ABBREVIATIONS

A	ALARM, COMPRESSED AIR OUTLET	CH	CONVECTION HEATER	EVS	EMERGENCY VENTILATION SWITCH	HR	HEAT RECOVERY UNIT, HOUR,	OCSD	ODOR CONTROL SHUTOFF DAMPER	SRP	SCRUBBER RECIRCULATION PUMP
AC	AIR COMPRESSOR	C/L	CENTERLINE	EWC	ELECTRIC WATER COOLER		HOSE REEL	OD	OUTSIDE DIAMETER	SS	STAINLESS STEEL
AD	ACCESS DOOR, AIR DRYER	CO	CLEANOUT	EWH	ELECTRIC WATER HEATER	HUH	HEATING WATER UNIT HEATER	ORD	OVERFLOW ROOF DRAIN	SSK	SERVICE SINK
AF	AIR FLOW, AIRFOIL	CONC	CONCRETE	EWT	ENTERING WATER TEMPERATURE	HUM	HUMIDIFIER	ORP	OXIDATION REDUCTION POTENTIAL	SSP	SUBMERSIBLE SUMP PUMP
AFD	ADJUSTABLE FREQUENCY DRIVE	CONN	CONNECTION	EXIST	EXISTING	HV	HOSE VALVE	P	PNEUMATIC	STD	STANDARD
AFF	ABOVE FINISH FLOOR	CONT	CONTINUATION	F	DEGREES FAHRENHEIT	HWB	HEATING WATER BOILER	PD	PRESSURE DROP (INCHES OF	SV	SERVICE VALVE, SHUTOFF VALVE,
AFM	AIR FLOW MONITOR	CP	CIRCULATING PUMP	FA	FOUL AIR	HWP	HEATING WATER PUMP		WATER FOR AIR, FEET OF WATER		SUPPLY VALVE, SOLENOID VALVE
AHU	AIR HANDLING UNIT	CS	CUP SINK	FBD	FACE AND BYPASS DAMPER	HZ	HERTZ		FOR FLUIDS)	T	THERMOSTAT
ALUM	ALUMINUM	CT	COOLING TOWER	FC	FORWARD CURVE, FAN COIL	I	INTAKE	PAC	PACKAGED AIR CONDITIONING UNIT	TCP	TEMPERATURE CONTROL PANEL
AP	ACCESS PANEL	CU	CONDENSING UNIT	FCO	FLOOR CLEANOUT	ID	INSIDE DIAMETER	PAH	PACKAGED AIR HANDLING UNIT	TCV	TEMPERATURE CONTROL VALVE
APPROX	APPROXIMATE	CV	CHECK VALVE, CONTROL VALVE	FD	FIRE DAMPER, FLOOR DRAIN	IN	INCHES	PDI	PLUMBING AND DRAINAGE INSTITUTE	TD	TRENCH DRAIN
AR	AIR RECEIVER	CWP	CHILLED WATER PUMP	FDB	DEGREES FAHRENHEIT DRY BULB	INV	INVERT	PDS	PRESSURE DIFFERENTIAL SWITCH	TE	TEMPERATURE ELEMENT
AS	AIR SEPARATOR	CWW	CLEAR WATER WASTE	FEF	FUME EXHAUST FAN	JS	JANITOR'S SINK	PF	PROPELLER FAN	TL	TOP LEVEL
ATU	AIR TERMINAL UNIT	D	DIRECT DRIVE, DRAW-THRU	FLEX	FLEXIBLE	KS	KITCHEN SINK	PHP	PACKAGED HEAT PUMP	TP	TRAP PRIMER
AUTO	AUTOMATIC	DB	DRY BULB	FM	FLOW METER	KW	KILOWATT	PL	PLATE	TS	TIP SPEED, TAMPER SWITCH
AVG	AVERAGE	DDC	DIRECT DIGITAL CONTROL	FPM	FEET PER MINUTE	L	LINED DUCT, LOUVER	POS	POSITION	TYP	TYPICAL
AVS	AUTOMATIC VALVE STATION	DEH	DEHUMIDIFIER	FR	FUNNEL RECEPTOR	LAT	LEAVING AIR TEMPERATURE	PPM	PARTS PER MILLION	UR	URINAL
B	BELT DRIVE, BLOW THROUGH	DF	DRINKING FOUNTAIN, DUCT FAN	FRP	FIBERGLASS REINFORCED PLASTIC	LAV	LAVATORY	PROP	PROPELLER	V	VERTICAL
BDD	BACKDRAFT DAMPER	DIA	DIAMETER		PIPE	LBS	POUNDS	PRS	PRESSURE REDUCING STATION	VAC	VACUUM OUTLET
BF	BLIND FLANGE	DM	DUCT MOUNTED	FS	FLOOR SINK, FLOW SWITCH	LD	COMBINATION LOUVER/DAMPER	PRV	POWER ROOF VENTILATOR,	VANE	VANEAXIAL
BFF	BELOW FINISH FLOOR	DN	DOWN	FSD	COMBINATION FIRE/SMOKE DAMPER	LI	LEVEL INDICATOR		PRESSURE REDUCING VALVE	VAV	VARIABLE AIR VOLUME
BF	BACKFLOW PREVENTER	DSN	DOWNSPOUT NOZZLE	FSW	FILTER SURFACE WASH	LS	LABORATORY SINK, LEVEL SWITCH	PS	PRESSURE SWITCH	VB	VACUUM BREAKER
BH	BASEBOARD HEATER	DX	DIRECT EXPANSION	FT	FEET, FIN TUBE HEATER, FLOW	LWT	LEAVING WATER TEMPERATURE	PSI	POUNDS PER SQUARE INCH	VCD	VOLUME CONTROL DAMPER
BI	BACKWARD INCLINED, BUILT-IN	E	TUBE			MAU	MAKEUP AIR UNIT	PSIA	POUNDS PER SQUARE INCH ABSOLUTE	VF	VANEAXIAL FAN
	THERMOSTAT		EXHAUST	FUR	FURNACE	MAX	MAXIMUM	PSIG	POUNDS PER SQUARE INCH GAUGE	VP	VACUUM PUMP
BL	BOTTOM LEVEL	EA	EACH, EXHAUST AIR	FWB	DEGREES FAHRENHEIT WET BULB	MCA	MINIMUM CIRCUIT AMPS	PTAC	PACKAGED TERMINAL AIR	VSP	VERTICAL COLUMN SUMP PUMP
BLDG	BUILDING	EAT	ENTERING AIR TEMPERATURE	G	GAS OUTLET	ME	MIST ELIMINATOR		CONDITIONER	VTR	VENT THRU ROOF
BLR	BLOWER	EC	ECONOMIZER, EVAPORATIVE COOLER	GA	GAUGE	MFR	MANUFACTURER	RA	REACTIVATION AIR, RETURN AIR	W	WIDE FLANGE, WIDTH
BOD	BOTTOM OF DUCT ELEVATION	ECH	ELECTRIC CABINET HEATER	GALV	GALVANIZED	MOCP	MAXIMUM OVERCURRENT PROTECTION	RAC	ROOM AIR CONDITIONER	WB	WET BULB
BOT	BOTTOM	ECP	EQUIPMENT CONTROL PANEL	GD	GARBAGE DISPOSER	MIN	MINIMUM	RCS	REMOTE CONTROL STATION	WBP	WATER BOOSTER PUMP
BTF	BIOTRICKLING FILTER	EDH	ELECTRIC DUCT HEATER	GIH	GAS INFRARED HEATER	MOD	MODULATING	RD	ROOF DRAIN	WC	WATER CHILLER, WATER CLOSET
BTUH	BRITISH THERMAL UNITS PER HOUR	EEW	EMERGENCY EYE WASH	GPM	GALLONS PER MINUTE	MS	MOP SINK	REQD	REQUIRED		WATER COLUMN
BU	BELL-UP	EF	EXHAUST FAN	GUH	GAS UNIT HEATER	NC	NORMALLY CLOSED	RH	RELATIVE HUMIDITY, ROOF HOOD	WCO	WALL CLEANOUT
BV	BALL VALVE	EFF	EFFICIENCY	GV	GATE VALVE	NO	NORMALLY OPEN, NUMBER	RSF	ROOF SUPPLY FAN	WF	WALL FAN
C	CHANNEL, CONVECTOR, COOLING,	EGS	EMERGENCY GAS SCRUBBER	GW	GLASS WASHER	NPSHR	NET POSITIVE SUCTION HEAD	SA	SUPPLY AIR	WG	WATER GAUGE
	COOLING (MAKE ON RISE)	EIH	ELECTRIC INFRARED HEATER	GWH	GAS WATER HEATER		REQUIRED	SCD	SMOKE CONTROL DAMPER	WH	WALL HEATER, WALL HYDRANT
CAU	CARBON ADSORPTION UNIT	EL	ELEVATION	H	HAND OPERATOR, HEATING,	NT	NEUTRALIZATION TANK	SCFM	STANDARD CUBIC FEET PER	WHA	WATER HAMMER ARRESTOR
CB	CENTRIFUGAL BLOWER	EP	EXPLOSION PROOF		HEATING (MAKE ON FALL), HEIGHT,	OA	OUTSIDE AIR		MINUTE	WM	WALL MOUNTED
CBD	COUNTERBALANCE BACKDRAFT DAMPER	EQUIP	EQUIPMENT		HORIZONTAL, HUMIDISTAT	OC	ODOR CONTROL	SCP	SCRUBBER CONTROL PANEL	WST	WATER STORAGE TANK
CC	COOLING COIL	ES	EMERGENCY SHOWER, EMERGENCY	HC	HEATING COIL	OCBD	ODOR CONTROL BALANCE DAMPER	SF	SQUARE FEET, SUPPLY FAN	WT	WEIGHT
CCU	CARBON CANISTER UNIT		SWITCH	HCH	HEATING WATER CABINET HEATER	OCF	ODOR CONTROL FAN	SH	SHEET, SHOWER	WV	WATER CONTROL VALVE
CD	CONTROL DAMPER	ES/EEW	EMERGENCY SHOWER AND EYEWASH	HE	HEAT EXCHANGER, HELIUM	OCFS	ODOR CONTROL FLOW SWITCH	SIM	SIMILAR	ZD	ZONE DAMPER
CDWP	CONDENSER WATER PUMP	ESP	EXTERNAL STATIC PRESSURE	HF	HOSE FAUCET	OCLS	ODOR CONTROL LEVEL SWITCH	SMD	SMOKE DETECTOR		
CENTR	CENTRIFUGAL	ET	EXPANSION TANK	HO	HAND-OFF	OCP	ODOR CONTROL PANEL	SP	STATIC PRESSURE (INCHES OF		
CF	CABINET FAN	EUH	ELECTRIC UNIT HEATER	HOA	HAND-OFF-AUTO	OCPS	ODOR CONTROL PRESSURE SWITCH		WATER)		
CFM	CUBIC FEET PER MIN	EV	EXHAUST VAL	HP	HEAT PUMP, HORSEPO	OCS	ODOR CONTROL SCRUBBE	SPS	STATIC PRESSURE SENSO		

LEGEND

PIPING LEGEND

PLAN	2D SYMBOL	DESCRIPTION
		PIPING ABOVE FLOOR OR GRADE
		PIPING BELOW FLOOR OR GRADE
		PIPE TURNING UP
		PIPE TURNING DOWN

WATER

NPW	COLD WATER (NONPOTABLE)
PW	COLD WATER (POTABLE)
DE	DEIONIZED WATER
DW	DISTILLED WATER
F	FIRE PROTECTION WATER
HWC	HOT WATER CIRCULATING (POTABLE)
NPHW	HOT WATER (NONPOTABLE)
HW	HOT WATER (POTABLE)
PEW	PLANT EFFLUENT WATER
SW	SERVICE WATER
TW	TEMPERED OR BLENDED WATER
TNPW	TEMPERED NONPOTABLE WATER

WASTE

CRW	CHEMICAL RESISTANT WASTE
CRV	CHEMICAL RESISTANT VENT
CWW	CLEAR WATER WASTE
D	INDIRECT DRAIN
SAN	SANITARY DRAIN
ST	STORM DRAIN
PD	SUMP PUMP DISCHARGE
V	VENT

SPECIAL

ACET	ACETYLENE
AR	ARGON
A	COMPRESSED AIR
HE	HELIUM
H	HYDROGEN
ME	METHANE
N	NITROGEN
NO	NITROUS OXIDE
OX	OXYGEN
VAC	VACUUM

FUEL GAS

G	NATURAL GAS
PG	PROPANE GAS

HVAC / ODOR CONTROL

CMR	CHILLED WATER RETURN
CMS	CHILLED WATER SUPPLY
C	CONDENSATE DRAIN
CDWR	CONDENSER WATER RETURN
CDWS	CONDENSER WATER SUPPLY
FA	FOUL AIR
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM (<15 PSIG)
R	REFRIGERANT
SR	SCRUBBER RECIRCULATION

VALVES

- ANGLE VALVE
- BACKFLOW PREVENTER W/STRAINER (2" AND SMALLER)
- BACKFLOW PREVENTER
- BACKWATER VALVE
- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- GATE VALVE
- GLOBE VALVE
- PLUG VALVE
- PRESSURE REDUCING VALVE
- THREE WAY VALVE

PIPE FITTINGS

- BLIND FLANGE
- CAP
- REDUCER
- SLEEVE
- TEST PLUG
- UNION
- P-TRAP
- VENT THROUGH ROOF (VTR)

PIPING SPECIALTIES

- AUTOMATIC VALVE STATION
- BASKET STRAINER
- COMBINATION PUMP DISCHARGE VALVE
- FLEXIBLE CONNECTION
- FLOW CONTROL VALVE
- FLOW SENSOR METER
- HOSE FAUCET
- HOSE FAUCET W/ VACUUM BREAKER
- HOSE VALVE W/ HOSE NIPPLE
- AIR VENT
- PRESSURE REDUCING STATION
- PRESSURE RELIEF VALVE
- PRESSURE/TEMPERATURE RELIEF VALVE
- QUICK COUPLING
- ROTAMETER
- SIGHT FLOW INDICATOR
- SUCTION DIFFUSER (SCHEMATIC)
- TRAP PRIMER
- WALL HYDRANT W/ VACUUM BREAKER
- METER
- WYE STRAINER
- WYE STRAINER W/ BLOWOFF
- VACUUM BREAKER

PLUMBING (SCHEMATIC)

- AIR-GAP FITTING
- BELL-UP DRAIN OR FUNNEL RECEPTOR
- FLOOR CLEANOUT
- FLOOR DRAIN
- FLOOR DRAIN W/ FUNNEL

FIRE PROTECTION

- ALARM CHECK VALVE - WET SYSTEM
- DRY PIPE VALVESWITCH
- FIRE DEPARTMENT CONNECTION
- SUPERVISORY (TAMPER) SWITCH

PLUMBING

- BELL-UP DRAIN OR FUNNEL RECEPTOR W/ TRAP
- CLEANOUT (FLOOR)
- CLEANOUT (PIPE)
- BLENDING VALVE
- DOWNSPOUT NOZZLE
- EMERGENCY SHOWER / EYEWASH
- FLOOR DRAIN
- HOSE RACK
- HOSE REEL
- ROOF DRAIN
- SHOWER
- SPLASH BLOCK
- WATER HAMMER ARRESTOR W/ PDI SIZE DESIGNATION

HVAC

- DIFFUSER FOR FLEXIBLE DUCT
- DUCTWORK DIMENSIONS, THE FIRST DIMENSION IS THE SIDE SEEN OR SIDE THE LEADER LINE TOUCHES. SEE GENERAL MECHANICAL NOTES. (30"x20"(L))
- FLEXIBLE CONNECTION
- FLEXIBLE DUCTWORK
- INCLINED RISE (UP) OR DROP (DN) IN RESPECT TO DIRECTION OF AIRFLOW (DN / UP)
- NEGATIVE PRESSURE DUCT
- POSITIVE PRESSURE DUCT
- REGISTER, GRILLE OR DIFFUSER
- ROUND OR FLEXIBLE DUCT TAKEOFF
- ROUND TO SQUARE TRANSITION
- TURNING VANES

CONTROLS AND INSTRUMENTATION

- DIAL TYPE THERMOMETER
- DRAFT GAUG
- ELECTRIC OPERATOR (EXPLOSION PROOF)
- ELECTRIC OPERATOR (MODULATING)
- ELECTRIC OPERATOR (2 POSITION)
- EMERGENCY VENTILATION SWITCH W/ NUMBER
- FLOW SWITCH
- GAUGE ACTIVATOR/ISOLATOR
- HUMIDISTAT W/ NUMBER
- INSTRUMENT TEST OPENING
- LEVEL SWITCH
- PRESSURE DIFFERENTIAL SWITCH W/ NUMBER
- PRESSURE GAUGE W/ SHUTOFF VALVE
- PRESSURE SWITCH
- SMOKE DETECTOR W/ NUMBER
- SOLENOID OPERATOR
- STEM TYPE THERMOMETER
- THERMOSTAT WITH NUMBER
- THERMOSTAT WITH NUMBER
- VACUUM GAUGE W/ SHUTOFF VALVE

AIR INLET AND OUTLET IDENTIFICATION

- SIZE-LENGTH BY WIDTH (INCHES)
- FLEXIBLE DUCT DIAMETER (INCHES, IF USED)
- 24"x10" - 10" SR - 1 - 760
- CFM THRU DEVICE
- DEVICE DESIGNATION
- DEVICE GROUP: R-REGISTER, G-GRILL, D-DIFFUSER
- DEVICE TYPE: S-SUPPLY, E-EXHAUST, R-RETURN, T-TRANSFER

GENERAL MECHANICAL NOTES

1. THIS IS A GENERAL LEGEND AND ABBREVIATION SHEET FOR PLUMBING, FIRE PROTECTION, HVAC AND ODOR CONTROL DRAWINGS. SOME ITEMS CONTAINED ON THIS SHEET MAY NOT BE USED ON THIS SPECIFIC PROJECT.
2. FIRE PROTECTION AND HVAC WORK SHALL BE IN ACCORDANCE WITH THE FOLLOWING APPLICABLE CODES:
   - 2021 INTERNATIONAL BUILDING CODE
   - 2018 ARKANSAS MECHANICAL CODE
   - 2014 ENERGY CODE
3. SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL EQUIPMENT BASE DETAILS.
4. "SCREENED" DELINEATION DENOTES EXISTING AND NEW FACILITIES AND IS FOR REFERENCE ONLY. "LIGHT" LINE DELINEATION DENOTES EXISTING MECHANICAL EQUIPMENT AND SYSTEMS. EXISTING FACILITY AND MECHANICAL SYSTEMS INFORMATION WAS TAKEN FROM PREVIOUS DRAWINGS, CONSTRUCTION RECORDS, DATA, AND FIELD SURVEY INFORMATION. ACTUAL LOCATION, ARRANGEMENT, AND DIMENSIONS SHALL BE FIELD VERIFIED AND WORK INSTALLED TO MEET ACTUAL CONDITIONS AND LOCATIONS ENCOUNTERED. "BOLD" (DARK) DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS CONTRACT.
5. ALL PIPE AND DUCT PENETRATIONS THROUGH FIRE RESISTANCE RATED ASSEMBLIES SHALL BE PROVIDED WITH FIRESTOP SYSTEMS, EQUIPMENT AND ACCESSORIES TO RESIST THE PASSAGE OF FIRE, SMOKE AND OTHER GASES. THE ORIGINAL FIRE RESISTANCE RATING OF THE ASSEMBLY PENETRATED SHALL BE MAINTAINED FOR ALL TYPES OF PENETRATIONS. SEE ARCHITECTURAL DRAWINGS FOR RATED ASSEMBLY LOCATIONS.
6. METAL ROOF DECKING OR BOTTOM CHORD OF BAR JOISTS SHALL NOT BE USED FOR THE SUPPORT OF EQUIPMENT, PIPING, OR DUCTWORK.
7. ALL HANGERS, BRACKETS, OR BRACES FOR DUCTWORK, EQUIPMENT, AND PIPING ARE NOT INDICATED ON THE DRAWINGS. REFER TO THE SPECIFICATIONS FOR SUPPORT REQUIREMENTS NOT SHOWN ON THE PLANS.
8. OUTSIDE AIR INLETS SHALL BE LOCATED A MINIMUM OF 10' AWAY FROM ANY EXHAUST AIR OR PLUMBING VENT OUTLET.
9. ALL EQUIPMENT, PIPING, AND DUCTWORK FINAL LOCATIONS SHALL BE COORDINATED TO AVOID INTERFERENCES WITH STRUCTURE, OTHER PIPING, EQUIPMENT, DUCTWORK, AND CONDUIT. UNLESS SPECIFICALLY DIMENSIONED, THE PIPE AND DUCTWORK ROUTING SHOWN IS INTENDED TO INDICATE GENERAL LOCATION ONLY. INSTALL DUCTWORK TO ALLOW FOR PIPING AND CONDUIT TO BE ROUTED BEHIND DUCTWORK AGAINST WALLS.
10. ALL PIPING AND DUCTWORK SHALL BE ROUTED AS HIGH AS POSSIBLE WITH A MINIMUM HEIGHT OF 8'-0" ABOVE THE WALKING SURFACE UNLESS OTHERWISE INDICATED BY A CENTERLINE, INVERT, OR BOTTOM OF DUCT ELEVATION.
11. PIPING AND DUCTWORK INSTALLED ABOVE SUSPENDED CEILINGS SHALL BE INSTALLED TO ALLOW A MINIMUM 8 INCH CLEARANCE BETWEEN THE CEILING AND PIPING OR BOTTOM OF DUCT.
12. DUCTWORK SHALL BE FABRICATED, REINFORCED, SUPPORTED AND SEALED FOR OPERATING PRESSURES INDICATED IN THE SCHEDULES FOR THE EQUIPMENT IT SERVES. ALL DUCTWORK SHALL HAVE A MINIMUM SMACNA PRESSURE CLASSIFICATION OF ONE INCH.
13. DUCT SIZES INDICATED ARE CLEAR DIMENSIONS INSIDE THE DUCT OR DUCT LINING. SHEET METAL SIZES ARE LARGER FOR INTERNALLY LINED DUCTWORK.
14. MINIMUM INSULATION THICKNESSES FOR DUCTWORK SHALL BE AS INDICATED IN THE SPECIFICATIONS UNLESS OTHERWISE INDICATED ON THE PLANS WITH A "L" OR "W" DESIGNATION. WHERE AN INSULATION THICKNESS IS INDICATED ON THE DRAWINGS, IT SHALL GOVERN. THE FOLLOWING DENOTES THE DIFFERENT INSULATION THICKNESSES INDICATED ON THE DRAWINGS:
    - L,L1 - 1 INCH INTERNALLY LINED
    - L15 - 1.5 INCH INTERNALLY LINED
    - L2 - 2 INCH INTERNALLY LINED
    - W,W1 - 1 INCH EXTERNALLY WRAPPED
    - W15 - 1.5 INCH EXTERNALLY WRAPPED
    - W2 - 2 INCH EXTERNALLY WRAPPED
15. DUCT CONNECTIONS TO EQUIPMENT, PIPING SIZES TO EQUIPMENT, AND EQUIPMENT SUPPORTS SHALL BE VERIFIED AND ADJUSTED TO MATCH ACTUAL EQUIPMENT FURNISHED.
16. THE LOCATION OF PIPING AND VALVES TO THE AIR HANDLING EQUIPMENT SHALL NOT INTERFERE WITH FILTER REMOVAL OR AIR HANDLING EQUIPMENT SERVICING.
17. CONTROL DAMPER SIZES SHALL MATCH DIMENSIONS OF ASSOCIATED LOUVER UNLESS OTHERWISE INDICATED.
18. INSULATION SHALL BE PROVIDED FOR EQUIPMENT, PIPING, AND DUCT SYSTEMS AS INDICATED IN THE SPECIFICATIONS.
19. FOR ALL BUILDING MECHANICAL PIPING PENETRATIONS THROUGH FLOORS AND WALLS, SEE MECHANICAL DRAWINGS.

BLACK & VEATCH
Black & Veatch Corporation
Kansas City, Missouri

olsson

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED ON JANUARY 24, 2023 BY MICHELE F. ROTH, A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF ARKANSAS, E-17959

BEAVER WATER DISTRICT

WESTERN CORRIDOR PUMP STATION

100% SET

REVISIONS AND RECORD OF ISSUE

DESIGNED:	TVT
DETAILED:	PEM
CHECKED:	DAV
APPROVED:	MFR
DATE:	JANUARY 2023
PROJECT NO.:	405654

PUMP STATION

HVAC

LEGENDS, ABBREVIATIONS, AND GENERAL NOTES

H-00-001

82 OF 159

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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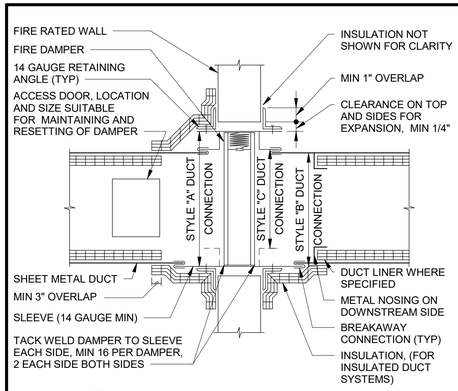
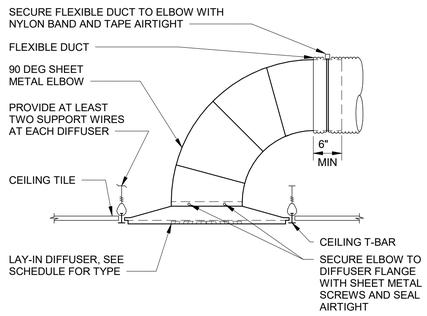
D11000



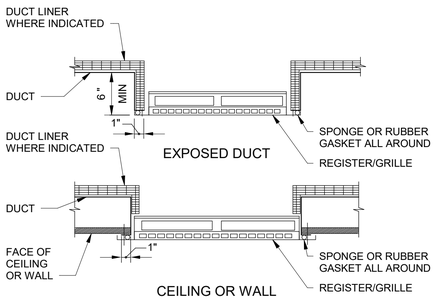
A FIRE DAMPER - VERTICAL

NO SCALE



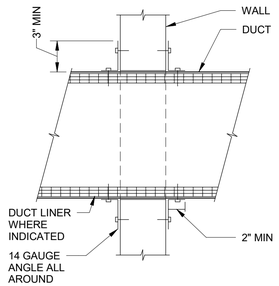
B CEILING DIFFUSER - HORIZONTAL DUCT CONNECTION

NO SCALE



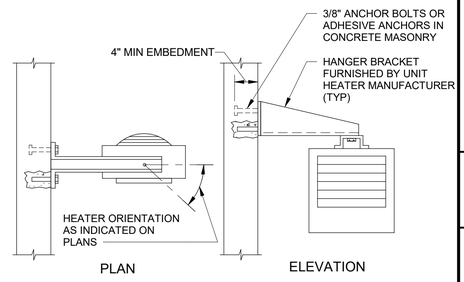
C REGISTER/GRILLE

NO SCALE



D WALL PENETRATION - INTERIOR

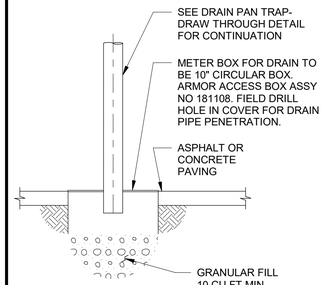
NO SCALE



NOTES:
1. MASONRY WALLS SHALL BE SOLIDLY GROUTED 4" MIN, ALL SIDES OF ANCHORS.
2. UNIT HEATER BOTTOM ELEVATION SHALL BE 8 FT ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.

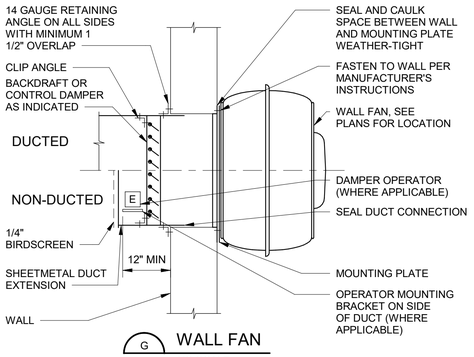
E ELECTRIC UNIT HEATER SUPPORT

NO SCALE



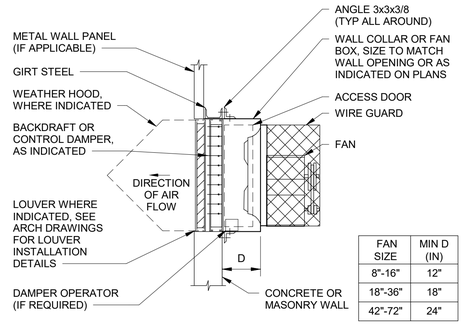
F CONDENSATE DRAIN SUMP

NO SCALE



G WALL FAN

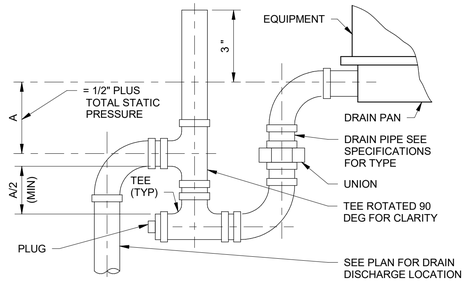
NO SCALE



FAN SIZE	MIN D (IN)
8"-16"	12"
18"-36"	18"
42"-72"	24"

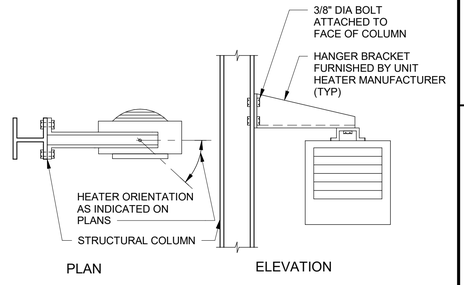
H PROPELLER FAN

NO SCALE



J DRAIN PAN TRAP - DRAW THROUGH

NO SCALE



NOTES:
UNIT HEATER BOTTOM ELEVATION SHALL BE 8 FT ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.

K ELECTRIC UNIT HEATER SUPPORT

NO SCALE

HVAC SEQUENCE OF OPERATION

1. GENERAL SYSTEM OPERATIONS.

1.2. SYSTEM INTERLOCKS AND ALARMS

1.2.1. SMOKE DETECTION SYSTEMS

1.2.1.1. SMOKE DETECTION (DUCT MOUNTED DETECTORS). SMOKE DETECTORS SHALL BE LOCATED IN THE DUCT OF EQUIPMENT LISTED BELOW. IN THE EVENT SMOKE IS DETECTED BY A DETECTOR, A SMOKE DETECTED SIGNAL SHALL BE TRANSMITTED TO THE REMOTE TEST STATION AND FIRE ALARM PANEL. A "SMOKE DETECTED" ALARM LIGHT ON THE RESPECTIVE REMOTE TEST STATION SHALL BE ILLUMINATED. THE RESPECTIVE EQUIPMENT AND ANY INTERLOCKED EQUIPMENT SHALL BE DE-ENERGIZED AND OUTSIDE AIR DAMPERS ASSOCIATED WITH THE DE-ENERGIZED EQUIPMENT SHALL CLOSE.

IN THE EVENT A SMOKE DETECTOR MALFUNCTIONS, A MALFUNCTION SIGNAL SHALL BE TRANSMITTED TO THE REMOTE TEST STATION OR FIRE ALARM PANEL, ILLUMINATING A "SMOKE DETECTOR MALFUNCTION" INDICATING LIGHT.

SMOKE DETECTOR	DE-ENERGIZED EQUIPMENT
42-SMD-01	42-AHU-05

2. HEATING SYSTEMS.

2.1. UNIT HEATERS. UNIT HEATERS SHALL BE CONTROLLED BY THEIR RESPECTIVE THERMOSTATS.

2.3. WALL HEATERS. WALL HEATERS SHALL BE CONTROLLED BY THEIR RESPECTIVE THERMOSTATS.

3. VENTILATING/EXHAUST SYSTEMS.

3.1. "ON-OFF" EQUIPMENT CONTROL. EQUIPMENT INDICATED FOR "ON-OFF" CONTROL SHALL EACH BE CONTROLLED BY THE RESPECTIVE BATTERY CABINET PROVIDED UNDER ELECTRICAL. THE SWITCH LOCATION SHALL BE AS INDICATED BELOW. THE BATTERY CABINET FAN IS ENERGIZED WHEN A SIGNAL IS SENT FROM THE BATTERY CABINET BUILT-IN THERMOSTAT OR HYDROGEN SENSOR. BEFORE THE FAN CAN OPERATE, THE CONTROL DAMPER(S) SHALL BE PROVEN OPEN. WHEN THE BATTERY CABINET FAN IS DE-ENERGIZED, THE CONTROL DAMPER(S) SHALL RETURN TO THE NORMAL POSITION.

EQUIPMENT	SWITCH LOCATION	CONTROL DAMPER(S)
42-LCP-102	BATTERY CABINET	42-CD-11
42-LCP-103	BATTERY CABINET	42-CD-12
43-LCP-101	BATTERY CABINET	43-CD-01
43-LCP-104	BATTERY CABINET	43-CD-01

3.2. "ON-OFF-AUTO" EQUIPMENT CONTROL. EQUIPMENT INDICATED FOR "ON-OFF-AUTO" CONTROL SHALL EACH BE CONTROLLED BY AN INDIVIDUAL "ON-OFF-AUTO" FAN SELECTOR SWITCH. THE SWITCH LOCATION SHALL BE AS INDICATED BELOW. WHEN THE SWITCH IS PLACED IN THE "AUTO" POSITION, THE FAN SHALL BE INTERLOCKED AND CONTROLLED BY THE FAN INTERLOCK. WHEN THE SWITCH IS PLACED IN THE "ON" POSITION, THE FAN SHALL BE ENERGIZED. BEFORE A FAN CAN OPERATE, THE CONTROL DAMPER(S) SHALL BE PROVEN OPEN. WHERE THE FAN IS INTERLOCKED WITH ANOTHER FAN OR EQUIPMENT WITH A FAN, THE FANS SHALL BE ENERGIZED SIMULTANEOUSLY AFTER ALL ASSOCIATED CONTROL DAMPERS ARE PROVEN OPEN. WHEN THE FAN IS DE-ENERGIZED, THE CONTROL DAMPER(S) SHALL RETURN TO THE NORMALLY CLOSED POSITION UNLESS OTHERWISE INDICATED.

EQUIPMENT	SWITCH LOCATION	FAN INTERLOCK	CONTROL DAMPER(S)
42-EF-05	STARTER	42-T-05	42-CD-10, 42-CD-09
42-EF-07	STARTER	42-T-08	42-CD-15, 42-CD-16

3.2.1 "ON-OFF-AUTO" EQUIPMENT CONTROL IN OCCUPIED AREAS. EQUIPMENT INDICATED FOR "ON-OFF-AUTO" CONTROL SHALL EACH BE CONTROLLED BY AN INDIVIDUAL "ON-OFF-AUTO" FAN SELECTOR SWITCH. THE SWITCH LOCATION SHALL BE AS INDICATED BELOW. WHEN THE SWITCH IS PLACED IN THE "AUTO" POSITION, THE FAN SHALL BE INTERLOCKED AND CONTROLLED BY THE FAN INTERLOCK. WHEN THE SWITCH IS PLACED IN THE "ON" POSITION, THE FAN SHALL BE ENERGIZED. BEFORE A FAN CAN OPERATE, THE CONTROL DAMPER(S) SHALL BE PROVEN OPEN. WHERE THE FAN IS INTERLOCKED WITH ANOTHER FAN OR EQUIPMENT WITH A FAN, THE FANS SHALL BE ENERGIZED SIMULTANEOUSLY AFTER ALL ASSOCIATED CONTROL DAMPERS ARE PROVEN OPEN. WHEN THE FAN IS DE-ENERGIZED, THE CONTROL DAMPER(S) SHALL RETURN TO THE NORMALLY CLOSED POSITION UNLESS OTHERWISE INDICATED.

IN THE OCCUPIED MODE OF OPERATION THE AHU SHALL COMMAND THE EXHAUST TO ENERGIZE. BEFORE A FAN CAN OPERATE, THE CONTROL DAMPER(S) SHALL BE PROVEN OPEN. WHERE THE FAN IS INTERLOCKED WITH ANOTHER FAN OR EQUIPMENT WITH A FAN, THE FANS SHALL BE ENERGIZED SIMULTANEOUSLY AFTER ALL ASSOCIATED CONTROL DAMPERS ARE PROVEN OPEN.

IN THE UNOCCUPIED MODE OF OPERATION THE AHU SHALL COMMAND THE EXHAUST TO DE-ENERGIZE. WHEN THE FAN IS DE-ENERGIZED, THE CONTROL DAMPER(S) SHALL RETURN TO THE NORMALLY CLOSED POSITION UNLESS OTHERWISE INDICATED.

EQUIPMENT	SWITCH LOCATION	FAN INTERLOCK	CONTROL DAMPER(S)
42-EF-06	STARTER	42-AHU-05	42-CD-13, 42-CD-14

3.2.2. MULTIPLE LEAD/LAG FAN SYSTEM.THE EXHAUST FANS SERVING THE PUMP ROOM 111 SHALL BE PROVIDED WITH A TEMPERATURE CONTROLLER AND ROOM TEMPERATURE SENSOR THAT SHALL CONTROL THE FANS WHEN THE SWITCH IS IN THE "AUTO" POSITION. THE LEAD FAN MOTOR SHALL BE ENERGIZED AND OPERATE WHEN THE AIR TEMPERATURE IS ABOVE THE CHANGEOVER SETPOINT AS DETECTED BY THE ROOM TEMPERATURE SENSOR. A SIGNAL SHALL BE SENT FROM THE TEMPERATURE SENSOR TO THE TEMPERAUTRE CONTROLLER SIGNALLING THE RESPECTIVE EXHAUST FAN TO ENERGIZE. AS THE ROOM CONTINUES TO RISE IN TEMPERATURE AS DETECTED BY THE ROOM TEMPERATURE SENSOR EVERY 3 DEGREES ANOTHER FAN WILL BE CALLED TO ENERGIZE BY THE TEMPERATURE CONTROLLER RESPECTIVELY. AS THE TEMPERATURE DROPS 3 DEGREES BELOW THE THRESHOLD AS SENSED BY THE ROOM TEMPERATURE SENSOR THE TEMPERATURE CONTROLLER WILL DE-ENERGIZE THE FANS RESPECTIVELY TO MAINTAIN THE ROOM TEMPERATURE SETPOINT. THE TEMPERATURE CONTROLLER SHALL BE USED TO ALTERNATE THE LEAD-LAG DESIGNATION OF THE FOUR UNITS ON A WEEKLY (ADJUSTABLE) BASIS BASED ON OVERALL RUN TIME IN LEAD MODE.

EQUIPMENT	SWITCH LOCATION	FAN INTERLOCK	CONTROL DAMPER(S)
42-EF-01	MCC/TEMP CONTROLLER	42-T-06	42-CD-01, 42-CD-08
42-EF-02	MCC/TEMP CONTROLLER	42-T-06	42-CD-02, 42-CD-07
42-EF-03	MCC/TEMP CONTROLLER	42-T-06	42-CD-03, 42-CD-06
42-EF-04	MCC/TEMP CONTROLLER	42-T-06	42-CD-04, 42-CD-05

4. AIR CONDITIONING SYSTEMS.

4.1. SINGLE ZONE CONSTANT VOLUME SYSTEMS. SINGLE ZONE CONSTANT VOLUME SYSTEMS SHALL BE CONTROLLED BY THEIR RESPECTIVE THERMOSTAT. SYSTEM OPERATION SHALL BE CONTROLLED BY AN "OFF--AUTO-COOL" (AUTOMATIC CHANGEOVER, PROGRAMMABLE) SYSTEM SWITCH AND AN "AUTO-ON" FAN SWITCH LOCATED ON THE THERMOSTAT SUB-BASE. WHEN THE FAN SWITCH IS PLACED IN THE "AUTO" POSITION, THE RESPECTIVE EQUIPMENT FAN SHALL BE ENERGIZED UPON A CALL FOR COOLING AS REQUIRED TO MAINTAIN THE DESIRED ROOM TEMPERATURE. WHEN THE FAN SWITCH IS PLACED IN THE "ON" POSITION, THE FAN SHALL BE ENERGIZED.

4.1.1. THE SYSTEM SHALL CONSIST OF TWO 50% SPLIT SYSTEMS OPERATING IN A LEAD-LAG CONFIGURATION. UPON AN INCREASE IN SPACE TEMPERATURE ABOVE THE COOLING SETPOINT AS SENSED BY THE ROOM TEMPERATURE SENSOR, THE LEAD UNIT SHALL ENERGIZE AND OPERATE TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. UPON A FURTHER INCREASE IN SPACE TEMPERATURE ABOVE THE COOLING SETPOINT, THE LAG UNIT SHALL ENERGIZE. THE LEAD-LAG CONTROLLER PROVIDED WITH THE UNITS SHALL BE USED TO ALTERNATE THE LEAD-LAG DESIGNATION OF THE UNITS ON A MONTHLY (ADJUSTABLE) BASIS BASED ON OVERALL RUN TIME IN LEAD MODE.

EQUIPMENT	ROOM THERMOSTAT
42-AHU-01/42-CU-01	42-T-01
42-AHU-02/42-CU-02	42-T-01
42-AHU-03/42-CU-03	42-T-02
42-AHU-04/42-CU-04	42-T-02
42-FC-01/42-CU-06	42-T-03
42-FC-02/42-CU-07	42-T-04
43-FC-01/43-CU-01	43-T-01
43-FC-02/43-CU-02	43-T-02

5. VARIABLE VOLUME SYSTEMS SERVING OCCUPIED SPACES, 42-AHU-05/42-CU-05. VARIABLE VOLUME SYSTEMS SHALL BE CONTROLLED BY THEIR RESPECTIVE THERMOSTAT, 42-T-07 AND HUMIDISTAT 42-H-01. SYSTEM OPERATION SHALL BE CONTROLLED BY AN "OFF-HEAT-AUTO-COOL" (AUTOMATIC CHANGEOVER, PROGRAMMABLE) SYSTEM SWITCH AND AN "AUTO-ON" FAN SWITCH LOCATED ON THE THERMOSTAT SUB-BASE. WHEN THE FAN SWITCH IS PLACED IN THE "AUTO" POSITION, THE RESPECTIVE EQUIPMENT FAN SHALL BE ENERGIZED UPON A CALL FOR COOLING OR HEATING AS REQUIRED TO MAINTAIN THE DESIRED ROOM TEMPERATURE. WHEN THE FAN SWITCH IS PLACED IN THE "ON" POSITION, THE FAN SHALL BE ENERGIZED. BEFORE THE FAN CAN OPERATE, THE CONTROL DAMPER(S) SHALL BE PROVEN OPEN. WHEN THE FAN IS DE-ENERGIZED, THE CONTROL DAMPER(S) SHALL CLOSE.

EACH SYSTEM SHALL BE IN THE OCCUPIED MODE WHEN THE AREA SERVED IS OCCUPIED. IN THIS MODE, THE VFD FOR 42-AHU-05 SHALL OPERATE CONTINUOUSLY AND MODULATE THE FAN SPEED AND COMPRESSORS TO MAINTAIN THE SETPOINT AND THE OUTSIDE AIR CONTROLS SHALL BE SET AT THE MINIMUM OUTSIDE AIR POSITION . WHEN THE AREA SERVED IS UNOCCUPIED, THE FAN SHALL BE DE-ENERGIZED AND ONLY OPERATE WHEN HEATING OR COOLING IS REQUIRED TO MAINTAIN THE SETBACK TEMPERATURES. WHEN THE THERMOSTAT IS CAPABLE OF PROVIDING AUTOMATIC OCCUPIED/UNOCCUPIED CONTROL, THE FAN SHALL OPERATE AS DESCRIBED IN THE UNOCCUPIED – NIGHT SETBACK CONTROL PARAGRAPH. IN ALL CASES, THE FAN SHALL OPERATE CONTINUOUSLY WHEN THE SPACE IS OCCUPIED AND CYCLE ON AND OFF TO MEET THE HEATING OR COOLING LOADS WHEN THE SPACE IS UNOCCUPIED.

5.1 UNOCCUPIED – NIGHT SETBACK CONTROL. THE SYSTEM SHALL BE IN THE UNOCCUPIED MODE WHEN THE BUILDING IS SCHEDULED TO BE UNOCCUPIED THROUGH THE SYSTEM TIME CLOCK. IN THIS MODE, THE OUTSIDE AIR AND EXHAUST AIR SHALL BE CLOSED AND THE FAN SHALL BE CYCLED BY THE SYSTEM NIGHT SETBACK THERMOSTAT AND HUMIDISTAT TO MAINTAIN THE SETBACK TEMPERATURE SETPOINT AND HUMIDITY UNDER A 60F DEW POINT. IN UNOCCUPIED MODE THE VFD FOR 42-AHU-05 WILL REDUCE THE FAN SPEED AND COMPRESSORS TO THE LOW RATE AMOUNT AS SHOWN ON THE SCHEDULE.

THE SYSTEM SHALL OPERATE IN THE HEATING UNOCCUPIED – NIGHT SETBACK MODE WHEN THE TEMPERATURE FALLS BELOW THE HEATING NIGHT SETBACK THERMOSTAT SETPOINT. IN THIS MODE, THE AIR HANDLING SYSTEM AND HEATING SHALL CYCLE TO MAINTAIN THE SETBACK TEMPERATURE.

THE SYSTEM SHALL OPERATE IN THE COOLING UNOCCUPIED – NIGHT SETBACK MODE WHEN THE TEMPERATURE RISES ABOVE THE COOLING NIGHT SETBACK THERMOSTAT SETPOINT. IN THIS MODE, THE AIR HANDLING SYSTEM AND COMPRESSORS SHALL CYCLE TO MAINTAIN THE SETBACK TEMPERATURE.

WHEN THE UNOCCUPIED MODE IS OVERRIDDEN ON THERMOSTATS FURNISHED WITH OCCUPIED/UNOCCUPIED OVERRIDE, THE ZONE OR SYSTEM SHALL RETURN TO ITS OCCUPIED OPERATING MODE. AFTER THE PRESELECTED TIME PERIOD HAS ELAPSED FOR THE SETBACK OVERRIDE, THE SYSTEM SHALL RETURN TO THE UNOCCUPIED CONTROL.

EQUIPMENT	ROOM THERMOSTAT/HUMIDISTAT
42-AHU-05/42-CU-05	42-T-07/42-H-07

6. THERMOSTAT SETPOINTS

6.1. THERMOSTAT SETPOINTS SHALL BE AS INDICATED BELOW, UNLESS THE SETPOINT HAS BEEN DESCRIBED PREVIOUSLY IN THIS SEQUENCE OF OPERATIONS.

HEATERS	- 54 F
OCCUPIED AREAS (COOLING)	- 78 F
OCCUPIED AREAS (HEATING)	- 72 F
OCCUPIED AREAS (HUMIDITY)	- 50%
VENTILATING EQUIPMENT WORKSHOP	- 90 F
VENTILATING EQUIPMENT PUMP ROOM	- STAGE 1 90 F
PROGRAMABLE TEMPERATURE CONTROLLER	- STAGE 2 93 F
	- STAGE 3 96 F
	- STAGE 4 99F
PROGRAMMABLE THERMOSTATS (ELECTRICAL SPACES)	- 85 F COOLING

BLACK & VEATCH
Black & Veatch Corporation
Kansas City, Missouri

olsson

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED ON JANUARY 24, 2023 BY MICHELE F. ROTH, A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF ARKANSAS, E-17959

BEAVER WATER DISTRICT

WESTERN CORRIDOR PUMP STATION

100% SET

REVISIONS AND RECORD OF ISSUE

DESIGNED:	TVT
DETAILED:	PEM
CHECKED:	DAV
APPROVED:	MFR
DATE:	JANUARY 2023
PROJECT NO.:	405654

GENERAL

HVAC

DETAILS & SEQUENCE OF OPERATION

H-00-501

PLOTTED: 1/18/2023 2:53:39 PM
FILE: BIM 360:/405654 - BWD Western Corridor Pump Station\405654-00-GENERAL.rvt
D11000

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

AIR DEVICE SCHEDULE

SYMBOL	MANUFACTURER	MODEL	FRAME/BORDER	MODULE SIZE	MATERIAL	FINISH	DAMPER TYPE	NOTES
ED-1	PRICE	PDR						
RD-1	PRICE	PDR	LAY-IN	---	ALUMINUM	ALUM PRIME COAT	OPPOSED BLADE	1,2
RR-1	PRICE	22DAL	SURFACE MOUNT	---	ALUMINUM	ALUM PRIME COAT	OPPOSED BLADE	1
SD-1	PRICE	PDS	LAY-IN	---	ALUMINUM	ALUM PRIME COAT	OPPOSED BLADE	1,2
SR-1	PRICE	22DAL						

AIR HANDLING UNIT (PACKAGED) SCHEDULE

UNIT NUMBER	LOCATION	MANUFACTURER	MODEL	AIRFLOW (CFM)	ESP (IN WC)	ORIENTATION	INDOOR FAN MOTOR HP	DRIVE	POWER SUPPLY		COOLING				HEATING			NOTES
											EAT		CAPACITY (BTUH)					
									VOLTS	PHASE	(FDB)	(FWB)	SENSIBLE	TOTAL	EAT (FDB)	TYPE	CAPACITY (BTUH OR (KW))	
42-AHU-1	MEDIUM VOLTAGE ELECTRICAL ROOM 113	TRANE	TWE	6400	0.5	VERTICAL	3	BELT	480	3	85	63.2	193500	207000	---	---	---	1,2
42-AHU-2	MEDIUM VOLTAGE ELECTRICAL ROOM 113	TRANE	TWE	6400	0.625	VERTICAL	3	BELT	480	3	85	63.2	193500	207000	---	---	---	1,2
42-AHU-3	MEDIUM VOLTAGE ELECTRICAL ROOM 114	TRANE	TWE	5000	0.625	VERTICAL	3	BELT	480	3	85	63.2	163000	176500	---	---	---	1,2
42-AHU-4	MEDIUM VOLTAGE ELECTRICAL ROOM 114	TRANE	TWE	5000	0.625	VERTICAL	3	BELT	480	3	85	63.2	163000	176500	---	---	---	1,2
42-AHU-05	MECHANICAL ROOM 108	TRANE	TWE	2400/1750	1	VERTICAL	2	BELT	480	3	82.1	64.8	60500/49000	82500/52500	---	ELECTRIC	34.88	3

CONDENSING UNIT SCHEDULE

UNIT NUMBER	LOCATION	MANUFACTURER	MODEL	COOLING				HEATING OUTPUT CAPACITY [HEAT PUMP] (BTUH)	POWER SUPPLY		MINIMUM CIRCUIT AMPACITY	ARI MINIMUM EFFICIENCY	MATCHED WITH INDOOR UNIT	APPROX WEIGHT (LBS)	NOTES
				CAPACITY (BTUH)	MIMIMUM CAPACITY STEPS	SUCTION TEMPERATURE (F)			VOLTS	PHASE					
						MINIMUM	MAXIMUM								
42-CU-01	MEDIUM VOLTAGE ELECTRICAL ROOM 113	TRANE	TTA	207000	2			---	480	3	40	11 SEER	42-AHU-01	807	1,2
42-CU-02	MEDIUM VOLTAGE ELECTRICAL ROOM 113	TRANE	TTA	207000	2			---	480	3	40	11 SEER	42-AHU-02	807	1,2
42-CU-03	MEDIUM VOLTAGE ELECTRICAL ROOM 114	TRANE	TTA	176500	2			---	480	3	34	11 SEER	42-AHU-03	807	1,2
42-CU-04	MEDIUM VOLTAGE ELECTRICAL ROOM 114	TRANE	TTA	176500	2			---	480	3	34	11 SEER	42-AHU-04	807	1,2
42-CU-05	MECHANICAL ROOM 108	TRANE	TTA	82500/52500	2			---	480	3	15	11 SEER	42-AHU-05	315	1,2,3
42-CU-06	LOW VOLTAGE ELECTRICAL ROOM 110	TRANE/MITSUBISHI	TRUYA	22000	1			---	208	1	19	13 SEER	42-FC-01	115	1,2
42-CU-07	LOW VOLTAGE ELECTRICAL ROOM 110	TRANE/MITSUBISHI	TRUYA	22000	1			---	208	1	19	13 SEER	42-FC-02	115	1,2
43-CU-01	ELECTRICAL ROOM 101	TRANE/MITSUBISHI	TRUYA	35000	1			---	208	1	25	13 SEER	43-FC-01	243	1,2
43-CU-02	ELECTRICAL ROOM 101	TRANE/MITSUBISHI	TRUYA	35000	1			---	208	1	25	13 SEER	43-FC-02	243	1,2

FAN SCHEDULE

UNIT NUMBER	LOCATION	MANUFACTURER	MODEL	FAN TYPE	AIRFLOW (CFM)	ESP (IN WC)	BRAKE HP	MOTOR HP	POWER SUPPLY		MINIMUM WHEEL DIAMETER (IN)	WHEEL TYPE	DRIVE	FILTER DATA		VIBRATION ISOLATION	APPROX WEIGHT (LBS)	NOTES
									VOLTS	PHASE				TYPE	THICKNESS (IN)			
42-EF-01	PUMP ROOM 112	GREENHECK	AER	PF	13625	0.25	1.05	3	480	3	48	P	DIRECT	---	---	---	275	1
42-EF-02	PUMP ROOM 112	GREENHECK	AER	PF	13625	0.25	1.05	3	480	3	48	P	DIRECT	---	---	---	275	1
42-EF-03	PUMP ROOM 112	GREENHECK	AER	PF	13625	0.25	1.05	3	480	3	48	P	DIRECT	---	---	---	275	1
42-EF-04	PUMP ROOM 112	GREENHECK	AER	PF	13625	0.25	1.05	3	480	3	48	P	DIRECT	---	---	---	275	1
42-EF-05	WORKSHOP 111	GREENHECK	CUE	WF	1000	0.25	0.11	1/4	120	1	13	C	DIRECT	---	---	---	75	1
42-EF-06	ADMINISTRATION SPACE	GREENHECK	CSP	CF	650	0.5	0.19	1/3	120	1	7.75	C	DIRECT	---	---	---	35	1
42-EF-07	HALL 112	GREENHECK	AER	PF	325	0.25	0.04	1/4	120	1	20	P	DIRECT	---	---	---	60	1

FAN COIL UNIT SCHEDULE

UNIT NUMBER	LOCATION	MANUFACTURER	MODEL	AIRFLOW (CFM)	AIR PD (IN WC)	EAT		LAT (FDB)	CAPACITY (BTUH)		EWT (F)	WATER FLOW (GPM)	WATER PD (FT)	MOTOR HP	POWER SUPPLY		APPROX WEIGHT (LBS)	NOTES
						(FDB)	(FWB)		SENSIBLE	TOTAL					VOLTS	PHASE		
42-FC-01	LOW VOLTAGE ELECTRICAL ROOM 110	TRANE/MITSUBISHI	TPLA	675	0.375	85	63.2	55.5	22000	22000	---	---	---	---	208	1	75	---
42-FC-02	LOW VOLTAGE ELECTRICAL ROOM 110	TRANE/MITSUBISHI	TPLA	675	0.375	85	63.2	55.5	22000	22000	---	---	---	---	208	1	75	---
43-FC-01	ELECTRICAL ROOM 101	TRANE/MITSUBISHI	TPEADA	1100	0.375	85	63.2	56.5	34000	35000	---	---	---	---	208	1	100	1
43-FC-02	ELECTRICAL ROOM 101	TRANE/MITSUBISHI	TPEADA	1100	0.375	85	63.2	56.5	34000	35000	---	---	---	---	208	1	100	1

HEATER SCHEDULE

UNIT NUMBER	LOCATION	MANUFACTURER	MODEL	TYPE	UNIT ORIENTATION	EAT (F)	EWT (F)	AIR FLOW (CFM)	AIR PD (IN WC)	OUTPUT CAPACITY		WATER FLOW (GPM)	WATER PD (FT)	MOTOR HP	POWER SUPPLY		APPROX WEIGHT (LBS)	NOTES
										(BTUH)	(KW)				VOLTS	PHASE		
42-EUH-01	PUMP ROOM 112	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	7.5	---	---	1/15	480	3	50	1A
42-EUH-02	PUMP ROOM 112	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	7.5	---	---	1/15	480	3	50	1A
42-EUH-03	PUMP ROOM 112	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	7.5	---	---	1/15	480	3	50	1A
42-EUH-04	PUMP ROOM 112	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	7.5	---	---	1/15	480	3	50	1A
42-EUH-05	PUMP ROOM 112	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	7.5	---	---	1/15	480	3	50	1A
42-EUH-06	PUMP ROOM 112	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	7.5	---	---	1/15	480	3	50	1A
42-EUH-07	PUMP ROOM 112	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	7.5	---	---	1/15	480	3	50	1A
42-EUH-08	PUMP ROOM 112	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	7.5	---	---	1/15	480	3	50	1A
42-EUH-09	PUMP ROOM 112	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	7.5	---	---	1/15	480	3	50	1A
42-EUH-10	PUMP ROOM 112	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	7.5	---	---	1/15	480	3	50	1A
42-EUH-11	PUMP ROOM 112	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	7.5	---	---	1/15	480	3	50	1B
42-EUH-12	PUMP ROOM 112	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	7.5	---	---	1/15	480	3	50	1B
42-EUH-13	WORKSHOP 111	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	380	---	---	5	---	---	1/35	480	3	35	1A
42-EUH-14	WORKSHOP 111	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	380	---	---	5	---	---	1/35	480	3	35	1A
42-EUH-15	MEDIUM VOLTAGE ELECTRICAL ROOM 113	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	5	---	---	1/35	480	3	50	1A
42-EUH-16	MEDIUM VOLTAGE ELECTRICAL ROOM 113	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	5	---	---	1/35	480	3	50	1A
42-EUH-17	MEDIUM VOLTAGE ELECTRICAL ROOM 114	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	5	---	---	1/35	480	3	50	1A
42-EUH-18	MEDIUM VOLTAGE ELECTRICAL ROOM 114	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	5	---	---	1/35	480	3	50	1A
42-WH-01	LOW VOLTAGE ELECTRICAL ROOM 111	INDEECO	WAI	WH	HORIZONTAL	60	---	160	---	---	2	---	---	---	208	1	25	1
42-WH-02	HALLWAY 113	INDEECO	WAI	WH	HORIZONTAL	72	---	160	---	---	3	---	---	---	480	3	35	1
42-WH-03	MECHANICAL ROOM 108	INDEECO	WAI	WH	HORIZONTAL	72	---	160	---	---	2	---	---	---	208	1	24	1
42-WH-04	HALLWAY 101	INDEECO	WAI	WH	HORIZONTAL	72	---	160	---	---	3	---	---	---	480	3	35	1
42-WH-05	WOMEN'S RESTROOM 102	INDEECO	WAI	WH	HORIZONTAL	72	---	160	---	---	1.5	---	---	---	208	1	24	1
42-WH-06	MEN'S RESTROOM 103	INDEECO	WAI	WH	HORIZONTAL	72	---	160	---	---	1.5	---	---	---	208	1	24	1
42-WH-07	OFFICE/CONFERENCE ROOM 104	INDEECO	WAI	WH	HORIZONTAL	72	---	160	---	---	2	---	---	---	208	1	24	1
43-EUH-01	ELECTRICAL ROOM 101	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	5	---	---	1/35	480	3	50	1A
43-EUH-02	ELECTRICAL ROOM 101	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	5	---	---	1/35	480	3	50	1A
43-EUH-03	ELECTRICAL ROOM 101	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	5	---	---	1/35	480	3	50	1A
43-EUH-04	ELECTRICAL ROOM 101	CHROMALOX	LUH	EUHHD	HORIZONTAL	60	---	850	---	---	5	---	---	1/35	480	3	50	1A

SCHEDULE NOTES

AIR DEVICE SCHEDULE:
ACCESSORIES: NONE

NOTES:
1. SEE DRAWINGS FOR DEVICE LENGTH, WIDTH AND SUPPLY PATTERN.
2. ALL DIFFUSER CORE STYLES ARE 4-WAY UNLESS OTHERWISE INDICATED ON THE PLAN.

AIR HANDLING UNIT (PACKAGED) SCHEDULE:
ACCESSORIES: NONE

CAPACITY NOTE: CAPACITIES LISTED IN PARENTHESES ARE IN UNITS OF "KW". CAPACITIES LISTED WITHOUT PARENTHESES ARE IN UNITS OF "BTUH".

NOTES:
1. PROVIDE RETURN GRILLE
2. PROVIDE LEAD/LAG CONTROLLER
3. VARIABLE FREQUENCY DRIVE FAN FOR CAPACITY MODULATION

CONDENSING UNIT SCHEDULE:
ACCESSORIES: NONE

OUTDOOR COIL ENTERING AIR TEMPERATURE:
COOLING - 98 F DESIGN/50 F MIN

NOTES:
1. LOW AMBIENT KIT
2. HAIL GUARDS
3. VARIABLE FREQUENCY DRIVE COMPRESSORS FOR CAPACITY MODULATION

FAN SCHEDULE:
ACCESSORIES: NONE

FAN TYPE ABBREVIATIONS:
CF - CABINET FAN
PF - PROPELLER FAN
WF - WALL FAN

WHEEL TYPE ABBREVIATIONS:
C - CENTRIFUGAL
P - PROPELLER

NOTES:
1. WALL MOUNTING KIT

FAN COIL SCHEDULE:
ACCESSORIES: NONE

NOTES:
1. PROVIDE RETURN GRILLE

HEATER SCHEDULE:
ACCESSORIES: NONE

TYPE ABBREVIATIONS:
EUHHD - HEAVY DUTY ELECTRIC UNIT HEATER
WH - WALL HEATER

NOTES:
1. PROVIDE SURFACE MOUNT KIT FOR WALL HEATER
2. WALL MOUNTING BRACKET A) WALL B) COLUMN

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BEAVER WATER DISTRICT

WESTERN CORRIDOR PUMP STATION

100% SET

REVISIONS AND RECORD OF ISSUE

DESIGNED:	TVT
DETAILED:	PEM
CHECKED:	DAV
APPROVED:	MFR
DATE:	JANUARY 2023
PROJECT NO.:	405654

GENERAL

HVAC

SCHEDULES

H-00-601

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

PLOTTED: 1/18/2023 2:53:39 PM
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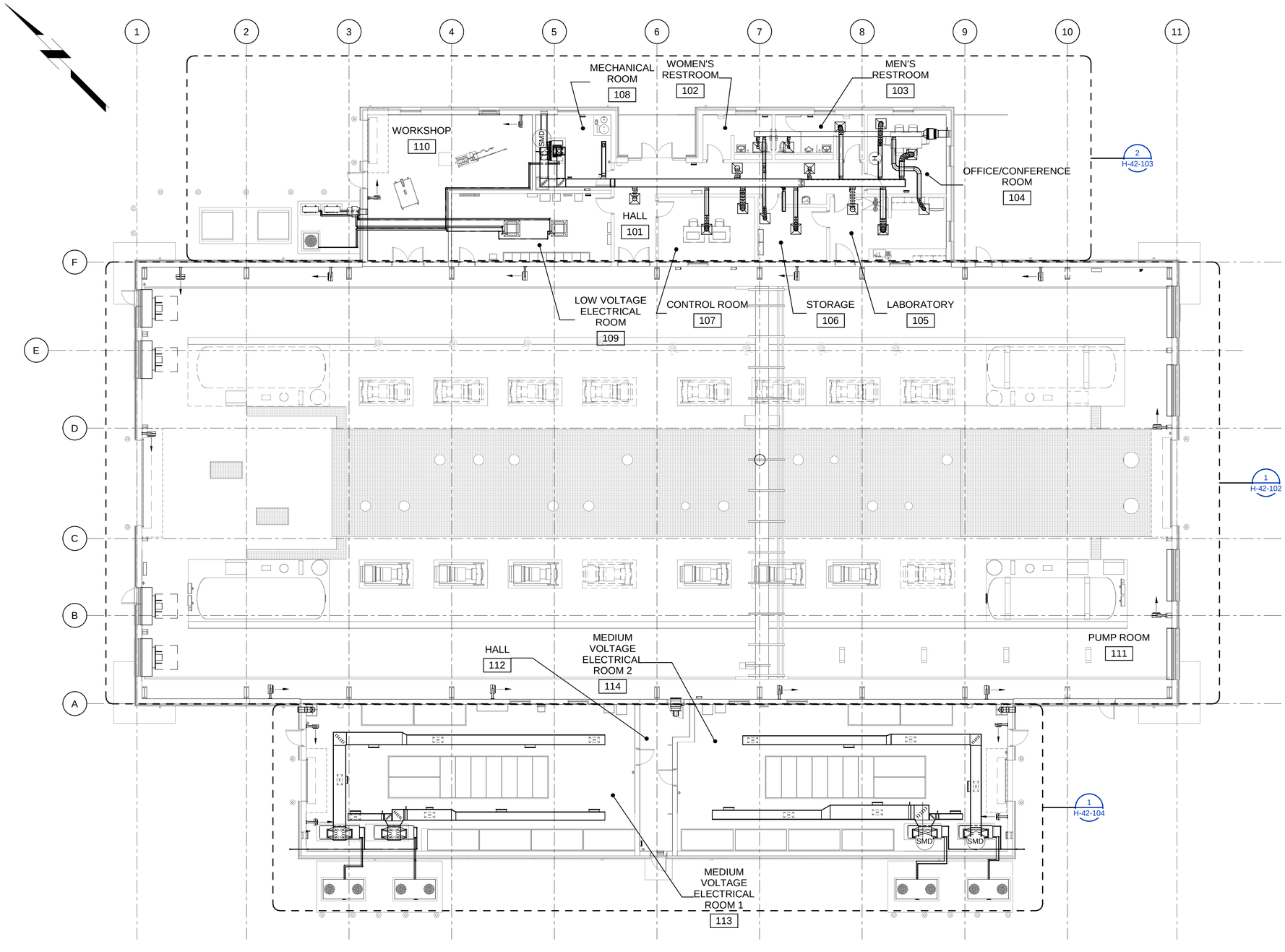
D1000



OVERALL PLAN

3/32" = 1'-0"

12" 8" 4" 0' 10' 20'

3/32" = 1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

PLOTTED: 1/20/2023 7:30:29 AM
FILE: BIM 360://405654 - BWD Western Corridor Pump Station/405654-42-PUMP STATION.rvt
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BEAVER WATER DISTRICT

WESTERN CORRIDOR PUMP STATION

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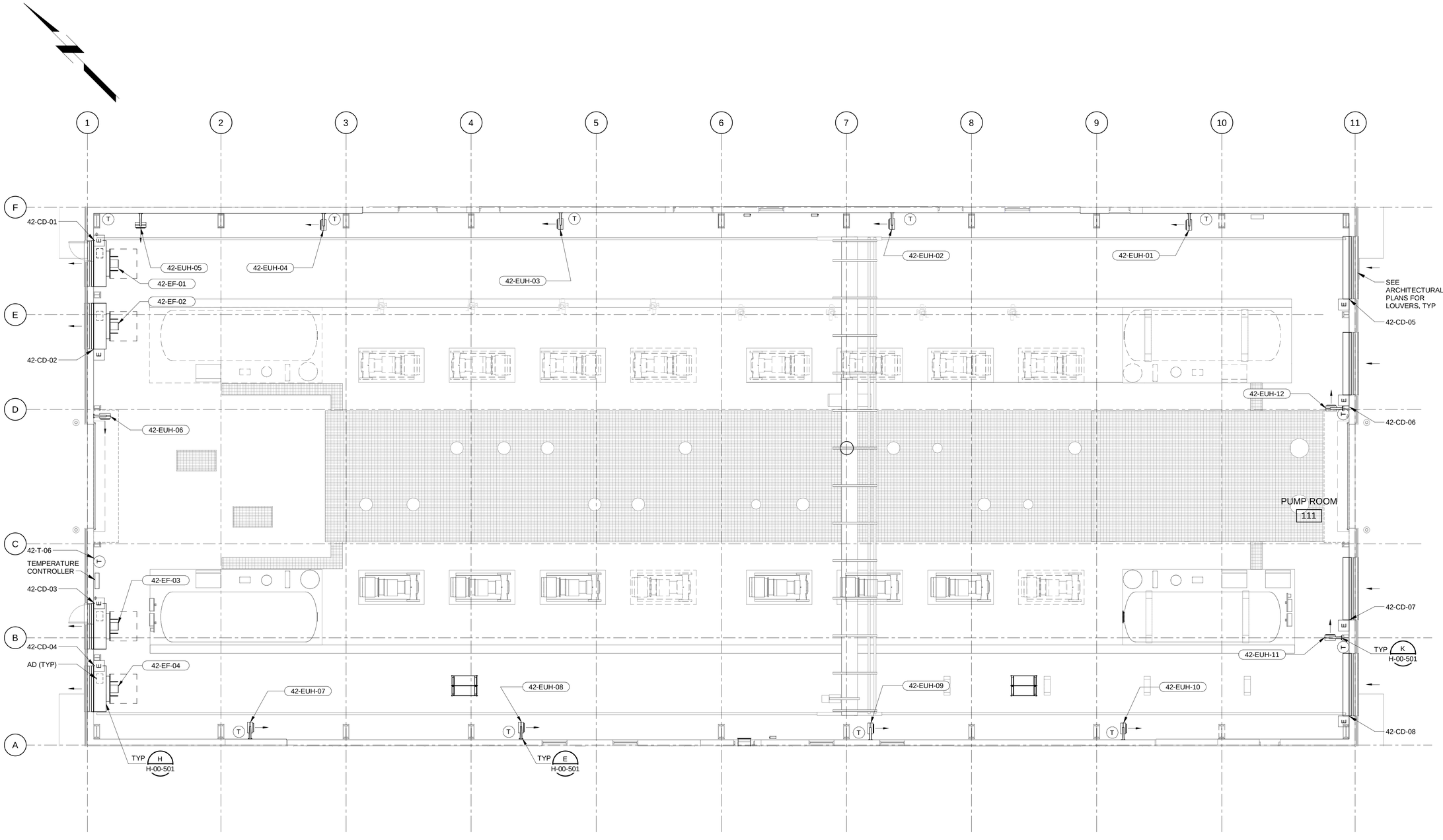
DATE:	JANUARY 24, 2023
PROJECT NO.:	405654

PUMP STATION

HVAC

OVERALL PLAN

H-42-101



ENLARGED HVAC PUMP ROOM PLAN

1/8" = 1'-0"

8' 4' 0' 8' 16'

1/8" = 1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

PLOTTED: 1/20/2023 7:32:40 AM
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BEAVER WATER DISTRICT

WESTERN CORRIDOR PUMP STATION

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PUMP STATION

HVAC

OPERATING FLOOR PLAN - PUMP ROOM

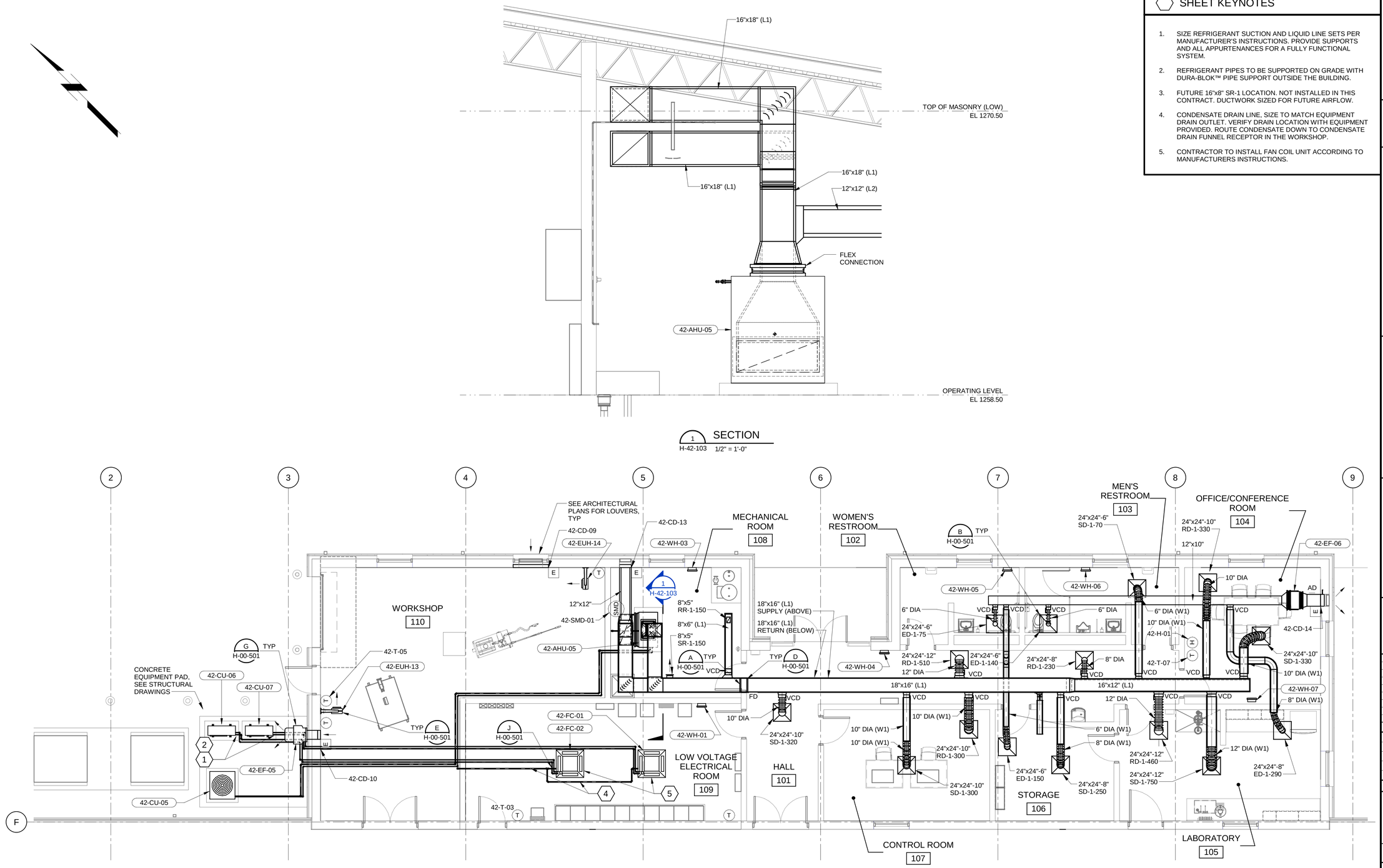
H-42-102

86 OF 159

1 SECTION
H-42-103 1/2" = 1'-0"

SHEET KEYNOTES

1. SIZE REFRIGERANT SUCTION AND LIQUID LINE SETS PER MANUFACTURER'S INSTRUCTIONS. PROVIDE SUPPORTS AND ALL APPURTENANCES FOR A FULLY FUNCTIONAL SYSTEM.
2. REFRIGERANT PIPES TO BE SUPPORTED ON GRADE WITH DURA-BLOK™ PIPE SUPPORT OUTSIDE THE BUILDING.
3. FUTURE 16"x8" SR-1 LOCATION. NOT INSTALLED IN THIS CONTRACT. DUCTWORK SIZED FOR FUTURE AIRFLOW.
4. CONDENSATE DRAIN LINE, SIZE TO MATCH EQUIPMENT DRAIN OUTLET. VERIFY DRAIN LOCATION WITH EQUIPMENT PROVIDED. ROUTE CONDENSATE DOWN TO CONDENSATE DRAIN FUNNEL RECEPTOR IN THE WORKSHOP.
5. CONTRACTOR TO INSTALL FAN COIL UNIT ACCORDING TO MANUFACTURERS INSTRUCTIONS.



ENLARGED HVAC PLAN ADMINISTRATIVE WING
3/16" = 1'-0"

12" 6" 0' 1' 2' 3' 4' 5'
1/2" = 1'-0"

6' 4' 2' 0' 5' 10'
3/16" = 1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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BEAVER WATER DISTRICT

WESTERN CORRIDOR PUMP STATION

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PROJECT NO.:	405654

PUMP STATION

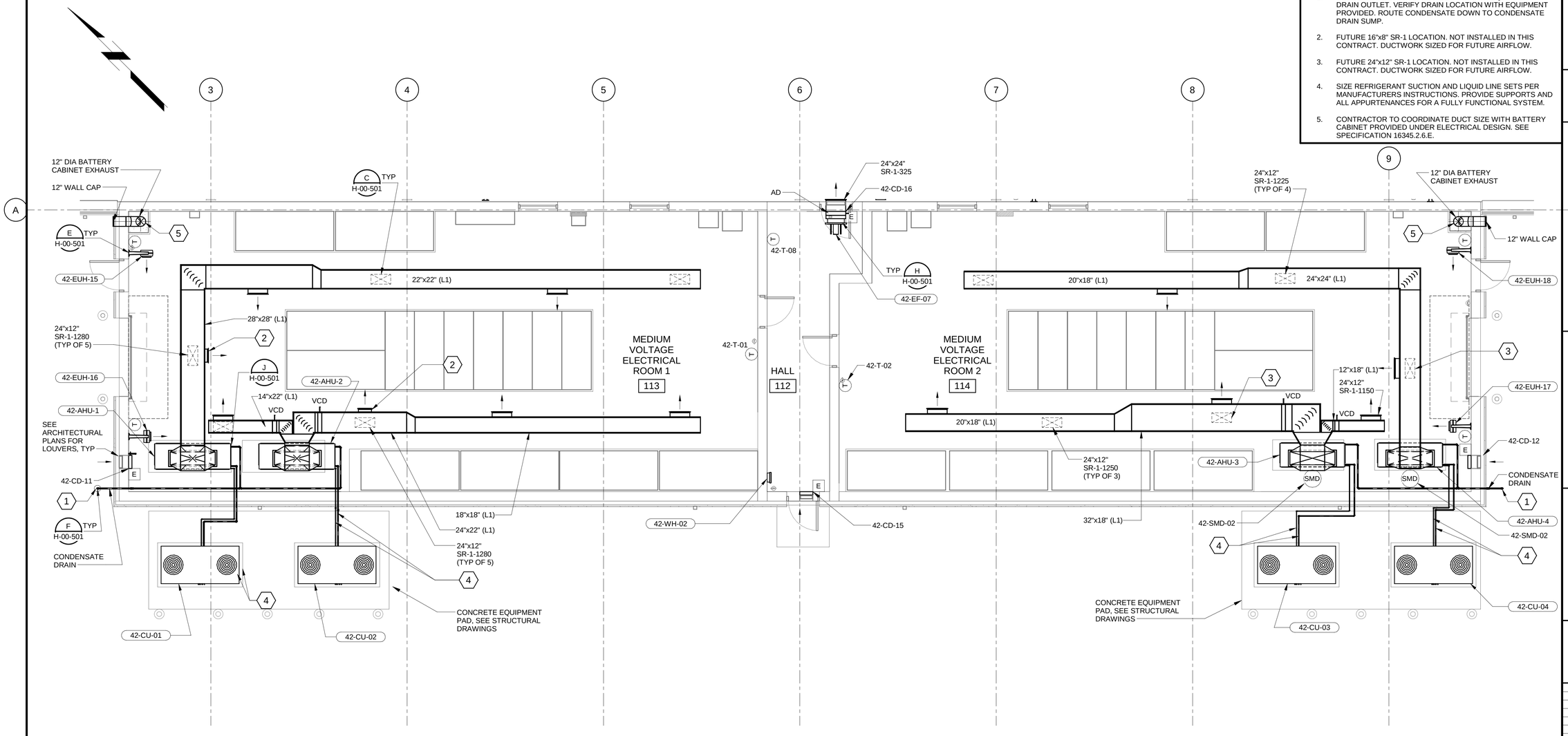
HVAC

OPERATING FLOOR PLAN - ADMINISTRATIVE WING

H-42-103

SHEET KEYNOTES

1. CONDENSATE DRAIN LINE, SIZE TO MATCH EQUIPMENT DRAIN OUTLET. VERIFY DRAIN LOCATION WITH EQUIPMENT PROVIDED. ROUTE CONDENSATE DOWN TO CONDENSATE DRAIN SUMP.
2. FUTURE 16"x8" SR-1 LOCATION. NOT INSTALLED IN THIS CONTRACT. DUCTWORK SIZED FOR FUTURE AIRFLOW.
3. FUTURE 24"x12" SR-1 LOCATION. NOT INSTALLED IN THIS CONTRACT. DUCTWORK SIZED FOR FUTURE AIRFLOW.
4. SIZE REFRIGERANT SUCTION AND LIQUID LINE SETS PER MANUFACTURERS INSTRUCTIONS. PROVIDE SUPPORTS AND ALL APPURTENANCES FOR A FULLY FUNCTIONAL SYSTEM.
5. CONTRACTOR TO COORDINATE DUCT SIZE WITH BATTERY CABINET PROVIDED UNDER ELECTRICAL DESIGN. SEE SPECIFICATION 16345.2.6.E.



ENLARGED HVAC PLAN ELECTRICAL WING

3/16" = 1'-0"

6' 4' 2' 0' 5' 10'

3/16" = 1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

PLOTTED: 1/20/2023 7:32:51 AM
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WESTERN CORRIDOR PUMP STATION

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PROJECT NO.:	405654

PUMP STATION

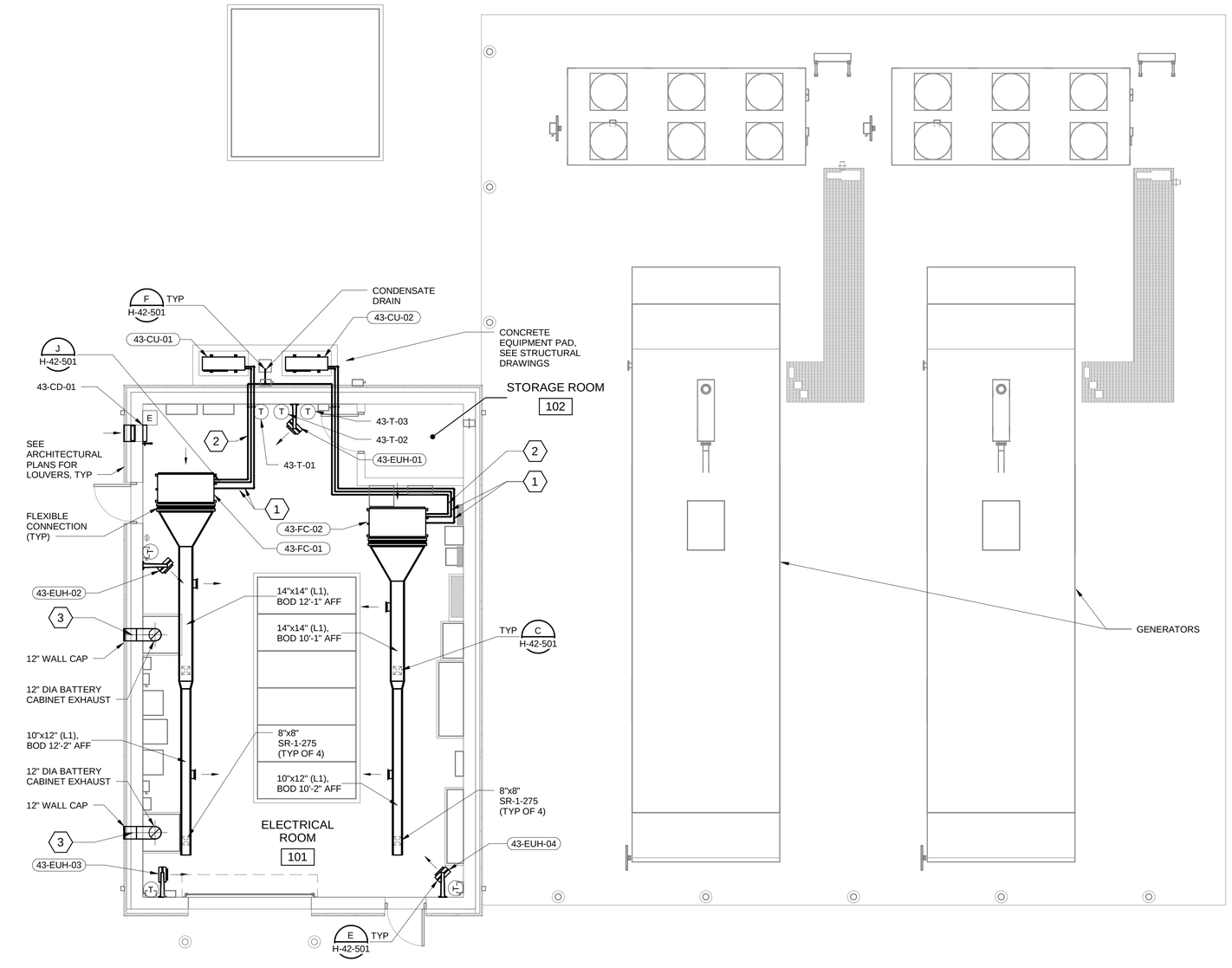
HVAC

OPERATING FLOOR PLAN - ELECTRICAL WING

H-42-104

SHEET KEYNOTES

1. SIZE REFRIGERANT SUCTION AND LIQUID LINE SETS PER MANUFACTURERS INSTRUCTIONS. PROVIDE SUPPORTS AND ALL APPURTENANCES FOR A FULLY FUNCTIONAL SYSTEM.
2. CONDENSATE DRAIN LINE, SIZE TO MATCH EQUIPMENT DRAIN OUTLET. VERIFY DRAIN LOCATON WITH EQUIPMENT PROVIDED. ROUTE CONDENSATE DOWN TO CONDENSATE DRAIN SUMP.
3. CONTRACTOR TO COORDINATE DUCT SIZE WITH BATTERY CABINET PROVIDED UNDER ELECTRICAL DESIGN. SEE SPECIFICATION 16345.2.6.E.



HVAC PLAN

3/16" = 1'-0"

6' 4' 2' 0' 5' 10'

3/16" = 1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

PLOTTED: 1/20/2023 7:28:23 AM
FILE: BIM 360://405654 - BWD Western Corridor Pump Station/405654-43-ELECTRICAL BUILDING.rvt
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BEAVER WATER DISTRICT

WESTERN CORRIDOR PUMP STATION

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DATE:	JANUARY 24, 2023
PROJECT NO.:	405654

ELECTRICAL BUILDING

HVAC

FLOOR PLAN

H-43-101