY
----- PWR -----	EXISTING PROCESS WATER RETURN
----- CHCS -----	NEW CONDENSER CHILL WATER SUPPLY
----- CHCR -----	NEW CONDENSER CHILL WATER RETURN
----- CHCS -----	EXISTING CONDENSER CHILL WATER SUPPLY
----- CHCR -----	EXISTING CONDENSER CHILL WATER RETURN
----- PWCS -----	NEW CONDENSER PROCESS WATER SUPPLY
----- PWCR -----	NEW CONDENSER PROCESS WATER RETURN
----- PWCS -----	EXISTING CONDENSER PROCESS WATER SUPPLY
----- PWCR -----	EXISTING CONDENSER PROCESS WATER RETURN
----- CD -----	(CD) CONDENSATE DRAIN

- GENERAL NOTES – DEMOLITION WORK**
- A. COORDINATE LANDSCAPE ALTERATION WORK REQUIRED BY PROJECT DESIGN WITH OWNER.
- B. ALL ROOFING WORK MUST BE PERFORMED BY OWNER APPROVED ROOFING CONTRACTOR. EXISTING ROOFING CONSTRUCTION IS SIKA SARNAFIL 90 MIL PVC LIQUID APPLIED MEMBRANE. ROOFING WORK MUST MAINTAIN EXISTING ROOFING WARRANTY. CURRENT ROOFING CONTRACTOR IS SNYDER ROOFING
- C. CONTROL WORK MUST BE PERFORMED BY ENVIRONMENTAL CONTROLS .
- D. SEE FLOOR PLANS FOR ADDITIONAL DEMOLITION NOTES.

- GENERAL NOTES – NEW WORK**
1. VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. REPORT DISCREPANCIES BACK TO THE ENGINEER.
2. VERIFY INDICATED (E)PIPE SIZES PRIOR TO RECONNECTING NEW EQUIPMENT. EQUIPMENT SHALL NOT BE CONNECTED TO EXISTING PIPES OF SMALLER DIAMETER THAN NEW PIPES. REPORT DISCREPANCIES BACK TO ENGINEER.
3. DO NOT FABRICATE EQUIPMENT SUPPORTS/BASES W/O CONFIRMING SPACE AND EXISTING PADS.
4. COORDINATE ALL MECHANICAL AND CONTROL WORK WITH GENERAL CONTRACTOR, CONTROL CONTRACTOR, ELECTRICAL AND ARCHITECTURAL.
5. COORDINATE OTHER TRADES FOR PATCH/REPAIR OF WALLS WHERE EXISTING SENSORS ARE REMOVED OR MODIFIED.
6. PATCH & REPAIR WALLS / FLOORS / CEILING WHERE OLD PIPES HAVE BEEN REMOVED TO MATCH EXISTING FINISHES.
7. SEE DETAILS 1 & 2 ON SHEET M6.01 FOR PIPE SUPPORT.
8. SEE SPECIFICATIONS FOR VIBRATION ISOLATION AND SEISMIC RESTRAINTS.
9. ABOVE ROOF CONDENSATE PIPING SUPPLY AND RETURN SHALL BE POLYPROPYLENE (HEAT WELDED).
10. ALTERNATE #1: UNDER ALT#1, PROVIDE THE MAGNETIC BEARING CHILLER IN PLACE OF THE BASE-BID SCREW CHILLER, SEE SCHEDULE FOR INFORMATION.
11. ALTERNATE #2: REPLACE EXISTING PROCESS PIPING SERVING THE NORTH SIDE AS SHOWN ON SHEETS M1.12, M1.22 AND M2.22.
12. ALTERNATE #3: REPLACE THE CHEMICAL TREATMENT ON THE PROCESS AND CHILLER CONDENSER WATER LOOPS WITH THE CHEMICAL FREE WATER TREATMENT. SEE PIPING DIAGRAMS AND SPECIFICATIONS.

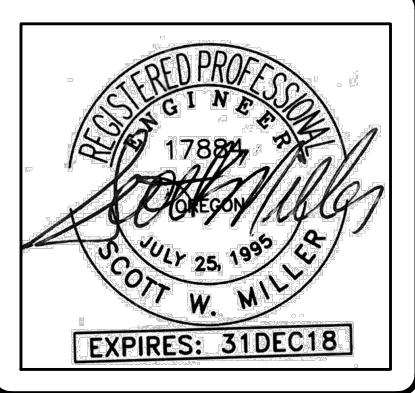
DUCT HEATING COIL SCHEDULE	
MARK NUMBER	EDH-1214
SPACE SERVED	CHILLER ROOM
DUCT HEATER TYPE	OPEN COIL
TEMPERATURE CONTROL	STAGE
AIRFLOW CFM	1800
ENTERING AIR TEMPERATURE F	23
LEAVING AIR TEMPERATURE F	64.7
REQUIRE HEAT (BTUH)	90000
REQUIRED ELECTRICAL LOAD (KW)	27.0
DUCT HEATER KW	27.0
HEATER AMPS(3 PH=WATTS/VOLTS/1.73)	75.04
HEATER AMPS(1 PH=WATTS/VOLTS)	129.8
HEATER DUCT WIDTH (IN)	24
HEATER DUCT HEIGHT (IN)	18
AIRFLOW VELOCITY (FPM)	600
HEATER KW / SQ FT	9.0
HEATER MAX PRESSURE DROP (IN WG)	0.05
ELECTRICAL (VOLTS/PH)	480/3/60
CONTROL FAN INTELOCK	SF-1214
CONTROLLED BY	T'STAT
UNIT WEIGHT (POUNDS)	
BASIS OF DESIGN:	Q'MARK
REMARKS, SEE NOTES:	1,2
NOTES:	
1. CONTROL FROM SPACE THERMOSTAT.	
2. INSTALL 2 FEET UPSTREAM OF ELBOWS OR DUCT TURNS.	

COOLING TOWER SCHEDULE					
MARK NUMBER		CT-1, -2, -3		CT-4	
SYSTEM		COOLING WATER		COOLING WATER	
LOCATION		ROOF		ROOF	
TYPE		OPEN-CROSSFLOW-MOD		OPEN-CROSSFLOW-MOD	
NUMBER OF CELLS		3		1	
FLUID TYPE		WATER		WATER	
		WINTER	SUMMER	WINTER	SUMMER
PERFORMANCE	HEAT REJECTION CAPACITY (MBH)	4,000	11,952	1,000	1,680
	TONS	333	996	83	140
	DESIGN TEMPERATURE WB (F)	21	70	21	70
	ENTERING WATER TEMP. (F)	50	94	50	88
	LEAVING WATER TEMP. (F)	45	82	45	80
	APPROACH (F)	24	12.0	24	10
	RANGE (F)	5	12.0	5	8
	DESIGN FLOW RATE (GPM)	1,600.0	1,992.0	400.0	420.0
	MIN FLOW RATE (GPM)	1,600.0	800.0	400.0	200.0
	WATER SIDE PRESSURE DROP - FT WG	5	5	5	5
INLET / OUTLET PIPE CONNECTIONS - (IN)		12/14		6/8	
MAKE-UP WTR PIPE CONNECTIONS - (IN)		2		1	
OVERFLOW WTR PIPE CONNECTIONS - (IN)		6		4	
FAN	NUMBER PER UNIT	8		2	
	CFM PER FAN	21956		25796	
	MOTOR HP PER FAN	7.5		7.5	
ISOLATION	VFD CONTROL- NUMBER OF VFDS	YES - 4		YES - 2	
	SPRING VIBRATION ISOLATION	YES		YES	
	SEISMIC RESTRAINTS	YES		YES	
	PIPE CONNECTION	FLEX		FLEX	
	INERTIAL BASE	NO		NO	
ELECTRICAL	FLA/MODULE	98.4		24.4	
	MAX MOTOR CURRENT PER MODULE	108.2		28.1	
	VFD COMPATIBLE	YES		YES	
	ELECTRICAL (VOLT/PHASE/HERTZ)	480/3/60		480/3/60	
	TYPE	TEAO		TEAO	
	BASIN HEATER - KW(SEPARATE CONNECTION)	6 KW		6 KW	
	PANEL NEMA RATING	4		4	
AIR INTAKE HEIGHT - (FT)		6		6	
WEIGHT OPERATING/SHIPPING (LBS)		27258		10417	
BASIS OF DESIGN, MODEL#		TOWER-TECH TTXL-0819XX		TOWER-TECH TTXL-I219XX	
REMARKS/NOTES		1,2,3		1,2,3	
NOTES:					
1 PROVIDE BASIN HEATER					
2 PROVIDE FOR VFD CONTROL APPLICATION: 2 MOTORS PER 1 VFD AND 2 MIN VFDS PER TOWER.					
3 PROVIDE HEAT TRACING ON ALL EXPOSED PIPING.					

DIFFUSER AND REGISTER SCHEDULE			
TAG	TYPE	LOCATION - NOTES	MANUFACTURER: MODEL
A	SUPPLY GRILLE - DOUBLE DEFLECTION	SIDEWALL - {1}[2][3]	TITUS 300RL
B	RETURN/EXHAUST GRILLE - SIDEWALL	SIDEWALL -{1}[2]	TITUS 350RL
NOTES:			
{1} PROVIDE NECK SIZE AS SHOWN ON PLANS.			
{2} PROVIDE BLADES PARALLEL TO THE FLOOR/CEILING LINE AT SIDEWALL GRILLES.			
{3} PROVIDE SURFACE MOUNT BORDER FOR HARD CEILINGS.			

EXHAUST FANS SCHEDULE																		
DESIGN SYMBOL	FAN TYPE	SERVES	MIN CFM	MAX CFM	ESP INCHES	MOTOR						MOUNTING EXTERNAL	INLET/ RADIATED SONES/DbA	DAMPER TYPE	OPER. WEIGHT LBS	INTER- LOCK / CONTROL WITH	REMARKS NOTES	DESIGN BASIS MODEL# GREENHECK
						BHP	HP	RPM	DRIVE TYPE	SPEED CONTROLLER	VOLTS/PHASE /HZ							
EF-1214	ROOF UPBLAST	CHILLER ROOM	1780	4000	0.35	1.24	2	1725	DIRECT	ECM	208/1/60	ROOF CURB	22/73	MOTORIZED	121	DS-1	1,2,3,4,5,6	CUE-161-VG
NOTES:																		
		1 PROVIDE DISCONNECT SWITCH. 2 PROVIDE LOCAL DIAL ON MOTOR FOR BALANCING. 3 PROVIDE ROOF CURB. 4 PROVIDE 0-10 VDC SIGNAL FOR VFD CONTROL. 5 OPERATE AT LOW AIRFLOW FOR NORMAL VENTILATION DURING BUILDING OCCUPIED MODE. OPERATE AT HIGH AIRFLOW WHEN ENABLED BY SPACE REFRIGERANT DETECTOR 6 PROVIDE EMERGENCY POWER SUPPLY.																
UPDATED: 4/4/2018 17:47																		

UPDATED: 4/4/2018 17:47



Proj No: MFIA 9381

Drawn By: MG

Chkd By: SWM

DSN By: MG

OREGON CONVENTION CENTER
CHILLER PLANT REDESIGN
777 NE Martin Luther King Jr Blvd, Portland, OR 97232
MECHANICAL LEGEND AND NOTES

Issuance

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Date:
JUNE 05, 2018



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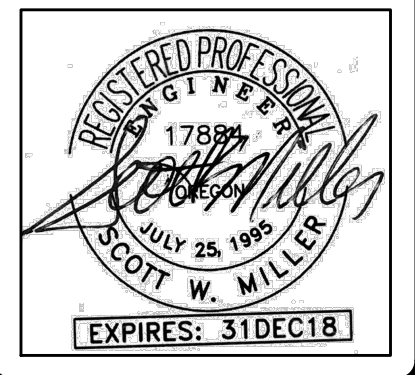
SUPPLY FAN SCHEDULE																	
DESIGN SYMBOL	SYSTEM	TYPE	DISCHARGE	MAX CFM	MIN ESP INCHES	MOTOR				MOUNTING	VIBRATION ISOLATION			OPER. WEIGHT LBS	INTER-LOCK / CONTROL WITH	REMARKS NOTES	DESIGN BASIS GREENHECK MODEL#
						BHP	HP	RPM	VOLTS/PHASE /HERTZ		ISOLATOR TYPE NOTE	MIN. STATIC DEFLECTION	DBA/ SONES				
SF-1214	VENTILATION AIR	CENTRIFUGAL	ROOF	1800	0.45	0.45	3/4	1750	115/1/60	ROOF CURB	SEE SPECS	SEE SPECS	11.6	150	DUCT HEATER	1,2,3,4,5	RSF-90
NOTES: 1 PROVIDE DISCONNECT SWITCH. 2 OPERATE FROM LIGHT SWITCH FOR OPERATION DURING OCCUPANCY. 3 PROVIDE MOTORIZED CONTROL DAMPER AT FAN INTAKE. 4 PROVIDE WITH FILTERS. 5 PROVIDE 12 INCH MINIMUM HEIGH ROOF CURB.																	
UPDATED: 5/2/2018 13:42																	

DAMPER SCHEDULE																		
DESIGN SYMBOL	SYSTEM	LOCATION	AIRFLOW DIRECTION	MIN AIRFLOW CFM	MAX AIRFLOW CFM	MAX PRESSURE DROP IN	BACKDRAFT DAMPER	SIZE				ELECTRICAL				INTERLOCK	REMARKS NOTES	DESIGN BASIS
								WIDTH IN	HEIGHT IN	PERCENT FREE AREA	FREE AREA SF	DESIGN VELOCITY FPM	NUMBER OF SECTIONS	NUMBER OF ACTUATORS	EMERGENCY POWER			
DS-1	HEAT / EMER	WALL	INTAKE	4000	21000	0.05	NO	108	54	95%	38.48	546	2	2	YES	120/1/60	1,2	ICD-45
DS-2	VENTILATION	WALL	INTAKE	1800	1800	0.05	NO	20	20	95%	2.64	682	1	1	YES	120/1/60	2	VCD
DE-1	HEAT EXHAUST	ROOF	EXHAUST	4000	21000	0.1	NO	48	48	95%	15.20	1382	1	1	NO	120/1/60	1,3	VCD
DE-2	EMERG. EXH	ROOF	EXHAUST	4000	4000	0.1	NO	22	22	95%	3.19	1253	1	1	YES	120/1/60	1,3	VCD
NOTES:																		
1 PROVIDE INSULATED DAMPER BLADE CONSTRUCTION																		
2 PROVIDE 2 POSITION ACTUATOR, FAIL CLOSE.																		
3 VERIFY EXISTING EXHAUST FAN INSTALLATION OF ROOF OPENING. DUCT DAMPER EQUAL TO OR LARGER TO MATCH EXISTING ROOF OPENING.																		

WATER COOLED CHILLER SCHEDULE						
MARK NUMBER	CH-1	CH-2	BASE BID: CH-3	BASE BID: CH-4	ALT#1: CH-3	ALT#1: CH-4
SYSTEM	CHILLED WATER	CHILLED WATER	CHILLED WATER	CHILLED WATER	CHILLED WATER	CHILLED WATER
LOCATION	CHILLER ROOM	CHILLER ROOM	CHILLER ROOM	CHILLER ROOM	CHILLER ROOM	CHILLER ROOM
CHILLER TYPE	CENTRIFUGAL	CENTRIFUGAL	SCREW	SCREW	MAGNETIC BEARING	MAGNETIC BEARING
CHILLER REFRIGERANT FLOW			VARIABLE SPEED	VARIABLE SPEED	VARIABLE SPEED	VARIABLE SPEED
REFRIGERANT TYPE	R-134A	R-134A	R-134A	R-134A	R-134A	R-134A
PART LOAD EFF 75%/50%/25%, NPLV KW/TON					0.4189 / 0.3092 / 0.3474	0.4189 / 0.3092 / 0.3474
FULL LOAD EFFICIENCY, KW/TON			0.3448	0.3448	0.3545	0.3545
TOTAL REFRIGERANT CHARGE (LBS)	1600	1600	1430	1430	1114	1114
EVAPORATOR	TOTAL COOLING (MBH)	9,600	9,600	6,000	6,000	6,000
	TOTAL COOLING (TONS)	800	800	500	500	500
	ENTERING WATER TEMP. (F)	56	56	56	56	56
	LEAVING WATER TEMP. (F)	42	42	42	42	42
	FLOW RATE (GPM)	1,372	1,372	858	854	854
	EVAP MINIMUM FLOW (GPM)	1372	1372	769	276	276
	LOAD BYPASS MINIMUM FLOW (GPM)	1372	1372	769	276	276
	PRESSURE DROP (FT WTR)	14	14	10.5	13.8	13.8
	FOULING FACTOR	0.0001	0.0001	0.0001	0.0001	0.0001
	GLYCOL MIXTURE (%)	0	0	0	0	0
CONDENSER	NUMBER OF PASSES		2	2	2	2
	WATER CONTENT (GAL PER MODULE)		156	156	105	105
	CHILLER HEAT REJECTION (MBH)	9,600	9,600	7,050	7,026	7,026
	ENTERING WATER TEMP. (F)	82	82	82	82	82
	LEAVING WATER TEMP. (F)	94	94	94	94	94
	FLOW RATE (GPM)	1600	1600	1175	1171	1171
	CONDENSER MINIMUM FLOW (GPM)	1600	1600	817	1,171	1,171
	LOAD BYPASS MINIMUM FLOW (GPM)	1600	1600	817	1171	1171
	PRESSURE DROP (FT WTR)	10	10	11.7	14.8	14.8
	FOULING FACTOR	0.00025	0.00025	0.00025	0.00025	0.00025
COMPRESSOR	GLYCOL MIXTURE (%)	0%	0%	0%	0%	0%
	NUMBER OF PASSES		2	2	2	2
	WATER CONTENT (GAL PER MODULE)		171	171	96	96
	TYPE-NO		SCREW-1	SCREW-1	CENTRIFUGAL	CENTRIFUGAL
	SPEED (EACH COMPRESSOR)		VFD	VFD	VFD	VFD
	WATER ECONOMIZER		NO	NO	NO	NO
	INPUT KW		302.5	302.5	281.7	281.7
	RLA/LRA (PER COMPRESSOR)		397/430.6	397/430.6	387/426	387/426
	MCA		496	496	487	487
	MOP				680	680
ELECT	ELECTRICAL (VOLT/PHASE/HERTZ)	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60
	ELECTRICAL CONNECTION TYPE					
	VIBRATION ISOLATION			YES	YES	YES
	SEISMIC RESTRAINTS			YES	YES	YES
	RAIL BASE			YES	YES	YES
	PIPE CONNECTION			FLEX	FLEX	FLEX
	OPERATING WEIGHT (LBS)		30031.1	30031.1	30031.1	30031.1
	BASIS OF DESIGN, MODEL#	EXISTING	EXISTING	CARRIER 23XRVS656	CARRIER 23XRVS656	DAIKIN WME0501S
	REMARKS/NOTES			1,2,3,4	1,2,3,4	1,2,3,4
	NOTES: 1 PROVIDE SINGLE POINT POWER CONNECTION. 2 PROVIDE SPRING ISOLATION. 3 PROVIDE FOR BACNET COMMUNICATION. 4 PROVIDE ACOUSTICAL SOUND INSULATION.					

WATER FILTER SCHEDULE		
SYSTEM	COND PROC WTR	COND CLG WTR
LOCATION	PUMP ROOM	PUMP ROOM
TYPE	AUTO, WITH CLOSED RECOVERY VESSEL	AUTO, WITH CLOSED RECOVERY VESSEL
MAXIMUM FLOW (GPM)	400	1128
MINIMUM FLOW (GPM)	200	800
FLUID TYPE	WATER	WATER
FLUID SPECIFIC GRAVITY	1.7	1.7
CENTRIF. SEPARATOR	EQUIPMENT TAG	CS-1
	FILTER EFF. AT +74 MICRON (SINGLE PASS)	76%
	INLET/OUTLET CONNECTION SIZE (INCHES)	4
	MAXIMUM PRESSURE (PSI)	150
	HEAD LOSS (FT)	16.40
	RINSE CYCLE FLOW (GPM)	40
	RINSE CYCLE MIN. PRESSURE (PSIG)	5
	DRAIN & PURGE VALVE SIZE (IN)	1 1/2
	PURGE VALVE	AUTOMATIC
	PURGE CYCLE, SECONDS	15
RECOVERY BAG FILTER	OPERATING WEIGHT - LBS	456
	BASIS OF DESIGN: PEP FILTERS	ICS2-0400
	EQUIPMENT TAG	RF-1
	INLET/OUTLET CONNECTIONS SIZE (INCHES)	2
	PERFORATED BASKET-PERFORATIONS	9/64
	BAG FILTER GRADE - MICRONS	50
	MAXIMUM PRESSURE (PSI)	100
	HEAD LOSS, FILTER+BAG (FT)	4.39
	RINSE CYCLE FLOW (GPM)	40
	RINSE CYCLE MIN. PRESSURE (PSIG)	5
PUMP	DRAIN CONNECTION (IN)	1
	BAG CHANGE-OUT ALARM PRESS DIFF. PSI	20
	OPERATING WEIGHT - LBS	230
	BASIS OF DESIGN: PEP FILTERS	BGFS-100
	EQUIPMENT TAG	FP-1
	DESIGN FLOW RATE PER PUMP (GPM)	400
	MIN. SHUT OFF HEAD	49.6
	PUMP HEAD (FT WG)	44.00
	RPM	1200
	PUMP EFFICIENCY	80%
CONTROLLER	VFD CONTROL	YES
	MOTOR HP	7 1/2
	ELECTRICAL POWER	460/3/60
	PUMP WEIGHT - LBS	877
	BASIS OF DESIGN: B&G	E-1510 4EB
	LINE VOLTAGE	LINE VOLTAGE
	LINE VOLTAGE	LINE VOLTAGE
	REMARKS/NOTES	1,2,3,4,5
	REMARKS/NOTES	1,2,3,4,5
	NOTES: 1 PROVIDE SEISMIC RESTRAINTS. 2 PURGE CYCLE DURATION TO BE ADJUSTED IN THE FIELD AS REQ'D FOR WTR QUALITY. 3 PROVIDE VIBRATION ISOLATION AND FLEXIBLE PIPING CONNECTIONS AT PUMP. 4 MOUNT CENTRIFUGAL SEPARATOR VERTICALLY ON SUPPORT LEGS WITH ANCHORS. 5 MOUNT BAG FILTER VERTICALLY ON SUPPORT LEGS WITH ANCHORS.	

HYDRONIC PUMPS SCHEDULE									
MARK NUMBER	P-3,-4	P-10,-11,-12	P-15,-16	P-22,-23	HWB-1	CPB-1	CPB-2	CCB-1	CHB-1
SYSTEM	CHILL WATER	COND LOOP	PROCESS LOOP	PROCESS TOWER	CHEMICAL FEED	CHEMICAL FEED	CHEMICAL FEED	CHEMICAL FEED	CHEMICAL FEED
TYPE	END SUCTION	DBL SUCTION	END SUCTION	END SUCTION	PERM. MAGNET	PERM. MAGNET	PERM. MAGNET	PERM. MAGNET	PERM. MAGNET
MOUNTING	FLOOR SLAB	FLOOR SLAB	FLOOR SLAB	FLOOR SLAB	IN LINE	IN LINE	IN LINE	IN LINE	IN LINE
GLYCOL/WATER MIXTURE - % PROPYLENE	WATER	WATER	WATER	WATER	HEATING WATER	CONDENSER WTR	PROCESS WATER	CONDENSER WTR	CHILL WATER
INTERLOCK	CHILLERS	CT-2,-3,-4	PROCESS EQUIP	CT-1	(E)BOILERS	CT-1	PROCESS EQUIP	CT-2,-3,-4	CHILLERS
AVERAGE FLUID TEMPERATURE	49	84	70	84	160	84	70	84	49
DESIGN CRITERIA	QUANTITY	1 EA	1 EA	1 EA	1	1	1	1	1
	DESIGN FLOW RATE PER PUMP (GPM)	858	1992	410	420	5	5	5	5
	MIN FLOW RATE PER PUMP (GPM)	769	800	205	200	5	5	5	5
	MIN. SHUT OFF HEAD	36	119	70.5	179	34	34	34	34
	PUMP HEAD (FT WG)	35	90	160	60	13	18	17	15
	MOTOR (HP)	15	60	30	10	1/4	1/4	1/4	1/4
	MOTOR TYPE	PREMIUM EFF	PREMIUM EFF	PREMIUM EFF	PREMIUM EFF	ECM	ECM	ECM	ECM
	VFD CONTROL	YES	YES	YES	YES	ELECTRONIC	ELECTRONIC	ELECTRONIC	ELECTRONIC
	RPM	1750	1750	1800	1800	1100-4400	1100-4400	1100-4400	1100-4400
	PUMP EFFICIENCY	77%	80%	68%	76%				
DESIGN BASIS	ELECTRICAL (VOLTS/PHASE/HERTZ)	480/3/60	480/3/60	480/3/60	480/3/60	115/1/60	115/1/60	115/1/60	115/1/60
	NET POSITIVE SUCTION HEAD REQUIRED (FT)	5.72	7.57	7.81	6.89	13.398	1.6863		
	DESIGN WEIGHT (LBS) (NOTE 5)	1045	2282.5	896.5	437.8	10	10	10	10
	MANUFACTURER-BASIS OF DESIGN:	BELL&GOSSETT	BELL&GOSSETT	BELL&GOSSETT	BELL&GOSSETT	TACO	TACO	TACO	TACO
	MODEL-BASIS OF DESIGN:	E-1510 6G	HSC-S	E-1510 3GB	E-1510 3BD	VR3452	VR3452	VR3452	VR3452
	REMARKS/NOTES	2,4,5	1,4,5	1,2,5	1,2,5	3	3	3	3
	NOTES: 1 INSTALL NEW INERTIA BASE OVER EXISTING HOUSEKEEPING PAD. 2 PROVIDE CONCRETE FILLED INERTIAL BASE WITH SPRING VIBRATION ISOLATORS. 3 PROVIDE DIFFERENTIAL PRESSURE CONTROL 4 PROVIDE NEW HOUSEKEEPING PAD. 5 PUMP WEIGHTS DOES NOT INCLUDE INERTIA BASE OR SUPPORTS.								



Proj No: MFIA 9381

Drawn By: MG

Chkd By: SWM

DSN By: MG

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CHILLER PLANT REDESIGN
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MECHANICAL SCHEDULES

Issuance

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Date:
JUNE 05, 2018

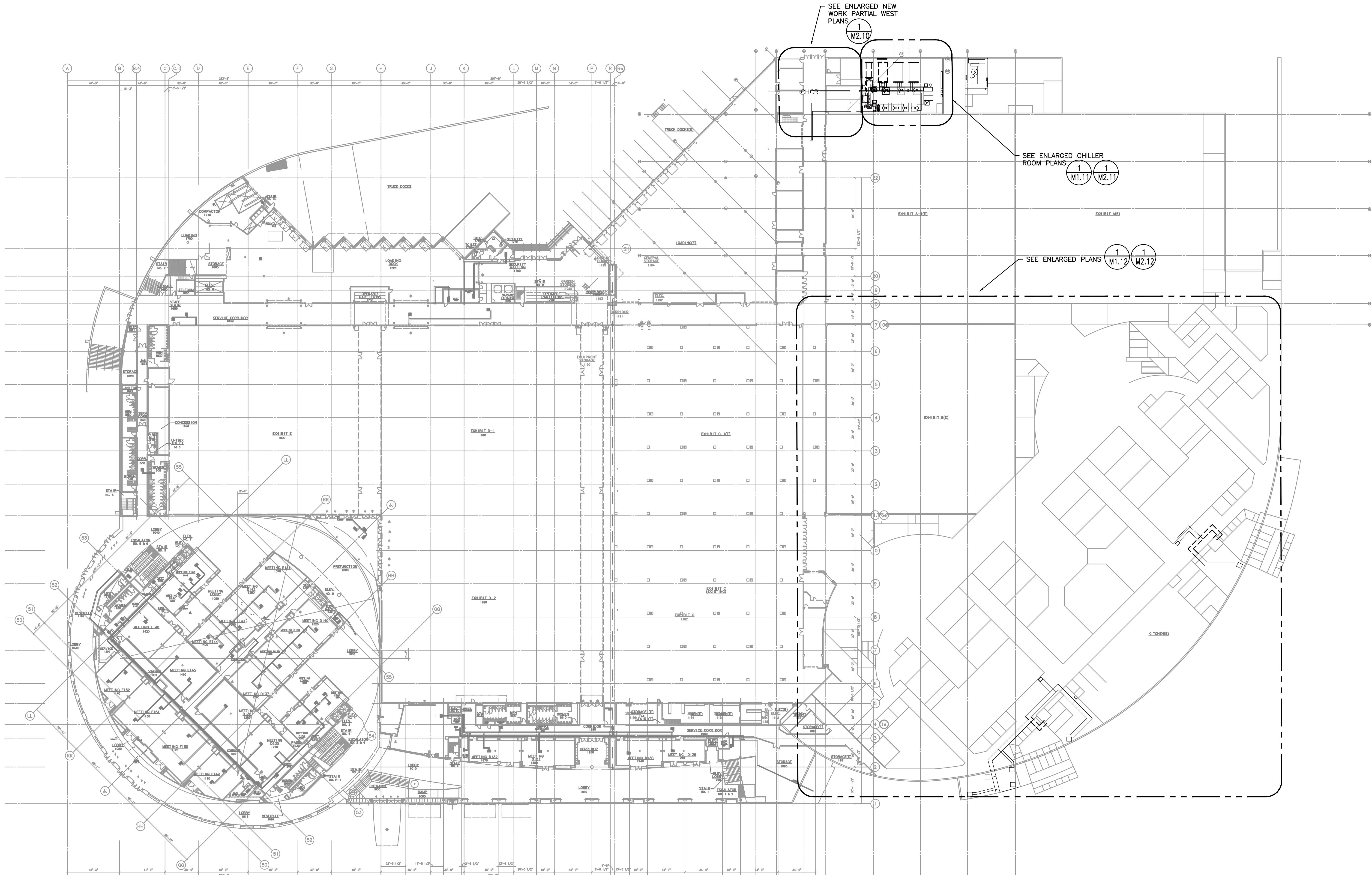


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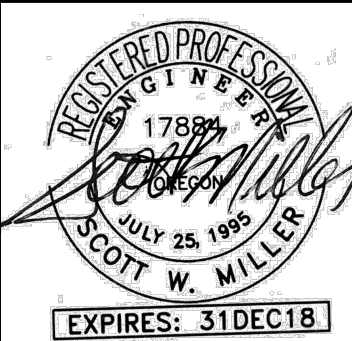
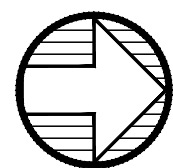
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M0.02

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ARCH expand D (24.00 x 36.00 inches), 1:1



1 GROUND FLOOR MECHANICAL PLAN
M1.01 SCALE: 1" = 40'



Proj No: MFIA 9381

Drawn By: MG

Chkd By: SWM

DSGN By: MG

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GROUND FLOOR MECHANICAL PLAN

Issuance

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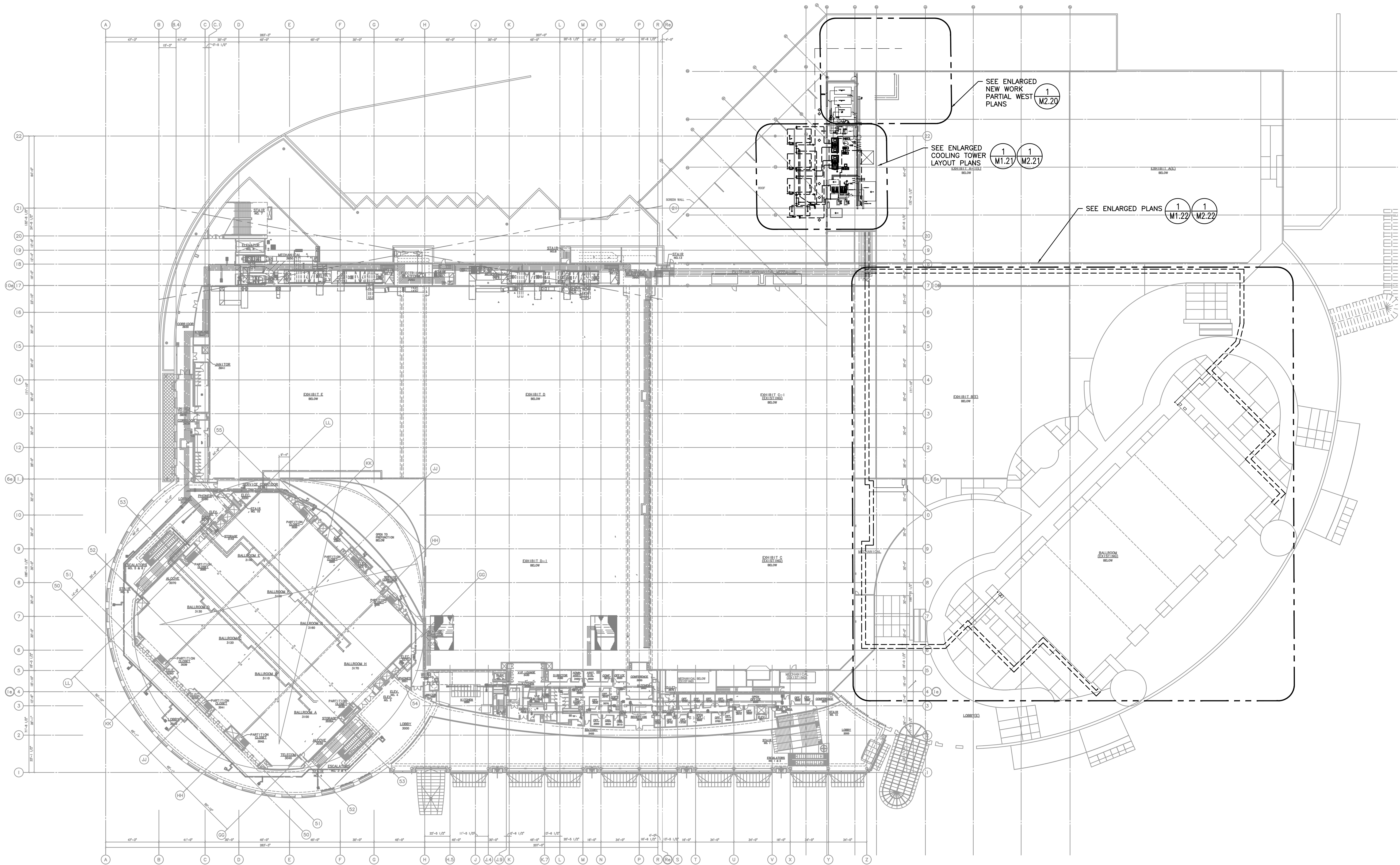


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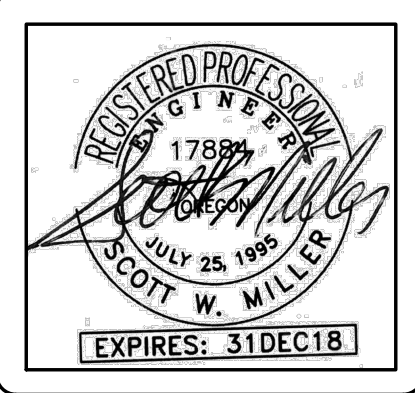
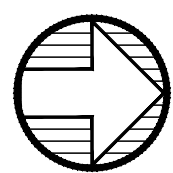
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ARCH expand D (24.00 x 36.00 Inches), 1:1



PLAN UPPER FLOOR (10/8'-0")

1 UPPER FLOOR MECHANICAL PLAN
M1.02 SCALE: 1" = 40'-0"



Proj No:	MFA 9381
Drawn By:	MG
Chkd By:	SWM
DSN By:	MG

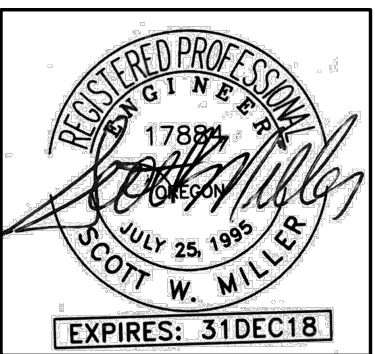
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CHILLER PLANT REDESIGN
777 NE Martin Luther King Jr Blvd, Portland, OR 97232
MECHANICAL UPPER FLOOR PLAN

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M1.02



Proj No: MFIA 9381

Drawn By: MG

Chkd By: SWM

DSN By: MG

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CHILLER PLANT REDESIGN
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MECHANICAL CHILLER ROOM DEMO PLAN

Issuance

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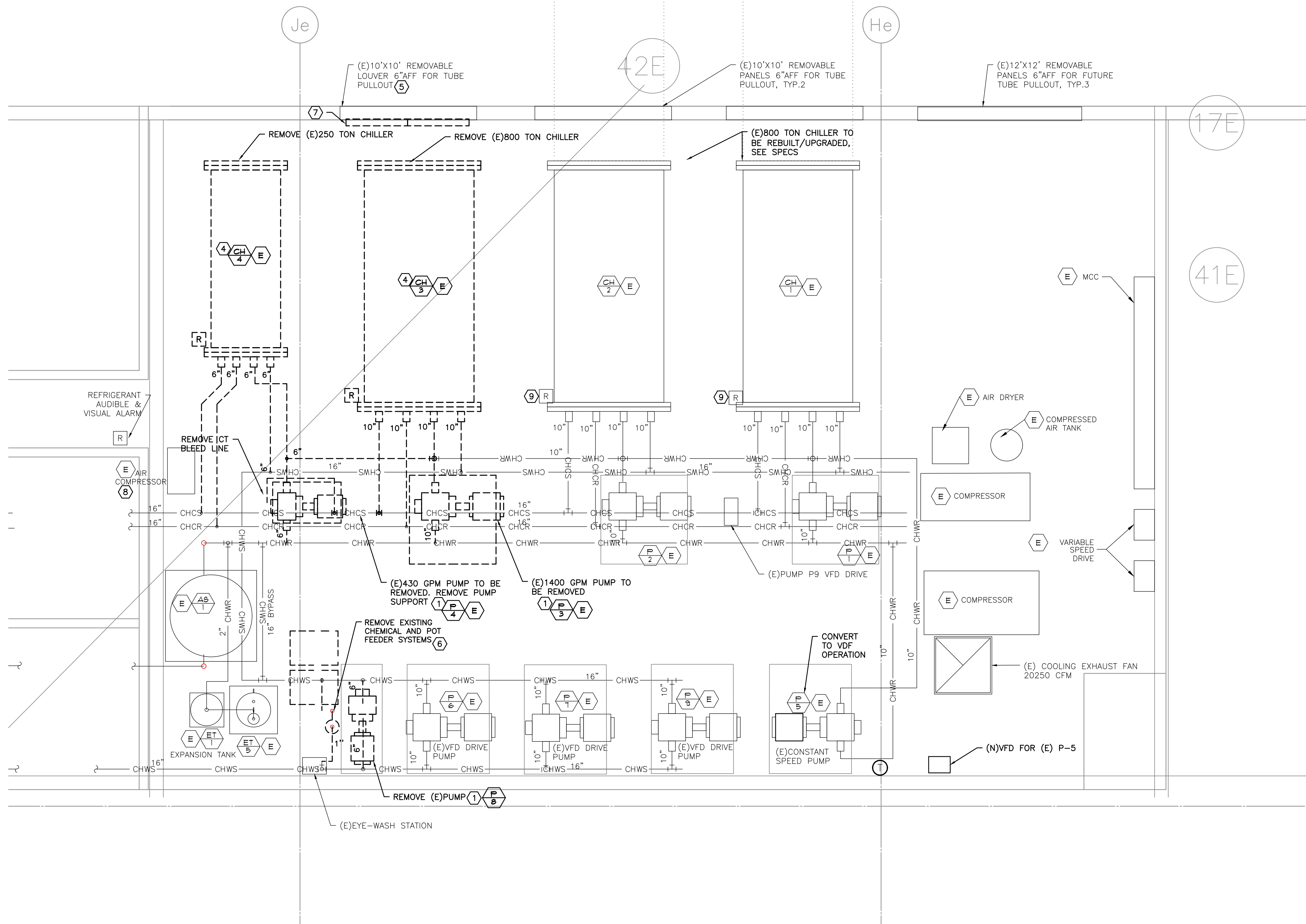
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SHEET

M1.11



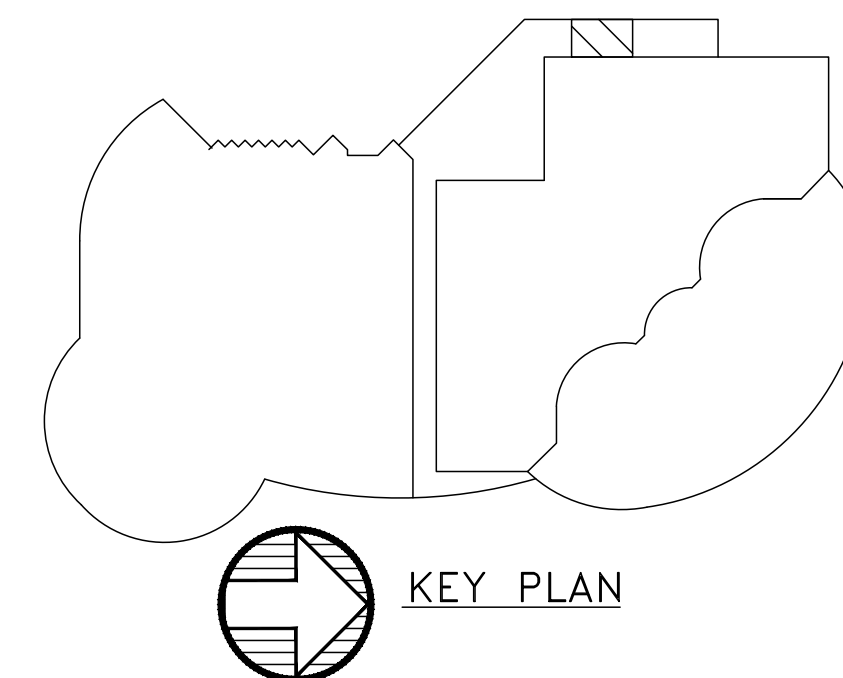
GENERAL NOTES:

- VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. DO NOT FABRICATE PIPING/DUCTWORK WITHOUT CONFIRMING SPACE EXISTS, FOR SIZES REQUIRED.
- COORDINATE ALL MECHANICAL AND CONTROL WORK WITH GENERAL CONTRACTOR, CONTROL CONTRACTOR, ELECTRICAL AND ARCHITECTURAL.
-

(X) MECHANICAL KEYED NOTES:

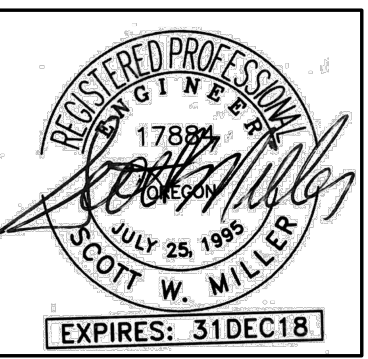
- REMOVE EXISTING PUMP, INERTIA BASE, AND PERTAINING CONTROLS & WIRING; PIPING INCLUDING FITTINGS TO THE EXTENT SHOWN; AND HANGERS & SUPPORTS.
- REMOVE EXISTING COOLING TOWER, PERTAINING PIPING FITTINGS AND CONTROLS. REPLACE AS SHOWN ON NEW WORK PLANS.
- INERTIA BASE AT PUMP BEING REPLACED: DETERMINE RE-USING THE INERTIA BASE FOR THE REPLACED PUMP. REMOVE IF BASE IS NOT COMPATIBLE WITH NEW PUMP. PROVIDE CREDIT BACK TO OWNER IF RE-USING THE INERTIA BASE FOR THE NEW PUMP.
- REMOVE EXISTING CHILLER, AND PERTAINING SENSORS & CONTROLS; PRESSURE RELIEF, PIPING, VALVES, & FITTINGS; AND SUPPORTS.
- EXISTING CHILLER ROOM WALL PANEL FOR REMOVAL AND INSTALLATION OF EQUIPMENT. COORDINATE EXTERIOR LANDSCAPE AND SIDEWALK PARAPET WALL MODIFICATIONS WITH OWNER.
- REMOVE EXISTING CHEMICAL FEED SYSTEM AND PERTAINING PIPING AND CONTROLS. SALVAGE EXISTING PUMPS AND CONTROLLERS AND RETURN TO OWNER. SEE NEW WORK PLANS FOR NEW SYSTEM.
- REMOVE OUTSIDE AIR INTAKE DAMPER SEE NEW WORK PLANS FOR MODIFICATIONS.
- EXISTING CHILLER ROOM REFRIGERANT MONITOR STATION TO REMAIN.
- EXISTING REFRIGERANT SAMPLING SENSOR TO REMAIN.
- BASE BID: (E)PWS&R TO REMAIN AS IS. ALTERNATE #2: REMOVE EXISTING COOLING TOWER PROCESS WATER PIPING FITTINGS AND SUPPORTS AS SHOWN. SEE NEW WORK PLANS FOR REPLACEMENT WITH LARGER PIPING.

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





- A. VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. DO NOT FABRICATE PIPING/DUCTWORK WITHOUT CONFIRMING SPACE EXISTS, FOR SIZES REQUIRED.
- B. COORDINATE ALL MECHANICAL AND CONTROL WORK WITH GENERAL CONTRACTOR, CONTROL CONTRACTOR, ELECTRICAL AND ARCHITECTURAL.
- C. —.



Drawn By:

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NE SECTION ENLARGED PLAN - DEMOLITION

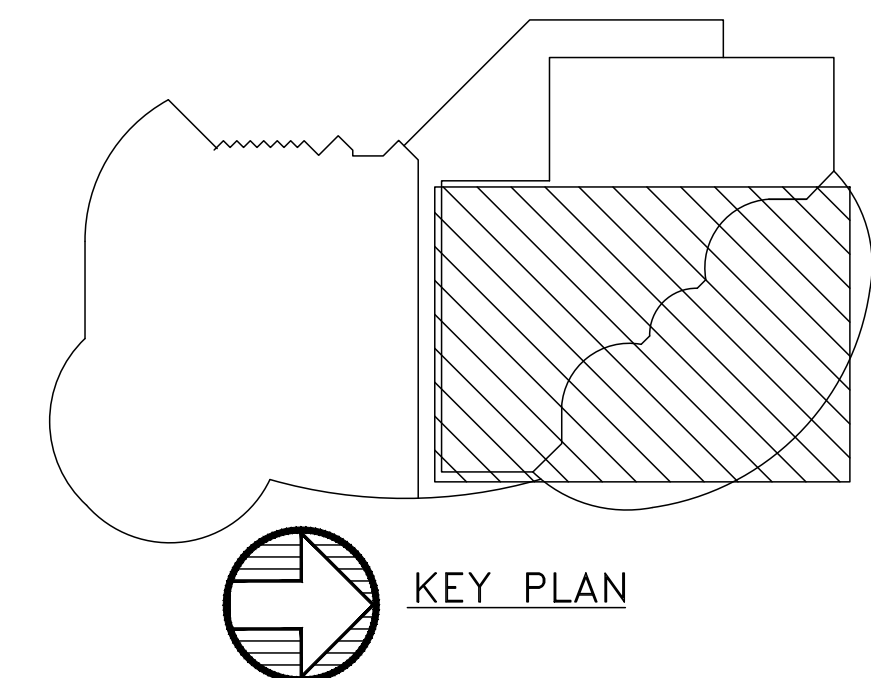
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Date:
JUNE 05, 2018

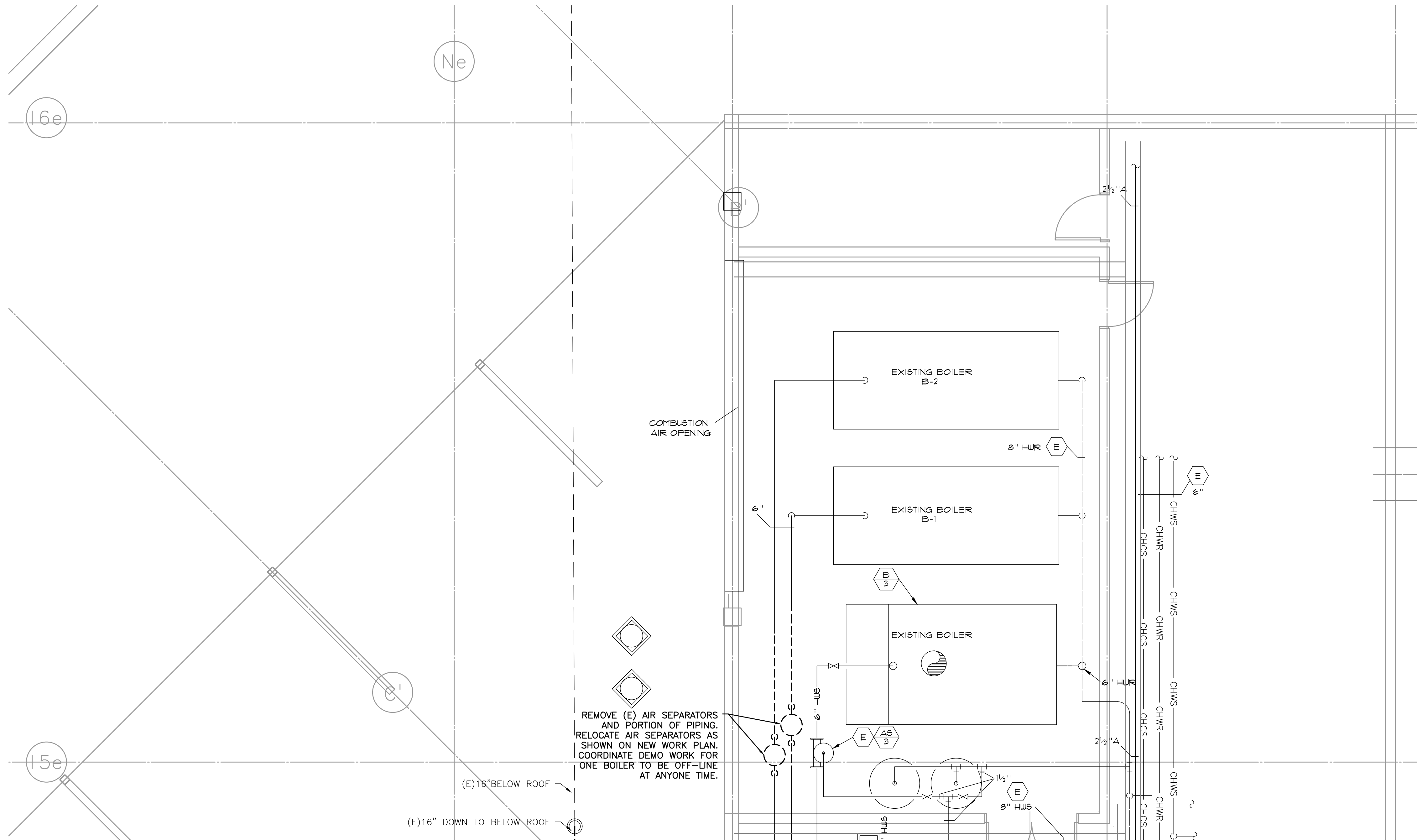


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M1.12



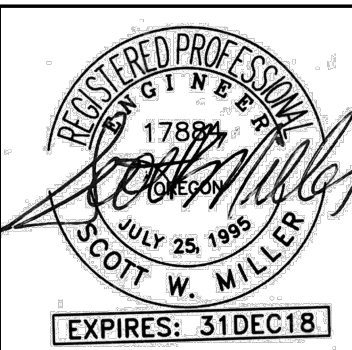
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ARCH expand D (24.00 x 36.00 Inches), 1:1



1 ENLARGED 2ND LEVEL WEST PLAN — DEMOLITION
M1.20 SCALE: 1/4" = 1'-0"

GENERAL NOTES:

- A. VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. DO NOT FABRICATE PIPING/DUCTWORK WITHOUT CONFIRMING SPACE EXISTS, FOR SIZES REQUIRED.
- B. COORDINATE ALL MECHANICAL AND CONTROL WORK WITH GENERAL CONTRACTOR, CONTROL CONTRACTOR, ELECTRICAL AND ARCHITECTURAL.
- C. —



Proj No: MFIA 9381

Drawn By: MG

Chkd By: SWM

DSGN By: MG

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CHILLER PLANT REDESIGN
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MECHANICAL 2ND LEVEL PLAN — DEMOLITION

Issuance

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Date:
JUNE 05, 2018

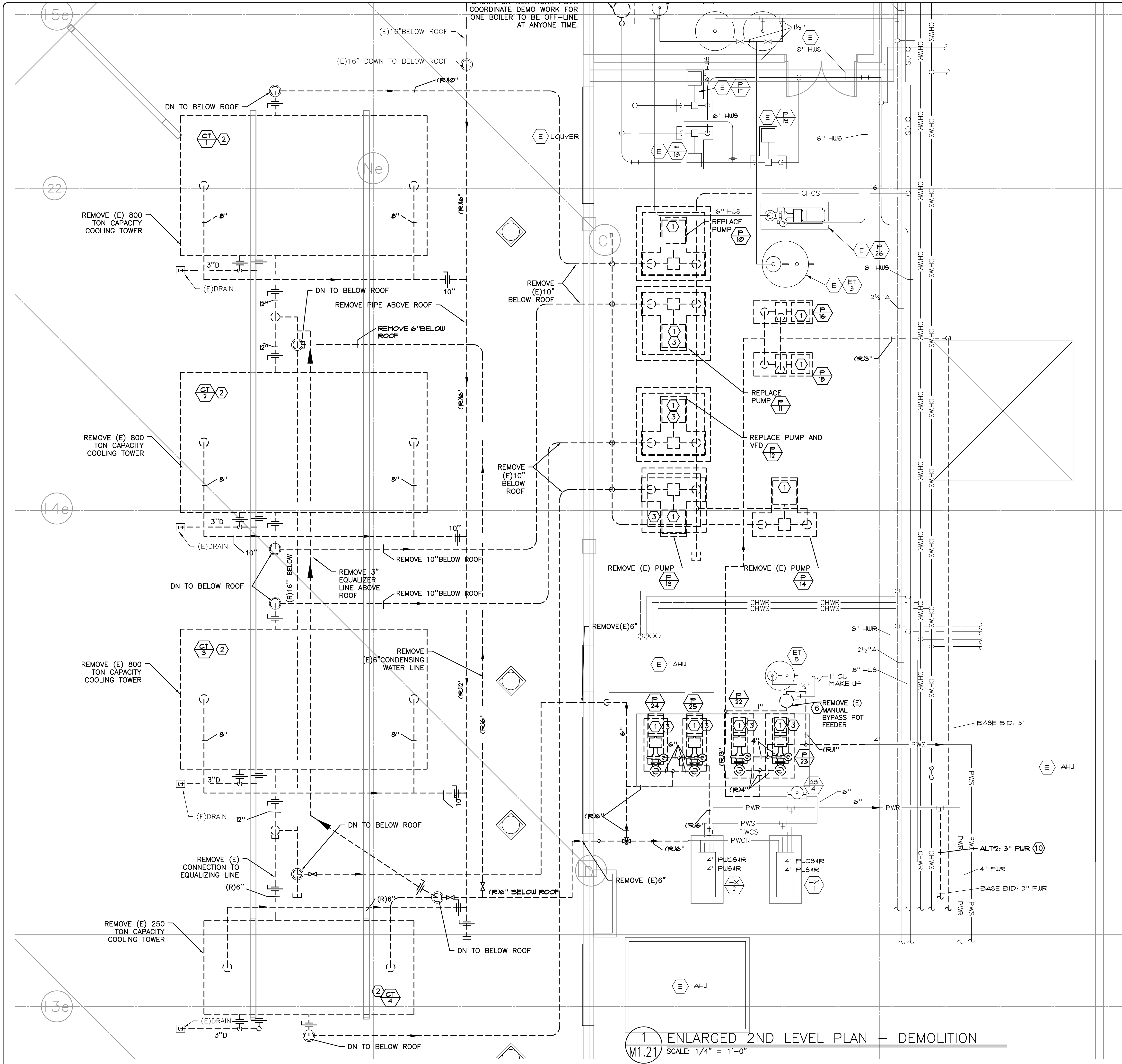
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M1.20

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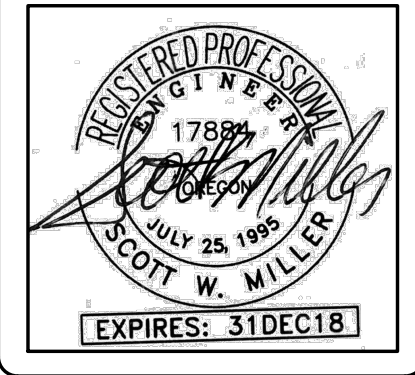


GENERAL NOTES:

- VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. DO NOT FABRICATE PIPING/DUCTWORK WITHOUT CONFIRMING SPACE EXISTS, FOR SIZES REQUIRED.
- COORDINATE ALL MECHANICAL AND CONTROL WORK WITH GENERAL CONTRACTOR, CONTROL CONTRACTOR, ELECTRICAL AND ARCHITECTURAL.
-

MECHANICAL KEYED NOTES:

- REMOVE EXISTING PUMP, INERTIA BASE, AND PERTAINING CONTROLS & WIRING; PIPING INCLUDING FITTINGS TO THE EXTENT SHOWN; AND HANGERS & SUPPORTS.
- REMOVE EXISTING COOLING TOWER, PERTAINING PIPING FITTINGS AND CONTROLS. REPLACE AS SHOWN ON NEW WORK PLANS.
- INERTIA BASE AT PUMP BEING REPLACED: DETERMINE RE-USING THE INERTIA BASE FOR THE REPLACED PUMP. REMOVE IF BASE IS NOT COMPATIBLE WITH NEW PUMP. PROVIDE CREDIT BACK TO OWNER IF RE-USING THE INERTIA BASE FOR THE NEW PUMP.
- REMOVE EXISTING CHILLER, AND PERTAINING SENSORS & CONTROLS; PRESSURE RELIEF PIPING, VALVES, & FITTINGS; AND SUPPORTS.
- EXISTING CHILLER ROOM WALL PANEL FOR REMOVAL AND INSTALLATION OF EQUIPMENT. COORDINATE EXTERIOR LANDSCAPE AND SIDEWALK PARAPET WALL MODIFICATIONS WITH OWNER.
- REMOVE EXISTING CHEMICAL FEED SYSTEM AND PERTAINING PIPING AND CONTROLS. SALVAGE EXISTING PUMPS AND CONTROLLERS AND RETURN TO OWNER. SEE NEW WORK PLANS FOR NEW SYSTEM.
- REMOVE OUTSIDE AIR INTAKE DAMPER SEE NEW WORK PLANS FOR MODIFICATIONS.
- EXISTING CHILLER ROOM REFRIGERANT MONITOR STATION TO REMAIN.
- EXISTING REFRIGERANT SAMPLING SENSOR TO REMAIN.
- BASE BID: (E)PWS&R TO REMAIN AS IS. ALTERNATE #2: REMOVE EXISTING COOLING TOWER PROCESS WATER PIPING FITTINGS AND SUPPORTS AS SHOWN. SEE NEW WORK PLANS FOR REPLACEMENT WITH LARGER PIPING.



Proj No:	MFA 9381
Drawn By:	WG
Chkd By:	SWM
DSN By:	MG

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MECHANICAL UPPER PLAN - DEMOLITION

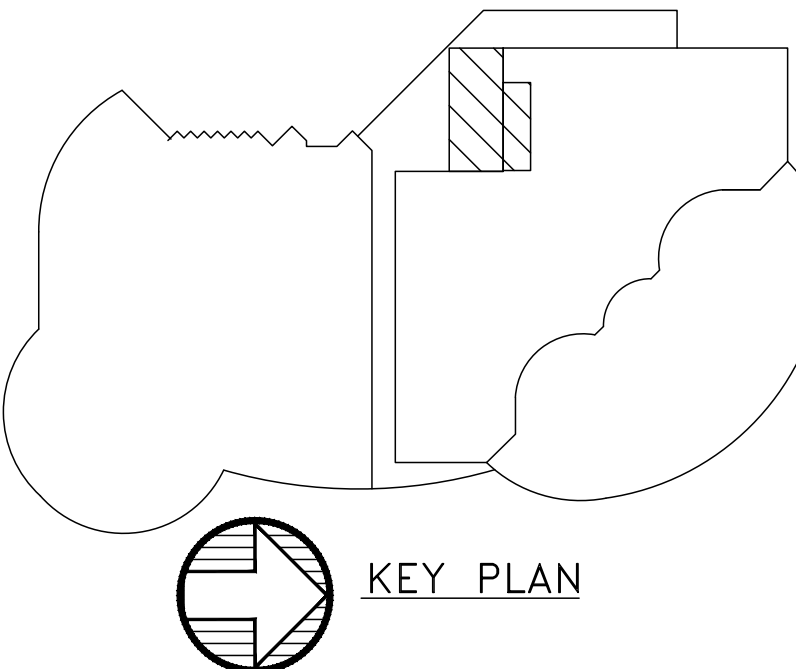
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JUNE 05, 2018



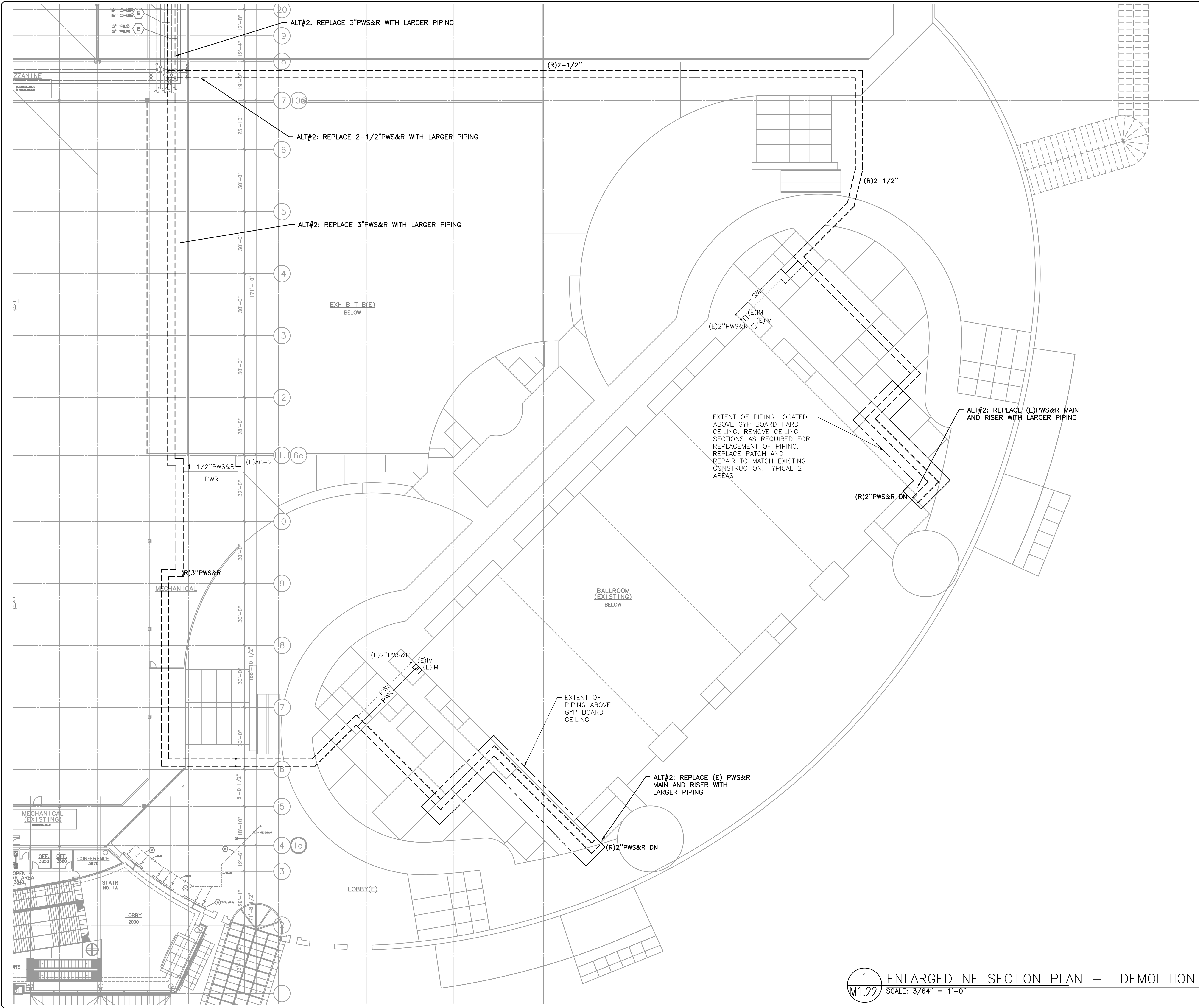
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SHEET

M1.21

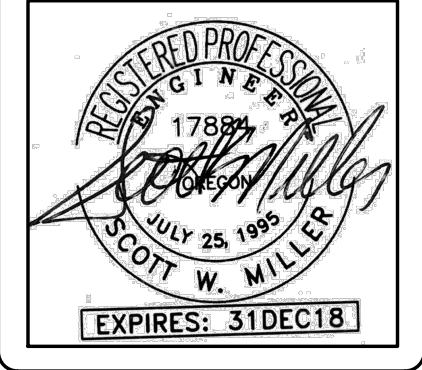


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GENERAL NOTES:

- A. VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. DO NOT FABRICATE PIPING/DUCTWORK WITHOUT CONFIRMING SPACE EXISTS, FOR SIZES REQUIRED.
- B. COORDINATE ALL MECHANICAL AND CONTROL WORK WITH GENERAL CONTRACTOR, CONTROL CONTRACTOR, ELECTRICAL AND ARCHITECTURAL.
- C. -.



Proj No: MFIA 9381

Drawn By: MG

Chkd By: SWM

DSN By: MG

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777 NE Martin Luther King Jr Blvd, Portland, OR 97232
MECHANICAL UPPER NE SECTION - DEMOLITION PLAN

Issuance

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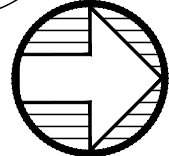
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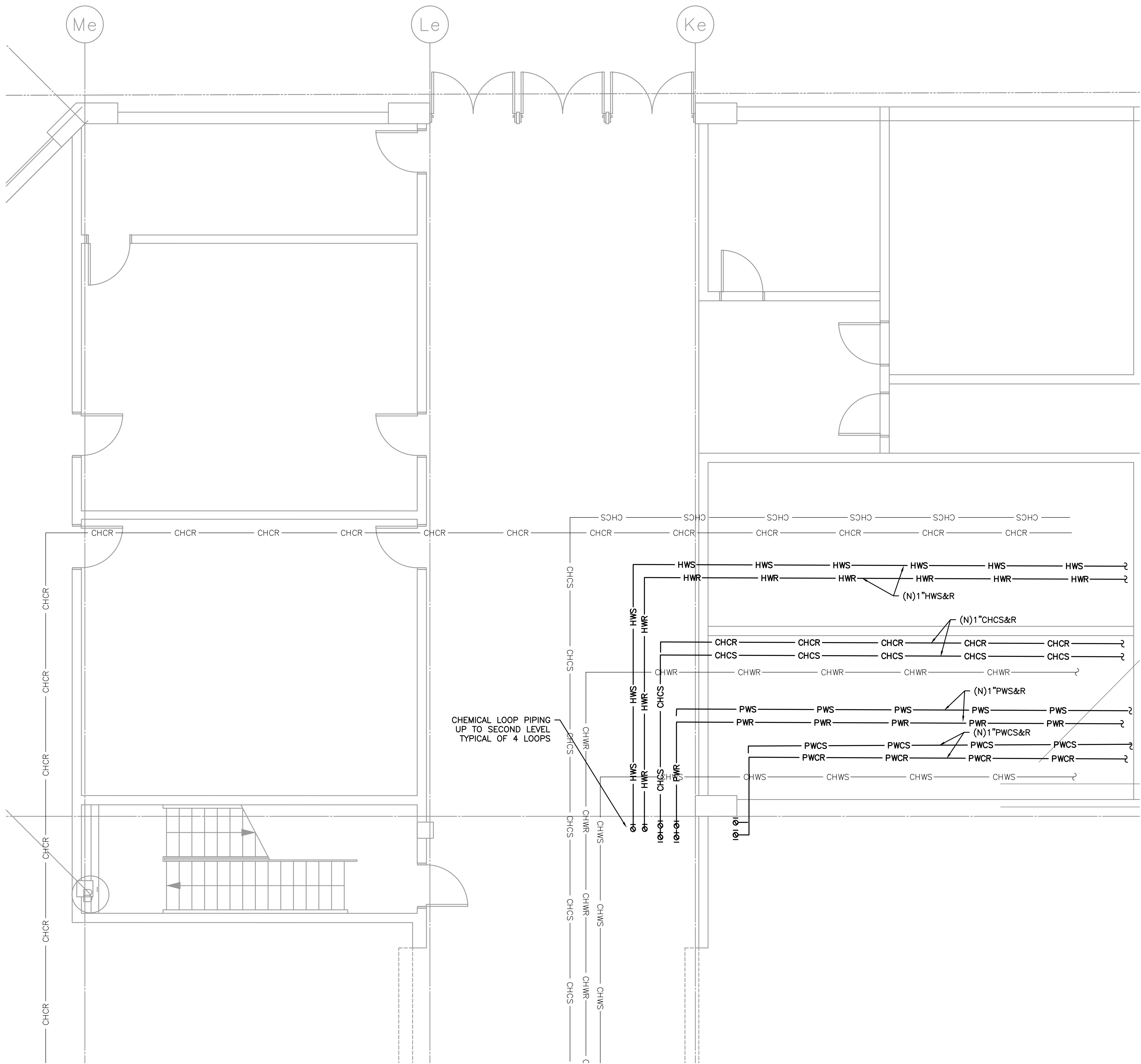
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M1.22



KEY PLAN

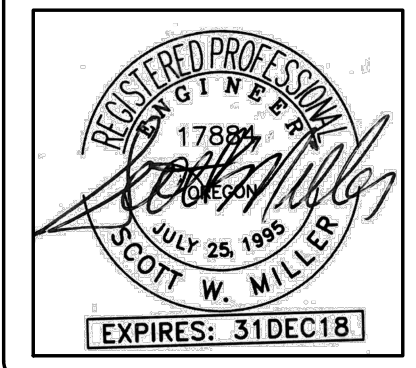
1 ENLARGED NE SECTION PLAN - DEMOLITION
M1.22 SCALE: 3/64" = 1'-0"



1 ENLARGED WEST MECHANICAL MAIN PLAN - NEW WORK
M2.10 SCALE: 1/4" = 1'-0"

GENERAL NOTES:

- A. VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. DO NOT FABRICATE PIPING/DUCTWORK WITHOUT CONFIRMING SPACE EXISTS, FOR SIZES REQUIRED.
- B. COORDINATE ALL MECHANICAL AND CONTROL WORK WITH GENERAL CONTRACTOR, CONTROL CONTRACTOR, ELECTRICAL AND ARCHITECTURAL.
- C. -.



Proj No:	MFA 9381
Drawn By:	MG
Chkd By:	SWM
DSGN By:	MG

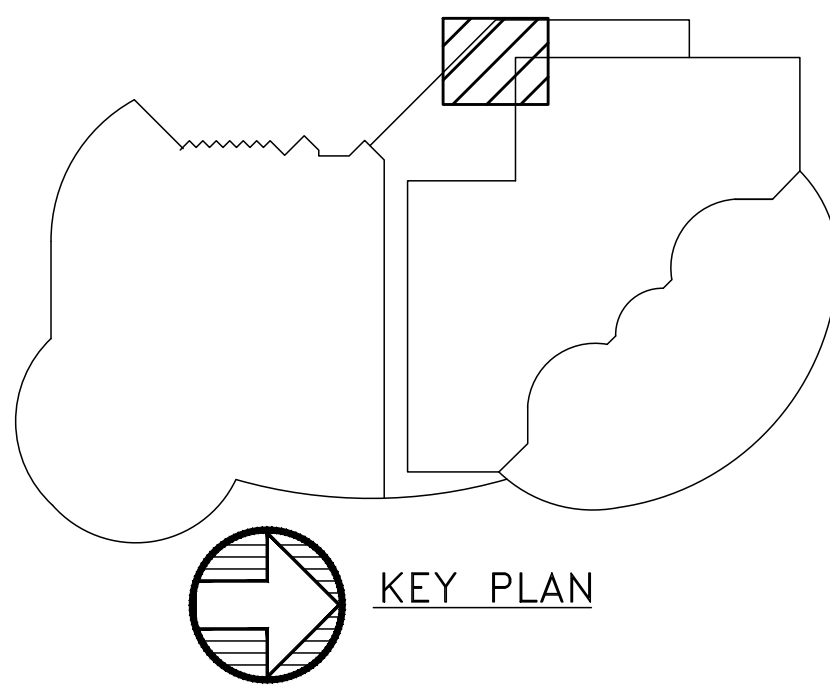
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777 NE Martin Luther King Jr Blvd, Portland, OR 97232
MECHANICAL MAIN LEVEL PLAN - WEST

Issuance
PERMIT SET
Date:
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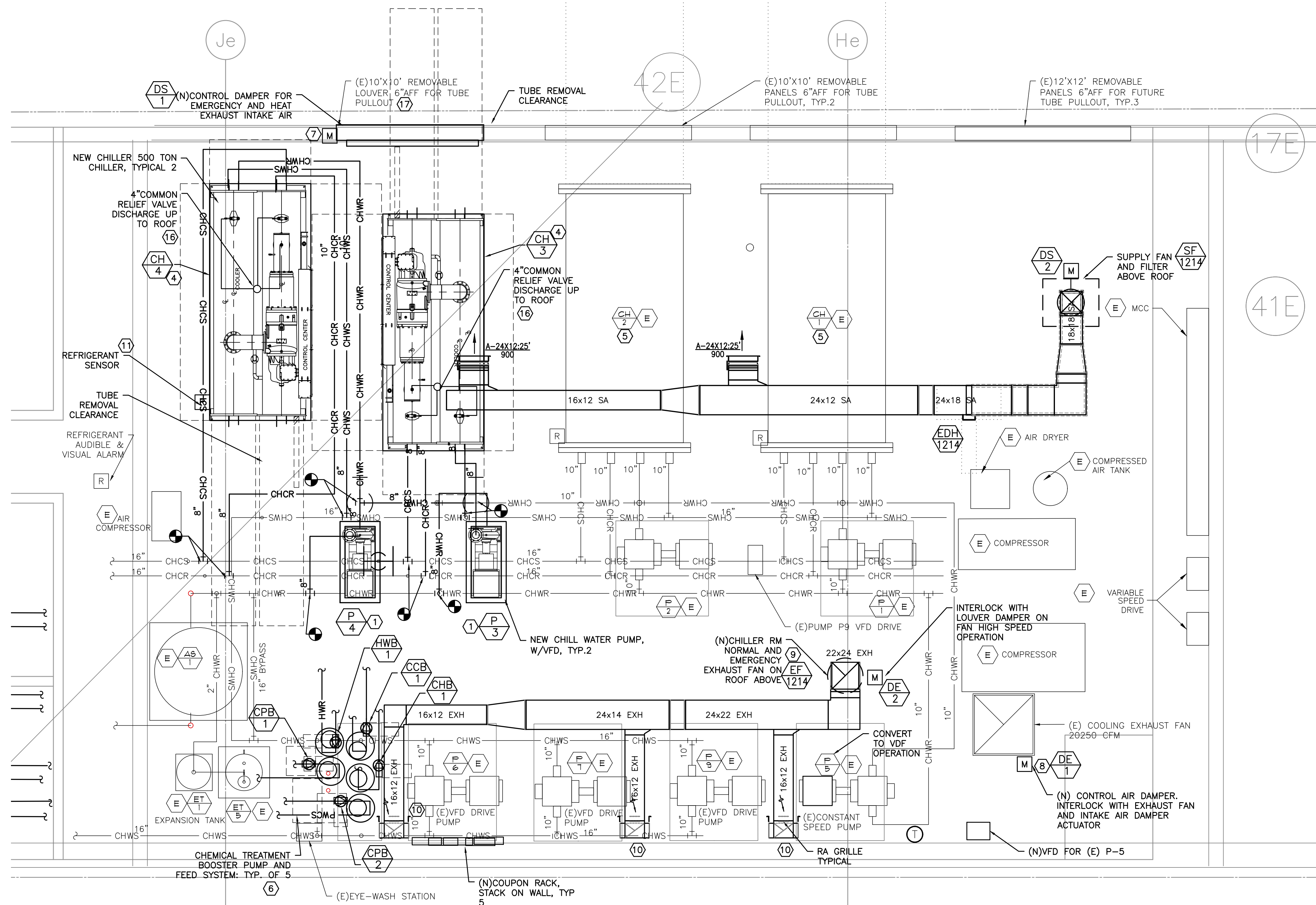


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SHEET
M2.10



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ARCH full bleed D (24.00 x 36.00 inches), 1:1



1 ENLARGED MECHANICAL CHILLER ROOM PLAN — NEW WORK
M2.11 SCALE: 1/4" = 1'-0"

GENERAL NOTES:

- VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. DO NOT FABRICATE PIPING/DUCTWORK WITHOUT CONFIRMING SPACE EXISTS, FOR SIZES REQUIRED.
- COORDINATE ALL MECHANICAL AND CONTROL WORK WITH GENERAL CONTRACTOR, CONTROL CONTRACTOR, ELECTRICAL AND ARCHITECTURAL.
-

(X) MECHANICAL KEYED NOTES:

- NEW PUMP AND INERTIA BASE. INSTALL ON NEW FLOOR PAD.
- NEW COOLING TOWER. MOUNT ON RIGID STRUCTURAL RAIL BASE. PROVIDE SEISMIC AND VIBRATION ISOLATION AT STRUCTURE. PROVIDE LADDER AND TOP RAILING TO MAINTENANCE PLATFORM ON SOUTH END FOR ACCESS ON TOP. SEE STRUCTURAL FOR INSTALLATION DETAILS.
- NEW PUMP AND INERTIA BASE. INSTALL ON EXISTING FLOOR PAD.
- NEW CHILLER. PROVIDE WITH SEISMIC SUPPORT AND SECURE TO NEW 6" HOUSEKEEPING PAD WITH VIBRATION ISOLATORS. PROVIDE VIBRATION ISOLATION ON ALL PIPE CONNECTIONS.
- EXISTING CHILLER. UPGRADE CONTROLS SEE SPECIFICATIONS.
- NEW CHEMICAL FEED ZONE LOOP BOOSTER PUMP. PROVIDE 55 GALLON CHEMICAL STORAGE TANKS AND CHEMICAL PUMP FEEDER PER SPECS. SEE SPECS FOR WATER TREATMENT REQUIREMENTS.
- NEW MOTORIZED CONTROL DAMPER FOR COOLING VENTILATION AND EMERGENCY VENTILATION SYSTEM.
- EXISTING CHILLER ROOM COOLING VENTILATION EXHAUST FAN. PROVIDE NEW CONTROL DAMPER AND INTERLOCK WITH NEW INTAKE AIR CONTROL DAMPER AND EXISTING SPACE THERMOSTAT.
- NEW CHILLER ROOM NORMAL AND EMERGENCY EXHAUST FAN.
- EXHAUST AIR DUCT DOWN TO GRILLE, INSTALL GRILLE 6 INCH ABOVE FLOOR.
- NEW REFRIGERANT SENSOR. INSTALL 18 INCHES ABOVE FLOOR. ROUTE SAMPLING TUBE TO EXISTING REFRIGERANT MONITOR PANEL.
- EXISTING REFRIGERANT SENSOR. CALIBRATE DEVICE.
- EXISTING HEAT EXCHANGER. REBALANCE FOR NEW FLOW.
- NEW CONDENSER WATER FILTRATION SYSTEM INCLUDING CENTRIFUGAL SEPARATOR, RECOVERY FILTER AND PUMP. INSTALL PUMP ON INERTIA BASE WITH VIBRATION ISOLATION. INSTALL THE CENTRIFUGAL SEPARATOR AND BAG FILTER HOUSING VERTICALLY ON LEGS WITH ANCHORS. THE SEPARATOR MUST BE ELEVATED TO ALLOW GRAVITY FLOW OF DRAIN LINE TO THE BAG FILTER INLET CONNECTION.
- NEW COOLING TOWER PROCESS WATER PIPING, REPLACE PIPING AS SHOWN.
- CHILLER PRESSURE RELIEF VALVE. CONNECT THE EVAPORATOR AND CONDENSER RELIEF VALVE. PIPE TO THROUGH ROOF AND DISCHARGE 15 FT ABOVE ROOF. PROVIDE DRIP LEG AND FLEX CONNECTION AT EACH DISCHARGE PIPE CONNECTION.
- REINSTALL (E) WALL ACCESS LOUVER TO MAINTAIN STRUCTURAL/SECURITY INTEGRITY OF EXISTING CONSTRUCTION. REPLACE SEALANTS/GASKETS TO PROVIDE A WATERTIGHT AND AIRTIGHT CONSTRUCTION.

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777 NE Martin Luther King Jr Blvd, Portland, OR 97232
CHILLER MECHANICAL ROOM PLAN

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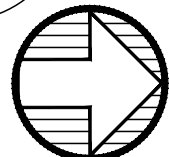
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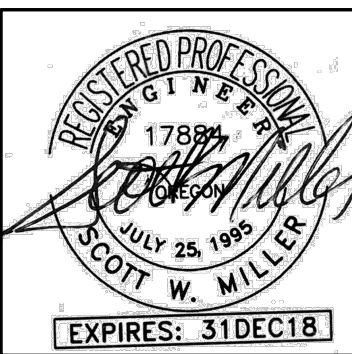
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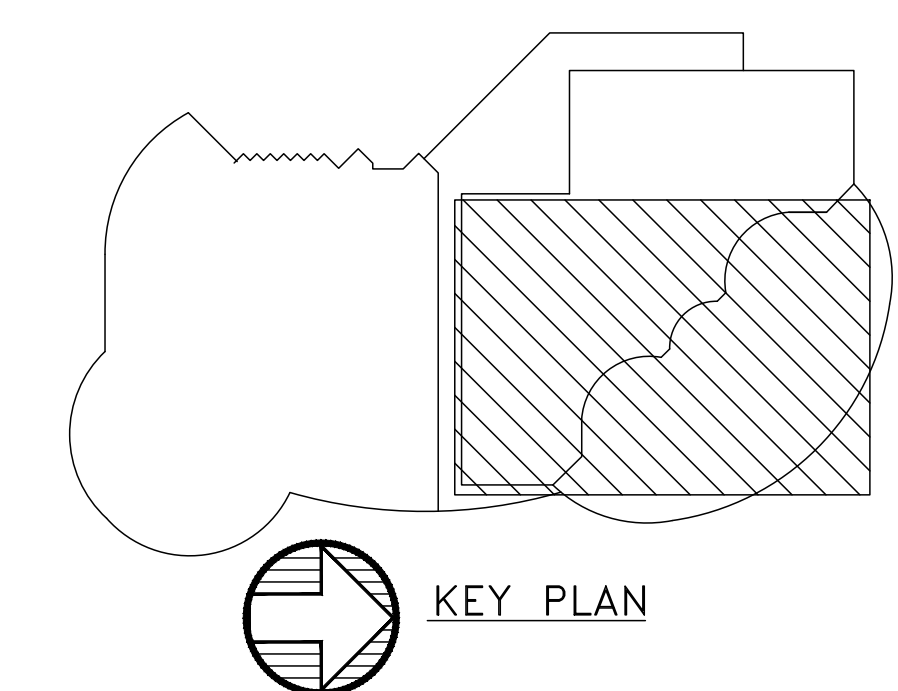
SHEET

M2.11



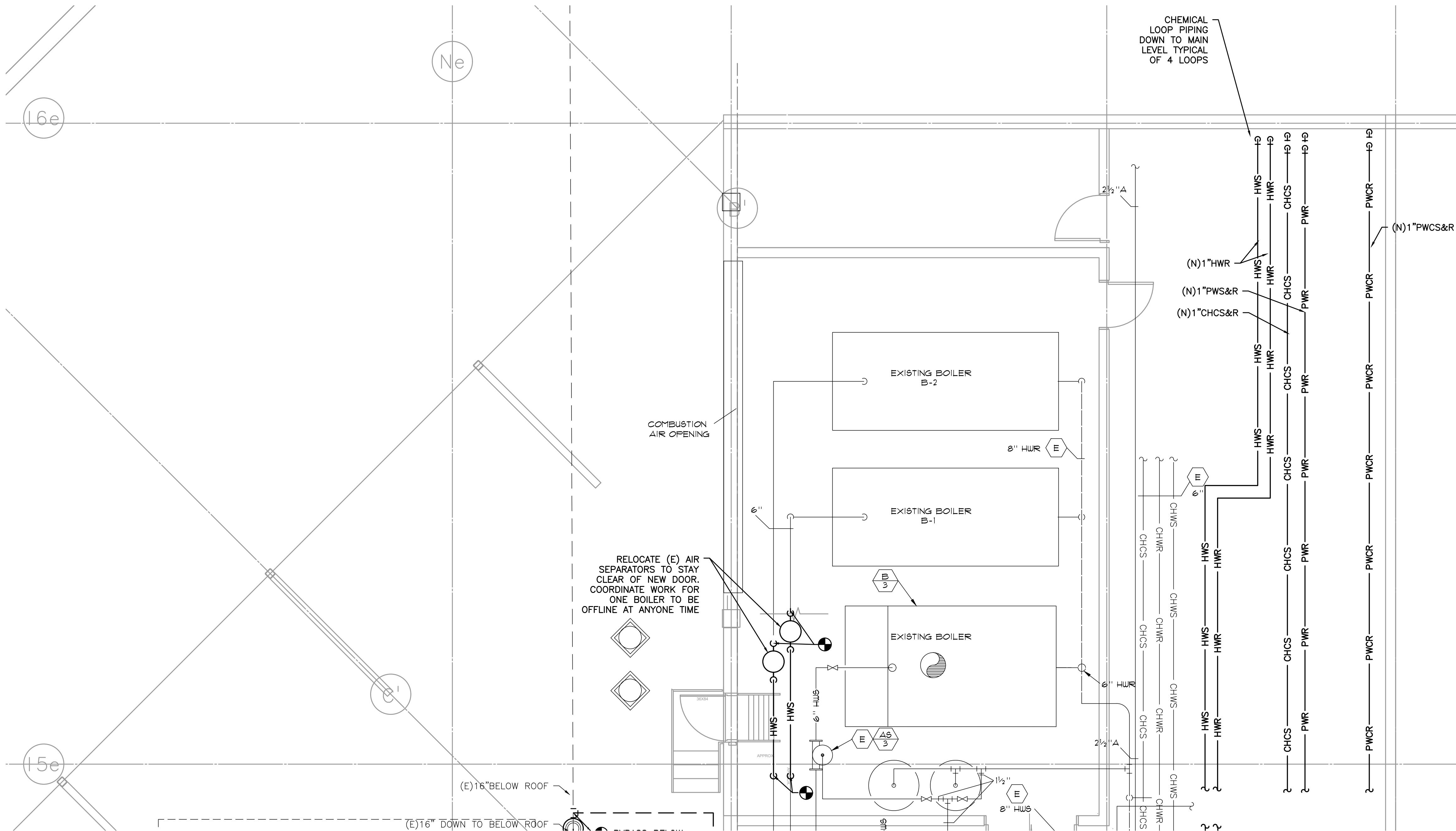
KEY PLAN





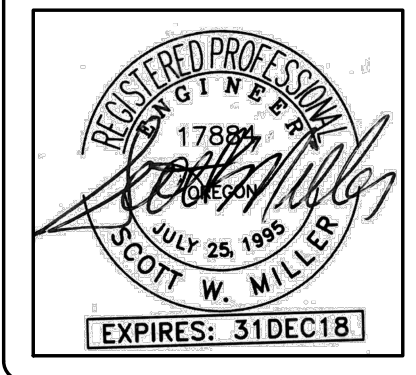
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ARCH expand D (24.00 x 36.00 Inches), 1:1



GENERAL NOTES:

- VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. DO NOT FABRICATE PIPING/DUCTWORK WITHOUT CONFIRMING SPACE EXISTS, FOR SIZES REQUIRED.
- COORDINATE ALL MECHANICAL AND CONTROL WORK WITH GENERAL CONTRACTOR, CONTROL CONTRACTOR, ELECTRICAL AND ARCHITECTURAL.
- .



Proj No: MFIA 9381

Drawn By: MG

Chkd By: SWM

DSGN By: MG

OREGON CONVENTION CENTER
CHILLER PLANT REDESIGN
777 NE Martin Luther King Jr Blvd, Portland, OR 97232
MECHANICAL WEST 2ND LEVEL PLAN - NEW WORK

Issuance

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JUNE 05, 2018

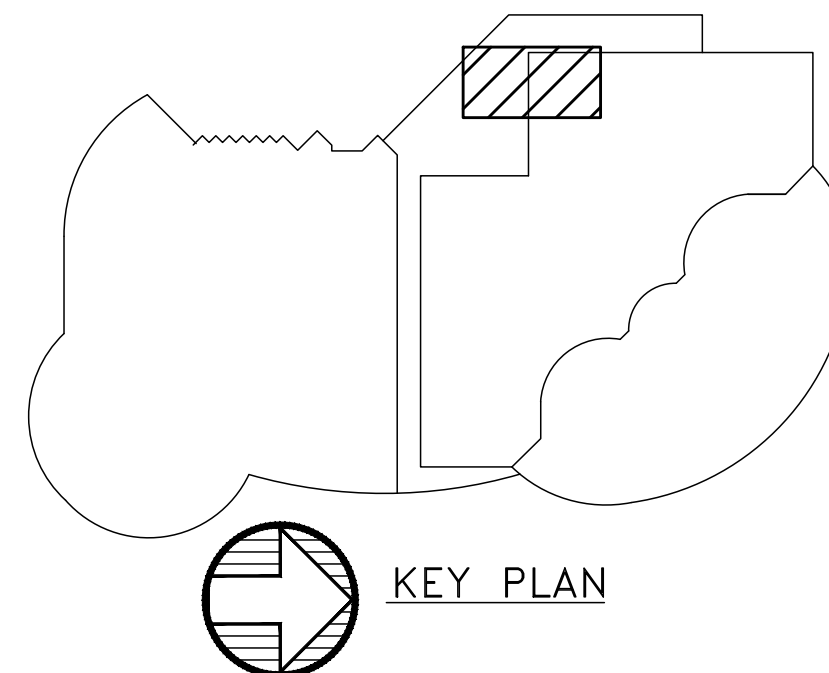
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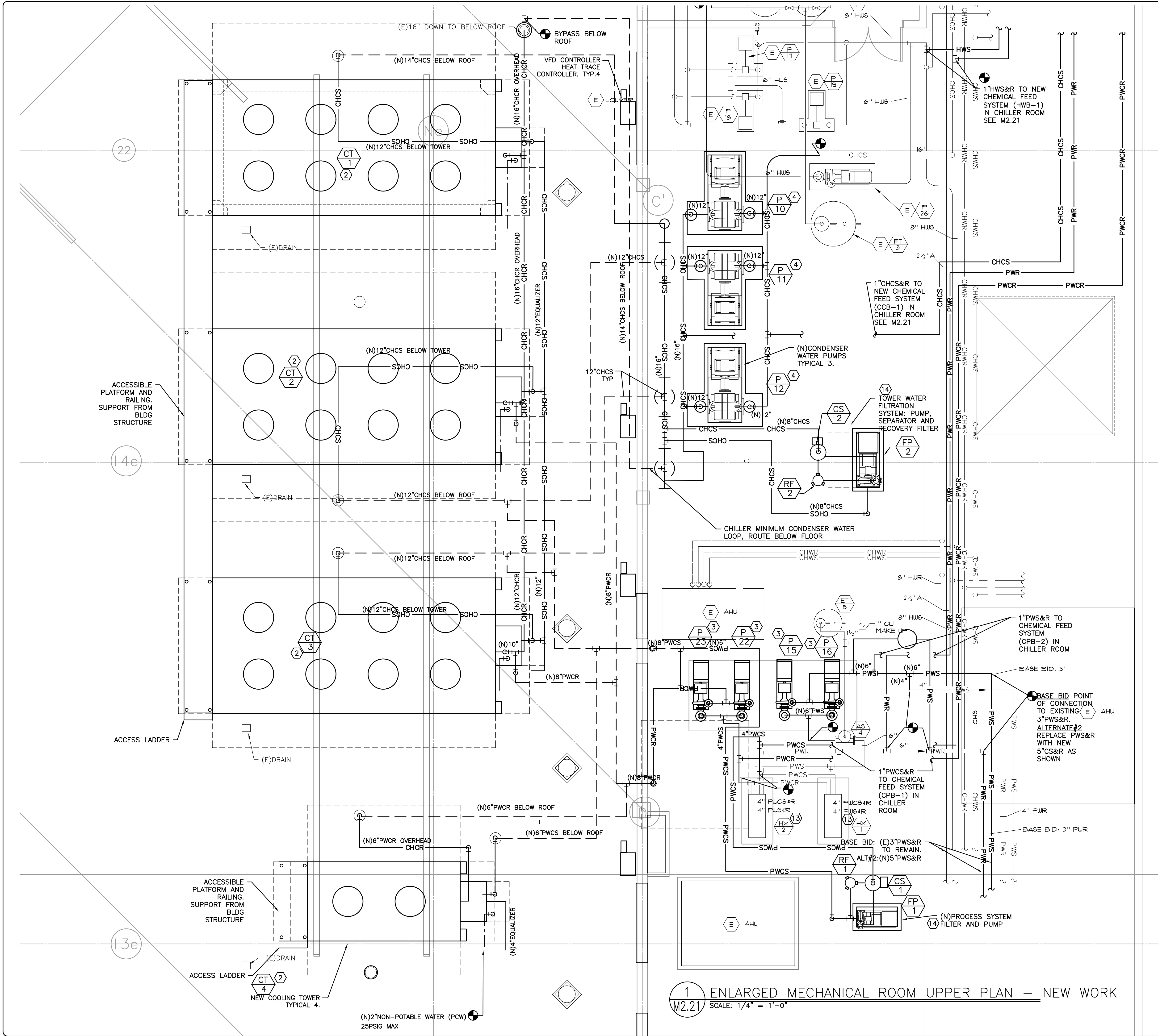
SHEET

M2.20

1
M2.20 ENLARGED WEST 2ND LEVEL PLAN - NEW WORK
SCALE: 1/4" = 1'-0"



G:\Metro\9381_Oregon Convention Center Chiller Plant\Mech\9381_OCC-CP_M20.dwg, M2.21, 6/4/2018 8:28:54 PM, ARCH full bleed D (24.00 x 36.00 inches), 1:1



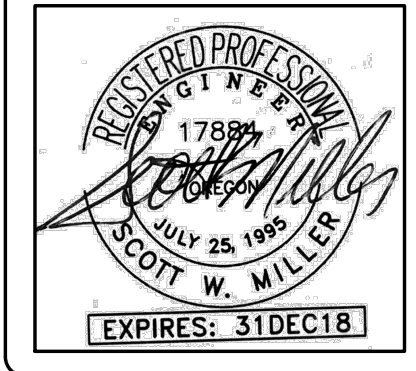
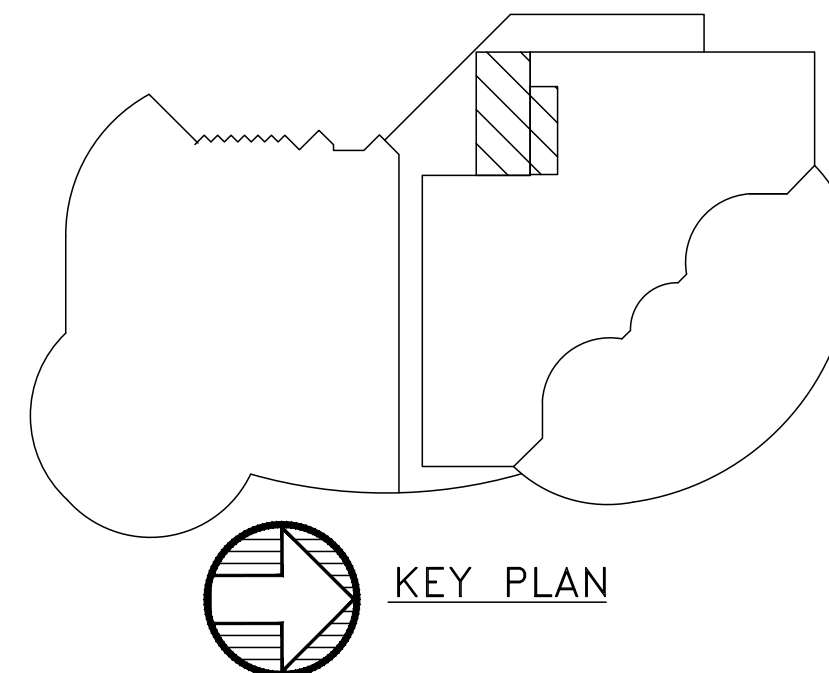
1 ENLARGED MECHANICAL ROOM UPPER PLAN - NEW WORK
M2.21 SCALE: 1/4" = 1'-0"

GENERAL NOTES:

- VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. DO NOT FABRICATE PIPING/DUCTWORK WITHOUT CONFIRMING SPACE EXISTS, FOR SIZES REQUIRED.
- COORDINATE ALL MECHANICAL AND CONTROL WORK WITH GENERAL CONTRACTOR, CONTROL CONTRACTOR, ELECTRICAL AND ARCHITECTURAL.
-

MECHANICAL KEYED NOTES:

- NEW PUMP AND INERTIA BASE. INSTALL ON NEW FLOOR PAD.
- NEW COOLING TOWER, MOUNT ON RIGID STRUCTURAL RAIL BASE. PROVIDE SEISMIC AND VIBRATION ISOLATION AT STRUCTURE. PROVIDE LADDER AND TOP RAILING TO MAINTENANCE PLATFORM ON SOUTH END FOR ACCESS ON TOP. SEE STRUCTURAL FOR INSTALLATION DETAILS.
- NEW PUMP AND INERTIA BASE. INSTALL ON EXISTING FLOOR PAD.
- NEW CHILLER: PROVIDE WITH SEISMIC SUPPORT AND SECURE TO NEW 6" HOUSEKEEPING PAD WITH VIBRATION ISOLATORS. PROVIDE VIBRATION ISOLATION ON ALL PIPE CONNECTIONS.
- EXISTING CHILLER, UPGRADE CONTROLS SEE SPECIFICATIONS.
- NEW CHEMICAL FEED ZONE LOOP BOOSTER PUMP. PROVIDE 55 GALLON CHEMICAL STORAGE TANKS AND CHEMICAL PUMP FEEDER PER SPECS. SEE SPECS FOR WATER TREATMENT REQUIREMENTS.
- NEW MOTORIZED CONTROL DAMPER FOR COOLING VENTILATION AND EMERGENCY VENTILATION SYSTEM.
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- NEW CHILLER ROOM NORMAL AND EMERGENCY EXHAUST FAN.
- EXHAUST AIR DUCT DOWN TO GRILLE, INSTALL GRILLE 6 INCH ABOVE FLOOR.
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- EXISTING REFRIGERANT SENSOR. CALIBRATE DEVICE.
- EXISTING HEAT EXCHANGER. REBALANCE FOR NEW FLOW.
- NEW CONDENSER WATER FILTRATION SYSTEM INCLUDING CENTRIFUGAL SEPARATOR, RECOVERY FILTER AND PUMP. INSTALL PUMP ON INERTIA BASE WITH VIBRATION ISOLATION. INSTALL THE CENTRIFUGAL SEPARATOR AND BAG FILTER HOUSING VERTICALLY ON LEGS WITH ANCHORS. THE SEPARATOR MUST BE ELEVATED TO ALLOW GRAVITY FLOW OF DRAIN LINE TO THE BAG FILTER INLET CONNECTION.
- NEW COOLING TOWER PROCESS WATER PIPING, REPLACE PIPING AS SHOWN.
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- REINSTALL (E) WALL ACCESS LOUVER TO MAINTAIN STRUCTURAL/SECURITY INTEGRITY OF EXISTING CONSTRUCTION. REPLACE SEALANTS/GASKETS TO PROVIDE A WATERTIGHT AND AIRTIGHT CONSTRUCTION.



Proj No: MFIA 9381

Drawn By: MG
Chkd By: SWM
DSN By: MG

OREGON CONVENTION CENTER CHILLER PLANT REDESIGN 777 NE Martin Luther King Jr Blvd, Portland, OR 97232 MECHANICAL UPPER ENLARGED PLAN - NEW WORK

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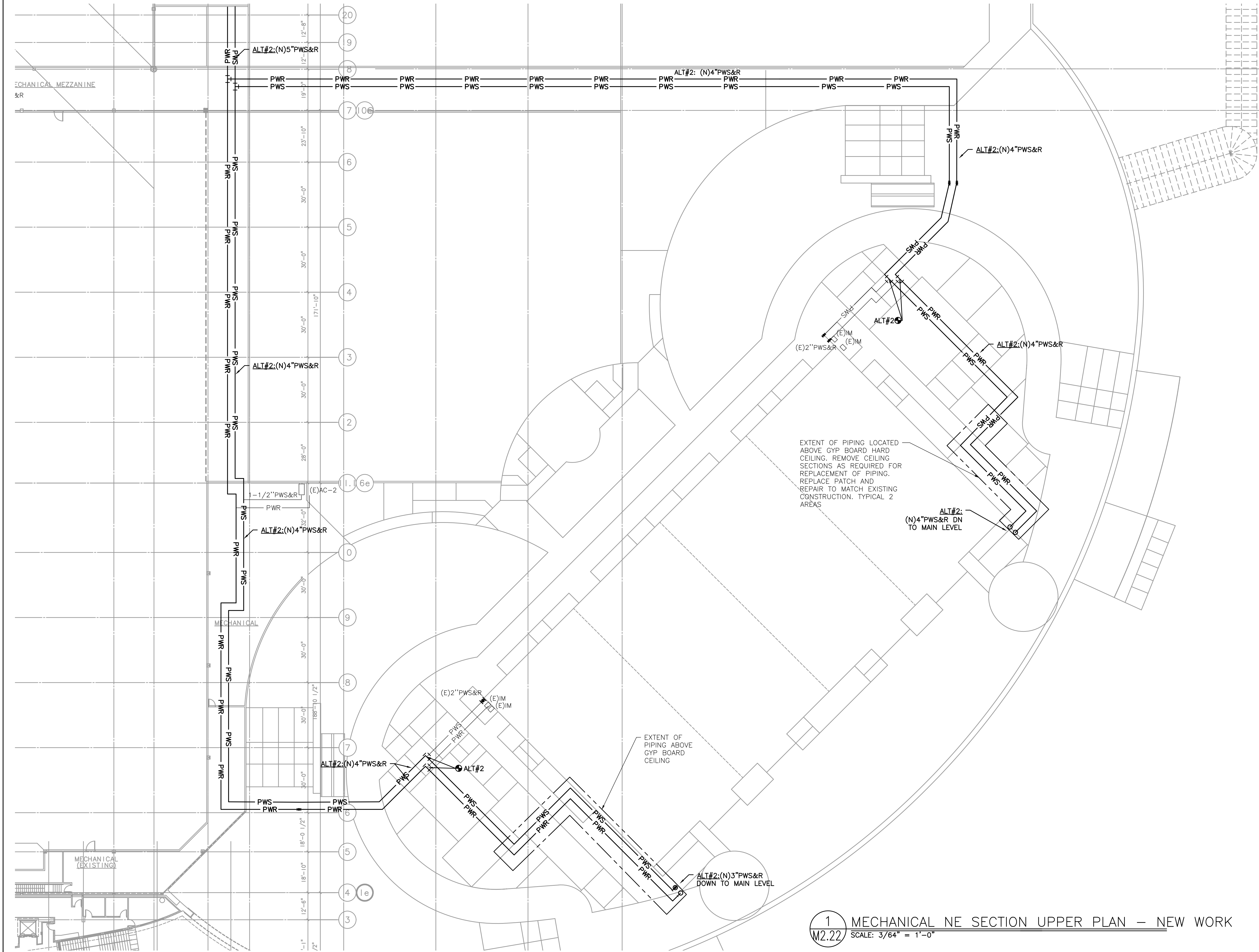


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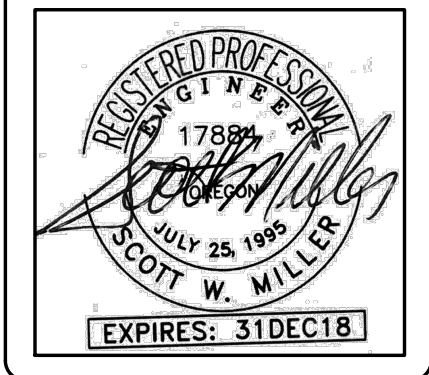
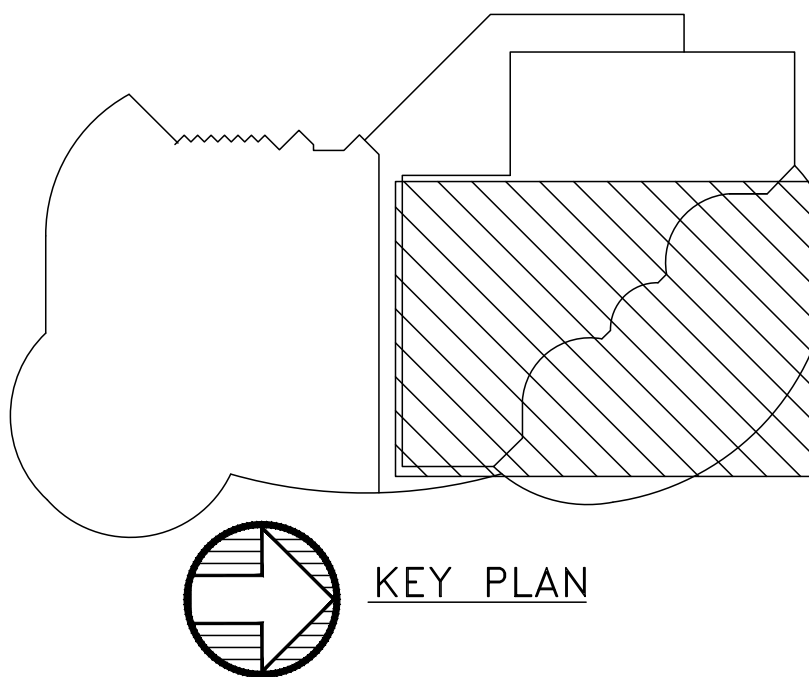
SHEET

M2.21

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1 MECHANICAL NE SECTION UPPER PLAN — NEW WORK
M2.22 SCALE: 3/64" = 1'-0"



Proj No:	MFA 9381
Drawn By:	MG
Chkd By:	SWM
DSGN By:	MG
REV A	05/09/18

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777 NE Martin Luther King Jr Blvd, Portland, OR 97232
NE SECTION UPPER PLAN — NEW WORK

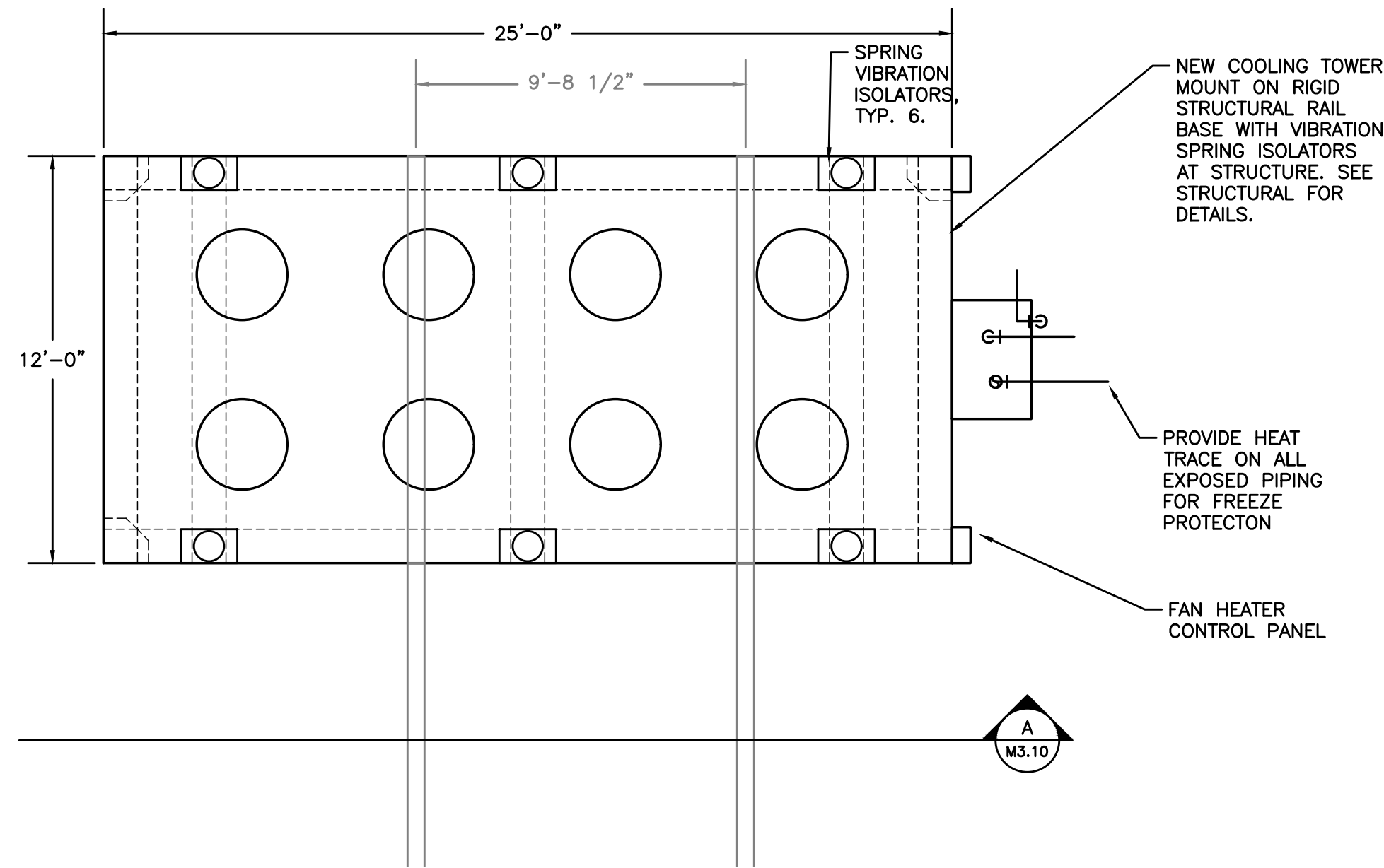
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Date:
JUNE 05, 2018



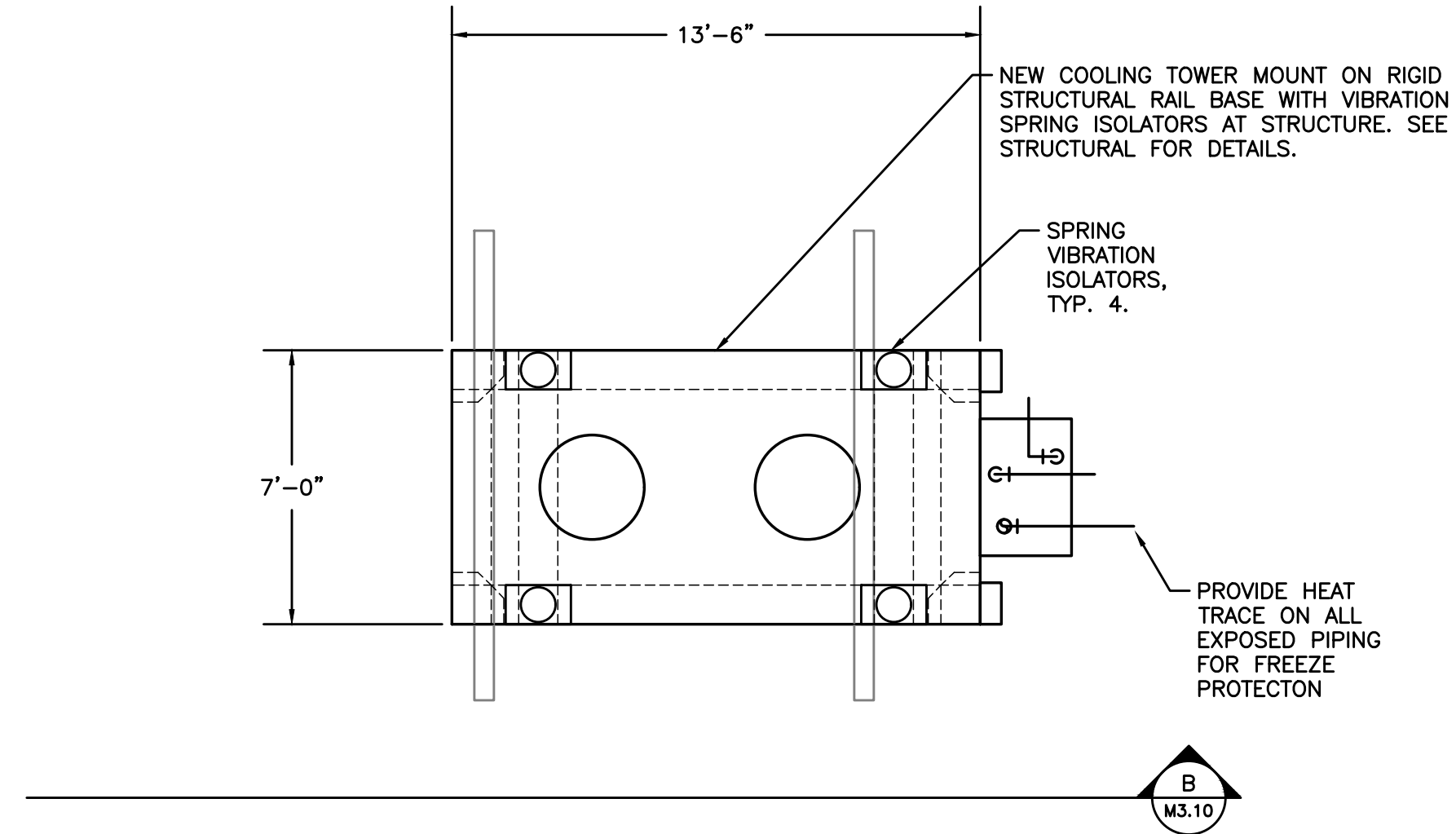
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SHEET
M2.22

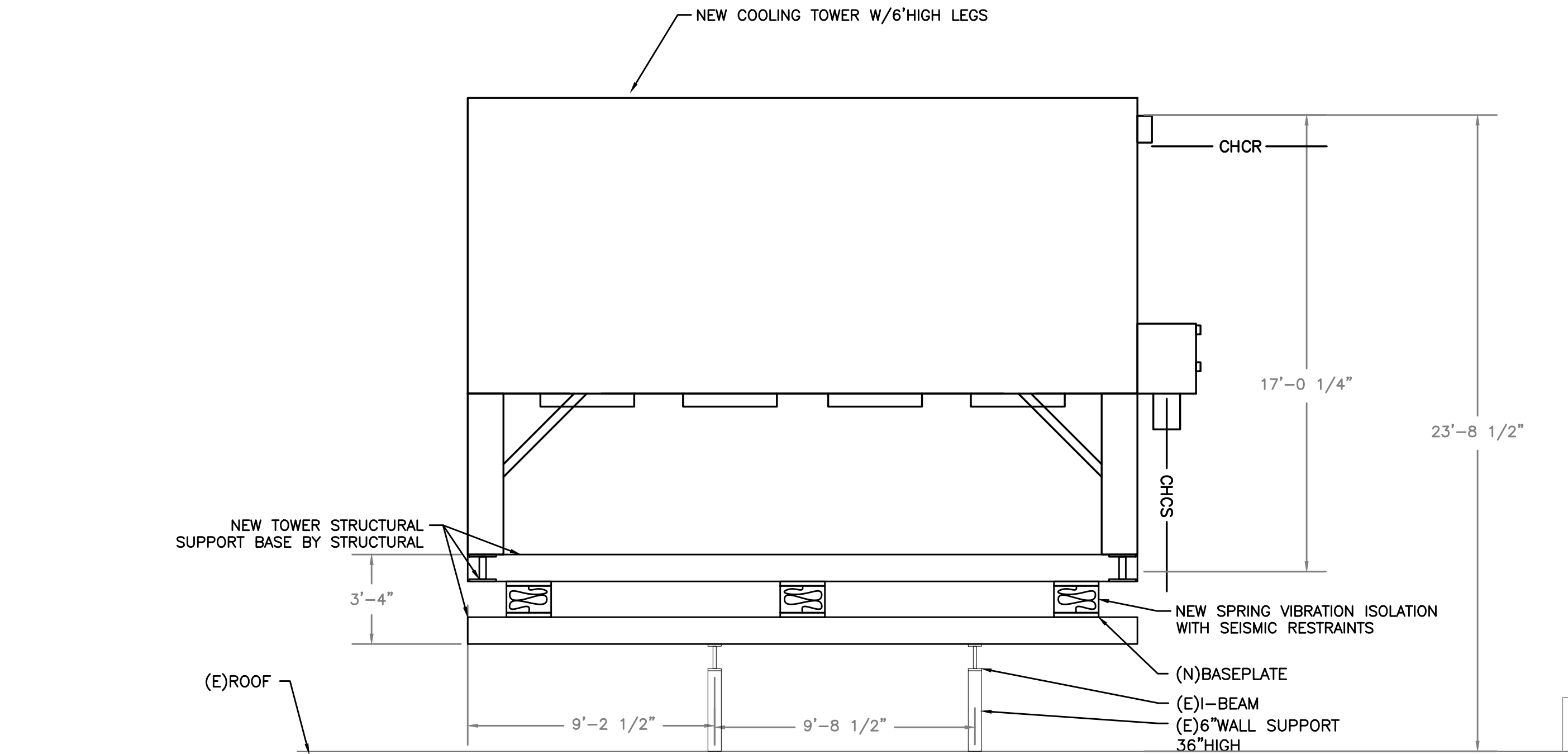
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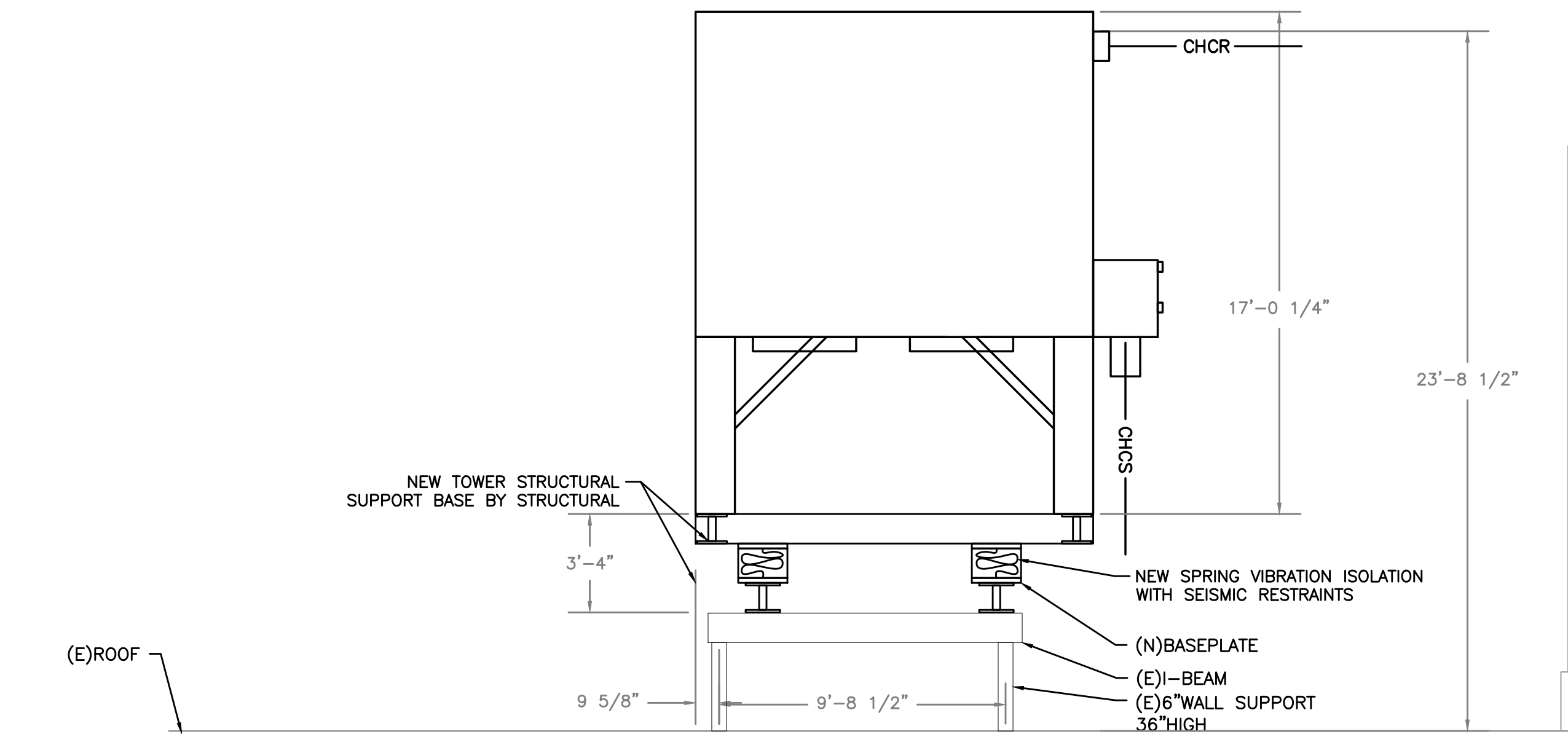
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M3.10 8-FAN COOLING TOWER INSTALLATION DETAIL
SCALE: 1/4" = 1'-0"



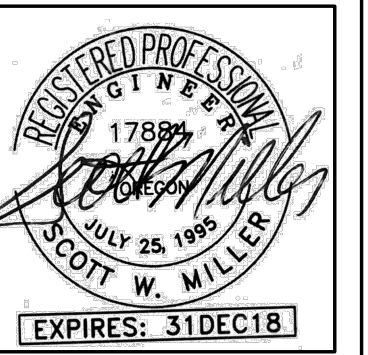
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M3.10 2-FAN COOLING TOWER INSTALLATION DETAIL
SCALE: 1/4" = 1'-0"



A
M3.10 COOLING TOWER INSTALLATION DETAIL
SCALE: 1/4" = 1'-0"



B
M3.10 COOLING TOWER INSTALLATION DETAIL
SCALE: 1/4" = 1'-0"



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MECHANICAL SECTIONS AND PLAN DETAILS

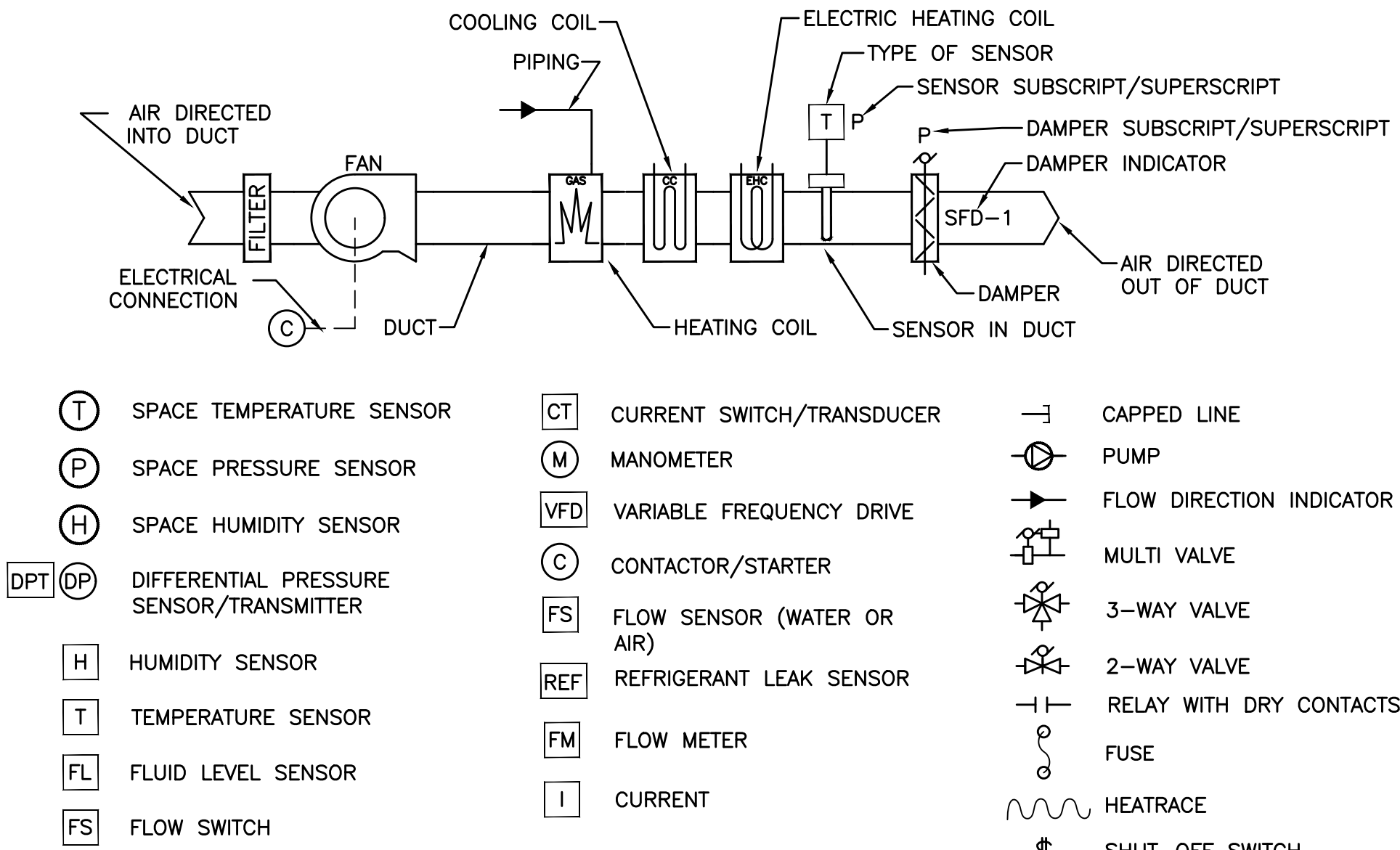
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M3.10

LEGEND



EQUIPMENT ABBREVIATIONS:

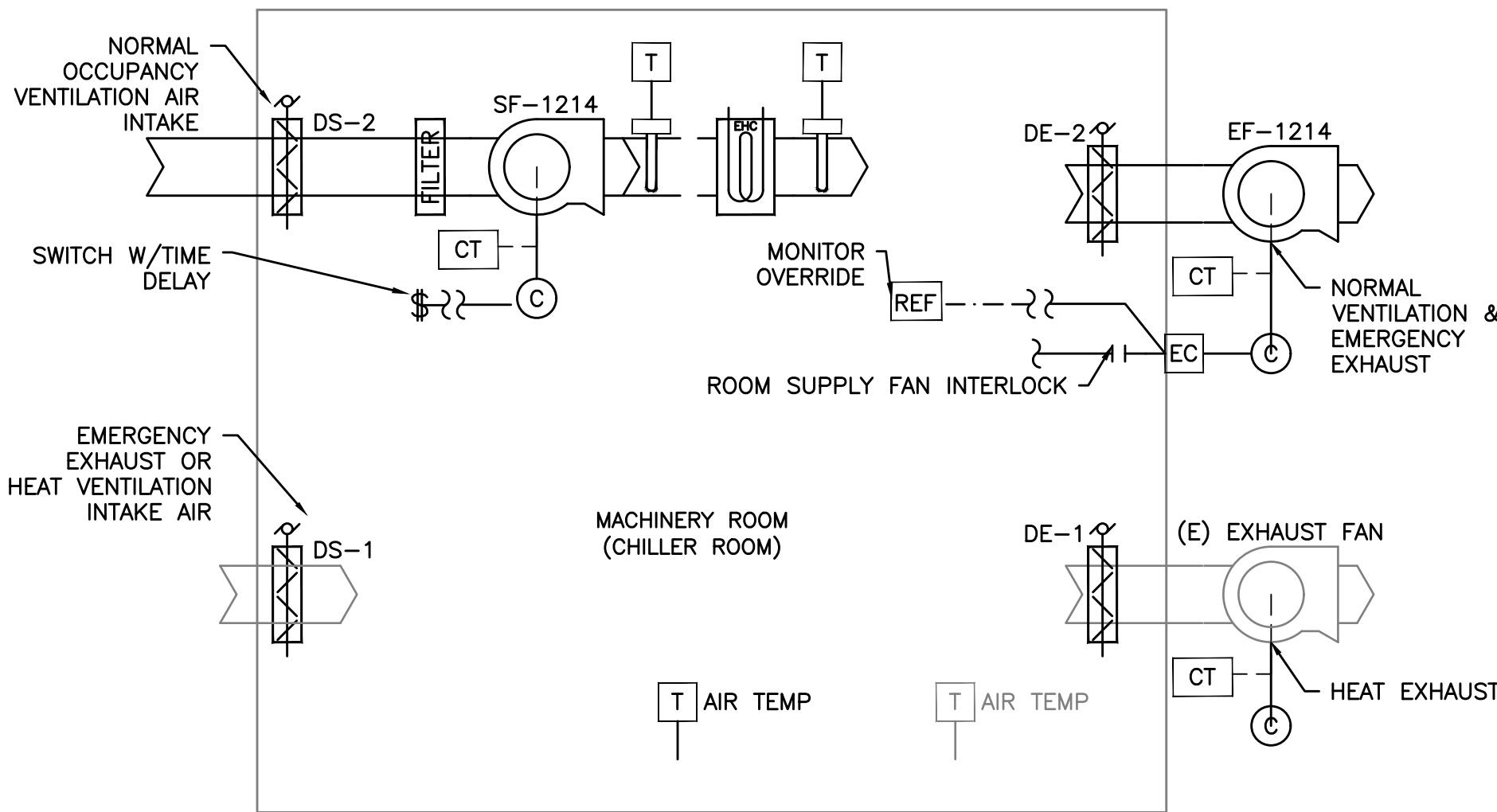
P - PUMP
CHP - CHILLED WATER PUMP
CDP - CONDENSING WATER PUMP
VFD - VARIABLE FREQUENCY DRIVE
CT - CONTACTOR
CH - CHILLER
B - BOILER
EF - EXHAUST FAN
RF - RETURN/RELIEF FAN
AH - AIR HANDLER
SD - SMOKE DAMPER
SFD - FIRE SMOKE COMBINATION DAMPER
H - HUMIDIFIER
V - VALVE
BAS - BUILDING AUTOMATION SYSTEM

PIPING ABBREVIATIONS:

CHS - CHILL WATER SUPPLY
CHR - CHILL WATER RETURN
CS - CONDENSER WATER SUPPLY
CR - CONDENSER WATER RETURN
HWS - HEATING WATER SUPPLY
CW - DOMESTIC COLD WATER
GPM - GALLONS PER MINUTE
DB - DOUBLE VALVE OPERATOR

AIR FLOW ABBREVIATIONS:

OSA - OUTSIDE AIR
RA - RETURN AIR
SA - SUPPLY AIR
EXH - EXHAUSTED AIR



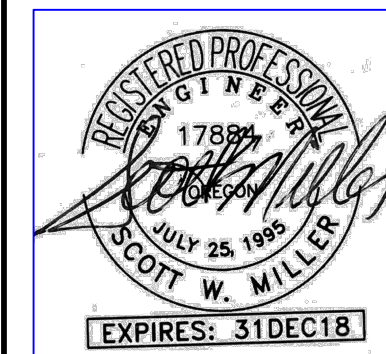
1 M5.01 MACHINERY ROOM HVAC CONTROLS SCHEMATIC

CONTROL INPUT/OUTPUT SCHEDULE

POINT NAME	HARDWARE POINTS				ALARM	TREND	SHOW ON GRAPHIC
	INPUT		OUTPUT				
	DIGITAL	ANALOG	DIGITAL	ANALOG			
5/M5.01 MACHINERY ROOM HVAC CONTROLS							
EXHAUST FAN, HEAT EXHAUST: EXISTING							
CONTROL DAMPER			X				
FAN START/STOP			X			COV	X
FAN STATUS PROOF	X				X		
DAMPER POSITON O/C	X					15 MIN	X
HIGH ZONE TEMP					X		
SUPPLY FAN W/ELECTRIC COIL AND FILTER: SF-1214							
DISCHARGE AIR TEMP		X				15 MIN	X
ELECTRIC COIL MODULATION					X	15 MIN	X
CONTROL DAMPER			X			COV	X
DAMPER POSITON O/C	X					15 MIN	X
SPACE TEMP		X				15 MIN	X
SUPPLY FAN STATUS	X					COV	X
SUPPLY FAN START/STOP			X			COV	X
FAN STATUS PROOF	X				X		
SCHEDULE							
SUPPLY AIR HEATING SETPOINT						+/-1 DEG F	X
SUPPLY FAN FAILURE					X		
SUPPLY FAN IN HAND					X		
SUPPLY FAN RUNTIME EXCEEDED					X		
HIGH DISCHARGE AIR TEMP					X		
EXHAUST FAN NORMAL AND EMRGENCY: EF-1214							
CONTROL DAMPER			X				
FAN START/STOP			X			COV	X
FAN STATUS PROOF	X				X		
DAMPER POSITON O/C	X					15 MIN	X
SWITCH ENABLE	X					COV	X
FAN SPEED				X		DCV	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
DVC - DIFFERENTIAL VALUE CHANGE FOR ANALOG POINTS



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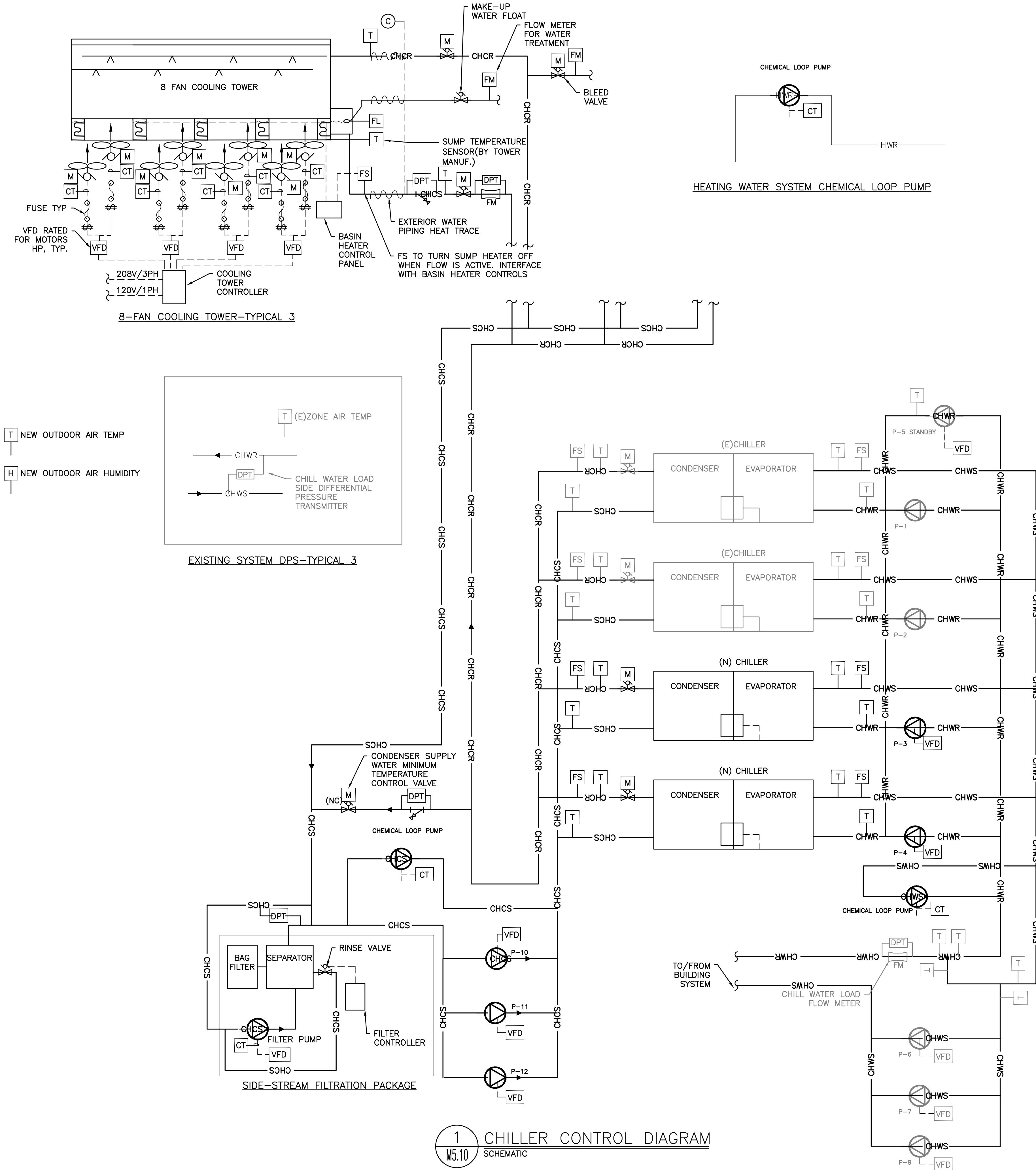
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MECHANICAL CONTROL DIAGRAMS

Issuance
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M5.01



1 CHILLER CONTROL DIAGRAM
M5.10 SCHEMATIC

CONTROL INPUT/OUTPUT SCHEDULE							
POINT NAME	HARDWARE POINTS				ALARM	TREND	SHOW ON GRAPHIC
	INPUT TO CONTROL		OUTPUT TO SYSTEM				
	DIGITAL DI	ANALOG AI	DIGITAL DO	ANALOG AO			
ENVIRONMENTAL CONDITIONS							
SCHEDULE							X
REFRIGERANT ALARM	X				X	DCV	X
CHEMICAL LOOP WATER PUMPS							
PUMP START/STOP (TYP 3)			X			COV	
PUMP STATUS (TYP 3)	X				X	COV	X
CHILL WATER SYSTEM STANDBY PUMP: P-5							
PUMP VFD START/STOP			X			COV	
PUMP VFD STATUS	X				X	COV	X
PUMP VFD SPEED CONTROL				X		DCV	X
CONDENSER WATER PUMPS: P-10, P-11, P-12							
PUMP VFD START/STOP (TYP 3)			X			COV	
PUMP VFD STATUS (TYP 3)	X				X	COV	X
PUMP VFD SPEED CONTROL (TYP 3)				X		DCV	X
CHILLED WATER PRIMARY PUMPS: P-3, P-4							
PUMP VFD START/STOP (TYP 2)			X			COV	X
PUMP VFD STATUS (TYP 2)	X				X	COV	X
PUMP VFD SPEED CONTROL (TYP 2)				X		DCV	X
COOLING TOWER 8 FAN: CT-1,-2,-3							
FAN STATUS (TYP 24)	X				X	COV	X
TOWER VFD SPEED CONTROL (TYP. 12)				X		DCV	X
TOWER VFD START/STOP (TYP.12)			X			COV	X
TOWER VFD STATUS (TYP.12)	X				X	COV	X
CONDENSER WATER SUPPLY TEMPERATURE (TYP.3)		X				15 MIN	X
CONDENSER WATER RETURN TEMPERATURE (TYP.3)		X				15 MIN	X
MAKE-UP WATER FLOW METER (TYP.3)		X				DCV	X
PIPING HEAT TRACE ON/OFF			X			COV	X
CS ISOLATION VALVE POSITION (TYP.3)	X					COV	X
CONDENSER WATER SUPPLY FLOW RATE (TYP.3)		X			X	DCV	X
CR ISOLATION VALVE POSITION (TYP.3)	X					COV	X
BASIN LOW WATER SWITCH (TYP.3)	X				X	COV	X
CS WATER FLOW SWITCH INDICATOR(TYP.3)		X			X	DCV	X
CR ISOLATION VALVE OPEN/CLOSE(TYP.3)			X			COV	X
CS ISOLATION VALVE OPEN/CLOSE(TYP.3)			X			COV	X
CONDENSER WATER PRESSURE DIFFERENTIAL		X				DCV	X
BLEED VALVE OPEN/CLOSE (TYP. 3)			X			COV	X
BLEED WATER FLOW METER (TYP.3)		X				DCV	X
CHILLERS: CH-3, CH-4							
ENABLE/DISABLE (TYP. 2)			X			COV	X
RESET SIGNAL (TYP. 2)		X					X
CHILLER ALARM (TYP. 2)						DCV	X
COMPRESSOR RUN TIME (TYP. 2)						DCV	X
CHILLER RUN TIME (TYP. 2)						DCV	X
CHILLER STATUS (TYP. 2)							X
CHILL WATER SUPPLY TEMPERATURE (TYP. 2)		X				15 MIN	X
CHILL WATER RETURN TEMPERATURE (TYP. 2)		X				15 MIN	X
CHILL WATER TEMPERATURE SETPOINT (TYP. 2)						+/-1 DEG F	X
CS WATER SUPPLY TEMPERATURE (TYP. 2)		X				15 MIN	X
CR WATER RETURN TEMPERATURE (TYP. 2)		X				15 MIN	X
CHILL WATER SUPPLY FLOW SENSOR (TYP. 2)		X				DCV	X
CS WATER FLOW SENSOR (TYP. 2)		X				DCV	X
CHILL WATER MINIMUM FLOWRATE (TYP. 2)		X				COV	X
CR ISOLATION VALVE OPEN/CLOSE (TYP.2)			X			COV	X
CR ISOLATION VALVE POSITION (TYP.2)	X					COV	X
CONDENSER WATER DISTRIBUTION							
CONDENSER WATER PRESSURE DIFFERENTIAL		X				DCV	X
CONDENSER WATER SUPPLY TEMP. SETPOINT						+/-1 DEG F	X
CS WATER MIN TEMP. CONTROL VALVE				X		DCV	X
WATER FILTER							
FILTER PRESSURE DIFFERENTIAL		X			X	DCV	X
RINSE VALVE POSITION INDICATOR	X					COV	X
CS WATER PRESSURE DIFFERENTIAL		X			X	DCV	X
PUMP STATUS	X				X	COV	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.							
DVC DIFFERENTIAL VALUE CHANGE FOR ANALOG POINTS.							



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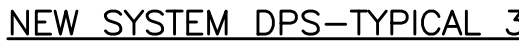
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MECHANICAL CONTROL DIAGRAMS

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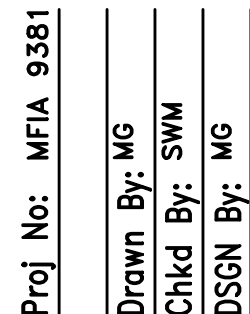


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SHEET
M5.10

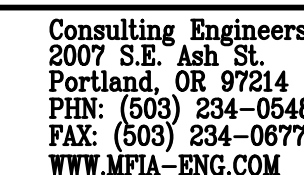


DEFINITIONS	
AI	ANALOG INPUT TO CONTROL
DI	DIGITAL INPUT TO CONTROL
AO	ANALOG OUTPUT TO SYSTEM
DO	DIGITAL OUTPUT TO SYSTEM
AV	ANALOG VALUE.
DVC	DIGITAL VALUE.
COV	CHANGE OF VALUE FOR DIGITAL POINTS.
DVC	DIFFERENTIAL VALUE CHANGE FOR ANALOG POINTS

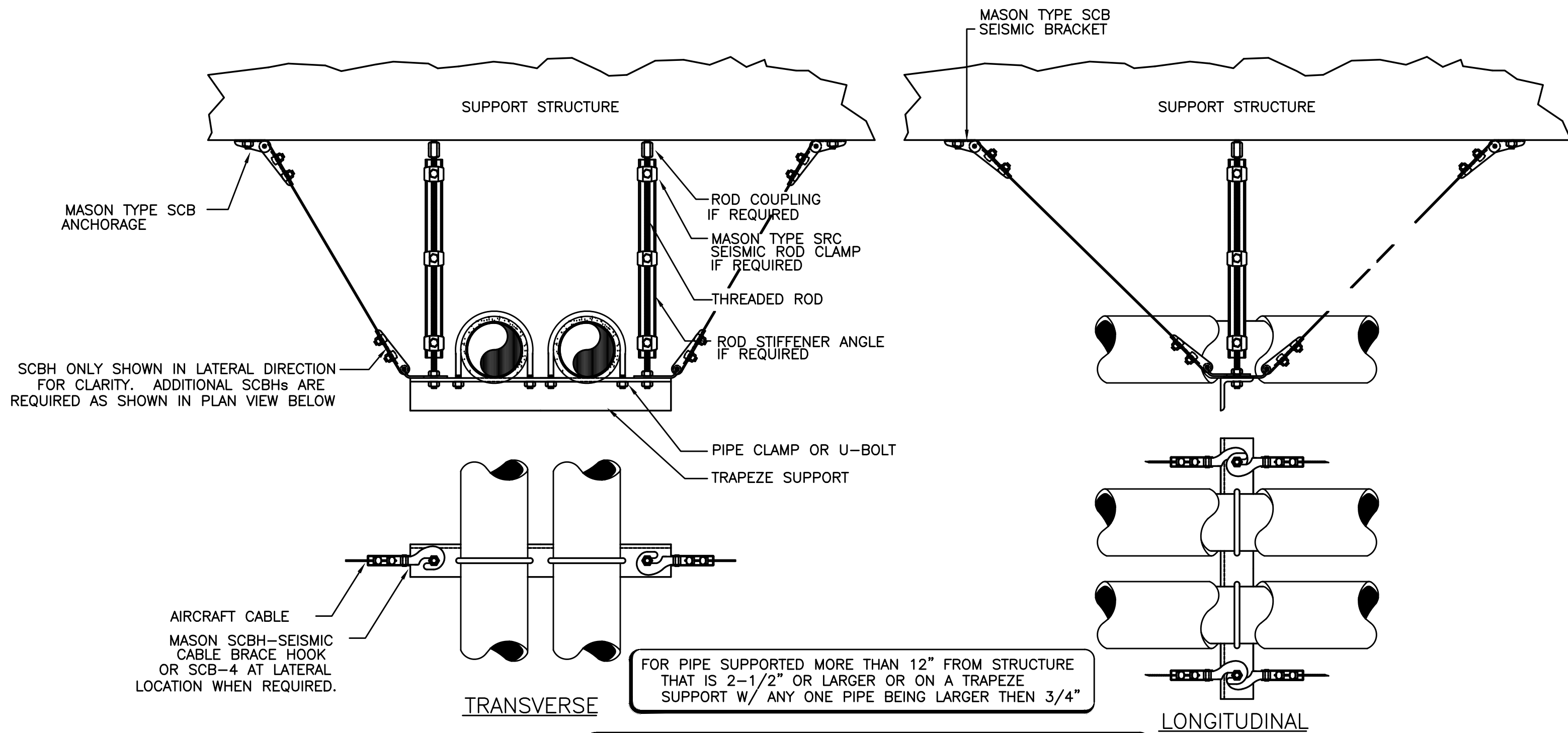


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CHILLER PLANT REDESIGN
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MECHANICAL CONTROL DIAGRAMS

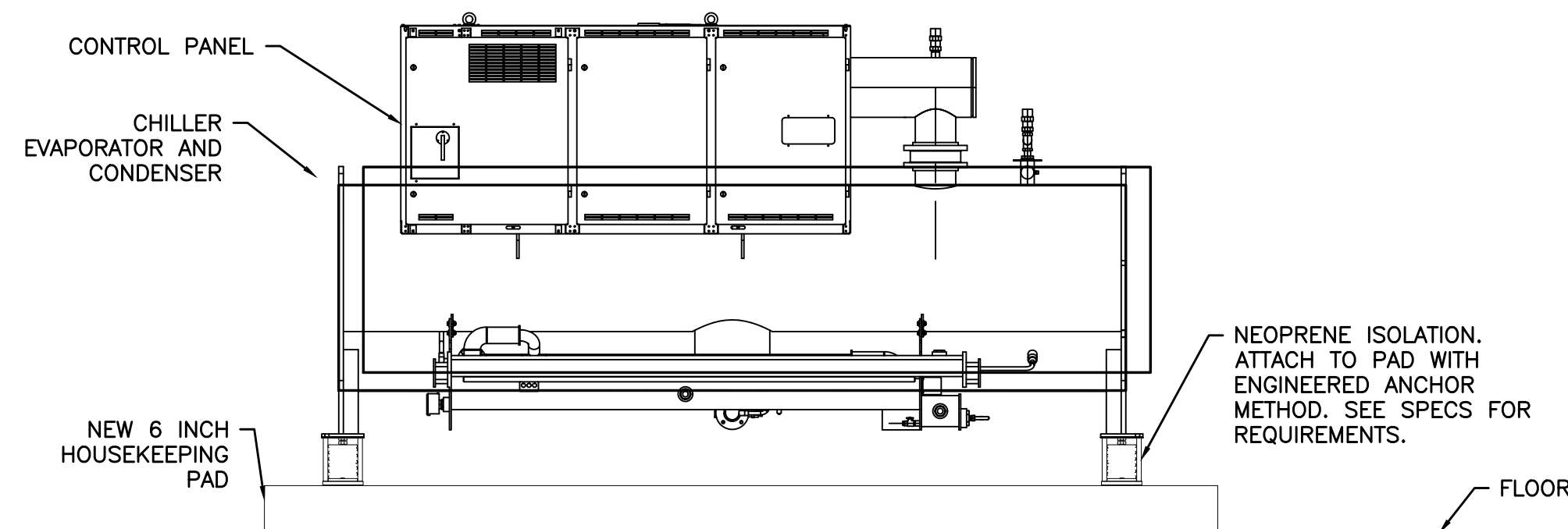
Date:
JUNE 05, 201



M5.11

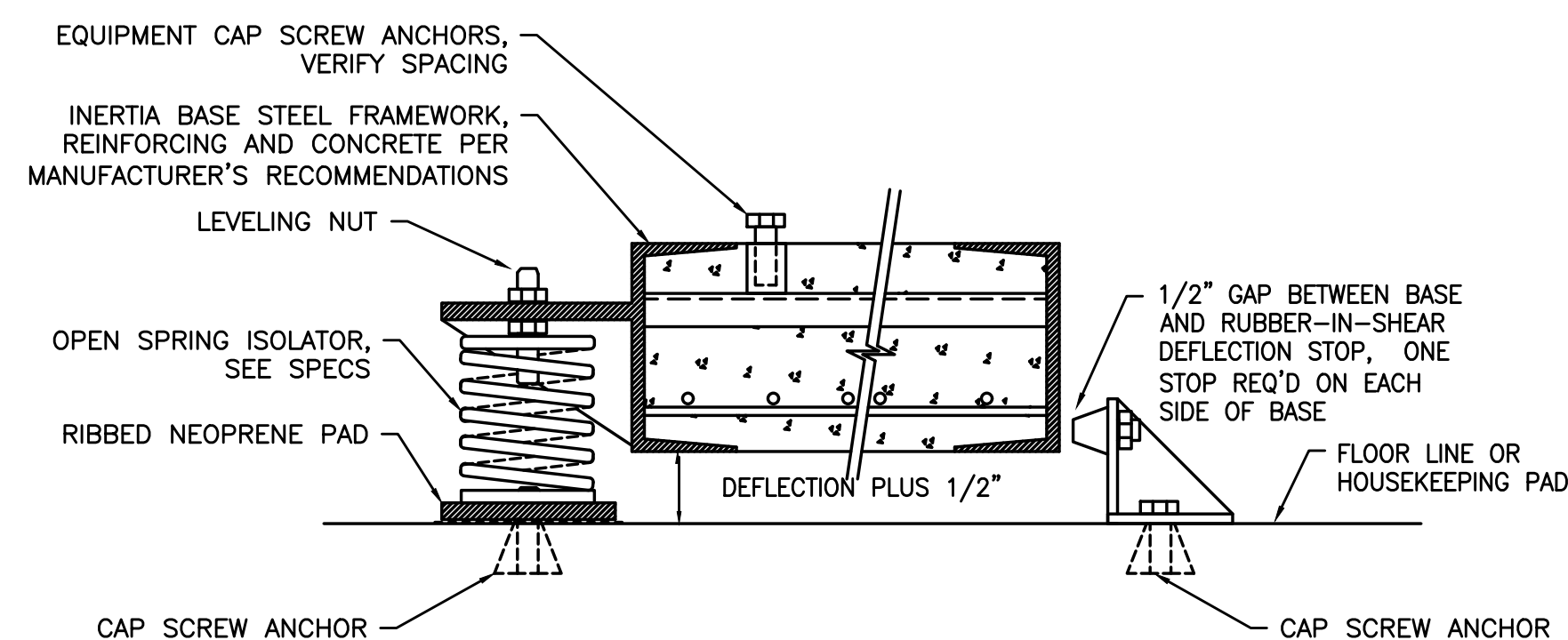


1 SEISMIC PIPE SUPPORT
SCALE: DETAIL

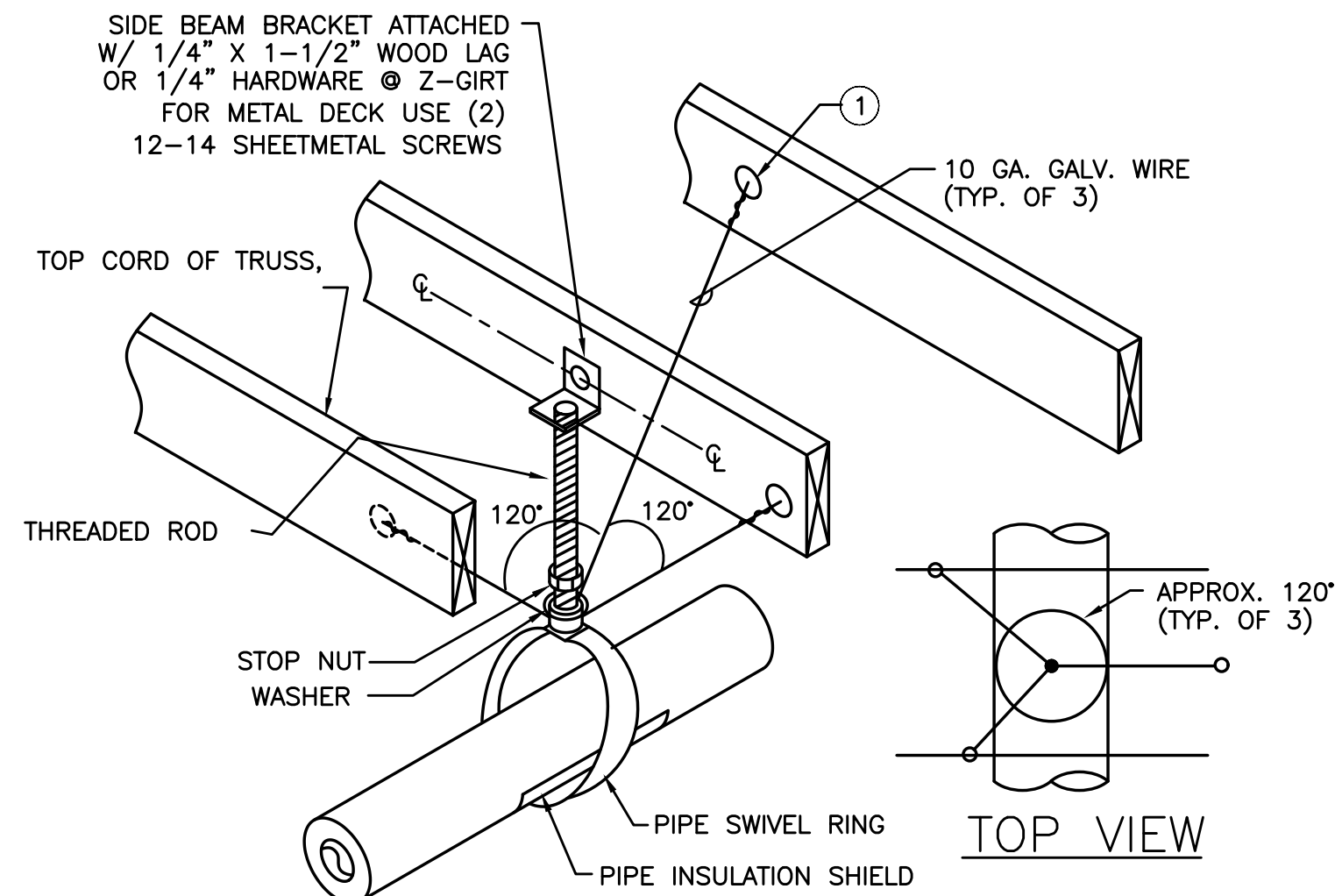


DETAIL NOTES:
1. PROVIDE FLEXIBLE PIPE CONNECTION TO CHILLER
2. PROVIDE REFRIGERANT RELIEF, CONNECT TO RUPTURE DISK OF EVAPORATOR AND PIPE TO ATMOSPHERE.

3 CHILLER DETAIL
SCALE: DETAIL



5 PUMP INERTIA BASE
SCALE: DETAIL

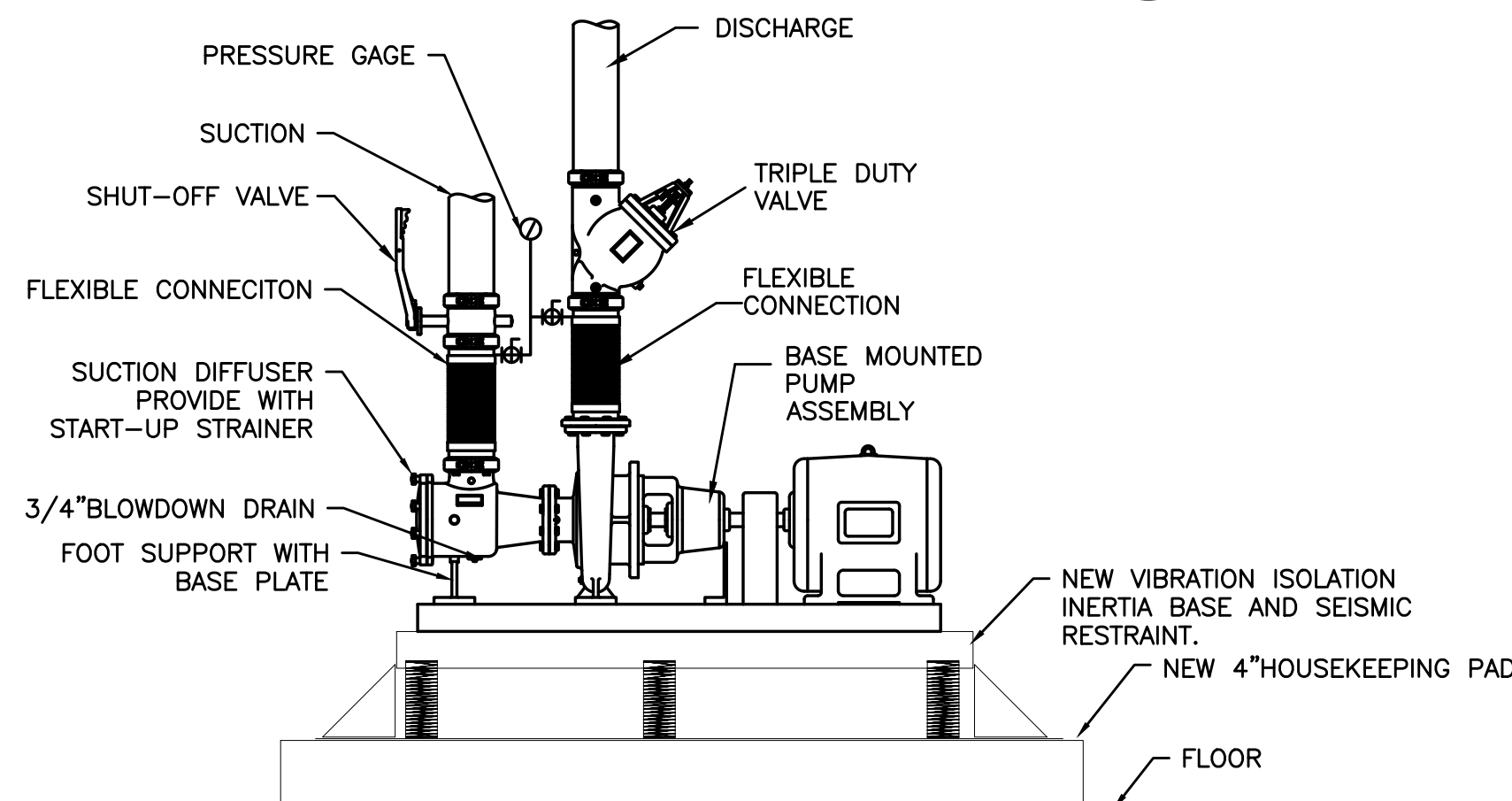


DETAIL NOTES

- 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

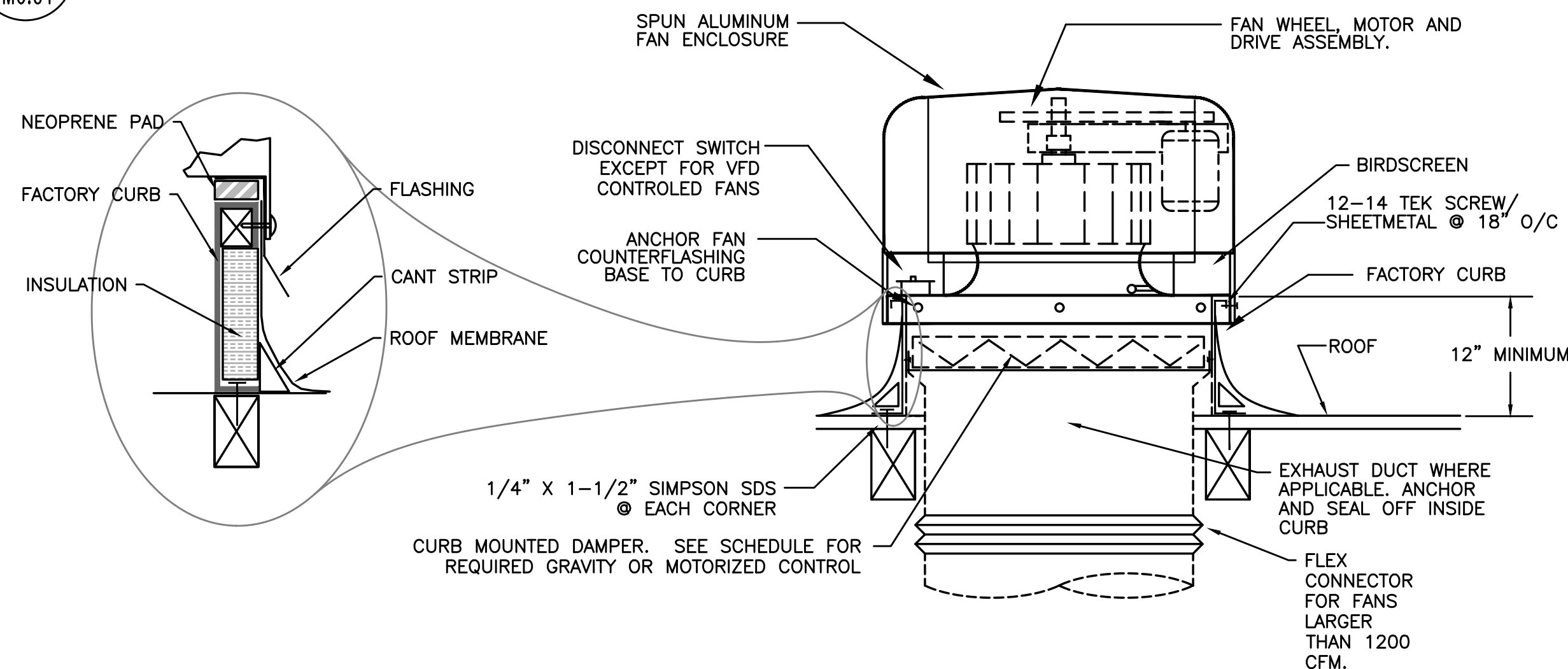
- FOR SINGLE 1-1/2" TO 3" STEEL LINES
- FOR SINGLE 2" COPPER LINES

2 PIPE SUPPORT
SCALE: DETAIL

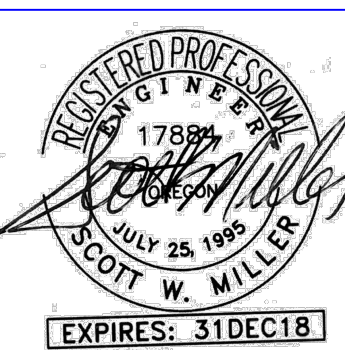


DETAIL NOTES:
1. PROVIDE PIPE FLEXIBLE CONNECTION.
2. SUPPORT PIPING INDEPENDENT OF PUMP, FIRST 3 HANGERS SHALL BE SPRING AND NEOPRENE TYPE, PROVIDE RIGID PIPE CONNECTORS FOR THE REST OF THE SUPPORTS.
3.

4 FLOOR MOUNTED PUMP DETAIL
SCALE: DETAIL



6 ROOF MOUNT EXHAUST FAN
SCALE: DETAIL



Proj No: MFIA 9381

Drawn By: MG

Chkd By: SWM

DSN By: MG

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MECHANICAL DETAILS

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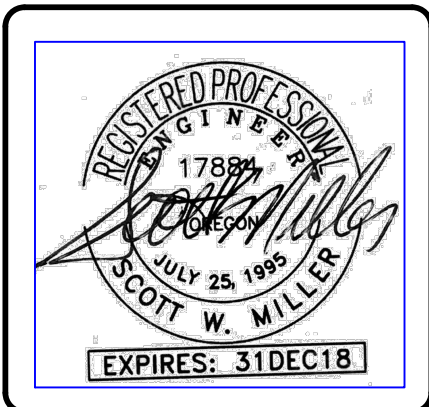
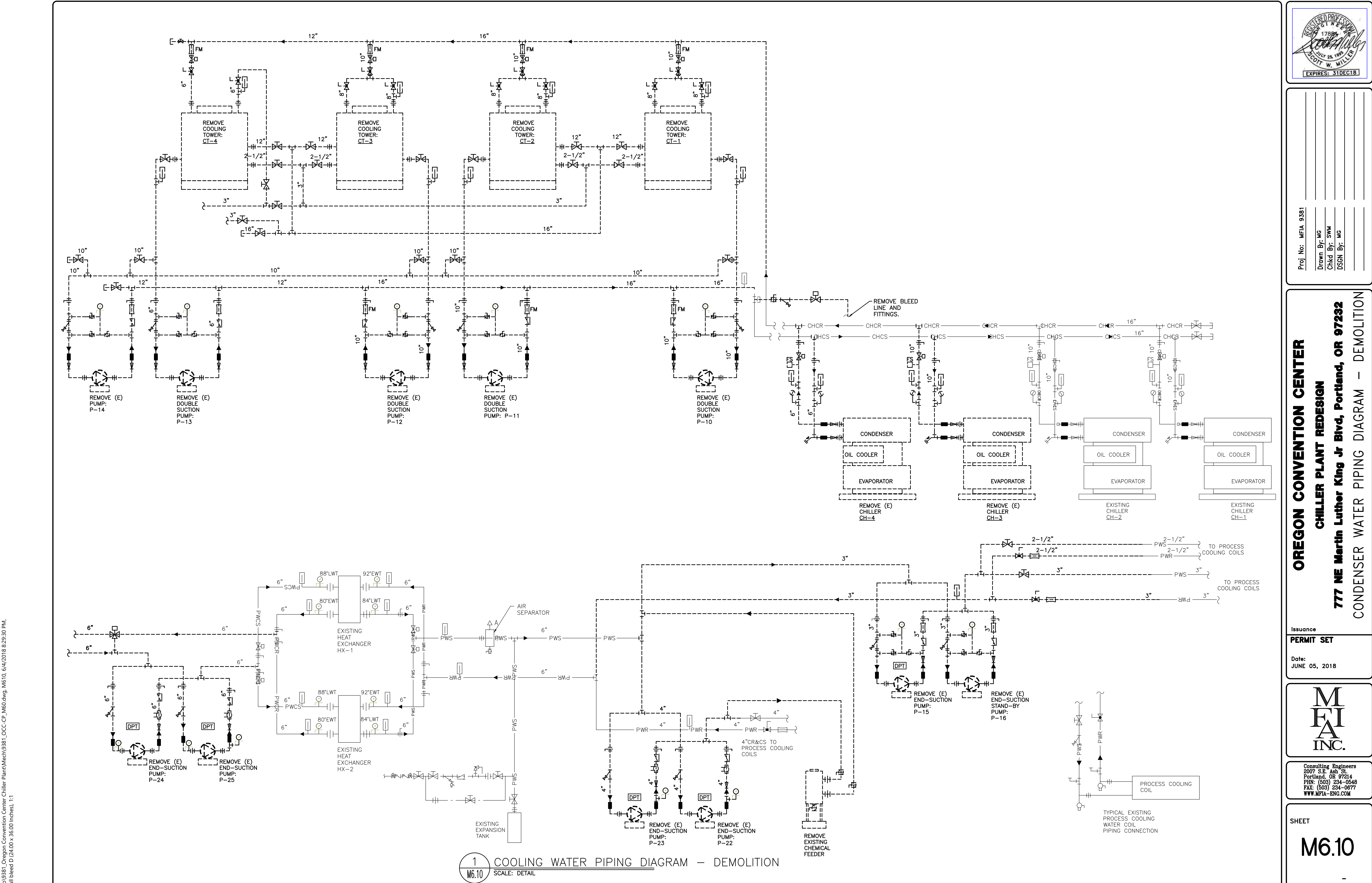
MFIA
INC.

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SHEET

M6.01

G:\Metro\9381_Oregon Convention Center Chiller Plant\Mech\9381_OCC_CP_M60.dwg, M610, 6/4/2018 8:25:30 PM, ARCH full bleed D (24.00 x 36.00 inches), 1:1



Proj No:	MFA 9381
Drawn By:	MG
Chkd By:	SWM
DSN By:	MG

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CONDENSER WATER PIPING DIAGRAM - DEMOLITION

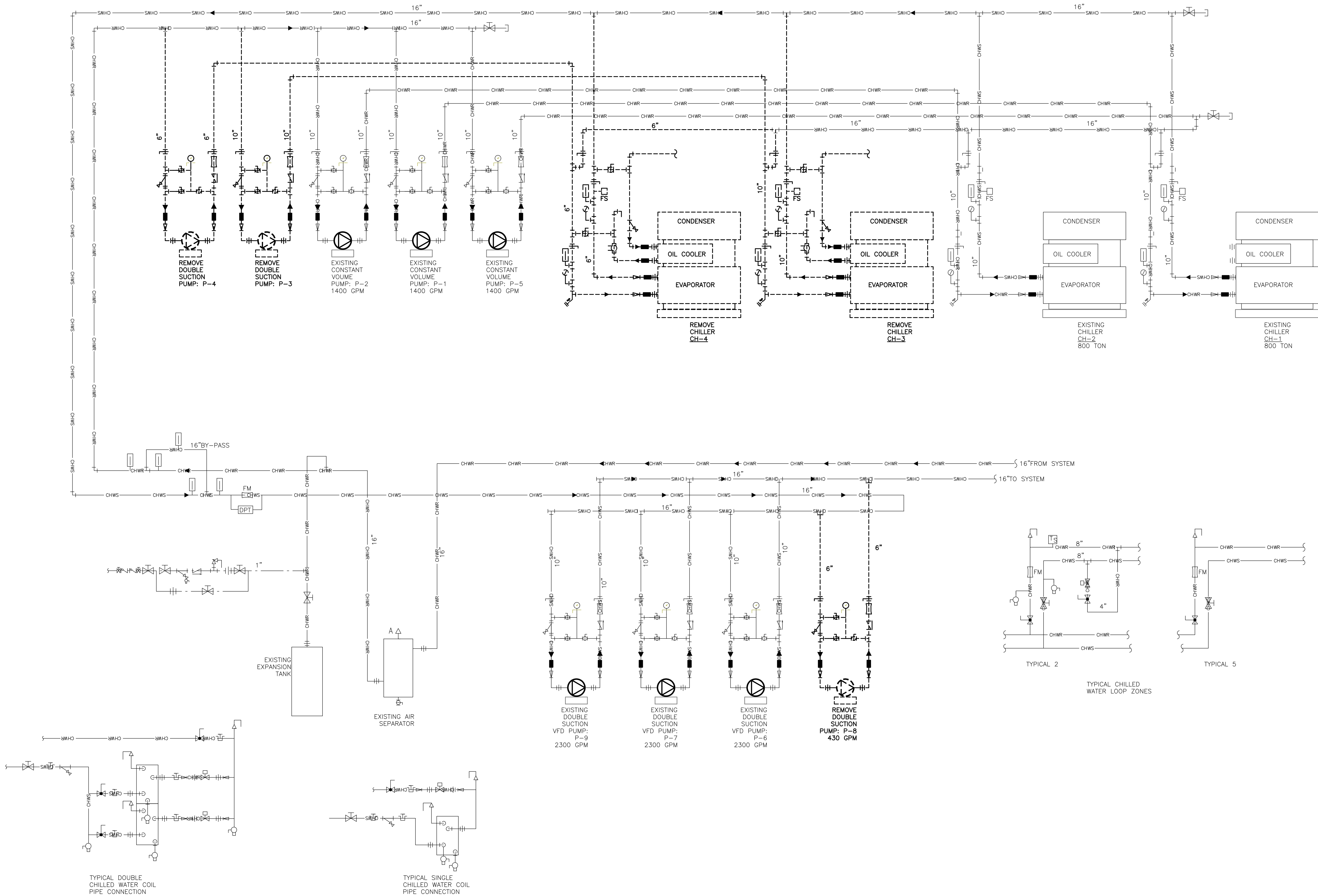
Issuance
PERMIT SET
Date:
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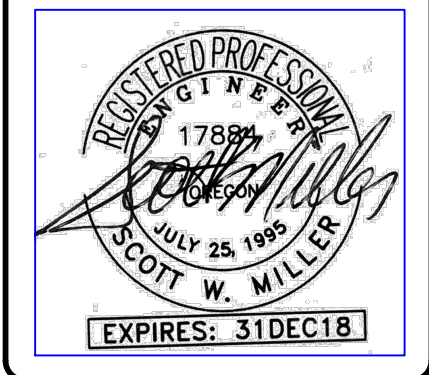
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M6.10

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1 CHILLED WATER PIPING DIAGRAM — DEMOLITION
M6.11 SCALE: DETAIL



Proj No: MFIA 9381
Drawn By: MG
Chkd By: SWM
DSN By: MG

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CHILLED WATER PIPING DIAGRAM—DEMOLITION

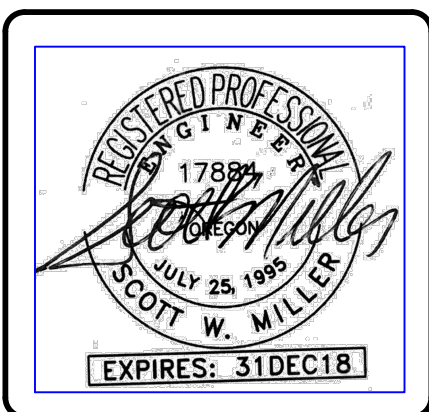
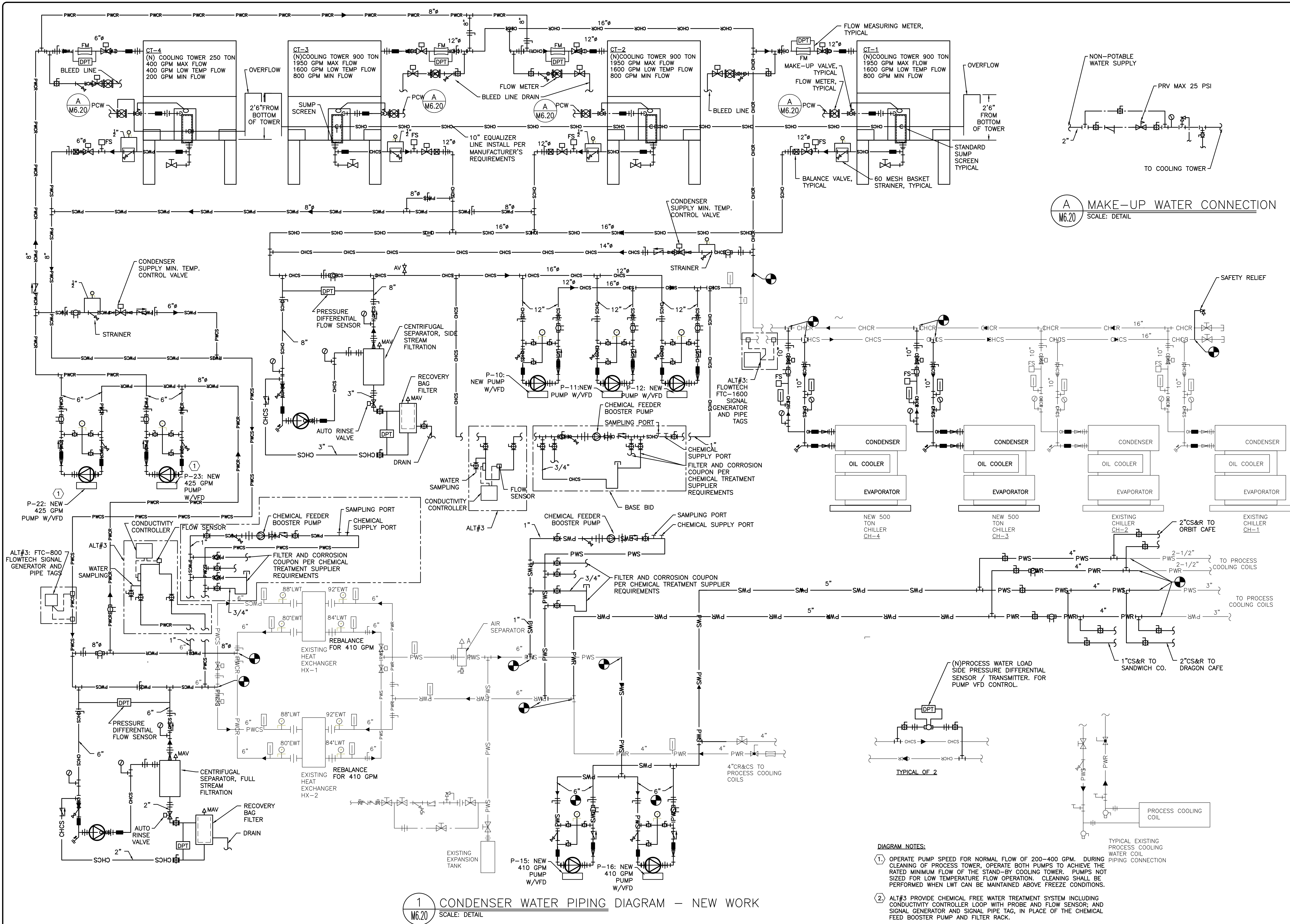
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M6.11

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Proj No:	MFA 9381
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Chkd By:	SWM
DSN By:	MG

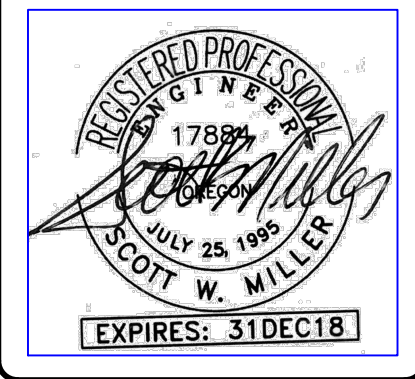
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CONDENSER WATER PIPING - NEW WORK

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SHEET
M6.20



Proj No: MFA 9381
Drawn By: MG
Chkd By: SWM
DSN By: MG

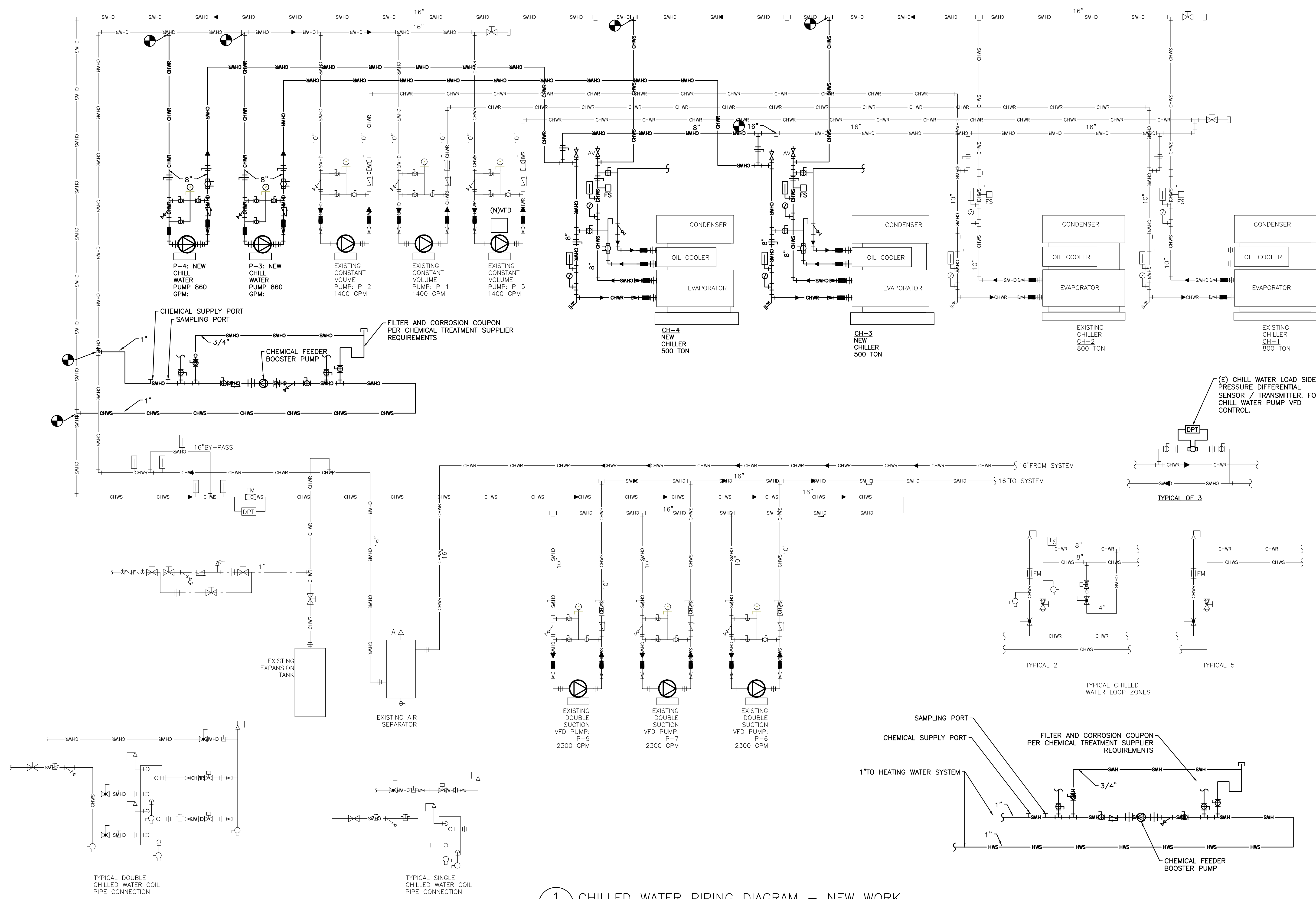
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SHEET
M6.21



1 CHILLED WATER PIPING DIAGRAM – NEW WORK
M6.21 SCALE: DETAIL