

POWER AND LIGHTING LEGEND					
ABBREVIATION OR SYMBOL	DESCRIPTION	ABBREVIATION OR SYMBOL	DESCRIPTION	ABBREVIATION OR SYMBOL	DESCRIPTION
<div>FIXTURE DESIGNATION</div> <div></div> <div>2x4 LAY-IN OR SURFACE MOUNTED FIXTURE; SHADING INDICATES EMERGENCY POWERED BATTERY</div> <div></div> <div>2x2 LAY-IN OR SURFACE MOUNTED FIXTURE; SHADING INDICATES EMERGENCY POWERED BATTERY</div> <div></div> <div>SURFACE OR STRIP FIXTURE</div> <div></div> <div>RECESSED STRIP FIXTURE; SHADING INDICATES EMERGENCY POWERED BATTERY</div> <div></div> <div>RECESSED DOWNLIGHT</div> <div></div> <div>RECESSED DOWNLIGHT; SHADING INDICATES EMERGENCY POWERED BATTERY</div> <div></div> <div>WALL-MOUNTED LINEAR FIXTURE</div> <div></div> <div>DOWNLIGHT FIXTURE</div> <div></div> <div>DOWNLIGHT FIXTURE. SHADING INDICATES EMERGENCY POWERED BATTERY</div> <div></div> <div>WALL-MOUNTED FIXTURE</div> <div></div> <div>EXIT SIGN; LED TYPE. DARKENED AREA INDICATES FACE, ARROWS INDICATE DIRECTION OF EGRESS</div> <div></div> <div>RECESSED ELECTRICAL PANEL WITH REQUIRED CLEARANCE</div> <div></div> <div>SURFACE MOUNTED ELECTRICAL PANEL WITH REQUIRED CLEARANCE</div> <div></div> <div>COMBINATION STARTER DISCONNECT SWITCH</div> <div></div> <div>NON FUSED DISCONNECT SWITCH</div> <div></div> <div>FUSED DISCONNECT SWITCH</div> <div></div> <div>MOTOR STARTER</div> <div></div> <div>ELECTRIC MOTOR, HORSEPOWER AS SHOWN.</div> <div></div> <div>JUNCTION BOX</div> <div></div> <div>SPECIALTY JUNCTION BOX WITH DESIGNATION "XYZ". REFER TO JBOX ABBREVIATION LEGEND.</div>		FLOOR BOXES		SWITCHES	
		FLOOR/WALL BOX WITH DESIGNATION "XYZ". REFER TO FLOOR/WALL BOX ABBREVIATION SCHEDULE.		S SINGLE POLE LIGHT SWITCH	
				S _M PADLOCKABLE HP RATED SWITCH	
		(1) (2) (3) (4)		S _X SPECIALTY SWITCH, FOR "X" DESIGNATION. SEE LIGHTING SWITCH ABBREVIATION SCHEDULE BELOW.	
		(6) (7) (8) (9)			
		POWER -- FLOOR/WALL BOX ABBREVIATION SCHEDULE		LIGHTING -- SWITCH ABBREVIATION SCHEDULE	
		POWER -- RECEPTACLE ABBREVIATION LEGEND		LIGHTING -- SENSOR ABBREVIATION SCHEDULE	
		ROOM CONTROLLERS / POWER PACKS		COMMUNICATIONS DEVICES	
		P ^{XX} SPECIALTY POWER PACK WITH DESIGNATION "XX". REFER TO ABBREVIATION LEGEND BELOW.			
		R ^{XX} SPECIALTY ROOM CONTROLLER WITH DESIGNATION "XX", REFER TO ABBREVIATION LEGEND BELOW.			
		LIGHTING -- ROOM CONTROLLER ABBREVIATION SCHEDULE			
DATA DEVICES					

1. SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS SHEET AND NOT BE UTILIZED ON THE PROJECTS.

WIRE TYPES

EQUIPMENT AND CONDUIT LINE TYPES

FURNISH + INSTALL NEW

EXISTING

DEMOLISH

UNDERGROUND CONNECT TO EXISTING

CONDUIT TYPE (SEE ABBREVIATIONS) REFER TO SPECIFICATIONS IF NOT SHOWN

CONDUIT SIZE

GROUNDED (NEUTRAL) CONDUCTOR, NUMBER AND SIZE

GROUNDED (NEUTRAL) CONDUCTOR, NUMBER AND SIZE

PHASE (HOT) CONDUCTOR, NUMBER & SIZE

NUMBER OF SETS

HOME RUN TO PANEL. LETTER(S) INDICATE NAME OF PANEL. NUMBER(S) INDICATE CIRCUIT NUMBERS.

ONE LINE SYMBOLS

CIRCUIT BREAKER, TRIP RATING SHOWN, 3-POLE UNLESS NOTED.

FUSE, CURRENT LIMITING, RATING AS SHOWN.

TRANSFORMER, RATINGS AS SHOWN.

ELECTRIC MOTOR, HORSEPOWER SHOWN.

MOTOR STARTER, SIZE AS SHOWN OR REQUIRED. FVNR UNLESS NOTED.

SURGE PROTECTION DEVICE.

GENERATOR

GROUNDING ROD, 3/4" x 10' MINIMUM, COPPER CLAD.

VARIABLE FREQUENCY DRIVE.

AUTOMATIC TRANSFER SWITCH

BROWN ENGINEERS LLC
No.1323
ARKANSAS ENGINEERS

ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16666
OSBORN GURIN

BROWN ENGINEERS

17200 Chenal Pkwy.
Suite 300 PMB 324
Little Rock, AR 72223
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TUCKER COLISEUM MECHANICAL
ROOM RENOVATION
ARKANSAS TECH UNIVERSITY
RUSSELVILLE, AR

ATU-002-T01

REV #	DESCRIPTION	DATE
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ISSUE DATE: 06/23/25

1"
ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

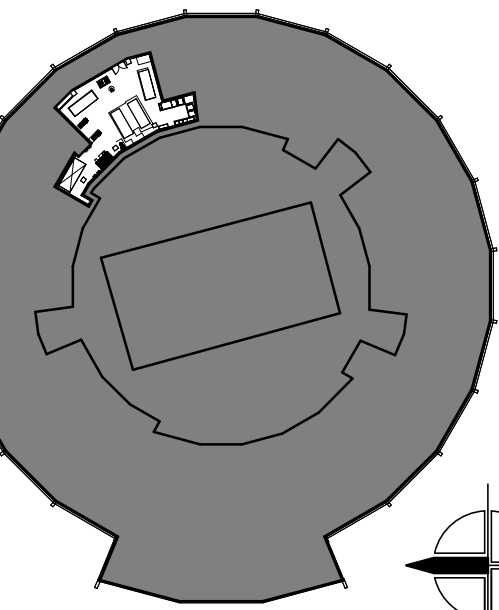
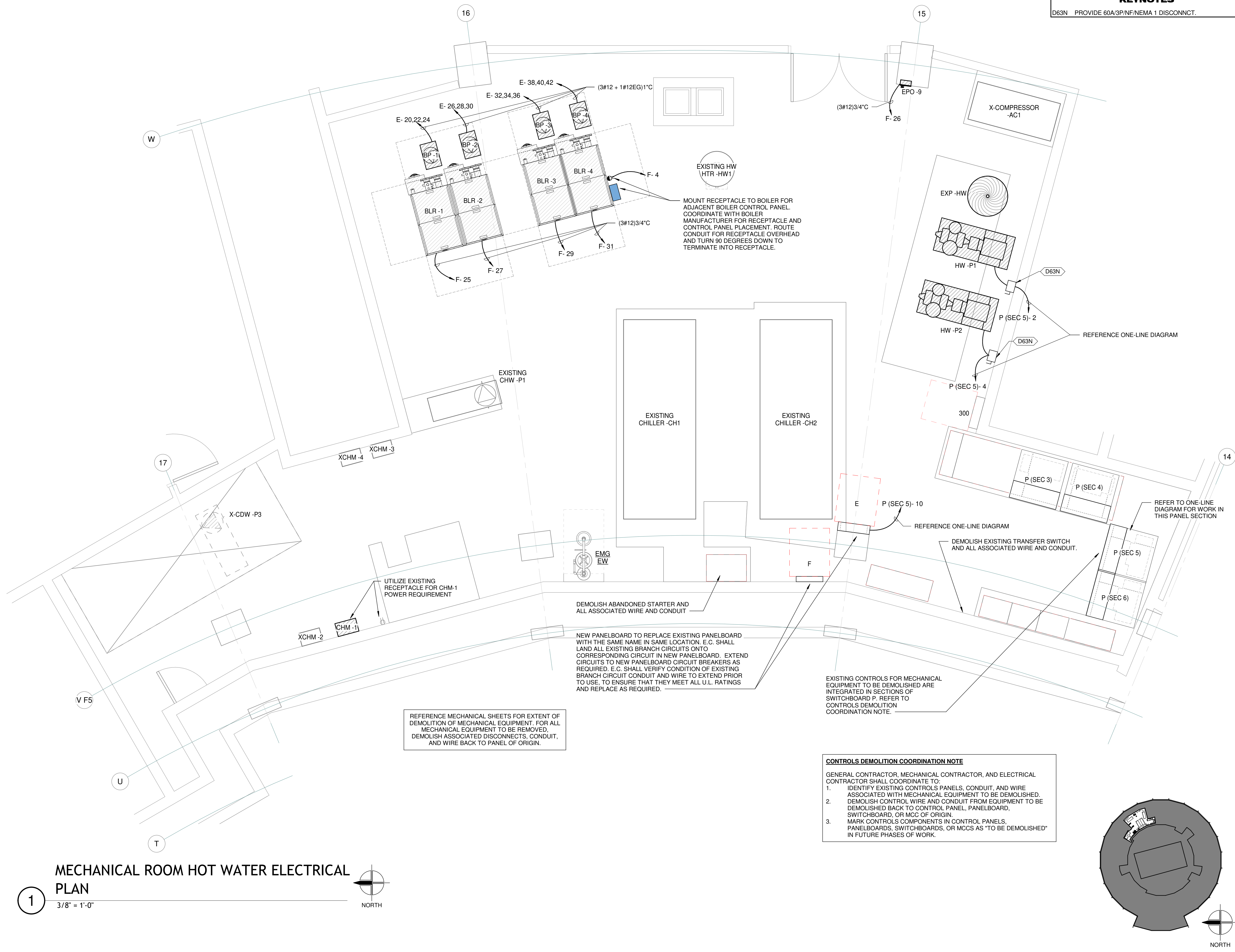
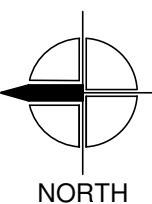
ELECTRICAL NOTES AND LEGENDS - PH1

E1.0

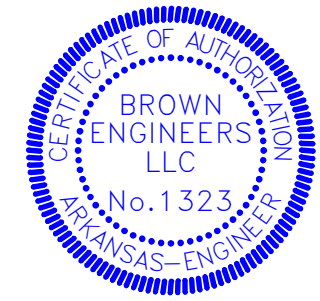
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MECHANICAL ROOM HOT WATER ELECTRICAL PLAN

3/8" = 1'-0"



KEYNOTES
D63N PROVIDE 60A/3P/NF/NEMA 1 DISCONNECT.



17200 Chenal Pkwy.
Suite 300 PMB 324
Little Rock, AR 72223
Phone 501-448-0100
www.browngineers.net

TUCKER COLISEUM MECHANICAL ROOM RENOVATION ARKANSAS TECH UNIVERSITY RUSSELVILLE, AR

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REV # DESCRIPTION DATE

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1"
ONE INCH AT FULL SIZE, IF NOT
ONE INCH SCALE ACCORDINGLY

MECH ROOM HW
ELECTRICAL PLAN

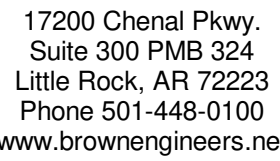
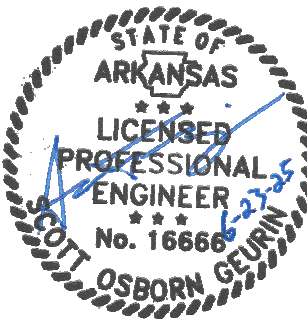
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Branch Panel: F																							
Location: MECH RM 33								Volts: 120/208 Vye				A.I.C. Rating: 22kA											
Supply From:								Phases: 3				Panel Rating: 100 A MLO											
Mounting: Surface								Wires: 4															
Enclosure: NEMA 1																							
Notes:																							
CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT										
1	*CONNECTED LOAD (9)	20 A	1	0.50			0.50			1	20 A	*CONNECTED LOAD (9)	2										
3	*CONNECTED LOAD (9)	20 A	1		0.50			0.18		1	20 A	BOILER CONTROL PANEL	4										
5	*CONNECTED LOAD (9)	30 A	1			0.50			0.50	1	20 A	*AIR DRYER	6										
7	*CHILLER CONTROLS	30 A	1	0.10			0.50			1	20 A	*RECIRCULATION PUMP	8										
9	*COOLING TOWER	20 A	1		0.50			0.10		1	20 A	*TREATMENT	10										
11	*HEAT TAPE COOLING TOWER	20 A	1			0.50			0.50	1	20 A	*PUMP P-4	12										
13	*PLUG (TELEPHONE POWER)	20 A	1	0.18			0.50			1	20 A	*CONNECTED LOAD (9)	14										
15	SPARE	20 A	1		0.00			0.50		1	20 A	*GOAL LIGHTS	16										
17	*PLUG SPOT LIGHT PLATFORM	20 A	1			0.18			0.50	1	20 A	*SUMP PUMP	18										
19				1.00			0.10			1	20 A	*AUTOMATION CONTROLS	20										
21	*CONNECTED LOAD (9)	60 A	3		1.00			0.18		1	20 A	*CAT 5 HUB	22										
23						1.00			0.18	1	20 A	*CABLE RACK	24										
25	BLR-1 (1)			1.27			0.10			1	20 A	GAS CONTROLLER (EPO-9)	26										
27	BLR-2 (1)	20 A	1		1.27			0.00		1	20 A	SPARE	28										
29	BLR-3 (1)	20 A	1			1.27			0.00	1	20 A	SPARE	30										
31	BLR-4 (1)	20 A	1	1.27			0.00			1	20 A	SPARE	32										
33	SPARE	20 A	1		0.00			0.00		1	20 A	SPARE	34										
35	SPARE	20 A	1			0.00			0.00	1	20 A	SPARE	36										
37	SPARE	20 A	1	0.00			0.00			1	20 A	SPARE	38										
39	SPARE	20 A	1		0.00			0.00		1	20 A	SPARE	40										
41	SPARE	20 A	1			0.00			0.00	1	20 A	SPARE	42										
Panel Totals																							
				PHASE A		PHASE B		PHASE C															
Total Load:				4.30 kVA		3.22 kVA		4.06 kVA															
Total Amps:				37 A		27 A		35 A															

Branch Panel: E																		
Location: MECH RM 33							Volts: 480/277 Wye											
Supply From: P (SEC 5)							Phases: 3											
Mounting: Surface							Wires: 4											
Enclosure: 1							A.I.C. Rating: 22kA											
							Panel Rating: 100 A MLO											
Notes:																		
CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT					
1	*EMERGENCY LIGHTS ARENA	20 A	1	0.50			0.50			1	20 A	*EMERGENCY LIGHTS ARENA	2					
3	*EMERGENCY LIGHTS ARENA	20 A	1		0.50			0.50		1	20 A	*EMERGENCY LIGHTS ARENA	4					
5	*EXIT LIGHTS	20 A	1			0.50			0.50	1	20 A	*EXIT LIGHTS	6					
7	*EXIT LIGHTS	20 A	1	0.50			0.50			1	20 A	*EXIT LIGHTS	8					
9	*CONNECTED LOAD (9)	20 A	1		0.50			0.50		1	15 A	*FIRE ALARM PANEL	10					
11	*CONNECTED LOAD (9)	20 A	1			0.50			--	1	--	SPACE	12					
13	SPARE	20 A	1	0.00			--			1	--	SPACE	14					
15	SPARE	20 A	1		0.00			--		1	--	SPACE	16					
17	SPARE	20 A	1			0.00			--	1	--	SPACE	18					
19	SPARE	20 A	1	0.00			0.58			3	20 A	BP-1 (1)	20					
21	SPARE	20 A	1		0.00			0.58					22					
23	SPARE	20 A	1			0.00			0.58				24					
25	SPARE	30 A	3	0.00			0.58			3	20 A	BP-2 (1)	26					
27					0.00			0.58					28					
29						0.00			0.58				30					
31	SPARE	20 A	3	0.00			0.58			3	20 A	BP-3 (1)	32					
33					0.00			0.58					34					
35						0.00			0.58				36					
37	SPARE	70 A	3	0.00			0.58			3	20 A	BP-4 (1)	38					
39					0.00			0.58					40					
41						0.00			0.58				42					
Panel Totals																		
				PHASE A		PHASE B		PHASE C										
Total Load:				4.33 kVA		4.33 kVA		3.83 kVA										
Total Amps:				16 A		16 A		14 A										
Total Conn. Load:				12.48 kVA														

[illegible]

- (1) INSTALL LOCKING DEVICE (LOCK-OFF FOR MAINTENANCE)
- (2) INSTALL LOCKING DEVICE (LOCK-ON FOR CRITICAL LOAD).
- (3) REFER TO SITE LIGHTING PLAN FOR WIRE SIZES.
- (4) PROVIDE GFI CIRCUIT BREAKER OR INLINE GFI FOR PERSONNEL PROTECTION (5 mA).
- (5) PROVIDE GFI CIRCUIT BREAKER OR INLINE GFI FOR EQUIPMENT PROTECTION (30 mA).
- (6) PROVIDE U.L. LISTED OVERCURRENT DEVICE TO COORDINATE AND MAINTAIN MANUFACTURER'S SERIES RATED SYSTEM.
- (7) EXISTING CIRCUIT TO REMAIN.
- (8) EXISTING CIRCUIT BREAKER TO REMAIN. VERIFY CONDITION OF CIRCUIT BREAKER TO ENSURE THAT IT IS OPERATIONAL AND MEETS ALL U.L. RATINGS.
- (9) TRACE EXISTING CIRCUIT, IDENTIFY LOAD AND PROVIDE TYPEWRITTEN PANELBOARD SCHEDULE AND PLACE ON INTERIOR OF PANELBOARD DOOR. IF CIRCUIT IS A "SPARE", REFER TO NOTE (8).
- (10) PROVIDE A NEW 450A TRIP UNIT.



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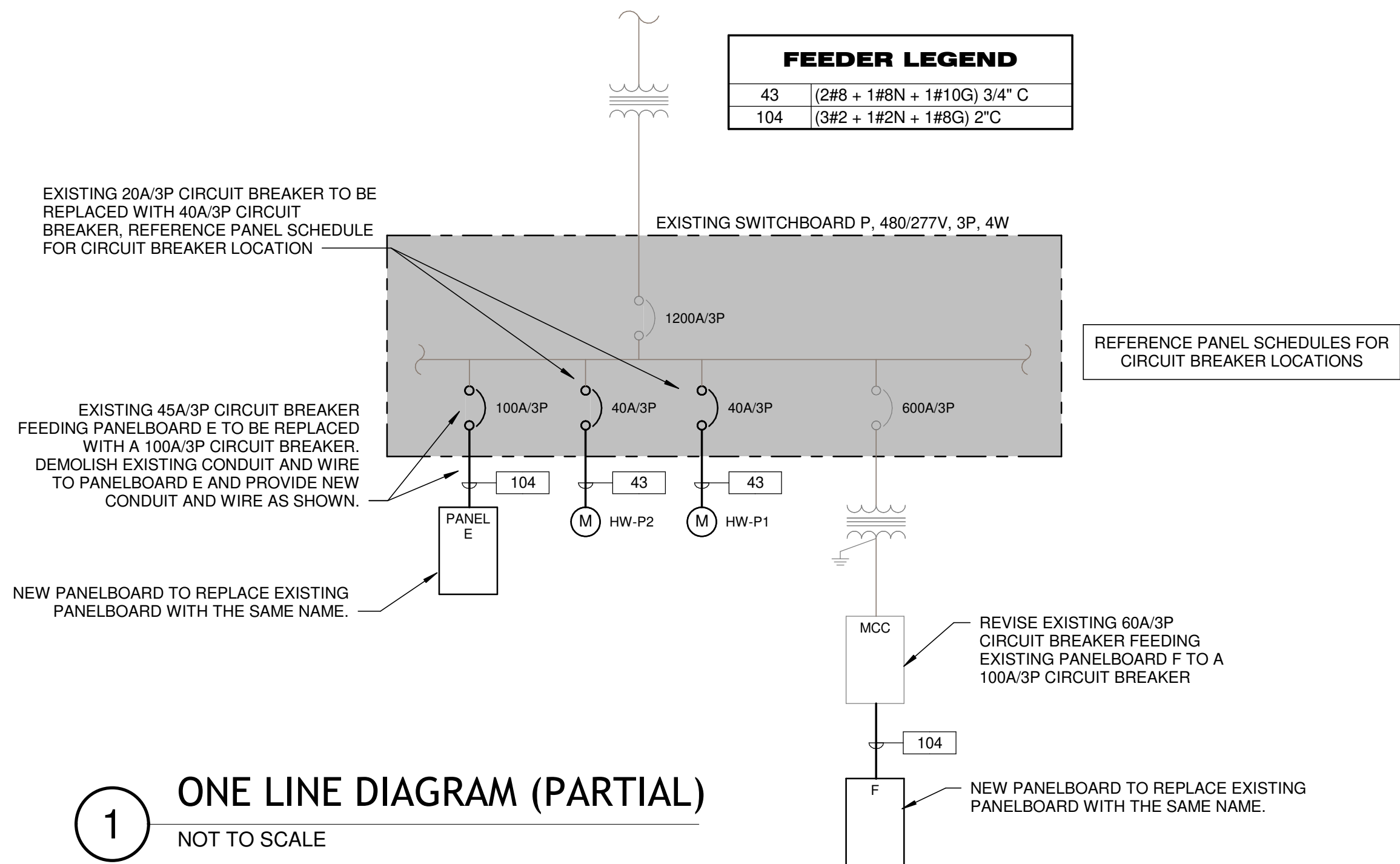
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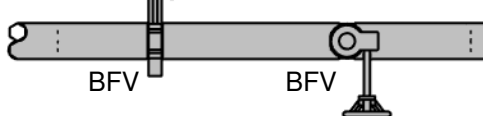

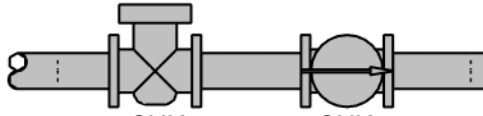

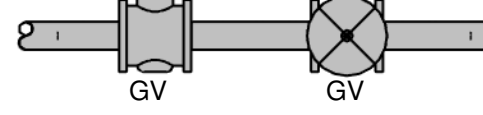

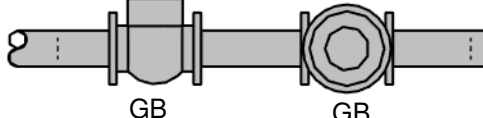

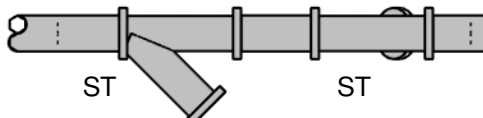

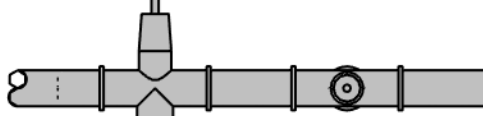























E3.0



1 ONE LINE DIAGRAM (PARTIAL)
NOT TO SCALE




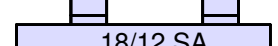
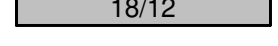
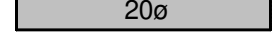
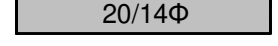
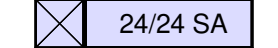
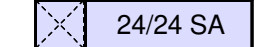
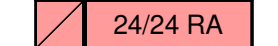
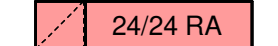
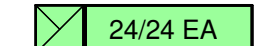
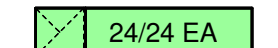

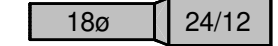



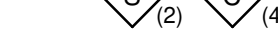




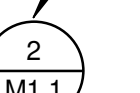





PIPING PLAN REPRESENTATION

ABBREVIATION OR SYMBOL	DESCRIPTION	ABBREVIATION OR SYMBOL	DESCRIPTION
PIPING SYSTEMS / DESIGNATIONS		PIPE VALVING / ABBREVIATIONS	
	CONDENSATE DRAIN		BALL VALVE
	PUMPED CONDENSATE DRAIN		BUTTERFLY VALVE (lever operator)
	CHILLED WATER SUPPLY		BUTTERFLY VALVE (wheel operator)
	CHILLED WATER RETURN		CHECK VALVE
	HOT WATER SUPPLY		GATE VALVE
	HOT WATER RETURN		GLOBE VALVE
	CONDENSER WATER SUPPLY		STRAINER (Y-TYPE)
	CONDENSER WATER RETURN		3-WAY CONTROL VALVE
	MAKE-UP WATER		2-WAY CONTROL VALVE
	REFRIGERANT PIPING	PIPING - PHASING AND GRAPHICS	
	FUEL OIL SUPPLY		BELOW GRADE PIPING (fine dash)
	FUEL OIL RETURN		EXISTING PIPING TO REMAIN (refer to system abbreviation)
	FUEL OIL VENT		EXISTING TO BE REMOVED (back to point indicated)
WATER & GAS PIPING			CONNECT TO EXISTING
	PIPE DOWN	* NOT ALL SYMBOLS MAY APPLY TO THIS PROJECT	
	PIPE UP		
	THREADED TEE DOWN		
	THREADED TEE UP		
	BRANCH - BOTTOM OF PIPE		
	BRANCH - TOP OF PIPE		
	ELBOW		
	45 DEGREE ELBOW		
	TEE / TAP		
	CAP		
	UNION / TRANSITION		

DEMOLITION AND RENOVATION GENERAL NOTES:

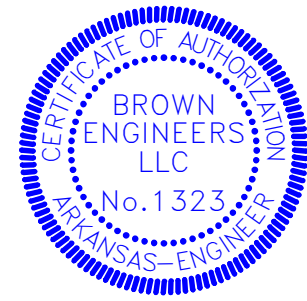
- THE MECHANICAL RELATED DEMOLITION WORK INDICATED ON THE PLANS, SPECIFICATIONS, AND NOTES IS TO BE CLOSELY COORDINATED WITH THE OWNER'S REPRESENTATIVE. NO DEMOLITION SHALL TAKE PLACE IN ANY AREA OR BUILDING UNTIL THE CONTRACTOR HAS BEEN GIVEN APPROVAL TO PROCEED IN THAT SPECIFIC LOCATION. REFER TO ARCHITECTURAL DEMOLITION DRAWINGS FOR ADDITIONAL INFORMATION AND DEMOLITION SCOPE OF WORK.
- IF, DURING DEMOLITION, IT BECOMES NECESSARY TO TEMPORARILY REMOVE ANY EQUIPMENT, PIPING, OR OTHER SYSTEM WHICH IS NOT SPECIFICALLY NOTED TO BE REMOVED (THEREBY IMPLYING THAT THEY ARE TO BE LEFT FOR FUTURE USE), THE CONTRACTOR SHALL REINSTALL SAID SYSTEMS TO FULLY OPERABLE CONDITION IN THEIR ORIGINAL LOCATIONS.
- ALL DEMOLITION WORK SHALL BE SCHEDULED WITH THE OWNER'S REPRESENTATIVE AT LEAST 48 HOURS PRIOR TO THE WORK.
- PATCH ALL OPENINGS IN WALLS, FLOORS, AND CEILINGS WHERE DUCT, PIPING, AND CONTROLS HAVE BEEN REMOVED TO MATCH EXISTING.
- ANY DAMAGE TO THE OWNER'S PROPERTY, BUILDING, EXISTING SYSTEMS, OR EQUIPMENT RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER AND ENGINEER WITHOUT ADDITIONAL COST TO THE OWNER.
- MAINTAIN THE SECURITY OF THE BUILDING AT ALL TIMES.
- REMOVE EXISTING CONTROL SYSTEMS SERVING DEMOLISHED HVAC EQUIPMENT UNLESS OTHERWISE NOTED.
- REMOVE ALL EXISTING SUPPORTS ASSOCIATED WITH EQUIPMENT, DUCTWORK, AND PIPE BEING REMOVED UNLESS NOTED OTHERWISE.
- DISPOSE OF ALL REMOVED EQUIPMENT AS DIRECTED BY THE OWNER.
- CONTRACTOR SHALL COORDINATE REMOVAL OF UTILITY SERVICES WITH UTILITY COMPANIES AND LOCAL AUTHORITIES AND PAY ALL FEES.
- SCHEDULE UTILITY WORK WITH OWNER TO KEEP TO A MINIMUM ACCEPTABLE DOWNTIME AND TO NOT INTERFERE WITH THE BUILDING OPERATIONAL SCHEDULE, IF POSSIBLE. UTILITY DOWN-TIME SHALL BE KEPT TO A MINIMUM AND SCHEDULED THREE DAYS IN ADVANCE. (MAYBE KEEP)
- MAINTAIN THE FIRE AND SMOKE CONSTRUCTION INTEGRITY OF THE EXISTING BUILDINGS. FIREPROOFING ON EXISTING STRUCTURE SHALL BE REPLACED OR REPAIRED WHERE DISTURBED FROM THE INSTALLATION OF MECHANICAL SYSTEMS.
- DO NOT VENT REFRIGERANT TO ATMOSPHERE. RECOVER REFRIGERANT FOR REUSE USING ASHRAE RECOMMENDED PROCEDURES.
- IF DURING THE COURSE OF THE WORK MATERIAL WHICH MAY CONTAIN ASBESTOS IS DISCOVERED, STOP WORK IMMEDIATELY AND COMPLY WITH EPA REGULATIONS TO PROTECT WORKERS AND OCCUPANTS. NOTIFY OWNER AND ENGINEER.
- ALL UNDERGROUND PIPING WHICH IS SHOWN TO BE TAKEN OUT OF SERVICE SHALL BE REMOVED TO POINTS INDICATED, AND REMAINING PIPE SHALL BE PURGED AND PLUGGED.
- EXISTING EQUIPMENT SHALL BE RELOCATED AS NECESSARY FOR THE INSTALLATION OF THE NEW SYSTEMS. METHODS AND POSITIONS OF THE RELOCATION SHALL BE APPROVED BY THE ARCHITECT.
- DEMOLITION AND SHUTDOWN OF EXISTING HVAC SYSTEMS THAT WILL AFFECT PORTIONS OF THE BUILDING OUTSIDE OF PROJECT AREA SHALL BE COORDINATED WITH OWNER'S REPRESENTATIVE AND PLANNED TO LIMIT INCONVENIENCE AND DISRUPTION OF BUILDING OPERATIONS AS MUCH AS POSSIBLE. WORK SHALL BE PHASED ACCORDINGLY. PLUMBING OR HVAC WORK REQUIRED IN OCCUPIED AREAS OUTSIDE OF THE FLOOR AREA SHALL BE SCHEDULED WITH THE OWNER 48 HOURS IN ADVANCE.
- SPECIAL CARE SHALL BE TAKEN ON THE EXISTING ROOFS TO PREVENT DAMAGE. ANY DAMAGE SHALL BE PROMPTLY REPAIRED AT NO EXPENSE TO THE OWNER. COMPLY WITH BONDING REQUIREMENTS OF EXISTING ROOF.
- THE EQUIPMENT LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. THE FINAL LOCATIONS SHALL BE ESTABLISHED IN THE FIELD TO BEST FIT THE AVAILABLE SPACE. COORDINATE WITH STRUCTURAL DRAWINGS.
- INSPECT THE EXISTING SYSTEM; ANY EXISTING EQUIPMENT, DUCTS, OR PIPING FOUND TO BE DAMAGED OR NON-OPERABLE SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE IMMEDIATELY.
- PHASE DEMOLITION AND RENOVATION WORK TO MAINTAIN EXISTING BUILDING AS REQUIRED BY BUILDING OWNER/OCCUPANTS. PROVIDE TEMPORARY SERVICES AS REQUIRED.
- VISIT THE SITE TO ESTABLISH THE EXISTING CONDITIONS PRIOR TO DUCT, PIPE, OR EQUIPMENT FABRICATION. SYSTEMS SHALL BE ERECTED USING FIELD MEASUREMENTS FOR COORDINATION WITH THE EXISTING SYSTEMS IN THE SPACE.
- USE EXISTING PIPING SYSTEM VALVES WHERE POSSIBLE TO ISOLATE SYSTEMS AND TO CAP EXISTING PIPING. REPLACE EXISTING VALVES WHERE NECESSARY WHEN EXISTING VALVES WILL NOT HOLD.
- REPLACE AND/OR PATCH TO MATCH EXISTING ANY EXISTING DUCT OR PIPING INSULATION THAT IS TO REMAIN EXISTING AND IS DAMAGED DURING CONSTRUCTION.
- WHEN CONNECTING TO EXISTING PIPING STUB-OUTS, INSULATE EXISTING STUB-OUT PIPING INCLUDING VALVE BODIES.
- INSPECT THE EXISTING DUCTWORK WITHIN PROJECT BOUNDARIES FOR POSSIBLE DAMAGE OR CONDENSATION. REPAIR AND RE-INSULATE.

HVAC LEGEND

ABBREVIATION OR SYMBOL	DESCRIPTION	ABBREVIATION OR SYMBOL	DESCRIPTION
AHU	AIR HANDLING UNIT		CEILING SUPPLY DIFFUSER
AFF	ABOVE FINISHED FLOOR		CEILING RETURN/EXHAUST GRILLE
AP	ACCESS PANEL		GRILLE OR REGISTER ON BOTTOM OF DUCTWORK
BHP	BRAKE HORSEPOWER		SIDEWALL SUPPLY (RETURN SIMILAR)
BTUH	BRITISH THERMAL UNIT PER HOUR		RECTANGULAR DUCT WITH DUCT SIZE TAG
CFM	CUBIC FEET PER MINUTE		ROUND DUCT WITH DUCT SIZE TAG
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT		OVAL DUCT WITH DUCT SIZE TAG
D	DRAIN		SUPPLY DUCT UP
DB	DRY BULB TEMPERATURE		SUPPLY DUCT DOWN
DN	DOWN		RETURN DUCT UP
EAT	ENTERING AIR TEMPERATURE OF THE COIL		RETURN DUCT DOWN
ESP	EXTERNAL STATIC PRESSURE		EXHAUST DUCT UP
EWT	ENTERING WATER TEMPERATURE		EXHAUST DUCT DOWN
FCU	FAN COIL UNIT		RECTANGULAR/OVAL TRANSITION
FLR	FLOOR		RECTANGULAR/ROUND TRANSITION
FO	FLAT OVAL		FLEXIBLE DUCT CONNECTION
FPM	FEET PER MINUTE (VELOCITY)		(1) FIRE DAMPER (2) SMOKE DAMPER (3) MOTORIZED DAMPER (4) CONTROL DAMPER
GPM	GALLONS PER MINUTE		(1) BALANCING DAMPER (2) SMOKE DETECTOR
HP	HORSEPOWER		BALANCING DAMPER, SET TO INDICATED CFM
KW	KILOWATT		NEW DUCT
LAT	LEAVING AIR TEMPERATURE OF THE COIL		EXISTING DUCT TO REMAIN
LWT	LEAVING WATER TEMPERATURE		DEMOLISH EXISTING DUCT BACK TO POINT.
MAU	MAKE-UP AIR UNIT		CONNECT TO EXISTING DUCT.
MAX	MAXIMUM		
MIN	MINIMUM		
MHP	MOTOR HORSEPOWER		
NTS	NOT TO SCALE		
OSA	OUTSIDE AIR		
PSI	POUNDS PER SQUARE INCH		
RA	RETURN AIR		
RH	RELATIVE HUMIDITY		
RPM	REVOLUTION PER MINUTE		
RTU	ROOF TOP (AIR CONDITIONING) UNIT		
SA	SUPPLY AIR		
SP	STATIC PRESSURE		
TYP	TYPICAL		
VAV	VARIABLE AIR VOLUME		
WB	WET BULB TEMPERATURE		
XFR	TRANSFER AIR		
-	FEET		
ø	INCHES		
Ø	ROUND DUCT		
Φ	OVAL DUCT		
		DETAIL/SECTION DESIGNATION	
		KEYED NOTE	
		AIR DEVICE DESIGNATION	
		NEW EQUIPMENT	
		EXISTING EQUIPMENT TO REMAIN	
		EXISTING EQUIPMENT TO BE REMOVED	
* NOT ALL SYMBOLS MAY APPLY TO THIS PROJECT			

MECHANICAL GENERAL NOTES

- ALL MECHANICAL WORK SHALL COMPLY WITH ALL LOCAL CODES, DRAWINGS, SPECIFICATIONS, AND AUTHORITIES HAVING JURISDICTION. IF DISCREPANCIES ARE FOUND, THE MOST STRINGENT REQUIREMENT SHALL GOVERN WORK. WHERE INSPECTIONS ARE REQUIRED BY AUTHORITIES HAVING JURISDICTION, WORK MUST NOT BE CONCEALED UNTIL INSPECTIONS AND TESTING ARE COMPLETE AND WORK IS ACCEPTED.
- REFER TO SPECIFICATIONS AND PROJECT MANUAL FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
- REFER TO ALL PROJECT DRAWINGS FOR DETAILS OF CONSTRUCTION AND INSTALLATION REQUIREMENTS.
- PRIOR TO BID, CONTRACTOR SHALL BECOME THOROUGHLY FAMILIAR WITH THE REQUIREMENTS OF THESE NOTES AS WELL AS OTHER NOTES SHOWN ON THE CONTRACT DOCUMENTS.
- THESE DRAWINGS REFLECT A SYSTEM DESIGNED AROUND SPECIFIED REFERENCE PRODUCTS, THE SELECTION OF WHICH HAS INFLUENCED THE DESIGNS OF OTHER TRADES. IF SUBSTITUTE MANUFACTURERS, SIZES, OR MODEL NUMBERS ARE BID OR SUBMITTED, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE ALL DIFFERENCES PRIOR TO BID. ALL COSTS OF ALL TRADES ASSOCIATED WITH THE SUBSTITUTION SHALL BE INCLUDED IN THE BID.
- COORDINATION OF ALL MODIFICATIONS TO EACH DISCIPLINE WHICH RESULT FROM SUBSTITUTION OF EQUIPMENT OR MATERIALS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SUBSTITUTIONS WHICH ARE INSTALLED AND SUBSEQUENTLY ARE PROVEN UNSATISFACTORY BY OWNER AND/OR ENGINEER WITHIN THE WARRANTY PERIOD, SHALL BE REMOVED COMPLETELY BY THE CONTRACTOR AND REPLACED WITH THE ORIGINAL DESIGN OR CORRECTED AS DIRECTED BY THE ENGINEER WITHOUT ADDITIONAL COST TO THE OWNER.
- ALL DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENTS OR GEOMETRICAL RELATIONSHIPS OF EQUIPMENT AND SERVICES. THEY ARE NOT INTENDED TO SPECIFY OR SHOW EVERY OFFSET, SEQUENCE, DEVICE, OPTION, FITTING, OR COMPONENT.
- INFORMATION AND COMPONENTS ON DETAILS OR IN SPECIFICATIONS, BUT NOT SHOWN ON PLANS, AND VICE VERSA, SHALL BE PROVIDED AS IF EXPRESSLY REQUIRED BY BOTH.
- CONTRACTOR SHALL NOT SCALE DRAWINGS. DRAWINGS SPECIFIC TO THIS DISCIPLINE DO NOT LIMIT THE RESPONSIBILITY OF WORK REQUIRED BY THE CONTRACT DOCUMENTS.
- EXACT LOCATIONS OF ALL EQUIPMENT, ROOF CURBS, DUCTS, DIFFUSERS, AND PIPING SHALL BE COORDINATED WITH OTHER TRADES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL WORK WITH THAT OF OTHER TRADES. REFER TO ALL CONSTRUCTION DOCUMENTS FOR COMPLETE INFORMATION PRIOR TO BID.
- ALL MECHANICAL CONSTRUCTION DETAILS SHALL BE AS SHOWN AND AS REQUIRED TO MAINTAIN "UL" ASSEMBLY RATINGS AS SHOWN ON ARCHITECTURAL SHEETS. SEAL AROUND ALL PENETRATIONS THROUGH UL RATED ASSEMBLIES, FIRE AND SMOKE WALLS. COORDINATE WITH GENERAL CONTRACTOR.
- NO OTHER TRADES, I.E., ELECTRICAL, CEILING, PLUMBING, OR OTHER SYSTEMS SHALL BE SUSPENDED, HUNG, OR SUPPORTED FROM DUCTWORK OR PIPING.
- SPECIAL CARE SHALL BE TAKEN ON EXISTING ROOFS TO PREVENT DAMAGE. ANY DAMAGE SHALL BE PROMPTLY REPAIRED AT NO EXPENSE TO THE OWNER. COMPLY WITH BONDING REQUIREMENTS OF EXISTING ROOF.
- CONTRACTOR SHALL BE RESPONSIBLE FOR FLASHING AND SEALING OF ALL ROOF PENETRATIONS AIR AND WATER TIGHT.
- CLOSELY COORDINATE FINAL LOCATIONS OF INSTALLED EQUIPMENT TO ACHIEVE THE GREATEST ACCESSIBILITY FOR MAINTENANCE PURPOSES.
- CONTRACTOR SHALL VISIT THE SITE TO ESTABLISH THE EXISTING CONDITIONS PRIOR TO DUCT, PIPE OR EQUIPMENT FABRICATION. SYSTEMS SHALL BE ERECTED USING FIELD MEASUREMENTS FOR COORDINATION WITH THE EXISTING EQUIPMENT, STRUCTURE, FIRE PROTECTION AND ELECTRICAL IN THE SPACE.
- MAINTAIN THE SECURITY OF THE BUILDING AT ALL TIMES.
- CORE DRILL ALL PIPING PENETRATIONS OF CONCRETE WALLS AND FLOORS.
- ALL HVAC WORK TO BE PER SMACNA AND ALL APPLICABLE CODES. DUCT SIZES REPRESENT FREE AREA.
- ALL LOW PRESSURE DUCTWORK THAT HAS TO BE OFFSET DUE TO AN OBSTRUCTION SHALL BE OFFSET WITH TWO - 45 DEGREE, 1.5 RADIUS ELBOWS UNLESS OTHERWISE NOTED.
- PROVIDE ACCESS DOORS IN WALLS, FLOORS, OR CEILINGS FOR ACCESS TO ALL FIRE DAMPERS, SMOKE DAMPERS, EQUIPMENT, COILS, VALVES, AND BALANCING DAMPERS. ACCESS DOORS ARE NOT REQUIRED WHERE DEVICES ARE DIRECTLY ACCESSIBLE THROUGH AIR DEVICES.
- PROVIDE FIRE DAMPERS AND SMOKE DAMPERS IN ALL RATED WALLS AS REQUIRED BY ALL AUTHORITIES HAVING JURISDICTION. SEAL AROUND ALL PENETRATIONS OF RATED WALLS, CHASES, CEILINGS, AND FLOORS TO MAINTAIN THE FIRE/SMOKE RATING OF THE ASSEMBLY.
- DUCT FITTINGS ARE AS FOLLOWS: 1) FLEX DUCT SHALL NOT BE USED. ALL ELBOWS SHALL BE HARD DUCTED. 2) ALL 90 DEGREE ELBOWS TO HAVE R/D = 1.5, UNLESS OTHERWISE NOTED. 3) ALL MITERED RECTANGULAR ELBOWS GREATER THAN 90 DEGREES NOTED ARE TO HAVE TURNING VANES.
- MAINTAIN A MINIMUM OF 10'-0" BETWEEN ALL FRESH AIR INTAKES AND PLUMBING VENTS, EXHAUST FAN DISCHARGE, AND FLUES.
- CONTRACTOR SHALL FIELD VERIFY ALL PIPE ROUTING AND ADJUST ELEVATIONS AS REQUIRED TO AVOID CONFLICTS. FINAL PLACEMENT OF PIPING SHALL BE DETERMINED BY FIELD MEASUREMENT AND VERIFICATION. ELEVATIONS ARE REFERENCED TO PIPE CENTERLINE UNLESS OTHERWISE NOTED.
- DUCTWORK SHALL CONFORM TO THE FOLLOWING PRESSURE CLASSES: RETURN/RELIEF/OUTSIDE AIR/EXHAUST; 2" SP. ALL DUCTWORK IS REQUIRED TO BE TESTED IN ACCORDANCE WITH THE SPECIFICATIONS.
- ALL EQUIPMENT, DEVICES, AND FIXTURES SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATION.
- CONTRACTOR SHALL VERIFY CLOSELY AT SITE TRANSPORTATION OF NEW HVAC EQUIPMENT INTO MECHANICAL AREAS BEFORE BIDDING. PROVIDE COMPLETE DISASSEMBLY AND RE-ASSEMBLY OF NEW EQUIPMENT AS REQUIRED FOR A COMPLETE INSTALLATION.
- PROVIDE FLEXIBLE CONNECTIONS AND TRANSITIONS ON DUCT INLET AND OUTLET CONNECTIONS TO ALL EQUIPMENT WITH MOVING PARTS.
- DUCTWORK VISIBLE THROUGH RETURN AIR OPENINGS SHALL BE PAINTED FLAT BLACK TO REDUCE VISIBILITY.
- NOT ALL REQUIRED PIPING, VALVES, OR FITTINGS ARE SHOWN ON DRAWINGS FOR CLARITY. COORDINATE PLAN DETAILS WITH SPECIFICATIONS, SCHEMATICS, FLOW DIAGRAMS, AND OTHER DETAILS TO PROVIDE COMPLETE PIPING SYSTEMS.
- COORDINATE WORK CLOSELY WITH CONTROL REQUIREMENTS. PROVIDE ALL NECESSARY DUCT TAPS, PIPE TAPS, WELLS, AND OTHER APPURTENANCES REQUIRED BY CONTROL SYSTEM. PROVIDE SPARE PIPE WELL ADJACENT TO EACH TEMPERATURE SENSOR IN PIPING.
- COORDINATE FINAL PLACEMENT OF ALL THERMOSTATS WITH WALL-MOUNTED DEVICES AND OWNER'S REPRESENTATIVE. MOUNT PER A.D.A. REQUIREMENTS. ANY THERMOSTAT THAT IS REQUIRED TO BE MOUNTED ON AN EXTERIOR WALL SHALL BE MOUNTED ON AN INSULATED PAD.
- PROVIDE CONCRETE PADS FOR ALL GROUND MOUNTED EQUIPMENT.
- REPLACE ALL ARCHITECTURAL FEATURES REMOVED OR DAMAGED DURING THE COURSE OF THE WORK.
- CONTRACTOR SHALL PATCH ALL WALLS, FLOORS, AND CEILINGS TO MATCH EXISTING FOR ALL OPENINGS CREATED BY INSTALLATION OF EQUIPMENT AND HVAC SERVICE PENETRATIONS.
- REFER TO SPECIFICATIONS FOR INSULATION AND R-VALUES FOR MECHANICAL PIPING AND DUCTWORK INSULATION.
- ALL HVAC COMPONENTS WITH ELECTRICAL REQUIREMENTS SHALL BE INSTALLED WITH ELECTRICAL INFRASTRUCTURE NECESSARY TO PROVIDE A FULLY FUNCTIONING SYSTEM. IF NOT SPECIFICALLY SHOWN ON ELECTRICAL SCHEDULE, HVAC FIXTURES REQUIRING ELECTRICAL SERVICE SHALL BE FED FROM BREAKER OF ADEQUATE CAPACITY.
- ALL CONTROL WIRING SHALL BE INSTALLED IN CONDUIT.



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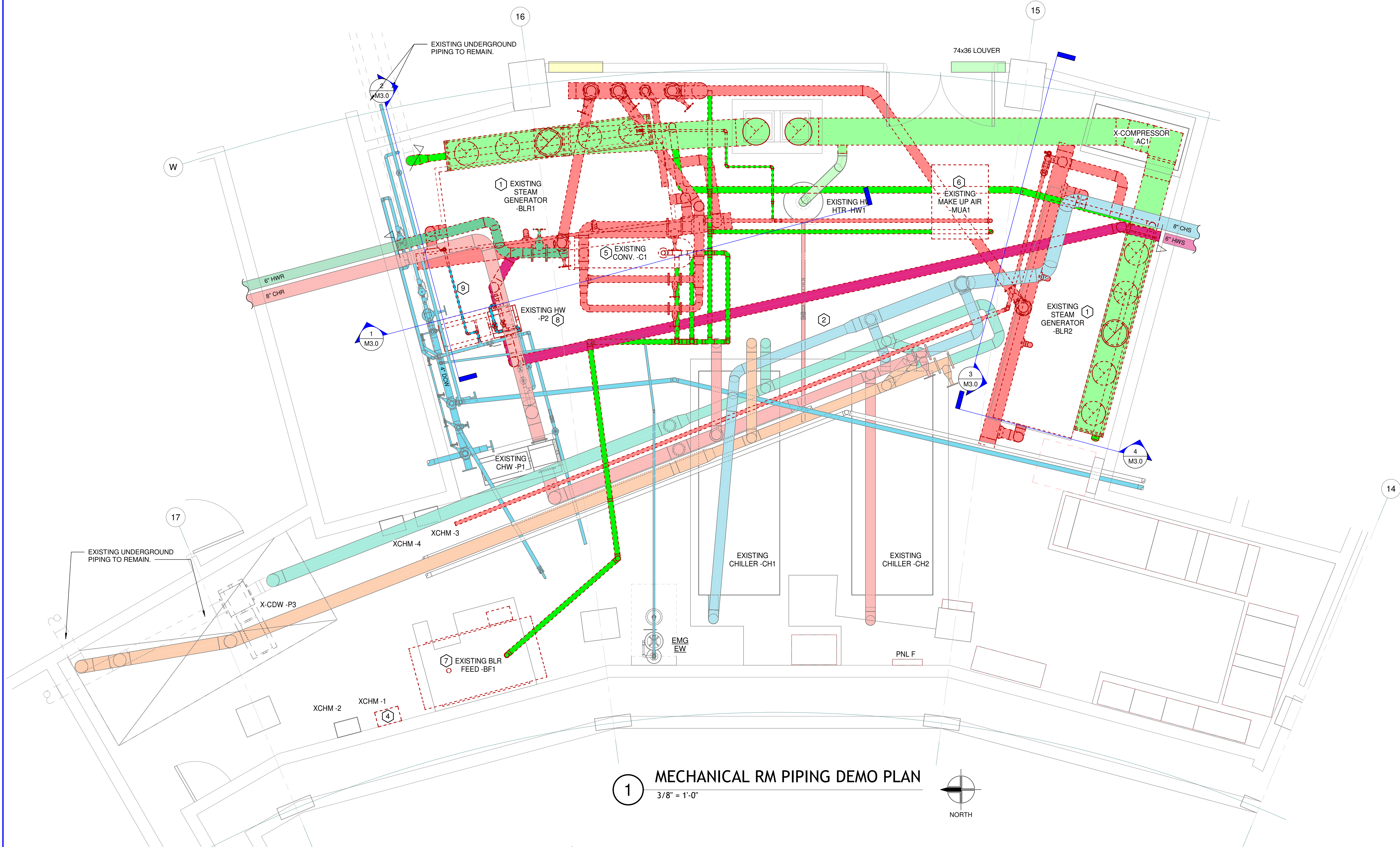
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ONE INCH AT FULL SIZE. IF NOT
ONE INCH SCALE ACCORDINGLY

MECHANICAL
NOTES AND
LEGENDS - PH1

M1.0



1 MECHANICAL RM PIPING DEMO PLAN
3/8" = 1'-0"



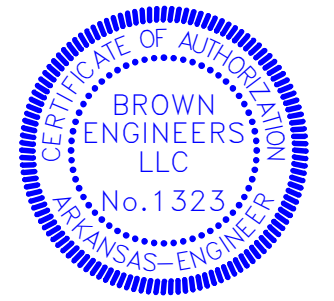
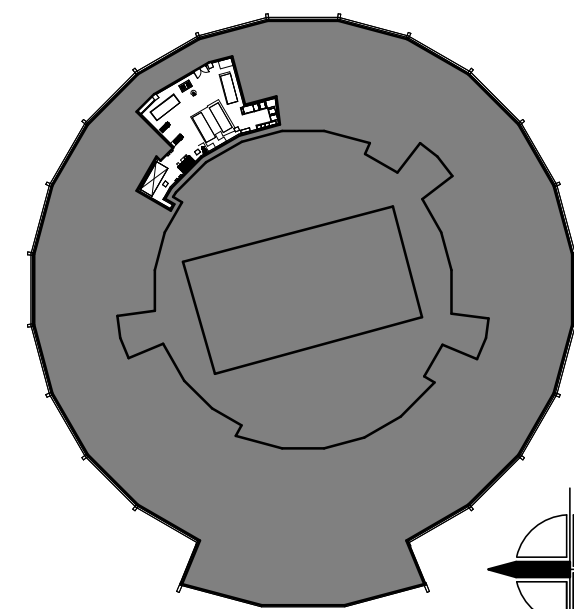
KEYED NOTES:

1. DEMO EXISTING STEAM GENERATOR AND ASSOCIATED FLUE AND DRAFT INDUCERS. COORDINATE WITH ELECTRICAL FOR DEMOLITION OF ASSOCIATED POWER. SEE CONTROLS DEMOLITION COORDINATION NOTE FOR CONTROLS SCOPE DEMOLITION.
2. ALL PIPING NOT SHOWN FOR DEMOLITION SHALL REMAIN UNLESS OTHERWISE NOTED.
3. DOMESTIC WATER HEATER AND ASSOCIATED PIPING SHALL REMAIN. SEE RENOVATION PLAN FOR FLUE PIPING MODIFICATIONS. COORDINATE DOWNTIME OF WATER HEATER WITH OWNER IN ADVANCE AND PHASE DEMOLITION AND RENOVATION TO LIMIT DOWNTIME TO LESS THAN ONE WEEK.
4. DEMO EXISTING CHEMICAL TREATMENT SYSTEM FOR HEATING WATER. FIELD VERIFY SYSTEM LOCATION. SEE RENOVATION PLAN FOR PROVISION OF NEW CHEM FEED SYSTEM AT SAME LOCATION.
5. DEMO EXISTING OVERHEAD STEAM CONVERTOR AND ASSOCIATED PIPING AND CONTROLS.
6. DEMO EXISTING MAKEUP AIR UNIT AND ASSOCIATED DUCT, PIPING, AND CONTROLS. COORDINATE WITH ELECTRICAL FOR DEMOLITION OF ASSOCIATED POWER.
7. DEMO EXISTING BOILER FEED SYSTEM AND ASSOCIATED PIPING AND CONTROLS.
8. DEMO EXISTING BUILDING HW PUMP, P2, AND ASSOCIATED PIPING AND CONTROLS. DEMO ASSOCIATED PIPING BACK TO VALVE AS SHOWN. COORDINATE WITH ELECTRICAL FOR DEMOLITION OF ASSOCIATED POWER.
9. DEMO EXISTING MAKEUP WATER PIPING SERVING EXISTING STEAM GENERATOR / HW SYSTEM. CAP AND MAINTAIN PIPING SERVING MAKEUP WATER TO OTHER SYSTEMS TO REMAIN.

CONTROLS DEMOLITION COORDINATION NOTE

GENERAL CONTRACTOR, MECHANICAL CONTRACTOR, AND ELECTRICAL CONTRACTOR SHALL COORDINATE TO:

1. IDENTIFY EXISTING CONTROLS PANELS, CONDUIT, AND WIRE ASSOCIATED WITH MECHANICAL EQUIPMENT TO BE DEMOLISHED.
2. DEMOLISH CONTROL WIRE AND CONDUIT FROM EQUIPMENT TO BE DEMOLISHED BACK TO CONTROL PANEL, PANELBOARD, SWITCHBOARD, OR MCC OF ORIGIN.
3. MARK CONTROLS COMPONENTS IN CONTROL PANELS, PANELBOARDS, SWITCHBOARDS, OR MCCS AS "TO BE DEMOLISHED" IN FUTURE PHASES OF WORK.



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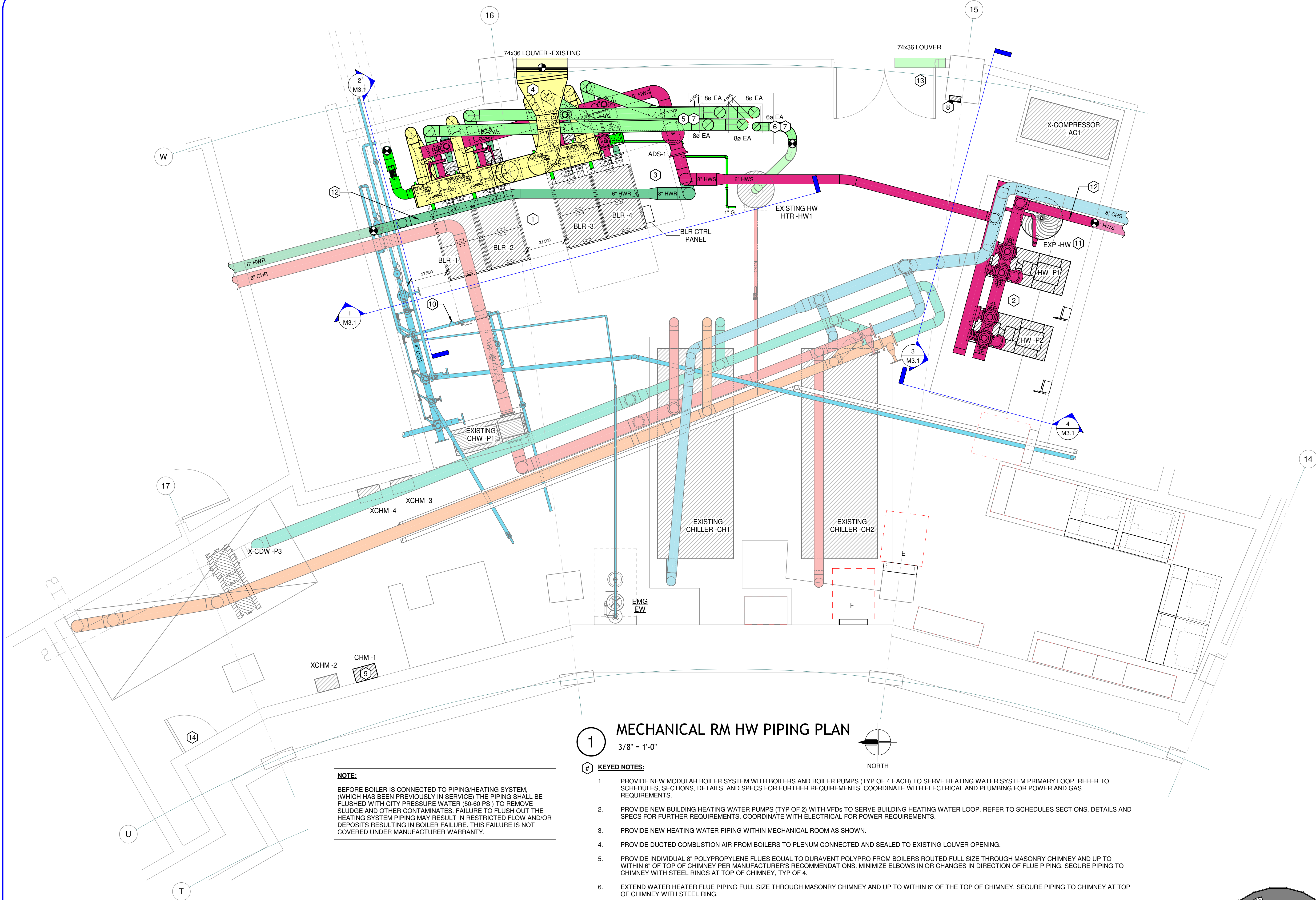
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1"
ONE INCH AT FULL SIZE, IF NOT
ONE INCH SCALE ACCORDINGLY

MECH ROOM HW
DEMO

M2.0

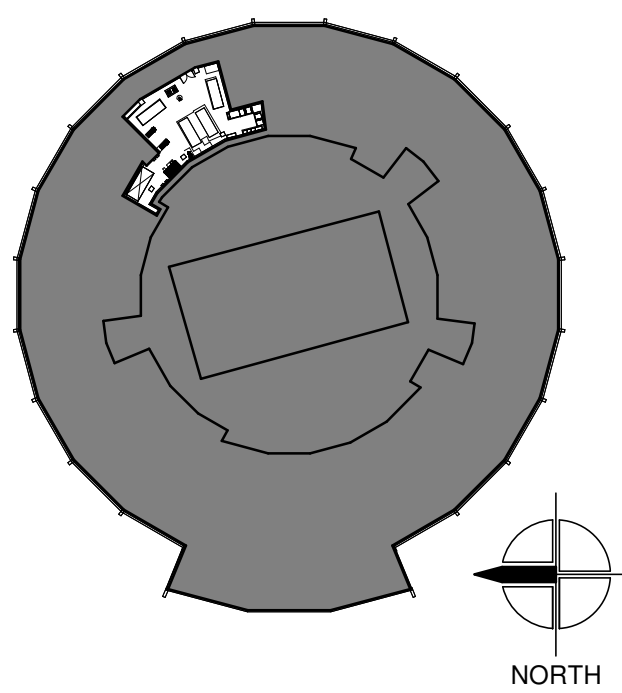


NOTE:
BEFORE BOILER IS CONNECTED TO PIPING/HEATING SYSTEM, (WHICH HAS BEEN PREVIOUSLY IN SERVICE) THE PIPING SHALL BE FLUSHED WITH CITY PRESSURE WATER (50-60 PSI) TO REMOVE SLUDGE AND OTHER CONTAMINATES. FAILURE TO FLUSH OUT THE HEATING SYSTEM PIPING MAY RESULT IN RESTRICTED FLOW AND/OR DEPOSITS RESULTING IN BOILER FAILURE. THIS FAILURE IS NOT COVERED UNDER MANUFACTURER WARRANTY.

1 MECHANICAL RM HW PIPING PLAN

3/8" = 1'-0"

- # KEYED NOTES:
1. PROVIDE NEW MODULAR BOILER SYSTEM WITH BOILERS AND BOILER PUMPS (TYP OF 4 EACH) TO SERVE HEATING WATER SYSTEM PRIMARY LOOP. REFER TO SCHEDULES, SECTIONS, DETAILS, AND SPECS FOR FURTHER REQUIREMENTS. COORDINATE WITH ELECTRICAL AND PLUMBING FOR POWER AND GAS REQUIREMENTS.
 2. PROVIDE NEW BUILDING HEATING WATER PUMPS (TYP OF 2) WITH VFDs TO SERVE BUILDING HEATING WATER LOOP. REFER TO SCHEDULES SECTIONS, DETAILS AND SPECS FOR FURTHER REQUIREMENTS. COORDINATE WITH ELECTRICAL FOR POWER REQUIREMENTS.
 3. PROVIDE NEW HEATING WATER PIPING WITHIN MECHANICAL ROOM AS SHOWN.
 4. PROVIDE DUCTED COMBUSTION AIR FROM BOILERS TO PLENUM CONNECTED AND SEALED TO EXISTING LOUVER OPENING.
 5. PROVIDE INDIVIDUAL 8" POLYPROPYLENE FLUES EQUAL TO DURAVENT POLYPRO FROM BOILERS ROUTED FULL SIZE THROUGH MASONRY CHIMNEY AND UP TO WITHIN 6" OF TOP OF CHIMNEY PER MANUFACTURER'S RECOMMENDATIONS. MINIMIZE ELBOWS IN OR CHANGES IN DIRECTION OF FLUE PIPING. SECURE PIPING TO CHIMNEY WITH STEEL RINGS AT TOP OF CHIMNEY, TYP OF 4.
 6. EXTEND WATER HEATER FLUE PIPING FULL SIZE THROUGH MASONRY CHIMNEY AND UP TO WITHIN 6" OF THE TOP OF CHIMNEY. SECURE PIPING TO CHIMNEY AT TOP OF CHIMNEY WITH STEEL RING.
 7. UTILIZE EXISTING CHIMNEY OPENINGS WHERE AVAILABLE. SEAL UNUSED OPENINGS AND SEAL AREAS AROUND NEW CHIMNEY PENETRATIONS TO MATCH EXISTING MASONRY CONSTRUCTION. MATERIALS SHALL BE NON-COMBUSTIBLE.
 8. MANUAL GAS SHUTOFF AT ROOM EXIT TO DEACTIVATE NATURAL GAS SUPPLY VALVE. SEE PLUMBING.
 9. NEW CHEMICAL TREATMENT SYSTEM FOR HEATING WATER BY OWNER'S CAMPUS-WIDE CHEMICAL FEED VENDOR - TBD. (VERIFY VENDOR WITH OWNER - MAY NOT MATCH PREVIOUSLY USED SYSTEM). COORDINATE INTEGRATION OF NEW CHEM SYSTEM WITH HW SYSTEM. INTRODUCE CHEM FEED AT MAKEUP WATER FEED TO BOILER SYSTEM. FIELD VERIFY FINAL HEATING WATER CHEM FEED SYSTEM LOCATION.
 10. PROVIDE NEW MAKEUP WATER SYSTEM INCLUDING COMBINATION RPZ, PRV, AND BYPASS TO SERVE HEATING WATER SYSTEM. SEE DETAIL. PROVIDE TAKE-OFF NEAR RISER VALVE SERVING EXISTING MAKEUP WATER SYSTEMS. MINIMIZE DISRUPTION TO CHILLED WATER MAKEUP SERVICE.
 11. HW EXPANSION TANK. SEE ENLARGED PLANS AND SECTIONS.
 12. PROVIDE HW PIPE TAP FOR DIFFERENTIAL PRESSURE TRANSMITTER PIPING CONNECTION AT THIS LOCATION. COORDINATE WITH CONTROLS CONTACTOR FOR PIPE SIZING, FITTINGS, AND APPURTENANCES, TYP. OF 2.
 13. PROVIDE BLANKOFF PLATE AT INTERIOR OF EXISTING LOUVER, SEAL AROUND EDGES WEATHER TIGHT.
 14. REPLACE EXISTING ACCESS DOOR AT RETURN AIR PLENUM WITH SEALED AND GASKETED DOOR.



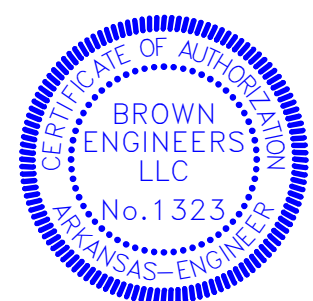
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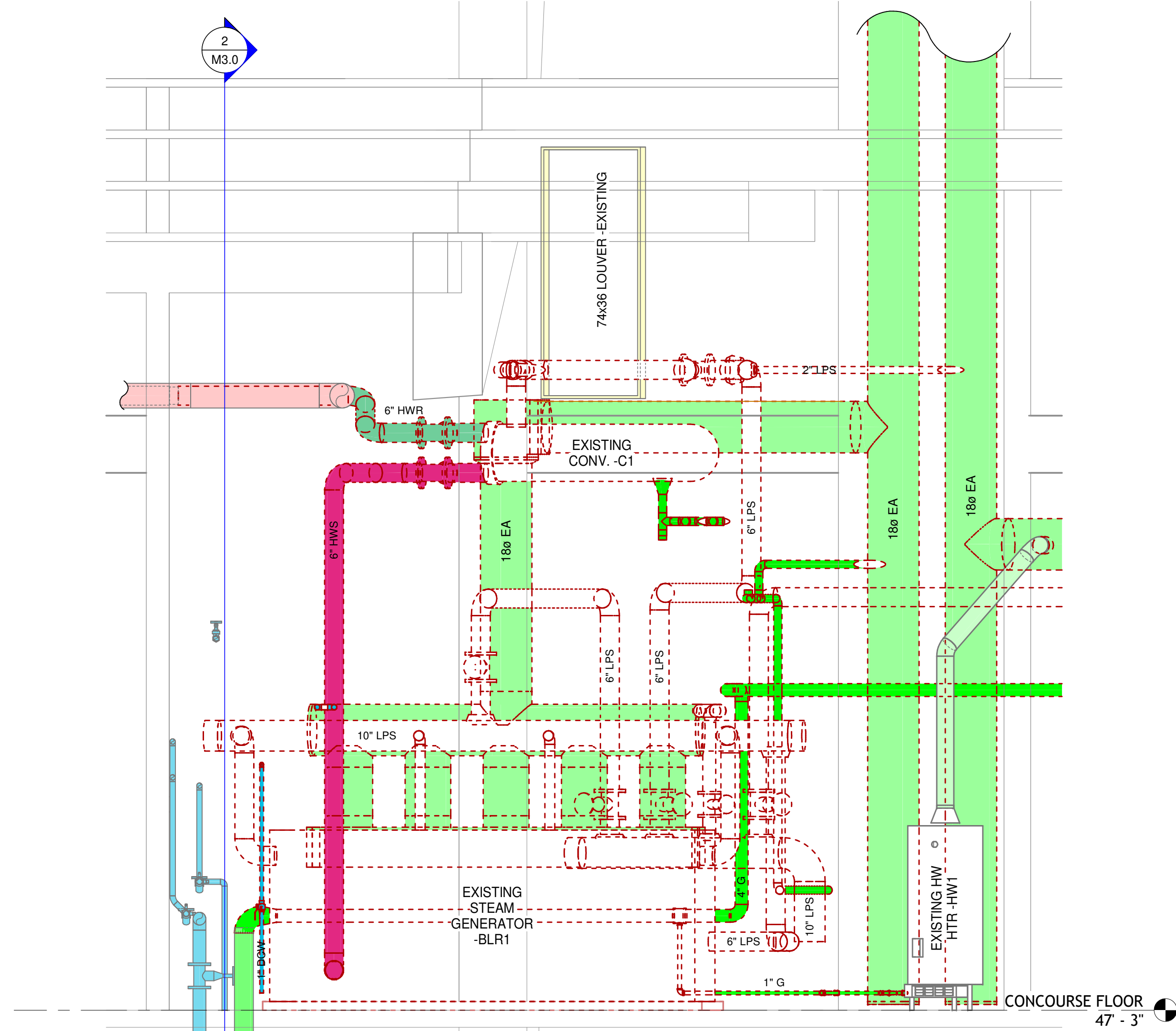
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1"
ONE INCH AT FULL SIZE, IF NOT
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MECH ROOM HW
RENOVATION

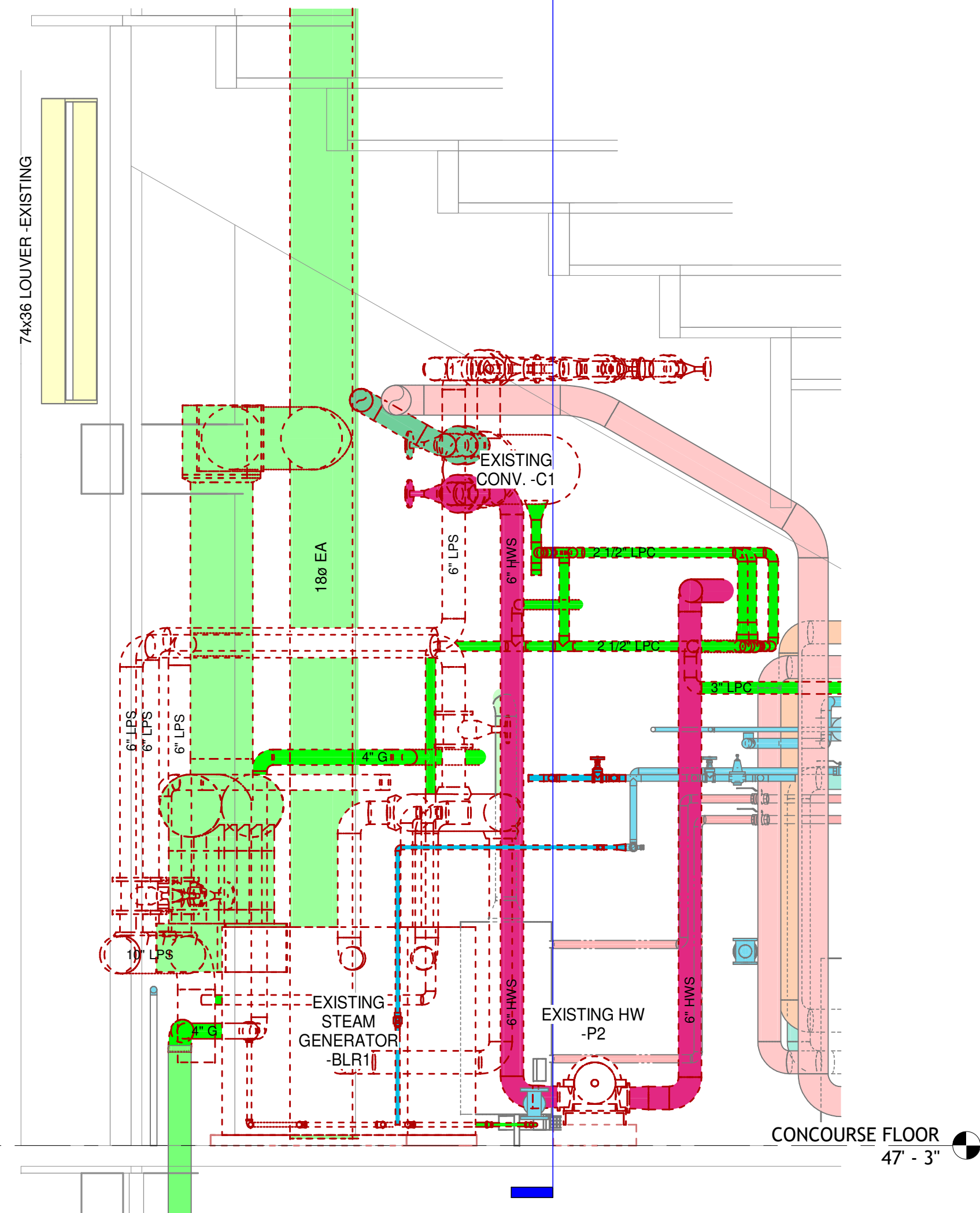
M2.1



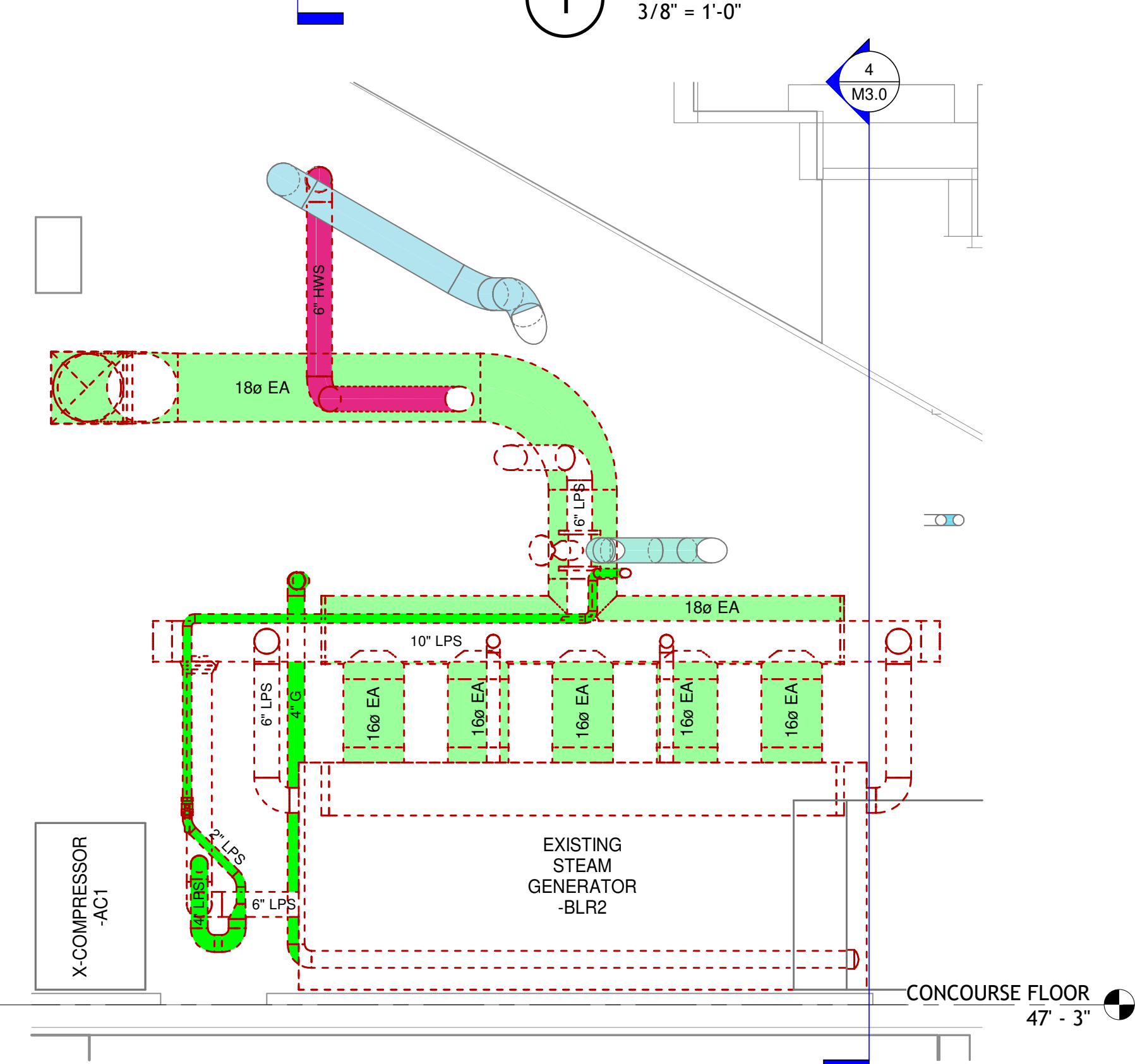
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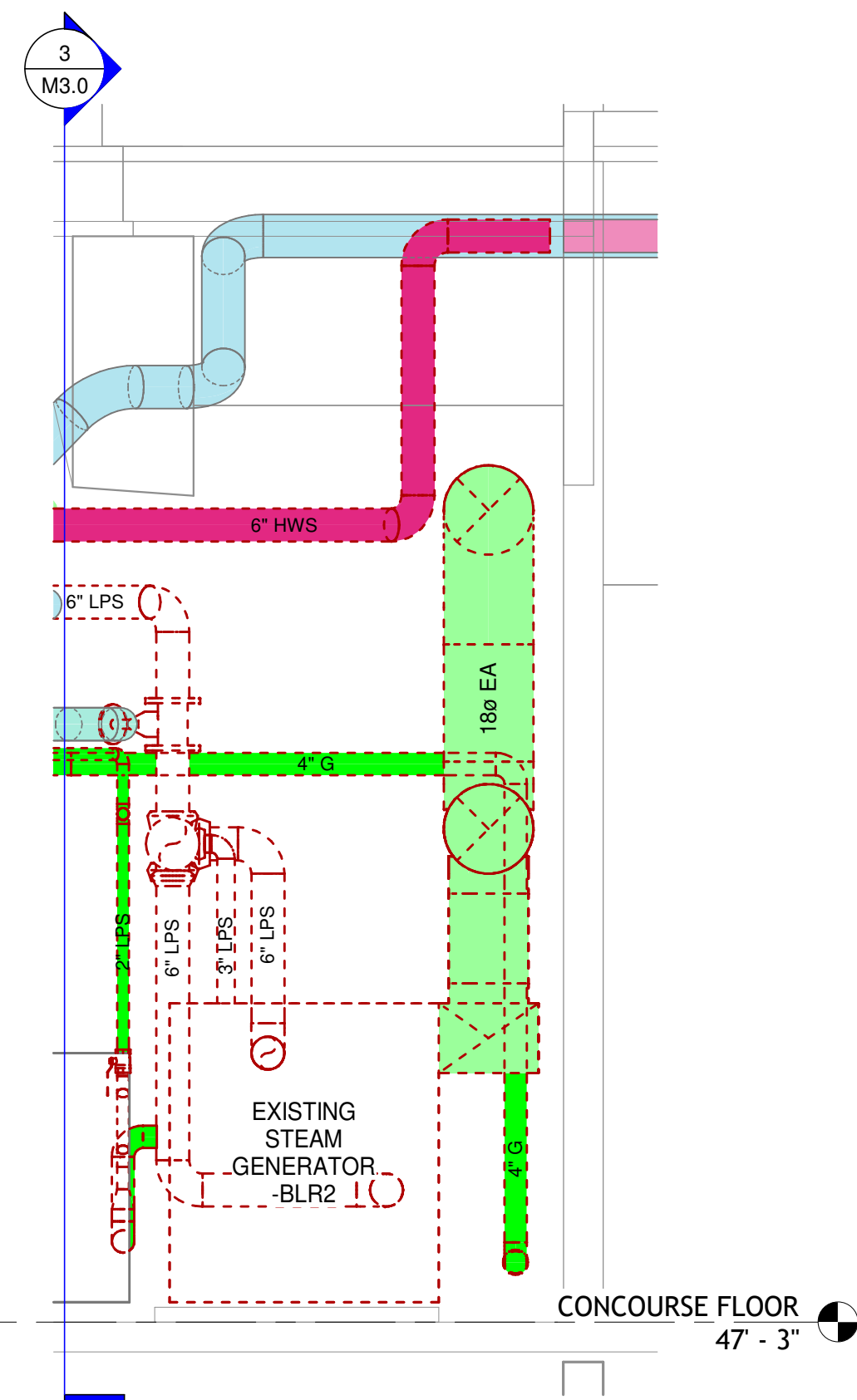
1 BOILER DEMO SECTION I
3/8" = 1'-0"



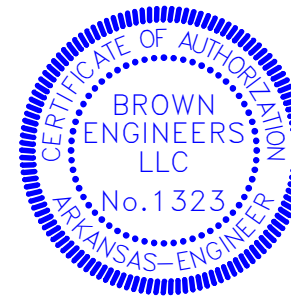
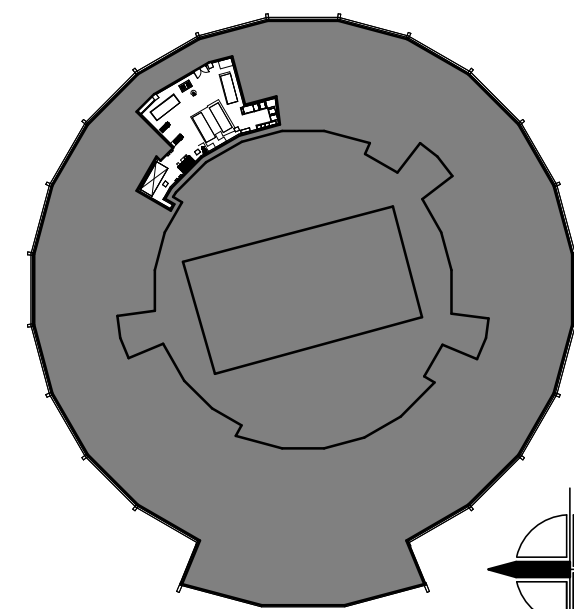
2 BOILER DEMO SECTION II
3/8" = 1'-0"



3 HOT WATER PUMP DEMO SECTION I
3/8" = 1'-0"



4 HOT WATER PUMP DEMO SECTION II
3/8" = 1'-0"



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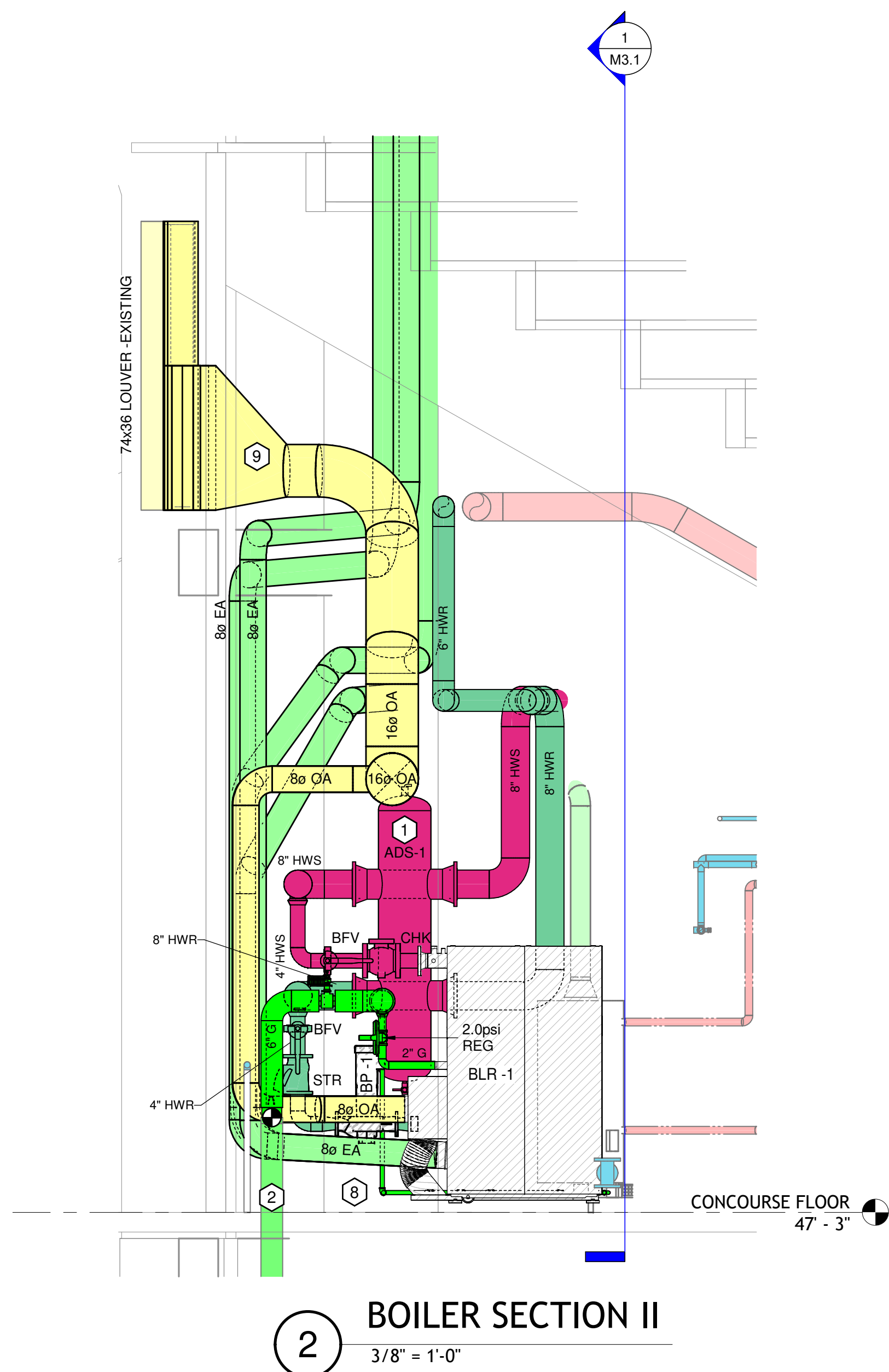
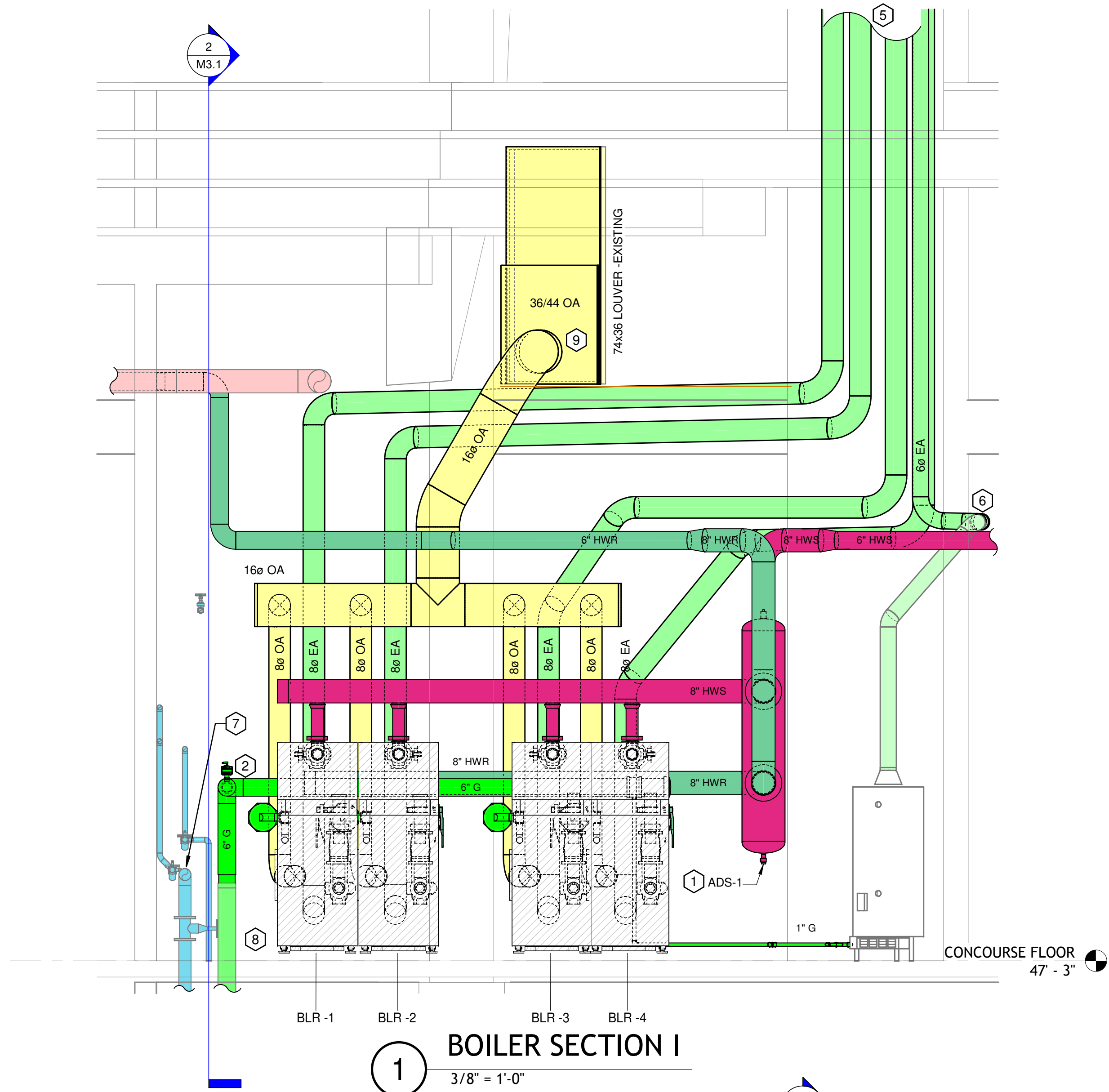
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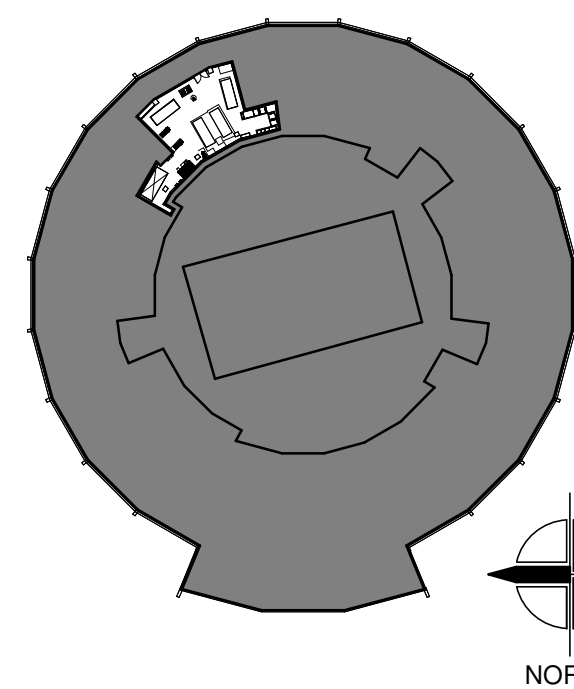
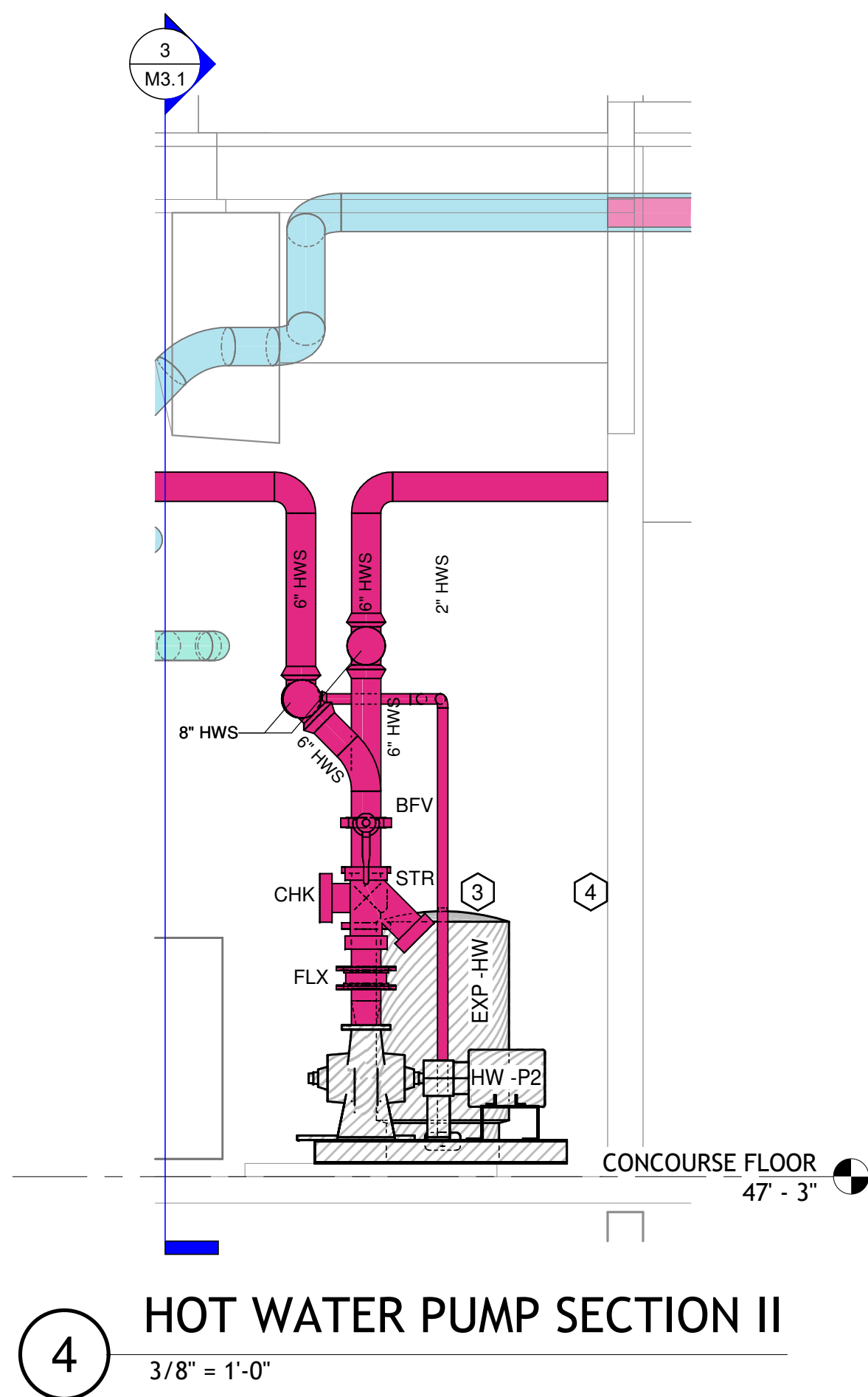
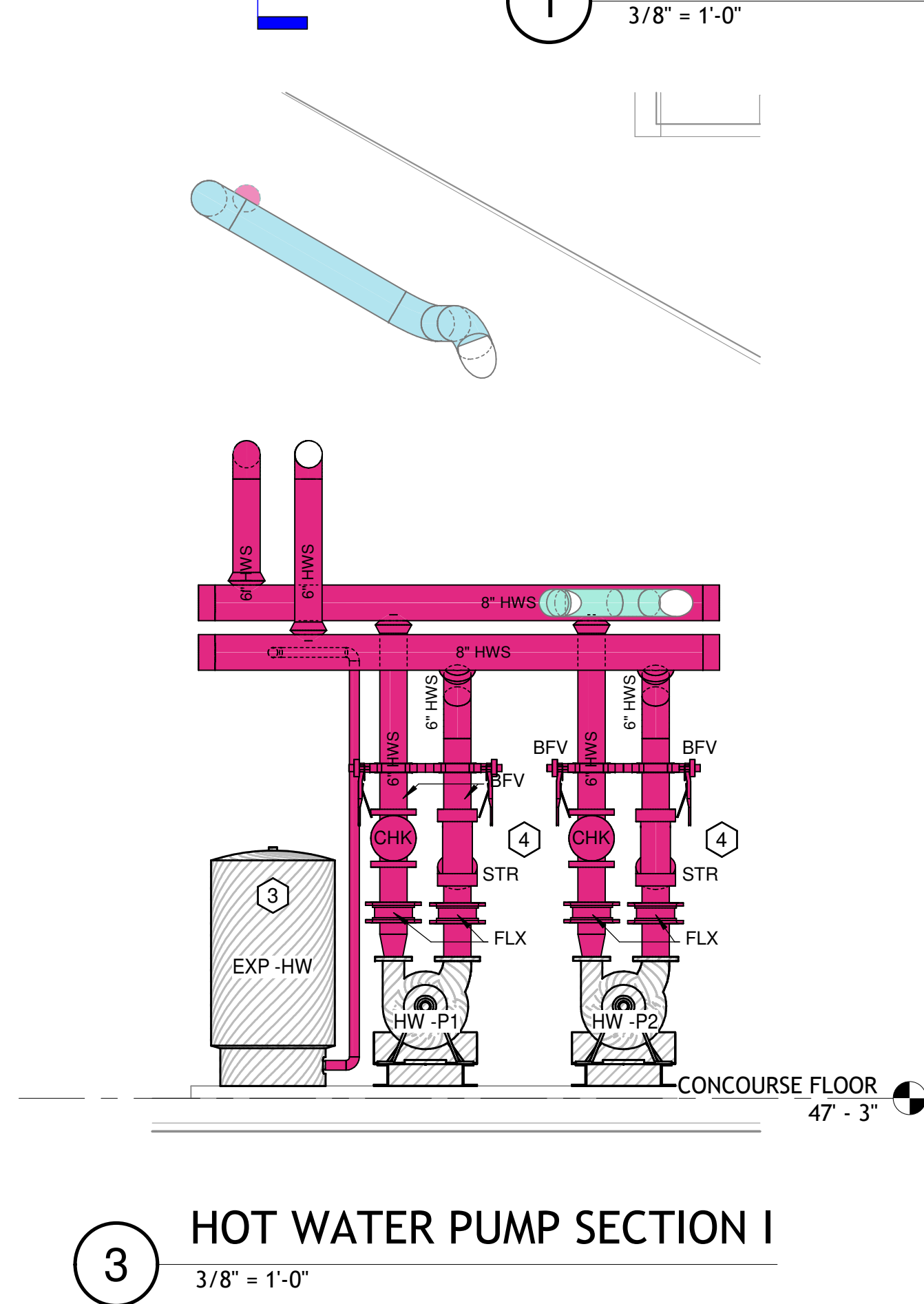
MECH ROOM HW
DEMO SECTIONS

M3.0



KEYED NOTES:

1. PROVIDE COMBINATION **AIR DIRT SEPARATOR LOW LOSS HEADER, ADS**, EQUAL TO SPIROTERM QUAD VDX800FAM (FLANGED, MAGNETIC) ASME WITH BLOWDOWN VALVE AND MAGNETS. SEE DETAIL FOR ADDITIONAL INSTALLATION REQUIREMENTS.
2. GAS ENTRANCE AND DISTRIBUTION PIPING BY PLUMBING CONTRACTOR.
3. PROVIDE **EXPANSION TANK, EXP-HW**, EQUAL TO WESSELS NLA-500, BLADDER TANK WITH 132 GAL ACCEPTANCE RATED TO 125 PSI WORKING PRESSURE.
4. PROVIDE WALL-MOUNTED, HEAVY-DUTY RATED SYSTEM **PUMP VFD** EQUAL TO SQUARE D, YASKAWA, ABB, DANFOSS OR ENGINEER APPROVED. VFD SHALL BE PROVIDED WITH BYPASS AND DISCONNECT. TYPICAL OF 2.
5. PROVIDE SS BOILER FLUE TERMINATION PER MANUFACTURER'S RECOMMENDATION AND TERMINATE WITHIN 6" OF TOP OF MASONRY CHIMNEY. PROVIDE SUPPORT AT TOP OF CHIMNEY. TYPICAL OF 4.
6. EXTEND WATER HEATER FLUE THROUGH AND UP CHIMNEY. PROVIDE TERMINATION PER MANUFACTURER'S RECOMMENDATION AND TERMINATE WITHIN 6" OF TOP OF MASONRY CHIMNEY. PROVIDE SUPPORT AT TOP OF CHIMNEY.
7. CONNECT TO BLDG DCW RISER, DOMESTIC WATER ENTRANCE AND PIPING (BY PLUMBING CONTRACTOR). CONNECT BOILER MAKEUP WATER PIPING (BY MECHANICAL CONTRACTOR) DOWNSTREAM OF BUILDING BACKFLOW PREVENTER.
8. PROVIDE **CONDENSATE NEUTRALIZER** FROM BOILER MANUFACTURER.. NEUTRALIZERS SHALL BE RATED FOR 2,000 MBH HEATING CAPACITY, MINIMUM, WITH TRANSLUCENT CONSTRUCTION TO VERIFY NEUTRALIZING MEDIA LEVELS. NEUTRALIZERS SHALL BE INSTALLED IN HORIZONTAL ORIENTATION, WITH PIPE UNIONS ON BOTH SIDES OF NEUTRALIZER FOR MAINTENANCE. DISCHARGE CONDENSATE TO NEAREST FLOOR DRAIN. TYPICAL AT EACH BOILER CONDENSATE DISCHARGE.
9. DUCT BOILER COMBUSTION AIR AS SHOWN TO EXISTING LOUVER, PROVIDE DUCT PLENUM ON LOWER HALF OF LOUVER AND PROVIDE BLANKOFF PLATE FOR UPPER HALF OF LOUVER, SEALING AROUND EDGES.



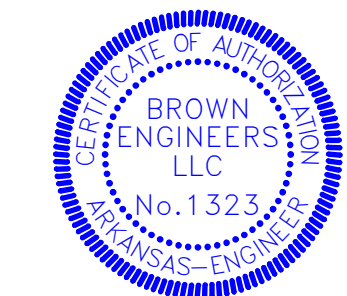
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REV # DESCRIPTION DATE

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1"
ONE INCH AT FULL SIZE, IF NOT
ONE INCH SCALE ACCORDINGLY

MECH ROOM HW
RENOVATION
SECTIONS

M3.1



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HVAC -- BOILER SCHEDULE

DESIGNATION		Manufacturer	Model	Description	INPUT BTUH (EACH BOILER)	OUTPUT BTUH (EACH BOILER)	ELECTRICAL REQUIREMENTS	
Type Mark	Mark						VOLTAGE	PHASE
BLR	1	Viessmann	Vitocrossal 200 CI2 2000	Commercial Condensing Boiler With Filtered Combustion Air Intake	2,000,000 Btu/h	1,940,000 Btu/h	120 V	1
BLR	2	Viessmann	Vitocrossal 200 CI2 2000	Commercial Condensing Boiler With Filtered Combustion Air Intake	2,000,000 Btu/h	1,940,000 Btu/h	120 V	1
BLR	3	Viessmann	Vitocrossal 200 CI2 2000	Commercial Condensing Boiler With Filtered Combustion Air Intake	2,000,000 Btu/h	1,940,000 Btu/h	120 V	1
BLR	4	Viessmann	Vitocrossal 200 CI2 2000	Commercial Condensing Boiler With Filtered Combustion Air Intake	2,000,000 Btu/h	1,940,000 Btu/h	120 V	1

BOILER SCHEDULE NOTES:

1. PROVIDE FOUR (4) GAS-FIRED CONDENSING BOILERS, WITH MAX OF THREE (3) IN OPERATION AT PEAK LOAD FOR N+1 REDUNDANCY.

2. BOILERS SHALL BE UTILIZED IN A PRIMARY / SECONDARY HEATING WATER SYSTEM.

3. HEATING WATER SUPPLY AND RETURN DESIGN TEMPERATURE SHALL BE AT 200/180°F.

4. THE BOILER AND HEATING HOT WATER PUMP SEQUENCES OF OPERATION SHALL ALTERNATE THE LEAD PUMPS AND LEAD BOILER SO THAT ALL EQUIPMENT WILL HAVE SIMILAR RUN TIMES.

5. PROVIDE BOILER RATED AND TESTED FOR 160 PSI MAX.

6. PROVIDE EACH BOILER WITH MANUFACTURER RECOMMENDED INLET SUCTION DIFFUSER.

7. PROVIDE EACH BOILER WITH MANUFACTURER RECOMMENDED SS FLUE EXHAUST VENT TERMINATION.

8. BOILERS SHALL BE PROVIDED WITH THE FOLLOWING:

GAS FIRED, CONDENSING FIRETUBE BOILER.

DUAL BURNERS

TITANIUM STABILIZED SERIES 441 STAINLESS STEEL HEAT EXCHANGER

97% THERMAL EFFICIENCY

96.5% COMBUSTION EFFICIENCY

20:1 TURNDOWN

O2 TRIM

DIGITAL TOUCHSCREEN

OUTDOOR RESET

ADJUSTABLE AUTO-RESET HIGH LIMIT

FIXED MANUAL RESET HIGH LIMIT

LP AND HP GAS SWITCHES

CONDENSATE NEUTRALIZATION TANK

WALL MOUNTED BUILDING MANAGEMENT SYSTEM BACNET MSTP GATEWAY

THE CONDENSATION RATE CONTROLLED BY OPTIMUM COMBUSTION, SHALL BE ABLE TO MEET A CO2 VALUE OF 10% THROUGH THE ENTIRE FIRING RANGE.

4" OF MINERAL WOOL NYLON BACKED INSULATION ON HEATEXCHANGERS

BOILERS SHALL BE EQUIPPED WITH 3 RETRACTABLE ON-BOARD CASTERS FOR EASY TRANSPORT AND POSITIONING.

HIGH MASS BOILERS WITH 99 GALLON WATER CONTENT

BOILER SHALL NOT REQUIRE A FLOW SWITCH

CERTIFIED FOR 8" POLYPROPYLENE FLUE

258.8 SQUARE FEET HEAT EXCHANGER SURFACE AREA

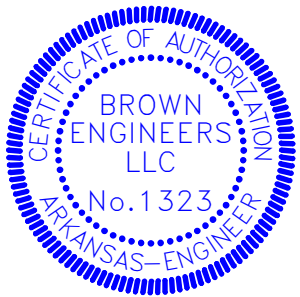
HVAC -- HEATING WATER PUMP SCHEDULE											
DESIGNATION		MANUFACTURER	MODEL	MOTOR HORSEPOWER	FLOW	TOTAL HEAD	MOTOR RPM	VOLTAGE	PHASE	POWER	REMARKS
BP	1	Bell & Gossett	3x3x7C	1	129 GPM	15.0 fH2O	1800	480 V	3	1.75 KVA	BOILER CIRCULATION PUMP
BP	2	Bell & Gossett	3x3x7C	1	129 GPM	15.0 fH2O	1800	480 V	3	1.75 KVA	BOILER CIRCULATION PUMP
BP	3	Bell & Gossett	3x3x7C	1	129 GPM	15.0 fH2O	1800	480 V	3	1.75 KVA	BOILER CIRCULATION PUMP
BP	4	Bell & Gossett	3x3x7C	1	129 GPM	15.0 fH2O	1800	480 V	3	1.75 KVA	BOILER CIRCULATION PUMP
HW	P1	Bell & Gossett	VSC-4x6x10.5B	15	570 GPM	60.0 fH2O	1800	480 V	3	17.55 KVA	BUILDING HW PUMP
HW	P2	Bell & Gossett	VSC-4x6x10.5B	15	570 GPM	60.0 fH2O	1800	480 V	3	17.55 KVA	BUILDING HW PUMP

PUMP SCHEDULE NOTES:

1. PROVIDE SUCTION DIFFUSER TO MATCH PUMP INLET SIZE . REFER TO PUMP CONTROLS AND DETAIL.
2. PROVIDE BOILER CIRCULATOR PUMPS, BP, AS STAINLESS STEEL.
3. THE BOILER AND HEATING HOT WATER PUMP SEQUENCES OF OPERATION SHALL ALTERNATE THE LEAD PUMPS AND LEAD BOILER SO THAT ALL EQUIPMENT WILL HAVE SIMILAR RUN TIMES.
4. THE PRIMARY BOILER PUMPS (BP) SHALL BE DEDICATED TO EACH BOILER WITH THE SECONDARY HEATING WATER PUMPS (HWP) HEADERED FOR REDUNDANCY.
5. PROVIDE NEW PUMPS WITH BRONZE FITTED FEATURE.
6. PROVIDE BUILDING HW PUMPS WITH WALL-MOUNTED VFDs. REFER TO M3.1.
7. NOTE THAT MOTORS SHALL BE BELL AND GOSSETT OR APPROVED EQUAL WITH NEMA PREMIUM EFFICIENCY MOTOR

NOTE:

REFER TO PLANS AND DETAILS FOR ADDITIONAL HEATING WATER SYSTEM EQUIPMENT, CONTROLS, AND ACCESSORIES.

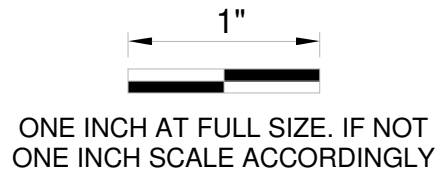


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REV #	DESCRIPTION	DATE

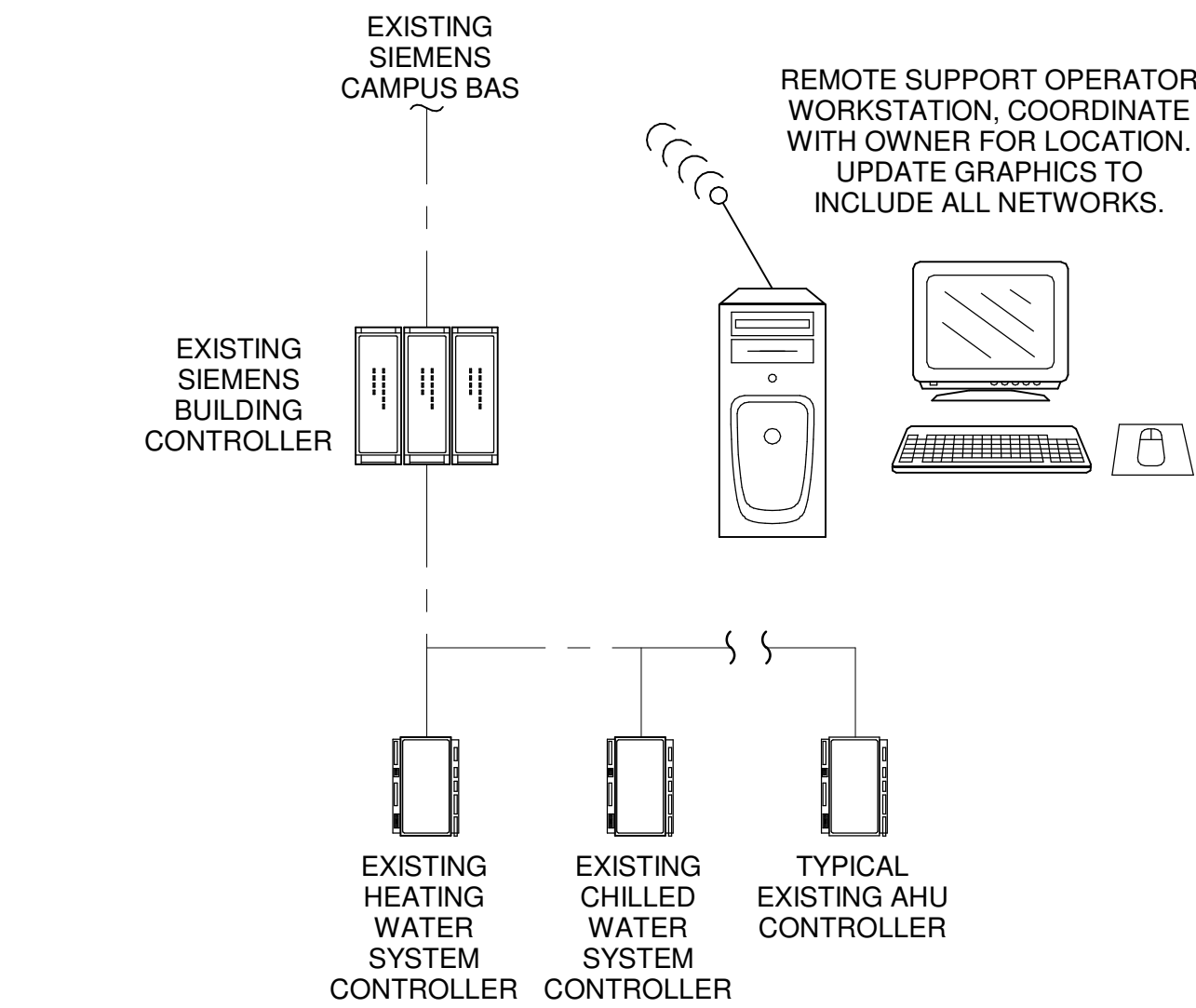
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MECHANICAL
SCHEDULES - HW

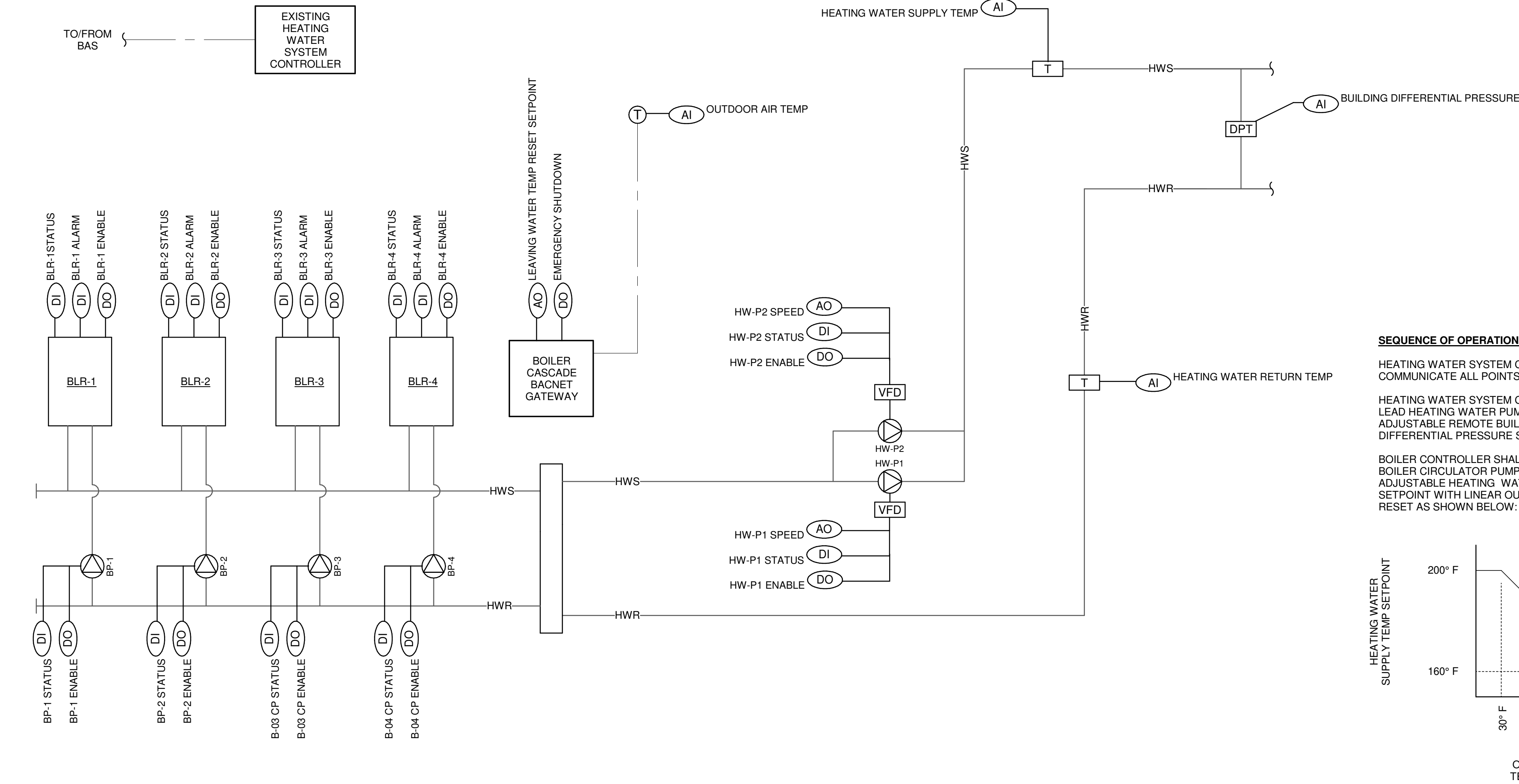
HVAC CONTROLS LEGEND

	CONTROL WIRING
	BAS TRUNK CABLING
	CONTROL DAMPER BY CONTROL SYSTEM MANUFACTURER, UNLESS OTHERWISE NOTED.
	FAN
	PUMP
	DUCT SMOKE DETECTOR
	FILTER
	FILTER MAGNEHELIC GAUGE BY FILTER MANUFACTURER
	ELECTRIC TWO-WAY, MODULATING CONTROL VALVE UNLESS NOTED AS TWO-POSITION
	ELECTRIC THREE-WAY, MODULATING CONTROL VALVE UNLESS NOTED AS TWO-POSITION
	FAN OR PUMP STARTER W / HOA
	LOW LIMIT TEMPERATURE CONTROLLER DAMPER
	DIFFERENTIAL PRESSURE SWITCH
	VARIABLE FREQUENCY DRIVE BY CONTROL MANUFACTURER
	ELECTRIC DAMPER OPERATOR
	TEMPERATURE SENSOR
	HUMIDITY SENSOR
	CURRENT SENSOR
	AIRFLOW MEASURING STATION
	FUME HOOD OCCUPANCY SENSOR
	FUME HOOD OPERATOR DISPLAY PANEL
	FUME HOOD SASH POSITION SENSOR
	AIR FLOW MEASUREMENT SIGNAL
	DIRTY FILTER ALARM
	PRESSURE SENSOR
	HIGH PRESSURE ALARM
	STATIC PRESSURE SENSOR
	HUMIDITY HIGH LIMIT SENSOR
	DIFFERENTIAL PRESSURE TRANSMITTER
	NORMALLY CLOSED
	NORMALLY OPEN
	COMMON
	CONSTANT VOLUME
	SPACE TEMPERATURE SENSOR
	SPACE HUMIDITY SENSOR
	SPACE PRESSURE SENSOR
	SPACE CO2 SENSOR
	ANALOG INPUT
	ANALOG OUTPUT
	DIGITAL INPUT
	DIGITAL OUTPUT



1 SYSTEM ARCHITECTURE

NOT TO SCALE



2 HEATING WATER SYSTEM CONTROLS

NOT TO SCALE

HVAC CONTROLS GENERAL NOTES:

CONTRACTOR SHALL FURNISH AND INSTALL BUILDING AUTOMATION SYSTEM (BAS) AS FOLLOWS:

- NEW CONTROLS INSTRUMENTATION TO SUPPORT HVAC SYSTEMS INTEGRATION AND MONITORING AS SHOWN.
- INTEGRATION OF NEW EQUIPMENT INTO EXISTING EQUIPMENT CONTROLLERS, BUILDING CONTROLLER, AND CAMPUS BAS.

CONTRACT DOCUMENT CONTROLS DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ONLY ILLUSTRATE CONTROLS AS REQUIRED TO ACHIEVE DESIGN INTENT. CONTROLS CONTRACTOR SHALL PROVIDE ALL INSTRUMENTATION AND PROGRAMMING AS REQUIRED TO FURNISH A FULLY FUNCTIONING SYSTEM.

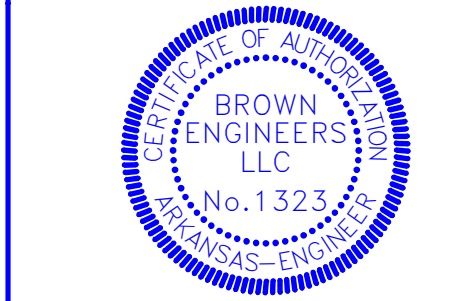
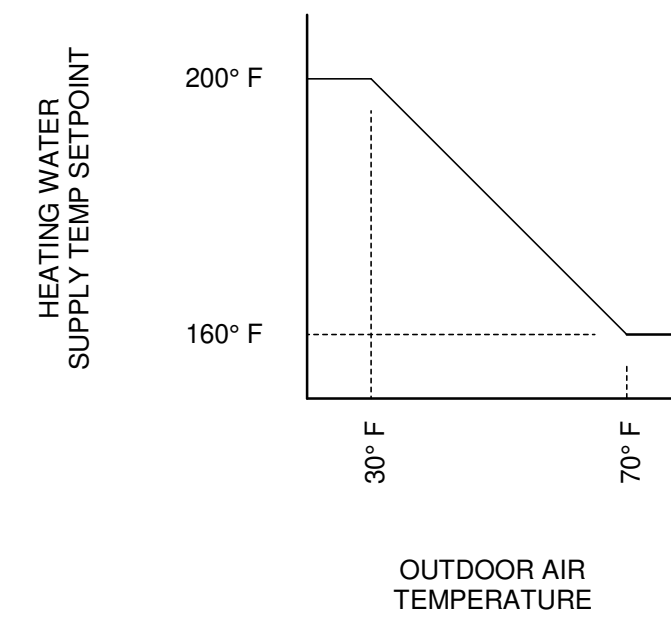
BUILDING CONTROLS MANUFACTURER SHALL BE SIEMENS TO COORDINATE WITH EXISTING CAMPUS NETWORK. NO SUBSTITUTIONS OR ALTERNATIVES SHALL BE ACCEPTED.

SEQUENCE OF OPERATIONS

HEATING WATER SYSTEM CONTROLLER SHALL FULLY COMMUNICATE ALL POINTS WITH BAS AS ILLUSTRATED.

HEATING WATER SYSTEM CONTROLLER SHALL MODULATE LEAD HEATING WATER PUMP MOTOR SPEED TO MAINTAIN ADJUSTABLE REMOTE BUILDING HEATING WATER DIFFERENTIAL PRESSURE SETPOINT (5 PSIG).

BOILER CONTROLLER SHALL ENERGIZE BOILERS AND BOILER CIRCULATOR PUMPS IN SEQUENCE TO MAINTAIN ADJUSTABLE HEATING WATER SUPPLY TEMPERATURE SETPOINT WITH LINEAR OUTDOOR AIR TEMPERATURE RESET AS SHOWN BELOW:



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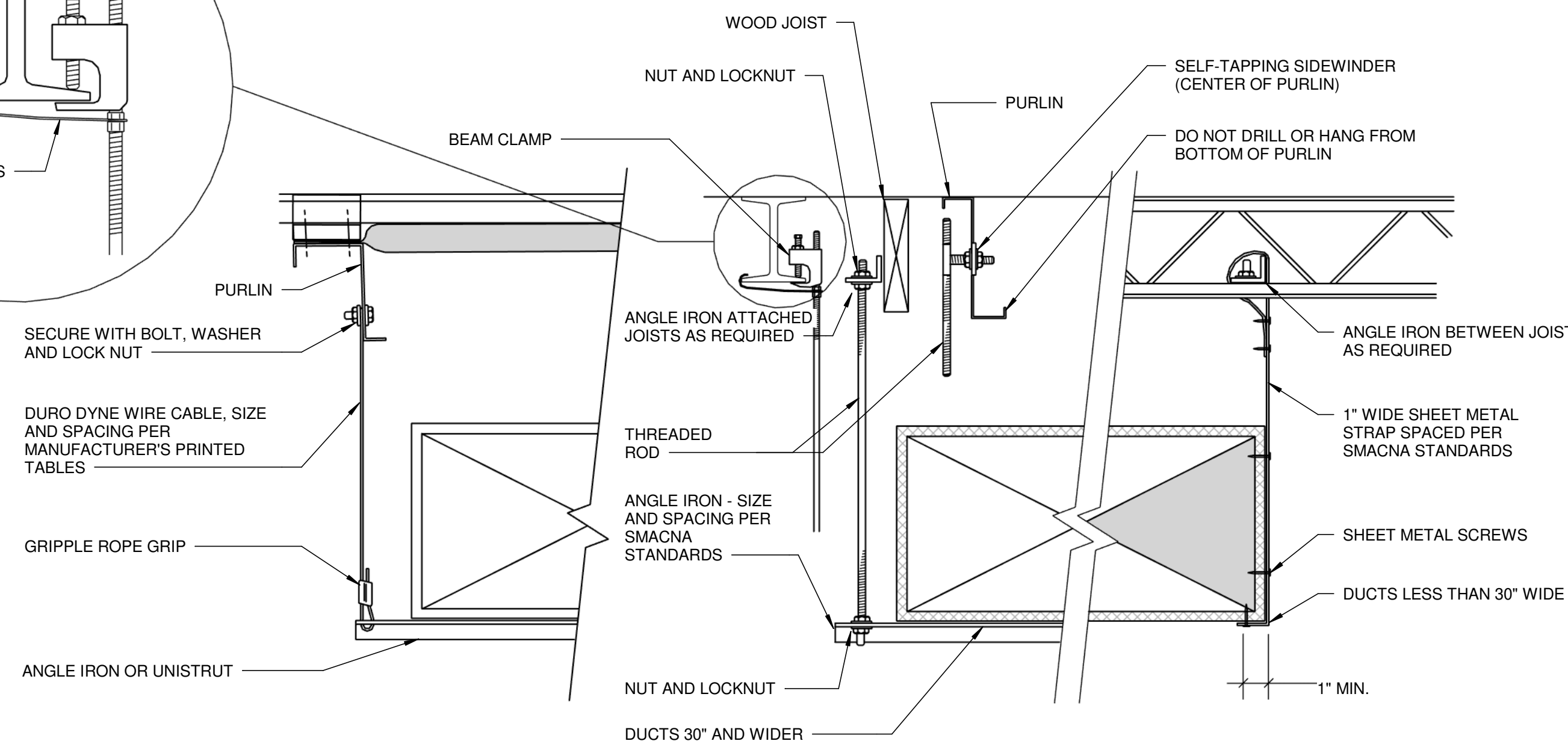
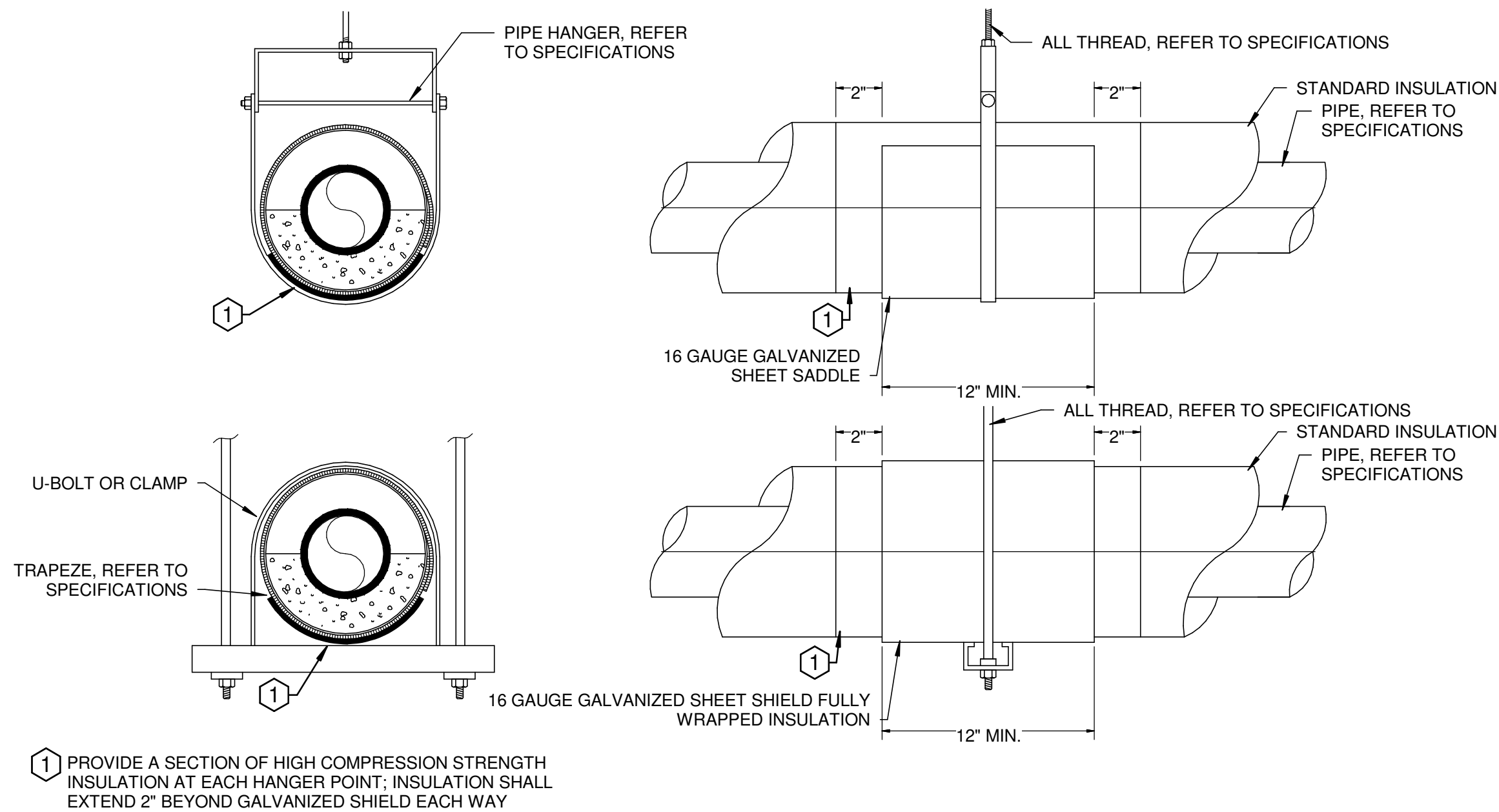
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1"
ONE INCH AT FULL SIZE, IF NOT
ONE INCH SCALE ACCORDINGLY

MECHANICAL
CONTROLS - HW

M5.1

DRAWING NAME: ATU-002-T01 M6.1
DATE: 6/23/2025 5:04:54 PM
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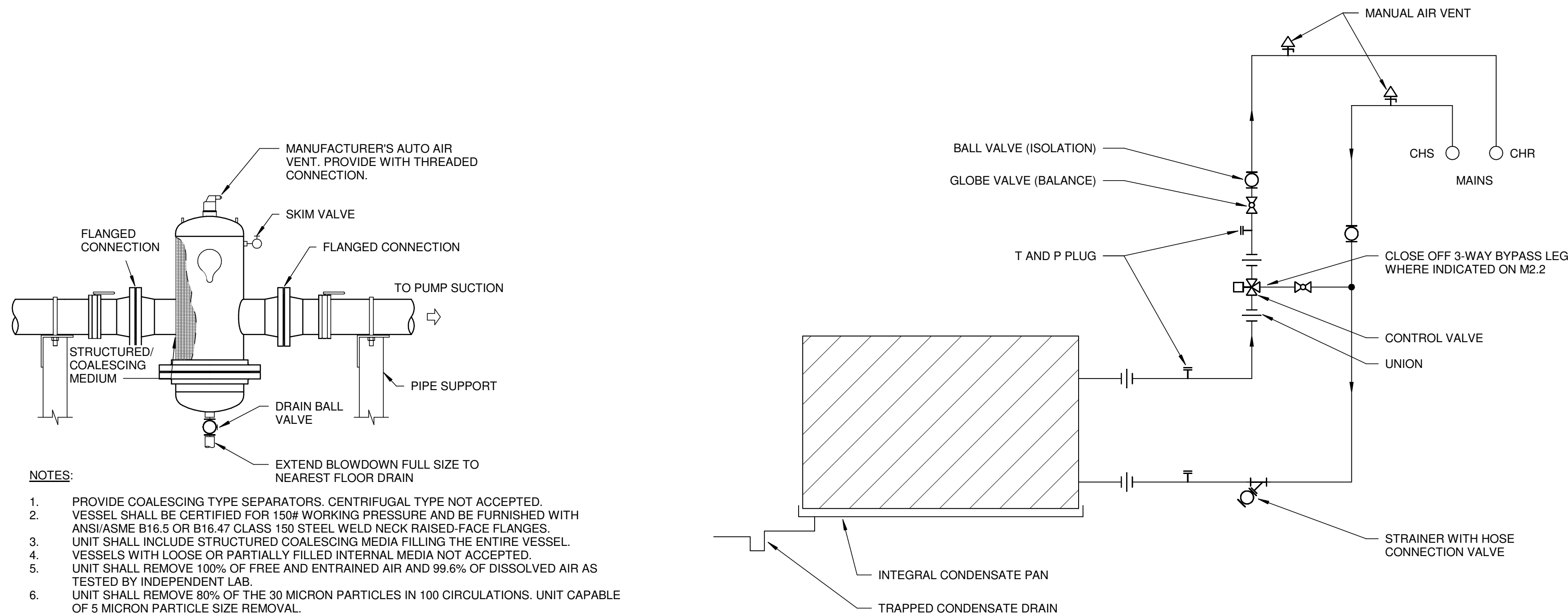


1 INSULATED PIPE HANGER 1

NOT TO SCALE

2 DUCT / EQUIPMENT SUPPORT

NOT TO SCALE

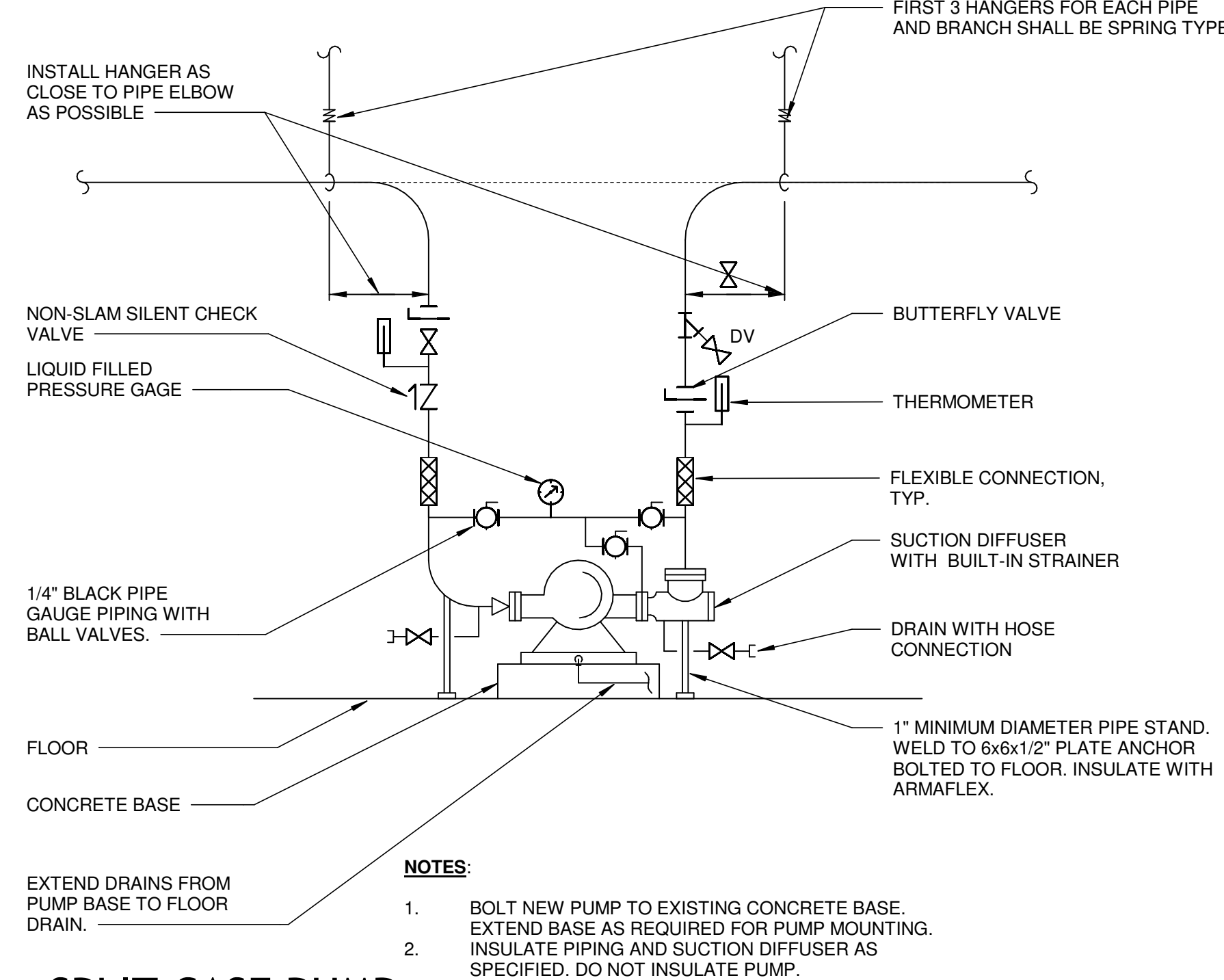


3 AIR DIRT SEPARATOR

NOT TO SCALE

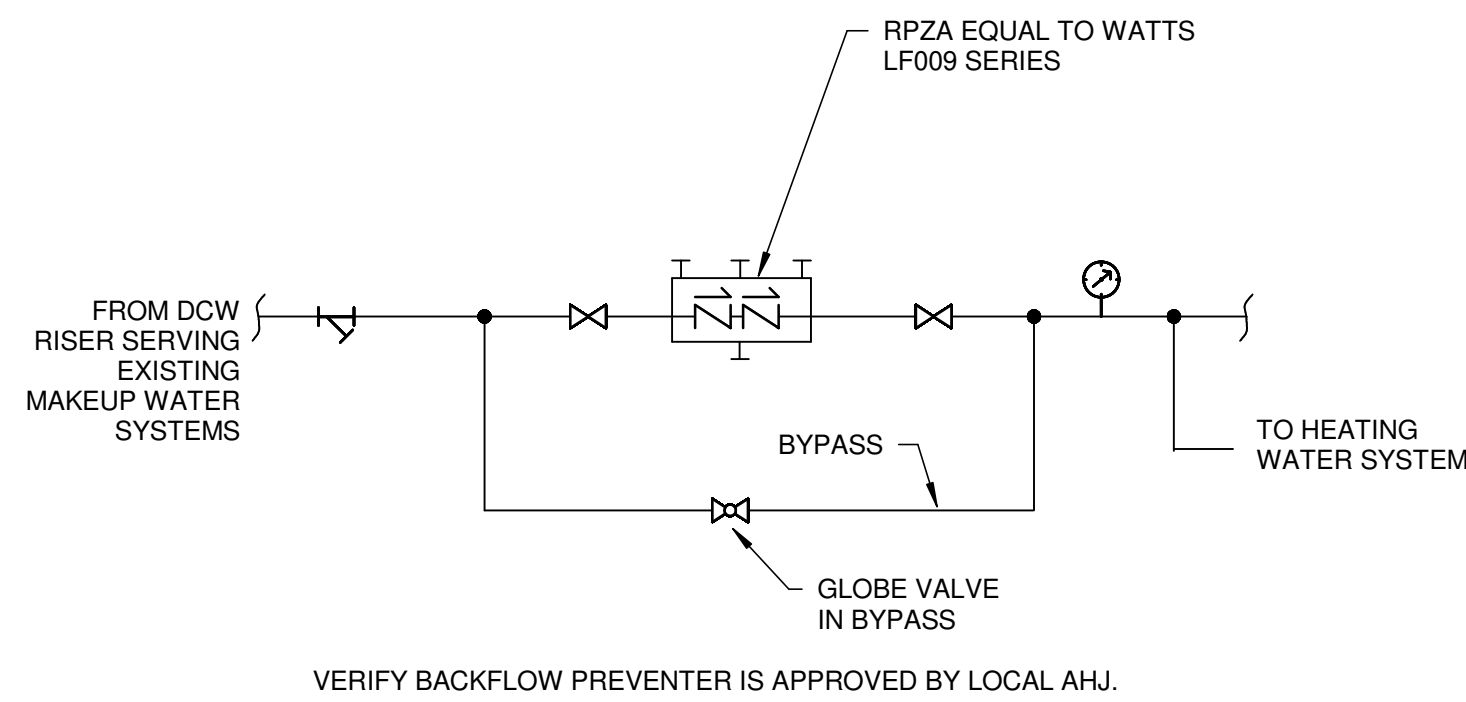
4 EXISTING HW COIL - 3 WAY CONTROL VALVE

NOT TO SCALE



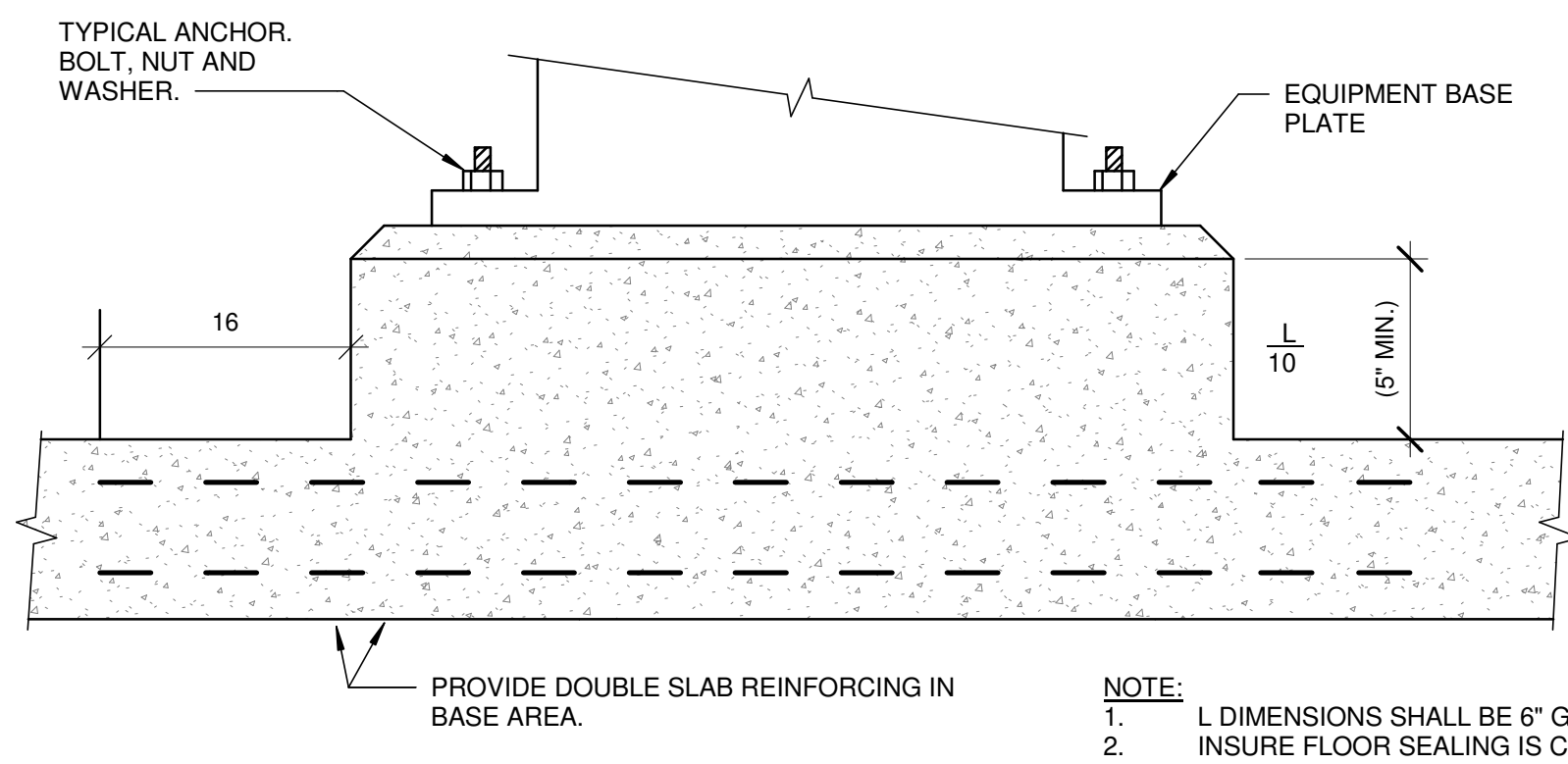
5 SPLIT CASE PUMP

NOT TO SCALE



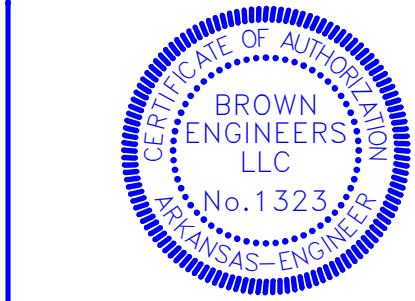
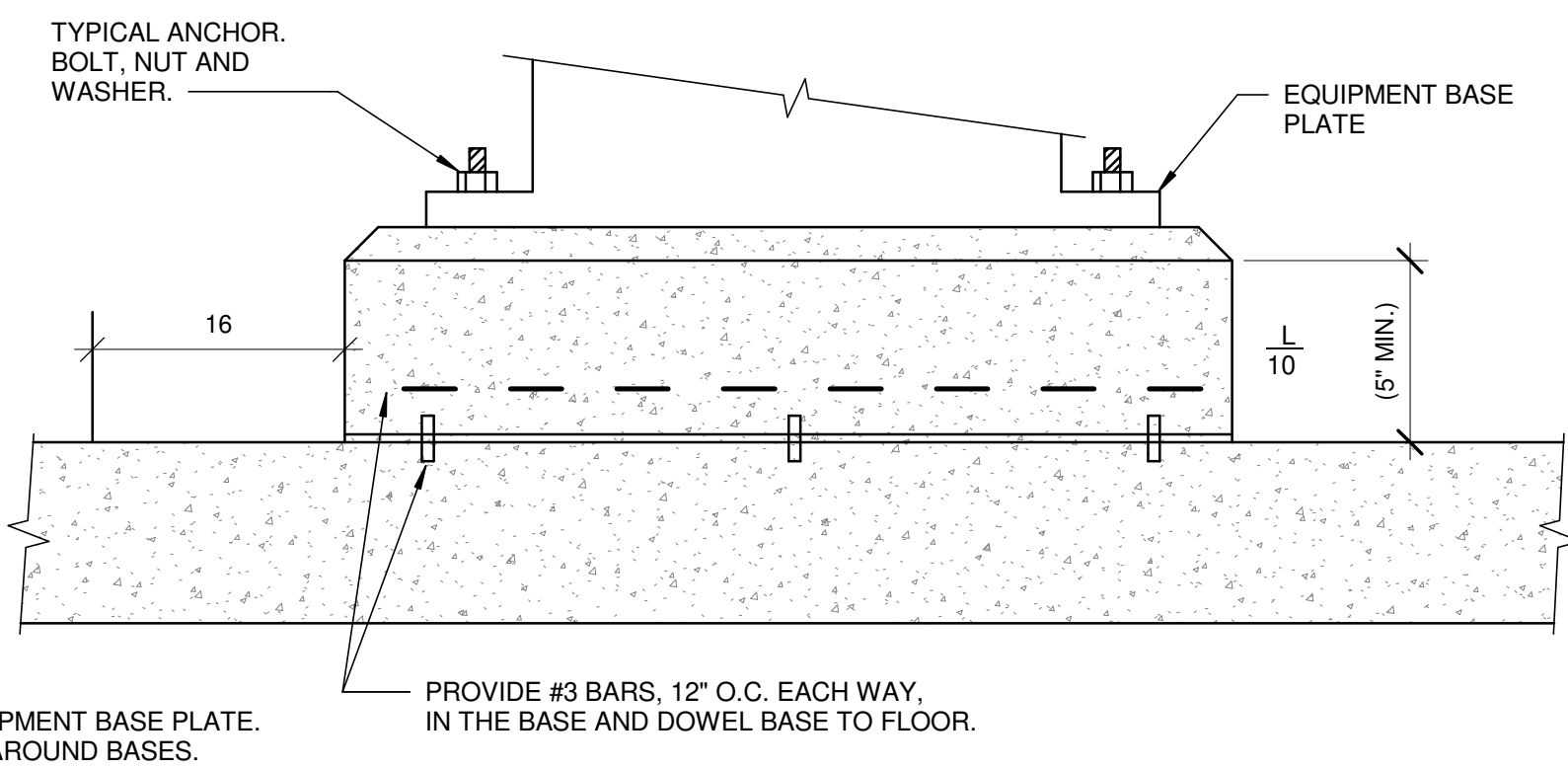
6 MAKE-UP WATER PRV

NOT TO SCALE



7 CONCRETE EQUIPMENT BASES

NOT TO SCALE

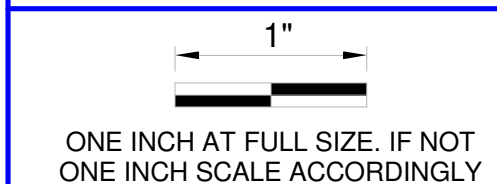


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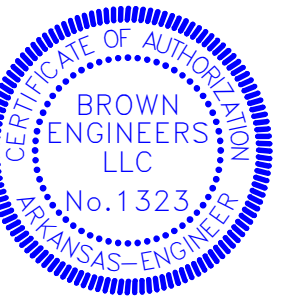
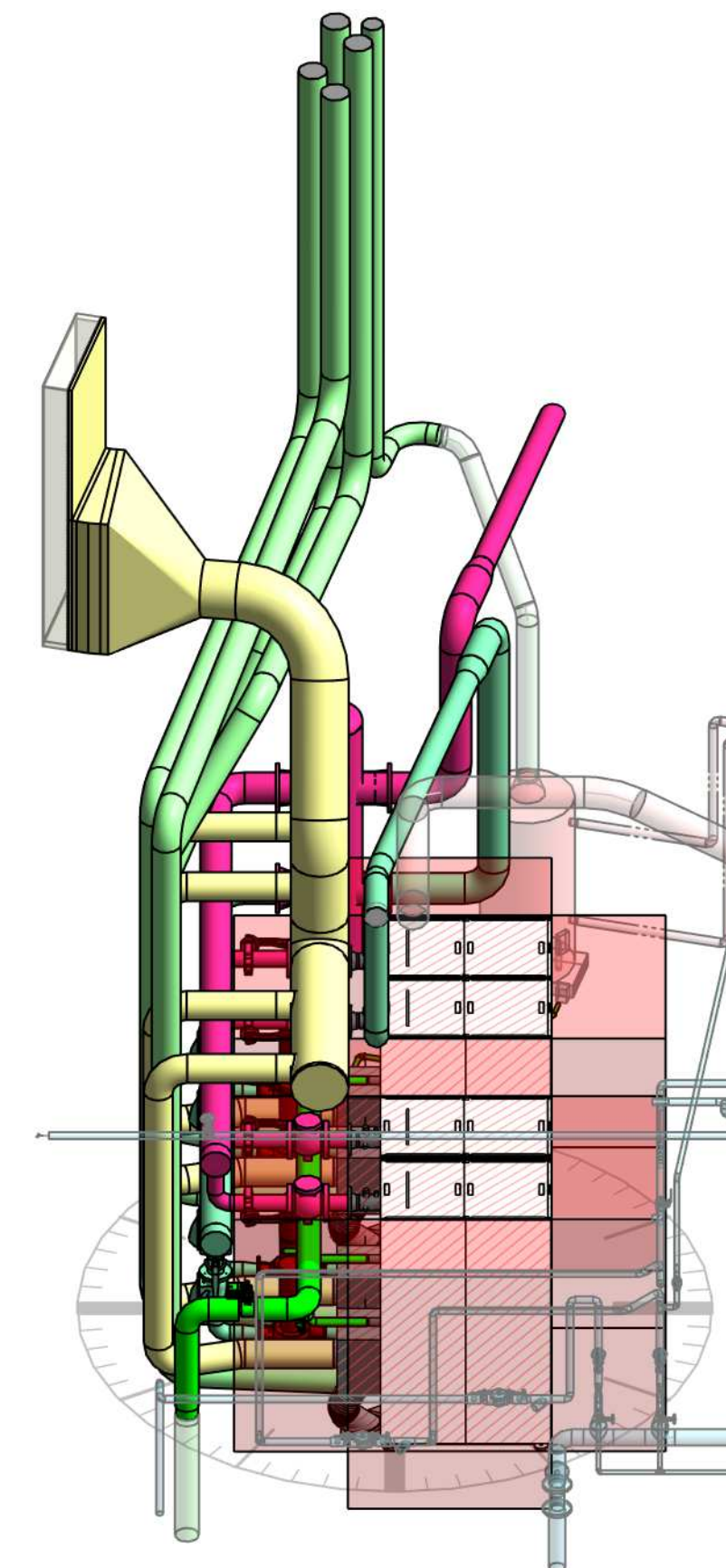
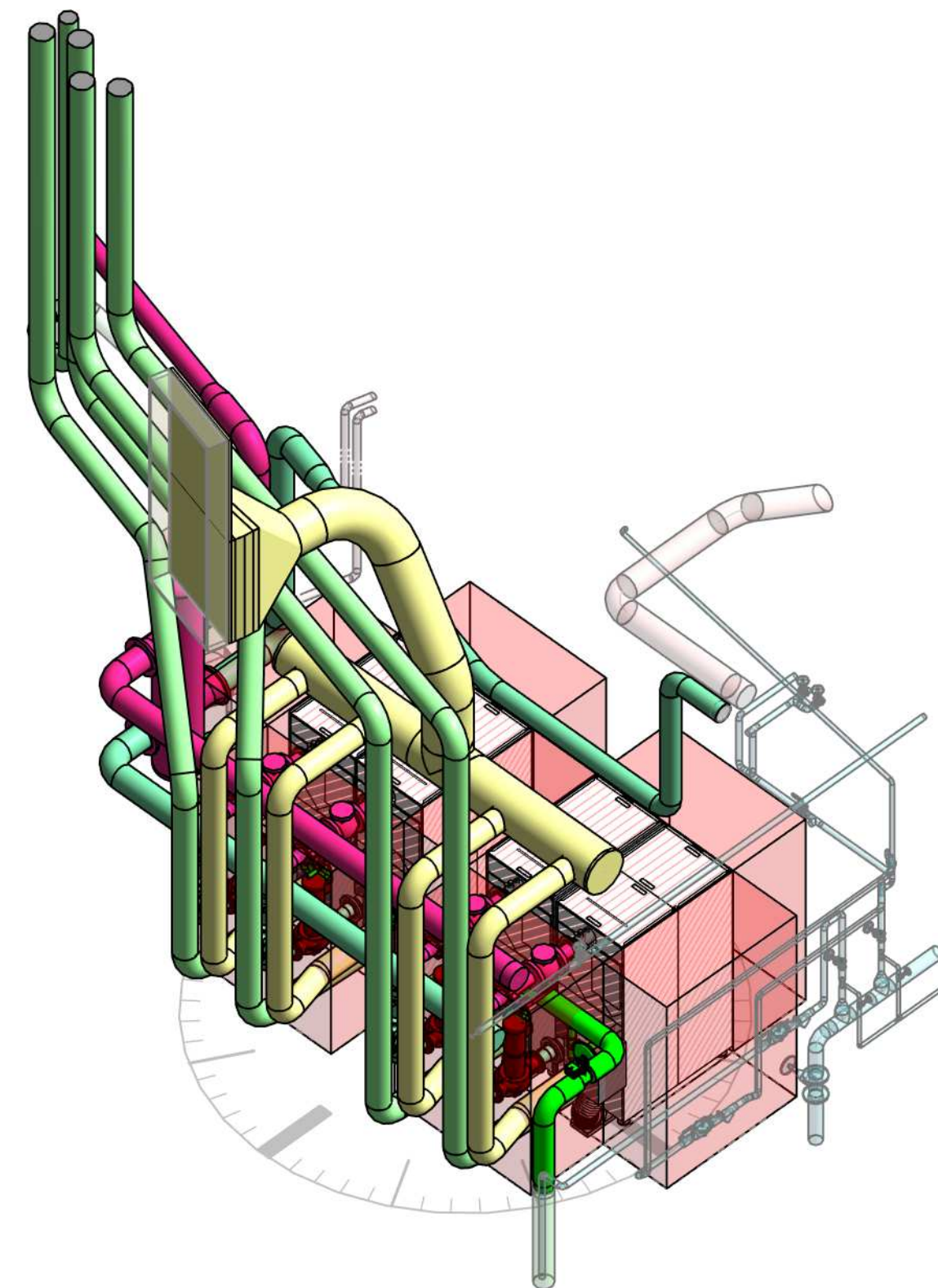
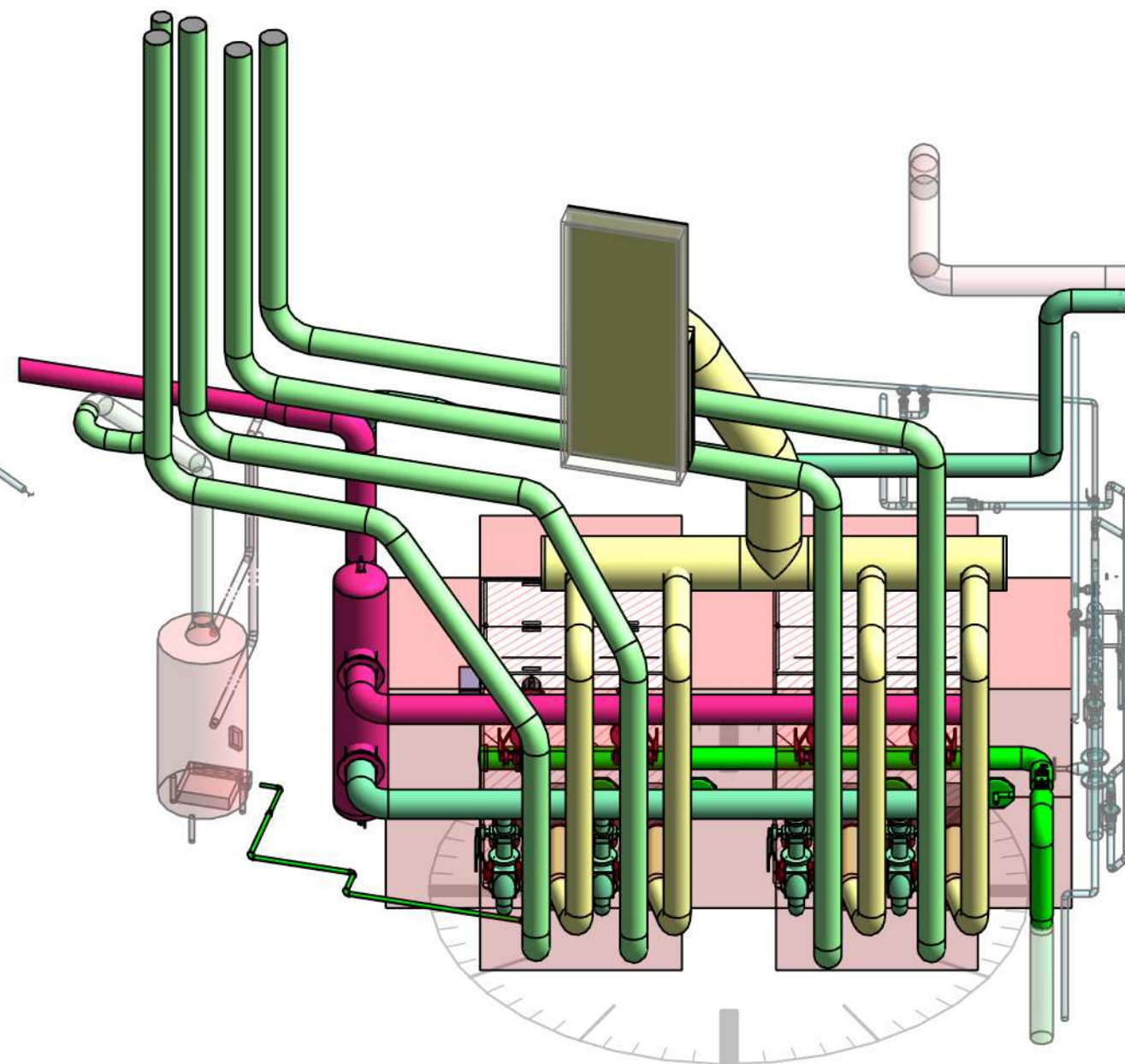
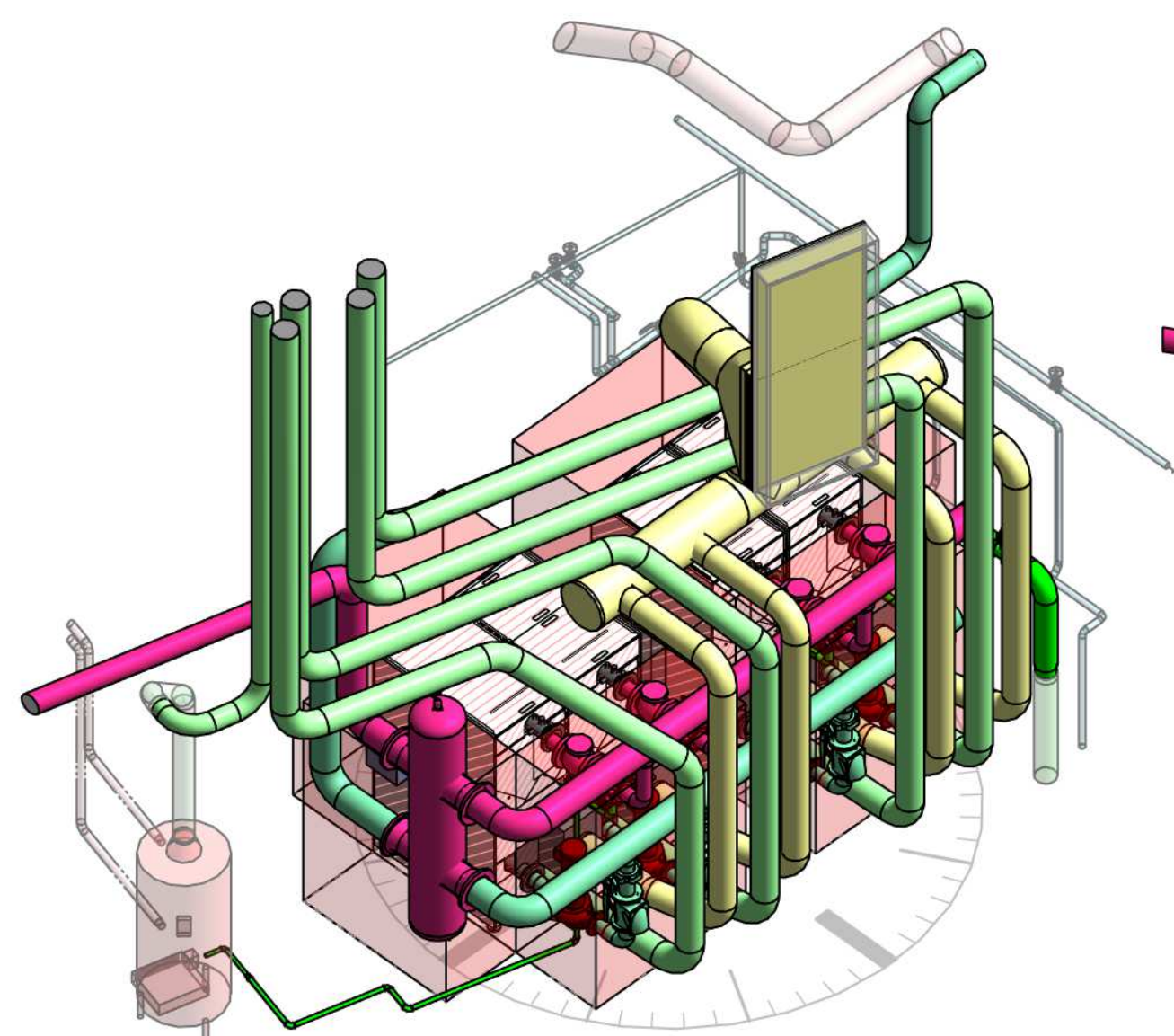
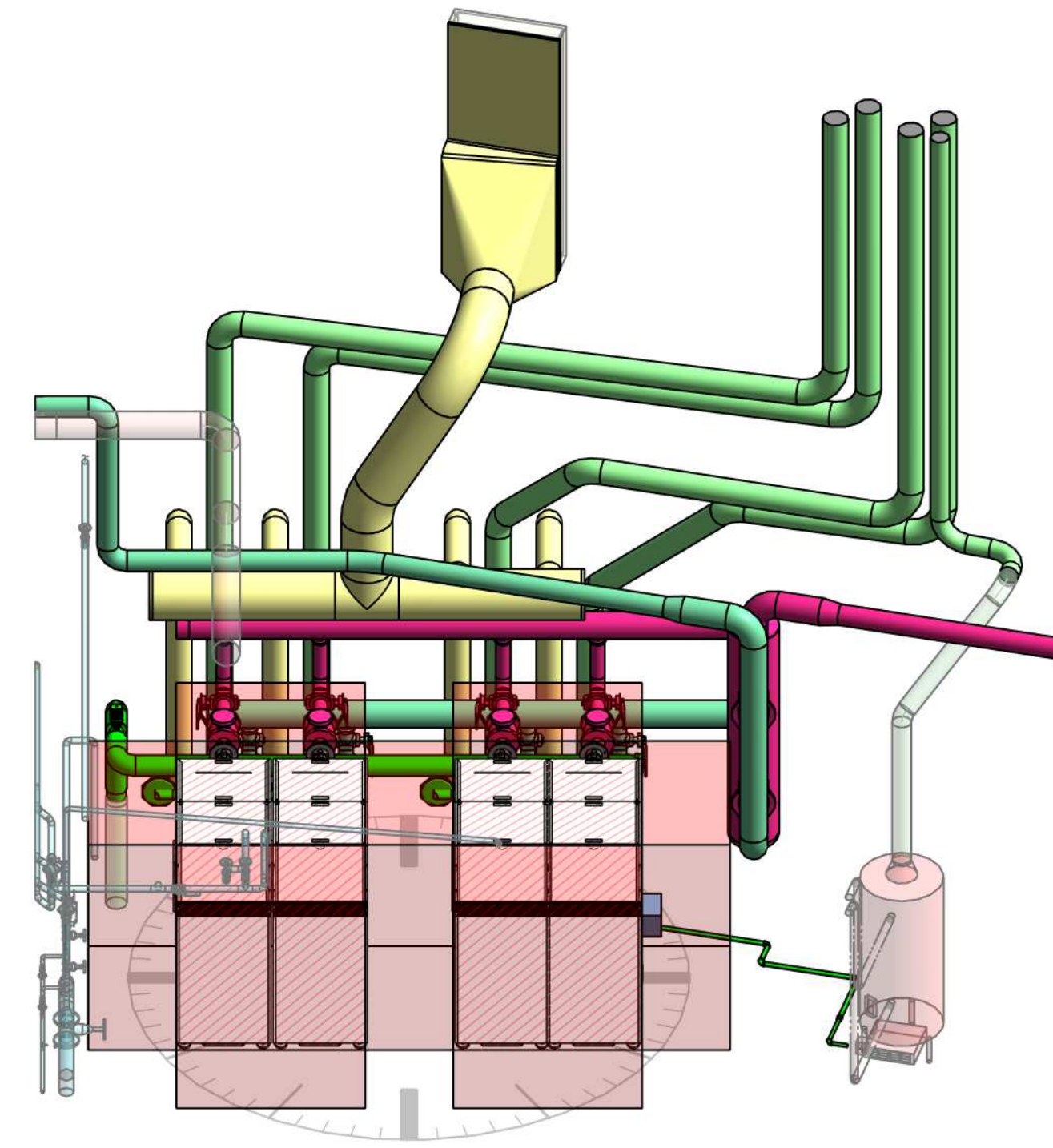
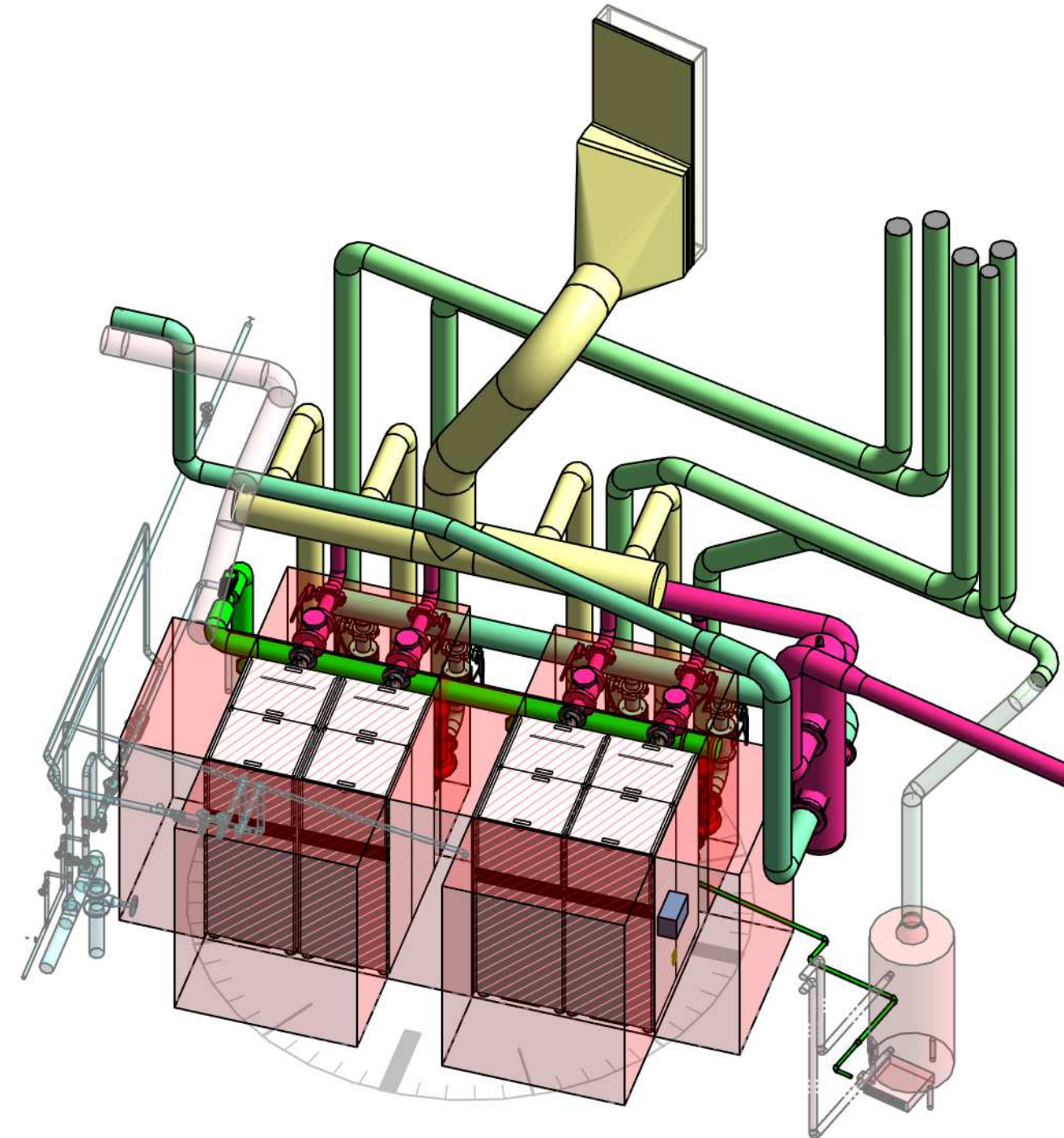
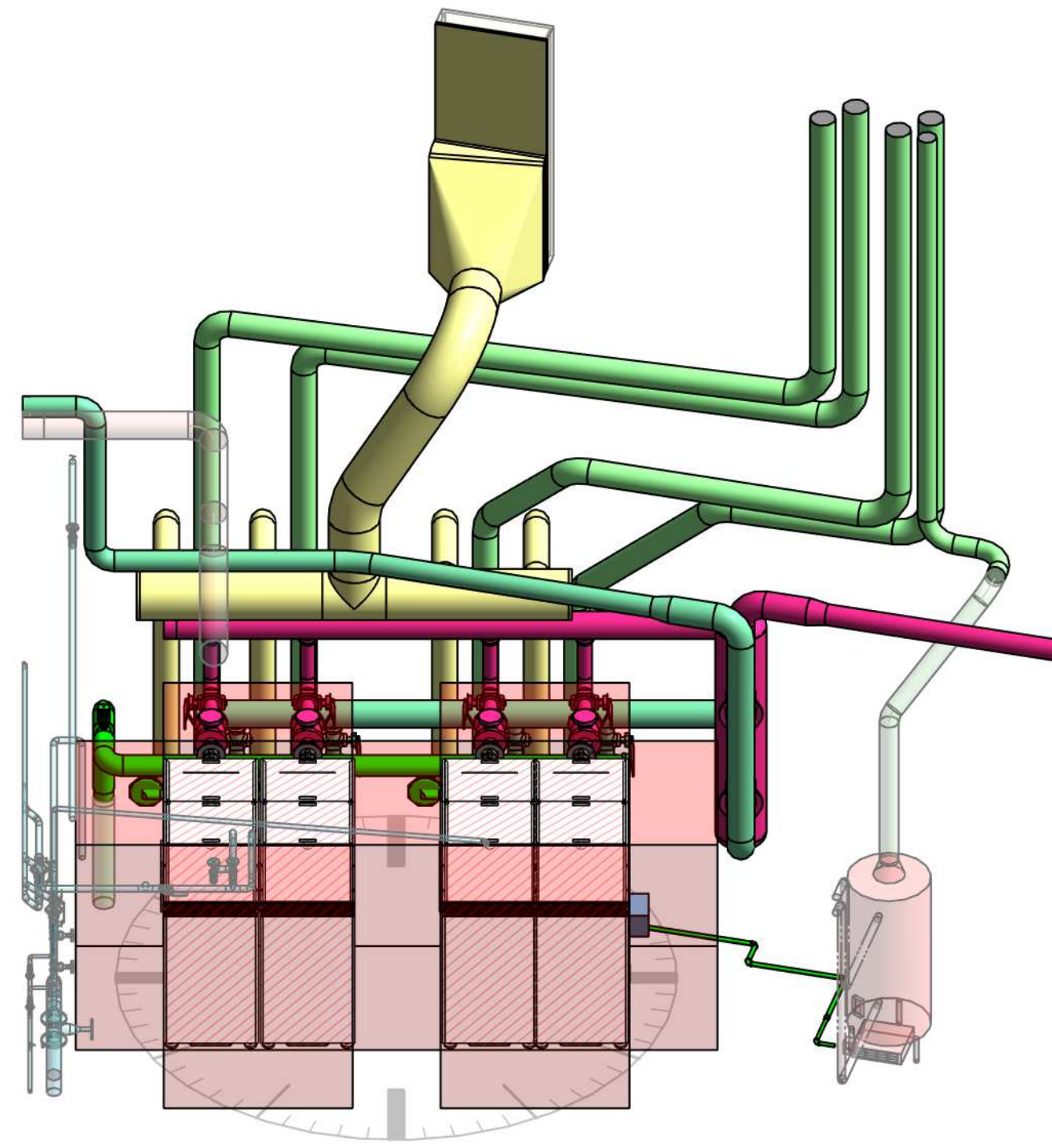
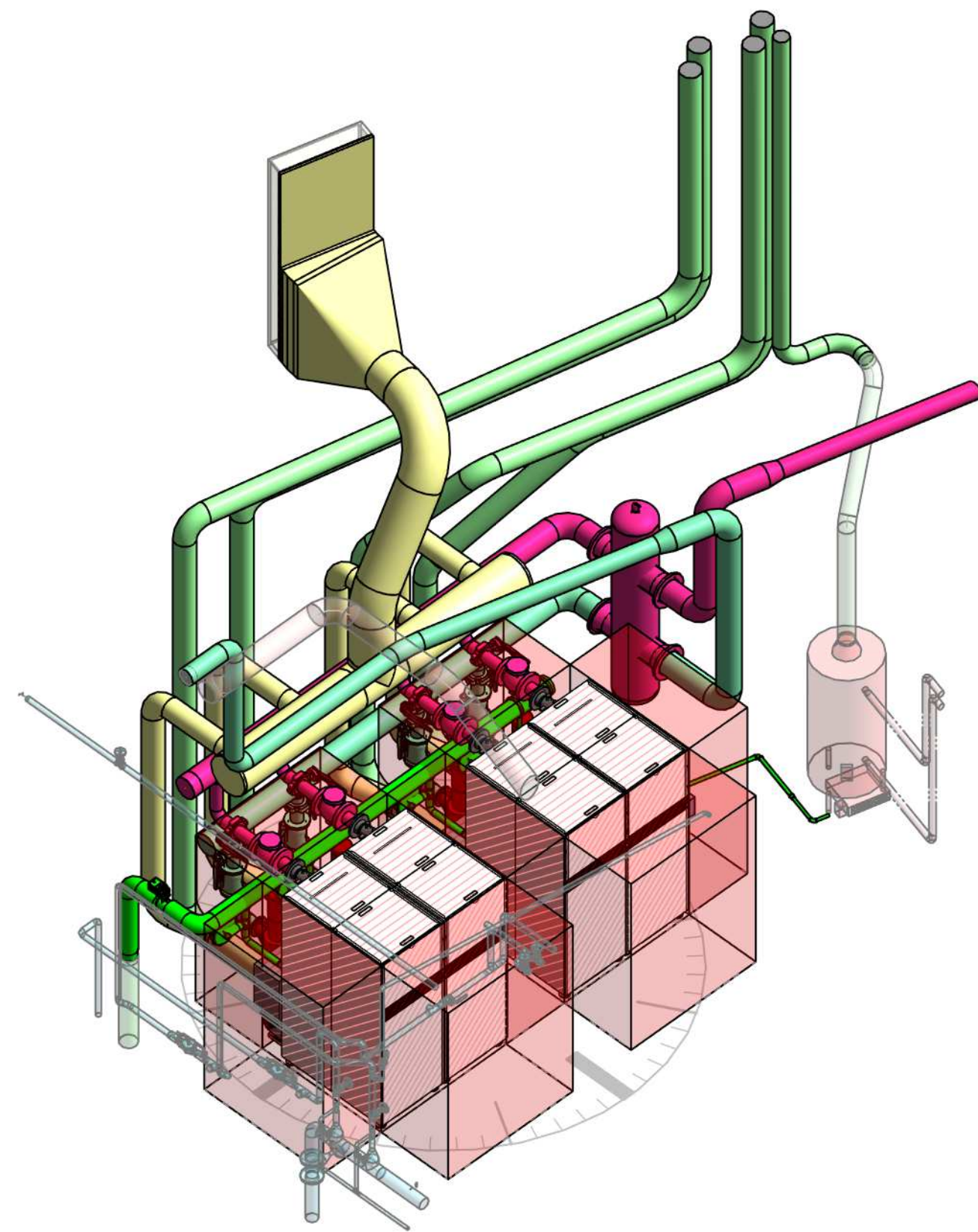
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MECHANICAL
DETAILS I - PH 1

M6.1

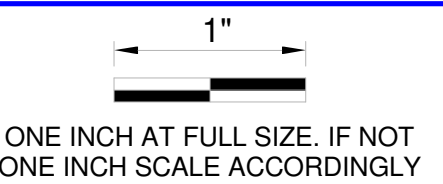


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










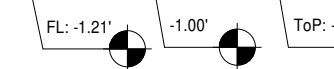

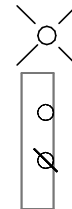

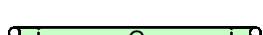

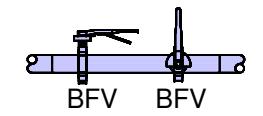


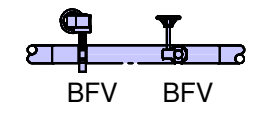
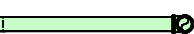

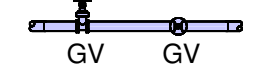


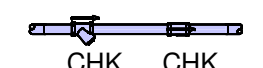


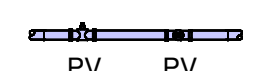


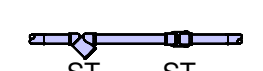









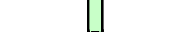

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BOILER PIPING
ISOMETRIC
REFERENCES

M7.1

PLUMBING LEGEND

ABBREVIATION OR SYMBOL	DESCRIPTION	ABBREVIATION OR SYMBOL	DESCRIPTION	ABBREVIATION OR SYMBOL	DESCRIPTION
	DOMESTIC COLD WATER		FLEXIBLE PIPING		ABOVE FINISH FLOOR
	DOMESTIC HOT WATER		EXISTING PIPING TO REMAIN (refer to line designation)		ABOVE FINISH GRADE
	DOMESTIC HOT WATER RETURN		EXISTING TO BE REMOVED (back to point indicated)		FINISH FLOOR ELEVATION
	SANITARY SEWER		CONNECT TO EXISTING		PRESSURE REDUCING VALVE
	SANITARY - GREASE WASTE		BELOW GRADE PIPING (fine dash)		TOP OF PIPE
	SANITARY - ACID WASTE		PIPE ELEVATION CALLOUTS		
	STORM DRAIN				PIPE PENETRATION (through floor/wall/etc)
	VENT				DCW ROUGH-IN
	NATURAL GAS				DHW ROUGH-IN
	CONDENSATE DRAIN				
VALVING		THREADED WATER & GAS PIPING		LONG RADIUS SEWER & VENT PIPING	
	BUTTERFLY VALVE (lever operator)		PIPE DOWN		PIPE DOWN
	BUTTERFLY VALVE (wheel operator)		PIPE UP		PIPE UP
	GATE VALVE		THREADED TEE DOWN		PIPE WYE DOWN
	CHECK VALVE		THREADED TEE UP		PIPE WYE UP
	PLUG VALVE		BRANCH - BOTTOM OF PIPE		BRANCH - BOTTOM OF PIPE
	STRAINER (Y-TYPE)		BRANCH - TOP OF PIPE		BRANCH - TOP OF PIPE
	BALL VALVE		90 DEGREE ELBOW		ELBOW
			45 DEGREE ELBOW		45 DEGREE ELBOW
			TEE		WYE WITH EIGHTH BEND
			UNION		UNION

* NOT ALL SYMBOLS MAY APPLY TO THIS PROJECT

SEISMIC DESIGN NOTES:

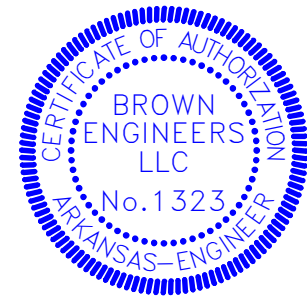
- BUILDING RISK CATEGORY: **CATEGORY II**
- SEISMIC DESIGN CATEGORY: C
- ALL PLUMBING SYSTEMS AND EQUIPMENT CONVEYING TOXIC, EXPLOSIVE, OR HAZARDOUS MATERIALS SHALL BE SUPPORTED IN ACCORDANCE WITH ASCE 7-16 REQUIREMENTS. THESE SYSTEMS INCLUDE:
A. NATURAL GAS PIPING ABOVE GRADE, INCLUDING GAS METER AND GAS-FIRED EQUIPMENT.
- DISTRIBUTED PLUMBING SYSTEMS OF SUFFICIENT SIZE OR WEIGHT, AS DEFINED BY ASCE 7 CHAPTER 13, SHALL ALSO BE PROVIDED WITH SEISMIC SUPPORTS.
- FINAL DETERMINATION OF SEISMIC DESIGN PARAMETER SHALL BE PER STRUCTURAL DOCUMENTS.

DEMOLITION GENERAL NOTES

- THE PLUMBING DEMOLITION WORK INDICATED ON THE PLANS, SPECIFICATIONS, AND NOTES IS TO BE CLOSELY COORDINATED WITH THE OWNER'S REPRESENTATIVE. NO DEMOLITION SHALL TAKE PLACE IN ANY AREA OR BUILDING UNTIL THE CONTRACTOR HAS BEEN GIVEN APPROVAL TO PROCEED IN THAT SPECIFIC LOCATION. REFER TO ARCHITECTURAL DEMOLITION DRAWINGS FOR ADDITIONAL INFORMATION AND DEMOLITION SCOPE OF WORK.
- THE EQUIPMENT LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE, BASED ON ORIGINAL DRAWINGS AND FIELD VERIFICATION OF VISIBLE PORTIONS OF THE SYSTEM. THE FINAL LOCATIONS SHALL BE ESTABLISHED IN THE FIELD TO BEST FIT THE AVAILABLE SPACE. COORDINATE WITH STRUCTURAL DRAWINGS.
- IF, DURING DEMOLITION, IT BECOMES NECESSARY TO TEMPORARILY REMOVE ANY EQUIPMENT, PIPING, OR OTHER SYSTEM WHICH IS NOT SPECIFICALLY NOTED TO BE REMOVED (THEREBY IMPLYING THAT THEY ARE TO BE LEFT FOR FUTURE USE), THE CONTRACTOR SHALL REINSTALL SAID SYSTEMS TO FULLY OPERABLE CONDITION IN THEIR ORIGINAL LOCATIONS.
- ALL DEMOLITION WORK SHALL BE SCHEDULED WITH THE OWNER'S REPRESENTATIVE AT LEAST 48 HOURS PRIOR TO THE WORK.
- PATCH ALL OPENINGS IN WALLS, FLOORS, AND CEILINGS WHERE DUCT, PIPING, AND CONTROLS HAVE BEEN REMOVED TO MATCH EXISTING.
- ANY DAMAGE TO THE OWNER'S PROPERTY, BUILDING, EXISTING SYSTEMS, OR EQUIPMENT RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER AND ENGINEER WITHOUT ADDITIONAL COST TO THE OWNER.
- MAINTAIN THE SECURITY OF THE BUILDING AT ALL TIMES.
- REMOVE ALL EXISTING SUPPORTS ASSOCIATED WITH EQUIPMENT, DUCTWORK, AND PIPE BEING REMOVED UNLESS NOTED OTHERWISE.
- DISPOSE OF ALL REMOVED EQUIPMENT AS DIRECTED BY THE OWNER.
- CONTRACTOR SHALL COORDINATE REMOVAL OF UTILITY SERVICES WITH UTILITY COMPANIES AND LOCAL AUTHORITIES AND PAY ALL FEES.
- SCHEDULE UTILITY WORK WITH OWNER TO KEEP TO A MINIMUM ACCEPTABLE DOWNTIME AND TO NOT INTERFERE WITH THE BUILDING OPERATIONAL SCHEDULE, IF POSSIBLE.
- MAINTAIN THE FIRE AND SMOKE CONSTRUCTION INTEGRITY OF THE EXISTING BUILDINGS.
- IF DURING THE COURSE OF THE WORK MATERIAL WHICH MAY CONTAIN ASBESTOS IS DISCOVERED, STOP WORK IMMEDIATELY AND COMPLY WITH EPA REGULATIONS TO PROTECT WORKERS AND OCCUPANTS. NOTIFY OWNER AND ENGINEER.
- ALL UNDERGROUND PIPING WHICH IS SHOWN TO BE TAKEN OUT OF SERVICE SHALL BE REMOVED TO POINTS INDICATED, AND REMAINING PIPE SHALL BE PURGED AND PLUGGED.
- DEMOLITION AND SHUTDOWN OF EXISTING PLUMBING SYSTEMS SHALL BE COORDINATED WITH OWNER'S REPRESENTATIVE AND PLANNED TO LIMIT INCONVENIENCE AND DISRUPTION OF BUILDING OPERATIONS AS MUCH AS POSSIBLE. WORK SHALL BE PHASED ACCORDINGLY.
- SPECIAL CARE SHALL BE TAKEN ON THE EXISTING ROOFS TO PREVENT DAMAGE. ANY DAMAGE SHALL BE PROMPTLY REPAIRED AT NO EXPENSE TO THE OWNER. COMPLY WITH BONDING REQUIREMENTS OF EXISTING ROOF.
- DEMOLITION AND SHUTDOWN OF EXISTING PLUMBING SYSTEMS THAT WILL AFFECT PORTIONS OF THE BUILDING OUTSIDE OF PROJECT AREA SHALL BE COORDINATED WITH OWNER'S REPRESENTATIVE AND PLANNED TO LIMIT INCONVENIENCE AND DISRUPTION OF BUILDING OPERATIONS AS MUCH AS POSSIBLE. WORK SHALL BE PHASED ACCORDINGLY.

PLUMBING GENERAL NOTES:

- ALL PLUMBING WORK SHALL COMPLY WITH ALL LOCAL CODES, AUTHORITIES HAVING JURISDICTION, DRAWINGS AND SPECIFICATIONS. IF DISCREPANCIES ARE FOUND - THE MOST STRINGENT REQUIREMENT SHALL GOVERN WORK.
- ALL DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENTS OR GEOMETRIC RELATIONSHIPS OF EQUIPMENT AND SERVICES. THEY ARE NOT INTENDED TO SPECIFY OR SHOW EVERY OFFSET, FITTING, OR COMPONENT. CONTRACTOR SHALL NOT SCALE DRAWINGS. EQUIPMENT SCHEDULES SHALL TAKE PRECEDENCE OVER CONFLICTING DRAWING INFORMATION. DRAWINGS SPECIFIC TO THIS DISCIPLINE DO NOT LIMIT THE RESPONSIBILITY OF WORK REQUIRED BY CONTRACT DOCUMENTS. REFER TO COMPLETE PROJECT DOCUMENTS FOR COORDINATION WITH OTHER DISCIPLINES.
- EXCEPT WHERE MODIFIED BY SPECIFIC NOTATION TO THE CONTRARY, IT SHALL BE UNDERSTOOD THAT THE INDICATION AND/OR DESCRIPTION OF ANY ITEM IN THE DRAWINGS OR SPECIFICATIONS CARRIES WITH IT THE INSTRUCTION TO PROVIDE THE ITEM, REGARDLESS OF WHETHER OR NOT THIS INSTRUCTION IS EXPLICITLY STATED AS PART OF THE INDICATION OR DESCRIPTION.
- REFER TO PLUMBING SCHEDULES AND SPECIFICATIONS FOR BASIS OF DESIGN, ACCEPTABLE MANUFACTURERS, AND MODELS OF PLUMBING FIXTURES AND EQUIPMENT.
- PROVIDE CLEANOUTS IN ALL SANITARY LINES, WHETHER SHOWN OR NOT, AT INTERVALS NOT TO EXCEED 100' AND AT EACH CHANGE IN DIRECTION GREATER THAN 45 DEGREES.
- PROVIDE A TWO-WAY CLEANOUT AT THE JUNCTION OF ALL BUILDING DRAINS AND BUILDING SEWERS.
- REFER TO SPECIFICATIONS FOR INSULATION REQUIREMENTS.
- ALL SANITARY SEWER LINES 2 1/2" AND SMALLER SHALL HAVE A MINIMUM SLOPE OF 1/4" PER FOOT. ALL SANITARY LINES 3" AND LARGER SHALL HAVE A MINIMUM SLOPE OF 1/8" PER FOOT. VERIFY EXISTING SANITARY LINE ELEVATIONS AND COORDINATE INSTALLATION TO ASSURE PROPER FLOW. ALL GREASE WASTE LINES, REGARDLESS OF SIZE, SHALL HAVE A MINIMUM SLOPE OF 1/4" PER FOOT.
- SEAL ALL PIPE PENETRATIONS THROUGH WALLS, ROOF, AND FLOOR AIR AND WATER TIGHT.
- ALL FLOOR DRAINS SHALL HAVE DEEP SEAL TRAPS, 4" DEEP SEAL MINIMUM UNLESS NOTED OTHERWISE. PROVIDE A TRAP GUARD EQUAL TO PROSET OR SURE SEAL SIZED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS FOR ALL FLOOR DRAINS.
- ALL PIPE DROPS FROM CEILING PLENUM TO BELOW FLOOR SHALL BE MADE IN FURR-OUTS AT COLUMNS, IN WEBB OF BEAMS AT COLUMNS, OR IN WALLS UNLESS SHOWN OTHERWISE.
- ALL EXPOSED OR ACCESSIBLE P-TRAPS SHALL BE CHROME PLATED AND PROVIDED WITH BOTTOM CLEANOUT PLUGS. ALL EXPOSED PLUMBING TRIM SHALL BE CHROME PLATED.
- PROVIDE TIGHT-FITTED MOLDED PLASTIC INSULATION AT ALL EXPOSED WATER AND DRAIN PIPING FOR ADA FIXTURES PER ANSI A117.1 AND ADA REQUIREMENTS. FINISH SHALL BE WHITE.
- ALL DOMESTIC WATER SHALL BE ROUTED ABOVE CEILING. ALL DOMESTIC WATER ROUTED IN EXTERIOR WALLS SHALL BE INSTALLED ON CONDITIONED SIDE OF ROOM INSULATION.
- MAINTAIN A MINIMUM OF 10'-0" BETWEEN ALL HVAC FRESH AIR INTAKES AND PLUMBING VENTS. COORDINATE WITH MECHANICAL BEFORE INSTALLATION OF VTRS.
- CONTRACTOR SHALL VISIT SITE AND VERIFY CONDITIONS PRIOR TO BIDDING.
- CONTRACTOR SHALL VERIFY EXACT LOCATIONS OF UTILITIES AND INVERTS PRIOR TO ROUTING SERVICES. CONTRACTOR SHALL COORDINATE ALL SANITARY SEWER, FIRE, GAS AND DOMESTIC WATER LINES WITH EXISTING UTILITIES AND WITH CIVIL DRAWINGS. SEE CIVIL DRAWINGS FOR CONTINUATION OF ALL UTILITY LINES.
- CONTRACTOR SHALL PAY ALL UTILITY FEES AND CHARGES IN THE CONTRACT.
- PROVIDE ALL FITTINGS, TRANSITIONS, COUPLINGS, ADAPTORS, UNIONS, AND OTHER ACCESSORIES NEEDED TO COMPLETE CONNECTIONS AND PROVIDE FOR PROPER OPERATION OF PLUMBING FIXTURES AND PLUMBING EQUIPMENT.
- FIRE STOP ALL PIPE PENETRATIONS THROUGH RATED WALLS. REFER TO SPECIFICATIONS.
- PIPING SHALL NOT BE ROUTED OVER ELECTRICAL ROOMS, COMPUTER ROOMS, ELECTRICAL PANELS, OR ELECTRICAL EQUIPMENT UNLESS OTHERWISE NOTED.
- PROVIDE LEAD-FREE PRESSURE REDUCING VALVE AT DOMESTIC ENTRANCE TO PROVIDE ADEQUATE PRESSURE AT ALL OUTLETS IN ACCORDANCE WITH THE SYSTEM REQUIREMENTS.
- EACH FIXTURE GROUP OR BATTERY OF FIXTURES SHALL BE PROVIDED WITH A SHUTOFF VALVE IN THE DOMESTIC HOT AND COLD WATER SUPPLY LINES ABOVE CEILING. VALVES SHALL BE ACCESSIBLE FROM ROOM BELOW.
- PAINT EXPOSED PIPING AND PIPE INSULATION. COORDINATE WITH OWNER FOR FINAL COLOR.
- ALL UNDER FLOOR WATER PIPING SHALL BE PROVIDED WITH A POLYETHYLENE SLEEVE. EXTEND SLEEVE UP THROUGH FLOOR SLAB AND SEAL AIR AND WATER TIGHT.
- PLASTIC PIPE IS PROHIBITED IN RETURN AIR PLENUMS. ALL PIPING AND PIPE CONNECTIONS IN RETURN AIR PLENUMS SHALL BE PLENUM RATED.
- PIPING THROUGH FOUNDATION WALLS AND FOOTINGS SHALL BE SLEEVED AS PER STRUCTURAL DETAILS.
- ALL PIPE CONNECTIONS BETWEEN DISSIMILAR METALS SHALL BE MADE THROUGH DIELECTRIC UNIONS.
- ALL PLUMBING COMPONENTS WITH ELECTRICAL REQUIREMENTS SHALL BE INSTALLED WITH THE ELECTRICAL INFRASTRUCTURE NECESSARY TO PROVIDE A FULLY FUNCTIONING SYSTEM. IF NOT SPECIFICALLY SHOWN ON ELECTRICAL SCHEDULE, PLUMBING FIXTURES REQUIRING ELECTRICAL SERVICE SHALL BE FED FROM BREAKER OF ADEQUATE CAPACITY.
- REFER TO PLUMBING SPECIFICATIONS FOR PIPE MATERIAL AND INSULATION REQUIREMENTS.
- EXACT LOCATION OF ALL EQUIPMENT AND PIPING SHALL BE COORDINATED WITH OTHER TRADES. CEILING MOUNTED SPRINKLER AND LIGHTING SHALL TAKE PRECEDENCE OVER CEILING MOUNTED MECHANICAL REQUIREMENTS.
- PROVIDE FABRICATED EXPANSION LOOP OR MANUFACTURED EXPANSION DEVICE ON ALL PIPING SYSTEMS CROSSING BUILDING EXPANSION JOINTS.
- WATER SUPPLY CONNECTIONS TO COFFEE MACHINES AND NONCARBONATED BEVERAGE DISPENSERS SHALL BE PROVIDED WITH A BACKFLOW PREVENTER OR AN AIR GAP.



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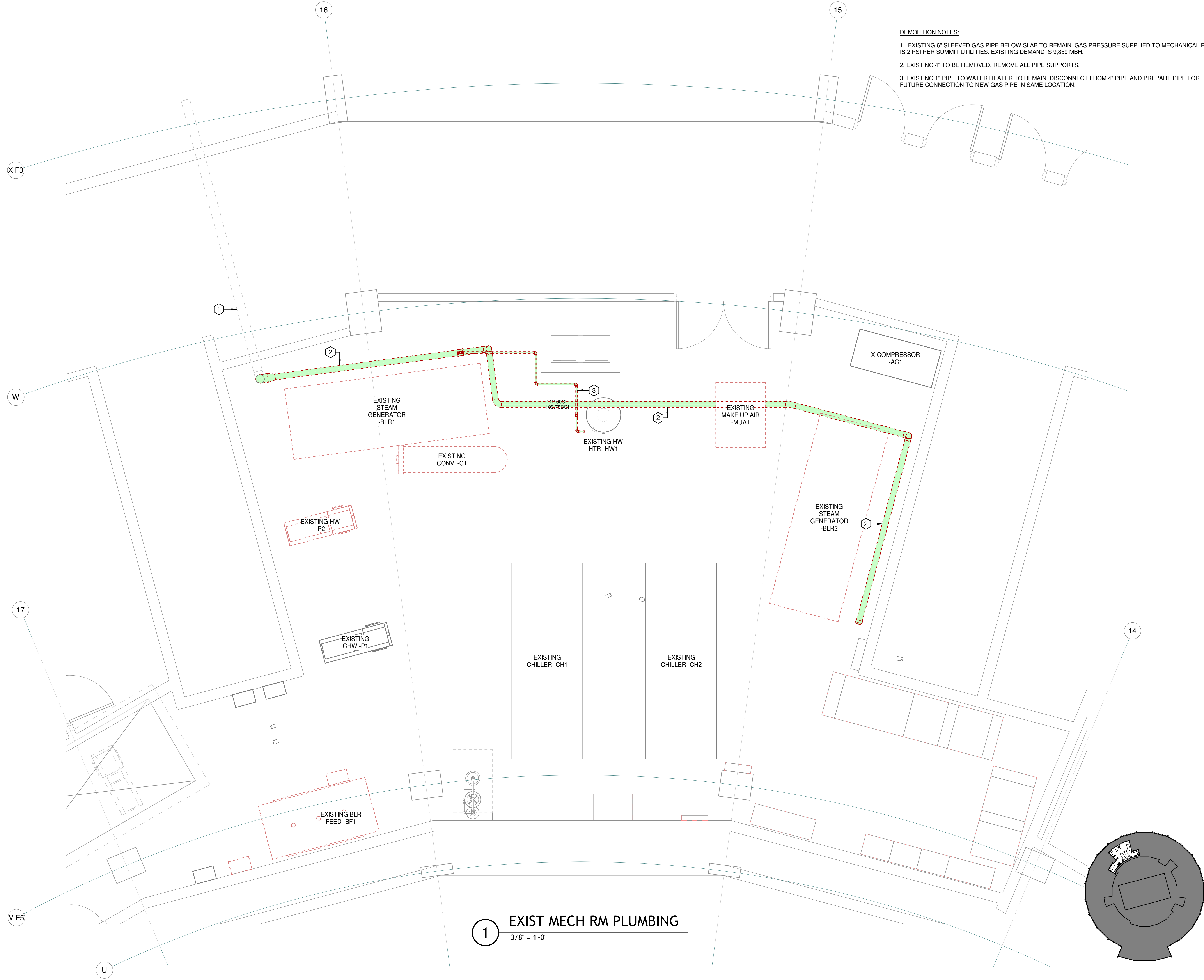
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ONE INCH AT FULL SIZE - IF NOT
ONE INCH SCALE ACCORDINGLY

PLUMBING NOTES,
SCHEDULES, AND
LEGENDS - HW

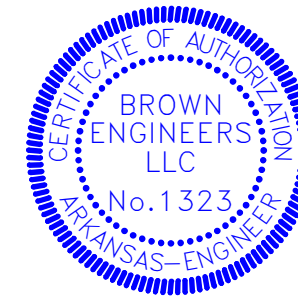
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- DEMOLITION NOTES:**
1. EXISTING 6" SLEEVED GAS PIPE BELOW SLAB TO REMAIN. GAS PRESSURE SUPPLIED TO MECHANICAL ROOM IS 2 PSI PER SUMMIT UTILITIES. EXISTING DEMAND IS 9,859 MBH.
 2. EXISTING 4" TO BE REMOVED. REMOVE ALL PIPE SUPPORTS.
 3. EXISTING 1" PIPE TO WATER HEATER TO REMAIN. DISCONNECT FROM 4" PIPE AND PREPARE PIPE FOR FUTURE CONNECTION TO NEW GAS PIPE IN SAME LOCATION.

1 EXIST MECH RM PLUMBING
3/8" = 1'-0"



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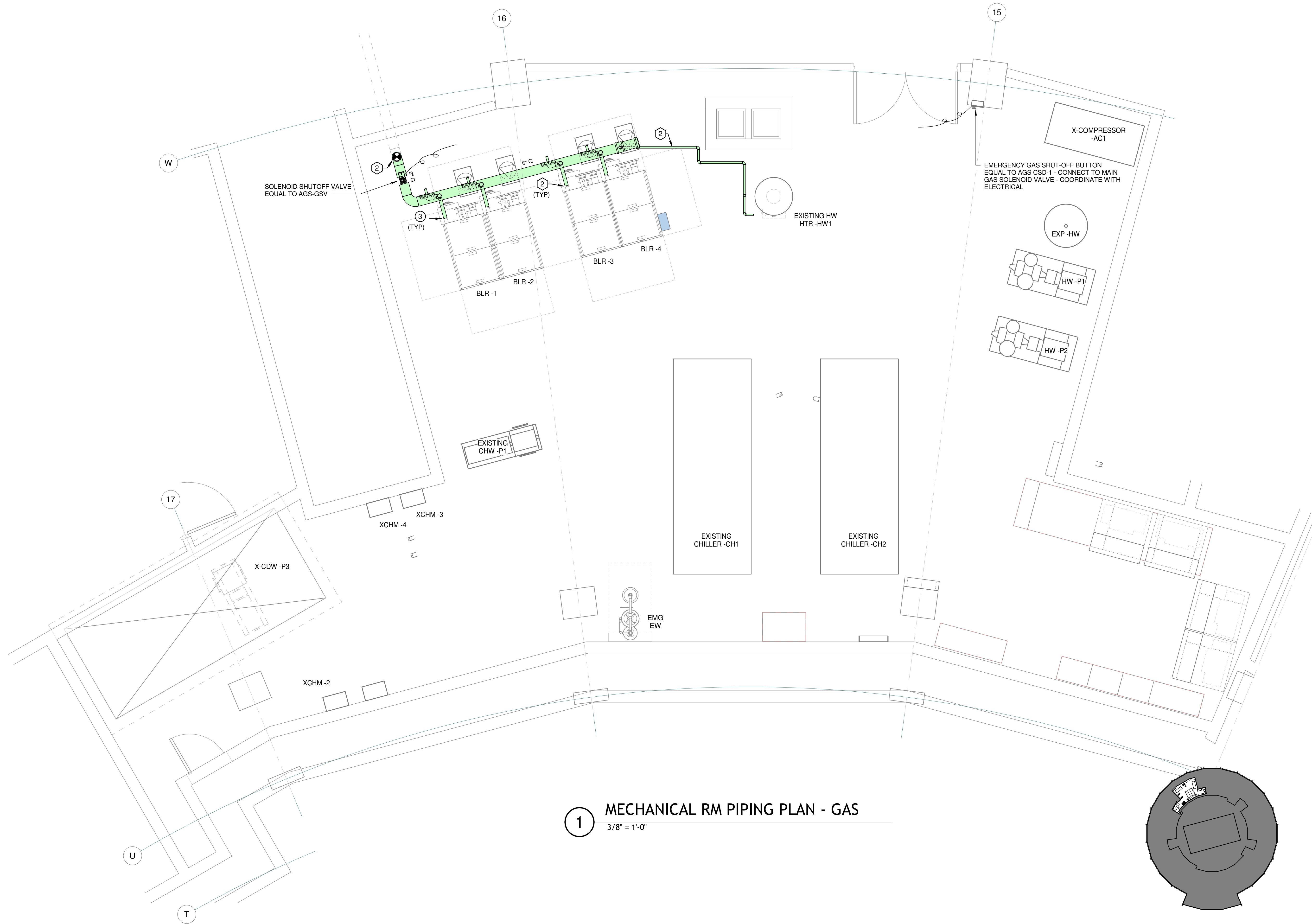
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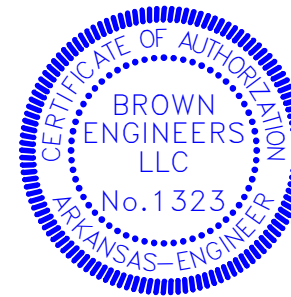
EXISTING MECH
ROOM HW
PLUMBING DEMO

P1.1



- # PLUMBING NOTES:
1. CONNECT NEW 6" GAS SERVICE TO EXISTING 6" GAS WHERE IT ENTERS MECHANICAL ROOM THRU SLAB.
 2. REWORK EXISTING 1" GAS LINE TO EXISTING WATER HEATER AND CONNECT TO NEW 6" SERVICE MAIN.
 3. 2" GAS LINE TO NEW MECHANICAL BOILERS (2,000 MBH). INSTALL NEW GAS PRV WITHIN 10 FEET OF BOILERS.

1 MECHANICAL RM PIPING PLAN - GAS
3/8" = 1'-0"



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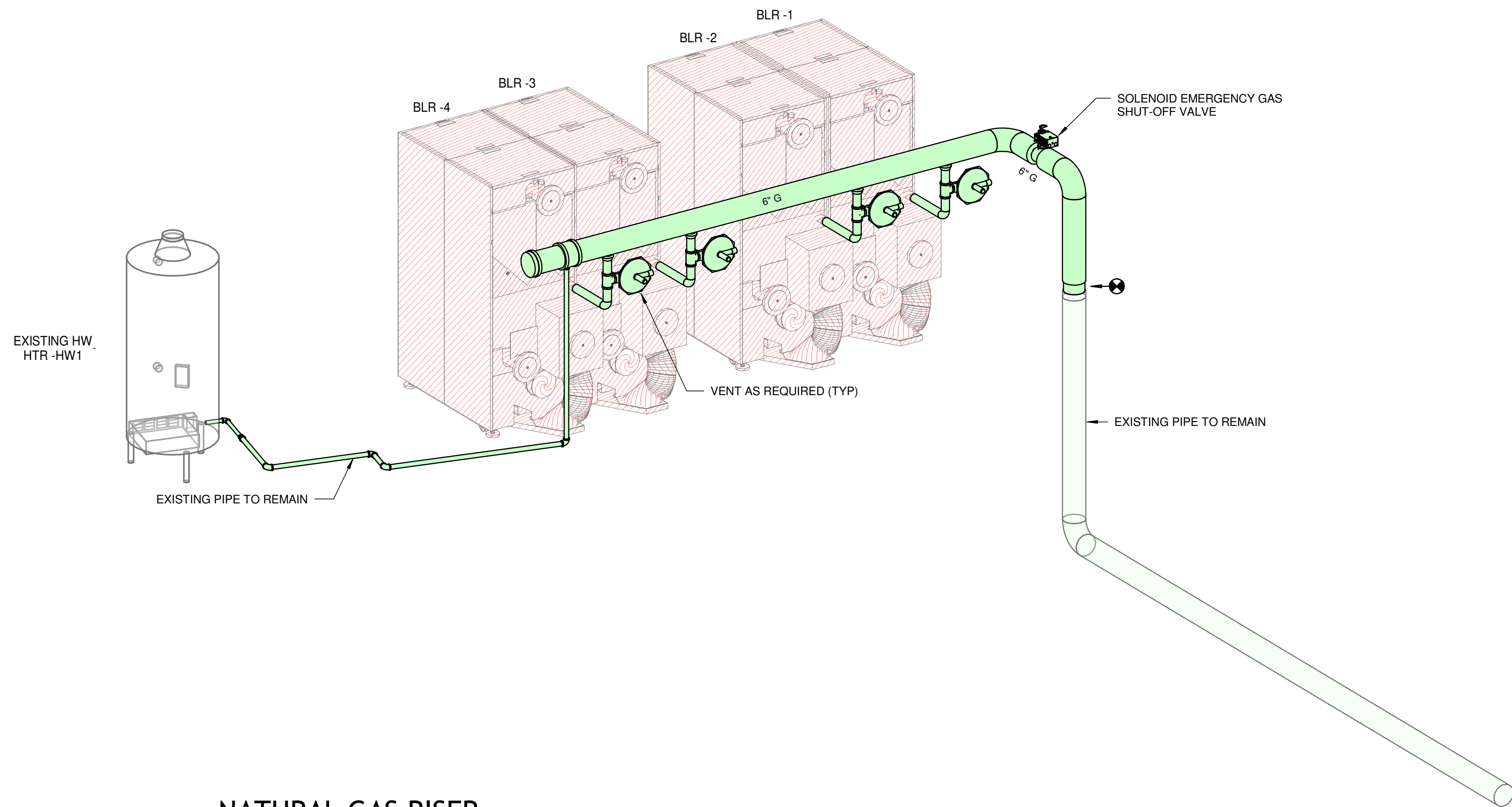
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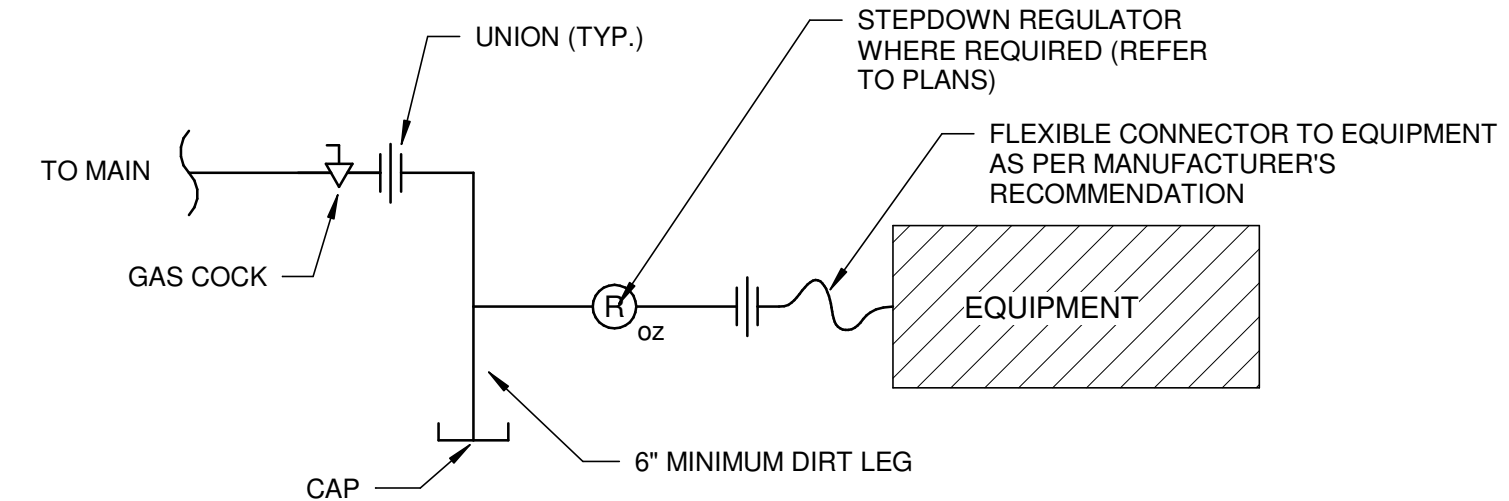
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1"
ONE INCH AT FULL SIZE, IF NOT
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MECH ROOM HW
PLUMBING
RENOVATION

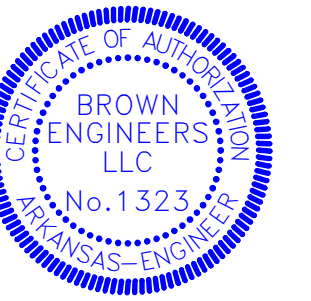


1 NATURAL GAS RISER



- NOTES:**
- ALL GAS FIRED EQUIPMENT PROVIDED WITHOUT INTERNAL GAS REGULATOR FROM FACTORY, OR WITH ONE OF INADEQUATE CAPACITY SHALL BE PROVIDED WITH AN EXTERNAL GAS REGULATOR CAPABLE OF SUPPLYING GAS SERVICE TO EQUIPMENT AT PRESSURE AND FLOW AS PRESCRIBED BY EQUIPMENT MANUFACTURER.

2 GAS CONNECTION TO EQUIPMENT
NOT TO SCALE



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PLUMBING RISERS
- PH 1