Mechanical System Upgrades at:

Wentworth Hi-Rise OH5-14

2765 Wentworth Avenue
Dayton, Ohio 45406

OWNER

Greater Dayton Premier Management
400 Wayne Ave.
Dayton, Ohio 45410

DESIGN TEAM

ARCHITECT:

RDA GROUP ARCHITECTS
7662 PARAGON ROAD | DAYTON, OH 45459 | 937.610.3440

PME ENGINEER

Helmig Lienesch LLC
Consulting Engineers

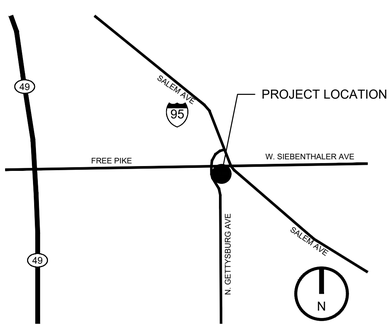
410 South Jefferson Street
Dayton, OH 45402

EXISTING FIRE ALARM SYSTEM TO REMAIN ACTIVE - CONTRACTOR TO COORDINATE WITH VENDOR [KOORSEN] FOR ANY MODIFICATIONS THAT MAY BE REQUIRED AS A RESULT OF THE WORK IN THIS PERMIT - DELEGATED DESIGN BY OTHERS. ADDITIONALLY CONTRACTOR TO COORDINATE ANY / ALL TESTING, TEMPORARY PROTECTION, ETC. OF THE SYSTEM.

EXISTING FIRE SUPPRESSION / SPRINKLER SYSTEM TO REMAIN ACTIVE - CONTRACTOR TO COORDINATE WITH VENDOR [KOORSEN] FOR ANY MODIFICATIONS THAT MAY BE REQUIRED AS A RESULT OF THE WORK IN THIS PERMIT - DELEGATED DESIGN BY OTHERS. ADDITIONALLY CONTRACTOR TO COORDINATE ANY / ALL TESTING, TEMPORARY PROTECTION, ETC. OF THE SYSTEM.

SHEET INDEX

VICINITY MAP



CODE REVIEW

PROJECT DESCRIPTION:
REPLACEMENT OF EXISTING MECHANICAL SYSTEM WITH A NEW MECHANICAL SYSTEM. NO CHANGE IN BUILDING USE, OCCUPANCY, OR OTHER LIFE SAFETY COMPONENTS.

AUTHORITY HAVING JURISDICTION:
ZONING PERMIT - CITY OF DAYTON
BUILDING PERMIT - CITY OF DAYTON

ZONING CODE:
CITY OF DAYTON

BUILDING CODE: 2024 OEBC [OHIO EXISTING BUILDING CODE]
2024 OBC [OHIO BUILDING CODE]

2024 OHIO EXISTING BUILDING CODE
OEBC CHAPTER 3: PROVISIONS FOR ALL COMPLIANCE METHODS
301.3.2 **WORK AREA COMPLIANCE METHOD**: ALTERATIONS, ADDITIONS, AND CHANGES OF OCCUPANCY COMPLYING WITH SECTIONS 302 THROUGH 309 AND THE APPLICABLE REQUIREMENTS OF CHAPTERS 6 THROUGH 12 OF THIS CODE ARE TO BE CONSIDERED IN COMPLIANCE WITH THE PROVISIONS OF THIS CODE.
302.3 EXISTING MATERIALS ALREADY IN USE IN A BUILDING IN COMPLIANCE WITH REQUIREMENTS OR APPROVALS IN EFFECT AT THE TIME OF THEIR ERECTION OR INSTALLATION SHALL BE PERMITTED TO REMAIN IN USE UNLESS DETERMINED BY THE CODE OFFICIAL TO BE UNSAFE.
302.5 OCCUPANCY AND USE - DETERMINED PER OBC CHAPTER 3 [NO CHANGE IN EXISTING BUILDING USE / OCCUPANCY]
303 STORM SHELTERS - NOT APPLICABLE
304 STRUCTURAL DESIGN LOADS - NOT APPLICABLE [NO CHANGE TO EXISTING STRUCTURAL LOADS]
305 INSITU LOAD TESTS - NOT APPLICABLE
306 ACCESSIBILITY - NOT APPLICABLE [NO CHANGE TO EXISTING ACCESSIBLE ENTRIES OR ROUTES]
307 SMOKE ALARMS - NOT APPLICABLE
308 CARBON MONOXIDE DETECTION - NOT APPLICABLE
309 EXTERIOR WALL COVERINGS / ENVELOPES - NOT APPLICABLE

OEBC CHAPTER 6: CLASSIFICATION OF WORK
603.1 ALTERATION—LEVEL 2
603.1 SCOPE: LEVEL 2 ALTERATIONS INCLUDE THE RECONFIGURATION OR EXTENSION OF ANY SYSTEMS, THE INSTALLATION OF ANY ADDITIONAL EQUIPMENT, WHERE THE WORK AREA IS EQUAL TO OR LESS THAN 50% OF THE BUILDING AREA.
603.2 APPLICATION: LEVEL 2 ALTERATIONS SHALL COMPLY WITH THE PROVISIONS OF CHAPTER 8.

OEBC CHAPTER 8: ALTERATIONS-LEVEL 2
801.3 SYSTEM INSTALLATIONS - REQUIREMENTS RELATED TO WORK AREA ARE NOT APPLICABLE WHERE THE LEVEL 2 ALTERATIONS ARE LIMITED SOLELY TO ONE OR MORE OF THE FOLLOWING: MECHANICAL SYSTEMS, ELECTRICAL SYSTEMS. [PROJECT IS SOLELY A MECHANICAL SYSTEMS REPLACEMENT / UPGRADES PROJECT]
801.4 COMPLIANCE - NEW CONSTRUCTION ELEMENTS, COMPONENTS, SYSTEMS, AND SPACES SHALL COMPLY WITH THE BUILDING CODE.
803.1 FIRE PROTECTION - THE BUILDING HAS A SPRINKLER SYSTEM, WILL NOT BE IMPACTED BY THE WORK OF THIS PERMIT.
804.1 MEANS OF EGRESS - NO CHANGE BY THE WORK OF THIS PERMIT.
805.1 STRUCTURAL - NO IMPACT / CHANGE BY THE WORK OF THIS PERMIT.
806.1 ELECTRICAL - COMPLY WITH NFPA 70 FOR NEW WORK.
807.1 MECHANICAL - COMPLY WITH OMC.
808.1 PLUMBING - NOT APPLICABLE
809.1 ENERGY CONSERVATION - NOT APPLICABLE WITH THE EXCEPTION OF THE NEW SYSTEMS BEING INSTALLED.

2024 OHIO BUILDING CODE
OBC CHAPTER 3: USE AND OCCUPANCY CLASSIFICATION
310.3 R-2, APARTMENT - NO CHANGE

OBC CHAPTER 5: GENERAL BUILDING HEIGHT AND AREA
NO CHANGE TO EXISTING BUILDING HEIGHT OR AREA
BUILDING IS 6 STORIES IN HEIGHT [60']
BUILDING AREA IS APPROXIMATELY 15,390 SF PER STORY

TABLE 509.1 INCIDENTAL USE AREAS - BOILER ROOMS - 1 HOUR OR PROVIDE SPRINKLER SYSTEM - EXISTING 2 HOUR SEPARATION VIA CMU WALLS AND THE BUILDING CONTAINS A SPRINKLER SYSTEM [COMPLIES]

OBC CHAPTER 6: TYPES OF CONSTRUCTION
TABLE 601:
PRIMARY STRUCTURAL FRAME = 2 HOUR
EXTERIOR BEARING WALLS = 2 HOUR
INTERIOR BEARING WALLS = 2 HOUR
NON-BEARING WALLS = 0 HOUR
FLOOR CONSTRUCTION = 2 HOUR
ROOF CONSTRUCTION = 1 HOUR
602.2 CONSTRUCTION TYPE: I B [NON-COMBUSTIBLE]

OBC CHAPTER 9: FIRE PROTECTION SYSTEMS
903 SPRINKLER SYSTEMS - REQUIRED, PROVIDED, COMPLIES
906 FIRE EXTINGUISHERS - REQUIRED, PROVIDED, COMPLIES
907 FIRE ALARM SYSTEMS - REQUIRED, PROVIDED, COMPLIES

OBC CHAPTER 10: MEANS OF EGRESS
NO CHANGE IN BUILDING MEANS OF EGRESS, EGRESS DOORS, TRAVEL DISTANCE, ETC. [3] EXITS PER FLOOR PROVIDED. EACH DWELLING UNIT HAS ACCESS TO [2] INDEPENDENT EXITS.

OBC CHAPTER 11: ACCESSIBILITY
NO CHANGES AS PART OF THIS PROJECT

RDA CONTRACT ADMINISTRATION

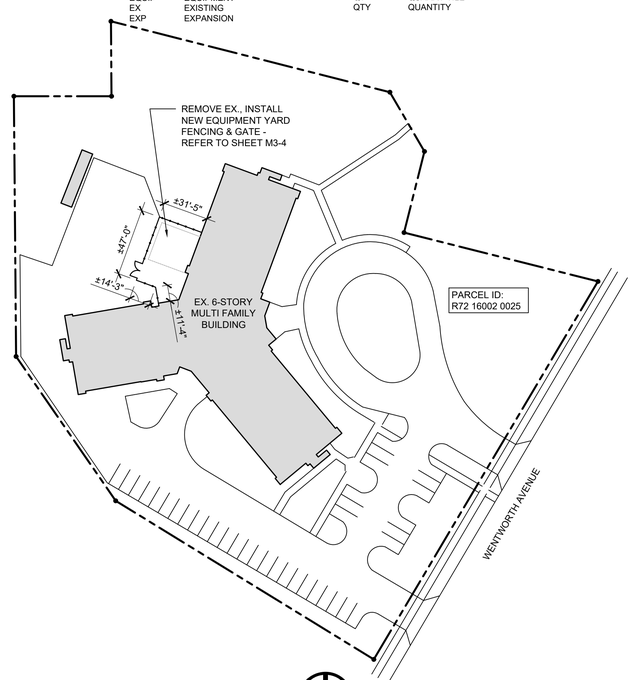
1. RDA IS PROVIDING CONTRACT ADMINISTRATION SERVICES FOR THIS PROJECT. CONTRACTOR AND CLIENT / OWNER ARE RESPONSIBLE TO COORDINATE THE PROPOSED WORK, SCHEDULES, INSTALLATIONS, PERMITS, INSPECTIONS, ETC.
2. CONTACT ARCHITECT FOR CLARIFICATION SHOULD THERE BE QUESTIONS REGARDING THE INTERPRETATION OR INTENT OF THE DOCUMENTS, FIELD DISCOVERY, ETC. THAT WOULD IMPACT OR AFFECT THE WORK AS PROPOSED. RDA IS NOT BE LIABLE FOR DEVIATIONS, FIELD CHANGES, AND CLIENT / OWNER CHANGES DURING CONSTRUCTION.
3. FIELD CONFIRM ALL EXISTING CONDITIONS, PROPOSED INSTALLATIONS AND HOW THEY INTERFACE TO ENSURE THE SYSTEMS CAN BE INSTALLED PER THE INTENT OF THE DOCUMENTS AND TO MEET APPLICABLE BUILDING AND ZONING CODES, LOCAL REQUIREMENTS, CLIENT / OWNER REQUIREMENTS, ETC.
4. MEET ALL APPLICABLE BUILDING AND ZONING CODES REQUIREMENTS WHETHER SPECIFICALLY NOTED HEREIN OR NOT. BUILDING CODES REPRESENT THE MINIMUM ACCEPTABLE STANDARD.
5. INSTALL ALL PRODUCTS, MATERIALS, INSTALLATIONS, AND THE LIKE IN ACCORDANCE WITH APPLICABLE INDUSTRY STANDARDS, APPLICABLE MANUFACTURER'S DETAILS AND INSTRUCTIONS, IN ACCORDANCE WITH BEST PRACTICES, AND BUILDING CODE PROVISIONS.

THE PLANS AND SPECIFICATIONS ARE INTENDED TO DEPICT THE GENERAL SCOPE, LAYOUT AND QUALITY OF WORKMANSHIP REQUIRED. THE DOCUMENTS ARE NOT AN 'INSTRUCTION MANUAL' TO EXECUTE THE WORK NOR ARE THEY INTENDED TO SHOW OR DESCRIBE IN DETAIL EVERY ITEM NECESSARY FOR THE PROPER INSTALLATION OF THE WORK. THE MEANS AND METHODS REQUIRED TO EXECUTE THE WORK DESCRIBED IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL INCLUDE THE ANCILLARY WORK REQUIRED, WHETHER EXPLICITLY STATED OR NOT, FOR THE PROPER COMPLETION OF THE WORK AS INTENDED. THE CONTRACTOR IS REQUIRED TO MEET OR EXCEED BUILDING CODE REQUIREMENTS, APPLICABLE INDUSTRY STANDARDS, ASTM STANDARDS, AND/OR MANUFACTURER INSTALLATION REQUIREMENTS AS THEY RELATE TO THE WORK.

THE PLANS AND SPECIFICATIONS REPRESENT A SINGLE COMPLETE DESIGN PACKAGE INDICATING THE INTENDED SCOPE OF THE PROJECT IN ITS ENTIRETY. AS SUCH, THE PROJECT IS STRUCTURED TO BE AWARDED TO A SINGLE PRIME CONTRACTOR. THE DOCUMENTS DO NOT DELINEATE BID PACKAGES OR ASSIGN RESPONSIBILITIES TO ANY SUBSEQUENT SUBCONTRACTORS, DICTATE CONSTRUCTION SEQUENCING, NOR PROVIDE COORDINATION BETWEEN ANY 'TRADES'. SUCH ACTIVITIES ARE THE RESPONSIBILITY OF THE HOLDER OF THE CONSTRUCTION CONTRACT. IN THE EVENT OF A DISCREPANCY WITHIN THE DRAWINGS OR BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT REPRESENTED IN THE DOCUMENTS SHALL PREVAIL.

ABBREVIATIONS

°	DEGREES	FD	FLOOR DRAIN	R / RAD	RADIUS
±	PLUS OR MINUS	FDN	FOUNDATION	RA	RETURN AIR
≠	NOT EQUAL	FE	FIRE EXTINGUISHER	RB	RUBBER BASE
Ø	DIAMETER	FEC	FIRE EXTINGUISHER CABINET	RD	ROOF DRAIN
∠	ANGLE	FF	FINISH FLOOR	REF	REFRIGERATOR
℄	CENTERLINE	FIN	FINISH / FINISHED	REINF	REINFORCE
℈	PROPERTY LINE	FRT	FIRE RETARDANT TREATED	REQ'D	REQUIRED
		FSE	FOOD SERVICE EQUIPMENT	REQ'MT	REQUIREMENT[S]
ABV	ABOVE	FTG	FOOTING	REV	REVISION
ADA	ACCESSIBLE / HANDICAP ACCESSIBLY / ACCESSIBILITY - ANSI ICC-117.1	FV	FIELD VERIFY	RO	ROUGH OPENING
				R/W	RIGHT OF WAY
AFF	ABOVE FINISH FLOOR	GA	GAUGE		
ALT	ALTERNATE	GALV	GALVANIZED	SALV	SALVAGED
ALUM	ALUMINUM	GC	GENERAL CONTRACTOR	SF	SQUARE FEET
APPROX	APPOXIMATE	GYP	GYPSUM	SIM	SIMILAR
ATC	ACOUSTIC TILE CEILING	GYP BD	GYPSUM BOARD	SM	SHEET METAL
				SPEC	SPECIFICATION
BET/BETWN.	BETWEEN	HB	HOSE BIBB	SQ	SQUARE
BLKG	BLOCKING	HM	HOLLOW METAL	SS	STAINLESS STEEL
BRG	BEARING	HOR	HORIZONTAL	STD	STANDARD
BSMT	BASEMENT	HT	HEIGHT	STL	STEEL
BTM	BOTTOM	HVAC	HEATING, VENTILATION, AIR CONDITIONING	T	TEMPERED
				TBD	TO BE DETERMINED
CIP	CAST IN PLACE	INT	INTERIOR	T&B	TOP AND BOTTOM
CJ	CONTROL JOINT			T&G	TONGUE AND GROOVE
CL	CENTERLINE	JB	JUNCTION BOX	T.O.	TOP OF
CLG	CEILING			TR	TREATED
CLR	CLEAR	LL	LIVE LOAD	TYP	TYPICAL
CMU	CONCRETE MASONRY UNIT	LLH	LONG LEG HORIZONTAL		
COL	COLUMN	LLV	LONG LEG VERTICAL	UFAS	UNIFORM FEDERAL ACCESSIBILITY
CONC	CONCRETE	LTL	LINTEL		STANDARD
CONT	CONTINUOUS			UNO	UNLESS NOTED OTHERWISE
CPT	CARPET	MAX	MAXIMUM	UL	UNDERWRITER'S LABORATORY
CT	CERAMIC TILE	MECH	MECHANICAL		
		MFR	MANUFACTURER	VB	VAPOR BARRIER
DEMO	DEMOLISH / DEMOLITION	MIN	MINIMUM	VERT	VERTICAL
DF	DRINKING FOUNTAIN	MISC	MISCELLANEOUS		
DIA	DIAMETER	MO	MASONRY OPENING	W/	WITH
DIM	DIMENSION	MS	METAL STUD	W/O	WITHOUT
DIV	DIVISION	MTD	MOUNTED	WD	WOOD
DP	DEEP	MTL	METAL	W.P.	WORK POINT
DS	DOWNSPOUT			WRB	WEATHER RESISTIVE BARRIER
DTL	DETAIL	NIC	NOT IN CONTRACT	WWF	WELDED WIRE FABRIC
DW	DISHWASHER	NOM	NOMINAL		
DWG	DRAWING	NTS	NOT TO SCALE		
EA	EACH	OC	ON CENTER		
EERO	EMERGENCY ESCAPE & RESCUE OPENING	OH	OVERHEAD		
		OPG	OPENING		
EIFS	EXTERIOR INSULATION FINISH SYSTEM	OPP	OPPOSITE		
EJ	EXPANSION JOINT	PEMB	PRE-ENGINEERED METAL BUILDING		
ELEC	ELECTRIC / ELECTRICAL	PL	PLATE / PROPERTY LINE		
ELEV	ELEVATION / ELEVATOR	PTD	PAINTED		
EQ	EQUAL				
EQUIP	EQUIPMENT	QT	QUARRY TILE		
EX	EXISTING	QTY	QUANTITY		
EXP	EXPANSION				



A ARCHITECTURAL SITE PLAN
SCALE: 1" = 50'-0" 0 25 50 100

STATE OF OHIO
JONATHAN ROBERT SCHAAF
14503
REGISTERED ARCHITECT

Jonathan Robert Schaaf #14503
Expiration Date 12/31/2027

RDA GROUP ARCHITECTS
7662 PARAGON ROAD | DAYTON, OH 45459 | 937.610.3440

Mechanical System Upgrades at:
Wentworth Hi-Rise
OH5-14
2765 Wentworth Avenue
Dayton, Ohio 45406
Greater Dayton Premier Management

Project Number
2025-143

Date
January 23, 2026

Date	Issue
01.23.26	Bid / Construction

Sheet Title
Project Title Sheet

Sheet Number
G1.1

EQUIPMENT DATA (DOMESTIC HOT WATER SYSTEM)

WH-1, 2 & 3 DOMESTIC HOT WATER HEAT EXCHANGER

EACH DOMESTIC HOT WATER HEAT EXCHANGER SHALL BE **H2OMAX MODEL H119** AS MANUFACTURED BY THERMAL SOLUTIONS, TANK SHALL HAVE A NOMINAL CAPACITY OF **119 GALLONS**. SEE SPECIFICATIONS. EACH TANK SHALL BE PROVIDED WITH AQUATAT CONTROLLLER PER MANUFACTRER'S INSTRUCTIONS.

TET-1 THERMAL EXPANSION TANK

PRE-PRESSURIZED HYDRO-PNEUMATIC TANK TO ALLOW FOR EXPANSION OF WATER AS IT IS HEATED. UNIT SHALL HAVE POLYPROPYLENE LINER AND BE "NSF" APPROVED FOR USE WITH POTABLE WATER SYSTEM. BASED ON AMTROL "THERM-X-TROL" **MODEL NO. "ST-30V"**

TMP-1 TEMPERING VALVE

TEMPERING (CONTROL) VALVE SHALL LIMIT WATER TEMPERATURE TO 110°F. FOR **133 GPM** PEAK DEMAND WITH A PRESSURE DIFFERENTIAL OF 20 PSI, AND **5 GPM** MINIMUM FLOW. UNIT SHALL INCLUDE A DIAL THERMOMETER ON THE TEMPERED WATER OUTLET. **"MODEL 805"** MANUFACTURED BY LAWLER OR APPROVED EQUAL BY POWERS

PR-1 GAS PRESSURE REGULATOR

SERVICE REGULATOR WITH CAPACITY OF **1,999 SCFH** AT INLET PRESSURE OF PSI AND DISCHARGE PRESSURE OF **14" WC**, SENSUS SERIES **NO. 243-12-2** OR APPROVED EQUAL.

STRUCTURAL FOUNDATION GENERAL NOTES

GENERAL:

VERIFY ALL DIMENSIONS, ELEVATIONS, AND CONDITIONS IN THE FIELD PRIOR TO CONSTRUCTION.

DESIGN NOTES:

DESIGN PER OHIO BUILDING CODE 2024
WIND: 90 MPH
SEISMIC DESIGN CATEGORY: B

CONCRETE SLAB:

PREPARATION: PRIOR TO SETTING FORMS, THE SUBBASE SHALL BE THOROUGHLY COMPACTED AS DESCRIBED BELOW. LOW OR UNSTABLE AREAS SHALL BE FILLED WITH CRUSHED STONE AND RECOMPACTED AS REQUIRED.

THE AREA SHALL BE WETTED PRIOR TO PLACING CONCRETE.

CONCRETE SHALL BE 4,000 PSI TEST AT 28 DAYS, FREE OF VOIDS AND RUBBED SMOOTH WITH STEEL TROWEL. TOP SURFACE SHALL BE DEAD LEVEL.

AFTER FINISHING OPERATION IS COMPLETE, APPLY A MEMBRANE FORMING

CURING AND SEALING COMPOUND SHALL BE APPLIED AT MANUFACTURER'S RECOMMENDED RATE TO ALL EXPOSED SURFACES.

ALL EXPOSED EDGES SHALL HAVE 1" CHAMFER

IN PREPARING THE SUBBASE, THE CONTRACTOR SHALL COMPACT THE TOP 6" BELOW SUBGRADE AS WELL AS EACH LAYER OF BACKFILL MATERIAL AT 95% OF MAXIMUM DRY DENSITY ACCORDING TO ASTM D 1557 (MODIFIED PROCTOR).

FOR REQUIREMENTS ON EXCAVATION AND BACKFILL SEE ELECTRICAL SPECIFICATIONS.

GAS FIRED HEATING BOILER B-1, B-2 AND B-3

BFIT BRYAN BOILERS

Boiler SUBMITTAL DATA SHEET

RATINGS AND CAPACITIES		
Input - Low fire:	399,000	BTU/HR
Input - High Fire:	1,999,000	BTU/HR
Output - High Fire:	1,939,000	BTU/HR
Boiler Horsepower:	58	BHP
Thermal Efficiency:	97	
Combustion Efficiency:	97	
Heating Surface:	153	Sq.Ft.
Water Vol. (gal):	17	Gallons
Fuel:	Natural Gas or LP	
Firing Rate:	Full Modulation	
Burner Turndown:	5:1	
Low NOx Emissions:	<10 ppm	
Inlet Gas Pressure (NG):	4" (Min.) / 14" (Max.)	
Inlet Gas Pressure (LP):	8" (Min.) / 14" (Max.)	
Approx. Shipping Weight (lb):	1,217	lbs.

FLOWS AND PRESSURE DROPS		
Delta T	Flow (GPM)	Head Loss (ft)
30°	129	10.5

Electrical Requirements: (Appliance Only)				
Model	Voltage	Phase	Hz	Max. Amp Draw
2000	208	1	60	8.2

ASME Section IV (Max 160 PSIG / 210°F)
Setpoint range is 60-185°F
Adjustable, manual reset high limit setting of ≤ 200°F.
ASME H stamp MAWT is 210°F for the vessel. (For max setpoint, see Setpoint range.)
ETL Certified to ANSI Z21.13 / CSA 4.9
ETL Certified to UL 795 / CSA 3.1

DIMENSIONS / CONNECTIONS		
Height:	42-3/4	(Note 1)
Width:	34-1/4	(Note 2)
Length:	66-1/8	(Note 3)
Water Outlet Pipe (FNPT):	3	
Water Inlet Pipe (MNPT):	2-1/2	
Vent Connection:	8	
Air Intake Connection:	8	
Condensate Drain (PVC):	1	
Drain Line Connection:	3/4	
Gas Inlet Connection (FPT):	1 1/4	

NOTES:

1. Height dimension is from floor to top of jacket.
2. Length is from jacket front to jacket rear.
3. Dimensions shown are for reference only
4. Refer to manual for gas supply piping charts

2

PRESSURE VESSEL DESIGN

Stainless Steel Heat Exchanger
ASME Section IV Certified, "H" Stamp
MAWP 160 PSIG & Max Temp 210°F
Setpoint range is 60-185°F
Adjustable, manual reset high limit setting of ≤ 200°F.
ASME H stamp MAWT is 210°F for the vessel. (For max setpoint, see Setpoint range.)
Ten Year Limited Pressure Vessel Warranty

COMBUSTION DESIGN

Stainless Steel Pre-Mix Burner
Low NOx Emissions (< 10 ppm)
Full Modulation, 5:1 Turndown
Blocked Vent Switch
Zero governor gas valve
Variable Speed Combustion Blower
Air Proving Switch
Blocked Vent Switch
Natural Gas, Propane or Dual Fuel (Gas/Gas)
4" wc (8" wc Propane) to 14" wc inlet gas pressure
Manual fuel changeover switch (Dual Fuel Only)
4" wc (8" wc Propane) to 14" wc inlet gas pressure
High/Low gas pressure switches, manual reset
Direct Spark Ignition System with UV Scanner

VENTING

Category II or IV Venting
Indivdual or Common (Engineered) Vent System
Vertical or Horizontal
CPVC, PP or SS Venting *Materials Acceptable
Combustion Air Intake - Sealed or Room

BOILER EQUIPMENT

Concert ™ Control (24 Vac)
High Limit Temp Control, Manual Reset
Low water cutoff, manual reset
Supply & Return Water Temperature Sensors
Water Flow Switch
Condensate trap
Blocked Condensate Switch
Pressure & Temperature Gauge
Flue Gas Temperature Sensor
ASME Relief Valve: (Available: 30, 50, 60, 75,100, 125 or 150 psig)

ELECTRICAL DESIGN

Models 2000:
- 120-208-230VAC/60HZ/1PH - High Voltage

- PCB (Printed Circuit Board) Fused Connections
24VAC/5VDC - Low Voltage PCB
- EMS Communications
(Dual RJ45 Jacks for Peer-To-Peer or ModBus)
- Boiler Options (Sensors)
- Pumps (Boiler, DHW, System) & Auxiliary Devices

** Flue system material shall be capable of continuous operation at 210°F or higher and shall be certified to UL 1738 – venting system for gas-burning appliances cat II, III and IV.*

PROVIDE OPTIONAL EQUIPMENT MAKED WITH RED DOT

- ● Hydronic Kit (Boiler Circulation Pump, Pump Flange Kit and Condensate Neutralizer)
- ☐ External High Limit Temperature Control, Manual Reset
- ☐ Condensate Neutralizer
- ● Supply Header Temperature Sensor: ☐ Direct Immersion ● Well Immersion (with Well)
- ● Outdoor Air Temperature Sensor (Wired)
- ☐ EMS Signal Converter Kit (Converts Energy or Building Management System 0-10v signal to 4-20mA)
- ☐ Motorized Isolation Valves
- ☐ Alarm Buzzer with Silencing Switch
- ● Gas Valve Proving Switch
- ☐ Vent Adapter - CPVC
- ☐ Universal Communications Gateway (BACnet, Metasys, Modbus or Lonworks)
- ☐ Stackable Rack
- ● Conductor Sequencing Panel ☐ Optional Isolation Relay Board

The Conductor manages multiple condensing & non-condensing, small & large heat output, new and/or existing boilers (full modulation or on-off), and steam or hot water applications. It helps improve system efficiency by selecting and modulating the right boiler to match operating conditions. The Conductor offers a single point boiler plant Energy Management System (EMS) interface including Modbus TCP/IP, Modbus RTU RS485, BACnet/IP and BACnet MSTP standard. If Lonworks needed, add for the separate Lonworks gateway.

EXTENDED WARRANTY

☐ 3-Year Parts ☐ 5-Year Parts ☐ 10-Year Parts ● 5-Year Parts/Labor ☐ 10-Year Parts/Labor

PUMP SCHEDULE

SYSTEM
1...CHILLED WATER (30% P.G.)
2...HOT WATER HEATING
3...PROCESS COOLING
4...COOLING TOWER
5...DOMESTIC HOT WATER

TYPE
10...BASE MOUNTED CENTRIFUGAL
11...IN - LINE CENTRIFUGAL
12...HORIZONTAL SPLIT CASE
13...ROTARY GEAR

ELECTRIC
20....SEE ELECTRICAL DRAWINGS
21....VARIABLE FREQUENCY DRIVE
22....HIGH EFFICIENCY MOTOR
23....SHAFT GROUNDING KIT

MARK	SYSTEM	MFR.	MODEL / SERIES NO.	CAPACITY GPM	CAPACITY TDH	CAPACITY FLUID SP. GR.	CAPACITY PUMP EFF.	DESCRIPTION PUMP TYPE	DESCRIPTION SUCTION SIZE	DESCRIPTION DISCH. SIZE	DESCRIPTION IMPLR. SIZE IN.	MOTOR HP	MOTOR RPM	MOTOR ELECTRIC	NOTES
P-1	2	BELL & GOSSETT	e-1510/2BD	150	92 FT	1.00	70.7%	10	2.5"	2"	9.5	7 1/2	1,750	20, 22	1
P-2	2	BELL & GOSSETT	e-1510/2BD	150	92 FT	1.00	70.7%	10	2.5"	2"	9.5	7 1/2	1,750	20, 22	1
P-3	5	BELL & GOSSETT	NBF-25	6	13 FT	1.00	---	11	1-1/4"	1-1/4"	HIGH SPEED	125 WATTS	4,600	20	1
P-4	2	BELL & GOSSETT	e-80SC/3x3x7C	140	25 FT	1.00	71.7%	11	3"	3"	5.625	1-1/2	1,750	20	1
BP-1	2	GRUNDFOS	MAGNA1 100-120	130	15 FT	1.00	63.8%	11	4"	4"	---	2	3,600	20	2
BP-2	2	GRUNDFOS	MAGNA1 100-120	130	15 FT	1.00	63.8%	11	4"	4"	---	2	3,600	20	2
BP-3	2	GRUNDFOS	MAGNA1 100-120	130	15 FT	1.00	63.8%	11	4"	4"	---	2	3,600	20	2

NOTES: 1.) CIRCULATING WATER PUMP SELECTIONS ARE BASED ON BELL & GOSSETT MODEL NUMBERS, SEE SPECIFICATIONS. FOR APPROVE EQUALS.
2.) CIRCULATING WATER PUMP PROVIDED WITH BOILER PACKAGE KIT.

MECHANICAL GENERAL NOTES

1. WHERE REFERENCE IS MADE TO AN EXISTING PIPE, DUCT, OR AN ITEM OF EQUIPMENT, THE CONTRACTOR SHALL FIELD VERIFY EXACT SIZE, MODEL NUMBER, SERIAL NUMBER, AND LOCATION BEFORE ORDERING MATERIALS AND/OR STARTING FABRICATION.
2. THE EXISTING MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHOWN ON THESE DRAWINGS ARE SHOWN IN THEIR APPROXIMATE LOCATION AND MUST BE FIELD VERIFIED.
3. CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL PIPES, DUCTS, TERMINAL AIR UNITS, ETC. WITH THE OTHER TRADES AND SHIFT LOCATION OR OFF-SET WHERE NECESSARY. WORK BY OTHER TRADES ISN'T RESTRICTED TO NEW WORK BUT ALSO INCLUDES EXISTING ITEMS SUCH AS ELECTRICAL CONDUITS, STORM PIPING, ETC.
4. ALL EQUIPMENT, PIPING, DUCTWORK, CONTROLS, VALVES, ETC., NOTED TO BE REMOVED SHOULD ALSO BE DISPOSED OF UNDER THIS SECTION OF WORK UNLESS THE OWNER WISHES TO RETAIN POSSESSION OF SPECIFIC ITEMS.
5. UNLESS OTHERWISE INDICATED, ALL NEW SUPPLY DUCTWORK SHALL BE ACOUSTICALLY LINED SHEET METAL WITH 1-1/2" DUCT LINER (MIN. R=6).
6. ALL DUCTS AND PIPES SHALL BE INSTALLED ABOVE THE CEILING. WHERE NO CEILINGS ARE INSTALLED HOLD AS HIGH AS POSSIBLE OR WHERE DETAILED.
7. CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS STEEL REQUIRED FOR PIPE AND DUCTWORK SUPPORTS AND EQUIPMENT.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING ALL EXISTING GAS, AND WATER SYSTEMS WHEN NEW EQUIPMENT IS INSTALLED ON EXISTING SYSTEMS. TESTING SHALL BE PER CODE AND LOCAL INSPECTION AGENCY REQUIREMENTS.
9. THE CONTRACTOR SHALL MAINTAIN MAXIMUM PIPE CLEARANCE AWAY FROM ANY ELECTRICAL EQUIPMENT. PIPING SHALL NOT PASS DIRECTLY OVER ANY ELECTRICAL EQUIPMENT.
10. PROVIDE AIR VENTS WITH BALL VALVES AND DOWNTURN ELBOWS AT ALL HIGH POINTS IN PIPING SYSTEMS.
11. ALL PIPING SHALL BE PRESSURE TESTED AT 1.5 TIMES WORKING PRESSURE (MIN. 150 PSIG).
12. ALL ROOF WORK INCLUDING FLASHING AND PATCHING SHALL BE COMPLETED BY THE OWNER'S ROOFING CONTRACTOR TO MAINTAIN CARLISLE WARRANTY #1646302. FOR SUBCONTRACTOR PRICING, CONTACT ENTERPRISE ROOFING AT 937-298-8664.
13. ALL HEATING HOT WATER PIPING SHALL INSULATED WITH EITHER FIBERGLASS SECTIONAL PIPE INSULATION OR FLEXIBLE ELASTOMERIC CELLULAR INSULATION IN ACCORDANCE WITH THE FOLLOWING:
    - HEATING HOT WATER PIPE: THRU 1-½", 1-½" THICK; ABOVE 1-½", 2" THICK.
14. ALL DOMESTIC HOT AND DOMESTIC COLD WATER LINES SHALL BE INSULATED PRESS-FIT OR SOLDERED TYPE "L" COPPER.
15. ALL CHILLED WATER PIPING SHALL BE INSULATED WITH EITHER FIBERGLASS SECTIONAL PIPE INSULATION WITH ASJ OR FLEXIBLE ELASTOMERIC CELLULAR INSULATION IN ACCORDANCE WITH THE FOLLOWING:
    - CHILLED WATER INSULATION: INDOOR PIPING SHALL BE 1- ½" THICK.
    - CHILLED WATER INSULATION: OUTDOOR PIPING SHALL BE 2-½" THICK AND EMBOSSED ALUMINUM JACKET.
16. TEMPERATURE CONTROLS CONTRACTOR (TCC) SHALL PROVIDE ALL LOW AND HIGH VOLTAGE WIRING TO CONTROL PANELS FOR AIR COOLED CHILLER, MAKE-UP AIR UNIT, BOILERS, DAMPERS, THERMOSTATS, ETC. SEE ELECTRICAL DRAWINGS FOR POWER WIRING. TCC SUBCONTRACTOR PRICING SHALL BE INCLUDED IN THE MECHANICAL CONTRACTOR'S BID, SEE SPECIFICATIONS.
    - PROVIDE TEMPERATURE CONTROL ACCESS TOUCH SCREEN DISPLAY PERMANENT MOUNTED THE 48"x48" PLYWOOD BOARD ON THE WEST WALL OF THE BOILER ROOM.
    - PROVIDE ALARM HORN WITH SILENCING MUSHROOM TYPE PUSH BUTTON.
17. AFTER CLEANING THE GLYCOL PIPING SYSTEM, THE CONTRACTOR SHALL PROVIDE 30% PROPYLENE GLYCOL (BY VOLUME) PREMIXED SOLUTION OF DOWFROST™ "HD" HEAT TRANSFER FLUID OR EQUAL BY NU-CALGON. ALTHOUGH THE CONTRACTOR IS RESPONSIBLE FOR CALCULATING THE EXACT CHILLED WATER VOLUME, THE APPROXIMATE LOOP VOLUME IS **900 GALLONS**; IN ADDITION TO THE PIPING VOLUME, THE 55-GALLON GLYCOL FEED TANK SHALL BE FILL IN.
18. THE MECHANICAL CONTRACTOR SHALL NOTE THAT THE BUILDING IS OCCUPIED AND WILL REQUIRE THE DOMESTIC HOT WATER TO REMAIN OPERATIONAL DURING REMOVAL AND INSTALLATION OF THE NEW SYSTEM. THE CONTRACTOR SHALL CAREFULLY COORDINATE THE TIMING AND EXECUTION OF ALL WORK TO BE DONE IN THE BUILDING AREA WITH THE BUILDING MANAGER.
19. THE MECHANICAL CONTRACTOR SHALL PROVIDE A TEMPORARY DOMESTIC HOT WATER SYSTEM (RENTAL EQUIPMENT) AS REQUIRED TO MAINTAIN SYSTEMS FULLY OPERATIONAL DURING CONSTRUCTION PRIOR TO TAKING ANY EXISTING SYSTEM OUT OF SERVICE.
20. ALL PIPING SHALL BE SUPPORTED AT DISTANCES NOT EXCEEDING THE SPACING SPECIFIED IN TABLE 305.4, OR IN ACCORDANCE WITH ANSI/MSS SP-58.

MECHANICAL LEGEND

PIPING:

Symbol	Description
	DOMESTIC COLD WATER SUPPLY LINE
	DOMESTIC HOT WATER SUPPLY LINE
	DOMESTIC HOT WATER RETURN LINE
CHS	CHILLED WATER SUPPLY LINE
CHR	CHILLED WATER RETURN LINE
HWS	HOT WATER SUPPLY LINE
HWR	HOT WATER RETURN LINE
G	GAS LINE
CND	CONDENSATE WASTE
NP	NON POTABLE WATER SUPPLY LINE
	BALANCING VALVE
	BALL VALVE
	DOMESTIC WATER BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	GATE VALVE
	GLOBE VALVE
	STRAINER
	PRESSURE REDUCING VALVE
	SAFETY VALVE OR PRESSURE RELIEF VALVE
	UNION
	DIRECTION OF FLOW
	PITCH OF PIPE
	HOSE END CONNECTION
	CAP PIPING
	PIPE DROP
	PIPE RISE
	GAS VALVE
	LUBRICATED PLUG VALVE
P	PRESSURE GAUGE
	NEW CONNECTION TO EXISTING PIPING
	BACKFLOW PREVENTER

MISCELLANEOUS:

Symbol	Description
T	TEMPERATURE SENSOR
M	MOTOR OPERATOR
	DISCHARGE AIR
	EXHAUST OR INTAKE AIR
	REVISION SYMBOL
	NEW CONNECTION TO EXISTING
123	ROOM NUMBER
1	NOTE SYMBOL
E	EXISTING TO REMAIN
	EXISTING TO BE REMOVED
	EXISTING TO BE REMOVED
ER	EXISTING TO BE RELOCATED
ER	EXISTING RELOCATED
1	REFERENCE TO DETAIL
1 / M1-	DETAIL NUMBER / SHEET NUMBER
	CONTRACT LIMIT
BAS	BUILDING AUTOMATION SYSTEM
EC	ELECTRICAL CONTRACTOR
TCC	TEMPERATURE CONTROLS CONTRACTOR
GC	GENERAL CONTRACTOR
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
AFF	ABOVE FINISHED FLOOR

MECHANICAL SHEET INDEX

STATE OF OHIO
DENNIS R. HELMIG
E-45636
REGISTERED
PROFESSIONAL ENGINEER

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7662 PARAGON ROAD | DAYTON, OH 45459 | 937.610.3440

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410 South Jefferson Street
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Mechanical System Upgrades at:
Wentworth Hi-Rise
OH5-14
2765 Wentworth Avenue
Dayton, Ohio 45406
Greater Dayton Premier Management

Project Number
2025-143/6854

Date
January 23, 2026

Date	Issue
01.23.26	Bid / Constr.

Sheet Title
MECHANICAL - LEGEND, NOTES AND EQUIPMENT DATA

Sheet Number
M0.1

MAKE UP AIR HANDLING UNIT - MAU-1
Trane Performance Climate Changer Air Handler

Unit Overview - MAU-1

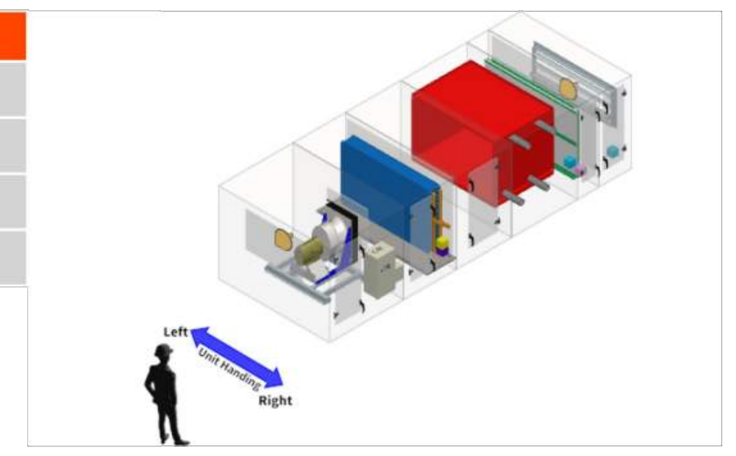
Application	Unit Size	External Dimensions Height	Width	Length	Weight Installed	Rigging
Indoor unit	CSAA017	52.5 in	72.0 in	196.543 in	3997 lb	3866 lb

Quantity of Shipping Sections	Largest Ship Split Height	Width	Length	Heaviest Ship Split	Elevation
3 piece(s)	52.5 in	72.0 in	82.5 in	1814 lb	970.00 ft

Supply Fan			
Airflow	7500 cfm	Total Static Pressure	3.509 in H2O

Construction Features

Panel	2in. foam injected R-13 with thermal break
Panel Material	All unit inner panels - galvanized
Integral Base Frame	6in. integral base frame
Agency Approval	UL listed unit



Unit Electrical

Circuit	Voltage/Phase/Frequency	FLA	MCA	Max Fuse Size	SCCR
Circuit number 1 Supply fan motor(s)	200-208/3/60	23.30 A	-	-	-
Circuit number 2 Controls-LL	115/1/60	2.61 A	3.26	15.00	N/A

Note: No factory motor interface provided. MCA and MOP to be determined by the Electrical Contractor.

Unit Controls

Factory Controls Package	Constant volume
Controller Type	Symbio
Controller mounting	Unit mounted
Controller location	Right
Factory programmed	Yes

Warranty

Parts - whole unit	2nd-3rd year additional
Labor - beyond 1st year	2nd thru 3rd year

Air mixing section - Position: 1

Openings

Face	Path	Type	Airflow	Face Velocity	Area	Pressure Drop	Hood
Back	Outside	Parallel blade damper	7500 cfm	1073 ft/min	6.99 sq ft	0.218 in H2O	N/A

Section Options

Door Location	Right

Filter section - Position: 2

Primary Filter

Type	Frame	Loading	Airflow	Face Area	Face Velocity	Condition	Pressure Drop	Filter Quantity	Filter Size
Pleated media - MERV 8	2in. filter frame	Side load filters	7500 cfm	18.89 sq ft	397 ft/min	Dirty	1.000 in H2O	2.00 4.00	20x20 20x24

Filter Section Options

Door Location	Right

Heating coil section - Position: 3

Coil Construction

Model	C-54 horiz IFB coil
Rows	4 rows
Fin Spacing	10 fins per inch
Face Area	12.91 sq ft
Installed Weight	812.0 lb

Coil Performance

Capacity	
Total	658.40 MBh
Air	
Flow	7500 cfm
Entering Dry Bulb	-5.00 F
Leaving Dry Bulb	78.80 F
Pressure Drop	0.542 in H2O
Face Velocity	581 ft/min
Fluid	
Flow	50.00 gpm
Entering	180.00 F
Leaving	153.40 F
Pressure Drop	0.88 ft fluid
Type	Water

Access/blank/turning section - Position: 4

Options

Section Length	36.000 in
Door Location 1	Right

TRANE — GDPM WENTWORTH HI-RISE — Job Name: 6854 WENTWORTH — CSAA Quantity: 1 Tags: MAU-1 :

MAKE UP AIR HANDLING UNIT - MAU-1
Trane Performance Climate Changer Air Handler

Cooling coil section - Position: 5

Coil Construction

Model	Chilled water - 5/8" Shipping Coil, General (W)
Rows	6
Tube Diameter	5/8in. tube diameter (15.875 mm)
Coil Connection	Standard
Tube Matl/Wall Thickness	.020" (0.508 mm) copper tubes
Fin Spacing	136 Per Foot
Fin Material	Aluminum fins
Fin Type	Prima flo H (Hi efficient)
Face Area	15.63 sq ft
Coil (top/single) H x L	37 in. (940 mm) X 60" (1524 mm) finned length
Casing	Galvanized
Turbulators	Yes
Rigging Weight	384.4 lb
Installed Weight	515.9 lb
Coil Section Options	
Extended Drain and Vent	Holes only
Drain Pan	Stainless steel
Drain Pan Size	Extended medium
Drain Connection	Left
Minimum Trap Height (L)	6.824 in
H Trap Dimension	3.883 in
J Trap Dimension	1.941 in
Door Location	Right

Coil Performance

Capacity	
Total	525.08 MBh
Sensible	290.66 MBh
Air	
Flow	7500 cfm
Entering Dry Bulb	95.00 F
Entering Wet Bulb	78.00 F
Leaving Dry Bulb	59.00 F
Leaving Wet Bulb	58.86 F
Pressure Drop	0.748 in H2O
Face Velocity	480 ft/min
Fluid	
Flow	66.78 gpm
Entering	44.00 F
Leaving	61.00 F
Pressure Drop	10.92 ft fluid
Tube Velocity	2.95 ft/s
Reynolds Number	3662.88
Type	Propylene glycol
Concentration	30.00 %
Fouling Factor	0.00000 hr-sq ft-deg F/Btu
Volume	14.04 gal
AHRI 410 Classification	
AHRI 410 Classification	NOT Certified by AHRI
Data Generation Date	1/20/2026
Trane Select Assist update number	26010

Note: Coil is NOT certified by AHRI. Coil is within the scope of AHRI Standard 410.

Supply fan section - Position: 6

Fan Data

Wheel Diameter/Type/Class	22.25in. dd plenum, full width, H press
Fan Quantity	1
Discharge Location	Front top
Motor Location	Right side drive
Blades	Higher eff.(some bands lower,more spike)
Drive Service Factor	Direct drive
Fan K-factor	2649.00
FEI	1.37
Fan Performance	
Airflow	7500 cfm
Total Static Pressure	3.509 in H2O
Total Brake Power	6.254 hp
Operating Speed	1816 rpm
AMCA FEG	FEG80
Bare fan peak total efficiency	71.10 %
Unit Static Efficiency	66.34 %
Motor Interface Options	
Selection Type	External junction box
Voltage	200-208/3
VFD Frequency	62.00 Hz

Motor Data

Power / Fan	7.5 hp
Voltage	200-208/3
Speed	1800
Class	NEMA premium compliant ODP
Efficiency	91.10 %
Part Load Efficiency	86.57 %
Fan electrical power (FEP)	5.10 kW
Wire to air static efficiency	60.56 %

Note: Field provided VFD efficiency not included. DOL motor fan electrical power calculated in accordance with AHRI 430.

Note: Certified airflow performance per AHRI 430

Fan Section Options

Fan Wheel Balance	Inverter balance with shaft grounding
Door Location	Right
Door Guard	Yes

Fan Discharge Options

Face	Type	Airflow	Face Velocity	Area	Pressure Drop	Exhaust Hood	Damper Torque Requirement
Front Face Feature	Sizeable rectangular opening	7500 cfm	1269 ft/min	5.91 sq ft	0.251 in H2O	N/A	N/A

Note: Certified by the AHRI Central Station Air-Handling Unit (AHU) Certification Program, based on AHRI Standard 430/431. AHRI certified units are subject to rigorous and continuous testing, have performance ratings independently measured and are third party verified. Certified units may be found in the AHRI Directory at www.ahridirectory.org.

AHRI CERTIFIED® www.ahridirectory.org — Central Station Air-Handling Unit Supply Fans AHRI Standards 430/431

Pressure Drop in (in w.g.)

Supply fan	
Air mixing section	0.22
Filter section	1.00
Coil section	0.54
Coil section	0.75
Fan section	0.25
Internal Static Pressure	**2.76**
External Static Pressure	**0.75**
Total Static Pressure	**3.51**

(*) MAKE UP AIR HANDLING UNIT SELECTION IS BASED ON TRANE MODEL NUMBER, SEE SPECIFICATIONS.

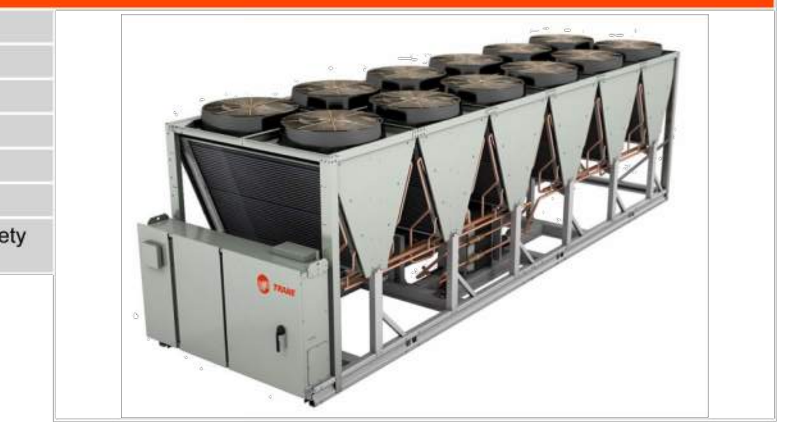
SEE POINT LIST AND PROPOSED SEQUENCE OF OPERATION (PROGRAMMER.)

UNIT CONTROLLER SHALL BE PROVIDED WITH BACNET COMMUNICATION INTERFACE, AND TEMPERATURE CONTROLS CONTRACTOR SHALL MAP POINTS TO BUILDING AUTOMATION SYSTEM.

AIR COOLED CHILLER - ACC-1
Ascend Product Report

General

Chiller Model	ACSA
Unit Nominal Tons	200 Nominal Tons
Voltage	208V/60Hz/3Phase
Refrigerant	Refrigerant Charge R-454B
Number of Circuits	2
Number of Compressors	6
Agency Listing	UL Listed to U.S./Canadian Safety Std



Chiller Performance

Cooling Capacity	171.4 tons	IPLV (Cooling Mode)	18.28 EER (Btu/W-h)
Cooling Efficiency	9.833 EER (Btu/W-h)	NPLV (Cooling Mode)	16.79 EER (Btu/W-h)

Evaporator

Evaporator Application	Standard Cooling (Above 40 Deg F)	**Fluid Properties**	
Fouling Factor	0.000100 hr-sq ft-deg F/ Btu	Leaving Fluid Temperature	44.00 F
Flow Switch Set Point	Flow Switch Set Point 60	Entering Fluid Temperature	54.00 F
Design Flow	434.2 gpm	Fluid Type	Propylene Glycol
Evaporator Head Loss	19.7 ft H2O	Fluid Concentration	30.00 %
Strainer Head Loss	2.25 ft	Fluid Freeze Point	9.19 F
VPF Min Flow	287.5 gpm		

Condenser

Unit Application	Low Ambient	Elevation	970.00 ft
Condenser Type	EC Condenser Fan Motors	Ambient Air Temperature	95.0 F
Number of Fans	10		

Electrical

Unit Voltage	208V/60Hz/3Phase	Total Power (Cooling)	209.2 kW
Compressor Starter	Across-The-Line-Starter	FLA - Condenser Fan (each)	2.70 A
Incoming Line Connection	Single Point Unit Power Connection	Short Circuit Rating	65000 A
Incoming Line Connection Type	High Fault Rated Circuit Breaker	**MOP**	
MCA		Single Point Power	1000 A
Single Point Power	937 A		

Compressor	RLA	LRA
1A	119.00 A	717.00 A
1B	119.00 A	717.00 A
1C	150.00 A	761.00 A
2A	119.00 A	717.00 A
2B	119.00 A	717.00 A
2C	150.00 A	761.00 A

Pump System

Pump Package	Dual Pump High Pressure with Dual VFD	System Fluid Pump VFD Input	59.60 A
Pump Size	25.00 hp	Available Head	100.20 ft
Pump FLA	68.00 A	Net Positive Suction Head Required	18.97 ft

Acoustics

Acoustic Notes

Sound power data collected per AHRI 370 methodology.	Sound power referenced to 1pW; sound pressure referenced to 20μPa.	Sound pressure values are at 30 feet from broadside of unit.

Physical

Dimensions		Weights	
Length	285 in	Operating Weight	12781 lb
Width	88 in	Shipping Weight	12639 lb
Height	98 in		

Circuit	Refrigerant Charge	Oil Charge
Circuit 1	63.0 lb	4.80 gal
Circuit 2	63.0 lb	4.80 gal

Standard Rating Performance and LEED Rating

Cooling Capacity	171.4 tons
Rated Cooling Capacity	176.4 tons
Cooling Efficiency	9.833 EER (Btu/W-h)
Rated Cooling Efficiency	10.09 EER (Btu/W-h)
IPLV (Cooling Mode)	18.28 EER (Btu/W-h)
Compressor Power	197.3 kW
Fan Motor Power	11.87 kW
Refrigerant Charge Circuit 1	63.0 lb
Refrigerant Charge Circuit 2	63.0 lb

ASHRAE 90.1 - 2019

This product meets the minimum efficiency requirements of ASHRAE Standard 90.1 and CANS/CSA C743 (which are based on AHRI standard rating conditions with water) and, therefore, also meets the LEED "Minimum Energy Performance" prerequisite in the Energy and Atmosphere section.

The LEED Green Building Rating System™, developed by the U.S Green Building Council, provides independent, third-party verification that a building project meets green building and performance measures.

Regulatory Compliance

AHRI Certification

Certified in accordance with the AHRI Air-Cooled Water-Chilling Packages Certification Program, which is based on AHRI Standard 550/590 (I-P) and AHRI Standard 551/591 (SI). Certified units may be found in the AHRI Directory at www.ahridirectory.org. Unit contains freeze protection liquids in the evaporator and is certified when rated per the Standard with water.

AHRI CERTIFIED® www.ahridirectory.org — Air-Cooled Water Chilling Packages AHRI Standards 550/590 and 551/591

(*) AIR COOLED CHILLER SELECTION IS BASED ON TRANE MODEL NUMBER, SEE SPECIFICATIONS.

SEE POINT LIST AND PROPOSED SEQUENCE OF OPERATION (PROGRAMMER.)

UNIT CONTROLLER SHALL BE PROVIDED WITH BACNET COMMUNICATION INTERFACE, AND TEMPERATURE CONTROLS CONTRACTOR SHALL MAP POINTS TO BUILDING AUTOMATION SYSTEM.

STATE OF OHIO — DENNIS R. HELMIG E-45636 — REGISTERED PROFESSIONAL ENGINEER

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Project Number	2025-143/6854
Date	January 23, 2026

Date	Issue
01.23.26	Bid / Constr.

Sheet Title
MECHANICAL - EQUIPMENT DATA

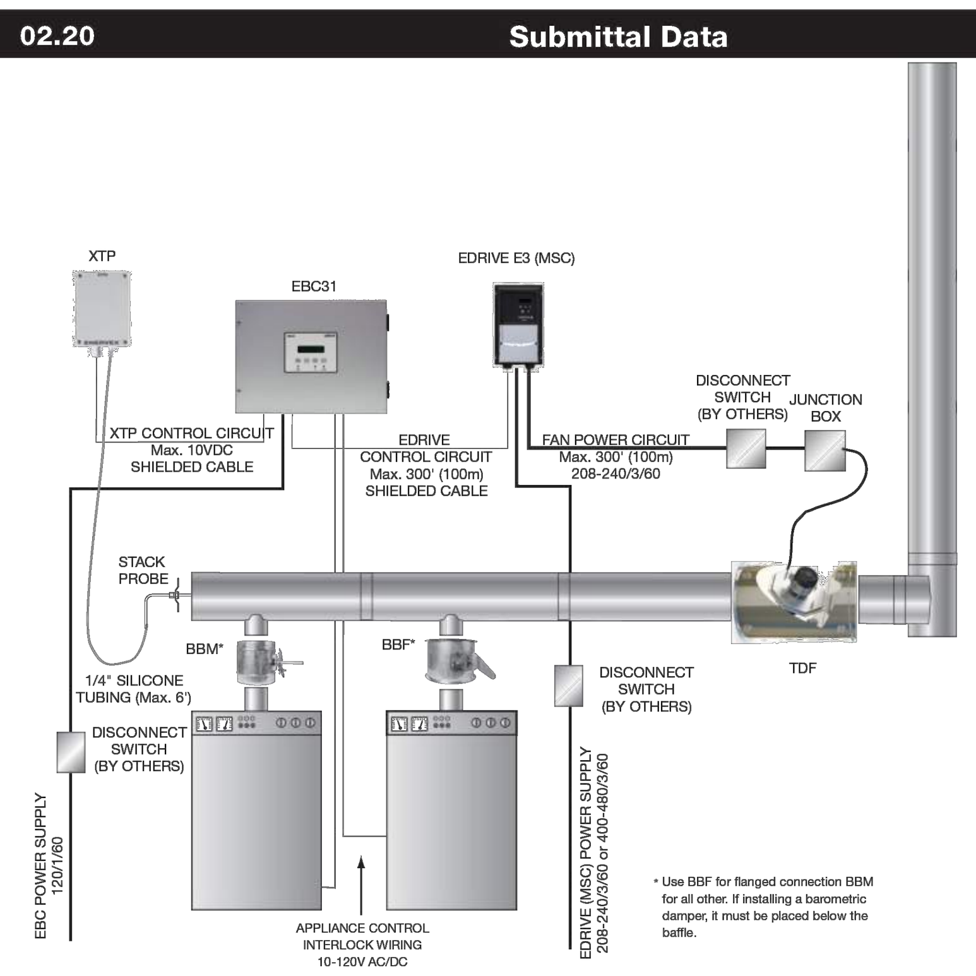
Sheet Number
M0.2

EQUIPMENT DATA

BOILER POWER VENT SYSTEM: MARK - CF-1

ENERVEX
CASI 300-500 w/EBC 31

022.1090.0220 02.20 Submittal Data



System Components and Specifications

Model	Fan	Control	MSC	Triac Board	If 7 + Appliances	Power Supply MSC	Max. Input Amp to MSC	Max. Input Current Fan	Max. Output Fan HP	RPM
CASI 400	TDF 400	EBC 31, incl XTP and stack probe	321.0912.2200		ES 12	208-240/3/60	12.1	8.9	2.1	1950

Wiring	Wire Rating	Rating Amps	No. of Leads	Max. Length	Min., Wire Gauge
EBC 31 Power Supply	600V	6.3	3	**	14
XTP Control Circuit	-	<0.01	3	300'	24
Fan Power Supply	600V	**	**	**	**
Appliance Control Circuit	**	**	4	**	**
MSC Control Circuit	-	<0.1	4	300'	24
MSC Power Supply	600V	see above	4	**	**

All wiring must comply with local codes, and in their absence, the National Electrical Code, NFPA 70.

** Job specific - check local code

ENERVEX®
TDF 400 POWER VENTER

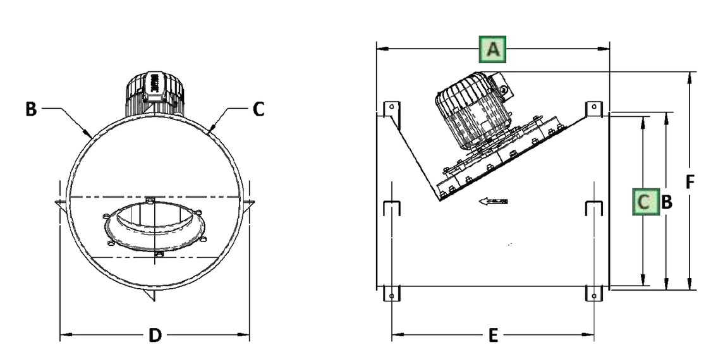
020.1094.0619 12.22 Product Information

Specifications

Model	TDF 400
Fan Type	Centrifugal Impeller (BC-Wheel)
Motor Type	ECM, Permanent Magnet
Voltage Configuration	3 x 208-240 VAC
EDrive Model	321.0912.2200
EDrive Ratings:	
NEMA / IP Rating	4X / IP66
Supply Voltage - VAC	3 x 208-240
Power - kW	2.2
Max Input Current - Amp	12.1
Max Output Current - Amp	10.5
Max Over-Current - %	175
Min Operating Temp. - °F / °C	-4 / -20
Max Operating Temp. - °F / °C	104 / 40
Motor Ratings:	
Motor Efficiency Class	IE5
Temperature Class	H
NEMA / IP Rating	3S / IP55
Max Current - Amp	8.9
Max Speed - RPM	2740
Power - kW / HP	2.2 / 3.0
Torque - Nm	9
Motor Operating Settings:	
Fan Speed - RPM	1950
Max Power - kW / ~ HP	1.6 / 2.1
Max Torque - Nm	6.4
Weight:	
TDF - lbs / kg	122 / 56
EDrive - lbs / kg	7.7 / 3.5

Note: Use EDrive Ratings Data for Circuit Sizing

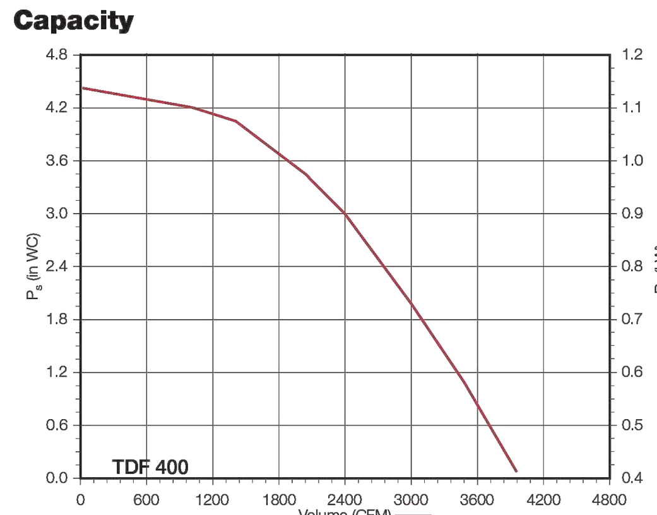
Dimensions



Model			TDF 400
Duct Connection			½" flange
Dimensions	A	in / mm	33.5 / 850
	B	in / mm	25.0 / 635
	C	in / mm	24.0 / 610
	D	in / mm	26.4 / 670
	E	in / mm	29.0 / 737
	F	in / mm	30.3 / 769
Flange Bolt Center Diameter		in / mm	- / -
Temp Rating *		°F / °C	1400 / 760

* Maximum Intermittent Temperature Rating

Capacity



Sound Table

SP	Sound Power re 10^{-12} Watts								Sones	$L_{wo}A$
	Octave Bands									
	1	2	3	4	5	6	7	8		
0.00	83	83	79	79	75	73	67	67	32	71
1.00	81	81	77	77	73	71	65	65	29	69
2.00	79	79	75	75	71	69	63	63	27	67
4.00	80	80	76	76	72	70	64	64	28	68

Values shown are for outlet $L_{Wo}A$ sound power levels for Installation Type C: ducted inlet, free outlet. The sound power level ratings shown are in decibels, referred to 10-12 watts, calculated per AMCA International Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. The sound ratings shown are loudness values in fan sones at a distance of 1.5 m (5 ft) in a hemispherical free field calculated per AMCA International Standard 301. Values shown are for free outlet hemispherical sone levels. dBA levels are not licensed by AMCA International.

ENERVEX
EDRIVE E3 MOTOR SPEED CONTROLLER

009.3210.1018 02.25 Product Information

Use
The EDrive E3 Model Motor Speed Controller is a full-featured, industrial-type motor controller programmed used to control and adjust the speed of ENERVEX fans using EC-Motors and 3-phase Induction Motors. It's identical to the EDrive except the enclosure is NEMA 4X rated.

Description
The EDrive E3 includes an intuitive keypad, built-in mounting brackets with easy access control terminals. The built-in LED display indicates various parameters including motor frequency, amperage and alarm conditions.

It comes pre-programmed by ENERVEX for each specific motor. If program changes are necessary, the settings can be adjusted using the keypad panel.

Features include:

- Sensorless Vector Control
- 14 basic programmable parameters
- Internal Category C1 EMC filter (on selected drives)
- Integral RFI Filter
- 0.5 HP through 1.5 HP in 120 VAC single-phase input classes
- 0.5 HP through 15 HP in 200 VAC three-phase input classes
- 0.5 HP through 2.0 HP in 200VAC-single-phase input classes
- 1 HP through 30 HP in 400 VAC three-phase input classes
- Modbus and Bluetooth connectivity

The single-phase 120V drive version has a special boost phase that initially ramps the motor voltage while maintaining a fixed starting frequency, before reducing the frequency and voltage to the desired operating point.

Material
The frame and the cover is PC/ABS plastic. Rated NEMA 4X

Listings
UL 508C Standard for Power Conversion

Approvals
- CE compliant
- Full EMC Compliance

Warranty
2-Year Factory Warranty. Complete warranty conditions are available from ENERVEX Inc.

Specifications

Programming	OptiTools Suite
Overload Capacity	150% for 60 seconds
	175% for 2.5 seconds
Typical Efficiency	>98%
Operating Temperature	-4°F to 104°F (-20°C to 40°C)
Enclosure Rating	NEMA 4X (IP66)
Connectivity	Modbus, Bluetooth

Dimensions

Frame Size	Height	Width	Depth
1	9.13 (232)	6.34 (161)	6.37 (162)
2	10.12 (257)	7.4 (188)	7.16 (182)
3	12.2 (310)	8.3 (211)	9.37 (238)
4	14.17 (360)	9.44 (240)	10.82 (275)

Fan Model	Input Voltage	EDrive Model Number	Frame Size	kW	Max. Input Current (A)	Output Current (A)	Max Cable Size mm	Max Cable Size AWG	EMC Filter
TDF 400	3 x 230VAC	321.0912.2200	2	2.2	12.1	10.5	8	8	Yes

ENERVEX®
XTP DIFFERENTIAL PRESSURE SENSOR

020.3031.1220 05.21 Product Information

Use
The XTP Differential Pressure Sensor is an external bi-directional pressure transducer that monitors pressure and sends a signal to a modulating fan control.

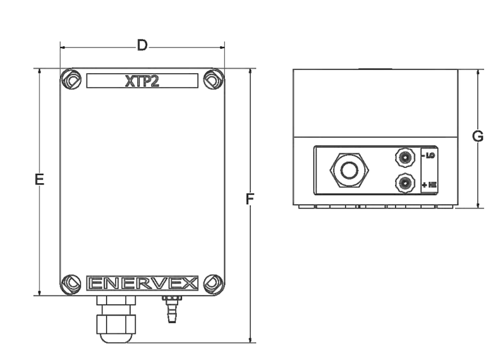
Description
The transducer converts measured pressure into a corresponding voltage, which is then relayed to the control to modulate the damper position and/or fan speed — thus regulating pressure at the set-point.

The transmitter uses a patented Si-Glas™ variable capacitance sensor. This MEMS sensor provides extraordinary sensitivity and long term stability. New digital compensation is accomplished using a highly reliable application specific integrated circuit (ASIC).

Warranty
2-Year Factory Warranty. Complete warranty conditions are available from ENERVEX Inc.

Specifications

Power Supply		VDC	12-36
Amperage		mA	<20
Output		VDC	0-10
Operating Temperature		°F/°C	0 to 160 / -18 to 71
Range of Operation		inWC/Pa	-1.0-+1.0 /-250-+250
Accuracy		inWC/Pa	+/-0.25%
Dimensions	D	in/mm	3.70/94
	E	in/mm	5.12/130
	F	in/mm	6.18/157
	G	in/mm	3.13/80
Weight		lbs/kg	0.6/0.3



ENERVEX®
EBC 31 MODULATING PRESSURE CONTROLLER

020.3060.0521 05.21 Product Information

Use
The EBC 31 is a multi-use, bi-directional draft or pressure controller with integrated webserver and remote access used with fans and dampers to monitor and maintain a constant draft or pressure by varying the speed of a fan(s) or the position of an actuator. It can be used with models RSV, IPVB, TDF, BEF and MDF.

Typical applications are:

- Maintain a constant draft by modulating a power venter in a mechanical draft system serving boilers and water heaters
- Maintain a constant draft by modulating position of an over-draft damper serving boilers and water heaters
- Maintain a constant duct pressure in a dryer venting system or a ventilation system
- Control the supply of combustion air to a mechanical room or directly to a boiler(s)
- Control and maintain room pressure

Description
The EBC 31 features "Plug-n-Play" to automatically monitor all terminals and register components attached to the control during initial start-up. The control can provide a 0-10V signal to a Variable Frequency Drive (VFD) or actuator. An optional triac board can supply 0-120VAC power directly to the mechanical draft fan or air supply ventilator. An optional damper PCB can provide the ability to control an exhaust fan, an intake fan and a draft damper simultaneously. It can interlock with up to 6 heating appliances, and an unlimited number of additional heating appliances can be handled by using one or more ES12, Relay Box.

The control has an integrated safety system to assure the heating appliance will shut down in case of fan failure or control failure. A unique priority operation function will probe the operating conditions and allow as many appliances as possible to operate without fan assistance, provided the operation is considered safe by the integrated safety system.

The EBC 31 can be set up for intermittent operation so it pre-purges the stack prior to the boiler(s) start and post-purges up to 30 minutes after boiler stop. Alternatively, it can be set up for continuous operation where the fan runs continuously but modulates and runs at idle speed, if no appliances are operating.

Intertek
ETL File 101223937ATL

The EBC31 can be configured either by using the LCD dot display and buttons, or by using the integrated webserver, which also allows remote monitoring and firmware upgrades. Two RS485 ports can be used for and BACnet communication, and one expansion board can be used for future hardware upgrades.

A bearing cycle activation rotates the fan motor(s) once every 24 hours if the fan(s) has not operated within the last 24 hours.

Material
The enclosure is made in steel and is NEMA 1 rated.

Standard Equipment
- Control box
- XTP Sensor
- 6' Silicone tubing
- Stack probe

Listings
The EBC 31 is ETL Listed in the U.S. and Canada under file no. 101223937ATL:

- UL 60947 Standard for Industrial Control Equipment
- UL 378 Standard for Draft Equipment
- CSA C22.2 No. 14-95 Standard for Industrial Control Equipment

Warranty
2-Year Factory Warranty. Complete warranty conditions are available from ENERVEX Inc.

ENERVEX®
ADF AUTOMATIC DAMPER

3932008.0418 10.22 Product Information

Use
The ADF Automatic Damper is a single blade, two position damper powered by an actuator. It is used to balance draft in a boiler connector and to reduce boiler stand-by losses. It is for installation with gas-fired or oil-fired equipment only.

Description
The ADF Automatic Damper is powered by a 120VAC or 24VAC/VDC actuator. The actuator is equipped with a fail safe system to open the damper in the event of an electrical or mechanical failure. It has an adjustable NO/NC endswitch to provide damper position open/closed.

The ADF is available in standard stack diameters ranging from 4" to 36". The actuator interlocks with a gas or oil fired heating appliance to open the damper when the appliance is in use, and closes it when the appliance is not in use.

The ADF damper is manufactured to connect to chimneys with a standard 1/2" flanged connection. The ADF is rated for temperatures up to 1400°F (760°C).

The ADF should be installed with sufficient clearance above the boiler outlet to allow for damper protrusion into the stack when fully open.

Material
The frame is made of 20 GA 316L stainless steel. The blade is made of 18 GA 316L stainless steel.

Standard Equipment
- V-bands

Optional Equipment
- Weather proof enclosure for actuator
- Positive Seal Gasket

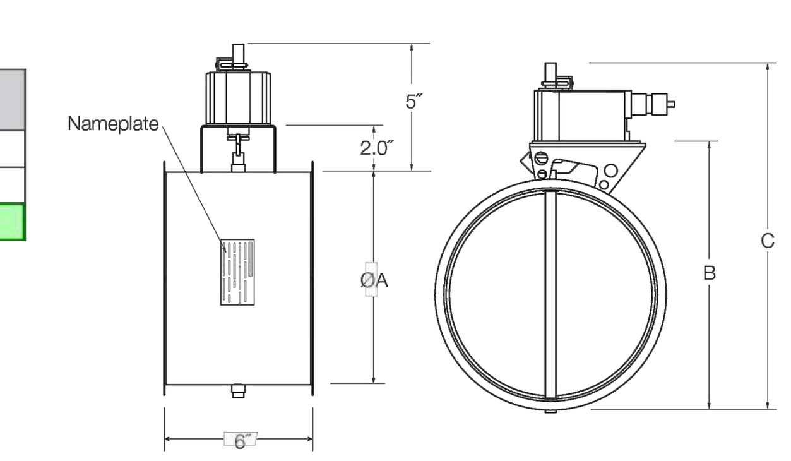
Listings
The ADF Automatic Damper assembly (damper with actuator) is UL listed in the US and certified for Canada under Underwriters Laboratories Inc. file no. E467733:

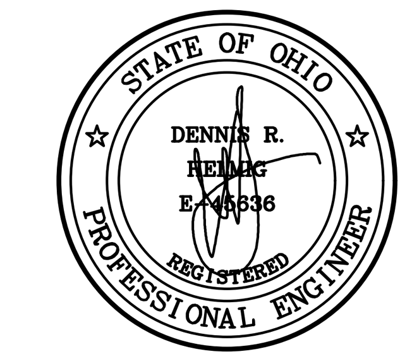
- UL 378 Standard for Draft Equipment
- UL 17 Standard for Vent or Chimney Connector Dampers for Oil-Fired Appliances
- ULC/ORD-C378 (1975) Draft Equipment
- ANSI Z21.66-1996 Automatic Vent Damper Devices For Use With Gas-fired Appliances

Warranty
2-Year Factory Warranty. Complete warranty conditions are available from ENERVEX Inc.

Specifications

Model	Stack ID in / mm	Dim. A in / mm	Dim. B in / mm	Dim. C in / mm
ADF 8	8	7.87 / 200	8.82 / 224	12.80 / 325





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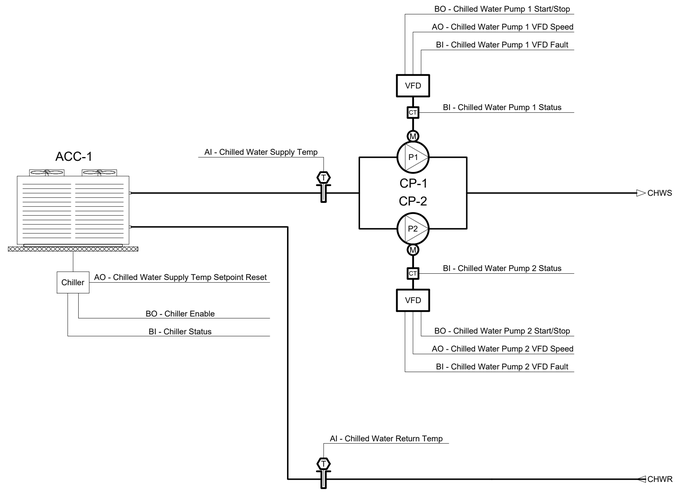
MECHANICAL - EQUIPMENT DATA

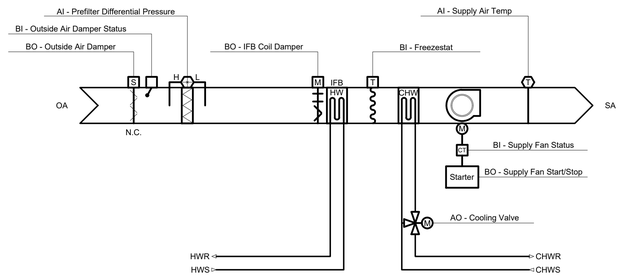
Sheet Number
M0.3



AIR COOLED CHILLER - ACC-1

(B) CHILLED WATER - TEMPERATURE CONTROLS DIAGRAM

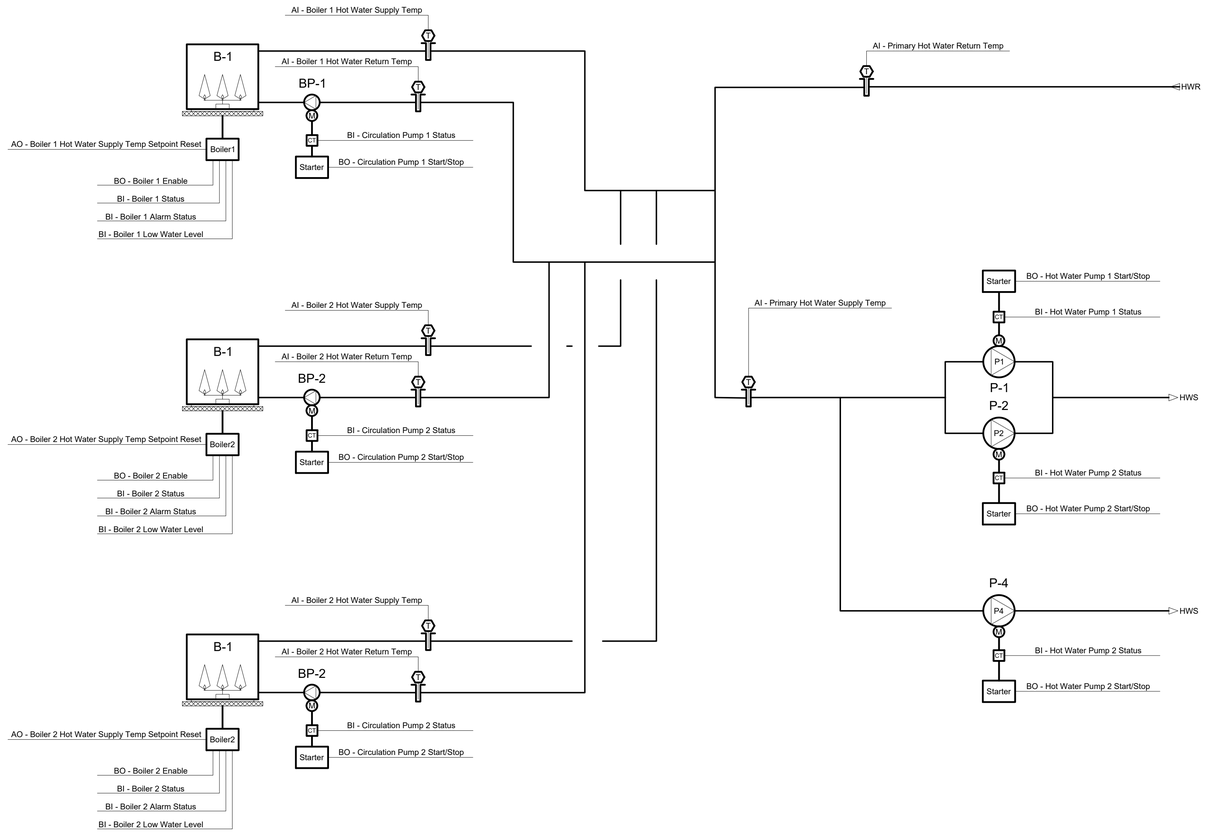
NO SCALE



NEW CONSTANT AIR VOLUME MODULAR UNIT - MAU-1

(A) MAKEUP AIR UNIT - CONTROLS DIAGRAM

NO SCALE



NEW CONDENSING BOILERS - HOT WATER LOOP

(C) HEATING HOT WATER PLANT - CONTROLS DIAGRAM

NO SCALE

MAKEUP AIR UINT - MAU-1

POINTS LIST

	ANALOG INPUTS: MEASURED: TEMPERATURE	RELATIVE HUMIDITY	POSITIVE PRESS. (IN. WC)	NEGATIVE PRESS. (IN. WC)	FLOW	CARBON DIOXIDE	ANALOG INPUTS: CALC.	DIGITAL INPUTS: PRESSURE SWITCH	CURRENT SENSOR	FLOW SWITCH	SWITCH CLOSURE	AUX CONTACT	AUX TRIP	VFD TRIP	OUTPUTS: D/O: CONTROL RELAY	SOLENOID	DAMPER MOTOR	OUTPUTS: A/O: PRESS TRANSDUCER	FLOW TRANSDUCER	4-20 MA MODULE	0-10 V MODULE	SYSTEM FEATURES: ALARMS: EQUIPM. STATUS	MAINTENANCE	ALARMS	HIGH LIMIT	LOW LIMIT	SYSTEM FEATURES: PROGRAMS: TIME SCHEDULING	HOLIDAYS	RUN TIME	ALTERNATION	START UP OPTIMIZATION	RESET	ENTHALPY TOTAL	NIGHTTIME FREE COOLING	DAMPER OPTIMIZATION	PURGE	DEMAND AIR OPTIMIZATION	NIGHT SETBACK	NIGHT PURGE	GEN-ERAL: COLOR GRAPHIC
MAKEUP AIR UNIT SYSTEM:																																								
SUPPLY FAN START/STOP															●								●		●		●●													
SUPPLY FAN STATUS								●																							●									
HEATING IFB COIL DAMPER CONTROL																		●																					
COOLING COIL VALVE CONTROL																		●																					
O.A. DAMPER CONTROL																		●																					
SUPPLY AIR TEMPERATURE	●																							●●															
LOW LIMIT THERMOSTATS												●												●															
FILTERS STATUS		●																								●													

AIR HANDLING UNIT CONTROLLER SHALL BE FACTORY PROGRAMMED AND PROVIDED WITH BACNET COMMUNICATION CARD, TEMPERATURE CONTROLS CONTRACTOR SHALL MAP POINTS TO BUILDING AUTOMATION SYSTEM

HEATING HOT WATER SYSTEM B-1, B-2, B-3, BP-1, BP-2, BP-3, P-1, P-2, AND P-4

POINTS LIST

	ANALOG INPUTS: MEASURED: TEMPERATURE	RELATIVE HUMIDITY	POSITIVE PRESS. (IN. WC)	NEGATIVE PRESS. (IN. WC)	FLOW	PERCENTAGE (%)	ANALOG INPUTS: CALC.	DIGITAL INPUTS: PRESSURE SWITCH	CURRENT SENSOR	FLOW SWITCH	SWITCH CLOSURE	AUX CONTACT	AUX TRIP	VFD TRIP	OUTPUTS: D/O: CONTROL RELAY	SOLENOID	DAMPER MOTOR	OUTPUTS: A/O: PRESS TRANSDUCER	FLOW TRANSDUCER	4-20 MA MODULE	0-10 V MODULE	SYSTEM FEATURES: ALARMS: EQUIPMENT STATUS	MAINTENANCE	ALARMS	HIGH LIMIT	LOW LIMIT	SYSTEM FEATURES: PROGRAMS: TIME SCHEDULING	HOLIDAYS	RUN TIME	ALTERNATION	START UP OPTIMIZATION	RESET	ENTHALPY TOTAL	NIGHTTIME FREE COOLING	DAMPER OPTIMIZATION	PURGE	DEMAND AIR OPTIMIZATION	NIGHT SETBACK	NIGHT PURGE	GEN-ERAL: COLOR GRAPHIC
HOT WATER SYSTEM:																																								
BOILER ENABLE															●												●													
BOILER STATUS																							●																	
BOILER ALARM STATUS																								●																
BOILER LOW WATER LEVEL																									●															
BOILER HOT WATER SUPPLY TEMPERATURE	●																							●●	●															
BOILER HOT WATER RETURN TEMPERATURE	●																							●●	●															
BOILER FIRING RATE							●																																	
HOT WATER SUPPLY TEMPERATURE SET-POINT																		●						●●	●															
OUTSIDE AIR TEMPERATURE	●																																							
HOT WATER PUMP BP-1, 2 & 3 START/STOP															●																●		●							
HOT WATER PUMP BP-1, 2 & 3 STATUS									●														●																	
HOT WATER PUMP P-1, 2 & 4 START/STOP															●																●		●							
HOT WATER PUMP P-1, 2 & 3 STATUS								●																●																
COMBUSTION AIR FAN - SF-1, 2 AND 3										●														●																
VENT EXHAUST SYSTEM START/STOP															●									●																

NEW BOILERS CONTROLLER SHALL BE INTEGRATED WITH THE CONDUCTOR SEQUENCING PANEL PROVIDED WITH BACNET COMMUNICATION CARD INTERFACE.
TEMPERATURE CONTROLS CONTRACTOR SHALL MAP POINTS TO BUILDING AUTOMATION SYSTEM.

CHILLED WATER SYSTEM ACC-1

POINTS LIST

	ANALOG INPUTS: MEASURED: TEMPERATURE	RELATIVE HUMIDITY	POSITIVE PRESS. (IN. WC)	NEGATIVE PRESS. (IN. WC)	FLOW	ANALOG INPUTS: CALC.	DIGITAL INPUTS: PRESSURE SWITCH	CURRENT SENSOR	FLOW SWITCH	SWITCH CLOSURE	AUX CONTACT	AUX TRIP	VFD TRIP	OUTPUTS: D/O: CONTROL RELAY	SOLENOID	DAMPER MOTOR	OUTPUTS: A/O: PRESS TRANSDUCER	FLOW TRANSDUCER	4-20 MA MODULE	0-10 V MODULE	SYSTEM FEATURES: ALARMS: EQUIPMENT STATUS	MAINTENANCE	ALARMS	HIGH LIMIT	LOW LIMIT	SYSTEM FEATURES: PROGRAMS: TIME SCHEDULING	HOLIDAYS	RUN TIME	ALTERNATION	START UP OPTIMIZATION	RESET	ENTHALPY TOTAL	NIGHTTIME FREE COOLING	DAMPER OPTIMIZATION	PURGE	DEMAND AIR OPTIMIZATION	NIGHT SETBACK	NIGHT PURGE	GEN-ERAL: COLOR GRAPHIC
CHILLED WATER SYSTEM:																																								
CHILLER ENABLE/DISABLE											●		●											●			●		●											
CHILLER STATUS										●																														
EXTERNAL CHILLED WATER SET POINT													●					●																					
CHILLED WATER SUPPLY TEMPERATURE	●																							●●	●															
CHILLED WATER RETURN TEMPERATURE	●																							●●	●															
CHILLER ALARM STATUS											●														●															
EXTERNAL CURRENT LIMIT SET POINT																		●																					
COMPRESSOR RUNNING STATUS		●						●		●														●															
MAXIMUM CAPACITY STATUS											●																													
CHILLED WATER FLOW SWITCH																																								
2 CHILLED WATER PUMPS START/STOP													●																											
2 CHILLED WATER PUMPS CONTROL (VFD)														●				●																						
2 CHILLED WATER PUMP STATUS								●																●																
MAIN CHILLED WATER SUPPLY TEMPERATURE	●																							●●	●															
MAIN CHILLED WATER RETURN TEMPERATURE	●																							●●	●															
OUTDOOR AIR TEMPERATURE	●																																							

EXISTING AIR COOLED CHILLER, TEMPERATURE CONTROLS CONTRACTOR SHALL COORDINATE THE NEW UPC OPEN BOARD PROGRAM, INTEGRATE AND MAP POINTS TO THE EXISTING BUILDING AUTOMATION SYSTEM.

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Sheet Title
MECHANICAL - POINTS LISTS AND TEMPERATURE CONTROL SCHEMATICS

Sheet Number
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PROPOSED SEQUENCE OF OPERATIONS

1 HEATING HOT WATER SYSTEM - B-1, B-2 AND B-3

THE HEATING HOT WATER SYSTEM CONSISTS OF THREE (3) NATURAL GAS FIRED BOILERS AND ITS CIRCULATING PUMPS, TWO (2) HEATING HOT WATER SYSTEM CIRCULATING PUMPS AND ONE (1) HOT WATER EXCHANGERS CIRCULATING PUMP SERVING THE FOLLOWING EQUIPMENT:

- ONE (1) 100% OUTDOOR AIR UNIT, IFB HEATING COILS, MAU-1.
- THREE (3) DOMESTIC HOT WATER HEAT EXCHANGERS, WH-1, WH-2 NAD WH-3.
- EXISTING TENANT FAN COIL UNITS AND UNIT HEATERS.

BOILER SYSTEM - RUN CONDITIONS: THE BOILER SYSTEM SHALL BE ENABLED TO RUN WHENEVER:

- ITS COMMANDED TO RUN.
- AND OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJUSTABLE).

TO PREVENT SHORT CYCLING, EACH THE BOILER SHALL RUN FOR AND BE OFF FOR MINIMUM ADJUSTABLE TIMES (BOTH USER DEFINABLE), UNLESS SHUTDOWN ON SAFETIES OR OUTSIDE AIR CONDITIONS.

EACH BOILER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.

THE BOILER SYSTEM SHALL ALSO RUN FOR FREEZE PROTECTION WHENEVER OUTSIDE AIR TEMPERATURE IS LESS THAN 38°F (ADJUSTABLE)

BOILER B-1 SAFETIES: THE FOLLOWING SAFETIES SHALL BE MONITORED:

- BOILER ALARM.
- LOW WATER LEVEL.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- BOILER ALARM.
- LOW WATER LEVEL ALARM.

BOILER B-2 SAFETIES: THE FOLLOWING SAFETIES SHALL BE MONITORED:

- BOILER ALARM.
- LOW WATER LEVEL.

BOILER B-3 SAFETIES: THE FOLLOWING SAFETIES SHALL BE MONITORED:

- BOILER ALARM.
- LOW WATER LEVEL.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- BOILER ALARM.
- LOW WATER LEVEL ALARM.

P-1 AND P-2 HEATING HOT WATER PUMP LEAD/LAG OPERATION: THE TWO HOT WATER PUMPS SHALL OPERATE IN A LEAD/LAG FASHION.

- THE LEAD PUMP SHALL RUN FIRST.
- ON FAILURE OF THE LEAD PUMP, THE LAG PUMP SHALL RUN AND THE LEAD PUMP SHALL TURN OFF.

THE DESIGNATED LEAD PUMP SHALL ROTATE UPON ONE OF THE FOLLOWING CONDITIONS (USER SELECTABLE):

- MANUALLY THROUGH A SOFTWARE SWITCH
- IF PUMP RUNTIME (ADJUSTABLE) IS EXCEEDED
- DAILY
- WEEKLY
- MONTHLY

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HOT WATER PUMP P-1
  - FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
  - RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
  - RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.
- HOT WATER PUMP P-2
  - FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
  - RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
  - RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

P-4 HOT WATER EXCHANGERS CIRCULATING PUMP SHALL BE INTERLOCKED WITH THE DOMESTIC HOT WATER HEAT EXCHANGERS, WH-1, WH-2 AND WH-3.

- THE PUMP SHALL RUN ANYTIME THE HEAT EXCHANGERS AQUASTAT FALLS BELOW SETPOINT.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HOT WATER PUMP P-4
  - FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
  - RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.

BOILER CIRCULATION PUMP BP-1: THE CIRCULATION PUMP BP-1 SHALL RUN ANYTIME BOILER B-1 IS CALLED TO RUN AND SHALL HAVE A USER DEFINABLE DELAY (ADJ.) ON STOP.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- CIRCULATION PUMP BP-1 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- CIRCULATION PUMP BP-1 RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- CIRCULATION PUMP BP-1 RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER-DEFINABLE LIMIT.

BOILER CIRCULATION PUMP BP-2: THE CIRCULATION PUMP B-2 SHALL RUN ANYTIME BOILER B-2 IS CALLED TO RUN AND SHALL HAVE A USER DEFINABLE DELAY (ADJ.) ON STOP.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- CIRCULATION PUMP BP-2 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- CIRCULATION PUMP BP-2 RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- CIRCULATION PUMP BP-2 RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER-DEFINABLE LIMIT.

BOILER CIRCULATION PUMP BP-3: THE CIRCULATION PUMP B-2 SHALL RUN ANYTIME BOILER B-3 IS CALLED TO RUN AND SHALL HAVE A USER DEFINABLE DELAY (ADJ.) ON STOP.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- CIRCULATION PUMP BP-3 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- CIRCULATION PUMP BP-3 RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- CIRCULATION PUMP BP-3 RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER-DEFINABLE LIMIT.

BOILER LEAD/LAG OPERATION: THE THREE BOILERS SHALL OPERATE IN A LEAD/LAG FASHION.

- THE LEAD BOILER SHALL RUN FIRST.
- ON FAILURE OF THE LEAD BOILER, THE LAG BOILER SHALL RUN AND THE LEAD BOILER SHALL TURN OFF.
- AS HOT WATER TEMPERATURE DROPS BELOW A SETPOINT OF 150 F (ADJ.), THE LAG BOILER SHALL STAGE ON AND RUN IN UNISON WITH THE LEAD BOILER TO MAINTAIN THE HOT WATER TEMPERATURE SETPOINT.
- AS HOT WATER TEMPERATURE RISES BACK TO 10°F ABOVE SETPOINT, THE LAG BOILER SHALL STAGE OFF.

THE DESIGNATED LEAD BOILER SHALL ROTATE UPON ONE OF THE FOLLOWING CONDITIONS: (USER SELECTABLE):

- MANUALLY THROUGH A SOFTWARE SWITCH
- IF BOILER RUNTIME (ADJ.) IS EXCEEDED
- DAILY
- WEEKLY
- MONTHLY

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- BOILER B-1
  - FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
  - RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
  - RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.
- BOILER B-2
  - FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
  - RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
  - RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.
- BOILER B-3
  - FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
  - RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
  - RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

- LEAD BOILER FAILURE: THE LEAD BOILER IS IN FAILURE AND THE STANDBY BOILER IS ON.

PRIMARY HOT WATER TEMPERATURE MONITORING: THE FOLLOWING TEMPERATURES SHALL BE MONITORED:

- PRIMARY HOT WATER SUPPLY.
- PRIMARY HOT WATER RETURN.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH PRIMARY HOT WATER SUPPLY TEMP: IF GREATER THAN 200°F (ADJ.).
- LOW PRIMARY HOT WATER SUPPLY TEMP: IF LESS THAN 100°F (ADJ.).

BOILER B-1 HOT WATER TEMPERATURE MONITORING: THE FOLLOWING TEMPERATURES SHALL BE MONITORED:

- BOILER B-1 HOT WATER SUPPLY.
- BOILER B-1 HOT WATER RETURN.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH HOT WATER SUPPLY TEMP: IF GREATER THAN 200°F (ADJ.).
- LOW HOT WATER SUPPLY TEMP: IF LESS THAN 100°F (ADJ.).

BOILER B-2 HOT WATER TEMPERATURE MONITORING: THE FOLLOWING TEMPERATURES SHALL BE MONITORED:

- BOILER B-2 HOT WATER SUPPLY.
- BOILER B-2 HOT WATER RETURN.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH HOT WATER SUPPLY TEMP: IF GREATER THAN 200°F (ADJ.).
- LOW HOT WATER SUPPLY TEMP: IF LESS THAN 100°F (ADJ.).

BOILER B-3 HOT WATER TEMPERATURE MONITORING: THE FOLLOWING TEMPERATURES SHALL BE MONITORED:

- BOILER B-3 HOT WATER SUPPLY.
- BOILER B-3 HOT WATER RETURN.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH HOT WATER SUPPLY TEMP: IF GREATER THAN 200°F (ADJ.).
- LOW HOT WATER SUPPLY TEMP: IF LESS THAN 100°F (ADJ.).

BOILER CONDUCTOR SEQUENCING PANEL

(FURNISHED AND PROGRAMED BY BOILER MANUFACTURER)

HOT WATER SYSTEM - BOILER MANAGER - RUN CONDITIONS:

THE HOT WATER SYSTEM SHALL BE ENABLED TO RUN WHENEVER:

- THE HEATING HOT WATER SYSTEM NEED HEATING.
- OR COMMANDED TO RUN.

TO PREVENT SHORT CYCLING, THE BOILER MANAGER SHALL RUN FOR AND BE OFF FOR MINIMUM ADJUSTABLE TIMES (BOTH USER DEFINABLE).

EACH BOILER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.

BOILER STAGING - THE NEW TWO EQUAL SIZE HOT WATER BOILERS SHALL BE SET AS THE LEAD BOILERS FIRST TWO STAGES, RUNNING IN PARALLEL THEN THE EXISTING FOUR EQUAL SIZED HOT WATER BOILERS RUNNING IN PARALLEL SET FOR THE LAST STAGES:

THIS SECTION REFERS TO THE STAGING AND SEQUENCING OF EACH BOILER "TRAIN". THE SEQUENCE OF OPERATION FOR EACH INDIVIDUAL BOILER AND ITS ASSOCIATED SUPPORT EQUIPMENT (SUCH AS PUMPS) ARE NOT INCLUDED IN THIS SECTION.

THE CONTROLLER SHALL DETERMINE THE FACILITY HEATING LOAD AND SHALL STAGE THE BOILERS ON IN SEQUENCE TO MEET RISING HEATING DEMAND AND DROPPING MAIN HOT WATER SUPPLY TEMPERATURE WHERE:

- LOAD (MBTU/H) = [HWS TEMP (DEGREES F) - HWR TEMP (DEGREES F)] X FLOW (GPM) X 0.5
- MAIN HOT WATER SUPPLY TEMPERATURE IS MEASURED AT A POINT LEAVING THE BOILER PLANT AND ENTERING THE FACILITY. THIS POINT SHALL BE DOWNSTREAM AND COMMON TO ALL BOILERS.

THE CONTROLLER SHALL DETERMINE THE FACILITY HEATING LOAD FROM:

- HWS FLOW (MAIN HWS LEAVING BOILER PLANT)
- HWS TEMPERATURE (MAIN HWS LEAVING BOILER PLANT)
- HWR TEMPERATURE (MAIN HWR RETURNING TO BOILER PLANT)

THE FOLLOWING SETPOINTS ARE RECOMMENDED VALUES. ALL SETPOINTS SHALL BE FIELD ADJUSTED DURING THE COMMISSIONING PERIOD TO MEET THE REQUIREMENTS OF ACTUAL FIELD CONDITIONS.

THE LEAD BOILER TRAIN SHALL RUN ANYTIME THE BOILER MANAGER IS ENABLED. ADDITIONAL BOILERS SHALL STAGE ON AS FOLLOWS. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJUSTABLE) DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A USER DEFINABLE (ADJUSTABLE) MINIMUM RUNTIME.

STAGING BOILERS:

- SECOND BOILER: STAGE ON IF LOAD RISES ABOVE SETPOINT* OF 1,500MBH OR HOT WATER SUPPLY TEMPERATURE DROPS BELOW SETPOINT. STAGE OFF IF LOAD DROPS BELOW SETPOINT* BY 1,800MBH AND HOT WATER SUPPLY TEMPERATURE RISES ABOVE SETPOINT BY 10°F.
- THIRD BOILER: STAGE ON IF LOAD RISES ABOVE SETPOINT* OF 3,000MBH OR HOT WATER SUPPLY TEMPERATURE DROPS BELOW SETPOINT. STAGE OFF IF LOAD DROPS BELOW SETPOINT* BY 1,800MBH AND HOT WATER SUPPLY TEMPERATURE RISES ABOVE SETPOINT BY 10°F.

*BASED ON A PERCENTAGE OF THE RUNNING BOILER(S) COMBINED CAPACITY (ADJ. SETPOINTS) WHERE 33.47 MBTU/H = 1BHP (BOILER HORSEPOWER).

THE BOILER STAGING ORDER SHALL BE USER DEFINABLE. THE DESIGNATED LEAD BOILER (USER DEFINABLE) SHALL ROTATE UPON ONE OF THE FOLLOWING CONDITIONS (USER SELECTABLE):

- MANUALLY THROUGH A SOFTWARE SWITCH
- IF BOILER RUNTIME (ADJUSTABLE) IS EXCEEDED
- DAILY ● WEEKLY ● MONTHLY

EACH BOILER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS. ON FAILURE OF ANY BOILER, THE FAILED BOILER SHALL BE "REMOVED" FROM OPERATION AND THE NEXT AVAILABLE PIECE OF EQUIPMENT AS DEFINED BY THE USER SHALL BE STAGED ON IN ITS PLACE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- BOILER B-1 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- BOILER B-2 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- BOILER B-3 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.

2 AIR COOLED CHILLER - ACC-1

CHILLER - RUN CONDITIONS: THE CHILLER SHALL BE ENABLED TO RUN WHENEVER THE OUTSIDE AIR TEMPERATURE IS GREATER THAN 54°F (ADJ.).

TO PREVENT SHORT CYCLING, THE CHILLER SHALL RUN FOR AND BE OFF FOR MINIMUM ADJUSTABLE TIMES (BOTH USER DEFINABLE), UNLESS SHUTDOWN ON SAFETIES OR OUTSIDE AIR CONDITIONS.

THE CHILLER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.

CHILLED WATER PUMP LEAD/STANDBY OPERATION: THE TWO CHILLED WATER PUMPS SHALL RUN ANYTIME THE CHILLER IS CALLED TO RUN. THE CHILLED WATER PUMP SHALL ALSO RUN FOR FREEZE PROTECTION WHENEVER THE OUTSIDE AIR TEMPERATURE IS LESS THAN A USER DEFINABLE SETPOINT (ADJ.).

THE LEAD PUMP SHALL START PRIOR TO THE CHILLER BEING ENABLED AND SHALL STOP ONLY AFTER THE CHILLER IS DISABLED. THE PUMP(S) SHALL THEREFORE HAVE:

- A USER ADJUSTABLE DELAY ON START.
- AND A USER ADJUSTABLE DELAY ON STOP.

THE DELAY TIMES SHALL BE SET APPROPRIATELY TO ALLOW FOR ORDERLY CHILLED WATER SYSTEM START-UP, SHUTDOWN AND SEQUENCING.

THE TWO PUMPS SHALL OPERATE IN A LEAD/STANDBY FASHION.

- THE LEAD PUMP SHALL RUN FIRST.
- ON FAILURE OF THE LEAD PUMP, THE STANDBY PUMP SHALL RUN AND THE LEAD PUMP SHALL TURN OFF.

THE DESIGNATED LEAD PUMP SHALL ROTATE UPON ONE OF THE FOLLOWING CONDITIONS (USER SELECTABLE):

- MANUALLY THROUGH A SOFTWARE SWITCH
- IF PUMP RUNTIME (ADJ.) IS EXCEEDED
- DAILY
- WEEKLY
- MONTHLY

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- CHILLED WATER PUMP 1
  - FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
  - RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
  - RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

- CHILLED WATER PUMP 2
  - FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
  - RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
  - RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

CHILLER: THE CHILLER SHALL BE ENABLED A USER ADJUSTABLE TIME AFTER PUMP STATUSES ARE PROVEN ON. THE CHILLER SHALL THEREFORE HAVE A USER ADJUSTABLE DELAY ON START.

THE DELAY TIME SHALL BE SET APPROPRIATELY TO ALLOW FOR ORDERLY CHILLED WATER SYSTEM START-UP, SHUTDOWN AND SEQUENCING.

THE CHILLER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- CHILLER FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- CHILLER RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- CHILLER RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

CHILLED WATER SUPPLY TEMPERATURE SETPOINT: THE CHILLED WATER SUPPLY TEMPERATURE SETPOINT SHALL RESET BASED ON OUTSIDE AIR TEMPERATURE.

AS OUTSIDE AIR TEMPERATURE DROPS FROM 75°F (ADJ.) TO 50°F (ADJ.) THE CHILLED WATER SUPPLY TEMPERATURE SETPOINT SHALL RESET UPWARDS BY ADDING FROM 0°F (ADJ.) TO 10°F (ADJ.) TO THE CURRENT SETPOINT.

CHILLED WATER TEMPERATURE MONITORING: THE FOLLOWING TEMPERATURES SHALL BE MONITORED:

- CHILLED WATER SUPPLY.
- CHILLED WATER RETURN.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH CHILLED WATER SUPPLY TEMP: IF THE CHILLED WATER SUPPLY TEMPERATURE IS GREATER THAN 55°F (ADJ.).
- LOW CHILLED WATER SUPPLY TEMP: IF THE CHILLED WATER SUPPLY TEMPERATURE IS LESS THAN 38°F (ADJ.).

3 CONSTANT AIR VOLUME MAKEUP AIR UNIT - MAU-1

(FURNISHED AND PROGRAMED BY EQUIPMENT MANUFACTURER)

RUN CONDITIONS - REQUESTED:

THE UNIT SHALL BE INTERLOCKED TO RUN CONTINUOUSLY:

- RUNS UNLESS SHUTDOWN ON SAFETIES.

FREEZE PROTECTION: THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A FREEZESTAT STATUS.

OUTSIDE AIR DAMPER:

THE OUTSIDE AIR DAMPER SHALL OPEN ANYTIME THE UNIT RUNS AND SHALL CLOSE ANYTIME THE UNIT STOPS. THE SUPPLY FAN SHALL START ONLY AFTER THE DAMPER STATUS HAS PROVEN THE DAMPER IS OPEN. THE OUTSIDE AIR DAMPER SHALL CLOSE 4 SEC (ADJ.) AFTER THE SUPPLY FAN STOPS.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- OUTSIDE AIR DAMPER FAILURE: COMMANDED OPEN, BUT THE STATUS IS CLOSED.
- OUTSIDE AIR DAMPER IN HAND: COMMANDED CLOSED, BUT THE STATUS IS OPEN.

SUPPLY FAN:

THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN. TO PREVENT SHORT CYCLING, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME, UNLESS SHUTDOWN ON SAFETIES.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- SUPPLY FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- SUPPLY FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

SUPPLY AIR TEMPERATURE SETPOINT - OUTSIDE AIR RESET:

THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE AND SHALL MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT. THE SUPPLY AIR TEMPERATURE SETPOINT SHALL RESET FOR COOLING AS FOLLOWS:

AS OUTSIDE AIR TEMPERATURE DROPS FROM 85°F (ADJ.) TO 20°F (ADJ.)

THE SUPPLY AIR TEMPERATURE SETPOINT SHALL RESET UPWARDS FROM 58°F (ADJ.) TO 78°F (ADJ.).

COOLING COIL VALVE:

THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE COOLING COIL VALVE TO MAINTAIN ITS COOLING SETPOINT.

THE COOLING SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
- AND THE SUPPLY AIR TEMPERATURE IS ABOVE COOLING SETPOINT.
- AND THE FAN STATUS IS ON.

THE COOLING COIL VALVE SHALL OPEN TO 50% (ADJ.) WHENEVER THE FREEZESTAT IS ON.

INTEGRAL FACE AND BYPASS HEATING COILS DAMPER:

THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE INTEGRAL FACE AND BYPASS HEATING COILS DAMPER TO MAINTAIN ITS HEATING SETPOINT.

THE HEATING SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
- AND THE SUPPLY AIR TEMPERATURE IS BELOW HEATING SETPOINT.
- AND THE FAN STATUS IS ON.

THE INTEGRAL FACE AND BYPASS HEATING COILS BYPASS DAMPER SHALL OPEN TO 100% (ADJ.) WHENEVER THE FREEZESTAT IS ON.

PREFILTER DIFFERENTIAL PRESSURE MONITOR:

THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE PREFILTER.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- PREFILTER CHANGE REQUIRED: PREFILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

SUPPLY AIR TEMPERATURE:

THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
- LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

4 TEMPERATURE CONTROL SYSTEM STATUS PANEL

THE TEMPERATURE CONTROL SYSTEM STATUS PANEL INCLUDES MONITORING TOUCH SCREEN LOCATED ON THE WEST WALL OF THE BOILER ROOM. THE STATUS PANELS SHALL BE PROGRAMED WITH THREE LARGE DISPLAY LIGHTS, RED, YELLOW AND GREEN. PROVIDED WITH HORN AND SILENCING MUSHROOM TYPE PUSH BUTTON.

HEATING HOT WATER SYSTEM BOILERS - B-1, B-2 AND B-3.

- THE RED LIGHT SHALL BE LABEL “BOILER DOWN”: INDICATING THAT ANY BOILER REQUIRED BY THE BOILER'S MANAGEMENT SYSTEM HAS BEEN DISABLED.
- THE YELLOW LIGHT SHALL BE LABEL “BOILER ALARM”: INDICATING ALARM AS DESCRIBED ON THE BOILER AND PUMPS SEQUENCE OF OPERATIONS ABOVE.
- THE GREEN LIGHT SHALL BE LABEL “BOILER RUNNING”: INDICATING THAT THE BOILER IS OPERATING WITHIN THE SETPOINTS.

MAKEUP AIR UNIT - MAU-1:

- THE RED LIGHT SHALL BE LABEL “MAKEUP AIR UNIT DOWN”: INDICATING MAKEUP AIR UNIT, MAU-1 HAS BEEN DISABLED.
- THE YELLOW LIGHT SHALL BE LABEL “MAKEUP AIR UNIT ALARM”: INDICATING ALARM AS DESCRIBED ON THE MAKEUP AIR UNIT SEQUENCE OF OPERATIONS ABOVE.
- THE GREEN LIGHT SHALL BE LABEL “MAKEUP AIR UNIT RUNNING”: INDICATING THAT THE MAKEUP AIR UNIT IS OPERATING WITHIN THE SETPOINTS.

AIR COOLED CHILLER - ACC-1:

- THE RED LIGHT SHALL BE LABEL “CHILLER DOWN”: INDICATING CHILLER AS BEEN DISABLED.
- THE YELLOW LIGHT SHALL BE LABEL “CHILLER ALARM”: INDICATING ALARM AS DESCRIBED ON THE CHILLER SEQUENCE OF OPERATIONS ABOVE.
- THE GREEN LIGHT SHALL BE LABEL “CHILLER RUNNING”: INDICATING THAT THE CHILLER IS OPERATING WITHIN THE SETPOINTS.

NOTE: ALL POINTS AND SEQUENCES OF OPERATION SHALL BE COORDINATED WITH THE OWNER, THE ELECTRICAL CONTRACTOR AND TEMPERATURE CONTROLS CONTRACTOR.

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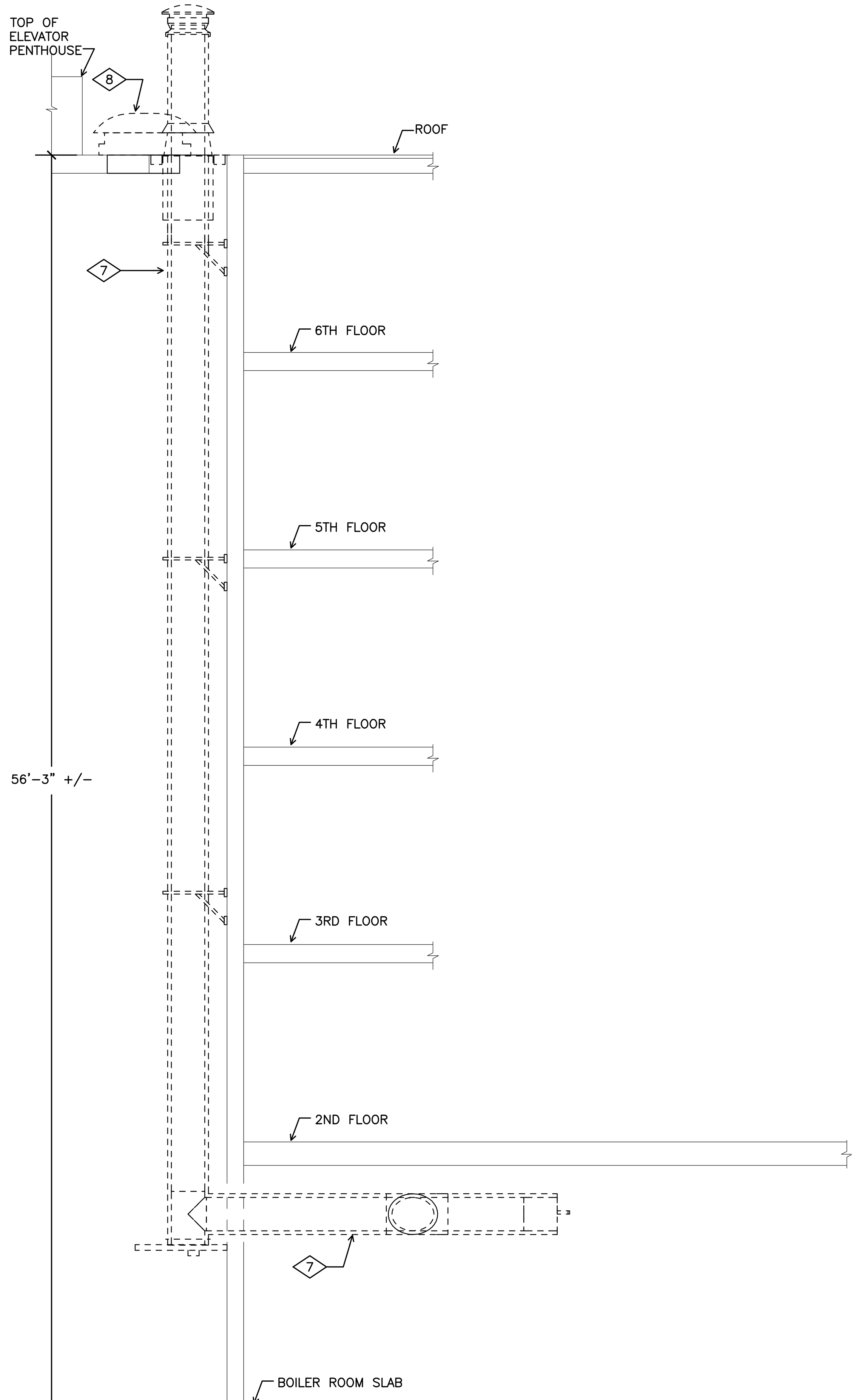
Sheet Title
MECHANICAL - PROPOSED SEQUENCE OF OPERATIONS

Sheet Number
M0.5



DEMOLITON
LOOKING WEST
A1 ELEVATION
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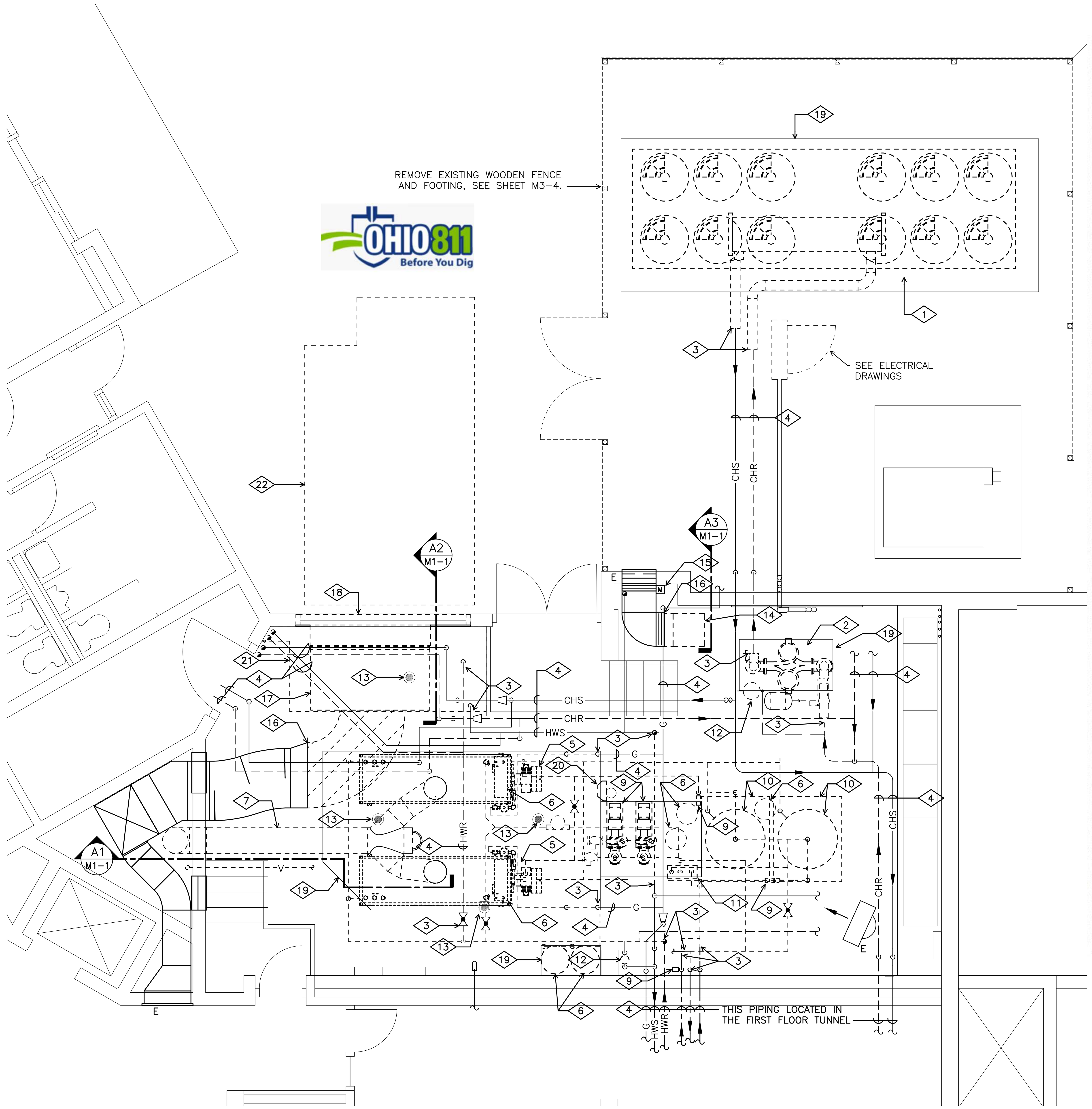
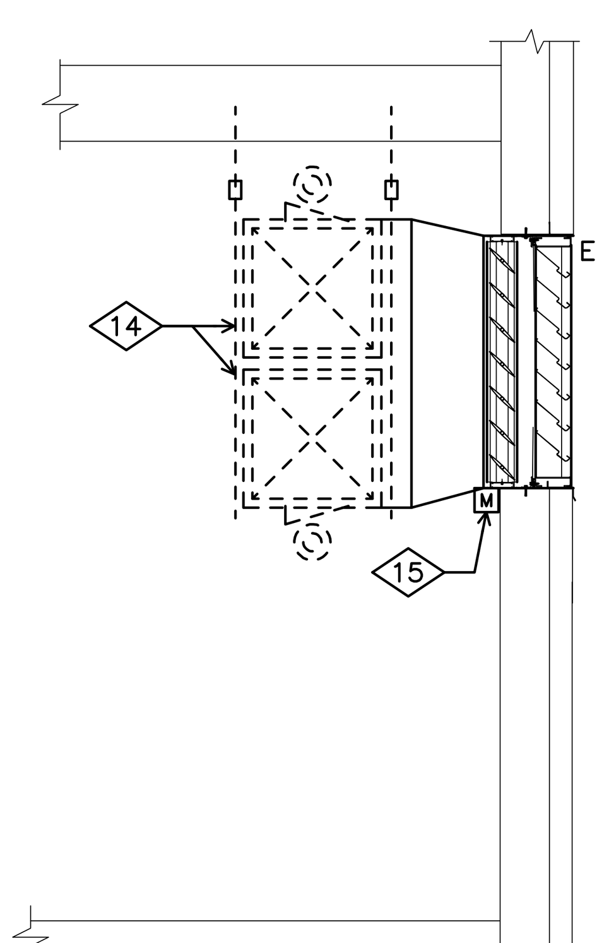
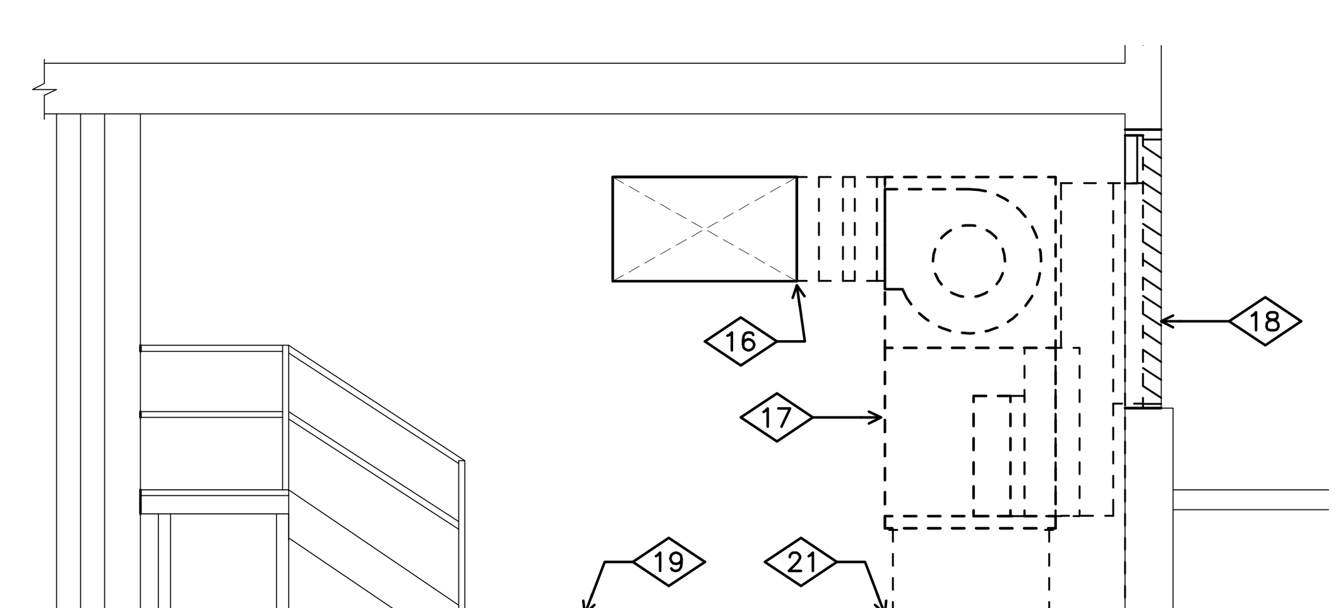


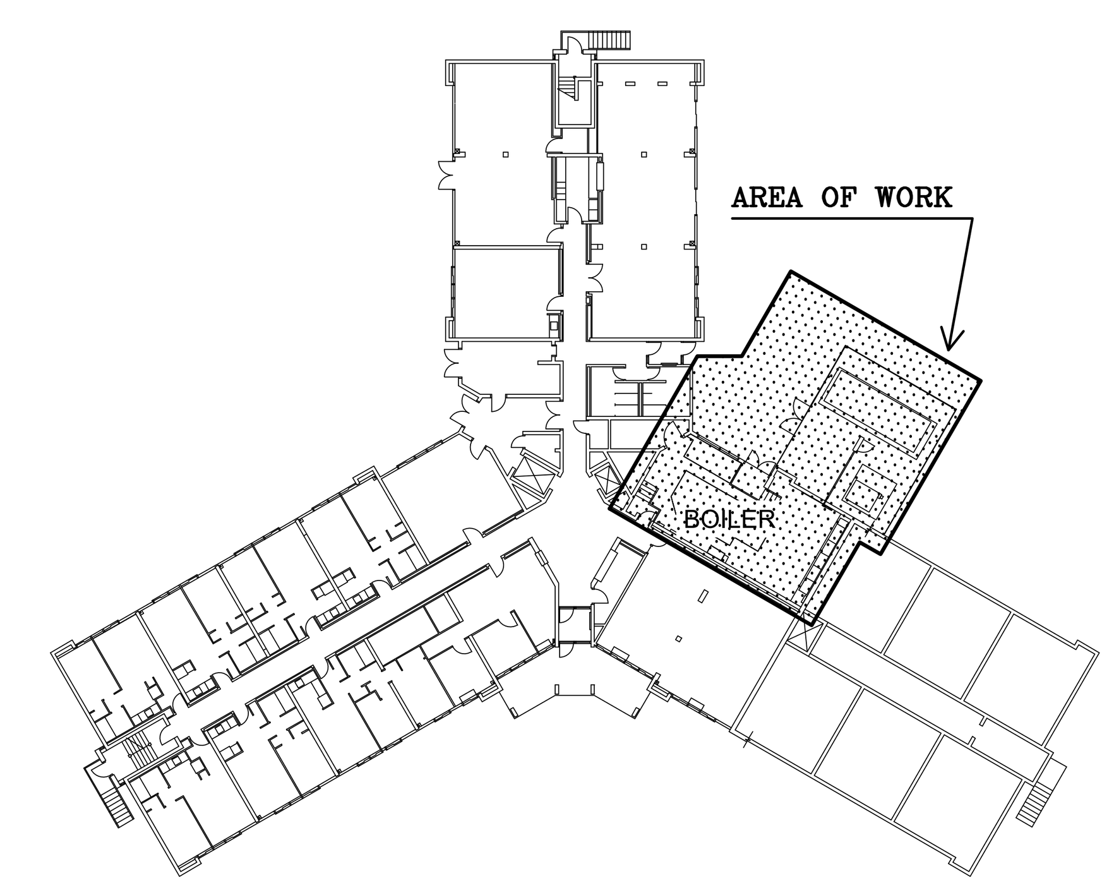
DEMOLITION
PARTIAL FLOOR PLAN
SCALE: 1/4" = 1'-0"
NORTH



DEMOLITION
LOOKING SOUTH
A3 ELEVATION
SCALE: 3/8" = 1'-0"



DEMOLITION
LOOKING SOUTH
A2 ELEVATION
SCALE: 1/4" = 1'-0"



KEY PLAN
NO SCALE
NORTH

MECHANICAL NOTES for Sheet M1-1

1. AFTER THE ELECTRICAL CONTRACTOR REMOVES ELECTRICAL POWER AND WIRING, REMOVE EXISTING AIR COOLED CHILLER.
2. AFTER THE ELECTRICAL CONTRACTOR REMOVES ELECTRICAL POWER AND WIRING, REMOVE EXISTING CHILLED WATER-CIRCULATING PUMPS, AIR PURGER, AND EXPANSION TANK.
3. REMOVE PIPING UP TO THIS POINT.
4. EXISTING PIPING TO REMAIN.
5. AFTER THE ELECTRICAL CONTRACTOR REMOVES ELECTRICAL POWER AND WIRING, DISCONNECT GAS PIPING AND REMOVE EXISTING GAS FIRED BOILER ASSOCIATED VENT SYSTEM PIPES BACK TO ROOF, AND HEATING AND DOMESTIC HOT WATER PIPING.
6. REMOVE EXISTING EXPANSION TANK AND ALL RELATED PIPING AND VALVES.
7. REMOVE EXISTING 18" DIAMETER FLUE, AND ALL ASSOCIATED HANGERS AND BRACKETS.
8. FOR TOP OF SHAFT ACCESS TEMPORARILY REMOVE GRAVITY ROOF VENT. REINSTALL AND SEAL WHEN FLUE WORK IS COMPLETE. CLEAN AND LUBRICATE DAMPER AND LINKAGE. ADJUST AND SET COUNTERWEIGHTS TO OPEN DAMPER AT 0.05" SP.
9. AFTER THE ELECTRICAL CONTRACTOR REMOVES ELECTRICAL POWER AND WIRING, REMOVE EXISTING CIRCULATING PUMPS AND ASSOCIATED PIPING, AND VALVES.
10. REMOVE EXISTING DOMESTIC HOT WATER STORAGE TANK, ASSOCIATED CONCRETE FILLED BASE AND ASSOCIATED VALVES AND PIPING.
11. REMOVE EXISTING DOMESTIC HOT WATER TEMPERING VALVE, ASSOCIATED PIPING, VALVES AND STRUCTURAL SUPPORT.
12. REMOVE AND REPLACE EXISTING CHEMICAL POT FEEDER.
13. EXISTING FLOOR DRAIN, SHOWN FOR REFERENCE.
14. AFTER THE ELECTRICAL CONTRACTOR REMOVES ELECTRICAL POWER AND WIRING, REMOVE EXISTING COMBUSTION AIR FANS.
15. EXISTING DAMPER AND MOTOR OPERATOR TO REMAIN. CLEAN AND LUBRICATE DAMPER AND LINKAGES.
16. REMOVE DUCTWORK BACK TO THIS POINT.
17. AFTER THE ELECTRICAL CONTRACTOR REMOVES ELECTRICAL POWER AND WIRING, REMOVE THE EXISTING MAKE UP AIR UNIT,

    ASSOCIATED SUPPORTS, DUCTWORK, PIPING, VALVES AND CONTROL WIRING.
18. REMOVE EXISTING AIR INTAKE LOUVER TO ACCOMMODATE NEW DUCTWORK.
19. EXISTING CONCRETE PAD TO REMAIN. CONCRETE PAD SHALL BE PRESSURE WASHED AND CLEANED TO RECEIVED SAFETY YELLOW PAINT ON ALL EDGES.
20. REMOVE EXISTING TEMPERATURE CONTROL PANEL AND ASSOCIATED CONTROL WIRING,
21. JACKHAMMER AND REMOVE EXISTING CONCRETE PAD. PATCH AS REQUIRED FOR SMOOTH FINISHED FLOOR.
22. SAW CUT EXISTING CONCRETE SLAB AND EXCAVATE TO ACCOMMODATE NEW MAKEUP AIR HANDLING UNIT. COORDINATE EXACT DIMENSIONS OF THE UNIT WITH APPROVED SHOP DRAWINGS

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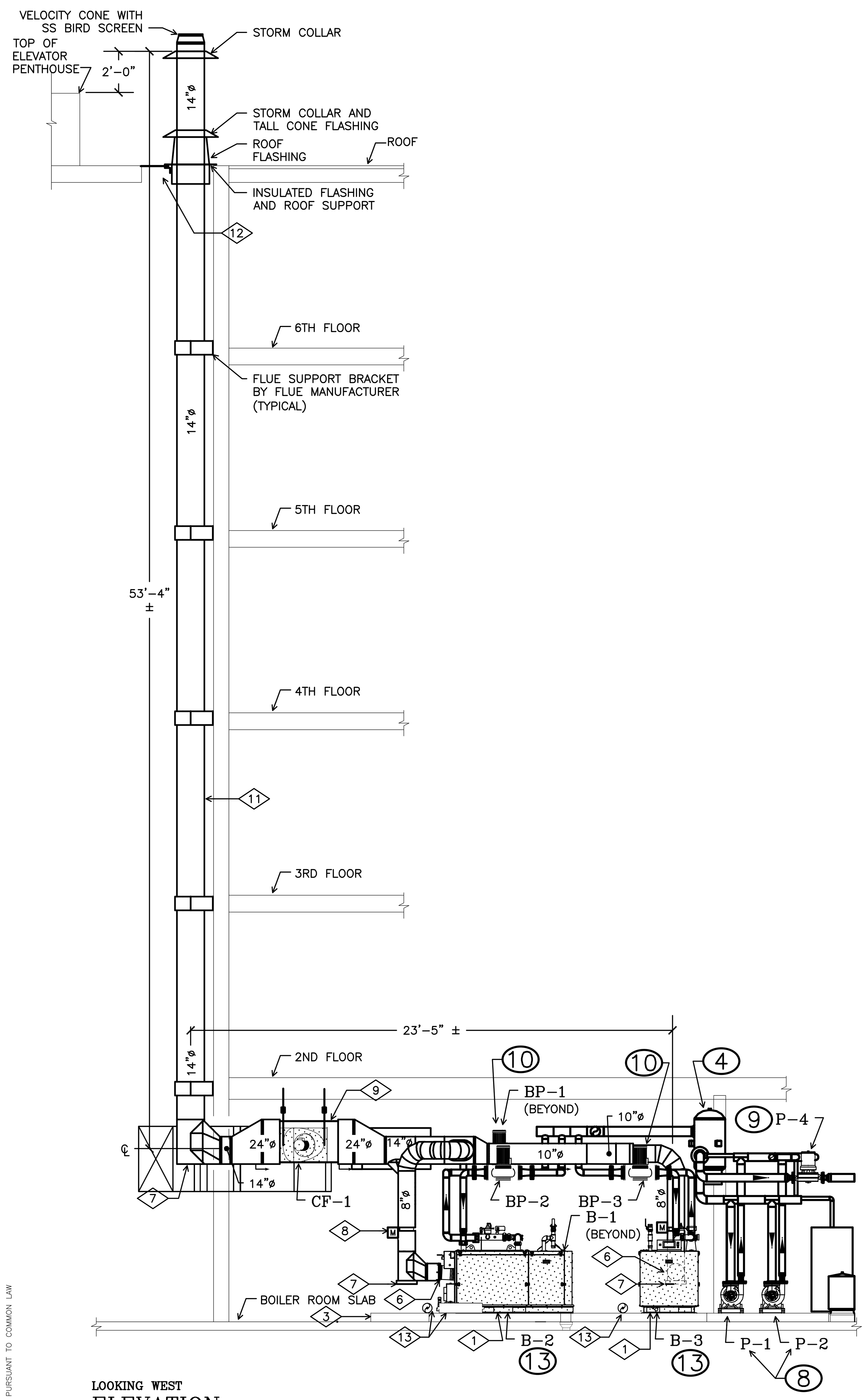
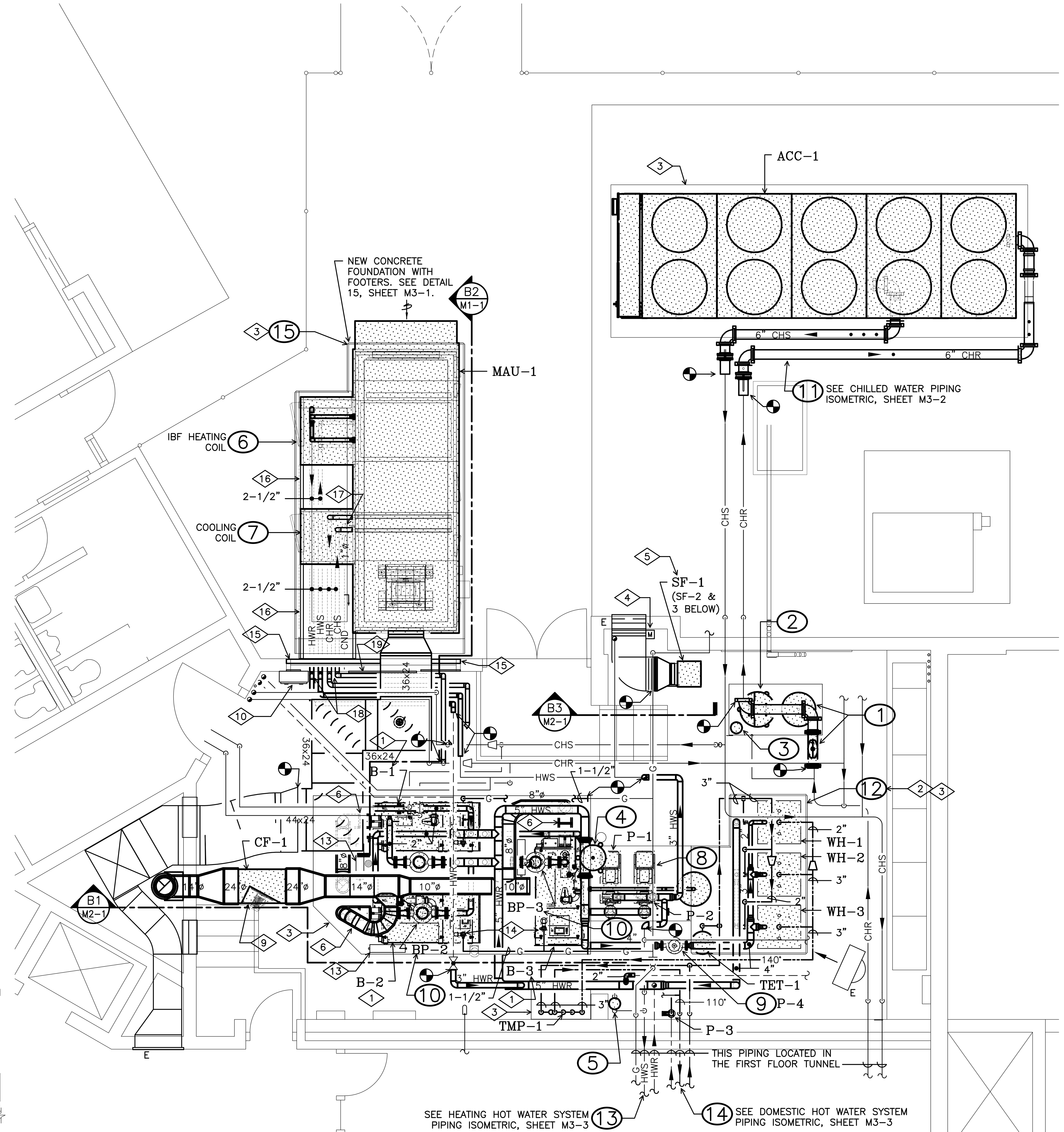
Sheet Title
MECHANICAL - DEMOLITION PARTIAL FLOOR PLAN

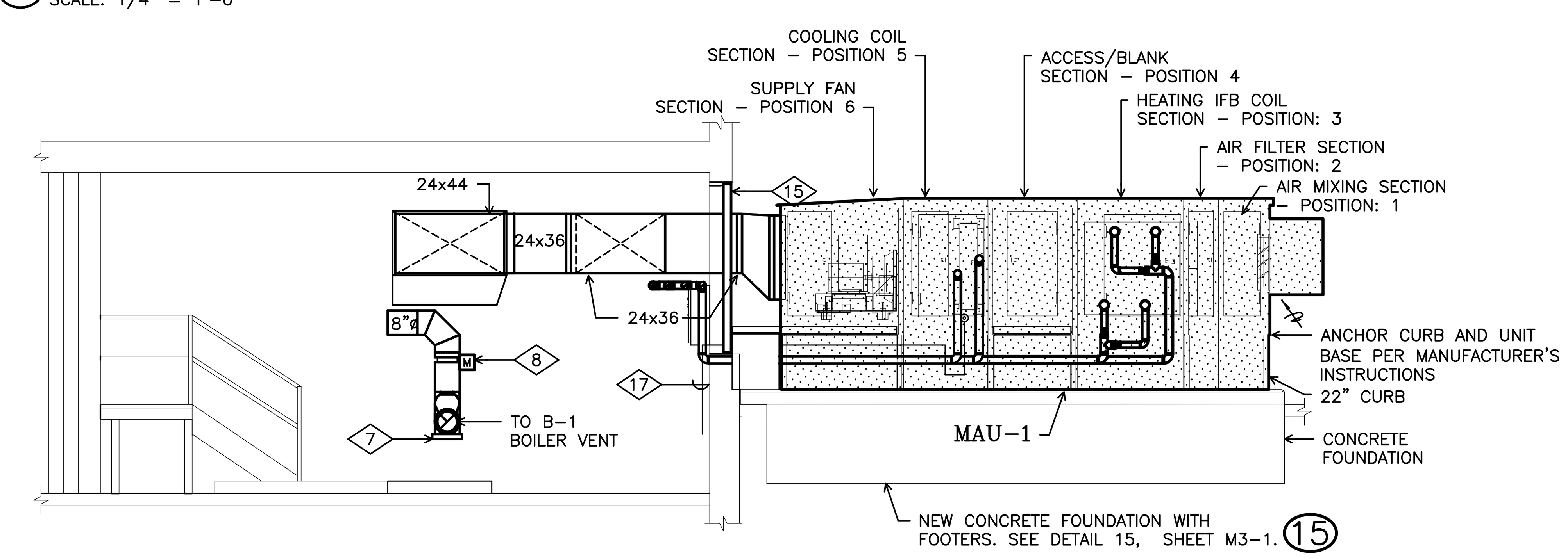
Sheet Number
M1.1



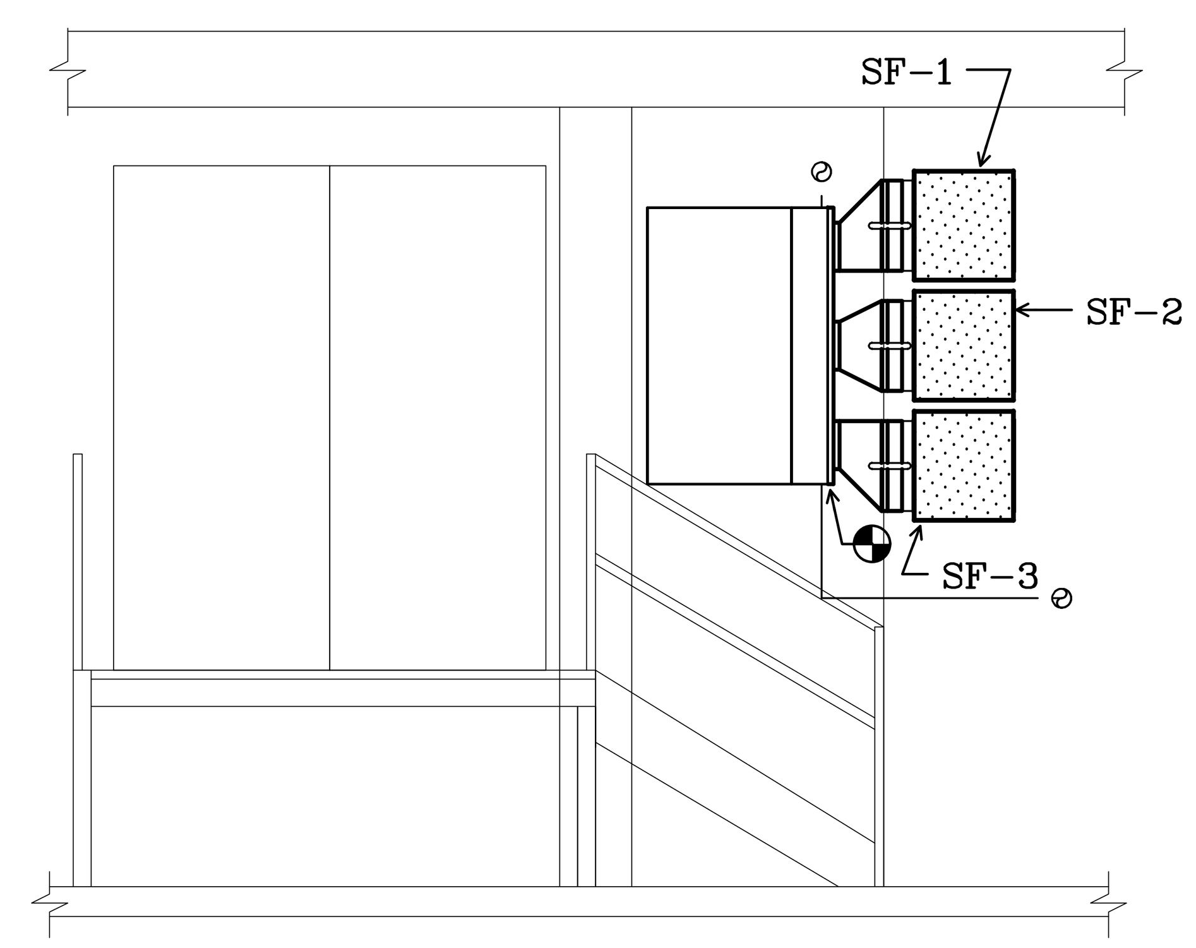
LOOKING WEST
B1 ELEVATION
SCALE: 1/4" = 1'-0"



REVISED
PARTIAL FLOOR PLAN
SCALE: 1/4" = 1'-0"



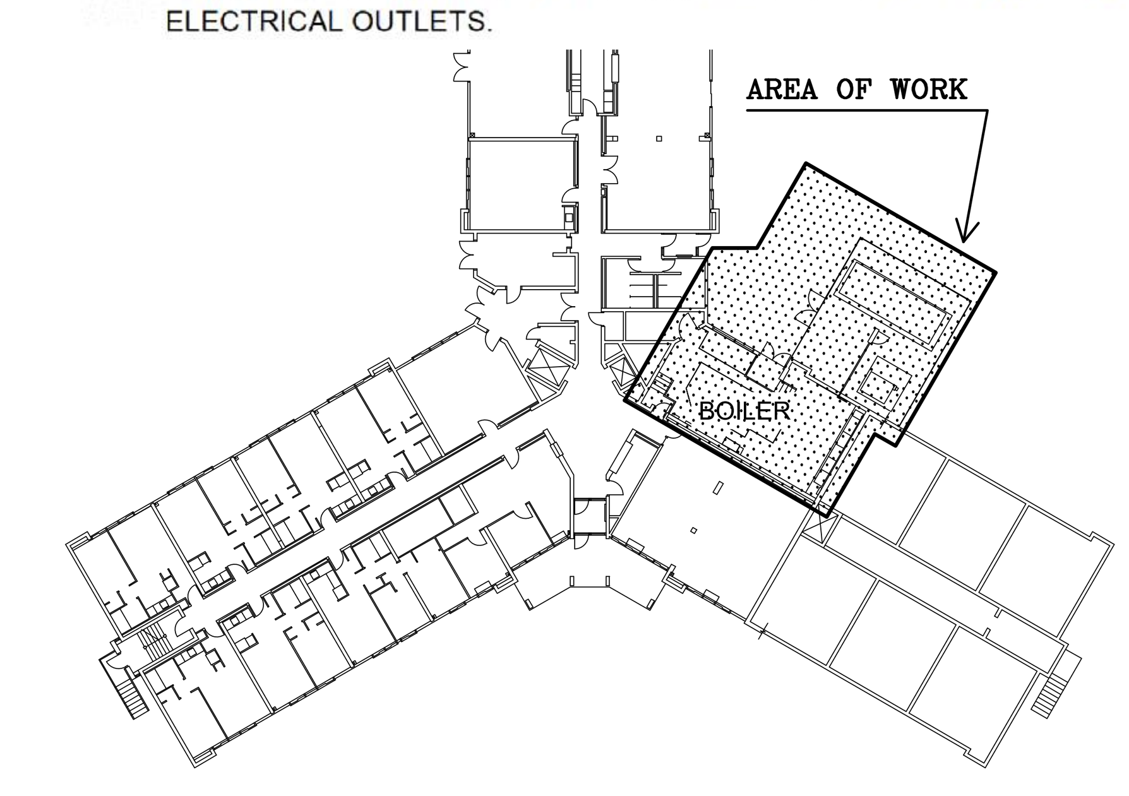
LOOKING SOUTH
B2 ELEVATION
SCALE: 1/4" = 1'-0"



LOOKING SOUTH
B3 ELEVATION
SCALE: 3/8" = 1'-0"

MECHANICAL NOTES for Sheet M2-1

1. NEW HOT WATER BOILER. SEE HEATING HOT WATER SYSTEM PIPING ISOMETRIC DETAILS FOR REQUIRED VALVING. DETAIL 13, SHEET M3-2.
2. PROVIDE NEW CONCRETE PAD EXTENSION WITH CHAMFERED EDGES, USING 3,500 PSI AIR ENTRAINED CONCRETE TEST AT 28 DAYS, FREE OF VOIDS AND RUBBED SMOOTH WITH STEEL TROWEL. THE TOP SURFACE SHALL BE DEAD LEVEL, SEE DETAIL 12, SHEET M3-3.
3. PROVIDE TWO COATS OF YELLOW SAFETY PAINT ON ALL 4 SIDES OF THE CONCRETE PAD.
4. EXISTING COMBUSTION AIR INTAKE MOTOR-OPERATED DAMPER SHALL BE INTERLOCKED WITH NEW COMBUSTION AIR SUPPLY FANS. DAMPER SHALL OPEN 100% WHENEVER EITHER FAN IS ENERGIZED.
5. INTERLOCK SF-1 (AIR SUPPLY FAN) WITH B-1 (BOILER), SF-2 WITH B-2, AND SF-3 WITH B-3. WHEN ONE BOILER BURNER IS FIRING, COMBUSTION AIR DAMPER SHALL BE OPEN AND SUPPLY FAN ASSOCIATED WITH BOILER SHALL BE ON. PROVIDE DIFFERENTIAL PRESSURE SWITCH ACROSS FAN INLET AND OUTLET, AND TIE INTO BOILER CONTROLS TO ALARM COMBUSTION AIR DAMPER OR FAN PROBLEM
6. EXTEND 8" DIAMETER FLUE FROM BOILER VENT OUTLET ADAPTER UP TO NEW MAIN FLUE. THE FLUE VENT SYSTEM SHALL BE UL-1738 WITH 430 STAINLESS STEEL OUTER SHELL, AS MANUFACTURED BY VAN-PAKER MODEL "CS", OR APPROVED EQUAL. SEE SPECIFICATIONS.
7. PROVIDE END CAP WITH DRAIN AND EXTEND HIGH TEMPERATURE TRANSLUCENT SILICONE RUBBER TUBING WITH P-TRAP, AND EXTEND TO FLOOR DRAIN.
8. PROVIDE UL LISTED AUTOMATIC DAMPER. DAMPER PROVIDED WITH BOILER POWER VENT SYSTEM, TYPICAL FOR THREE. SEE SPECIFICATIONS.
9. INSTALL POWER VENTER PER MANUFACTURES RECOMMENDATIONS. INSTALL THE DRAIN, PROVIDED WITH THE EQUIPMENT, AT THE INLET OF THE FAN AND EXTEND TO THE EXISTING DRAIN.
10. LOCATION OF MODULATING FAN CONTROL SYSTEM AND DRIVE. CONTROL PANEL AND DRIVE SHALL BE FURNISHED AND INSTALLED BY A MECHANICAL CONTRACTOR, AND WIRED BY THE ELECTRICAL CONTRACTOR. COORDINATE WITH THE ELECTRICAL AND TEMPERATURE CONTROLS CONTRACTOR, SEE EQUIPMENT DETAILS, SHEET M0-3.
11. EXTEND 14" DIAMETER FLUE FROM POWER VENTER OUTLET ADAPTER UP THROUGH THE ROOF, PROVIDE SUPPORT ASSEMBLY, AND TERMINATE WITH VELOCITY CONE WITH STAINLESS STEEL BIRD-SCREEN, ROOF INSULATED THIMBLE. TERMINATE VENT PIPING 24 INCHES ABOVE THE TOP OF ELEVATOR PENTHOUSE ROOF. AND INSTALL PER MANUFACTURER'S INSTRUCTIONS. THE FLUE VENT SYSTEM SHALL BE UL-1738 WITH 430 STAINLESS STEEL OUTER SHELL, AS MANUFACTURED BY VAN-PACKER MODEL "CS", OR APPROVED EQUAL, SEE MECHANICAL SPECIFICATION
12. PROVIDE ANGLE SUPPORT AS REQUIRED AND COORDINATE WITH THE ROOFING CONTRACTOR. ROOFING CONTRACTOR SHALL PROVIDE A DECK CLOSURE PLATE, AND INSULATE AND REPAIR THE ROOF TO MATCH EXISTING.
13. CONDENSATE TREATMENT PACKAGE TANK WITH NEUTRALIZATION MEDIA, PROVIDED BY BOILER SUPPLIER. EXTEND 1", SCHEDULE 80 CPVC, DOWN TO EXISTING FLOOR DRAIN.
14. MAKE GAS CONNECTION TO THE NEW BOILER, PROVIDE GAS VALVE ON THE RISER, DIRT LEG AT BASE OF DROP, UNION AT THE CONNECTION.
15. IN OPENING LEFT AFTER LOUVER REMOVAL, PROVIDE INSULATED DOUBLE-WALLED ALUMINUM SKINNED BLANK-OFF PANEL ON ALL 6 SIDES ON UNUSED PORTION OF OPENING, CAULK IN PLACE AFTER INSTALLATION AS REQUIRED. FIELD MEASURE OPENING BEFORE ORDERING FABRICATION FILLER. PROVIDE TWO COATS OF PAINT TO MATCH THE EXTERIOR OF THE EXISTING LOUVER.
16. PROVIDE CUSTOM MADE CURB WITH 2-½" THICK RIGID INSULATION AND INSULATED ACCESS DOORS, AS MANUFACTURED BY PATE®, OR EQUAL BY RPS CORPORATION TO ENCLOSE PIPING BETWEEN PIPE CABINETS.
17. PROVIDE CONDENSATE TRAP PER EQUIPMENT MANUFACTURER RECOMMENDATIONS, WITH HAND-TIGHT PLUGS, AND EXTEND INSULATED 1" COPPER AND TERMINATE DOWN TO EXISTING FLOOR DRAIN WITH A MINIMUM OF 2-INCH AIR GAP.
18. PROVIDE 3/4" DRAIN WITH BALL WITH CAPPED HOSE CONNECTION AT THE BOTTOM OF TURNING ELBOW.
19. PROVIDE 48"x48" 3/4" THICK FLAT BLACK PAINTED FIRE RATED PLYWOOD BACKBOARD FOR NEW TEMPERATURE CONTROL PANELS. COORDINATE WITH ELECTRICAL CONTRACTOR FOR ELECTRICAL OUTLETS.



KEY PLAN
NO SCALE

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MECHANICAL - REVISED PARTIAL FLOOR PLAN

Sheet Number
M2.1

SPECIFICATION:

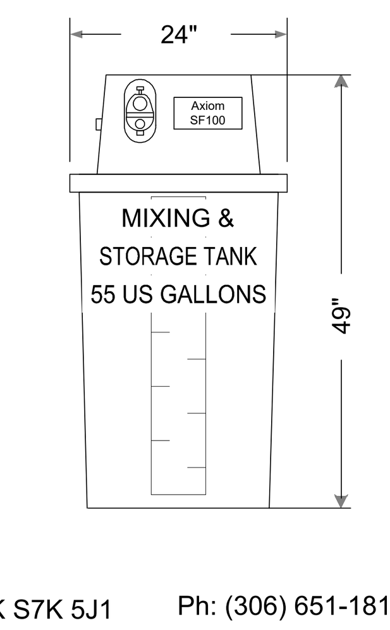
AXIOM INDUSTRIES HYDRONIC SYSTEM FEEDER: SF100

HYDRONIC SYSTEM FEEDER SHALL BE AXIOM INDUSTRIES LTD. MODEL SF100. SYSTEM SHALL INCLUDE 208 LITRE (55 US GALLON) STORAGE/MIXING TANK WITH COVER; PUMP SUCTION HOSE WITH INLET STRAINER; PRESSURE PUMP WITH THERMAL CUT-OUT; INTEGRAL PRESSURE SWITCH; INTEGRAL CHECK VALVE; CORD AND PLUG; PRE-CHARGED ACCUMULATOR TANK WITH EPDM DIAPHRAGM; MANUAL DIVERTER VALVE FOR PURGING AIR AND AGITATING CONTENTS OF STORAGE TANK; PRESSURE REGULATING VALVE ADJUSTABLE (35 - 380 KPA; 5 – 55 PSIG) COMPLETE WITH PRESSURE GAUGE; BUILT-IN CHECK VALVE; UNION CONNECTION; 12 MM (½") X 900 MM (36") LONG FLEXIBLE CONNECTION HOSE WITH CHECK VALVE; LOW LEVEL PUMP CUT-OUT. PRESSURE PUMP SHALL BE CAPABLE OF RUNNING DRY WITHOUT DAMAGE. POWER SUPPLY 115/60/1 0.7 A. UNIT SHALL BE COMPLETELY PRE-ASSEMBLED AND CERTIFIED BY A RECOGNIZED TESTING AGENCY TO CSA STANDARD C22.2 NO 68.

OPTIONS REQUIRED

2PRV - SECOND PRESSURE REDUCING VALVE, PRESSURE GAUGE, SYSTEM CONNECTOR HOSE AND CHECK VALVE TO ALLOW FOR INDEPENDENT PRESSURE SUPPLY TO A SECOND SYSTEM.

RIA10-1-SAA - LOW LEVEL ALARM PANEL C/W REMOTE MONITORING DRY CONTACTS AND SELECTABLE AUDIBLE ALARM. SEE RIA10-1-SAA PRODUCT PAGE FOR ALARM PANEL SPECIFICATIONS

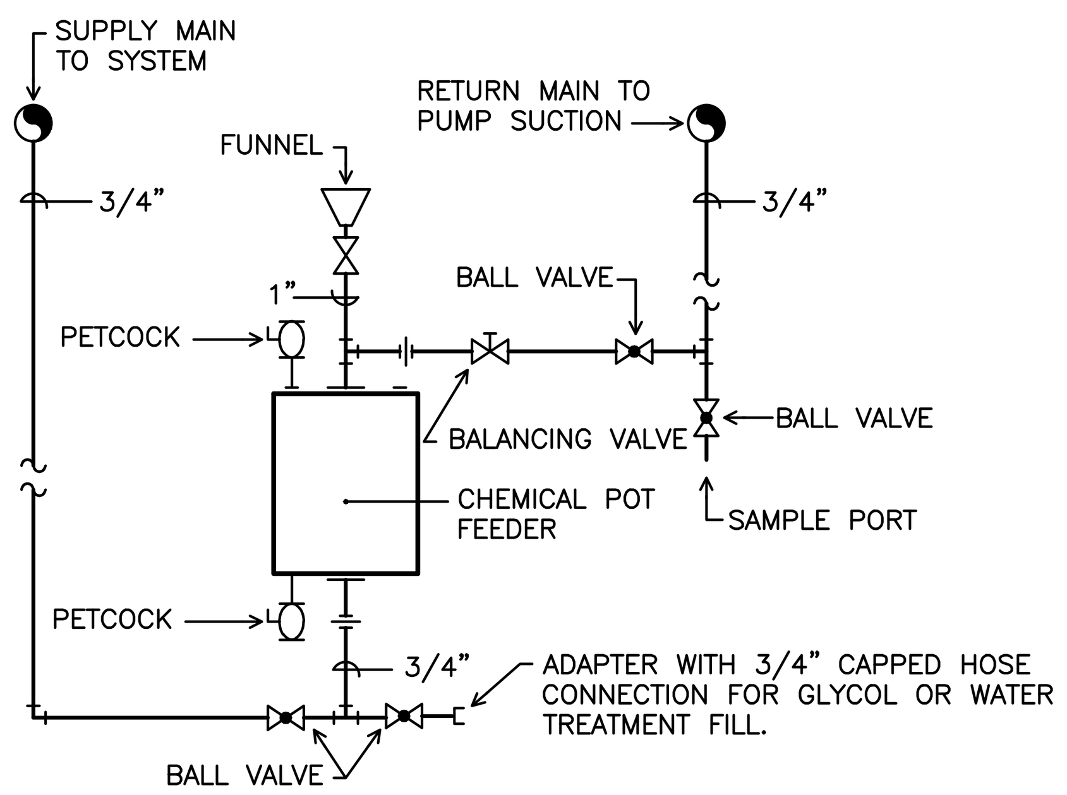


Certified to CAN/CSA C22.2 No. 68

9901055 Conforms to UL73

2615 Wentz Avenue, Saskatoon, SK S7K 5J1 Ph: (306) 651-1815 Fax: (306) 651-2293

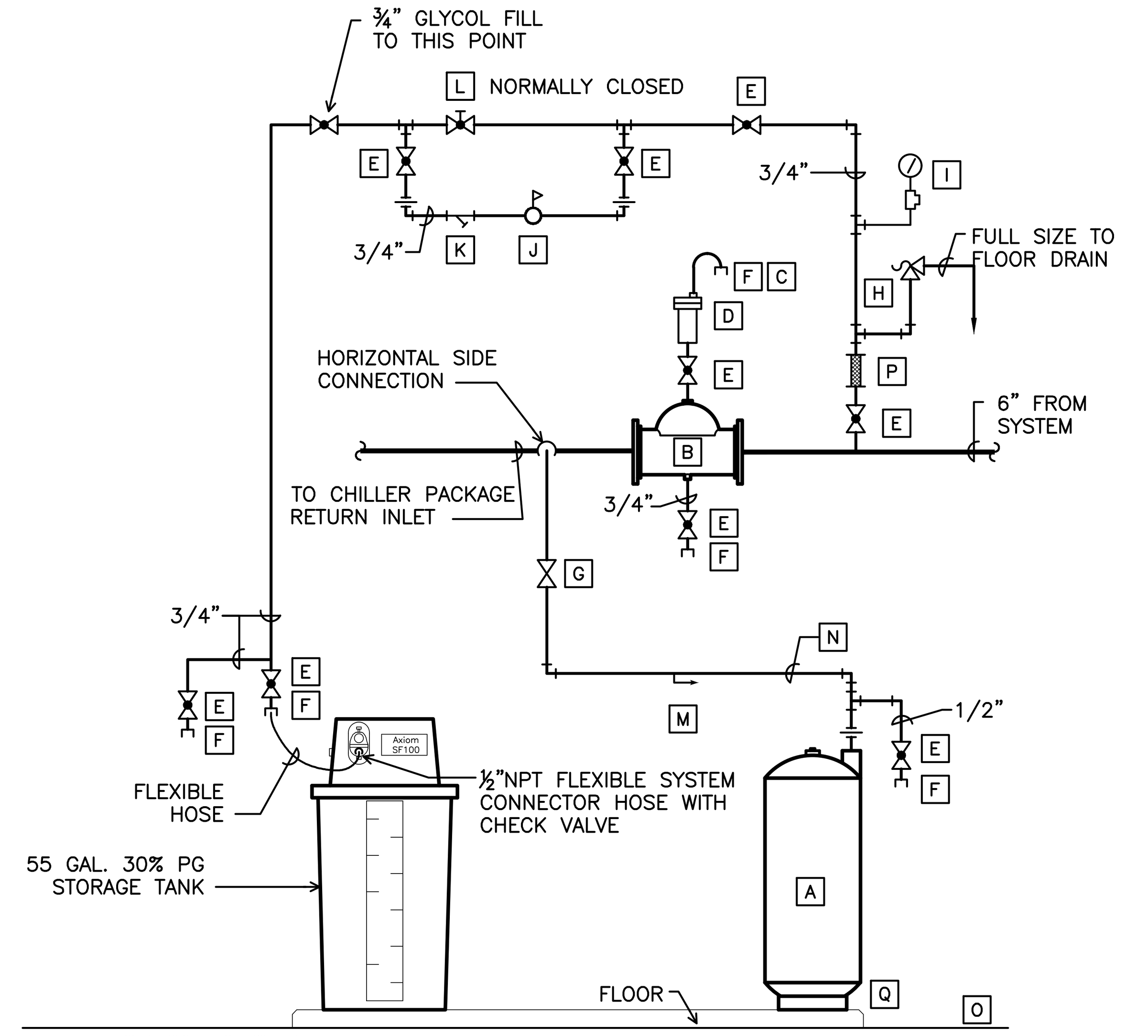
email: sales@axiomind.com website: www.axiomind.com



NOTE: INSTALL CHEMICAL POT FEEDER TANK ON UNISTRUT SUPPORT. TOP OF TANK SHALL NOT BE MORE THAT 4'-0" ABOVE FLOOR.

GLYCOL SYSTEMS
3 CHEMICAL POT FEEDER PIPING
NO SCALE

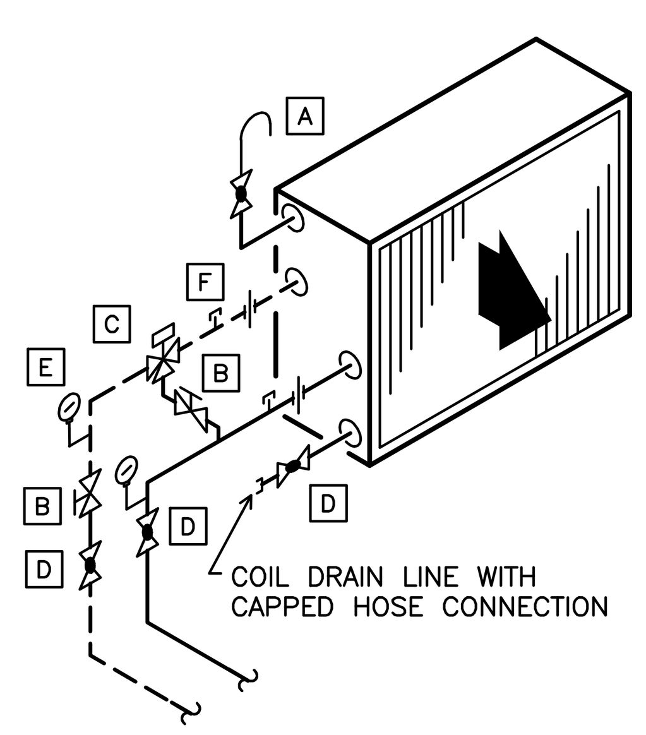
CHILLED WATER SYSTEM
2 GLYCOL FEED
NO SCALE



NOMENCLATURE: AIR ELIMINATION, DETAIL 1

- A EXPANSION TANK
  - NO. REQUIRED.................. 1
  - TANK VOLUME.................... 44.4 GALLONS
  - ACCEPTANCE VOLUME........ 22.6 GALLONS
  - MFR. & MODEL #............ BELL & GOSSETT "D-80V" OR APPROVED EQUAL BY AMTROL OR TACO
- B 6" IN-LINE AIR PURGER (SCOOP TYPE)
- C EXTEND FLEXIBLE HOSE DOWN TO GLYCOL STORAGE TANK
- D AIR VENT
- E BALL VALVE
- F 3/4" HOSE ADAPTER WITH CAP
- G BALL VALVE (REMOVE HANDLE)
- H PRESSURE RELIEF VALVE, 3/4". SET AT 75 PSIG
- I PRESSURE GAUGE WITH PULSATION SNUBBER
- J WATER PRESSURE REDUCING VALVE... SET AT 25 PSIG
- K LINE STRAINER
- L GLOBE VALVE
- M PITCH SYSTEM CONNECTION LINE 1/4" PER LINEAL FOOT TOWARD TANK
- N LINE SIZE SAME AS TANK CONNECTION SIZE
- O FLOOR SLAB
- P 3/4"x18" LONG STAINLESS STEEL BRAIDED HOSE CONNECTOR
- Q EXISTING HOUSEKEEPING CONCRETE PAD

GLYCOL SYSTEM
1 AIR ELIMINATION & PRESSURE CONTROL SCHEMATIC
NO SCALE

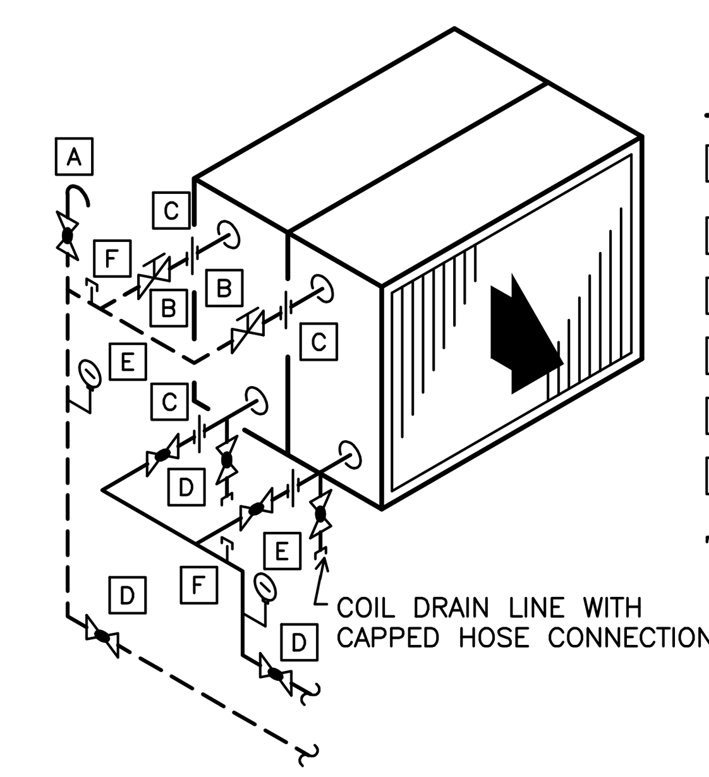


NOMENCLATURE:

- A ...3/8"VENT-TUBE WITH SHUT-OFF VALVE
- B ...BALANCING VALVE
- C ...3-WAY CONTROL VALVE
- D ...BALL VALVE
- E ...THERMOMETER
- F ...GAUGE PLUG FITTING

TYPICAL MAU-1

CHILLED WATER
7 COOLING COIL
NO SCALE

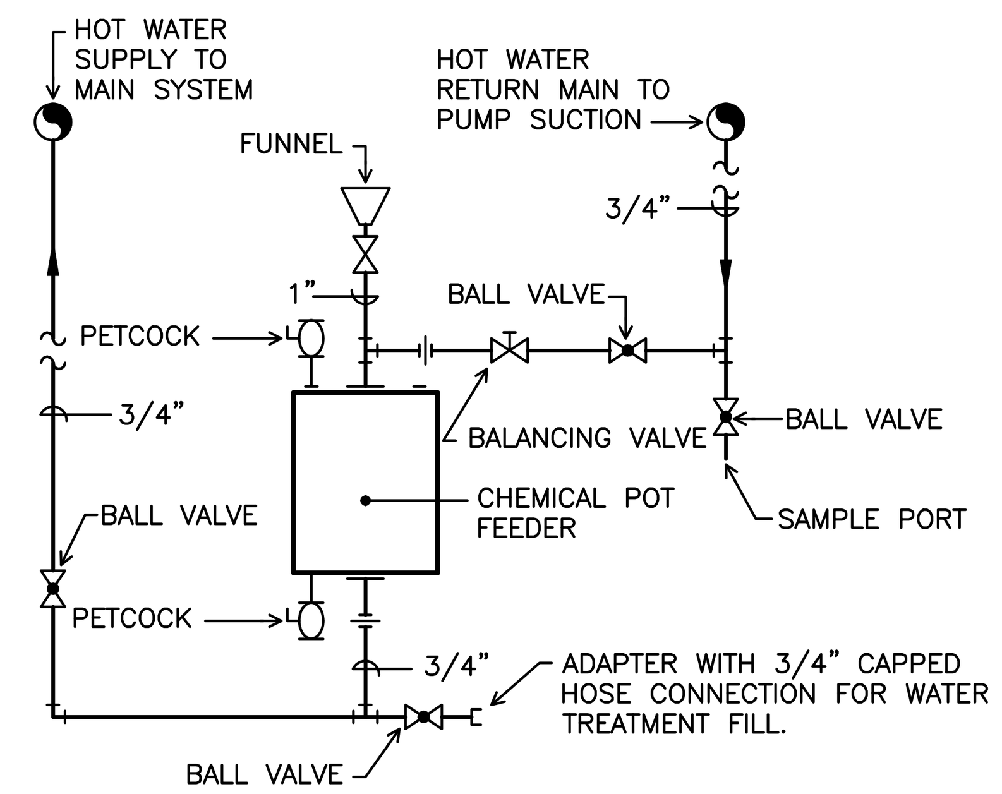


NOMENCLATURE:

- A ...3/8"VENT-TUBE WITH SHUT-OFF VALVE
- B ...BALANCING VALVE
- C ...UNION
- D ...BALL VALVE
- E ...THERMOMETER
- F ...GAUGE PLUG FITTING

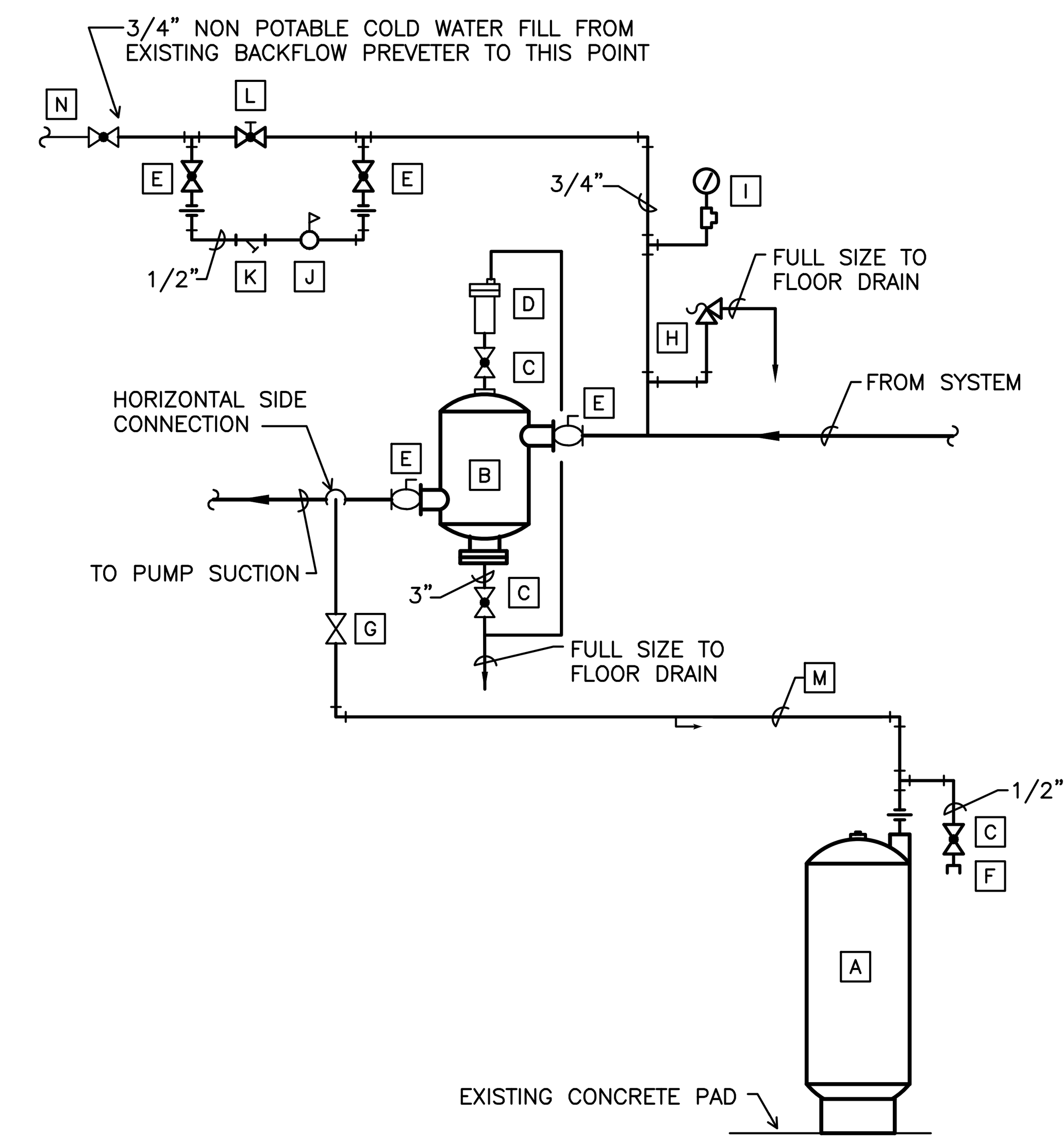
TYPICAL MAU-1

6 IFB PRE-HEAT COIL
NO SCALE



NOTE: INSTALL CHEMICAL POT FEEDER TANK ON UNISTRUT SUPPORT, TOP OF TANK NOT MORE THAN 4'-0" ABOVE FLOOR.

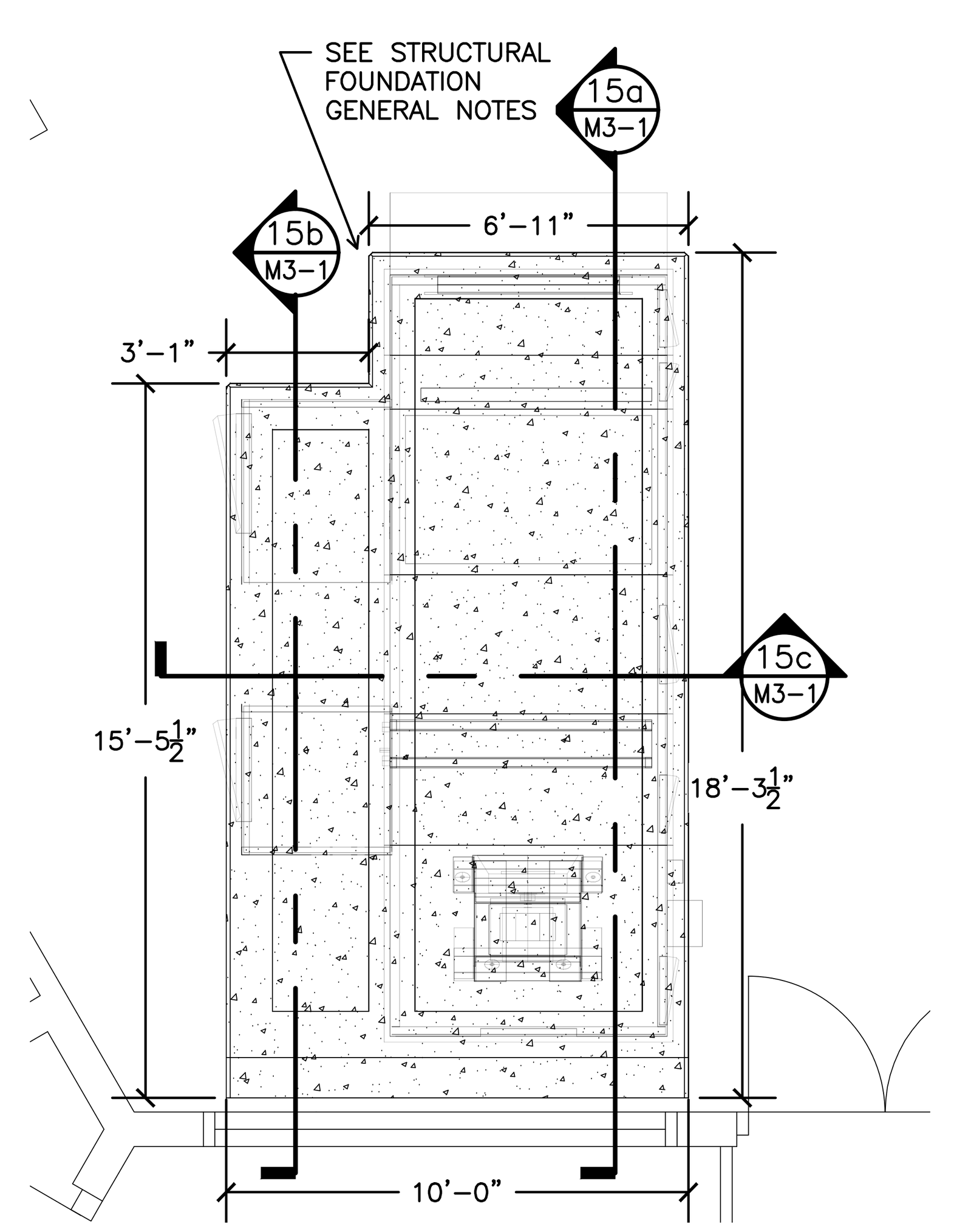
HOT WATER
5 CHEMICAL POT FEEDER PIPING
NO SCALE



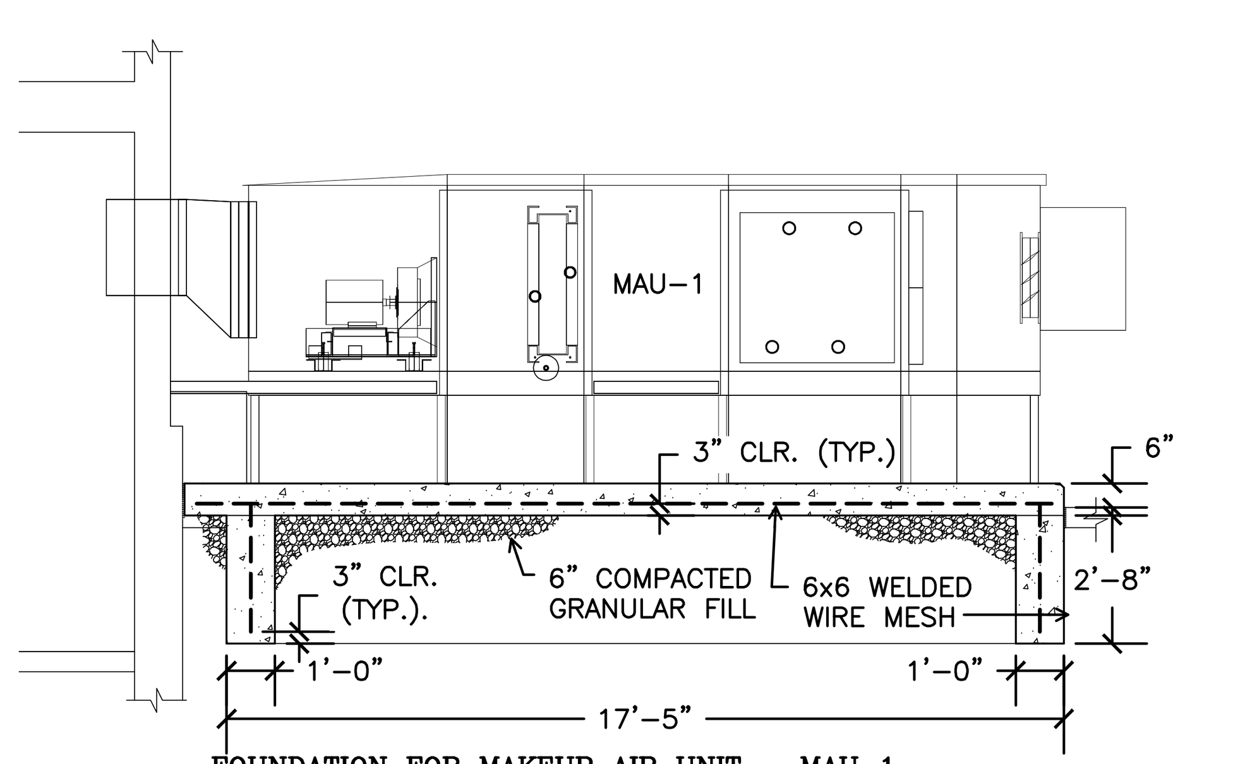
NOMENCLATURE: AIR ELIMINATION DETAIL 4

- A EXPANSION TANK
  - NO. REQUIRED.................. 1
  - TANK VOLUME.................... 70 GALLONS
  - ACCEPTANCE VOLUME........ 56.5 GALLONS
  - MFR. & MODEL NO........... BELL & GOSSETT "D120V" OR APPROVED EQUAL
- B AIR AND DIRT SEPARATOR, 5" LINE SIZE WITH STRAINER 304 SS, AND BRACKETS
  - MFR. & MODEL NO........... BELL & GOSSETT "R-5FB" OR APPROVED EQUAL
- C BALL VALVE
- D AIR VENT
- E BUTTERFLY VALVE
- F 3/4" HOSE ADAPTER
- G GATE VALVE (CONTRACTOR SHALL REMOVE HANDLE)
- H PRESSURE RELIEF VALVE, 3/4"...SET AT 75 PSIG
- I PRESSURE GAUGE WITH PULSATION SNUBBER
- J WATER PRESSURE REDUCING VALVE...SET AT 25 PSIG
- K LINE STRAINER
- L GLOBE VALVE
- M PITCH SYSTEM CONNECTION LINE 1/4" PER LINEAL FOOT TOWARD TANK
- N CONNECT TO 3/4" NON-POTABLE WATER LINE

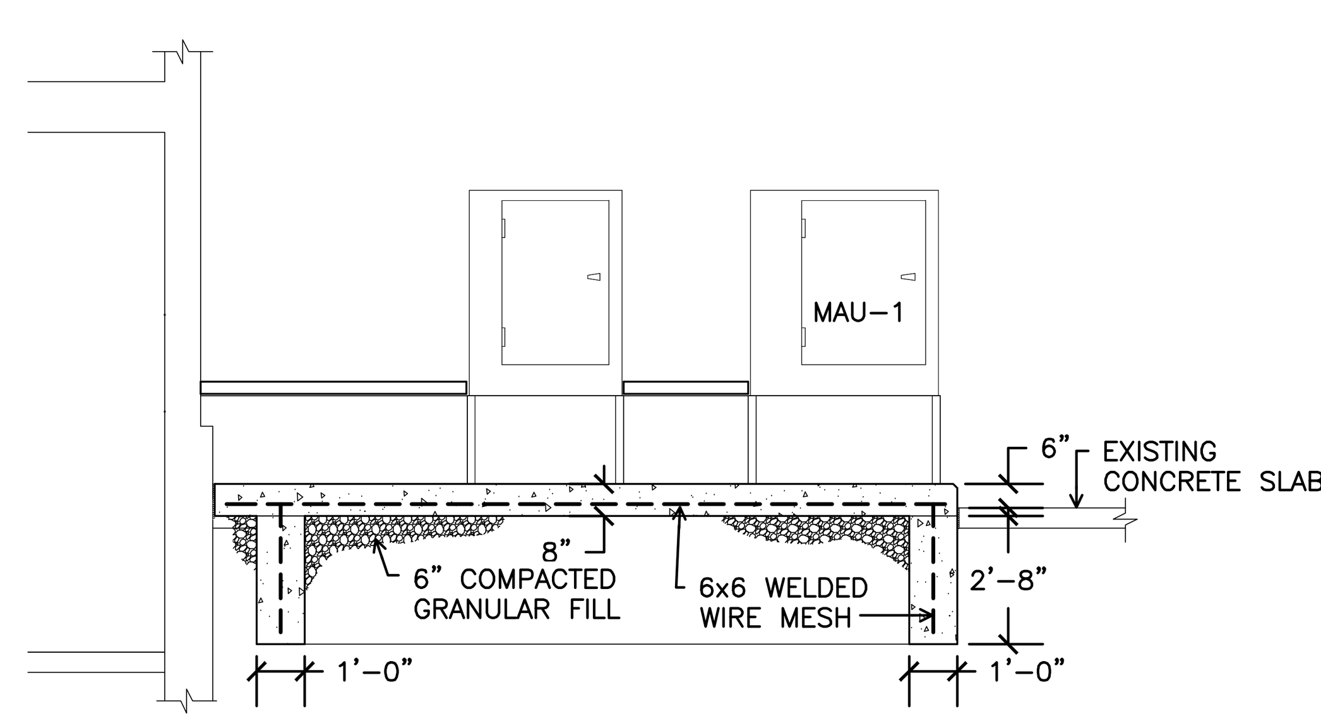
HEATING WATER
4 AIR ELIMINATION & PRESSURE CONTROL SCHEMATIC
NO SCALE



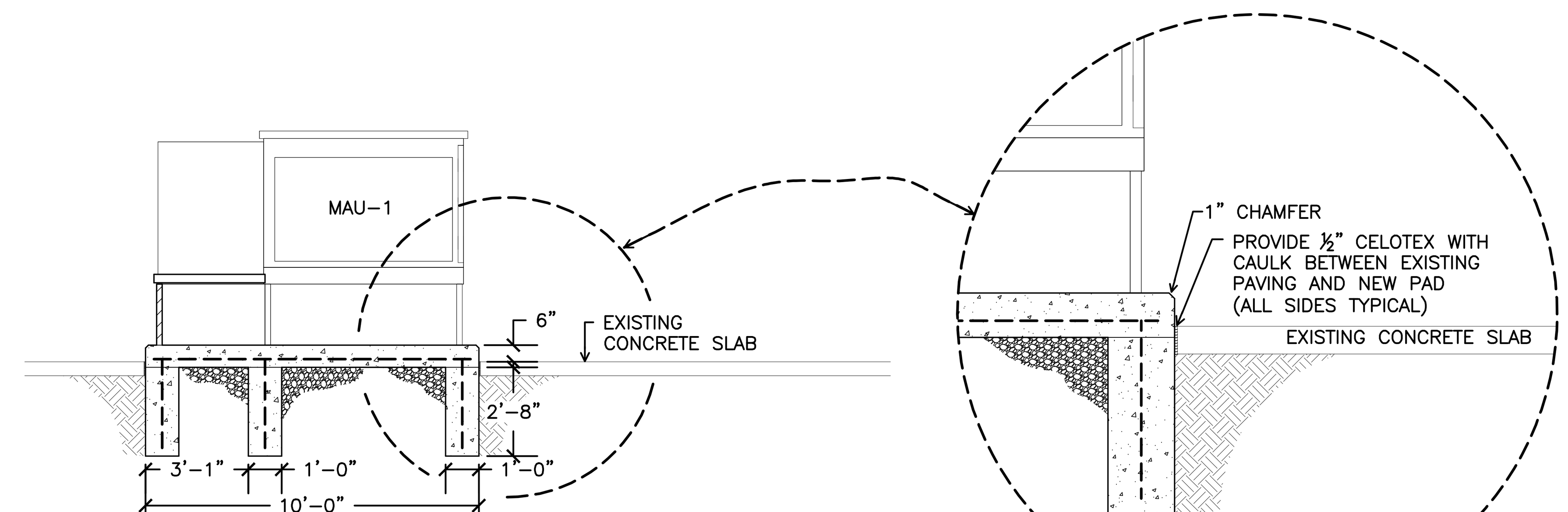
MAKEUP AIR UNIT – CONCRETE PAD
15 PARTIAL FLOOR PLAN
SCALE: 1/4" = 1'-0"



FOUNDATION FOR MAKEUP AIR UNIT – MAU-1
15a M3-1 15 CONCRETE FOUNDATION – SECTION
SCALE: 1/4" = 1'-0"



FOUNDATION FOR MAKEUP AIR UNIT – MAU-1
15b M3-1 15 CONCRETE FOUNDATION – SECTION
SCALE: 1/4" = 1'-0"



FOUNDATION FOR MAKEUP AIR UNIT – MAU-1
15C M3-1 15 CONCRETE FOUNDATION – SECTION
SCALE: 1/4" = 1'-0"

RDA GROUP ARCHITECTS
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Mechanical System Upgrades at:
Wentworth Hi-Rise OH5-14
2765 Wentworth Avenue
Dayton, Ohio 45406
Greater Dayton Premier Management

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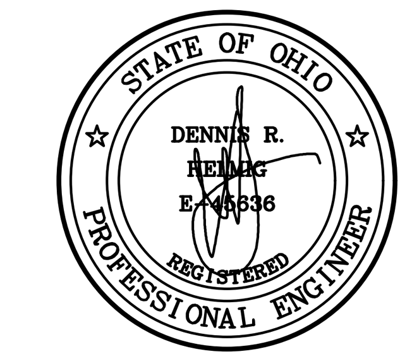
M3.1



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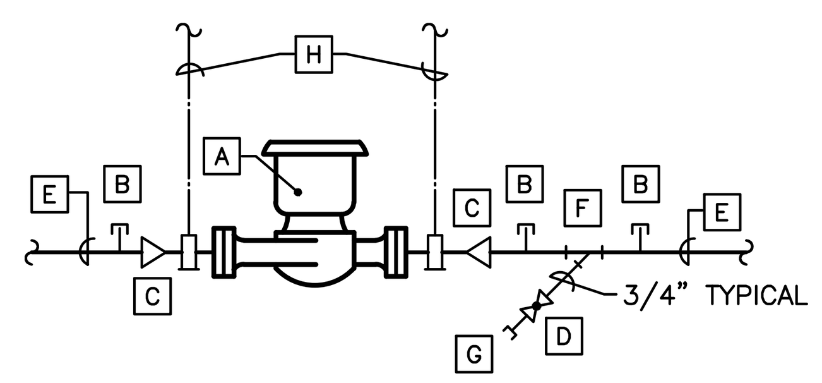


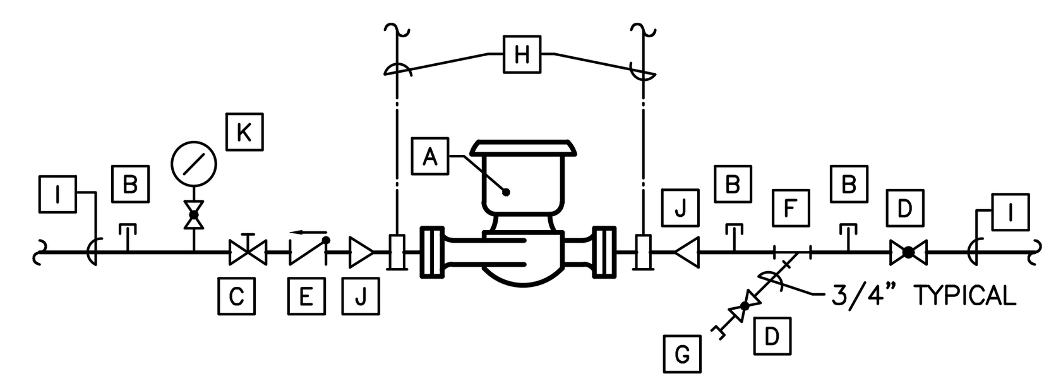
NOMENCLATURE: PUMP PIPING & VALVES, DETAIL ⑩

- A .....CIRCULATING PUMP: SEE PUMP SCHEDULE
- B .....TEMPERATURE/PRESSURE TEST PORT "PETE'S PLUG" TYPE
- C .....REDUCER
- D .....BALL VALVE
- E .....3" LINE
- F .....LINE STRAINER
- G .....ADAPTER WITH 3/4" HOSE CONNECTION
- H .....PIPE HANGERS (SUPPORT PUMP FROM PIPING ONLY) PROVIDE SPRING ISOLATING TYPE FOR FIRST TWO ON EACH SIDE OF PUMP.

HOT WATER PUMP – TYPICAL FOR BP-1, BP-2, AND BP-3

10 IN-LINE PUMP, PIPING & VALVES

NO SCALE



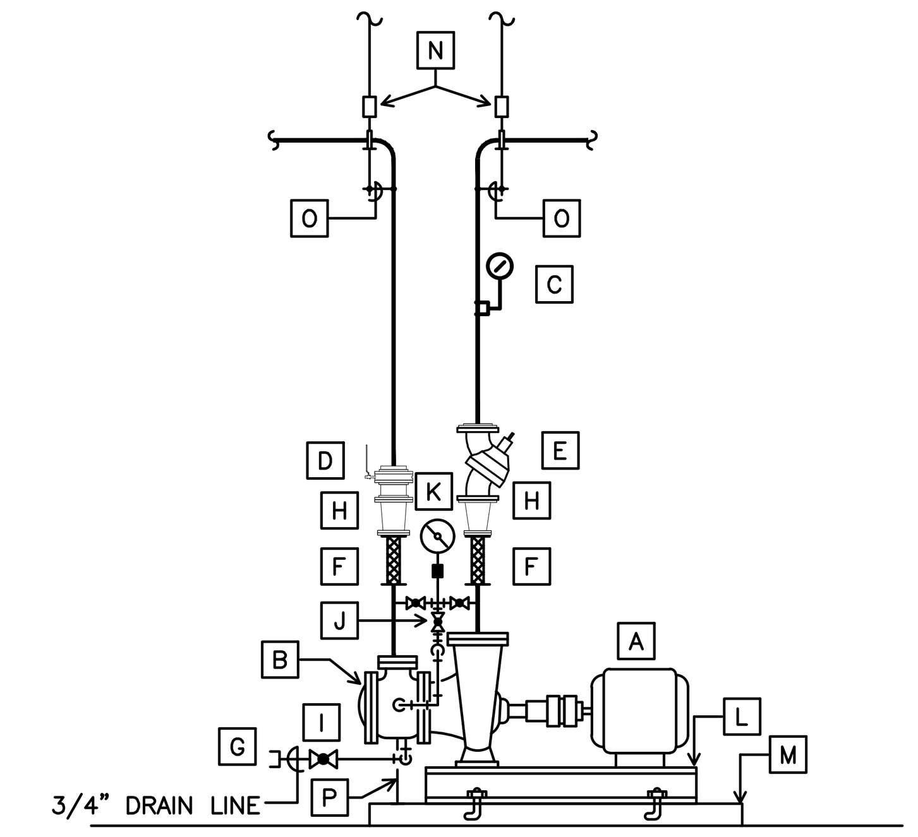
NOMENCLATURE: PUMP PIPING & VALVES, DETAIL ⑨

- A .....CIRCULATING PUMP: SEE PUMP SCHEDULE
- B .....TEMPERATURE/PRESSURE TEST PORT "PETE'S PLUG" TYPE
- C .....BALANCING VALVE.
- D .....BALL VALVE
- E .....CHECK VALVE
- F .....LINE STRAINER
- G .....ADAPTER WITH 3/4" HOSE CONNECTION
- H .....PIPE HANGERS (SUPPORT PUMP FROM PIPING ONLY) PROVIDE SPRING ISOLATING TYPE FOR FIRST TWO ON EACH SIDE OF PUMP.
- I .....SEE PLAN FOR MAIN SIZE
- J .....REDUCER
- K .....PRESSURE GAUGE @ PULSATION SNUBBER

HOT WATER PUMP – P-4

9 IN-LINE PUMP, PIPING & VALVES

NO SCALE



NOTES:

FOR MULTIPLE PUMPS INSTALLATION ALL INDIVIDUAL PUMP PIPING, VALVES, ETC. SHALL BE AS INDICATED ABOVE. INTERCONNECTS, TIE-INS, ETC. FOR PUMP PIPING SHALL BE ON SYSTEM SIDE OF ISOLATION VALVES.

IN LIEU OF FLEXIBLE COUPLINGS ON PUMP PIPING, CONTRACTOR MAY USE WELDED FITTINGS WITH FLEXIBLE CONNECTORS ON SUPPLY AND RETURN.

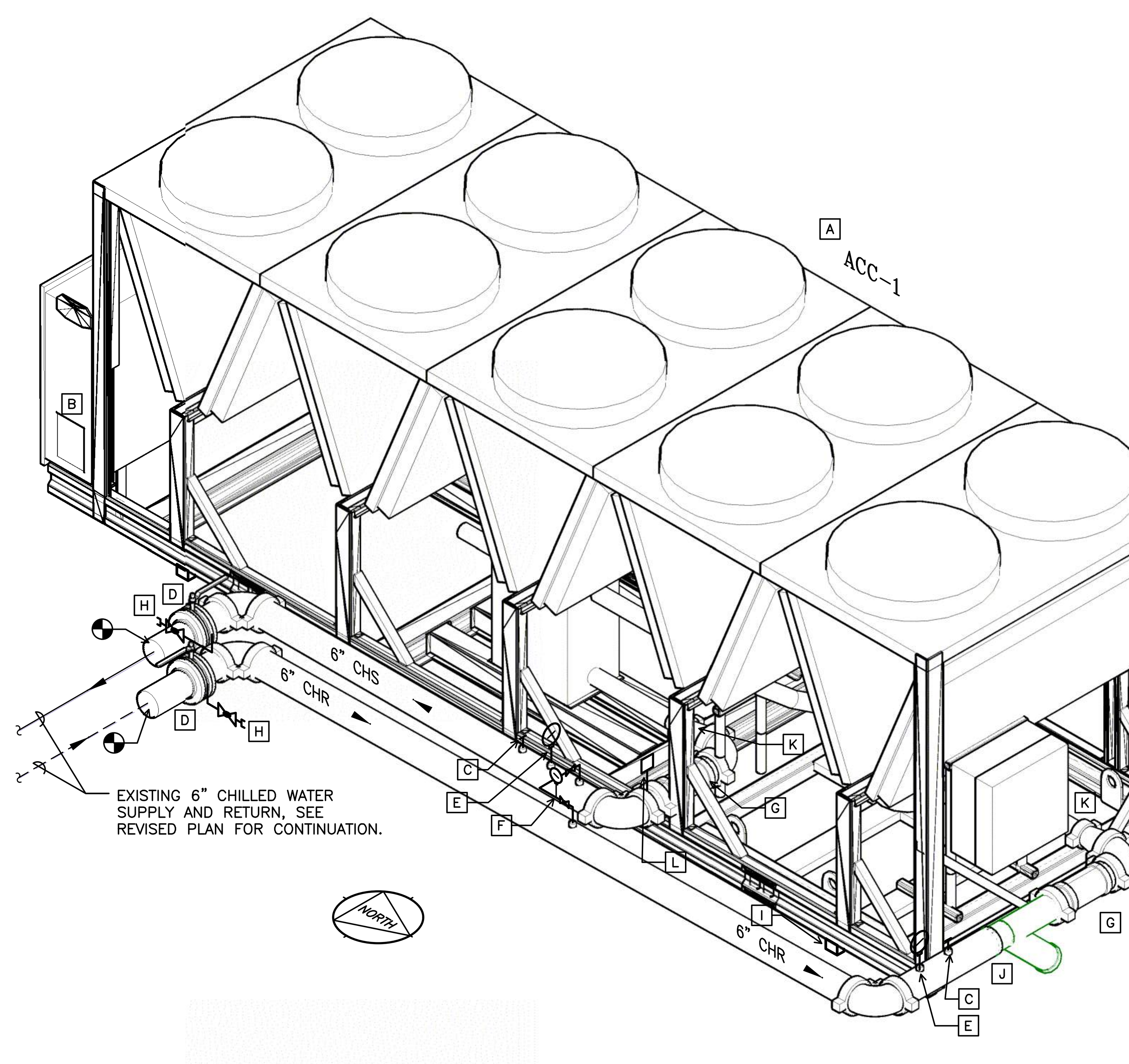
NOMENCLATURE: PUMP PIPING & VALVES, DETAIL ⑧

- A .....CIRCULATING PUMP: SEE PUMP SCHEDULE
- B .....SUCTION DIFFUSER WITH STRAINER
- C .....THERMOMETER
- D .....BUTTERFLY VALVE
- E .....TRIPLE DUTY VALVE
- F .....FLEXIBLE PIPE CONNECTION
- G .....3/4" HOSE ADAPTER
- H .....REDUCER AS REQUIRED
- I .....BALL VALVE
- J .....USE BALL VALVES AND STAINLESS TUBING FOR GAUGE ISOLATION
- K .....PRESSURE GAUGE
- L .....PIPE SLEEVES, ANCHOR BOLTS, AND SHIMS BY HVAC CONTRACTOR
- M .....EXISTING CONCRETE HOUSEKEEPING PAD
- N .....FIRST THREE HANGERS FOR EACH PIPE TO BE SPRING AND NEOPRENE TYPE.
- O .....INSTALL FIRST HANGER AS CLOSE TO ELL AS POSSIBLE
- P .....DIFFUSER SUPPORT

HOT WATER PUMP – P-1 AND P-2

8 PUMP, PIPING & VALVES

NO SCALE:



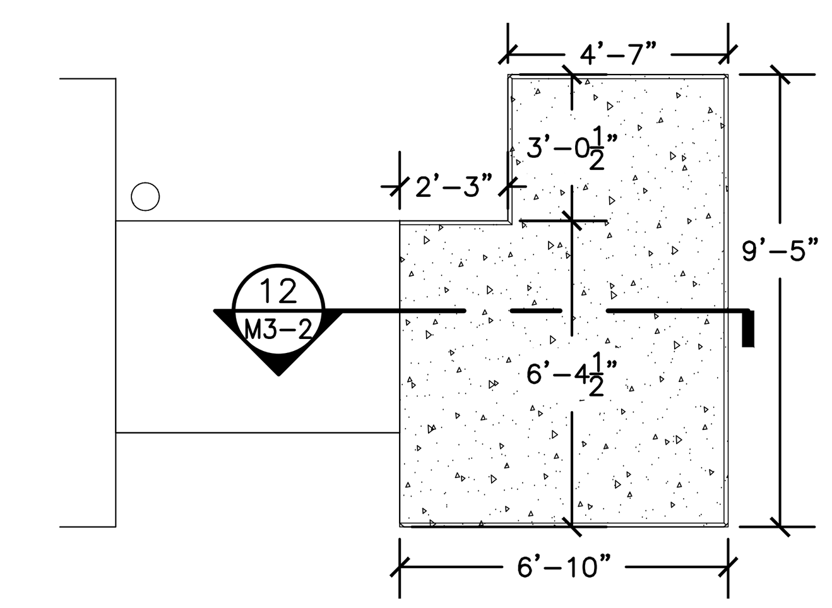
NOMENCLATURE (CHILLED WATER PIPING)

- A AIR COOLED CHILLER (SEE EQUIPMENT DATA SHEET M0-2)
- B CONTROL / POWER WIRING ENTRANCE.
- C GAUGE PLUG FITTING WITH EXTENDED NECK.
- D 6" BUTTERFLY (SHUTOFF VALVE)
- E SILICON FILLED TEMPERATURE GAUGE WITH ISOLATION VALVE.
- F PRESSURE GAGE WITH ISOLATION BALL VALVES
- G VIBRATION ELIMINATOR. (METRAFLEX)
- H 3/4" BALL VALVE WITH CAPPED THREADED HOSE CONNECTION
- I VIBRATION ISOLATORS FURNISHED BY WITH CHILLER PACKAGE
- J STRAINER WITH BALL VALVE WITH CAPPED THREADED HOSE CONNECTION.
- K PROVIDE REDUCERS OR ADAPTORS AS REQUIRED
- L FLOW SWITCH PROVIDED WITH AIR COOLED CHILLER

ACC-1 – CHILLER

11 AIR COOLED CHILLER PIPING ISOMETRIC

NO SCALE

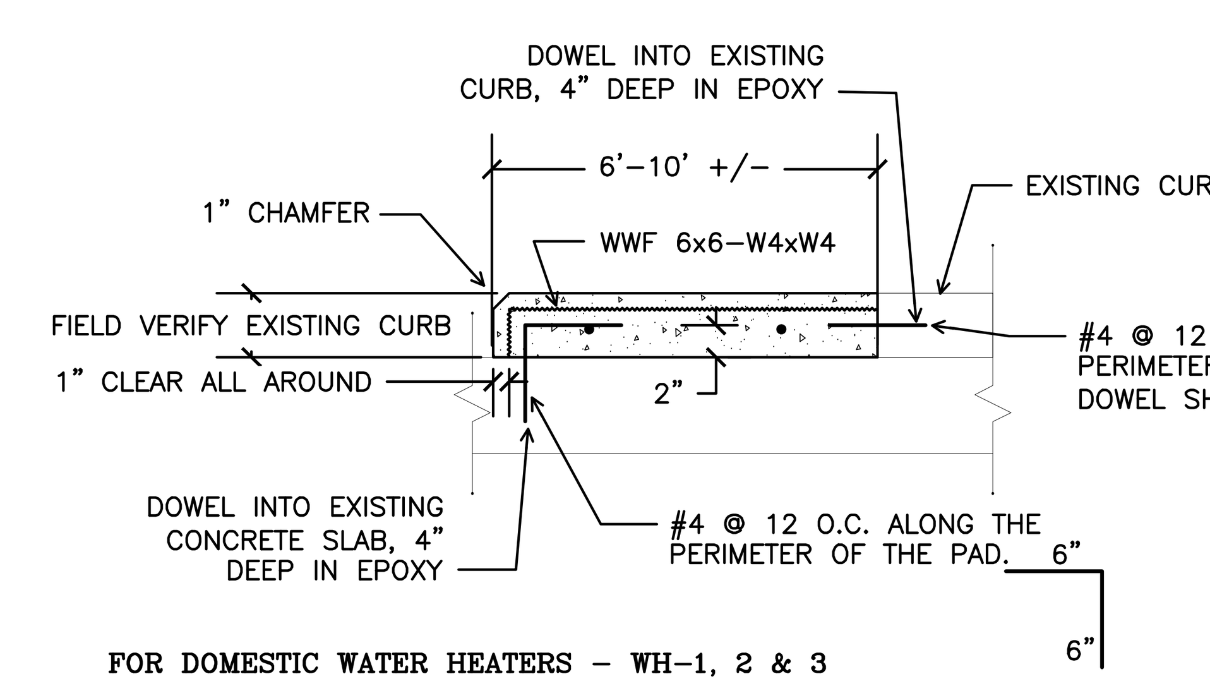


BOILER ROOM – CONCRETE PAD

PARTIAL FLOOR PLAN

SCALE: 1/4" = 1'-0"

NORTH



FOR DOMESTIC WATER HEATERS – WH-1, 2 & 3

12/M3-2 12 CONCRETE PAD EXTENSION

NO SCALE

Mechanical System Upgrades at:
Wentworth Hi-Rise OH5-14
2765 Wentworth Avenue
Dayton, Ohio 45406
Greater Dayton Premier Management

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MECHANICAL - DETAILS

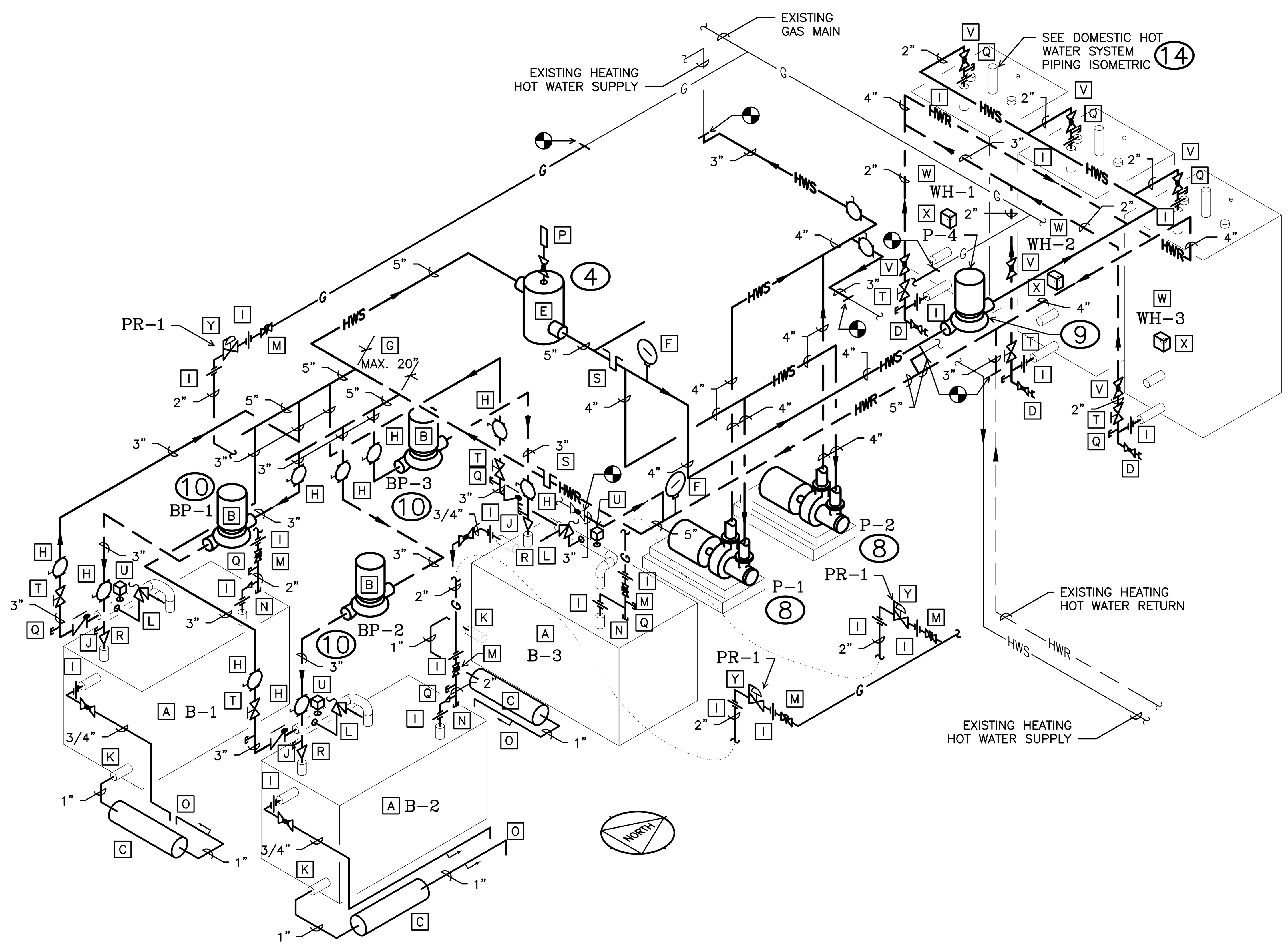
Sheet Number
M3.2

NOMENCLATURE (HEATING HOT WATER SYSTEM PIPING ISOMETRIC)

A	GAS FIRED CONDENSING BOILER. SEE EQUIPMENT DATA SHEET M0-1
B	INLINE PUMP, BOILER CIRCULATOR - SEE PUMP SCHEDULE
C	ACIDIC CONDENSATE NEUTRALIZER
D	3/4" BALL VALVE WITH HOSE END ADAPTER
E	5" AIR SEPARATOR. SEE DETAIL 4, SHEET M3-1
F	SILICON FILLED TEMPERATURE GAUGE WITH ISOLATION VALVE
G	MINIMUM 12" OR MAXIMUM 4X PIPE DIAMETERS
H	BUTTERFLY VALVE
I	UNION
J	SPRING LOADED CHECK VALVE
K	BOILER CONDENSATE DRAIN TEE ASSEMBLY, EXTEND PVC PIPE TO NEUTRALIZER
L	RELIEF VALVE FURNISHED WITH BOILER PACKAGE. PIPE DISCHARGE TO DRAIN.
M	MANUAL SHUT-OFF GAS RATED BALL VALVE
N	FULL SIZE DIRT LEG
O	PIPE DISCHARGE TO FLOOR DRAIN
P	HIGH CAPACITY AIR VENT WITH PIPE DISCHARGE TO DRAIN
Q	GAGE PLUG FITTING WITH EXTENDED NECK
R	REDUCER AS REQUIRED
S	PIPE WELL FOR TC SENSOR
T	BALANCING VALVE
U	LOW WATER CUT-OFF WITH SENSOR PROVIDED WITH BOILER
V	BALL VALVE
W	DOMESTIC HOT WATER HEAT EXCHANGER (SEE EQUIPMENT DATA, SHEET M0-1
X	INTERLOCK DOMESTIC WATER HEAT EXCHANGER TANK AQUASTAT CONTROLLER WITH CIRCULATING PUMP P-4
Y	GAS PRESSURE REDUCING VALVE WITH INTERNAL RELIEF VALVE. SEE EQUIPMENT DATA.

NOMENCLATURE (DOMESTIC HOT WATER SYSTEM PIPING ISOMETRIC)

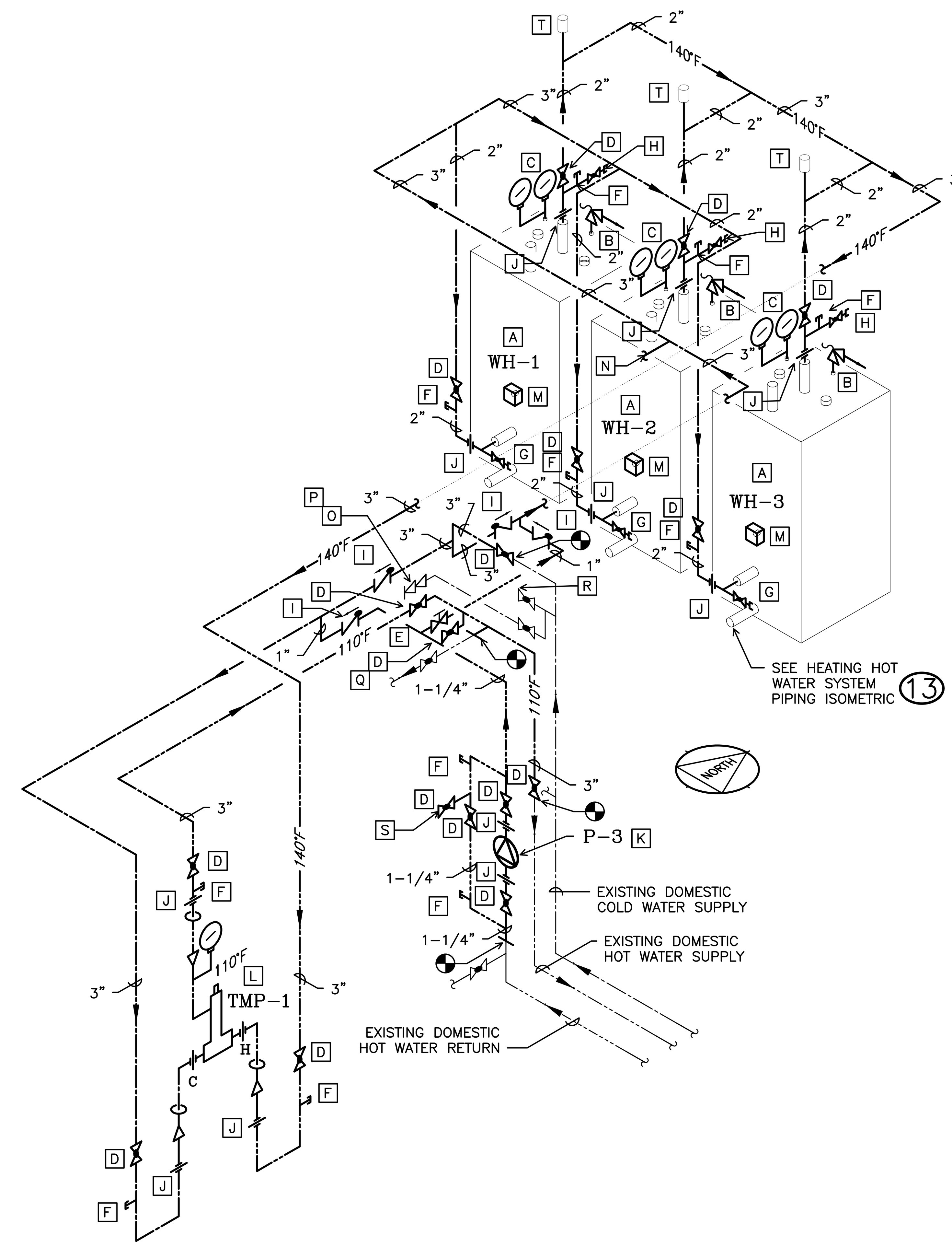
A	DOMESTIC HOT WATER HEAT EXCHANGER (SEE EQUIPMENT DATA, SHEET M0-1)
B	RELIEF VALVE BY DOMESTIC HOT WATER HEAT EXCHANGER MANUFACTURER SET FOR 60 PSIG.
C	THERMOMETER AND PRESSURE GAGE BY HEAT EXCHANGER MANUFACTURER
D	BALL VALVE
E	BALANCING VALVE
F	GAGE PLUG FITTING WITH EXTENDED NECK
G	3/4" DRAIN WITH BALL WITH CAPPED HOSE CONNECTION
H	3/4" BACK FLUSH WITH BALL WITH CAPPED HOSE CONNECTION
I	NON-SLAM CHECK VALVE
J	UNION
K	CIRCULATING PUMP; P-3, SEE PUMP SCHEDULE
L	TEMPERING VALVE. SEE EQUIPMENT DATA SHEET M0-1
M	INTERLOCK AQUASTAT CONTROLLER WITH CIRCULATING PUMP, P-4
N	EXTEND TO THERMAL EXPANSION TANK.
O	EXISTING BACK FLOW PREVENTER
P	EXTEND NON-POTABLE WATER TO HEATING SYSTEM
Q	TEMPORARY 3" DOMESTIC HOT WATER CONNECTION
R	TEMPORARY 3" DOMESTIC COLD WATER FEED
S	TEMPORARY 1-1/4" DOMESTIC HOT WATER RETURN CONNECTION
T	VACUUM BREAKER



HEATING BOILER PIPING – TYPICAL FOR B-1, B-2 ANS B-3

(13) HEATING HOT WATER SYSTEM PIPING ISOMETRIC

NO SCALE



DOMESTIC HOT WATER HEAT EXCHANGER – TYPICAL FOR HW-1, HW-2 AND HW-3

(14) DOMESTIC HOT WATER SYSTEM PIPING ISOMETRIC

NO SCALE

STATE OF OHIO
DENNIS R. HELMIG
E-45636
REGISTERED
PROFESSIONAL ENGINEER

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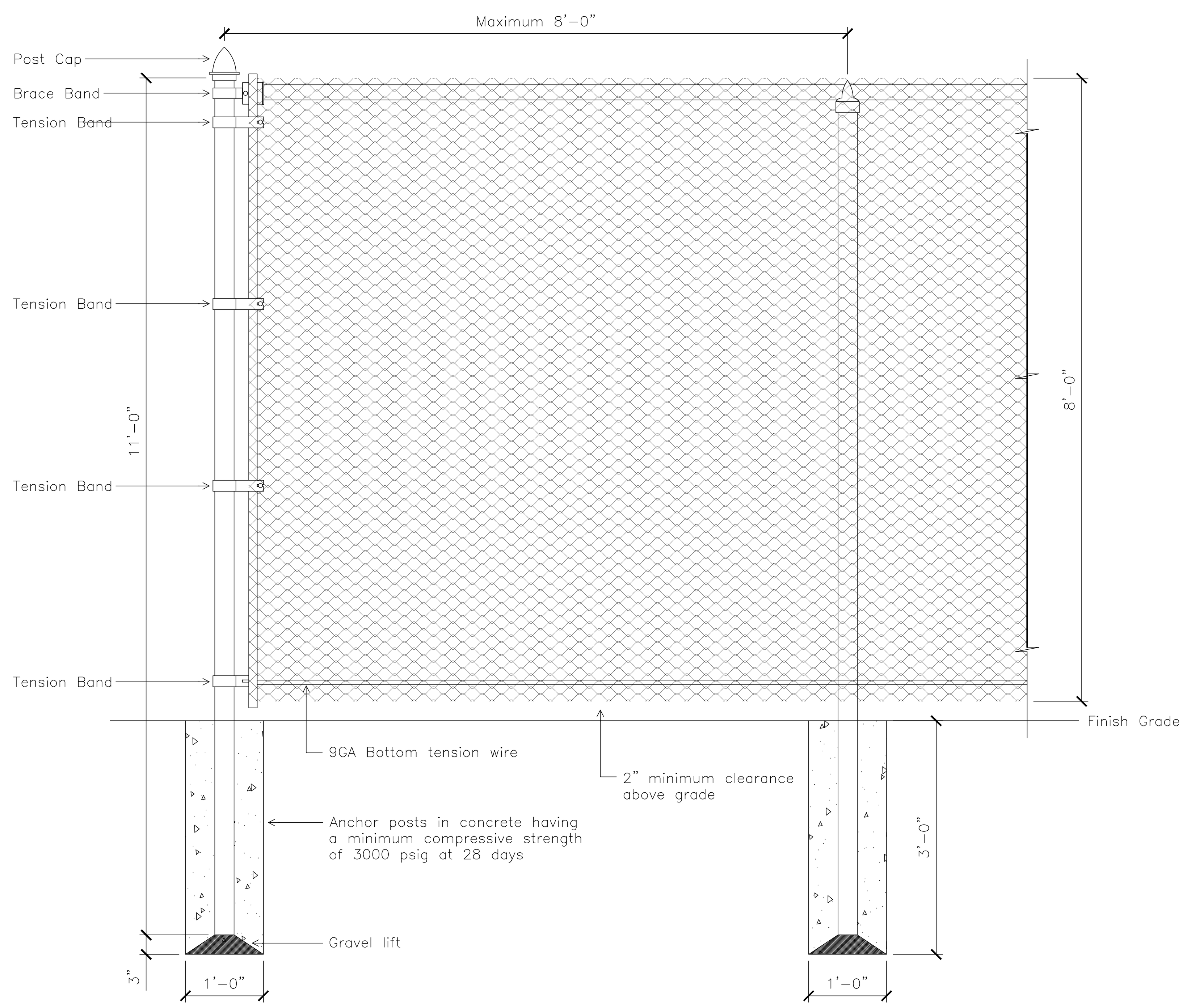
Sheet Title
MECHANICAL - DETAILS

Sheet Number
M3.3



96" high Chain Link Fence

Posts: 2 7/8" O.D. Schedule 40; Terminal/End/Corner

Fabric: 6GA x 2" Mesh

Top rail: 1 7/8" O.D. Schedule 40

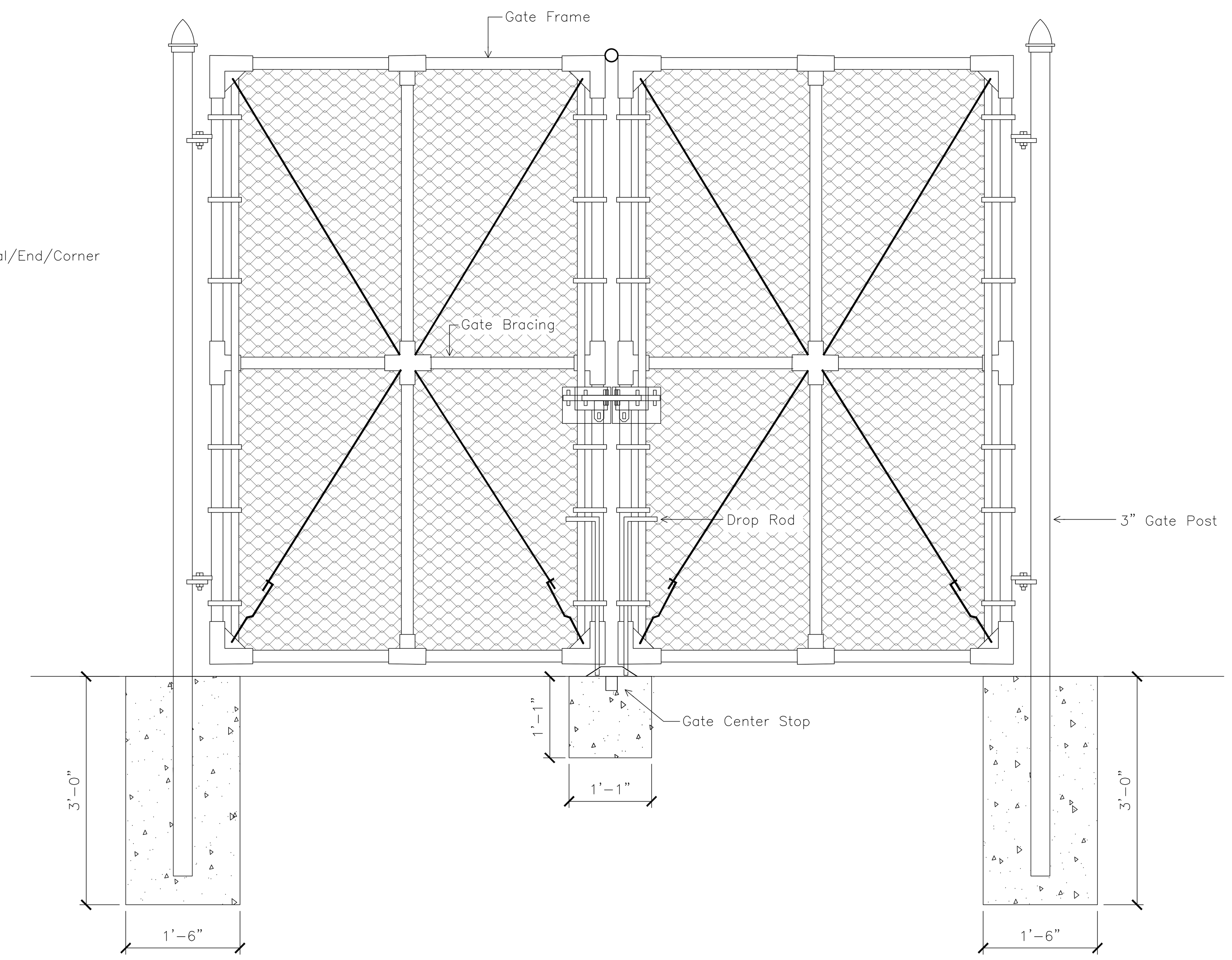
Post Caps: Acorn Style

Ties: 9GA Aluminum

Concrete: 3000 PSI

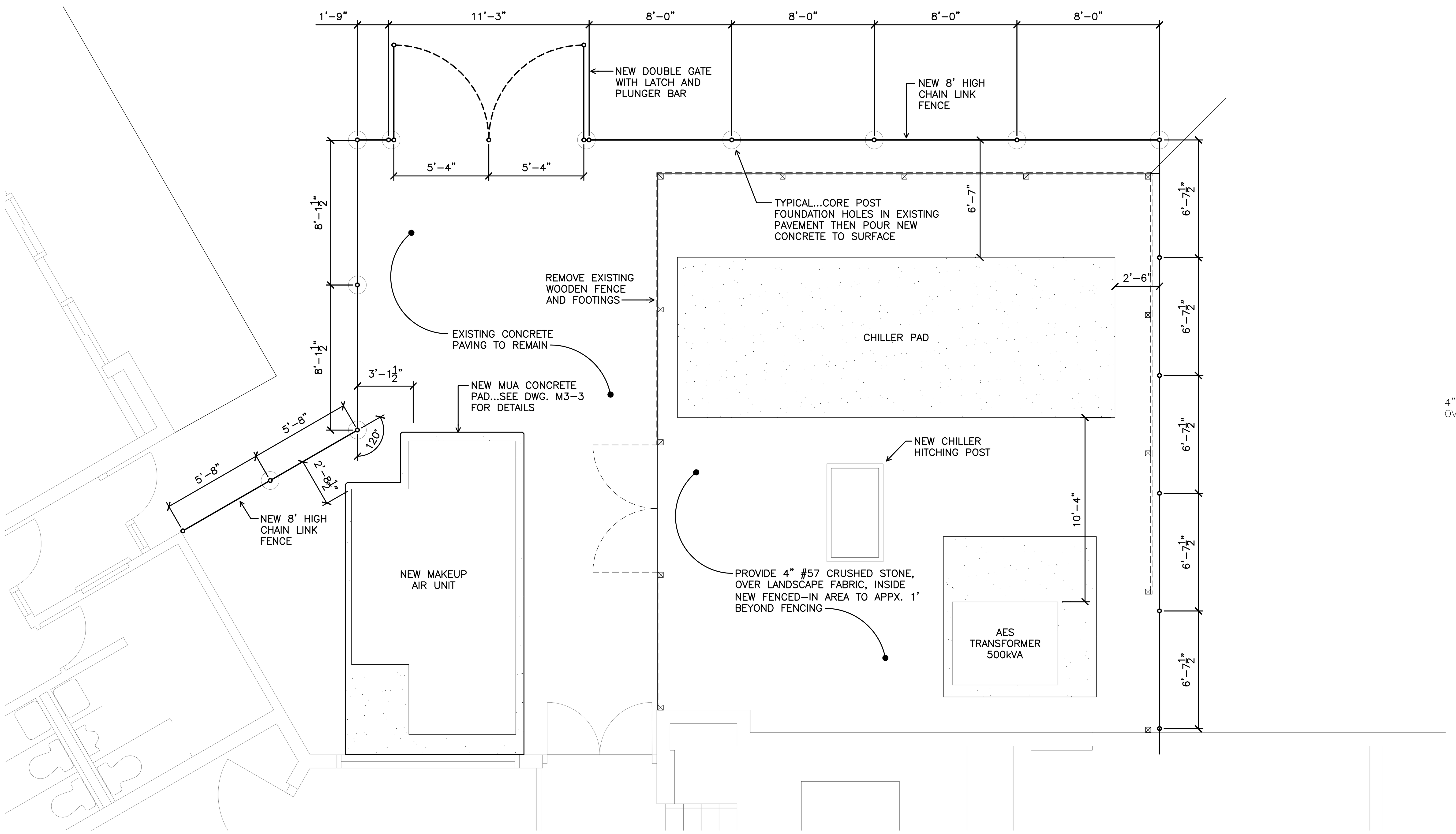
1 M3-4 TYPICAL FENCE DETAIL

SCALE: 3/4"= 1'-0"



2 M3-4 TYPICAL GATE DETAIL

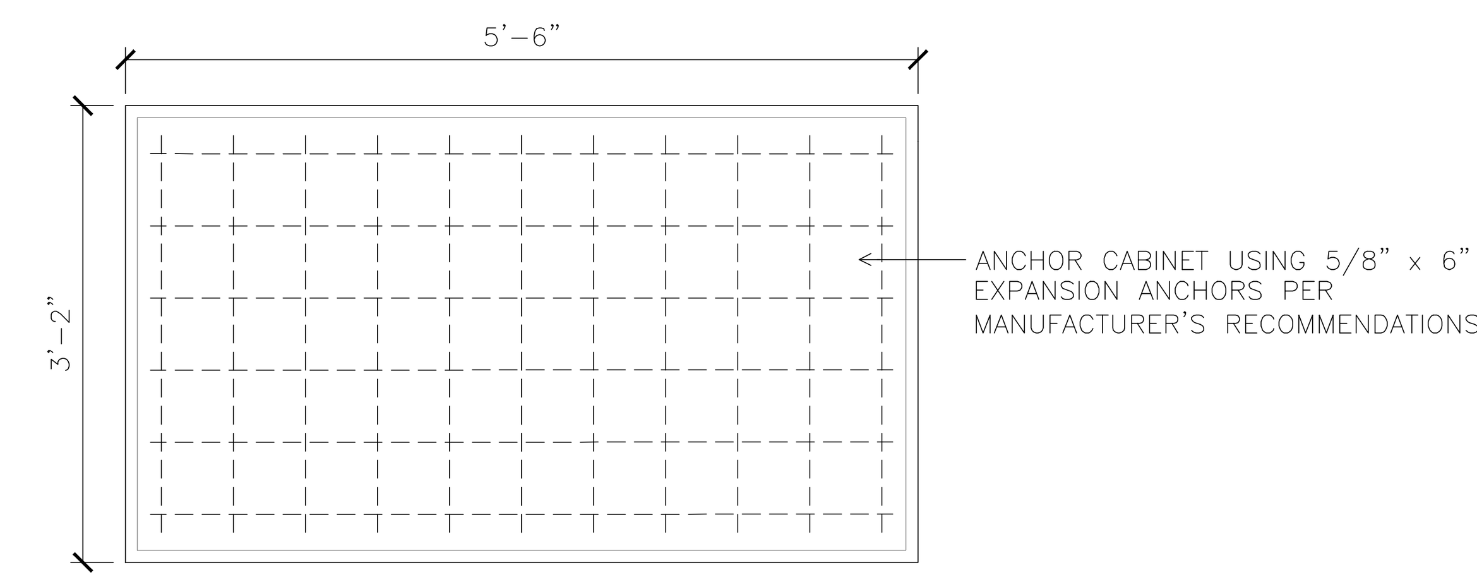
SCALE: 3/4"= 1'-0"

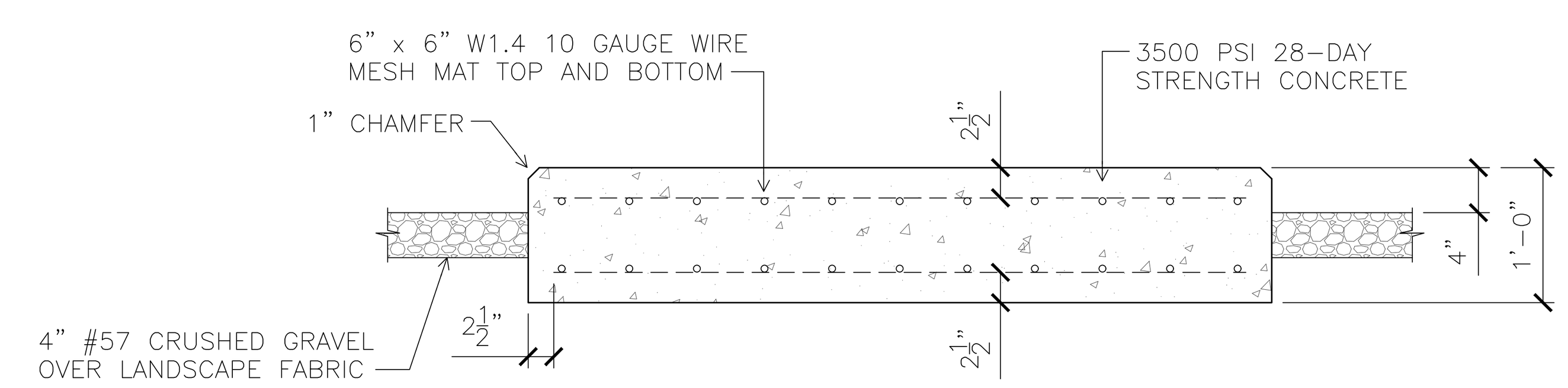


NOTE:
FENCE DEMOLITION, NEW FENCING, GRAVEL BASE TO BE PROVIDED BY THE GENERAL CONTRACTOR

DEMOLITION & REVISED
EQUIPMENT YARD FENCE PLAN

SCALE: 1/4"= 1'-0"

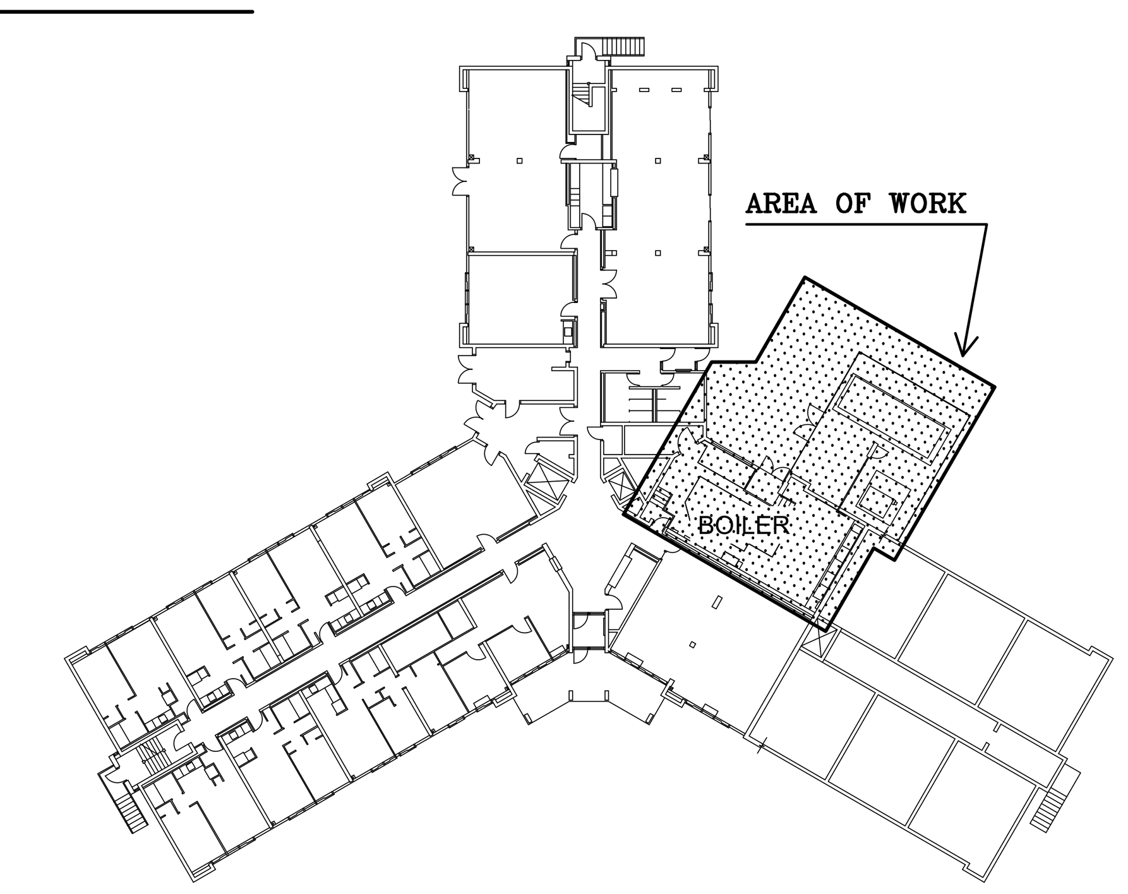




3 M3-4 MTS CONCRETE PAD

SCALE: 3/4"= 1'-0"

OHIO811 Before You Dig



KEY PLAN

NO SCALE

STATE OF OHIO
DENNIS R. HELMIG
E-45636
REGISTERED
PROFESSIONAL ENGINEER

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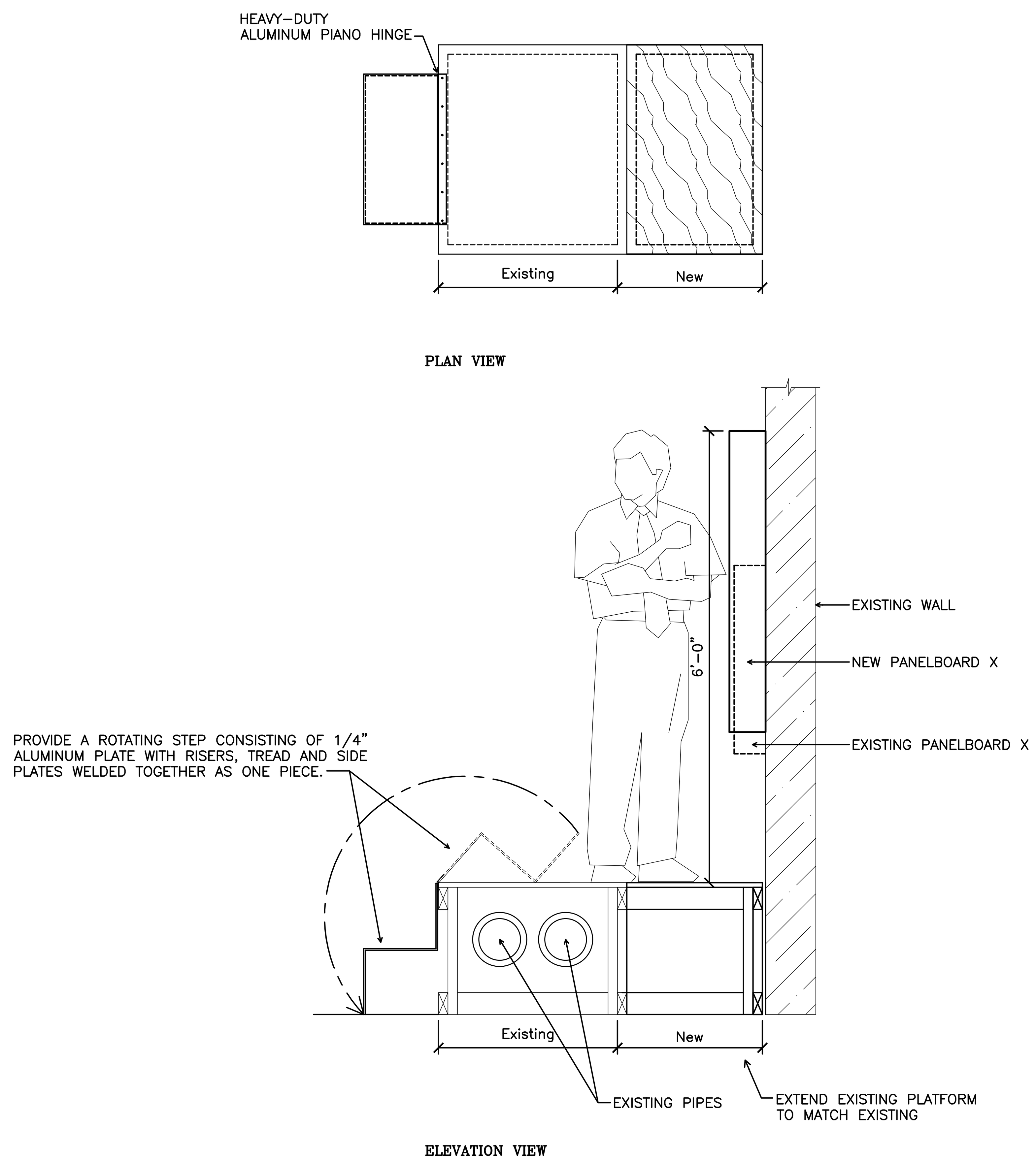
Sheet Title
Equipment Yard Fence Plan

Sheet Number
M3.4



1
E0-1

REVISED

PIPING PLATFORM REVISIONS

SCALE: 3/4"= 1'-0"

GENERAL NOTES

UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL WORK SHOWN ON THE ELECTRICAL DRAWINGS IS NEW WORK TO BE PROVIDED UNDER THIS CONTRACT.

COORDINATE AND COOPERATE WITH ALL TRADES ON THE PROJECT.

SECURE AN EXTRA SET OF ELECTRICAL DRAWINGS TO BE KEPT ON SITE AND MARK, DAILY, THE DRAWINGS IN RED AS THE PROJECT PROGRESSES IN ORDER TO KEEP AN ACCURATE RECORD OF ALL DEVIATIONS BETWEEN THE WORK SHOWN ON THE DRAWINGS AND THE WORK WHICH IS ACTUALLY INSTALLED. THESE MARKED DRAWINGS SHALL REFLECT ANY AND ALL CHANGES AND REVISIONS TO THE ORIGINAL DESIGN WHICH EXISTS IN THE COMPLETED WORK. DELIVER THE MARKED DRAWINGS TO THE ENGINEER AT PROJECT CLOSE-OUT.

TEST ALL WIRING FOR CONTINUITY AND GROUNDS BEFORE CONNECTING ANY FIXTURES OR DEVICES. PERFORM INSULATION RESISTANCE TESTS ON ALL WIRING #8 OR LARGER TO ENSURE THAT ALL PORTIONS ARE FREE FROM SHORT-CIRCUITS AND GROUNDS.

ARRANGE ALL NECESSARY INSPECTIONS. DELIVER ALL REQUIRED INSPECTION CERTIFICATES TO THE OWNER.

PROVIDE GROUNDING IN ACCORDANCE WITH THE NEC FOR THE ELECTRICAL SYSTEM INCLUDING EQUIPMENT FRAMES CONDUITS, SWITCHES, CONTROLLERS, WIRE-WAYS, NEUTRAL CONDUCTORS, AND OTHER EQUIPMENT. PROVIDE A GROUNDING CONDUCTOR IN ALL POWER CIRCUITS.

PROVIDE LABELS FOR ALL PANELBOARDS, CABINETS, SAFETY SWITCHES, MOTOR-DISCONNECT SWITCHES, AND MOTOR CONTROLLERS. LABELS SHALL BE MACHINE ENGRAVED, LAMINATED PLASTIC, PERMANENTLY ATTACHED WITH SELF-TAPPING SCREWS OR RIVETS. DO NOT USE SELF-ADHESIVE LABELS.

LABEL ALL JUNCTION BOXES WITH PERMANENT MARKER IDENTIFYING CIRCUIT NUMBER AND PANELBOARD OF CIRCUITS WITHIN.

PROVIDE TYPEWRITTEN PANELBOARD DIRECTORY CARD IN EACH PANELBOARD INCLUDING EXISTING PANELBOARDS MODIFIED FOR THIS PROJECT WITH CIRCUIT LOAD INFORMATION AND ROOM NUMBER CLEARLY IDENTIFIED. USE ACTUAL ROOM NUMBERS IN THE BUILDING, NOT THE ROOM NUMBERS SHOWN ON THE CONTRACT DRAWINGS, AS THEY ARE OFTEN DIFFERENT.

SECURE APPROVED SHOP DRAWINGS SHOWING WIRING DIAGRAMS, ROUGH-IN AND HOOK UP DETAILS FROM OTHER INVOLVED CONTRACTORS FOR EQUIPMENT WHICH MUST BE CONNECTED ELECTRICALLY.

MECHANICAL EQUIPMENT WILL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR. THE LOCATIONS SHOWN ON THE ELECTRICAL DRAWINGS ARE APPROXIMATE. COORDINATE WITH THE MECHANICAL CONTRACTOR TO DETERMINE THE EXACT LOCATION OF EACH PIECE OF EQUIPMENT AND DETERMINE THE EXACT ROUGH-IN AND CONNECTION REQUIREMENTS.

COORDINATE LIGHTING FIXTURES WITH PIPING, MECHANICAL EQUIPMENT, SPRINKLER HEADS, ACCESS PANELS, ETC.

MOUNTING HEIGHTS INDICATED ARE FROM THE FINISHED FLOOR TO THE CENTERLINE OF THE WIRING DEVICE UNLESS OTHERWISE NOTED. MOUNTING HEIGHTS OF LIGHTING FIXTURES AND FIRE ALARM DEVICES ARE TO THE BOTTOM OF THE FIXTURE OR DEVICE UNLESS OTHERWISE NOTED.

COORDINATE LOCATIONS OF SWITCHES, RECEPTACLES, AND TELE/DATA OUTLETS WITH OTHER WALL MOUNTED DEVICES SUCH AS THERMOSTATS AND CONTROL STATIONS.

FOR ANY WALL OR FLOOR PENETRATIONS THROUGH FIRE RATED STRUCTURES PROVIDE FIRE-PROOFING TO SEAL ALL THE PENETRATIONS AFTER THE CONDUIT HAS BEEN INSTALLED. FIRE PROOFING FOR PENETRATIONS SHALL BE UL APPROVED PER THE PENETRATION MADE IN ORDER TO MAINTAIN FIRE RATED INTEGRITY OF THE STRUCTURE.

ON PROJECT CLOSE-OUT, CLEAN ALL ELECTRICAL DEVICES, LIGHTING FIXTURES, AND LENSES, AND REMOVE ALL PAINT SPATTERS FROM DEVICES, FIXTURES, AND PLATES. REPLACE ALL INOPERATIVE LAMPS.

CONTRACTOR SHALL OBTAIN CUT SHEETS, INSTALLATION DATA, AND ROUGH-IN REQUIREMENTS FOR OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT AND COORDINATE ROUGH-IN AND POWER REQUIREMENTS WITH THE OWNER'S REPRESENTATIVE PRIOR TO STARTING ANY ASSOCIATED WORK.

ALL CONDUIT RUN OVERHEAD SHALL BE RUN AS HIGH AS POSSIBLE (AS APPLICABLE) IN ORDER TO AVOID CONFLICTS WITH OTHER TRADES.

ALL RECEPTACLES AND SWITCHES SHALL BE LABELED WITH PLASTIC LAMINATED LABEL WITH THE PANELBOARD DESIGNATION AND CIRCUIT NUMBER FROM WHICH IT IS FED.

UNLESS OTHERWISE INDICATED, PROVIDE ALL REQUIRED FRACTIONAL HORSEPOWER MANUAL STARTERS. ALL OTHER STARTERS, CONTROLS, ETC., PERTAINING TO EQUIPMENT PROVIDED UNDER OTHER SECTIONS OF THE PROJECT WILL BE FURNISHED UNDER THAT SECTION UNLESS OTHERWISE INDICATED. THESE OTHER STARTERS, CONTROLS, ETC. WILL BE TURNED OVER TO THE ELECTRICAL CONTRACTOR TO BE MOUNTED AND WIRED UNDER THIS SECTION OF THE WORK. NOTE THAT CERTAIN ITEMS OF MECHANICAL EQUIPMENT MAY HAVE STARTERS THAT ARE INTEGRALLY MOUNTED BY THE MANUFACTURER ON OR IN THE EQUIPMENT. SUCH EQUIPMENT WILL GENERALLY HAVE A POWER/CONTROL PANEL WHICH SHALL BE FED AND CONNECTED UNDER THIS SECTION OF THE WORK.

PROVIDE A DEMONSTRATION OF THE OPERATION OF ALL ELECTRICAL COMPONENTS UPON REQUEST OF THE OWNER.

ALL WIRING SHALL BE RUN IN CONDUIT.

ELECTRICAL LEGEND

	CONDUIT CONCEALED ABOVE CEILING OR IN WALL WHENEVER POSSIBLE
	CONDUIT CONCEALED IN OR BELOW FLOOR
	INDICATES NUMBER OF CONDUCTORS IN CONDUIT TO BE USED AS A GENERAL GUIDE TO SHOW INTENT OF CIRCUITING AND SWITCHING ARRANGEMENT...NOT SHOWN IN ALL CASES...CONTRACTOR SHALL VERIFY AND INSTALL ADDITIONAL CONDUCTORS WHERE REQUIRED.
G-1	HOME-RUN TO PANELBOARD SHOWING CIRCUIT DESIGNATION, INDICATING PANEL AND CIRCUIT BREAKER NUMBER WITHIN THE PANEL...BREAKER LOCATIONS MAY BE REARRANGED TO PERMIT THE USE OF A COMMON NEUTRAL CONDUCTOR.
	EACH ARROW INDICATES ONE COMPLETE CIRCUIT
	ELECTRIC MOTOR CONNECTION
	ELECTRICAL CONNECTION REQUIRED
	CONDUIT RISE
	CONDUIT DROP
52"	MOUNTING HEIGHT DESIGNATION IN INCHES ABOVE FINISHED FLOOR TO CENTERLINE...WHEN INDICATED ON DRAWINGS SUPERSEDES STANDARD MOUNTING HEIGHT IN LEGEND
1 / A-1	REFERENCE TO DETAIL
1	NOTE SYMBOL
	HEAVY-DUTY, NEMA-1, NON-FUSIBLE DISCONNECT SWITCH
	HEAVY-DUTY, NEMA-3R, NON-FUSIBLE DISCONNECT SWITCH
	COMBINATION STARTER/DISCONNECT SWITCH
	ROTARY NON-FUSED DISCONNECT
M	MANUAL STARTER WITH PILOT LIGHT @48"A.F.F.
JB	JUNCTION BOX
G	NEW ELECTRIC PANELBOARD
	NEW SUSPENDED LINEAR LED LIGHT FIXTURE LITHONIA #BLWP4-60L-ADSM-120V-EZ1-LP840, 47W, 6373 LUMEN, 4000K LOW PROFILE LED WRAPAROUND WITH #E10WLCP EM SELF-DIAGNOSTIC BATTERY PACK (48"L X 5.5"W X 3.5"D)
EX	EXIT SIGN; LITHONIA #LHQM-S-W-R-HO RO
	EXISTING TO BE REMOVED (DEMOLITION)
e	EXISTING TO REMAIN
er	EXISTING RELOCATED
1	GENERAL PURPOSE 1-POLE SWITCH @48"A.F.F.
3	GENERAL PURPOSE 3-WAY SWITCH @48"A.F.F.
	20A/125V/1PH/3W, 5-20R, RECEPTACLE @18"A.F.F.
	20A/125V/1PH/3W, NEMA 5-20R, DUPLEX GFCI RECEPTACLE @18"A.F.F.
	DOUBLE DUPLEX "QUAD" CONVENIENCE RECEPTACLES @18"A.F.F.
	FIRE ALARM AUDIO-VISUAL "HORN-STROBE" SIGNAL @80"A.F.F.
	FIRE ALARM VISUAL SIGNAL "STROBE" @80"A.F.F.
	FIRE ALARM MANUAL PULL STATION @48"A.F.F.
H	CEILING MOUNED FIXED TEMPERATURE RATE OF RISE HEAT DETECTOR

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	GRC	GALVANIZED RIGID CONDUIT
BKR	BREAKER	GFI	GROUND FAULT CIRCUIT PROTECTOR
C	CONDUIT	HP	HORSEPOWER
CIR	CIRCUIT	JB	JUNCTION BOX
e	EXISTING	KVA	KILOVOLT AMPERES
EC	ELECTRICAL CONTRACTOR	KW	KILOWATT
EM	EMERGENCY	MLO	MAIN LUGS ONLY
EMT	ELECTRICAL METALLIC CONDUIT	NEC	NATIONAL ELECTRIC CODE
er	EXISTING RELOCATED	NF	NON-FUSED
F	FLUSH	TC	TEMPERATURE CONTROL
FU	FUSE	TYP	TYPICAL
G	GROUND	WC	WATER COOLER
		WP	WEATHERPROOF

SHEET INDEX

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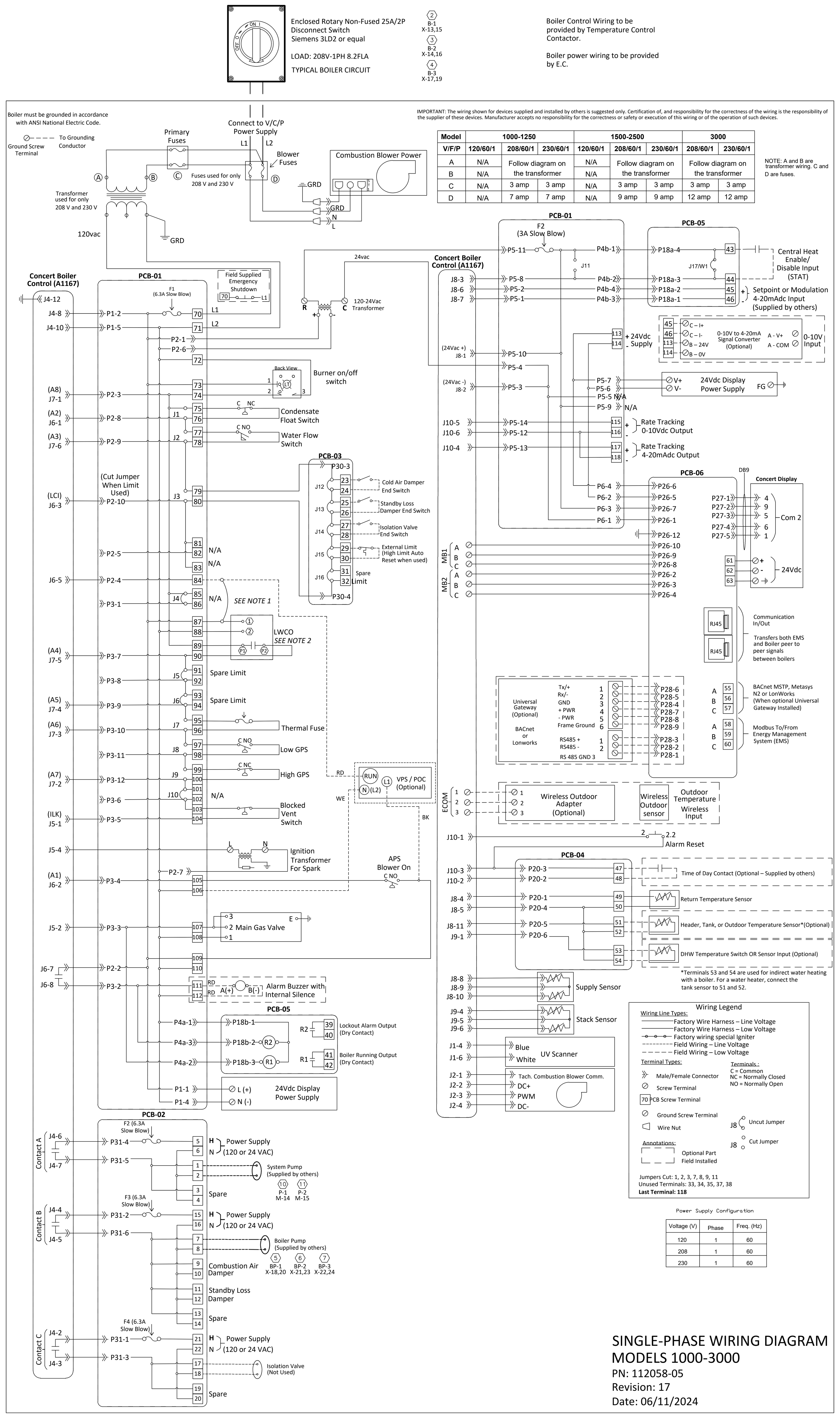
Mechanical System Upgrades at:
Wentworth Hi-Rise
OH5-14
2765 Wentworth Avenue
Dayton, Ohio 45406
Greater Dayton Premier Management

Project Number	2025-143/6854
Date	January 23, 2026

Date	Issue
01.23.26	Bid / Constr.

Sheet Title
Legend, Details, General Notes

Sheet Number
E0.1

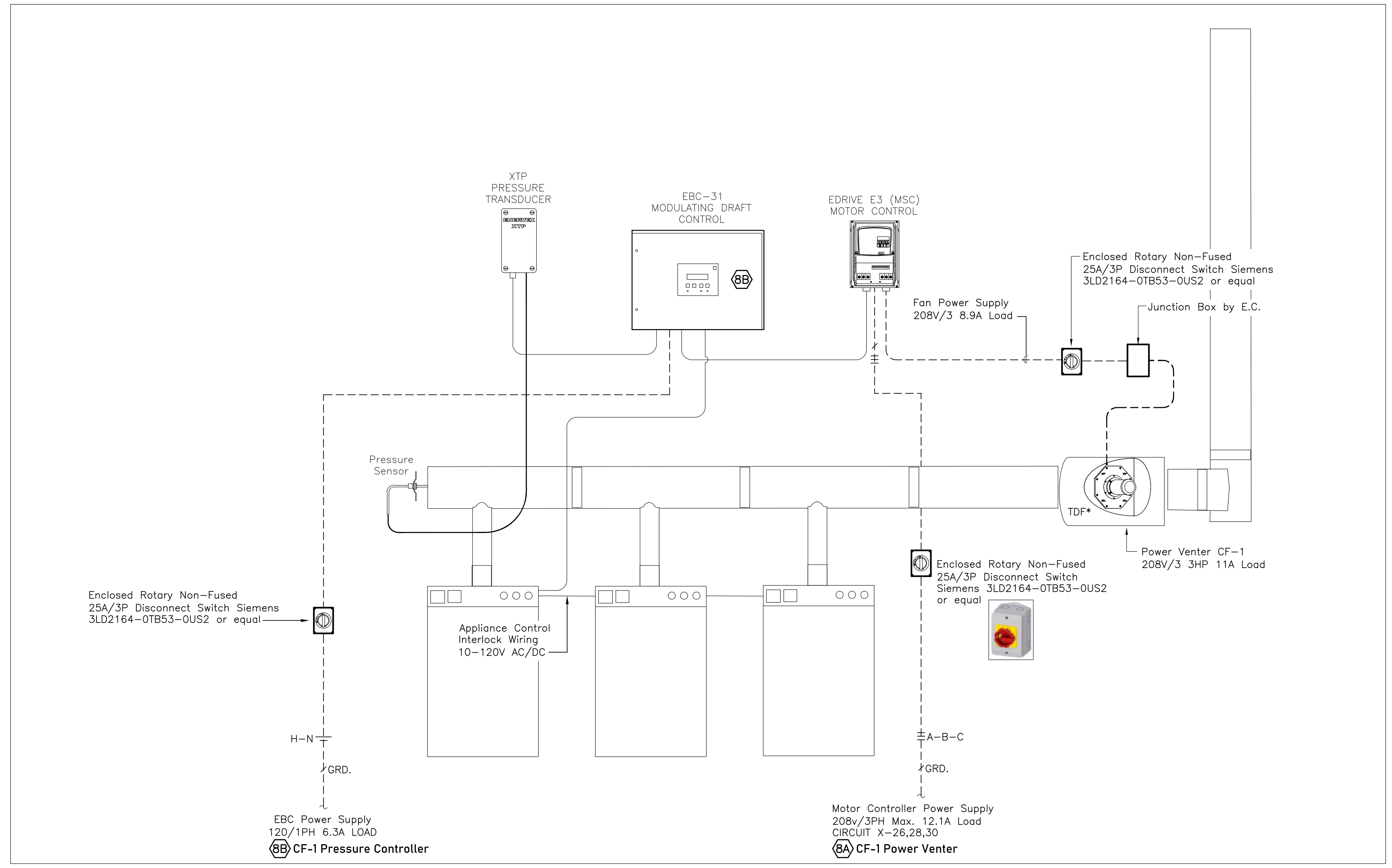


Model	1000-1250			1500-2500			3000	
V/F/P	120/60/1	208/60/1	230/60/1	120/60/1	208/60/1	230/60/1	208/60/1	230/60/1
A	N/A	Follow diagram on the transformer		N/A	Follow diagram on the transformer		Follow diagram on the transformer	
B	N/A			N/A				
C	N/A	3 amp	3 amp	N/A	3 amp	3 amp	3 amp	3 amp
D	N/A	7 amp	7 amp	N/A	9 amp	9 amp	12 amp	12 amp

Power Supply Configuration

Voltage (V)	Phase	Freq. (Hz)
120	1	60
208	1	60
230	1	60

1 / E0-2 **BOILER WIRING DIAGRAM**
SCALE: 3/4"= 1'-0"



2 / E0-2 **INLINE CHIMNEY WIRING DIAGRAM**
SCALE: 3/4"= 1'-0"

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Sheet Title
Wiring Diagrams

Sheet Number
E0.2

EXISTING PANELBOARD X SCHEDULE

TYPE	MAIN BREAKER: NO	200 AMPS; 22,000AIC	MOUNTING: SURFACE
	MAIN LUGS ONLY: YES	208 VOLTS, 3-PHASE, 4-WIRE	LOCATION: BOILER ROOM
F.P.E.	SOLID NEUTRAL: NO		FED FROM: SWITCHBOARD M1-5 (100A FUSE)
NLAB	GROUND BUS: YES		FEEDER: 4#3THHN,#8GRD.,1-1/4"C.

CKT. No.	BKR	LOAD	WIRE	KVA	LINE 1	LINE 2	LINE 3	KVA	WIRE	LOAD	BKR	CKT. No.
1	20/1	EXITS		0.00	●			0.00			60/2	2
3	20/1	EXITS		0.00		●		0.00				4
5	20/1	EXITS		0.00			●	0.00		EXITS	20/1	6
7	20/1	EXITS		0.00	●			0.00			20/1	8
9	20/1			0.00		●		0.00			20/1	10
11	20/1	RESTROOM & STAIR LIGHTS		0.00			●	0.00			20/1	12
13				0.00	●			0.00				14
15	20/3	DOMESTIC HOT WATER PUMP #1		0.00		●		0.00		BOILER #2	20/3	16
17				0.00			●	0.00				18
19				0.00	●			0.00				20
21	20/3	BOILER #1		0.00		●		0.00		DOMESTIC HOT WATER PUMP #2	20/3	22
23				0.00			●	0.00				24

NEW PANELBOARD X SCHEDULE

TYPE	MAIN BREAKER: NO	125 AMPS; 22,000AIC	MOUNTING: SURFACE
	MAIN LUGS ONLY: 125A	208 VOLTS, 3-PHASE, 4-WIRE	LOCATION: BOILER ROOM
SQUARE-D	SOLID NEUTRAL: YES		FED FROM: SWITCHBOARD M1-5 (100A FUSE)
NQOD	GROUND BUS: YES		FEEDER: 4#3THHN,#8GRD.,1-1/4"C.

CKT. No.	BKR	LOAD	WIRE	KVA	LINE 1	LINE 2	LINE 3	KVA	WIRE	LOAD	BKR	CKT. No.
1	20/1	EXITS	EXTG	0.75	●			3.12	EXTG	FIELD VERIFY	60/2	2
3	20/1	EXITS	EXTG	0.75		●		3.12	EXTG			4
5	20/1	EXITS	EXTG	0.75			●	0.75	EXTG	FIELD VERIFY	20/1	6
7	20/1	EXITS	EXTG	0.75	●			0.75	EXTG	FIELD VERIFY	20/1	8
9	20/1	FIELD VERIFY	EXTG	0.75		●		0.75	EXTG	FIELD VERIFY	20/1	10
11	20/1	RESTROOM & STAIR LIGHTS	EXTG	0.75			●	0.75	EXTG	FIELD VERIFY	20/1	12
13	20/2	NEW BOILER #1 (2)	12	0.85	●			0.85	12	NEW BOILER #2 (3)	20/2	14
15			12	0.85		●		0.85	12			16
17	20/2	NEW BOILER #3 (4)	12	0.85			●	0.76	12	NEW BOILER CIRC. PUMP BP-1 (6)	20/2	18
19			12	0.85	●			0.76	12			20
21	20/2	NEW BOILER CIRC PUMP BP-2 (5)	12	0.76		●		0.76	12	NEW BOILER CIRC BP-3 PUMP (7)	20/2	22
23			12	0.76			●	0.76	12			24
25			12	0.83	●			1.07	12			26
27	15/3	NEW CENTRIFUGAL PUMP P-4 (13)	12	0.83		●		1.07	12	NEW POWER VENTER CF-1 (8A)	15/3	28
29			12	0.83			●	1.07	12			30
31	15/1	NEW PRESSURE CONTROLLER (8B)	12	0.07	●			0.31	12	NEW MUA-1 CONTROLS (9B)	15/1	32
33	20/1	NEW CIRCULATOR PUMP P-3 (12)	12	0.19		●		0.08	12	GLYCOL FEED SYSTEM	20/1	34
35	15/1	NEW INLINE FAN SF-1 (14)	12	0.53			●	0.36	12	RCPTS. AT CHILLER & MTS	20/1	36
37	15/1	NEW INLINE FAN SF-2 (15)	12	0.53	●			0.36	12	TEMP. CONTROL PANEL RCPT.	20/1	38
39	15/1	NEW INLINE FAN SF-3 (16)	12	0.53		●				SPARE	20/1	40
41	20/1	SPARE					●			SPARE	20/1	42

REDUNDANT LOAD

EXISTING LOAD

PHASE A	11.86		32.941	Amps
PHASE B	11.30		31.384	Amps
PHASE C	8.92		24.78	Amps
TOTAL	32.08	Kva		
	89.10	Amps	89.105	Amps

TRACE OUT CIRCUITS LABELED "FIELD VERIFY" AND ADD DESIGNATION TO PANEL INDEX CARD.

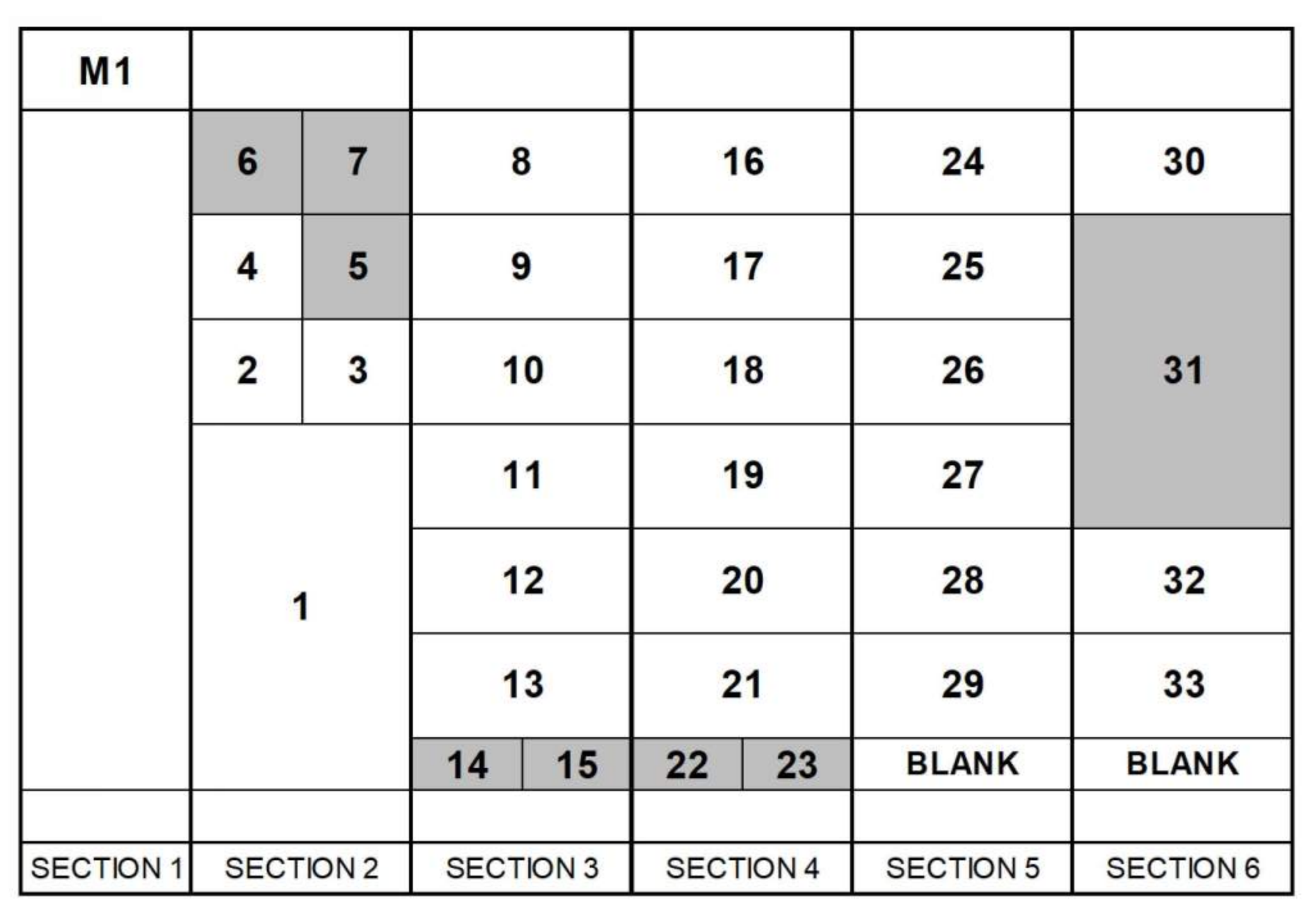
PANEL KP1	TCL	DEM	
LIGHTING	7.50	7.50	
RECEPTACLES	1.19	1.19	
MOTORS	17.15	15.44	
HEATING APPLIANCES	6.24	6.24	
WATER HEATERS	0.00	0.00	
AIR CONDITIONING	0.00	0.00	
	32.08	30.37	Kva
	89.10	84.37	Amps

EXISTING SWITCHBOARD M1 SCHEDULE

MAIN BOLTED PRESSURE SWITCH
F.P.E. QMB
SOLID NEUTRAL
GROUND BUS
FREESTANDING 24" DEEP
LOCATION: BOILER ROOM
FEEDER:
2000 AMP BUSSING; 22,000AIC
208 VOLTS, 3-PHASE, 4-WIRE

CKT. No.	SW.	LOAD	WIRE	KVA	LINE A	LINE B	LINE C
SECTION 1							
N/A		INCOMING LUGS					
SECTION 2							
1	2000/3	MAIN SWITCH		0.00			
2	100/3	M4 (SPARE) ON		0.00			
3	100/3	ELEVATOR 1		0.00			
4	100/3	ELEVATOR 2		0.00			
5	100/3	PANEL X (REUSE FOR NEW PANEL X)		0.00			
6	60/3	CHW PUMP 2 (MAKE SPARE)		0.00			
7	60/3	CHW PUMP 1 (MAKE SPARE)		0.00			
SECTION 3							
8	200/3	APT. PANEL 9		0.00			
9	200/3	APT. PANEL 10		0.00			
10	200/3	APT. PANEL 11		0.00			
11	200/3	APT. PANEL 12		0.00			
12	200/3	APT. PANEL 13		0.00			
13	200/3	AH UNITS		0.00			
14	60/3	H.W. PUMP P-1 (VERIFY)		0.00			
15	60/3	H.W. PUMP P-2 (VERIFY)		0.00			
SECTION 4							
16	200/3	APT. PANEL 17		0.00			
17	200/3	APT. PANEL 18		0.00			
18	200/3	APT. PANEL 19		0.00			
19	200/3	APT. PANEL 20		0.00			
20	200/3	APT. PANEL 21		0.00			
21	200/3	APT. PANEL 24		0.00			
22	60/3	MUA UNIT (USE FOR NEW MUA)		0.00			
23	60/3	FIELD VERIFY LOAD		0.00			
SECTION 5							
24	200/3	APT. PANEL 25		0.00			
25	200/3	APT. PANEL 26		0.00			
26	200/3	APT. PANEL 27		0.00			
27	200/3	APT. PANEL 29		0.00			
28	200/3	APT. PANEL 29		0.00			
29	200/3	APT. PANEL 30		0.00			
SECTION 6							
30	200/3	APT. PANEL 31		0.00			
31	1200/3	CHILLER (REUSE FOR NEW CHILLER		0.00			
32	200/3	FIRE PUMP		0.00			
33	200/3	ELEVATOR 1		0.00			

AFFECTED LOAD



SWITCHBOARD M1 FRONT ELEVATION

HIGHEST DEMAND LAST 12 MONTHS WAS IN JULY 2025 AT 278kVA (APPX. 858 AMPS)

MOTOR & EQUIPMENT SCHEDULE

MARK	ABBREV.	EQUIPMENT SERVED	HP/KW/FLA	MCA	MOCP	VOLTAGE: 120V-1PH	208V-1PH	208V-3PH			DISCONNECT: FURNISHED WITH FUSED SAFETY SWITCH	FURNISHED WITH NON-FUSED TOGGLE SAFETY SWITCH	E.C. PROVIDED NEMA-3R NON-FUSED SAFETY SWITCH	E.C. PROVIDED NON-FUSED ROTARY SAFETY SWITCH	FURNISHED WITH CIRCUIT BREAKER DISCONNECT	E.C. PROVIDED 20A-120V DUPLEX CONVENIENCE RCPT.	E.C. PROVIDED FRACTIONAL HP MANUAL STARTER	STARTER: FURNISHED WITH UNIT	FURNISHED WITH VFD; INSTALLED BY E.C.	E.C. PROVIDED FRACTIONAL HP MANUAL STARTER	E.C. PROVIDED COMBINATION MAGNETIC STARTER					SEE NOTE
1	ACC-1	AIR COOLED CONDENSING UNIT	876.4A	937.0	1000/3			●							●			●							3 SETS OF 3#400mcm, #2GRD., 3"C.	
2	B-1	BOILER 1	8.2A	10.3	20/2		●							●				●							2#12,#12GRD.,3/4"C.	
3	B-2	BOILER 2	8.2A	10.3	20/2		●							●				●							2#12,#12GRD.,3/4"C.	
4	B-3	BOILER 3	8.2A	10.3	20/2		●							●				●							2#12,#12GRD.,3/4"C.	
5	BP-1	BOILER CIRCULATOR PUMP	1523W-7.32A	9.2	20/2		●							●				●							2#12,#12GRD.,3/4"C.	
6	BP-2	BOILER CIRCULATOR PUMP	1523W-7.32A	9.2	20/2		●							●				●							2#12,#12GRD.,3/4"C.	
7	BP-3	BOILER CIRCULATOR PUMP	1523W-7.32A	9.2	20/2		●							●				●							2#12,#12GRD.,3/4"C.	
8A	CF-1	POWER VENTER	3HP-8.9A	11.1	15/3			●						●				●							3#12,#12GRD.,3/4"C.	
8B		PRESSURE CONTROLLER	1.6A	2.0	15/1	●								●				●							2#12,#12GRD.,3/4"C.	
9A	MUA-1	MAKEUP AIR UNIT SUPPLY FAN MOTORS	23.3A	29.1	50/3			●					●					●							3#10,#10GRD.,3/4"C.	
9B		CONTROLS	2.61A	3.3	15/1	●							●					●							2#12,#12GRD.,3/4"C.	
10	P-1	H.W. CIRCULATING PUMP	7.5HP-25.3A	31.6	50/3			●										●							3#10,#10GRD.,3/4"C.	
11	P-2	H.W. CIRCULATING PUMP	7.5HP-25.3A	31.6	50/3			●										●							3#10,#10GRD.,3/4"C.	
12	P-3	CIRCULATOR PUMP	125W-1.1A	1.4	20/1	●											●			●					2#12,#12GRD.,3/4"C.	
13	P-4	IN-LINE CENTRIFUGAL PUMP	1.5HP-6.9A	8.6	15/3			●						●											3#12,#12GRD.,3/4"C.	
14	SF-1	INLINE FAN	1/6HP-3.15A	4.0	15/1	●						●								●					2#12,#12GRD.,3/4"C.	
15	SF-2	INLINE FAN	1/6HP-3.15A	4.0	15/1	●						●								●					2#12,#12GRD.,3/4"C.	
16	SF-3	INLINE FAN	1/6HP-3.15A	4.0	15/1	●						●								●					2#12,#12GRD.,3/4"C.	
17	GF-1	CHW SYSTEM GLYCOL FEED	0.7A	0.9	20/1	●										●		●							2#12,#12GRD.,3/4"C.	

EXISTING PANELBOARD G SCHEDULE

TYPE	MAIN BREAKER: NO	225 AMPS; 22,000AIC	MOUNTING: SURFACE
	MAIN LUGS ONLY: YES	208 VOLTS, 3-PHASE, 4-WIRE	LOCATION: BOILER ROOM
SQUARE-D	SOLID NEUTRAL: NO		FED FROM: EXISTING 100A DISCONNECT
NQ	GROUND BUS: YES		FEEDER: 3#2THHN,#8GRD.,1-1/4"C.

CKT. No.	BKR	LOAD	WIRE	KVA	LINE 1	LINE 2	LINE 3	KVA	WIRE	LOAD	BKR	CKT. No.
1	20/1	MAIN 47		0.00			●	0.00		P2 CKT. 11, P1 CKT. 11, P4, P3 CKT. 45	20/1	2
3	20/1	P5 CKT. 51		0.00	●			0.00		P10,P9 CKT. 49, P8 CKT. 51	20/1	4
5	20/1	P12, P13 CKT. 50, P11 CKT. 52		0.00		●		0.00		P15,P16 CKT. 54, P14 CKT. 52	20/1	6
7	20/1	COMMUNITY ROOM		0.00			●	0.00			20/1	8
9	20/1			0.00	●			0.00		TRASH	20/1	10
11	20/1	FAPS 15 & 16 6TH FL.		0.00		●		0.00			20/1	12
13	20/1			0.00			●	0.00			20/1	14
15	20/1			0.00	●			0.00			20/1	16
17	20/1			0.00		●		0.00			20/1	18
19	20/1			0.00			●	0.00		PUMP	20/1	20
21	20/1			0.00	●			0.00			20/1	22
23	20/1			0.00		●		0.00			20/1	24
25	20/1			0.00			●	0.00			20/1	26
27	20/1	FAP POWER SUPPLIES		0.00	●			0.00			20/1	28
29	20/1	FIRE ALARM (FAP)		0.00		●		0.00			20/1	30
31	20/2			0.00			●	0.00			20/2	32
33				0.00	●			0.00				34
35	20/2			0.00		●		0.00			20/2	36
37				0.00			●	0.00				38
39	20/2			0.00	●			0.00			20/1	40
41				0.00		●		0.00	10	CHILLER CONTROLS	20/1	42
43	20/1	SPACE		0.00			●	0.00				44
45	20/1	FAPS 14 & 11 5TH & 6TH FLOOR		0.00	●			0.00			100/3	46
47	20/1	FAPS 12 & 13 5TH FLOOR		0.00		●		0.00				48
49	20/2	FAPS 9 & 10 4TH FLOOR		0.00			●	0.00		FA MAIN PANEL 1ST FLOOR	20/1	50
51	20/1	FAPS 5 & 8 4TH & 5TH FLOOR		0.00	●			0.00		FAPS 3 & 4 2ND FLOOR	20/1	52
53	20/1	FAPS 6 & 7 3RD FLOOR		0.00		●		0.00		FAPS 1 & 2 2ND FLOOR	20/1	54

AFFECTED LOAD

PHASE A	0.00	
PHASE B	0.00	
PHASE C	0.00	
TOTAL	0.00	Kva
	0.00	Amps

EXISTING PANEL INDEX CARD FOUND DURING FIELD SURVEY WAS NOT UP TO DATE DUE TO ONGOING FIRE ALARM SYSTEM UPGRADE WORK. PHOTOS WERE PROVIDED SHOWING BRANCH CIRCUIT WIRING AND ALL POLES ARE USED EXCEPT 27 AND 29.

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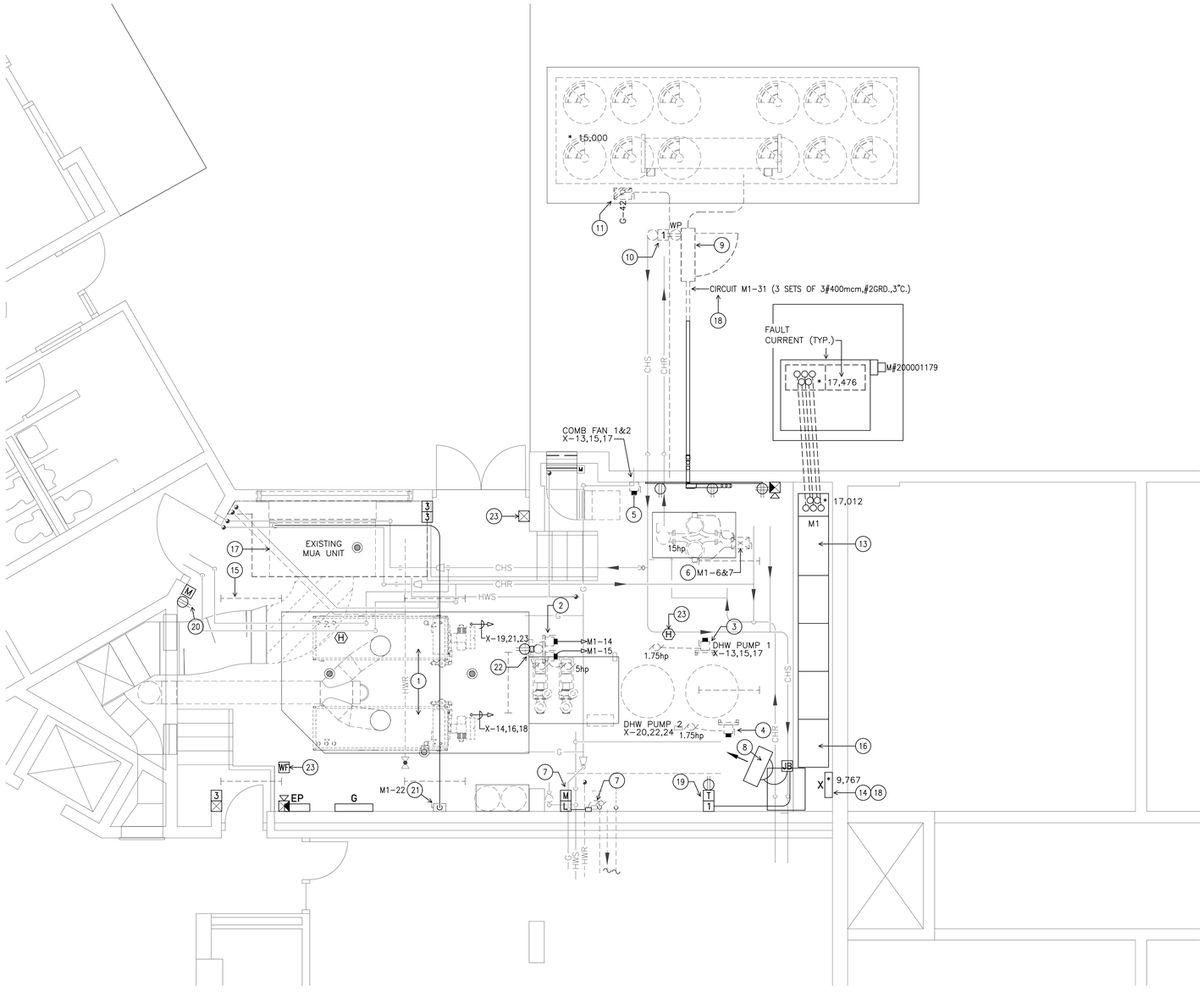
Sheet Title
Panelboard Schedules

Sheet Number
E0.3



DEMOLITION

PARTIAL FIRST FLOOR PLAN

SCALE: 1/4"= 1'-0"

1 DEMOLITION NOTES

IN ADDITION TO WORK SHOWN ELSEWHERE ON THE DRAWINGS, AND IN THE SPECIFICATIONS, THE FOLLOWING CLARIFICATIONS ARE OFFERED:

1 EXISTING BOILER #1 AND #2 BRANCH CIRCUIT DROPS SHALL BE DISCONNECTED AND REWORKED FOR NEW BOILERS.

2 EXISTING H.W. HEATING PUMP 1 & 2 BRANCH CIRCUIT DROPS, AND EXISTING COMBINATION MOTOR STARTERS, SHALL BE DISCONNECTED AND REMOVED.

3 EXISTING DOMESTIC H.W. PUMP #1, AND, EXISTING COMBINATION MOTOR STARTER SHALL BE DISCONNECTED AND REMOVED. VERIFY BRANCH CIRCUIT SOURCE AND ORIGIN.

4 EXISTING DOMESTIC H.W. PUMP #2 CONNECTION, AND, EXISTING COMBINATION MOTOR STARTER SHALL BE DISCONNECTED AND REMOVED.

5 EXISTING COMBUSTION FAN #1 AND #2 BRANCH CIRCUIT DROPS, AND, EXISTING COMBINATION MOTOR STARTERS, SHALL BE DISCONNECTED AND REMOVED.

6 EXISTING 15HP CHILLED WATER PUMP #1 AND #2 BRANCH CIRCUIT DROPS, AND, EXISTING COMBINATION MOTOR STARTERS, SHALL BE DISCONNECTED AND REMOVED.

7 DISCONNECT EXISTING DOMESTIC H.W. RETURN PUMP BRANCH CIRCUIT DROP FOR PUMP REPLACEMENT. PROVIDE A NEW MANUAL MOTOR STARTER DISCONNECT AND REUSE EXISTING BRANCH CIRCUIT FOR POWER.

8 EXISTING UNIT HEATER BRANCH CIRCUIT DROP SHALL REMAIN.

9 DISCONNECT AND REMOVE EXISTING AIR COOLED CHILLER SERVICE DISCONNECT SWITCH AND REUSE 120V BRANCH CIRCUIT FOR NEW CHILLER MANUAL TRANSFER SWITCH (MTS) RECEPTACLE.

10 DISCONNECT AND REMOVE EXISTING GLOBE AND GUARD WORK LIGHT, WP SWITCH, WP GFCI RECEPTACLE. REUSE BRANCH CIRCUIT TO FEED NEW LIGHT AND RECEPTACLE.

11 REMOVE EXISTING CHILLER CONTROL POWER SERVICE DISCONNECT AND BRANCH CIRCUIT.

12 EXISTING AES PAD MOUNTED TRANSFORMER AND METER.

13 EXISTING 2000 AMP, 120/208V-3Φ-4W, SWITCHBOARD M1.

14 EXISTING 200 AMP, 120/208V-3Φ-4W FEDERAL PACIFIC (F.P.E.) PANELBOARD SHALL BE REPLACED WITH NEW 42-CIRCUIT, 125 AMP, SQUARE-D PANELBOARD.

15 TYPICAL...REPLACE EXISTING LIGHT FIXTURES WITH LITHONIA #BLWP4-60L-ADSM-120V-EZ1-LP840, 47W, 6373 LUMEN, 4000K LOW PROFILE LED WRAPAROUND WITH #E10WLCP EM SELF-DIAGNOSTIC BATTERY PACK (48"L X 5.5"W X 3.5"D). COORDINATE NEW FIXTURE LOCATIONS WITH NEW PIPING AND EQUIPMENT.

16 EXISTING 1200 AMP SWITCH SERVING EXISTING CHILLER TO REMAIN. PROVIDE A NEW SET OF 1000 AMP KRPC FUSES.

17 DISCONNECT EXISTING MAKEUP AIR UNIT BRANCH CIRCUIT AND REMOVE ASSOCIATED CONDUIT AND WIRING AS REQUIRED.

18 TEST EXISTING FEEDER CABLES FOR INSULATION INTEGRITY.REFER TO SPECS "TESTING, LOAD BALANCE AND ADJUSTMENT".

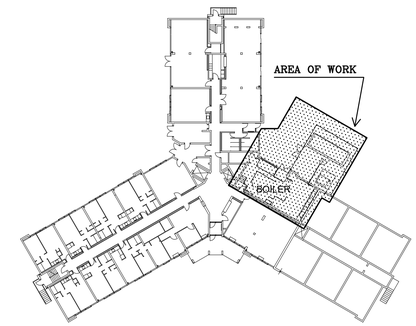
19 EXISTING THERMOSTAT AND MANUAL STARTER, SERVING UNIT HEATER, TO REMAIN.

20 EXISTING SUMP PUMP CONTROL PANEL TO REMAIN.

21 EXISTING MUA DISCONNECT SWITCH. REMOVE AND REWORK BRANCH CIRCUIT TO SERVE NEW OUTDOOR UNIT LOCATION.

22 EXISTING TEMPERATURE CONTROL PANEL TO BE REMOVED BY TEMPERATURE CONTROL CONTRACTOR. REMOVE ANY 120V POWER CONNECTIONS, CONDUIT AND WIRING.

23 TYPICAL...EXISTING FIRE ALARM DEVICES HAVE BEEN RECENTLY REPLACED AND SHALL REMAIN.



KEY PLAN

NO SCALE

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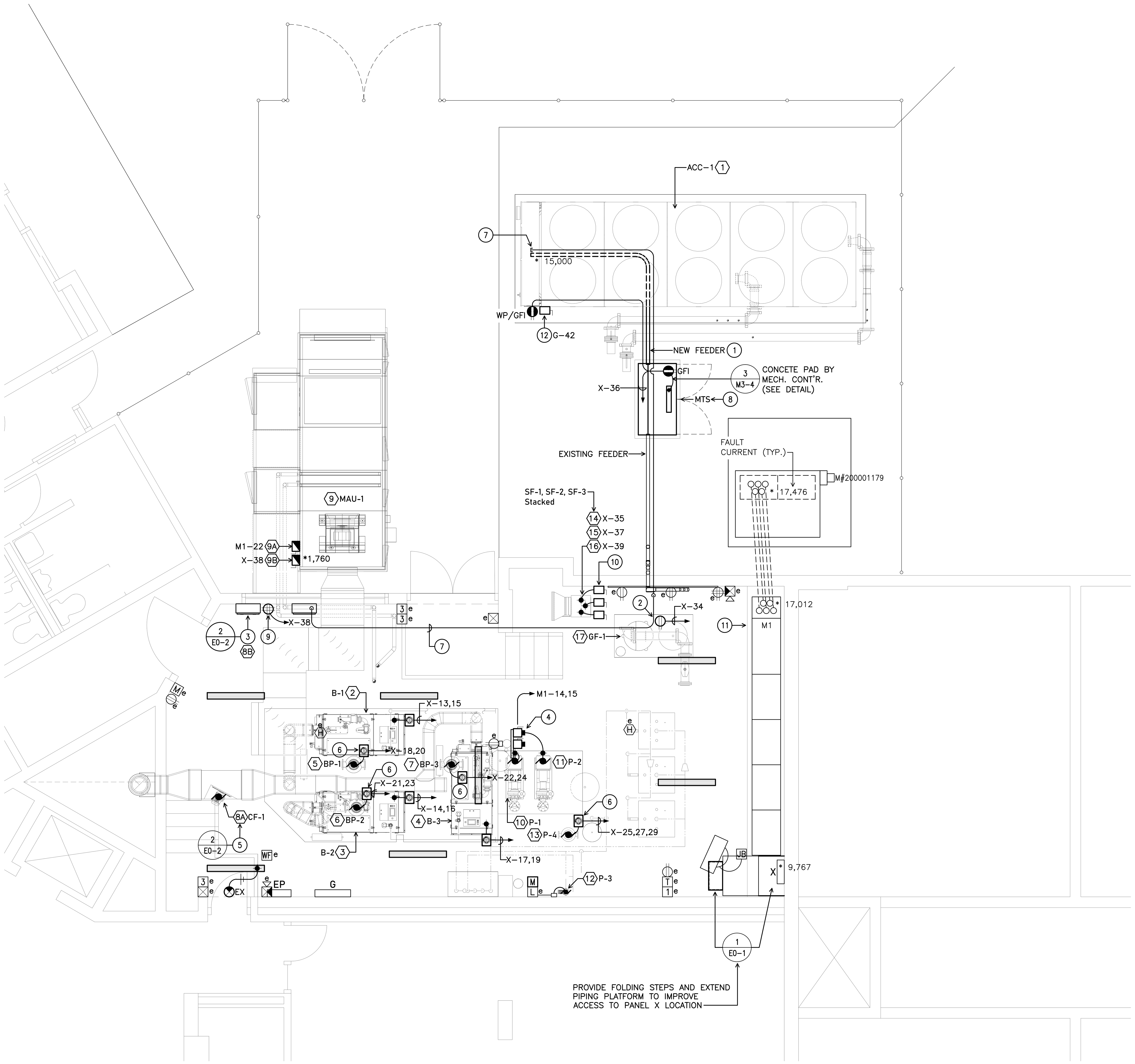
Sheet Title
Partial First Floor Plan
Demolition

Sheet Number
E1.1



REVISED

PARTIAL FIRST FLOOR PLAN

SCALE: 1/4"= 1'-0"

① REVISED PLAN NOTES

1 EXTEND FEEDER CIRCUIT M1-31 (3 SETS OF 3#400mcm, #2GRD., 3"C.) FROM NEW MANUAL TRANSFER SWITCH TO NEW CHILLER LINE TERMINALS AND CONNECT. COORDINATE ROUTING WITH HVAC CONTRACTOR.

2 PROVIDE 20A-120V DUPLEX CONVENIENCE RECEPTACLE, AND BRANCH CIRCUIT, TO SERVE NEW GLYCOL FEED SYSTEM. PROVIDE UNISTRUT SUPPORT AS REQUIRED.

3 BOILER POWER VENT SYSTEM MODULATING DRAFT CONTROL PANEL. REFER TO DETAIL 2/E0-2 FOR BRANCH CIRCUIT REQUIREMENTS.

4 MOUNT NEW H.W. PUMPS P-1 AND P-2 COMBINATION STARTERS ON EXISTING UNISTRUT SUPPORTS.

5 PROVIDE BRANCH CIRCUIT AND SAFETY SWITCH FOR INLINE POWER VENTER. REFER TO DETAIL 1/E0-2 FOR ADDITIONAL BRANCH CIRCUIT REQUIREMENTS.

6 PROVIDE ROTARY NON-FUSED DISCONNECT CLOSE TO PUMP FOR SERVICE.

7 PROVIDE 1" CONDUIT (WITH PULL CORD), FOR TEMPERATURE CONTROL CONTRACTOR'S USE, BETWEEN CHILLER CONTROL SECTION AND TEMPERATURE CONTROL PANEL.

8 CHILLER MANUAL TRANSFER SWITCH (MTS) (SEE DETAIL 1/E2-1). PROVIDE LAKE SHORE ELECTRIC QUICK CONNECT WITH MANUAL TRANSFER SWITCH QCM31200BS3AM-N0220; 1200A, 208V,50kAIC @ 208V, NEMA-3R FREESTANDING, ANSI 61 GRAY POWDER COAT, 400A MALE CAMLOCKS TEMPORARY ALTERNATE SOURCE RECEPTACLES, NEMA 5-20R RECEPTACLE.

CONTACT: Seth Smith Phone: (440) 232-0200 Email: ssmith@lake-shore-electric.com

PROVIDE BANNER #WLB32-Z-X-570-PB-AC-LMBWLB32MAG INDUSTRIAL MLIGHT STRIP WITH PLUG AND CORD. POSITION LIGHT FIXTURE FOR BEST ILLUMINATION. PLUG CORD INTO RECEPTACLE AND SECURE CORD SO IT DOES NOT INTERFERE WITH MECHANISMS.

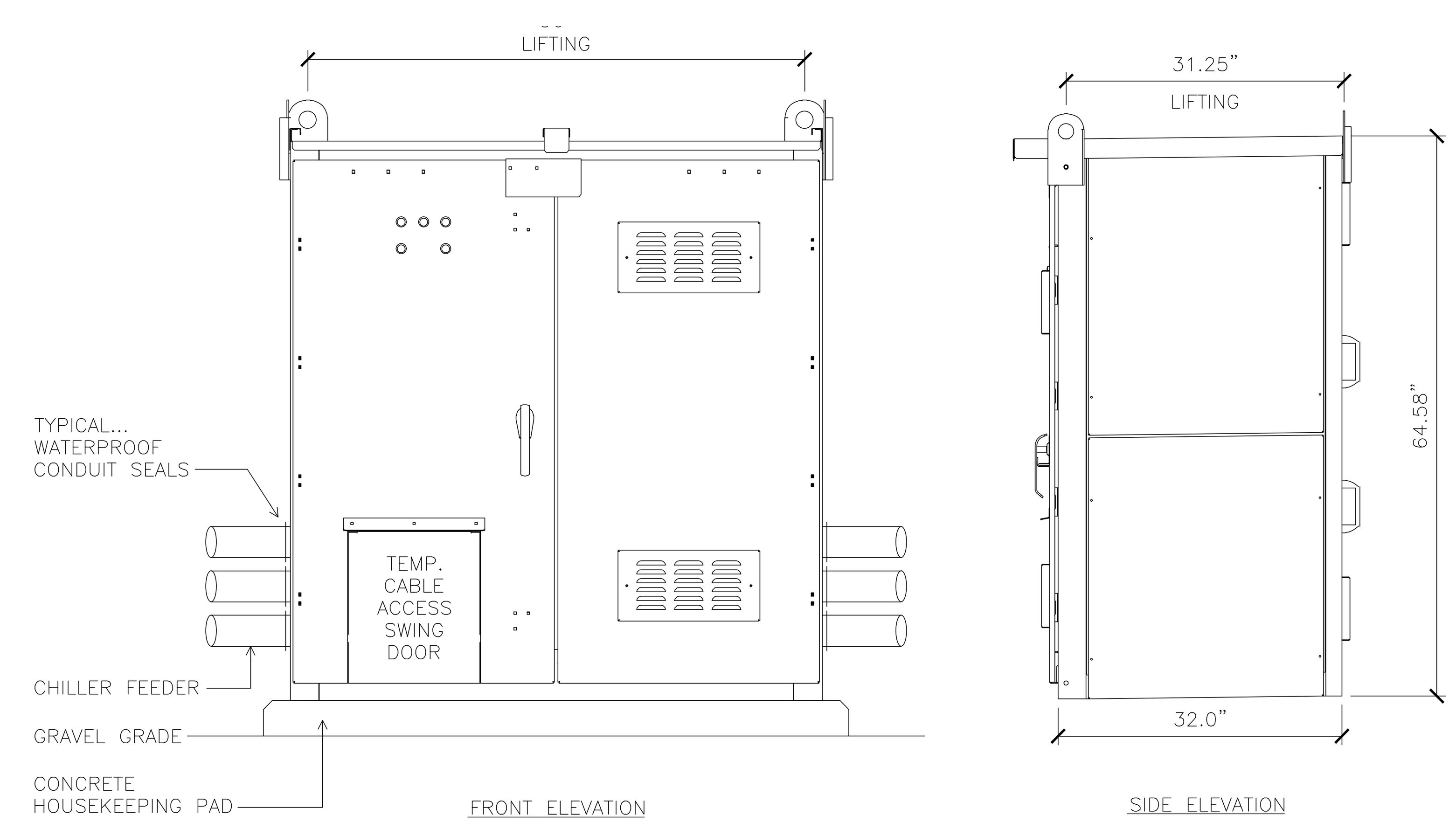
POURED REINFORCED CONCRETE PAD BY MECH. CONT'R.; 60" WIDE x 32" DEEP 4" ABOVE GRADE TO TOP SURFACE

9 CORDINATE LOCATION WITH TEMPERATURE CONTROLS CONTRACTOR.

10 MOUNT AND WIRE TOGGLE DISCONNECT SWITCHES PROVIDED WITH FANS.

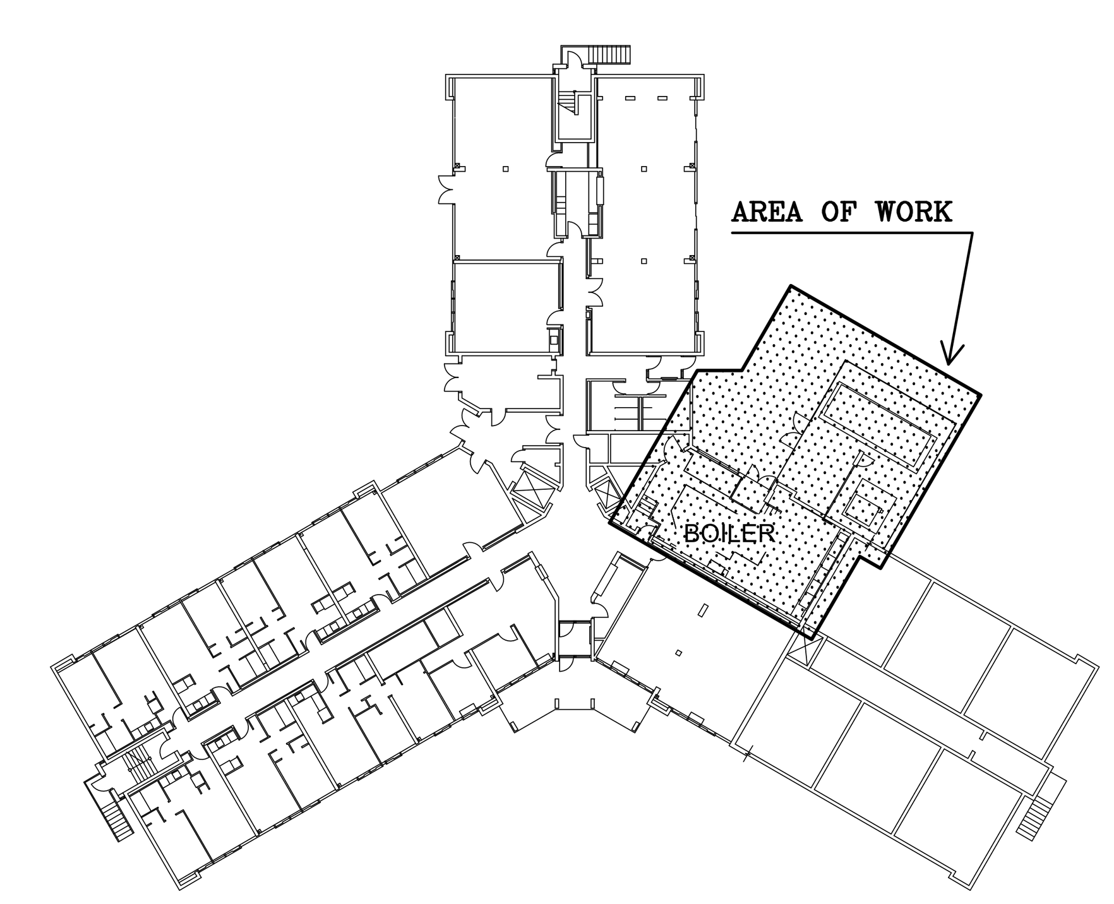
11 CONTRACT THE SERVICES OF HIGH VOLTAGE MAINTENANCE (HVM) AT (937) 278-0811 (ASK FOR JIM) TO PM THE EXISTING SWITCHBOARD. WORK SHALL INCLUDE CLEANING, MEGGAR TESTING INSULATION, DUCTOR TEST MAIN BOLTED PRESSURE SWITCH, INFRARED TEST BRANCH SWITCHES, AND INFRARED CABLE CONNECTIONS.

12 PROVIDE A 15A 120V BRANCH CIRCUIT FOR CHILLER FREEZE PROTECTION HEATERS. PROVIDE A NEMA-3R FUSED DISCONNECT AT CHILLER FOR SERVICING AND OVERCURRENT PROTECTION. REUSE EXISTING BRANCH CIRCUIT G-42 WHICH SERVES EXISTING CHILLER.



1/E2-1 MANUAL TRANSFER SWITCH (MTS)

SCALE: 3/4"= 1'-0"



KEY PLAN

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Partial First Floor Plan Revised

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E2.1