

2/12/2025 10:24:16 AM / CP / HVAC

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-GENERAL.rvt

SYSTEM ABBREVIATIONS	
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
C	CONDENSATE DRAIN
CDWR	CONDENSER WATER RETURN
CDWS	CONDENSER WATER SUPPLY
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
LPC	LOW PRESSURE CONDENSATE

DRAWING IDENTIFICATION SYSTEM	
	DENOTES PROCESS STRUCTURE
	SEQUENTIAL SHEET NUMBER
	DISCIPLINE
G	GENERAL
C	CIVIL
D	DEMOLITION
A	ARCHITECTURAL
P	PROCESS
S	STRUCTURAL
M	MECHANICAL
H	HVAC / PLUMBING

PROCESS STRUCTURE/FACILITY IDENTIFICATION	
A	HEADWORKS
B	ANOXIC BASINS
C	AERATION BASINS
D	SECONDARY CLARIFIER DISTRIBUTION BOX AND RAS PUMP STATION
E	SECONDARY CLARIFIER
F	RAS PUMP STATION NO. 2
G	WAS PUMP STATION
H	FILTER / UV / POST AERATION
I	EFFLUENT PUMP STATION
J	ELECTRICAL BUILDING
K	DIGESTER VALVE VAULTS
L	OPERATIONS / LABORATORY BUILDING
M	MAINTENANCE BUILDING
N	VEHICAL STORAGE BUILDING AND EQUIPMENT STORAGE BUILDING
Z	STANDARD DETAILS

EQUIPMENT IDENTIFICATION SYSTEM	
	SEQUENTIAL NUMBER OF SAME TYPE OF EQUIPMENT
	PROCESS STRUCTURE/DESIGNATION
	LETTER CODE FOR EQUIPMENT

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

AIR INLET & OUTLET IDENTIFICATIONS	
	SIZE-LENGTH BY WIDTH (INCHES)
	FLEXIBLE DUCT DIAMETER (INCHES, IF USED)
	CFM THRU DEVICE
	DEVICE DESIGNATION
	DEVICE GROUP: R-REGISTER, G-GRILLE, D-DIFFUSER
	DEVICE TYPE: S-SUPPLY, E-EEXHAUST, R-RETURN, T-TRANSFER

CONTROLS & INSTRUMENTATION LEGEND	
	CONTROL STATION
	DRAFT GAUGE
	ELECTRIC OPERATOR (EXPLOSION PROOF)
	ELECTRIC OPERATOR (MODULATING)
	ELECTRIC OPERATOR (2 POSITION)
	EMERGENCY VENTILATION SWITCH W/ NUMBER
	FLOW SWITCH
	GAUGE ACTIVATOR/ISOLATOR
	HUMIDISTAT W/ NUMBER
	LEVEL SWITCH
	PRESSURE DIFFERENTIAL SWITCH W/ NUMBER
	PRESSURE DIFFERENTIAL SWITCH W/ NUMBER (EXPLOSION PROOF)
	PRESSURE GAUGE W/ SHUTOFF VALVE
	PRESSURE SWITCH
	SMOKE DETECTOR W/ NUMBER
	SOLENOID OPERATOR
	THERMOMETER - DIAL TYPE
	THERMOMETER - STEM TYPE
	TEMPERATURE SENSOR WITH NUMBER
	THERMOSTAT WITH NUMBER
	THERMOSTAT (EXPLOSION PROOF) WITH NUMBER
	VACUUM GAUGE W/ SHUTOFF VALVE

MECHANICAL ABBREVIATIONS			
A	ALARM	G	GAUGE
AC	AIR COMPRESSOR	GALV	GALVANIZED
AD	ACCESS DOOR	GIH	GAS INFRARED HEATER
AF	AIR FLOW, AIRFOIL	GPM	GALLONS PER MINUTE
AFD	ADJUSTABLE FREQUENCY DRIVE	GUH	GAS UNIT HEATER
AFF	ABOVE FINISH FLOOR	GV	GATE VALVE
AFM	AIR FLOW MONITOR	H	HAND OPERATOR, HEATING, HEATING (MAKE ON FALL), HEIGHT, HORIZONTAL, HUMIDISTAT
AHU	AIR HANDLING UNIT	HC	HEATING COIL
ALUM	ALUMINUM	HCH	HEATING WATER CABINET HEATER
AP	ACCESS PANEL	HE	HEAT EXCHANGER
APPROX	APPROXIMATE	HO	HAND-OFF
AS	AIR SEPARATOR	HOA	HAND-OFF-AUTO
ATU	AIR TERMINAL UNIT	HP	HEAT PUMP, HORSEPOWER
AUTO	AUTOMATIC	HR	HEAT RECOVERY UNIT
AVG	AVERAGE	HUH	HEATING WATER UNIT HEATER
B	BELT DRIVE, BLOW THROUGH	HUM	HUMIDIFIER
BDD	BACKDRAFT DAMPER	HWB	HEATING WATER BOILER
BF	BLIND FLANGE	HWP	HEATING WATER PUMP
BFF	BELOW FINISH FLOOR	HZ	HERTZ
BFP	BACKFLOW PREVENTER	I	INTAKE
BH	BASEBOARD HEATER	ID	INSIDE DIAMETER
BI	BACKWARD INCLINED, BUILT-IN THERMOSTAT	IN	INCHES
BL	BOTTOM LEVEL	INV	INVERT
BLDG	BUILDING	K	KILOWATT
BLR	BLOWER	L	LINED DUCT, LOUVER
BOD	BOTTOM OF DUCT ELEVATION	LAT	LEAVING AIR TEMPERATURE
BOT	BOTTOM	LBS	POUNDS
BOUH	BOTTOM OF UNIT HEATER	LD	COMBINATION LOUVER/DAMPER
BTUH	BRITISH THERMAL UNITS PER HOUR	LI	LEVEL INDICATOR
BU	BELL-UP	LS	LEVEL SWITCH
BV	BALL VALVE	LWT	LEAVING WATER TEMPERATURE
C	CHANNEL, CONVECTOR, COOLING, COOLING (MAKE ON RISE)	LLCP	LEAD LAG CONTROL PANEL
CB	CENTRIFUGAL BLOWER	M	MAKUP AIR UNIT
CBD	COUNTERBALANCE BACKDRAFT DAMPER	MAU	MAKEUP AIR UNIT
CC	COOLING COIL	MAX	MAXIMUM
CD	CONTROL DAMPER	MCA	MINIMUM CIRCUIT AMPS
CDWP	CONDENSER WATER PUMP	ME	MIST ELIMINATOR
CENTR	CENTRIFUGAL	MFR	MANUFACTURER
CF	CABINET FAN	MOCP	MAXIMUM OVERCURRENT PROTECTION
CFM	CUBIC FEET PER MINUTE	MIN	MINIMUM
CH	CONVECTION HEATER	MOD	MODULATING
CL	CLASS, CENTERLINE	N	NORMALLY CLOSED
C/L	CENTERLINE	NC	NORMALLY OPEN, NUMBER
CO	CLEANOUT	NO	NORMALLY OPEN, NUMBER
CONC	CONCRETE	NPSHR	NET POSITIVE SUCTION HEAD REQUIRED
CONN	CONNECTION	O	OUTSIDE AIR
CONT	CONTINUATION	OA	OUTSIDE AIR
CS	CONTROL STATION	OED	OPEN ENDED DUCT
CT	COOLING TOWER	OD	OUTSIDE DIAMETER
CU	CONDENSING UNIT	P	PNEUMATIC
CV	CHECK VALVE, CONTROL VALVE	PD	PRESSURE DROP (INCHES OF WATER FOR AIR, FEET OF WATER FOR FLUIDS)
CWP	CHILLED WATER PUMP	PAC	PACKAGED AIR CONDITIONING UNIT
D	DIRECT DRIVE, DRAW-THRU	PAH	PACKAGED AIR HANDLING UNIT
DB	DRY BULB	PDS	PRESSURE DIFFERENTIAL SWITCH
DDC	DIRECT DIGITAL CONTROL	PEHX	POWERED EXHAUST
DEH	DEHUMIDIFIER	PF	PROPELLER FAN
DF	DUCT FAN	PHP	PACKAGED HEAT PUMP
DIA	DIAMETER	PL	PLATE
DM	DUCT MOUNTED	POS	POSITION
DN	DOWN	PPM	PARTS PER MILLION
DOAU	DEDICATED OUTDOOR AIR UNIT	PROP	PROPELLER
DSCP	DUTY STANDBY CONTROL PANEL	PRS	PRESSURE REDUCING STATION
DX	DIRECT EXPANSION	PRV	POWER ROOF VENTILATOR, PRESSURE REDUCING VALVE
E	ELECTRIC, ELECTRIC OPERATOR, EXHAUST	PS	PRESSURE SWITCH
EA	EACH, EXHAUST AIR	PSI	POUNDS PER SQUARE INCH
EAT	ENTERING AIR TEMPERATURE	PSIA	POUNDS PER SQUARE INCH ABSOLUTE
EC	ECONOMIZER, EVAPORATIVE COOLER	PSIG	POUNDS PER SQUARE INCH GAUGE
ECH	ELECTRIC CABINET HEATER	PTAC	PACKAGED TERMINAL AIR CONDITIONER
ECP	EQUIPMENT CONTROL PANEL	R	REACTIVATION AIR, RETURN AIR
EDH	ELECTRIC DUCT HEATER	RA	ROOM AIR CONDITIONER
EF	EXHAUST FAN	RCS	REMOTE CONTROL STATION
EFF	EFFICIENCY	REDD	REQUIRED
EGS	EMERGENCY GAS SCRUBBER	RH	RELATIVE HUMIDITY, ROOF HOOD
EIH	ELECTRIC INFRARED HEATER	RSF	ROOF SUPPLY FAN
EL	ELEVATION	RTU	ROOF TOP UNIT
EP	EXPLOSION PROOF	S	SUPPLY AIR
EQUIP	EQUIPMENT	SA	SUPPLY AIR
ES	EMERGENCY SWITCH	SCD	SMOKE CONTROL DAMPER
ESP	EXTERNAL STATIC PRESSURE	SCFM	STANDARD CUBIC FEET PER MINUTE
ET	EXPANSION TANK	SF	SQUARE FEET, SUPPLY FAN
EUH	ELECTRIC UNIT HEATER	SH	SHEET
EV	EXHAUST VALVE	SIM	SIMILAR
EVS	EMERGENCY VENTILATION SWITCH	SMD	SMOKE DETECTOR
EWT	ENTERING WATER TEMPERATURE	SP	STATIC PRESSURE (INCHES OF WATER)
EXIST	EXISTING	SPS	STATIC PRESSURE SENSOR
F	DEGREES FAHRENHEIT	SS	STAINLESS STEEL
FBD	FACE AND BYPASS DAMPER	STD	STANDARD
FC	FORWARD CURVE, FAN COIL	SV	SERVICE VALVE, SHUTOFF VALVE, SOLENOID VALVE
FD	FIRE DAMPER		
FDB	DEGREES FAHRENHEIT DRY BULB		
FEF	FUME EXHAUST FAN		
FLEX	FLEXIBLE		
FM	FLOW METER		
FPM	FEET PER MINUTE		
FR	FUNNEL RECEPTOR		
FRP	FIBERGLASS REINFORCED PLASTIC PIPE		
FS	FLOW SWITCH		
FSD	COMBINATION FIRE/SMOKE DAMPER		
FT	FEET, FIN TUBE HEATER		
FUR	FURNACE		
FWB	DEGREES FAHRENHEIT WET BULB		

GENERAL HVAC NOTES	
1.	THIS IS GENERAL LEGEND AND ABBREVIATION SHEET FOR HVAC DRAWINGS. SOME ITEMS CONTAINED ON THIS SHEET MAY NOT BE USED ON THIS SPECIFIC PROJECT.
2.	ALL MECHANICAL HVAC WORK SHALL BE IN ACCORDANCE WITH THE FOLLOWING APPLICABLE CODES: 2021 INTERNATIONAL BUILDING CODE. 2021 ARKANSAS MECHANICAL CODE. 2014 ARKANSAS ENERGY CODE. ASHRAE 62.1, 2022 VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY. NFPA 820, 2020 STANDARD FOR FIRE PROTECTION IN WASTEWATER TREATMENT AND COLLECTION FACILITIES. ANSI / ASHRAE 29.5, 2022 LABORATORY VENTILATION.
3.	FOR ROOFTOP EQUIPMENT CURBS, FLUES AND FLASHING DETAILS, SEE ARCHITECTURAL DRAWINGS.
4.	SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL EQUIPMENT BASE DETAILS.
5.	"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.
6.	ALL MATERIALS, FITTINGS, COVERS AND EQUIPMENT INSTALLED IN RETURN AIR PLENUMS SHALL BE NONCOMBUSTIBLE AND UL LISTED FOR USE IN RETURN AIR PLENUMS.
7.	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.
8.	METAL ROOF DECKING OR BOTTOM CHORD OF BAR JOISTS SHALL NOT BE USED FOR THE SUPPORT OF EQUIPMENT, PIPING OR DUCTWORK.
9.	ALL HANGERS, BRACKETS OR BRACES FOR PIPING, DUCTWORK AND EQUIPMENT ARE NOT INDICATED ON THE DRAWINGS. REFER TO THE SPECIFICATIONS FOR SUPPORT REQUIREMENTS NOT SHOWN ON THE PLANS.
10.	OUTSIDE AIR INLETS SHALL BE LOCATED A MINIMUM OF 10'-0" AWAY FROM ANY EXHAUST AIR OR PLUMBING VENT OUTLET.
11.	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 TO BE ROUTED NEAR WALLS.
12.	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 OR BOTTOM OF DUCT ELEVATION.
13.	PIPING AND DUCTWORK INSTALLED ABOVE SUSPENDED CEILING SHALL BE INSTALLED TO ALLOW A MINIMUM 8 INCH CLEARANCE BETWEEN THE CEILING AND PIPING OR BOTTOM OF DUCT.
14.	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.
15.	DUCT SIZES INDICATED ARE CLEAR DIMENSIONS INSIDE THE DUCT OR DUCT LINING. SHEET METAL SIZES ARE LARGER FOR INTERNALLY LINED DUCTWORK.
16.	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: L1 - 1 INCH INTERNALLY LINED W1 - 1 INCH EXTERNALLY WRAPPED L15 - 1.5 INCH INTERNALLY LINED W15 - 1.5 INCH EXTERNALLY WRAPPED L2 - 2 INCH INTERNALLY LINED W2 - 2 INCH EXTERNALLY WRAPPED
17.	DUCT CONNECTIONS TO EQUIPMENT, PIPING SIZES TO EQUIPMENT AND EQUIPMENT SUPPORTS SHALL BE VERIFIED AND ADJUSTED TO MATCH ACTUAL EQUIPMENT FURNISHED.
18.	THE LOCATION OF PIPING AND VALVES TO THE AIR HANDLING EQUIPMENT SHALL NOT INTERFERE WITH FILTER REMOVAL OR AIR HANDLING EQUIPMENT SERVICING.
19.	ROOFTOP EQUIPMENT SHALL NOT BE LOCATED SUCH THAT ACCESS TO CONTROLS AND TO PERFORM SERVICE FOR EQUIPMENT IS LOCATED WITHIN 10'-0" OF THE BUILDING EDGE.
20.	CONTROL DAMPER SIZES SHALL MATCH DIMENSIONS OF ASSOCIATED LOUVER UNLESS OTHERWISE INDICATED.
21.	ALL RELIEF VALVES SHALL BE PIPED TO 12" AFF.
22.	SEISMIC RESTRAINTS/BRACING SHALL BE PROVIDED FOR ALL EQUIPMENT, DUCTWORK, AND ACCESSORIES IN ACCORDANCE WITH THE LATEST SMACNA SEISMIC RESTRAINT MANUAL AND LOCAL BUILDING CODES. DESIGN BUILDER SHALL BE RESPONSIBLE FOR ALL SEISMIC SUPPORTS AND ADDITIONAL/MISCELLANEOUS STEEL REQUIRED FOR PROPER INSTALLATION OF SUPPORTS. SUPPORTS AND SEISMIC RESTRAINTS DESIGN SUBMITTALS SHALL BEAR THE STAMP AND SIGNATURE OF A LICENSED ENGINEER.
23.	INSULATION SHALL BE PROVIDED FOR EQUIPMENT, PIPING AND DUCT SYSTEMS AS INDICATED IN THE SPECIFICATIONS.
24.	THE BOTTOM ELEVATION OF UNIT HEATERS SHALL BE 8'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.
25.	THE BOTTOM ELEVATION OF WALL HEATERS SHALL BE 16" ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.
26.	WALL THERMOSTATS SHALL BE 4'-6" ABOVE THE FLOOR UNLESS OTHERWISE REQUIRED.
27.	ALL UNIT HEATERS SHALL BE PROVIDED WITH WALL MOUNTED THERMOSTAT AS INDICATED IN THE SPECIFICATIONS.
28.	DUCTWORK MATERIALS SHALL BE AS FOLLOWS, UNLESS OTHERWISE INDICATED BY NOTES ON THE DRAWINGS, SEE SPECIFICATION 15800: AIR CONDITIONING SPACES - GALVANIZED STEEL PROCESS SPACES - ALUMINUM OUTDOOR - ALUMINUM
29.	INSULATION FOR HVAC SYSTEM SHALL BE PER SPECIFICATION 15251, UNLESS OTHERWISE INDICATED BY NOTES ON THE DRAWINGS.

ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

DATE	REVISION

CITY OF BENTONVILLE, ARKANSAS
 BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

HAWKINS WEIR ENGINEERS, INC.

CITY OF BENTONVILLE, ARKANSAS
 FACILITY IMPROVEMENTS

LEGEND, ABBREVIATIONS AND GENERAL NOTES

CITY OF BENTONVILLE, ARKANSAS
 BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

BID DRAWINGS

MARCH 21, 2025

CITY OF BENTONVILLE, ARKANSAS
 FACILITY IMPROVEMENTS

DATE:	MARCH 2025
SCALE:	AS SHOWN
DESIGNED BY:	AK
DRAWN BY:	CP
HWEI NO.:	2021037
FILENAME:	H-GENERAL

SHEET NO.

H-1

2/12/2025 10:29:42 AM / AJP / PLUMBING

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-GENERAL.rvt

GENERAL ABBREVIATIONS

Table of general abbreviations including symbols and descriptions for items like alarm, compressor, access door, etc.

SYSTEM ABBREVIATIONS

Table of system abbreviations categorized by WATER, WASTE, and SPECIAL, including items like deionized water, fire protection water, etc.

VALVE LEGEND

Table of valve legends showing plan and section views for various valves like angle valve, backflow preventer, ball valve, etc.

PIPING ACCESSORIES LEGEND

Table of piping accessories legends showing plan and section views for items like flexible connection, hose faucet, pressure reducing station, etc.

PIPING LEGEND

Table of piping legends showing plan and section views for different piping types and orientations.

CONTROLS AND INSTRUMENTATION

Table of controls and instrumentation legends showing symbols for flow switch, level switch, pressure gauge, etc.

PIPE FITTING LEGEND

Table of pipe fitting legends showing plan and section views for items like blind flange, cap, reducer, sleeve, etc.

PLUMBING LEGEND

Table of plumbing legends showing plan and section views for items like bell-up drain, cleanout, blending valve, etc.

SCHEMATICS

Table of schematics legends showing symbols for air-gap fitting, bell-up drain, floor cleanout, etc.

SCHEMATICS SPECIALTIES

Table of schematics specialties legends showing symbols for automatic valve station, basket strainer, combination pump discharge valve, etc.

GENERAL PLUMBING NOTES

- List of 20 general plumbing notes providing instructions and specifications for the project, including references to codes and drawing details.

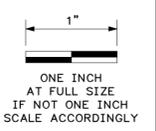


Table for tracking DATE and REVISIONS.



Company logo for HAWKINS WEIR ENGINEERS, INC. and BLACK & VEATCH.

Table for tracking DATE, SCALE, DESIGNED BY, DRAWN BY, HWEI NO., and FILENAME.

BID DRAWINGS MARCH 21, 2025

SHEET NO. H-2

BID DRAWINGS

MARCH 21, 2025

AIR DEVICE SCHEDULE

Table with columns: UNIT NUMBER, MANUFACTURER, MODEL, FRAME/BORDER, MODULE SIZE, MATERIAL, FINISH, DAMPER TYPE, NOTES. Rows include ER-1, RD-1, RD-2, RR-1, SD-1, SD-2, SR-1.

ROOF HOOD SCHEDULE

Table with columns: UNIT NUMBER, LOCATION, MANUFACTURER, MODEL, AIR FLOW (CFM), AIR PD (IN WC), TYPE, THROAT SIZE (IN X IN), HOOD CONSTRUCTION, APPROX WEIGHT (LBS), NOTES. Rows include RH-A01, RH-A02.

DEDICATED OUTDOOR AIR UNIT SCHEDULE

Table with columns: UNIT NUMBER, LOCATION, MANUFACTURER, MODEL, SUPPLY FAN, EXHAUST FAN, POWER SUPPLY, COOLING, HEATING, FILTER DATA, APPROX WEIGHT, NOTES. Row includes DOAU-L01.

FAN SCHEDULE

Table with columns: UNIT NUMBER, LOCATION, MANUFACTURER, MODEL, FAN TYPE, AIR FLOW (CFM), ESP (IN WC), BRAKE HP, MOTOR HP, POWER SUPPLY, MINIMUM WHEEL DIAMETER (IN), WHEEL TYPE, DRIVE, FILTER DATA, VIBRATION ISOLATION, APPROX WEIGHT, NOTES. Rows include EF-A01 through SF-A02.

MAKEUP AIR UNIT SCHEDULE

Table with columns: UNIT NUMBER, LOCATION, MANUFACTURER, MODEL, HEATING TYPE, AIR FLOW (CFM), ESP (IN WC), MOTOR HP, POWER SUPPLY, MINIMUM CIRCUIT AMPACITY, OUTPUT CAPACITY (BTUH OR (KW)), MINIMUM WHEEL DIAMETER (IN), FILTER DATA, APPROX WEIGHT, NOTES. Rows include MAU-A01 through MAU-M02.

PACKAGED AIR CONDITIONING UNIT/HEAT PUMP SCHEDULE

Table with columns: UNIT NUMBER, LOCATION, MANUFACTURER, MODEL, INDOOR FAN, POWER SUPPLY, COOLING, HEATING, FILTER DATA, ECONOMIZER DATA, APPROX WEIGHT, NOTES. Rows include PAC-A01 through PHP-M01.

CONT SCHEDULE NOTES

MAKEUP AIR UNIT SCHEDULE:
CONT NOTES:
9. LOUVERED INLET.
10. VARIABLE FREQUENCY DRIVE - FOR BALANCING DIRECT DRIVE FAN.
11. HEATING CAPACITY AND ESP SPECIFIED FOR HIGH FLOWRATE.
PACKAGED AIR CONDITIONING UNIT/HEAT PUMP SCHEDULE:
CAPACITY NOTE:
CAPACITIES LISTED IN PARENTHESES ARE IN UNITS OF "KW".
CAPACITIES LISTED WITHOUT PARENTHESES ARE IN UNITS OF "BTUH".
OUTDOOR COIL ENTERING AIR TEMPERATURE:
COOLING - 102°F DESIGN/ 0°F MIN
HEATING - 15°F DESIGN (HEAT PUMP)
NOTES:
1. INTEGRAL VFD OR VARIABLE SPEED MOTOR TO ALLOW BALANCING OF DIRECT DRIVE FAN.
2. UNIT IS SUBJECT TO CORROSION FROM A HYDROGEN SULFIDE LADEN ATMOSPHERE...

GENERAL SHEET NOTES

1. SEE DRAWING H-1 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
SCHEDULE NOTES
AIR DEVICE SCHEDULE:
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.
3. COORDINATE COLOR WITH ARCHITECT PRIOR TO ORDERING.
ROOF HOOD SCHEDULE:
NOTES:
1. UNIT IS SUBJECT TO CORROSION FROM A HYDROGEN SULFIDE LADEN ATMOSPHERE. A PROTECTIVE SPECIAL COATING OF EPOXY SHALL BE PROVIDED.
2. 1/2" ALUMINUM BIRD SCREEN TO BE PROVIDED.
DEDICATED OUTDOOR AIR UNIT SCHEDULE:
CAPACITY NOTE:
CAPACITIES LISTED IN PARENTHESES ARE IN UNITS OF "KW".
CAPACITIES LISTED WITHOUT PARENTHESES ARE IN UNITS OF "BTUH".
OUTDOOR COIL ENTERING AIR TEMPERATURE:
COOLING - 102°F DESIGN/ 0°F MIN
HEATING - 15°F DESIGN (HEAT PUMP)
NOTES:
1. INTEGRAL VFD OR VARIABLE SPEED MOTOR TO ALLOW BALANCING OF DIRECT DRIVE FAN.
2. UNIT IS SUBJECT TO CORROSION FROM A HYDROGEN SULFIDE LADEN ATMOSPHERE...

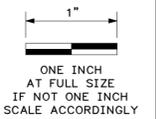


Table for REVISIONS with columns: DATE, REVISION.



HAWKINS WEIR ENGINEERS, INC. logo and contact information.

City of Bentonville, Arkansas logo and project name: H-3 SCHEDULES.

DATE: MARCH 2025
SCALE: AS SHOWN
DESIGNED BY: AK
DRAWN BY: CP
HWEI NO.: 2021037
FILENAME: H-GENERAL
SHEET NO. H-3

Autodesk Docs://1410144 - Bentonville Water Resource Recovery Facility Improvements/H-GENERAL.rvt 2/12/2025 10:27:08 AM / CP / HVAC

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HEATER SCHEDULE														
UNIT NUMBER	LOCATION	MANUFACTURER	MODEL	FAN TYPE	UNIT ORIENTATION	AIR FLOW (CFM)	AIR PD (IN WC)	OUTPUT CAPACITY		MOTOR HP	POWER SUPPLY		APPROX WEIGHT (LBS)	NOTES
								(BTUH)	(KW)		VOLTS	PHASE		
CH-A01	INFLUENT STRUCTURE - MECH. ROOM	INDEECO	CONVECTOR	CH	SURFACE MOUNT	---	---	---	1	---	208	1	25	2,3,6
CH-A02	INFLUENT STRUCTURE - TOILET	INDEECO	CONVECTOR	CH	SURFACE MOUNT	---	---	---	1	---	208	1	25	2,3,6
CH-A03	INFLUENT STRUCTURE - VESTIBULE	INDEECO	CONVECTOR	CH	SURFACE MOUNT	---	---	---	1	---	208	1	25	2,3,6
EDH-A01	INFLUENT STRUCTURE - ELECTRICAL ROOM	INDEECO	CUSTOM DUCT HEATER	EDH	HORIZONTAL	1200	---	---	19	---	480	3	350	1A,5,7,8
EDH-A02	INFLUENT STRUCTURE - VESTIBULE	INDEECO	CUSTOM DUCT HEATER	EDH	HORIZONTAL	350	---	---	6	---	480	3	150	1A,5,7,8
EUH-A01	INFLUENT STRUCTURE - EQUIPMENT ROOM	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	5	1/4	480	3	75	2,4
EUH-A02	INFLUENT STRUCTURE - ELECTRICAL ROOM	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	5	1/4	480	3	75	2,4
EUH-A03	INFLUENT STRUCTURE - EQUIPMENT ROOM	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	5	1/4	480	3	75	2,4
EUH-A04	INFLUENT STRUCTURE - EQUIPMENT ROOM	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	5	1/4	480	3	75	2,4
EUH-A05	INFLUENT STRUCTURE - DUMPSTER AREA	INDEECO	ULTRASAFE EXP	EUHEXP	HORIZONTAL	850	---	---	7.5	1/4	480	3	150	2,4,3
EUH-A06	INFLUENT STRUCTURE - DUMPSTER AREA	INDEECO	ULTRASAFE EXP	EUHEXP	HORIZONTAL	850	---	---	7.5	1/4	480	3	150	2,4,3
EUH-A07	INFLUENT STRUCTURE - DUMPSTER AREA	INDEECO	ULTRASAFE EXP	EUHEXP	HORIZONTAL	650	---	---	5	1/4	480	3	150	2,4,3
EUH-A08	INFLUENT STRUCTURE - DUMPSTER AREA	INDEECO	ULTRASAFE EXP	EUHEXP	HORIZONTAL	650	---	---	5	1/4	480	3	150	2,4,3
EUH-A09	INFLUENT STRUCTURE - STAIR	INDEECO	ULTRASAFE EXP	EUHEXP	HORIZONTAL	650	---	---	5	1/4	480	3	150	2,4,3
EUH-A10	INFLUENT STRUCTURE - EQUIPMENT AREA	INDEECO	ULTRASAFE EXP	EUHEXP	HORIZONTAL	650	---	---	5	1/4	480	3	150	2,4,3
EUH-A11	INFLUENT STRUCTURE - EQUIPMENT AREA	INDEECO	ULTRASAFE EXP	EUHEXP	HORIZONTAL	650	---	---	5	1/4	480	3	150	2,4,3
EUH-A12	INFLUENT STRUCTURE - EQUIPMENT AREA	INDEECO	ULTRASAFE EXP	EUHEXP	HORIZONTAL	650	---	---	5	1/4	480	3	150	2,4,3
EUH-A13	INFLUENT STRUCTURE - EQUIPMENT AREA	INDEECO	ULTRASAFE EXP	EUHEXP	HORIZONTAL	650	---	---	5	1/4	480	3	150	2,4,3
EUH-A14	INFLUENT STRUCTURE - EQUIPMENT AREA	INDEECO	ULTRASAFE EXP	EUHEXP	HORIZONTAL	650	---	---	5	1/4	480	3	150	2,4,3
EUH-A15	INFLUENT ELECTRICAL BUILDING-COMPRESSOR	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	2	1/4	277	1	75	2,4
EUH-A16	INFLUENT ELECTRICAL BUILDING-COMPRESSOR	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	2	1/4	277	1	75	2,4
EUH-A17	INFLUENT ELECTRICAL BUILDING-COMPRESSOR	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	2	1/4	277	1	75	2,4
EUH-A18	INFLUENT STRUCTURE - ELECTRICAL ROOM	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	2	1/4	277	1	75	2,4
EUH-J01	EFFLUENT PUMP STATION - PUMP ROOM	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	5	1/4	480	3	75	2,4
EUH-J02	EFFLUENT PUMP STATION - PUMP ROOM	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	5	1/4	480	3	75	2,4
EUH-J03	EFFLUENT PUMP STATION - PUMP ROOM	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	5	1/4	480	3	75	2,4
EUH-J04	EFFLUENT PUMP STATION - PUMP ROOM	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	5	1/4	480	3	75	2,4
EUH-J05	EFFLUENT PUMP STATION - PUMP ROOM	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	5	1/4	480	3	75	2,4
EUH-M01	MAINTENANCE BUILDING- WELDING BAY 101	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	5	1/4	480	3	75	2,4
EUH-M02	MAINTENANCE BUILDING- WELDING BAY 101	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	5	1/4	480	3	75	2,4
EUH-M03	MAINTENANCE BUILDING- MAINTENANCE BAY 103	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	7.5	1/4	480	3	75	2,4
EUH-M04	MAINTENANCE BUILDING- MAINTENANCE BAY 105	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	7.5	1/4	480	3	75	2,4
EUH-M05	MAINTENANCE BUILDING- MAINTENANCE BAY 105	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	7.5	1/4	480	3	75	2,4
EUH-M06	MAINTENANCE BUILDING- MAINTENANCE BAY 103	INDEECO	TRIAD	EUHCR	HORIZONTAL	700	---	---	7.5	1/4	480	3	75	2,4
WH-A01	ADMINISTRATION / LABORATORY BUILDING - LOCKERS	INDEECO	WAI	WH	SURFACE MOUNT	160	---	---	1.125	---	208	1	50	9,10
WH-A02	ADMINISTRATION / LABORATORY BUILDING - WOMENS	INDEECO	WAI	WH	SURFACE MOUNT	160	---	---	1.125	---	208	1	50	9,10
WH-M01	MAINTENANCE BUILDING - LOCKERS 109	INDEECO	WAI	WH	SURFACE MOUNT	160	---	---	1.125	---	208	1	50	9,10
WH-M02	MAINTENANCE BUILDING - OFFICE 112	INDEECO	WAI	WH	SURFACE MOUNT	160	---	---	1.125	---	208	1	50	9,10
WH-M03	MAINTENANCE BUILDING - WORK AREA 111	INDEECO	WAI	WH	SURFACE MOUNT	160	---	---	1.125	---	208	1	50	9,10
WH-M04	MAINTENANCE BUILDING - BREAKROOM 114	INDEECO	WAI	WH	SURFACE MOUNT	160	---	---	1.125	---	208	1	50	9,10

GENERAL SHEET NOTES

1. SEE DRAWING H-1 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

SCHEDULE NOTES

HEATER SCHEDULE:
 TYPE ABBREVIATIONS:
 EDH - ELECTRIC DUCT HEATER
 EUHEXP - EXPLOSIONPROOF ELECTRIC UNIT HEATER
 EUHCR - CORROSION RESISTANT ELECTRIC UNIT HEATER
 CH - CONVECTION HEATER

NOTES:
 1. ELECTRIC DUCT HEATER ELEMENT TYPE
 A) STAINLESS STEEL FINNED TUBE B) OPEN COIL.
 2. PROVIDE CORROSION RESISTANT WALL MOUNTING BRACKET.
 3. EXPLOSION PROOF THERMOSTAT TO BE PROVIDED AS AN ACCESSORY.
 4. PROVIDE CORROSION RESISTANT WALL MOUNTING THERMOSTAT.
 5. IN-DUCT THERMOSTAT TO BE PROVIDED AS AN ACCESSORY.
 6. EXPLOSION-PROOF CONVECTOR. CORROSION RESISTANT STAINLESS STEEL CONSTRUCTION.
 7. ENTIRE UNIT AND CONTROLS SHALL BE SUITABLE FOR OUTDOOR INSTALLATION.
 8. SEE PLAN DRAWINGS FOR DUCT DIMENSIONS.
 9. PROVIDE BUILT-IN THERMOSTAT.
 10. PROVIDE SURFACE MOUNTING FRAME.

1"
ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY
DATE
REVISION



HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
 BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
 HVAC SCHEDULES
 CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025
 SCALE: AS SHOWN
 DESIGNED BY: AK
 DRAWN BY: CP
 HWEI NO.: 2021037
 FILENAME: H-GENERAL

BID DRAWINGS
 MARCH 21, 2025

SHEET NO.
H-4

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-GENERAL.rvt 2/12/2025 10:30:10 AM / YBM / PLUMBING

BACKFLOW PREVENTER SCHEDULE

Table with 9 columns: UNIT NUMBER, LOCATION, MANUFACTURER, MODEL, SERVICE, BODY SIZE (IN), MAXIMUM FLOW (GPM), MAXIMUM PRESSURE DIFFERENTIAL (PSI), NOTES. Lists backflow preventer units for various buildings.

PIPING ACCESSORIES SCHEDULE

Table with 5 columns: UNIT NUMBER, MANUFACTURER, MODEL, DESCRIPTION, NOTES. Lists various piping accessories like floor cleanouts, drains, and valves.

PLUMBING EQUIPMENT SCHEDULE

Table with 6 columns: UNIT NUMBER, MANUFACTURER, MODEL, DESCRIPTION, APPROX WEIGHT (LBS), NOTES. Lists plumbing equipment such as pumps, expansion tanks, water heaters, and hose reels.

PLUMBING FIXTURE SCHEDULE

Table with 8 columns: UNIT NUMBER, MANUFACTURER, MODEL, DESCRIPTION, WATER (IN) HOT/COLD, SANITARY (IN) WASTE/VENT, APPROX WEIGHT (LBS), NOTES. Lists plumbing fixtures like toilets, sinks, showers, and faucets.

GENERAL SHEET NOTES

1. SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

SCHEDULE NOTES

BACKFLOW PREVENTER SCHEDULE:

NOTES: 1. PROVIDE AIR GAP FITTINGS.

PIPING ACCESSORIES SCHEDULE:

NONE

PLUMBING EQUIPMENT SCHEDULE:

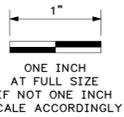
NOTES:

1. WATER HEATER SHALL BE EXPLOSION PROOF: CLASS 1, DIVISION 1, GROUPS C&D. 2. SOLENOID VALVE OF TRAP PRIMER SHALL BE EXPLOSION PROOF: CLASS 1, DIVISION 1, GROUPS C&D.

PLUMBING FIXTURE SCHEDULE:

NOTES:

1. FIXTURE AND INSTALLATION SHALL BE ADA COMPLIANT. 2. TEMPERED WATER SUPPLY. 3. LOCAL AND REMOTE ALARM SYSTEM. 4. COMMON FLOW SWITCH SERVES BOTH EEW-1 AND ES-1.



Revision table with columns for DATE and REVISION.



HAWKINS WEIR ENGINEERS, INC. logo and BLACK & VEATCH logo.

CITY OF BENTONVILLE, ARKANSAS WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS PLUMBING SCHEDULES

DATE: MARCH 2025 SCALE: AS SHOWN DESIGNED BY: SAM DRAWN BY: YBM HWI NO.: 2021037 FILENAME: H-GENERAL

BID DRAWINGS MARCH 21, 2025

SHEET NO. H-5

HVAC SEQUENCE OF OPERATIONS:

1. GENERAL SYSTEM OPERATIONS.

1.1. TEMPERATURE CONTROL PANEL(S), TEMPERATURE CONTROL PANEL(S) (TCP) AND EQUIPMENT CONTROL PANELS (ECP) IDENTIFIED IN THE SEQUENCE OF OPERATION SHALL BE PROVIDED WITH THE INDICATING LIGHTS, RUNNING LIGHTS, ALARM LIGHTS, AUDIBLE ALARMS, TIMERS, AND SELECTOR SWITCHES FOR CONTROL AND STATUS INDICATION OF THE EQUIPMENT SERVED. WHERE NO CONTROL PANELS ARE PROVIDED FOR EQUIPMENT, THE LIGHTS AND SWITCHES SHALL BE AT THE STARTER OR MCC. RUNNING LIGHTS SHALL BE PROVIDED TO INDICATE BOTH ENERGIZED AND DE-ENERGIZED CONDITIONS FOR THE EQUIPMENT AND SHALL POSITIVELY INDICATE EQUIPMENT CONDITIONS FROM THE MOTOR STARTER OR CURRENT SENSOR. SWITCH POSITION SHALL NOT BE USED FOR LIGHT ILLUMINATION. INDICATING AND RUNNING LIGHTS SHALL BE LOCATED DIRECTLY ABOVE EACH RESPECTIVE SELECTOR SWITCH WITH LIGHT COLORS AS FOLLOWS:

Table with 2 columns: Color and Status. Rows include RED - ENERGIZED, GREEN - DE-ENERGIZED, AMBER - ALARM, WHITE - STATUS.

INDICATING LIGHTS AND SELECTOR SWITCHES SHALL BE LOCATED ON THE FACE OF THE TEMPERATURE CONTROL PANEL SERVING THE RESPECTIVE EQUIPMENT. IN ADDITION TO THE LIGHTS, TIMERS, AND SELECTOR SWITCHES DESCRIBED IN THE SEQUENCE OF OPERATION FOR THE INDIVIDUAL EQUIPMENT, EACH CONTROL PANEL SHALL BE PROVIDED WITH THE FOLLOWING:

Table with 2 columns: Function and Description. Rows include 'CONTROL POWER ON' STATUS LIGHT, 'INDICATING LIGHT TEST' PUSHBUTTON, 'ALARM SILENCE' PUSHBUTTON, 'ALARM RESET' PUSHBUTTON (WHERE APPLICABLE).

CONTROL PANELS SPECIFIED TO BE PROVIDED WITH ALARM CONDITION INDICATING LIGHTS SHALL BE PROVIDED WITH AN ELECTRICALLY ISOLATED CONTACT TO PROVIDE A COMMON ALARM TO THE PLANT CONTROL SYSTEM (PCS). EACH CONTROL PANEL SHALL BE PROVIDED WITH A MINIMUM OF ONE COMMON ALARM OUTPUT POINT TO THE PCS AND ADDITIONAL INDIVIDUAL ALARM POINTS AS INDICATED BELOW.

TEMPERATURE CONTROL PANELS SHALL COME WITH PHENOLIC NAMEPLATES FOR EACH CONTROL SWITCH INDICATING SWITCH TYPE, EQUIPMENT CONTROLLED, ROOM OR AREA SERVED, AND SWITCH AUTOMATIC POSITION EQUIPMENT INTERLOCK.

1.2. SYSTEM INTERLOCKS AND ALARMS

UNLESS OTHERWISE INDICATED, ALL EQUIPMENT INTERLOCKING DEVICES AS DESCRIBED HEREIN SHALL BE PROVIDED WITHIN THE RESPECTIVE TEMPERATURE/EQUIPMENT CONTROL PANEL (TCP/ECP).

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 OR PLANT CONTROL SYSTEM (PCS) AND TCP/ECP WHEN A FIRE ALARM PANEL IS NOT PRESENT. A "SMOKE DETECTED" ALARM LIGHT ON THE RESPECTIVE REMOTE TEST STATION SHALL BE ILLUMINATED. WHERE A TCP/ECP IS PRESENT, THE REMOTE TEST STATION SHALL BE MOUNTED ON OR ADJACENT TO THE TEMPERATURE CONTROL PANEL. 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.

Table with 2 columns: SMOKE DETECTOR and DE-ENERGIZED EQUIPMENT. Row: SMD-A01 MAU-A01.

1.2.1.2. SMOKE DETECTION (AREA SMOKE DETECTION). A SMOKE DETECTED SIGNAL SHALL BE SENT FROM THE FIRE ALARM PANEL TO THE RESPECTIVE TEMPERATURE/EQUIPMENT CONTROL PANEL IN THE EVENT SMOKE IS DETECTED BY THE BUILDING SMOKE DETECTION SYSTEM. THE EQUIPMENT BELOW AND ANY INTERLOCKED EQUIPMENT SHALL BE DE-ENERGIZED AND OUTSIDE AIR DAMPERS ASSOCIATED WITH THE DE-ENERGIZED EQUIPMENT SHALL CLOSE.

Table with 2 columns: EQUIPMENT and TEMPERATURE/EQUIPMENT CONTROL PANEL. Lists MAU-A02, MAU-A03, PAC-A01, PAC-A02, SF-A01, PAC-J01, PAC-J02, PHP-L01, PHP-L02, PHP-L03, DOAU-L01, MAU-M01, MAU-M02, PHP-M01.

1.2.2. LOW TEMPERATURE PROTECTION. LOW AIR TEMPERATURE THERMOSTATS/SENSORS SHALL BE LOCATED IN THE SYSTEMS INDICATED BELOW. UPON DETECTION OF LOW AIR TEMPERATURE, THE THERMOSTAT SHALL DE-ENERGIZE THE RESPECTIVE EQUIPMENT AND ALL INTERLOCKED EQUIPMENT, CONTROL DAMPER(S) OF THE RESPECTIVE EQUIPMENT AND INTERLOCKED EQUIPMENT SHALL RETURN TO THE NORMAL POSITION, AND A "LOW AIR TEMPERATURE" ALARM LIGHT ON THE FACE OF THE RESPECTIVE TEMPERATURE/EQUIPMENT CONTROL PANEL SHALL BE ILLUMINATED OR ALARM INDICATION SENT TO THE PLANT CONTROL SYSTEM. AN ADJUSTABLE 0 TO 5 MINUTE TIME DELAY RELAY SHALL BE PROVIDED TO ALLOW FOR STARTING OF THE EQUIPMENT UNDER COLD AMBIENT CONDITIONS. UPON LOW TEMPERATURE SHUTDOWN, THE EQUIPMENT SHALL REQUIRE A MANUAL RESTART.

Table with 3 columns: EQUIPMENT, THERMOSTAT, TEMPERATURE/EQUIPMENT CONTROL PANEL. Lists MAU-A01, MAU-A02, MAU-A03, SF-A01, SF-A02, DOAU-L01*, MAU-M01, MAU-M02, PHP-M01.

* THIS EQUIPMENT SHALL ONLY GENERATE AN ALARM IN THE INSTANCE OF LOW TEMPERATURE AS DESCRIBED ABOVE, BUT SHOULD NOT BE DE-ENERGIZED.

** THIS THERMOSTAT SHALL GENERATE A FREEZE WARNING ALARM TO THE PLANT CONTROL SYSTEM.

1.2.3. HIGH FILTER PRESSURE LOSS. A HIGH LIMIT PRESSURE DIFFERENTIAL FLOW SWITCH SHALL BE LOCATED ACROSS THE FILTER BANK OF THE EQUIPMENT INDICATED BELOW. IN THE EVENT THE PRESSURE DIFFERENTIAL ACROSS THE FILTER EXCEEDS THE PRESET VALUE, A "HIGH FILTER PRESSURE LOSS" ALARM LIGHT ON THE FACE OF THE RESPECTIVE TEMPERATURE/EQUIPMENT CONTROL PANEL OR THERMOSTAT (WHERE FURNISHED WITH LIGHTS) SHALL BE ILLUMINATED.

Table with 3 columns: EQUIPMENT, FLOW SWITCH, TEMPERATURE/EQUIPMENT CONTROL PANEL. Lists MAU-A01, MAU-A02, MAU-A03, SF-A01, PDS-A06, PDS-A07, TCP-A01, PAC-A01, PAC-A02, PAC-J01, PAC-J02, PHP-L01, PHP-L02, PHP-L03, DOAU-L01, MAU-M01, MAU-M02, PHP-M01.

1.2.4. VENTILATION SYSTEM FAILURE.

1.2.4.1. VENTILATION SYSTEM FAILURE (AIRFLOW SWITCHES). VENTILATION SYSTEM FAILURE PRESSURE DIFFERENTIAL SWITCHES SHALL BE LOCATED IN THE SYSTEMS INDICATED BELOW. IN THE EVENT THAT AIRFLOW IS NOT ATTAINED OR LOST AS DETERMINED BY THE PRESSURE DIFFERENTIAL FLOW SWITCH, A "VENTILATION SYSTEM FAILURE" SIGNAL SHALL BE TRANSMITTED TO THE FIRE ALARM SIGNALING SYSTEM. WHERE A FIRE ALARM SIGNALING SYSTEM IS NOT PRESENT, THE "VENTILATION SYSTEM FAILURE" SIGNAL SHALL BE TRANSMITTED TO THE PLANT CONTROL SYSTEM (PCS). WHERE INDICATED ON THE DRAWINGS, A VISUAL ALARM SHALL BE ILLUMINATED AND AUDIBLE ALARM SHALL SOUND AT EACH ROOM ENTRANCE AND WITHIN THE ROOM. THE FIRE ALARM SIGNALING SYSTEMS HAVE A NORMALLY OPEN CONTACT FOR TRANSMITTING A SIGNAL TO THE RESPECTIVE TEMPERATURE/EQUIPMENT CONTROL PANEL ILLUMINATING AN ALARM INDICATING LIGHT FOR THE RESPECTIVE EQUIPMENT.

Table with 3 columns: EQUIPMENT, FLOW SWITCH, TEMPERATURE/EQUIPMENT CONTROL PANEL. Lists MAU-A01, MAU-A02, SF-A01, SF-A02, DOAU-L01, PDS-A01, PDS-A08, PDS-A05, PDS-A03, PDS-L01, ECP-A01, ECP-A02, TCP-A01, TCP-A01, ECP-L01.

1.2.4.2. VENTILATION SYSTEM FAILURE. PRESSURE DIFFERENTIAL SWITCHES SHALL BE LOCATED IN THE AIR LOCK VESTIBULE AS SHOWN IN THE AIR FLOW DIAGRAMS. IN THE EVENT AN AIR LOCK DOOR IS OPEN FOR LONGER THAN 20 SECONDS OR VENTILATION FAILS AS DETERMINED BY THE PRESSURE DIFFERENTIAL SWITCH (PDS-A02) (AN ADJUSTABLE 0 TO 5 MINUTE TIME DELAY RELAY SHALL BE PROVIDED TO ALLOW FOR DOOR TO CLOSE) OR COMBUSTIBLE GAS CONCENTRATIONS ARE GREATER THAN 10 PERCENT OF THE LOWER FLAMMABLE LIMIT OR FAN FAILURE, A "VENTILATION SYSTEM FAILURE" SIGNAL SHALL BE TRANSMITTED TO THE PLANT CONTROL SYSTEM AND VISIBLE AND AUDIBLE ALARMS SHALL ACTIVATE AT THE ENTRANCES AND WITHIN THE ROOM.

2. HEATING SYSTEMS.

2.1. UNIT HEATERS. UNIT 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 AN INDIVIDUAL "ON-OFF" FAN SELECTOR SWITCH. THE SWITCH LOCATION SHALL BE AS INDICATED BELOW. WHEN THE SWITCH IS PLACED IN THE "ON" POSITION, THE RESPECTIVE EQUIPMENT FAN SHALL BE ENERGIZED. BEFORE THE FAN CAN OPERATE, THE CONTROL DAMPER(S) SHALL BE PROVEN OPEN. WHEN THE EQUIPMENT FAN IS DE-ENERGIZED, THE CONTROL DAMPER(S) SHALL RETURN TO THE NORMAL POSITION.

Table with 3 columns: EQUIPMENT, SWITCH LOCATION, CONTROL DAMPER(S). Lists SF-A01, EF-L03, EF-M04, SF-A02, TCP-A01, TCP-L01, TCP-M01, TCP-A01, CD-A10, ---, ---, CD-A09.

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.

Table with 4 columns: EQUIPMENT, SWITCH LOCATION, FAN INTERLOCK, CONTROL DAMPER(S). Lists EF-A01, EF-A02, EF-A03, EF-A04, EF-J01, EF-L05, EF-L06*, TCP-A01, TCP-L01, CS-A01, TCP-J01, TCP-L01, TCP-L01, PHP-L03, EF-L02, EF-L04, EF-M01, EF-M02, EF-M03, TCP-L01, TCP-L01, TCP-M01, TCP-M01, TCP-M01, MAU-M01, MAU-M02, MAU-M02.

* EF-L06 SHALL BE INTERLOCKED WITH PHP-L03 TO MAINTAIN THE LAB UNDER NEGATIVE PRESSURE WHEN THE PHP-L03 IS OPERATING.

4. HEATING AND VENTILATING SYSTEMS.

4.1. MAKEUP AIR UNITS (100% OUTSIDE AIR). MAKEUP AIR UNITS SHALL EACH BE CONTROLLED BY AN INDIVIDUAL "SUMMER-OFF-WINTER" SYSTEM SELECTOR SWITCH. THE SWITCH LOCATION SHALL BE AS INDICATED BELOW. WHEN THE SWITCH IS PLACED IN THE "WINTER" POSITION, THE FAN SHALL OPERATE AND THE SUPPLY AIR SENSOR/THERMOSTAT SHALL MODULATE THE HEATING OUTPUT OF THE UNIT TO MAINTAIN THE DESIRED SUPPLY AIR TEMPERATURE. BEFORE THE FAN CAN OPERATE, THE CONTROL DAMPERS SHALL BE PROVEN OPEN. WHEN THE OUTSIDE AIR TEMPERATURE IS GREATER THAN THE HEATING CHANGEOVER TEMPERATURE SETPOINT AS DETECTED BY THE OUTDOOR AIR SENSOR/THERMOSTAT, THE HEATING SHALL BE LOCKED OUT. WHEN THE SWITCH IS PLACED IN THE "SUMMER" POSITION, THE FAN SHALL OPERATE AND THE HEATING SHALL BE LOCKED OUT. WHEN THE UNIT IS DE-ENERGIZED, THE CONTROL DAMPER(S) SHALL CLOSE.

Table with 4 columns: EQUIPMENT, SWITCH LOCATION, SUPPLY AIR THERMOSTAT, CONTROL DAMPER(S). Lists MAU-A01#, MAU-A02#, MAU-A03*#, MAU-M01, MAU-M02, ECP-A01, ECP-A02, ECP-A03, ECP-M01, ECP-M02, BUILT-IN, BUILT-IN, BUILT-IN, BUILT-IN, BUILT-IN, CD-A01, CD-A02, CD-A07, CD-M01, CD-M02.

* MAU-A03 SHALL BE INTERLOCKED WITH COMPRESSOR(S) AS WELL AS WITH THE ROOM THERMOSTAT, T-A01. THE SUPPLY FAN OF MAU-A03 SHALL BE PROVIDED WITH A VARIABLE FREQUENCY DRIVE. THE MAU SHALL BE ABLE TO VARY THE SUPPLY AIR CFM ACCORDING TO BELOW SPECIFIED SCENARIOS. SET FAN SPEED IN TESTING AND BALANCING.

Table with 3 columns: SCENARIO, HEATING COIL, SUPPLY AIRFLOW. Lists BOTH COMPRESSORS OFF, ONLY ONE COMPRESSOR ON, ONLY ONE COMPRESSOR ON AND ROOM TEMPERATURE BELOW SETPOINT, BOTH COMPRESSORS ON AND ROOM TEMPERATURE ABOVE SETPOINT, BOTH COMPRESSORS ON AND ROOM TEMPERATURE BELOW SETPOINT, BOTH COMPRESSOR ON AND ROOM TEMPERATURE BELOW SETPOINT.

WHEN THE HEATING COIL IS ENERGIZED, THE CAPACITY SHALL BE MODULATED TO MAINTAIN THE SUPPLY AIR SETPOINT.

THE ECP FOR MAU-A01, A02, AND A03 SHALL BE PROVIDED WITH A RELAY TO DISABLE THE HEATING UPON RECEIVING A GENERATOR POWER SIGNAL FROM THE PLC. WHEN THE SIGNAL IS LOST, THE RELAY SHALL RETURN TO NORMAL POSITION.

4.2. FANS WITH DUCT HEATERS. FANS ASSOCIATED WITH DUCT HEATERS SHALL BE CONTROLLED BY AN "ON-OFF" SELECTOR SWITCH LOCATED ON THE FACE OF THE TEMPERATURE CONTROL PANEL. WHEN THE 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. DUCT HEATERS SHALL EACH BE CONTROLLED BY A DUCT MOUNTED SUPPLY AIR THERMOSTAT. THE THERMOSTAT SHALL MODULATE THE OUTPUT OF THE DUCT HEATER TO MAINTAIN THE DESIRED SUPPLY AIR TEMPERATURE. AIRFLOW THROUGH THE HEATER SHALL BE PROVEN BEFORE THE HEATER CAN OPERATE.

Table with 4 columns: EQUIPMENT, DUCT HEATER, SUPPLY AIR THERMOSTAT, CONTROL DAMPER(S). Lists SF-A01, SF-A02, EDH-A01, EDH-A02, BUILT-IN, BUILT-IN, ---, ---.

5. AIR CONDITIONING SYSTEMS.

5.1. PACKAGED SYSTEMS. PACKAGED SYSTEMS SHALL BE CONTROLLED BY THEIR RESPECTIVE THERMOSTAT. 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. HEAT PUMPS SHALL ALSO HAVE AN "EMERGENCY HEAT" SYSTEM SWITCH POSITION TO ENERGIZE THE HEATING AND DE-ENERGIZE THE COMPRESSORS.

WHEN THE SWITCH IS PLACED IN "HEAT" POSITION, COOLING SHALL BE LOCKED OUT, THE FAN SHALL OPERATE AND THE ROOM THERMOSTAT SHALL MODULATE THE HEATING OUTPUT OF THE UNIT TO MAINTAIN DESIRED ROOM TEMPERATURE SETPOINT. BEFORE THE FAN CAN OPERATE THE CONTROL DAMPER(S) SHALL BE PROVEN OPEN. WHEN THE SWITCH IS PLACED IN "COOL" POSITION, HEATING SHALL BE LOCKED OUT, THE FAN SHALL OPERATE AND THE THERMOSTAT SHALL ENERGIZE COMPRESSOR(S) TO MAINTAIN DESIRED ROOM TEMPERATURE SETPOINT. WHEN THE SWITCH IS PLACED IN "AUTO" POSITION, THE FAN SHALL BE ENERGIZED UPON A CALL FOR COOLING OR HEATING AS REQUIRED TO MAINTAIN THE DESIRED ROOM TEMPERATURE.

EACH SYSTEM SHALL BE PROVIDED WITH AN ECONOMIZER IF SPECIFIED IN THE SCHEDULE OF DRAWINGS. THE SYSTEM SHALL BE IN THE ECONOMIZER MODE WHEN THE SYSTEM IS IN THE AUTO MODE, COOLING IS REQUIRED, AND THE OUTSIDE AIR IS SUITABLE FOR COOLING. OUTSIDE AIR IS SUITABLE FOR COOLING WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW THE CHANGEOVER TEMPERATURE INITIALLY SET AT 75F AND THE OUTSIDE AIR ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY ON SYSTEM EQUIPPED WITH DIFFERENTIAL ENTHALPY WITH FIXED DRY BULB TEMPERATURE CONTROL. THE CONTROLS SHALL BE CAPABLE OF MODULATING THE OUTSIDE AIR, RETURN AIR, AND RELIEF AIR DAMPERS IN CONJUNCTION WITH THE MECHANICAL COOLING TO SATISFY THE SPACE CONDITIONS. THE HEATING CONTROLS SHALL BE LOCKED OUT. WHERE POWER EXHAUST IS INDICATED, THE ECONOMIZER CONTROL SHALL SEND AN ENABLE SIGNAL TO THE POWER EXHAUST ACCESSORY WHEN THE ECONOMIZER MODE IS INITIATED. POWER EXHAUST SHALL HAVE A VARIABLE FREQUENCY DRIVE FOR MODULATING SPEED WITH RESPECT TO ROOM PRESSURE BY USING BUILT-IN DIFFERENTIAL PRESSURE TRANSDUCER.

Table with 4 columns: EQUIPMENT, ROOM THERMOSTAT, CONTROL DAMPER(S), ECONOMIZER. Lists PAC-A01, PAC-A02, PAC-J01, PAC-J02, PHP-L01*, PHP-L02, PHP-L03*, PHP-M01, T-A02, T-A02, T-J01, T-J01, T-L01, T-L03, T-L02, T-M04, CD-A03, CD-A04, CD-A05, CD-A06, CD-J01, CD-J02, CD-J03, CD-J04, CD-L03, CD-L04, CD-L07, CD-L08, CD-L05, CD-L06, PEKH-A01, PEKH-A02, PEKH-J01, PEKH-J02, PEKH-L01, ---, PEKH-L02, PEKH-M01.

THE BELOW SYSTEM(S) SHALL MONITOR THE SPACE RELATIVE HUMIDITY AND SHALL NOT ALLOW THE SUPPLY AIR TEMPERATURE TO BE RESET UPWARD IF THE SPACE RELATIVE HUMIDITY EXCEEDS 60%. MODULATING HOT GAS REHEAT SHALL BE UTILIZED TO CONTROL THE SPACE RELATIVE HUMIDITY IN CONTROL.

Table with 2 columns: EQUIPMENT, ROOM HUMIDISTAT. Lists PHP-L01, PHP-L02, PHP-L03, PHP-M01, H-L01, H-L03, H-L02, H-M01.

* THESE PHP(S) SHALL HAVE CAPACITY TO BE INTERLOCKED WITH EXHAUST FAN, REFER SECTION 3.2. WHEN THE PHP IS CALLED TO OPERATE, THE PHP SHALL SEND A SIGNAL TO TEMPERATURE CONTROL PANEL TO ENERGIZE THE INTERLOCKED EXHAUST FAN AND WHEN THE PHP IS DE-ENERGIZED, THE INTERLOCKED EXHAUST FAN SHALL BE DE-ENERGIZED.

5.1.1. DUTY/STANDBY CONTROL. THE AIR CONDITIONING SYSTEM CONSISTING OF TWO 100% CAPACITY PACKAGED UNITS SHALL OPERATE IN A DUTY/STANDBY CONFIGURATION. THE PACKAGED AIR CONDITIONING UNITS INDICATED BELOW SHALL BE PROVIDED WITH A DUTY/STANDBY TYPE CONTROL SYSTEM. THE UNITS SHALL BE CONTROLLED BY THEIR DUTY/STANDBY CONTROL PANEL (DSCP) AND RESPECTIVE THERMOSTATS. THE DSCP SHALL BE PROGRAMMED AS DESCRIBED HEREIN. IF THE DUTY OPERATING SYSTEM IS UNABLE TO MAINTAIN SPACE TEMPERATURE, THE DSCP SHALL ENERGIZE THE STANDBY UNIT TO ASSIST IN COOLING THE SPACE. THE DSCP SHALL BE FIELD PROGRAMMABLE FOR THE BUILT-IN CONTROLS OF THE EQUIPMENT AND SHALL BE CAPABLE OF CONTROLLING ANY PRE-EXISTING FUNCTIONS INCLUDING, BUT NOT LIMITED TO MIXED AIR ECONOMIZER, COOLING STAGES, AUTO CHANGEOVER ETC.

Table with 3 columns: EQUIPMENT, ROOM THERMOSTAT, DUTY/STANDBY CONTROL PANEL. Lists PAC-A01, PAC-A02, PAC-J01, PAC-J02, T-A02, T-A02, T-J01, T-J01, DSCP-A01, DSCP-A01, DSCP-J01, DSCP-J01.

5.2. 100% DEDICATED OUTDOOR AIR UNIT. THE DEDICATED OUTDOOR AIR UNIT SHALL BE OPERATED TO PROVIDE 100% CONDITIONED OUTDOOR AIR TO THE LABORATORY SPACE TO ACT AS MAKE-UP AIR FOR THE FUME HOOD EXHAUST. DOAU SHALL BE CONTROLLED BY "ON-OFF-AUTO" SELECTOR SWITCH. WHEN THE SWITCH IS PLACED IN "AUTO" POSITION, THE DOAU SHALL BE INTERLOCKED WITH FUME HOOD EXHAUST FAN, EF-L01. WHEN THE EF-L01 IS CALLED TO OPERATE, THE DOAU SHALL BE ENERGIZED. BEFORE THE FAN CAN OPERATE, THE CONTROL DAMPER(S) SHALL PROVE OPEN. WHEN THE FAN IS DE-ENERGIZED, THE CONTROL DAMPER(S) SHALL RETURN TO NORMAL POSITION. THE SUPPLY AIR BLOWER OPERATES CONTINUOUSLY TO PROVIDE CONSTANT AIR FLOW WHILE THE FUME HOOD EXHAUST FAN IS ON.

THE PACKAGED COOLING SYSTEM SHALL BE ENERGIZED WHEN TEMPERATURE OF OUTSIDE AIR IS GREATER THAN THE COOLING SETPOINT AS SENSED BY BUILT-IN TEMPERATURE SENSOR. THE COMPRESSOR SHALL MODULATE TO MAINTAIN A CONSTANT SUPPLY AIR SETPOINT. WITH FURTHER REDUCTION IN THE OUTDOOR AIR TEMPERATURE, THE HEATING COIL SHALL BE ENERGIZED, AND COOLING SHALL BE LOCKED OUT. HEATING COIL SHALL BE MODULATED TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT.

THE DOAU SHALL ALSO ADJUST THE SUPPLY AIR DEWPOINT BASED ON THE INPUT OF ROOM THERMOSTAT AND HUMIDISTAT TO AVOID CONDENSATE FORMATION. MODULATING HOT GAS REHEAT COIL SHALL BE UTILISED TO MAINTAIN SUPPLY AIR DEW POINT.

Table with 5 columns: EQUIPMENT, SWITCH LOCATION, FAN INTERLOCK, CONTROL DAMPER(S), ROOM THERMOSTAT / HUMIDISTAT. Lists DOAU-L01, ECP-L01, EF-L01, CD-L09, T-L04, H-L04.

6. LAB CONTROL SYSTEMS

6.1. LAB FUME HOOD EXHAUST SYSTEM. THE EXHAUST FAN SHALL BE PROVIDED WITH A "OFF-AUTO-ON" SELECTOR SWITCH. WHEN THE SWITCH IS PLACED IN "AUTO" POSITION, FUME HOOD CONTROLLER/SASH POSITION SENSOR SHALL CONTROL THE EXHAUST FAN OPERATION. BEFORE THE FAN CAN OPERATE, THE CONTROL DAMPER(S) SHALL BE PROVEN OPEN. WHEN THE FAN IS DE-ENERGIZED, THE CONTROL DAMPER(S) SHALL RETURN TO NORMAL POSITION.

Table with 4 columns: EQUIPMENT, FAN INTERLOCK, CONTROL DAMPER(S), SWITCH LOCATION. Lists EF-L01, FUME HOOD, CD-L10, TCP-L01.

7. THERMOSTAT SETPOINTS

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

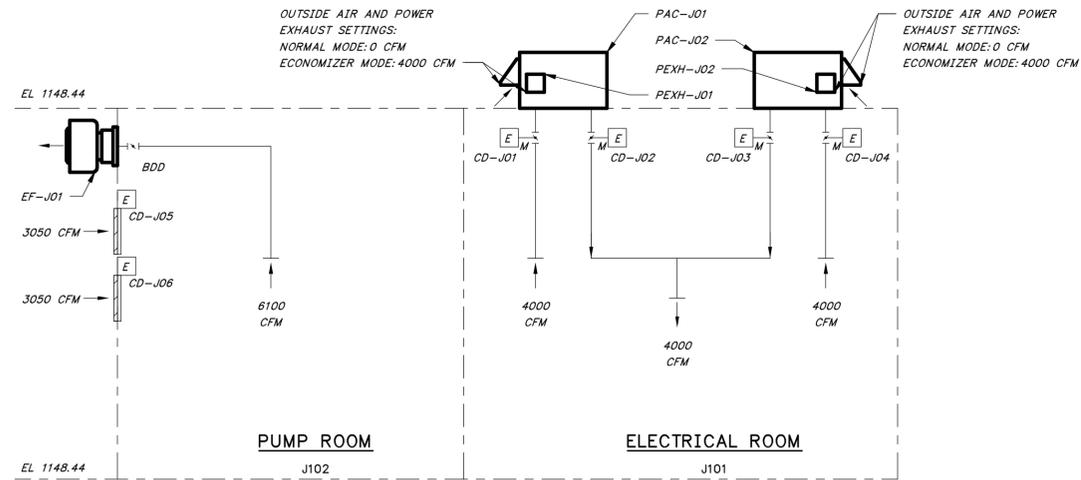
Table with 2 columns: Temperature/Condition and Value. Lists LOW TEMPERATURE THERMOSTATS HEATERS, MAKEUP AIR SUPPLY HEATING, VENTILATING EQUIPMENT, LABORATORY, CHANGEOVER TEMPERATURE SETPOINT.

Project information block including title 'BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS', drawing title 'HVAC SEQUENCE OF OPERATIONS', date 'MARCH 2025', scale 'AS SHOWN', and drawing by 'AK'. Includes a revision table and a professional engineer seal for Michael Franconi, No. 17959, State of Arkansas.

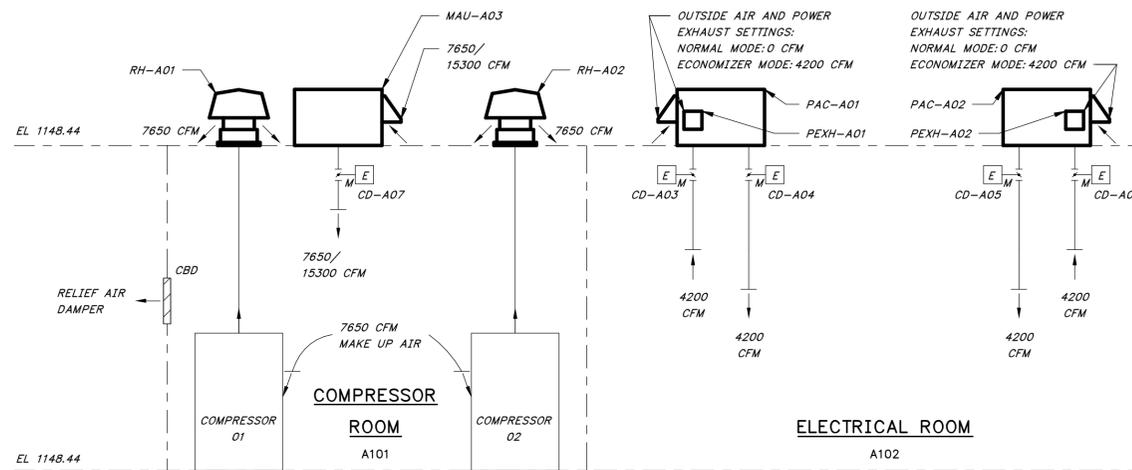
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2/12/2025 10:28:32 AM / CP / HVAC

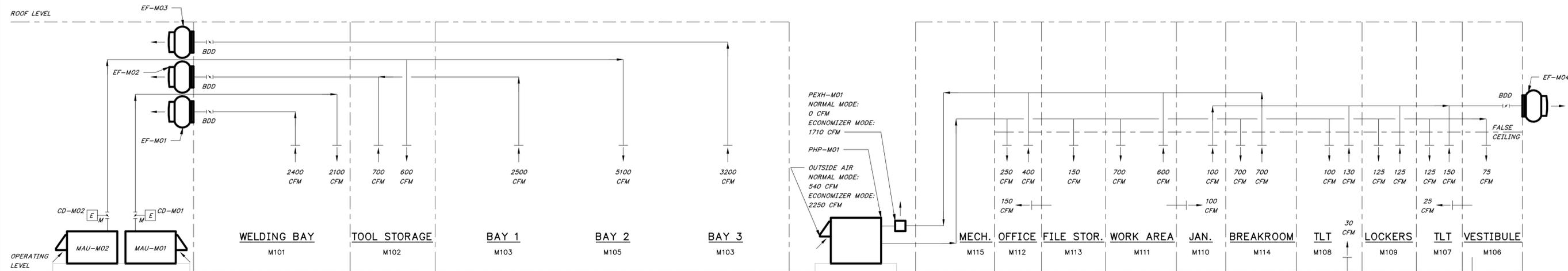
Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-GENERAL.rvt



EFFLUENT PUMP STATION BUILDING



INFLUENT ELECTRICAL BUILDING



MAINTENANCE BUILDING

HVAC AIRFLOW SCHEMATICS
NO SCALE

1" = 1' AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

DATE	
REVISION	



CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
HVAC AIRFLOW SCHEMATICS
CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025
SCALE: AS SHOWN
DESIGNED BY: AK
DRAWN BY: CP
HWEI NO.: 2021037
FILENAME: H-GENERAL

BID DRAWINGS
MARCH 21, 2025

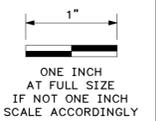
SHEET NO.
H-8

GENERAL SHEET NOTES

1. SEE DRAWING H-1 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

SHEET KEYNOTES

- ALL ROOMS SHALL BE BALANCED TO POSITIVE OR NEGATIVE PRESSURE AS INDICATED BY THE AIRFLOWS SHOWN ON THE DRAWINGS, AND THAT IN NO CASE SHALL A ROOM BE ADJUSTED TO PLUS OR MINUS 0.1" W.C. AS REQUIRED BY THE AIRFLOWS INDICATED. MINIMUM AIR CHANGES SHALL BE MAINTAINED, CONSULT ENGINEER FOR GUIDANCE ON REDUCING OR INCREASING SUPPLY OR EXHAUST FLOWS PER SPACE OR SYSTEM.
- THIS ROOM SHALL BE BALANCED TO POSITIVE PRESSURE OF 0.1" W.C. AS INDICATED BY THE AIRFLOWS SHOWN ON THE DRAWINGS.



DATE	REVISION

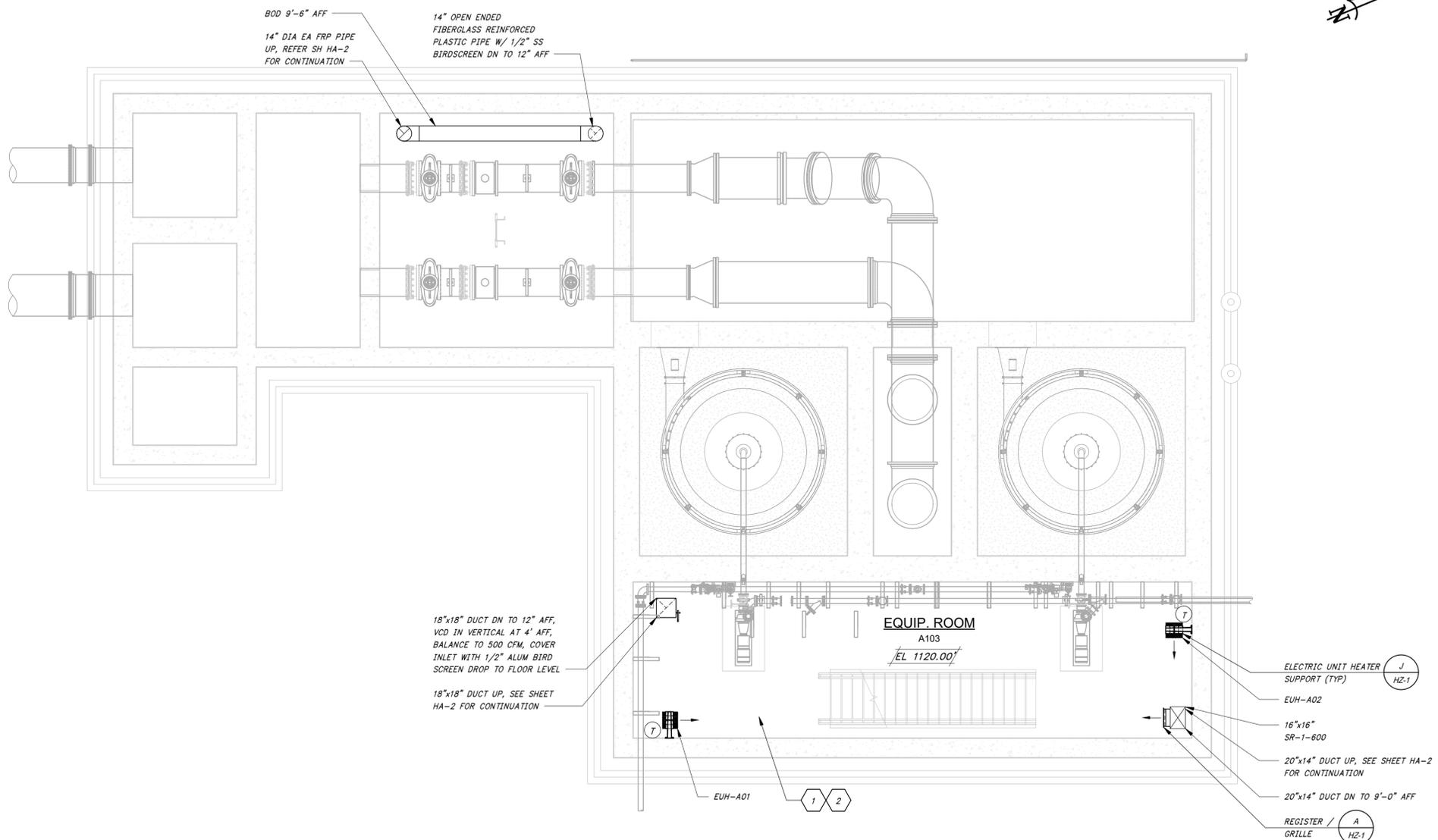


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CITY OF BENTONVILLE, ARKANSAS
 BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
 HVAC
 INFLUENT STRUCTURE LOWER LEVEL PLAN
 BENTONVILLE, ARKANSAS

DATE: MARCH 2025
 SCALE: 3/16" = 1'-0"
 DESIGNED BY: AK
 DRAWN BY: CP
 HWEI NO.: 2021037
 FILENAME: H-HEADWOKRS

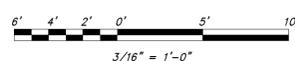
SHEET NO.
HA-1



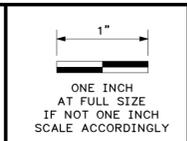
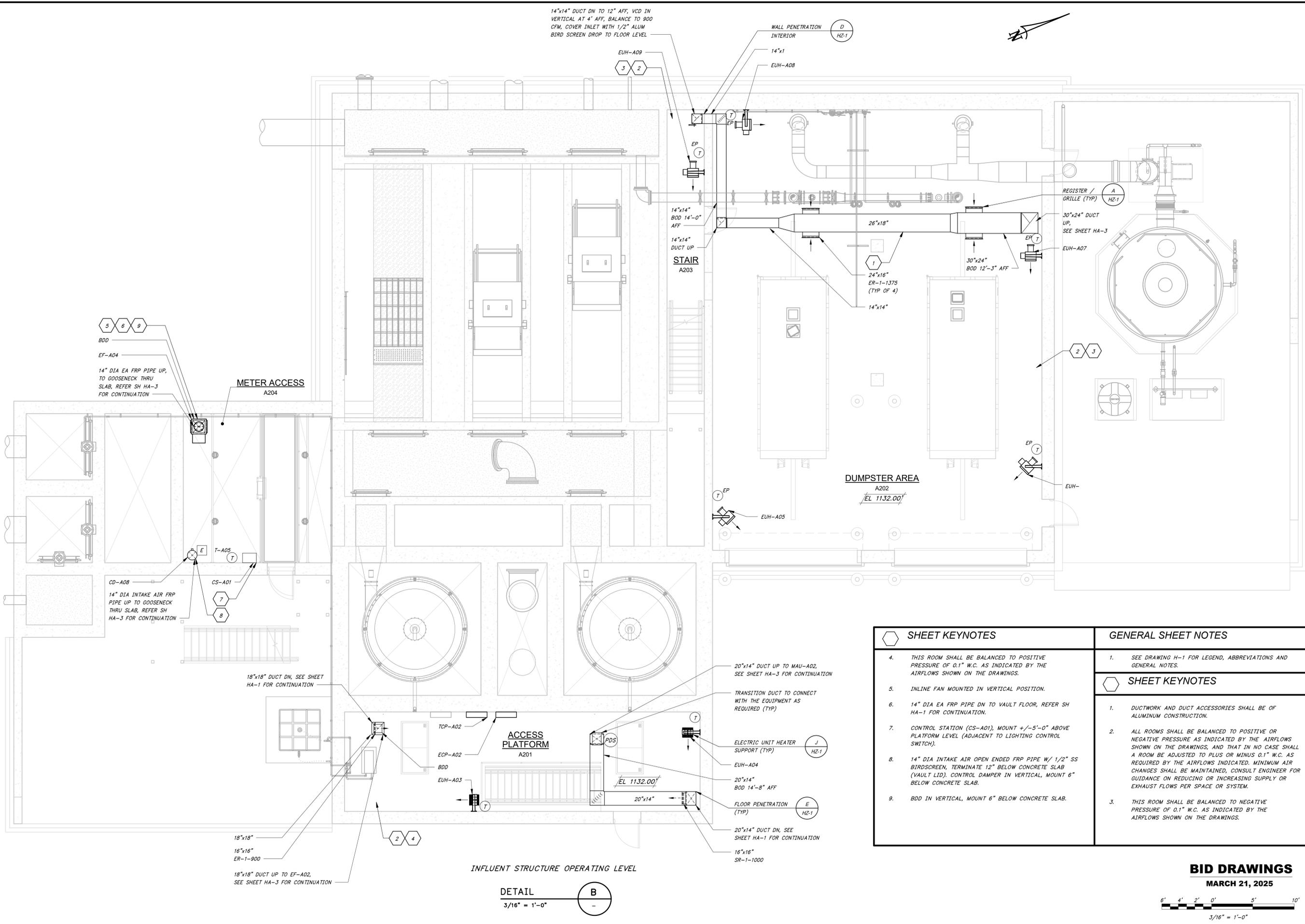
INFLUENT STRUCTURE LOWER LEVEL

DETAIL **A**
 3/16" = 1'-0"

BID DRAWINGS
 MARCH 24, 2025



3/16" = 1'-0"



DATE	
REVISION	



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SHEET KEYNOTES	
4.	THIS ROOM SHALL BE BALANCED TO POSITIVE PRESSURE OF 0.1" W.C. AS INDICATED BY THE AIRFLOWS SHOWN ON THE DRAWINGS.
5.	INLINE FAN MOUNTED IN VERTICAL POSITION.
6.	14" DIA EA FRP PIPE DN TO VAULT FLOOR, REFER SH HA-1 FOR CONTINUATION.
7.	CONTROL STATION (CS-A01), MOUNT +/-5'-0" ABOVE PLATFORM LEVEL (ADJACENT TO LIGHTING CONTROL SWITCH).
8.	14" DIA INTAKE AIR OPEN ENDED FRP PIPE W/ 1/2" SS BIRDSCREEN, TERMINATE 12" BELOW CONCRETE SLAB (VAULT LID), CONTROL DAMPER IN VERTICAL, MOUNT 6" BELOW CONCRETE SLAB.
9.	BDD IN VERTICAL, MOUNT 6" BELOW CONCRETE SLAB.

GENERAL SHEET NOTES	
1.	SEE DRAWING H-1 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
SHEET KEYNOTES	
1.	DUCTWORK AND DUCT ACCESSORIES SHALL BE OF ALUMINUM CONSTRUCTION.
2.	ALL ROOMS SHALL BE BALANCED TO POSITIVE OR NEGATIVE PRESSURE AS INDICATED BY THE AIRFLOWS SHOWN ON THE DRAWINGS, AND THAT IN NO CASE SHALL A ROOM BE ADJUSTED TO PLUS OR MINUS 0.1" W.C. AS REQUIRED BY THE AIRFLOWS INDICATED. MINIMUM AIR CHANGES SHALL BE MAINTAINED, CONSULT ENGINEER FOR GUIDANCE ON REDUCING OR INCREASING SUPPLY OR EXHAUST FLOWS PER SPACE OR SYSTEM.
3.	THIS ROOM SHALL BE BALANCED TO NEGATIVE PRESSURE OF 0.1" W.C. AS INDICATED BY THE AIRFLOWS SHOWN ON THE DRAWINGS.

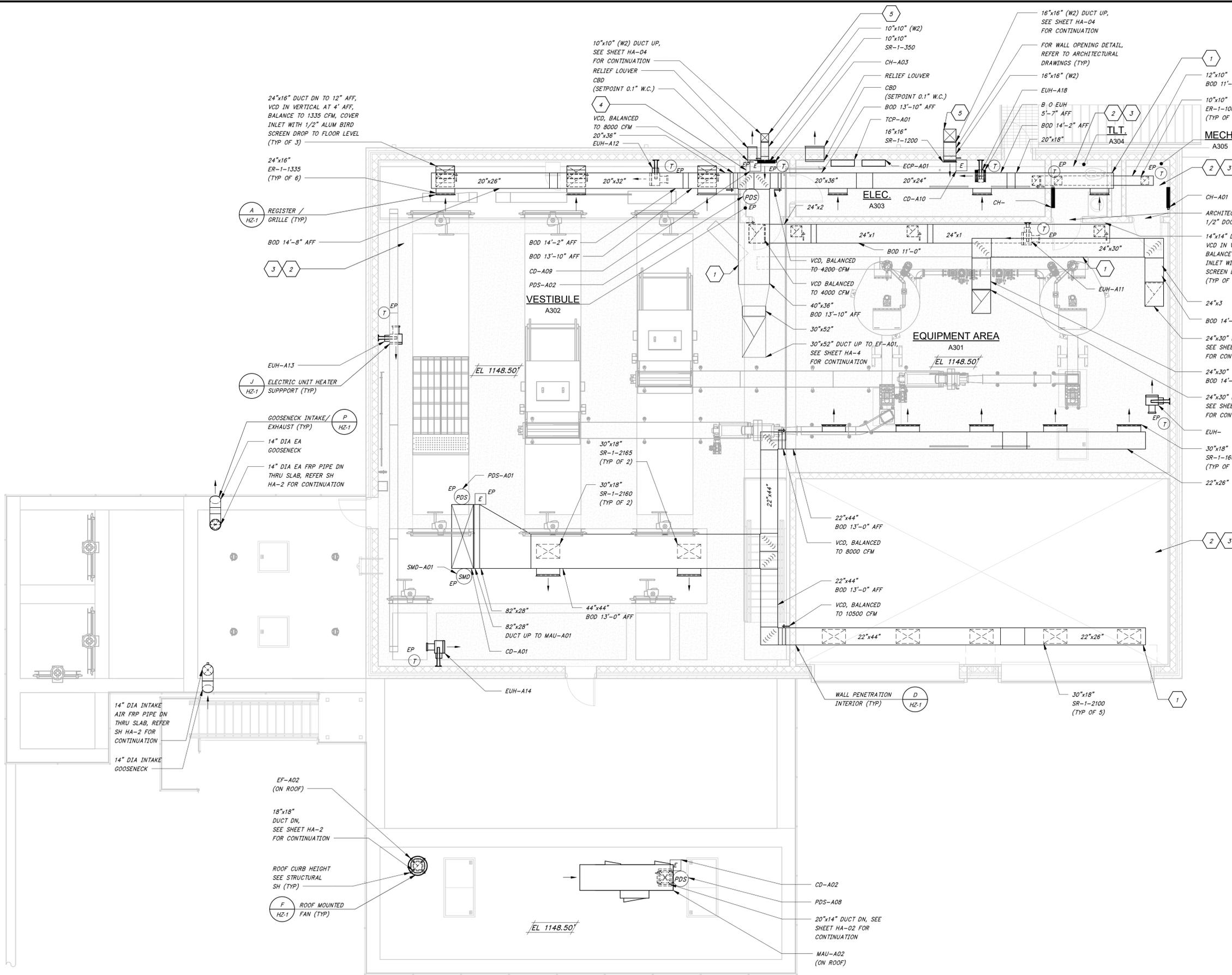
CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
HVAC
INFLUENT STRUCTURE
OPERATING LEVEL PLAN
BENTONVILLE, ARKANSAS

INFLUENT STRUCTURE OPERATING LEVEL

DETAIL **B**
3/16" = 1'-0"

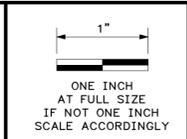
BID DRAWINGS
MARCH 21, 2025

DATE: MARCH 2025
SCALE: 3/16" = 1'-0"
DESIGNED BY: AK
DRAWN BY: CP
HWEI NO.: 2021037
FILENAME: H-HEADWORKS
SHEET NO. **HA-2**



INFLUENT STRUCTURE UPPER LEVEL

DETAIL C
3/16" = 1'-0"



DATE	REVISION



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GENERAL SHEET NOTES

- SEE DRAWING H-1 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

SHEET KEYNOTES

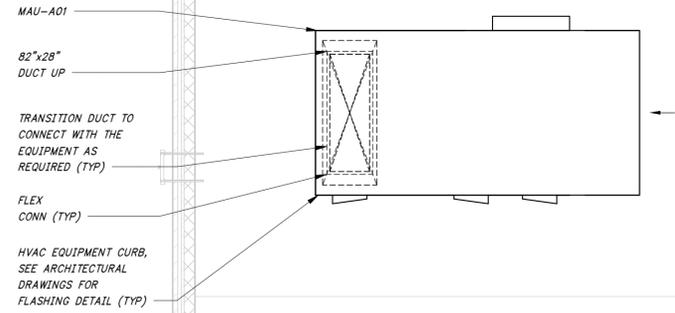
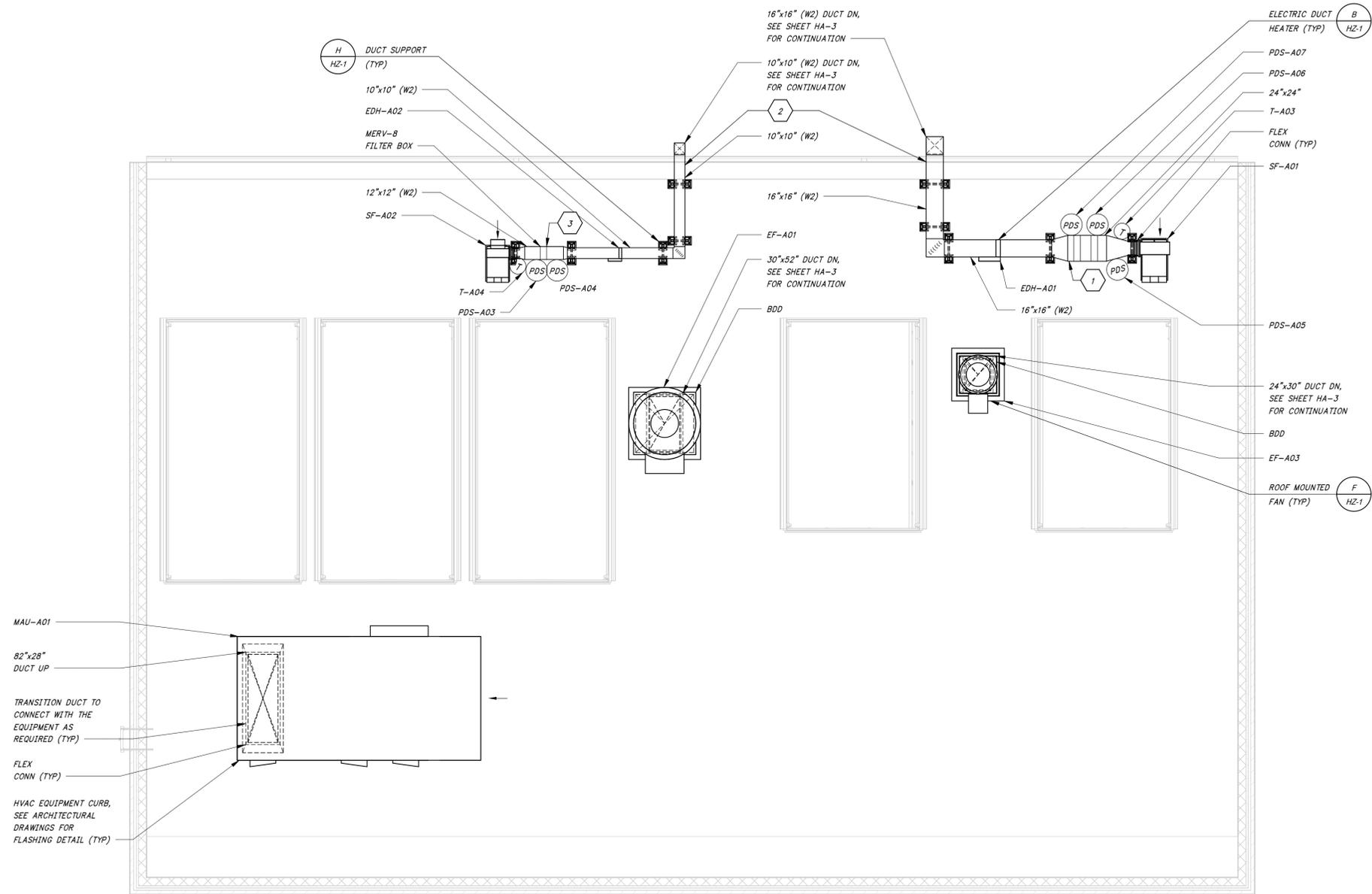
- DUCTWORK AND DUCT ACCESSORIES SHALL BE OF ALUMINUM CONSTRUCTION.
- ALL ROOMS SHALL BE BALANCED TO POSITIVE OR NEGATIVE PRESSURE AS INDICATED BY THE AIRFLOWS SHOWN ON THE DRAWINGS, AND THAT IN NO CASE SHALL A ROOM BE ADJUSTED TO PLUS OR MINUS 0.1" W.C. AS REQUIRED BY THE AIRFLOWS INDICATED. MINIMUM AIR CHANGES SHALL BE MAINTAINED. CONSULT ENGINEER FOR GUIDANCE ON REDUCING OR INCREASING SUPPLY OR EXHAUST FLOWS PER SPACE OR SYSTEM.
- THIS ROOM SHALL BE BALANCED TO NEGATIVE PRESSURE OF 0.1" W.C. AS INDICATED BY THE AIRFLOWS SHOWN ON THE DRAWINGS.

CITY OF BENTONVILLE, ARKANSAS
 BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
 HVAC
 INFLUENT STRUCTURE UPPER LEVEL PLAN
 BENTONVILLE, ARKANSAS

BID DRAWINGS
 MARCH 21, 2025

3/16" = 1'-0"

DATE: MARCH 2025
 SCALE: 3/16" = 1'-0"
 DESIGNED BY: AK
 DRAWN BY: CP
 HWI NO.: 2021037
 FILENAME: H-HEADWORKS
 SHEET NO.
HA-3



INFLUENT STRUCTURE ROOF LEVEL

DETAIL **D**
3/16" = 1'-0"

GENERAL SHEET NOTES

1. SEE DRAWING H-1 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

SHEET KEYNOTES

1. PROVIDE SIDE ACCESS FILTER HOUSING WITH 2" THICK MERV-8 PRE-FILTER FOLLOWED BY GAS PHASE FILTER SECTION, WITH PROVISIONS TO INSTALL PDS ACROSS BOTH THE SECTIONS. THE HOUSING SHALL BE SUITABLE FOR OUTDOOR INSTALLATION.
2. EXPOSED DUCT SHALL BE CONSTRUCTED FACTORY-INSULATED, DOUBLE-WALLED DUCT. REFER TO SPECIFICATION 15500 FOR ADDITIONAL DETAIL.
3. PROVIDE SIDE ACCESS FILTER HOUSING WITH 2" THICK MERV-8 FILTER, WITH PROVISIONS TO INSTALL PDS ACROSS THE FILTER. THE HOUSING SHALL BE SUITABLE FOR OUTDOOR INSTALLATION.

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

DATE	REVISION



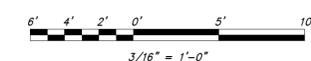
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 BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
 HVAC
 INFLUENT STRUCTURE ROOF LEVEL PLAN
 BENTONVILLE, ARKANSAS

DATE: MARCH 2025
 SCALE: 3/16" = 1'-0"
 DESIGNED BY: AK
 DRAWN BY: CP
 HWI NO.: 2021037
 FILENAME: H-HEADWORKS

SHEET NO.
HA-4

BID DRAWINGS
 MARCH 24, 2025

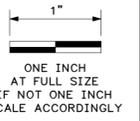


GENERAL SHEET NOTES

- SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

SHEET KEYNOTES

- 1/2" SVW FOR SEAL WATER TO GRIT PUMPS, SV IN DROP.



DATE	REVISION

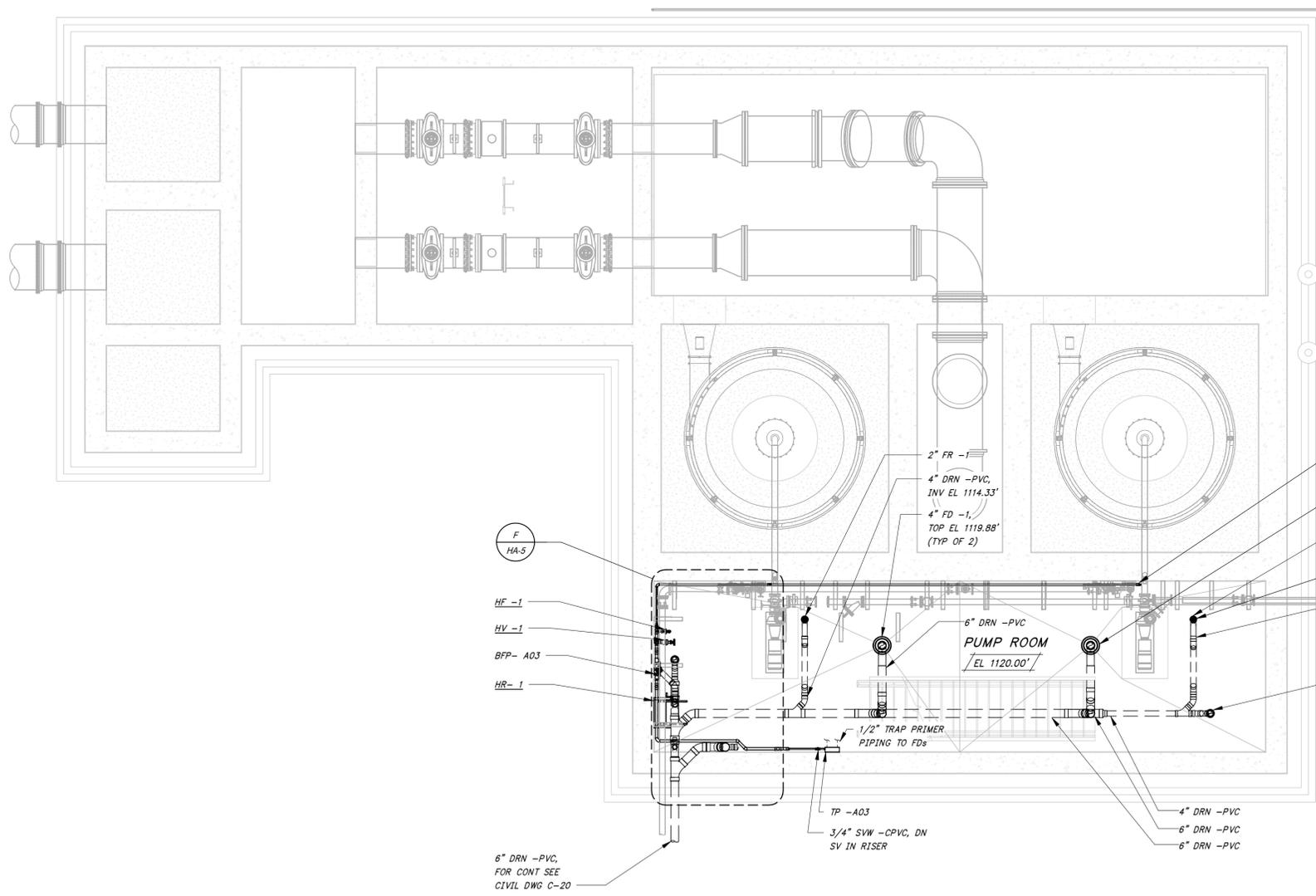


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 BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
PLUMBING
INFLUENT STRUCTURE LOWER LEVEL PLAN
 BENTONVILLE, ARKANSAS

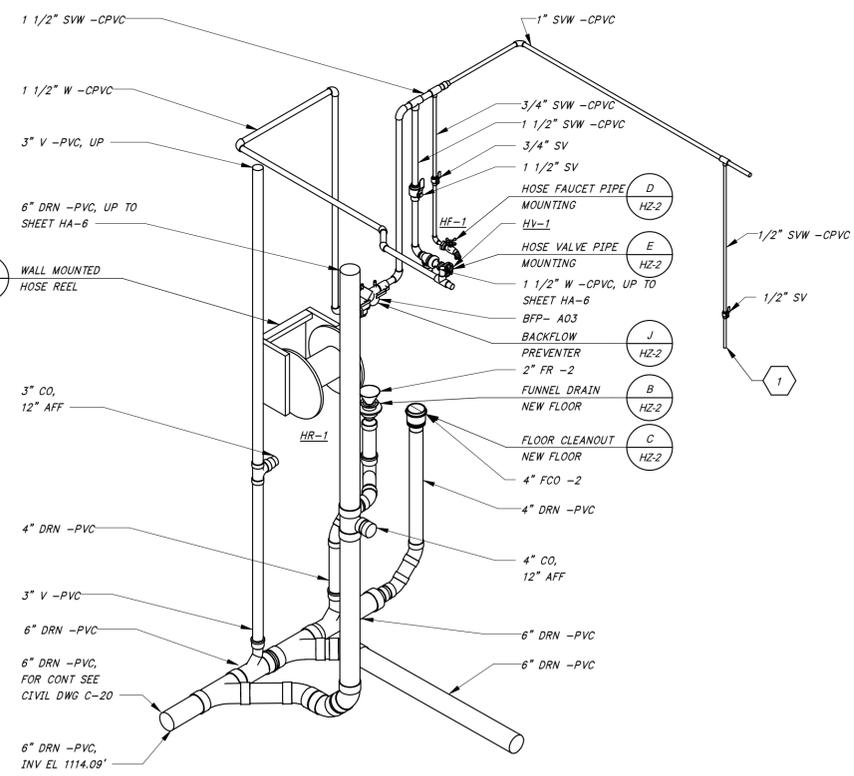
DATE: MARCH 2025
 SCALE: N.T.S.
 DESIGNED BY: SAM
 DRAWN BY: YBM
 HWI NO.: 2021037
 FILENAME: H-HEADWOKS

SHEET NO. **HA-5**



INFLUENT STRUCTURE LOWER LEVEL

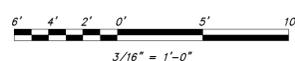
DETAIL **E**
 3/16" = 1'-0"



DETAIL - F

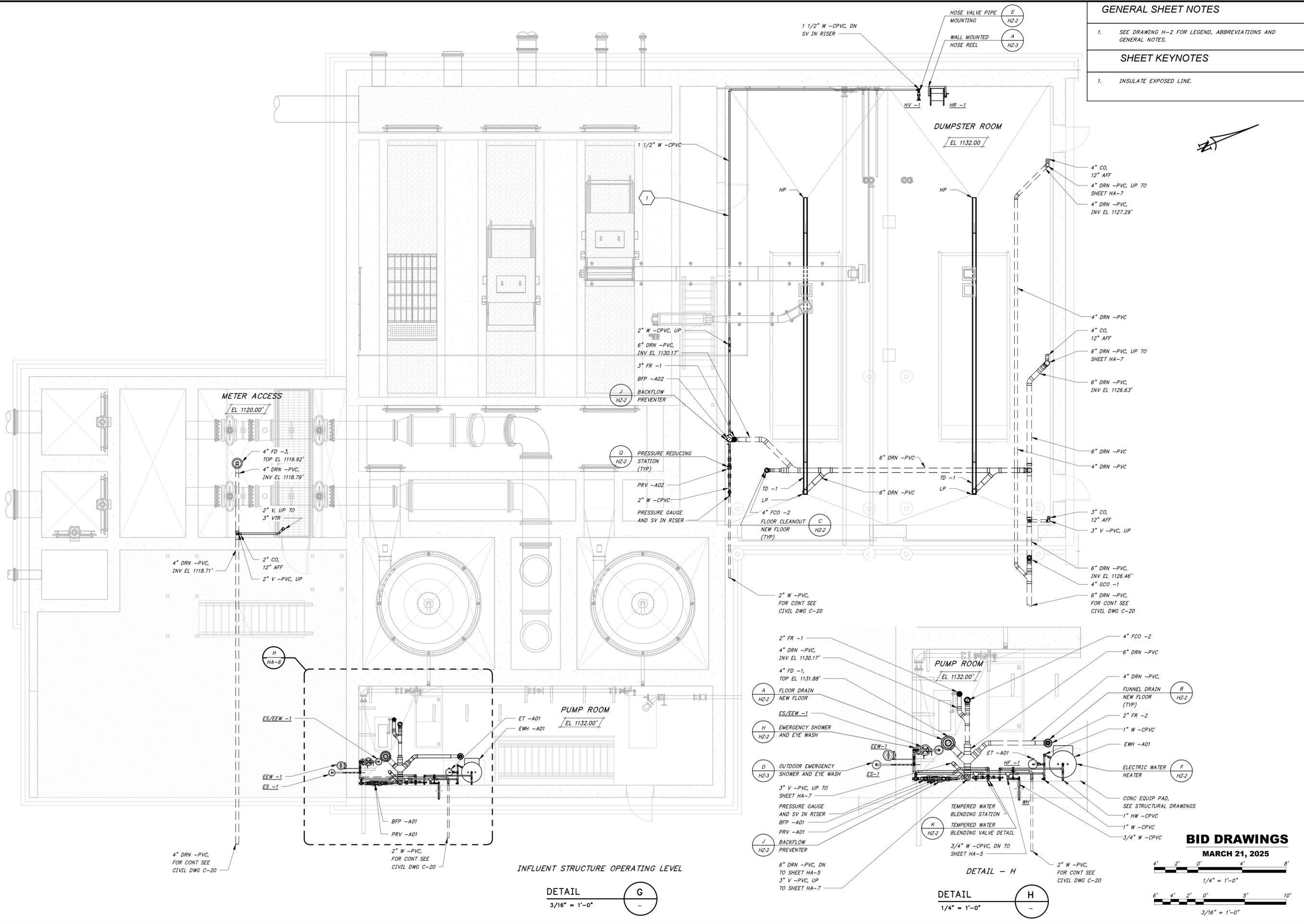
DETAIL **F**
 N.T.S.

BID DRAWINGS
 MARCH 21, 2025



3/13/2025 12:37:45 PM / YBM / PLUMBING

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-HEADWORKS BLDG-PR-RVT



GENERAL SHEET NOTES

- SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

SHEET KEYNOTES

- INSULATE EXPOSED LINE.

DATE	
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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

PLUMBING
INFLUENT STRUCTURE
OPERATING LEVEL PLAN
BENTONVILLE, ARKANSAS

DATE: MARCH 2025
SCALE: AS SHOWN
DESIGNED BY: SAM
DRAWN BY: YBM
HWEI NO.: 2021037
FILENAME: H-HEADWOKS

SHEET NO.
HA-6

INFLUENT STRUCTURE OPERATING LEVEL

DETAIL G
3/16" = 1'-0"

DETAIL H
1/4" = 1'-0"

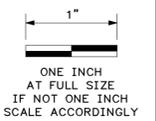
BID DRAWINGS
MARCH 21, 2025

GENERAL SHEET NOTES

1. SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

SHEET KEYNOTES

- 1. 4" SAN-PVC, DN TO CHANNEL BELOW.
- 2. SOLENOID VALVE OF ELECTRONIC TRAP PRIMER SHALL BE EXPLOSION PROOF: CLASS 1, DIVISION 2, GROUPS C&D.
- 3. INSULATE EXPOSED LINE.
- 4. FLOOR SINKS LOCATION SHALL BE COORDINATED WITH THE EQUIPMENT MANUFACTURER.



DATE	REVISION

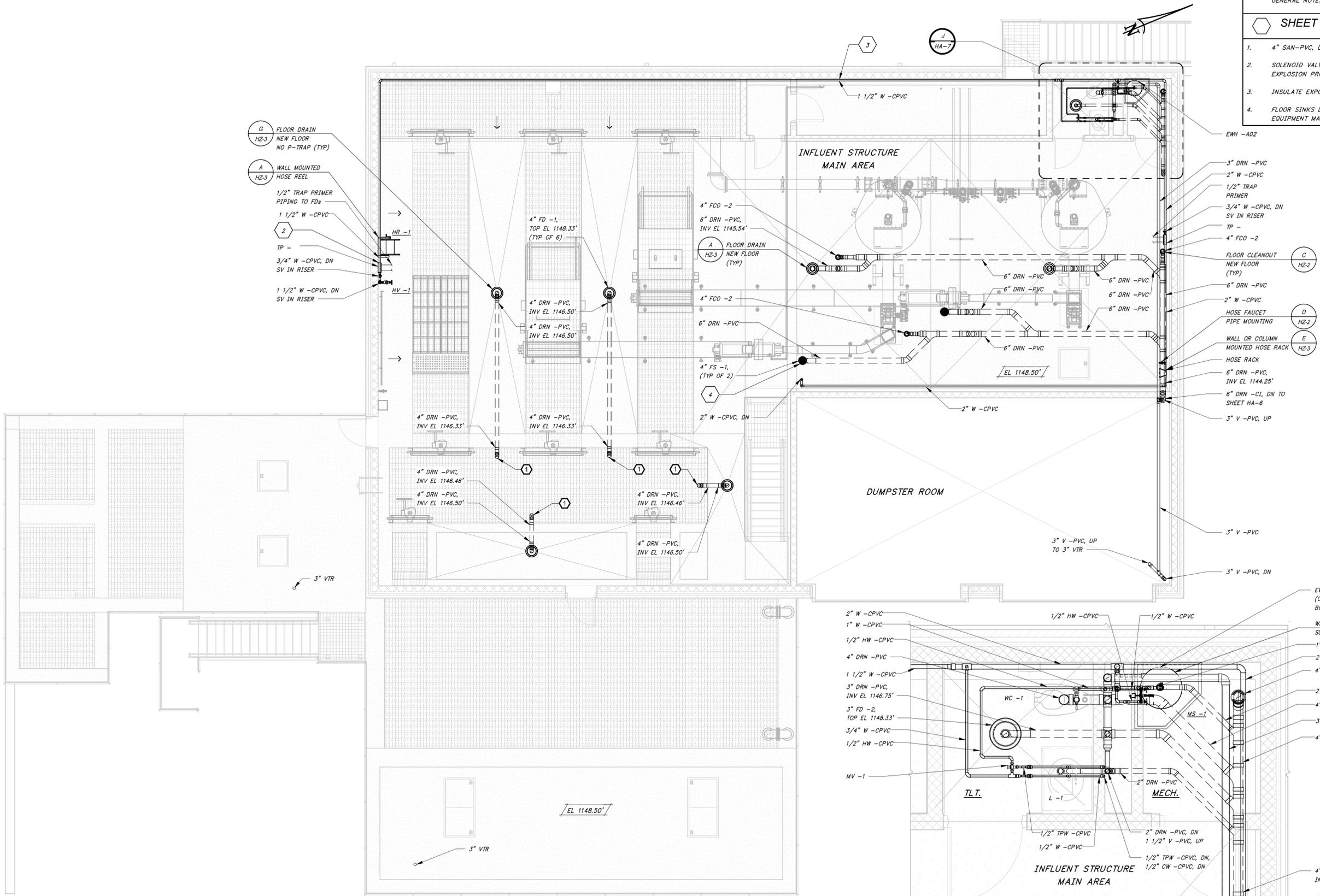


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 BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
PLUMBING
 INFLUENT STRUCTURE UPPER LEVEL PLAN
 BENTONVILLE, ARKANSAS

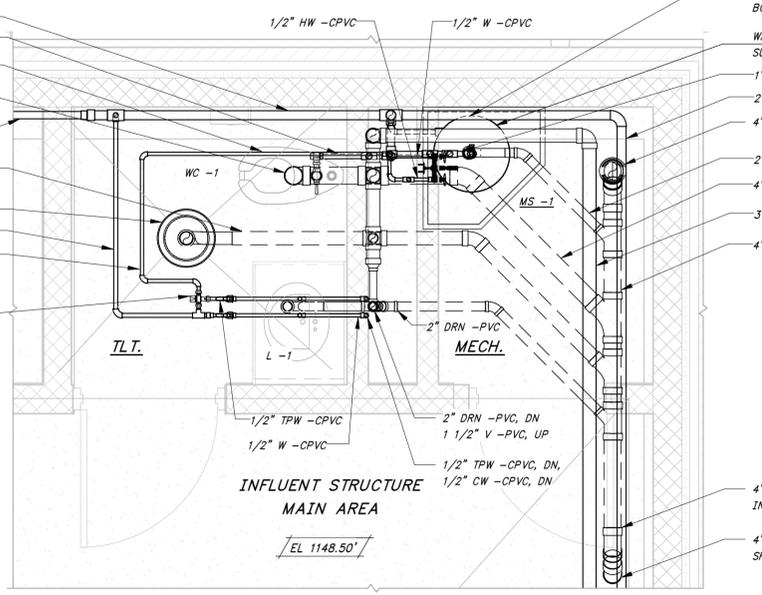
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 DRAWN BY: YBM
 HWEI NO.: 2021037
 FILENAME: H-HEADWOKS

SHEET NO. **HA-7**



INFLUENT STRUCTURE UPPER LEVEL

DETAIL **I**
 3/16" = 1'-0"



DETAIL **J**
 1/2" = 1'-0"

BID DRAWINGS
 MARCH 21, 2025

3/13/2025 10:03:32 AM / YBM / PLUMBING

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-HEADWORKS BLDG-PR-PLV

GENERAL SHEET NOTES

1. SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

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

DATE
REVISION

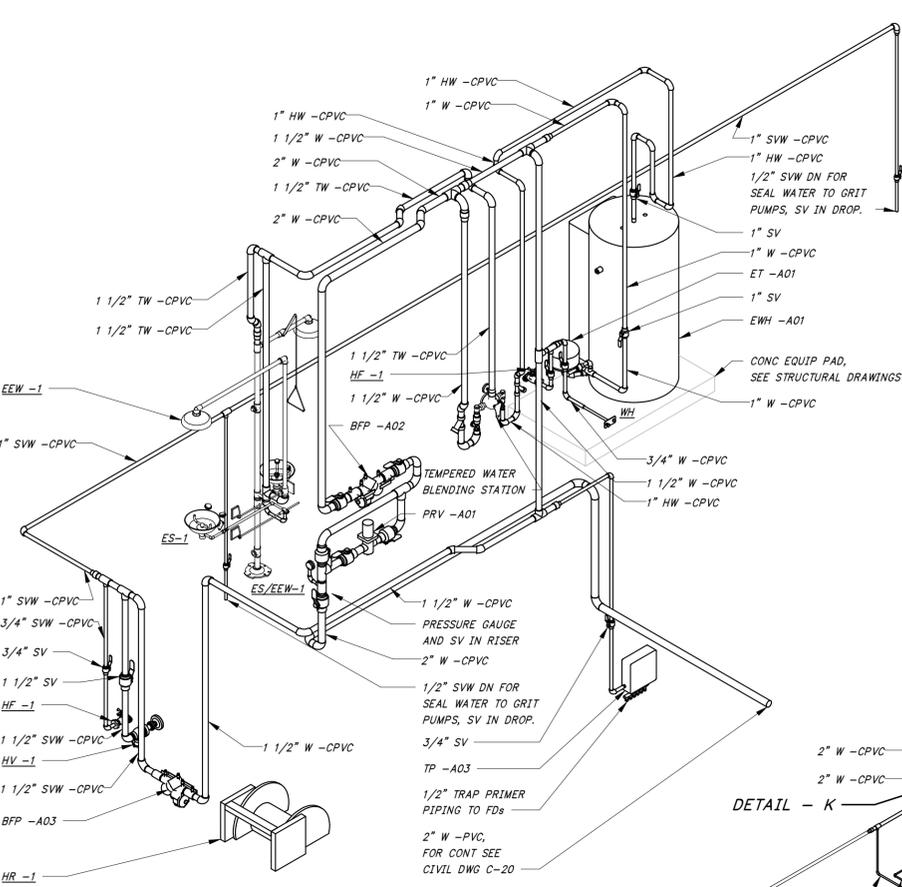


HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH

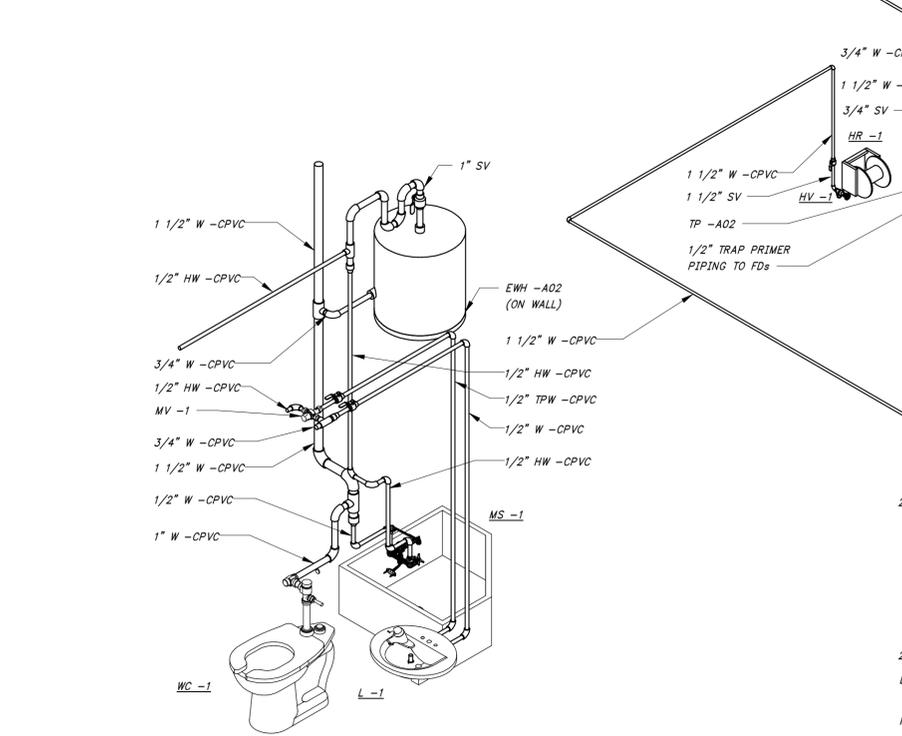
CITY OF BENTONVILLE, ARKANSAS
 BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
PLUMBING
INFILTRANT STRUCTURE ISOMETRICS
 BENTONVILLE, ARKANSAS

DATE: MARCH 2025
 SCALE: AS SHOWN
 DESIGNED BY: SAM
 DRAWN BY: YBM
 HWEI NO.: 2021037
 FILENAME: H-HEADWORKS

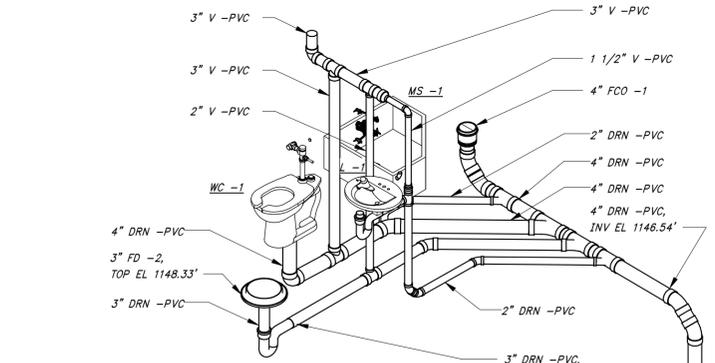
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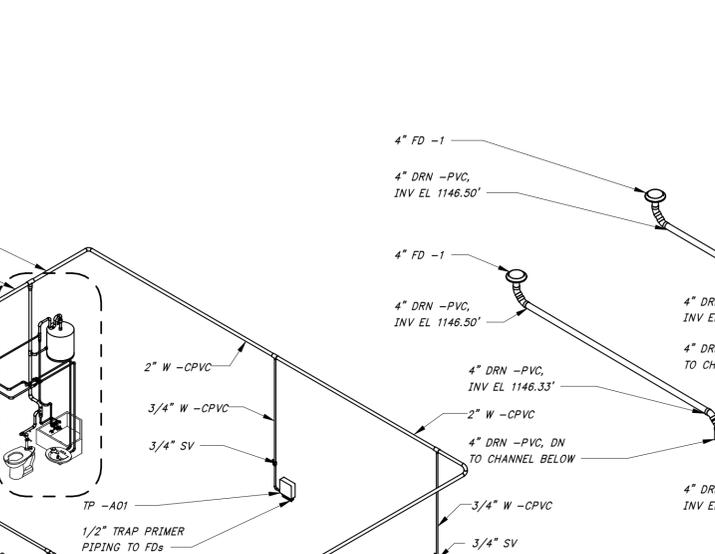
OPERATING LEVEL WATER SUPPLY ISOMETRIC
N.T.S.



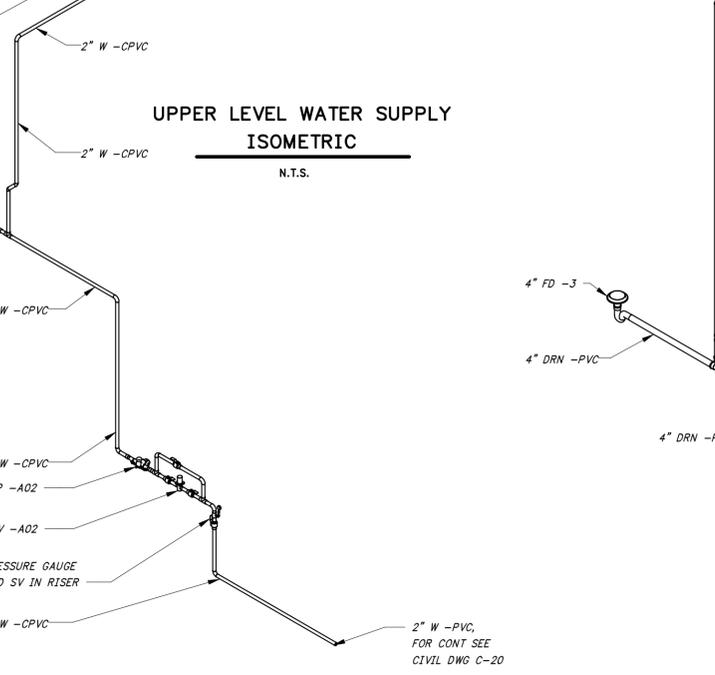
UPPER LEVEL WATER SUPPLY ISOMETRIC
N.T.S.



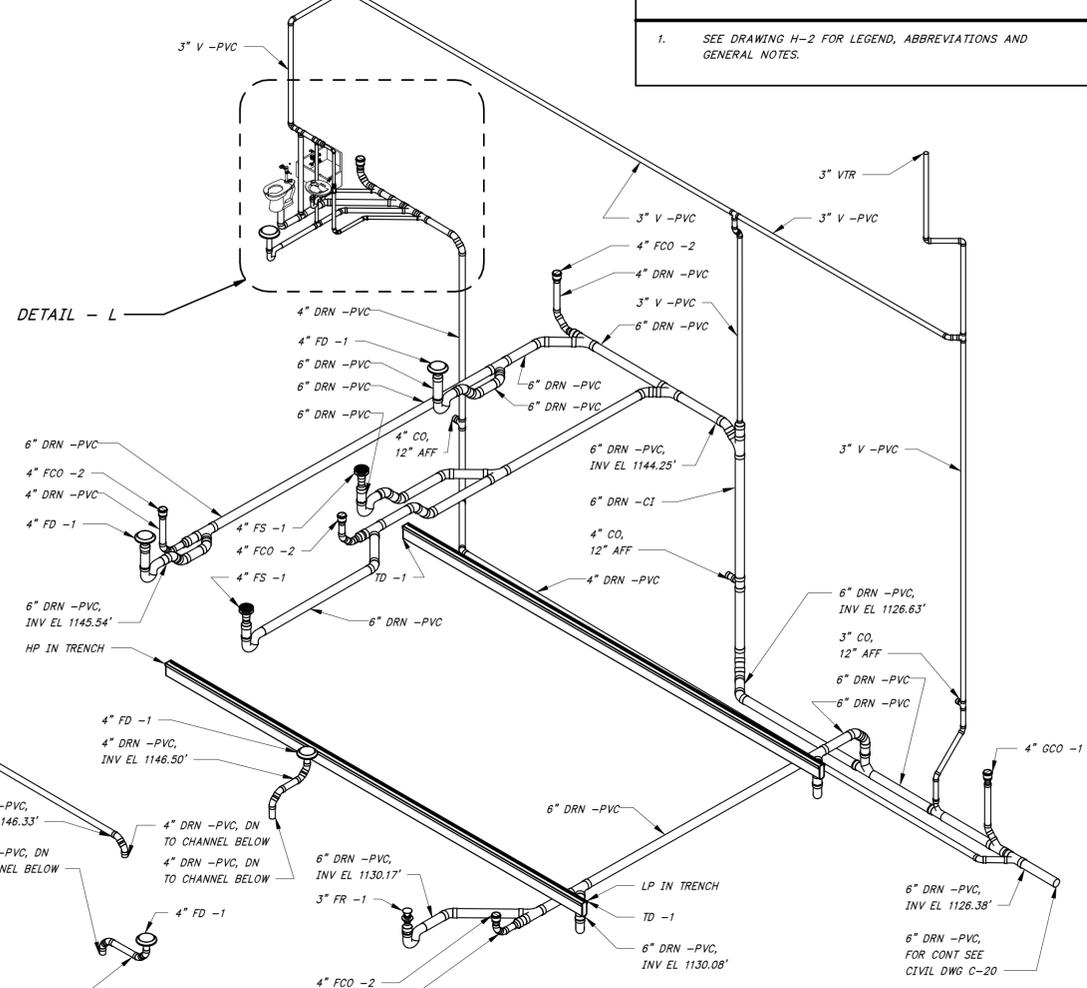
DETAIL - L
N.T.S.



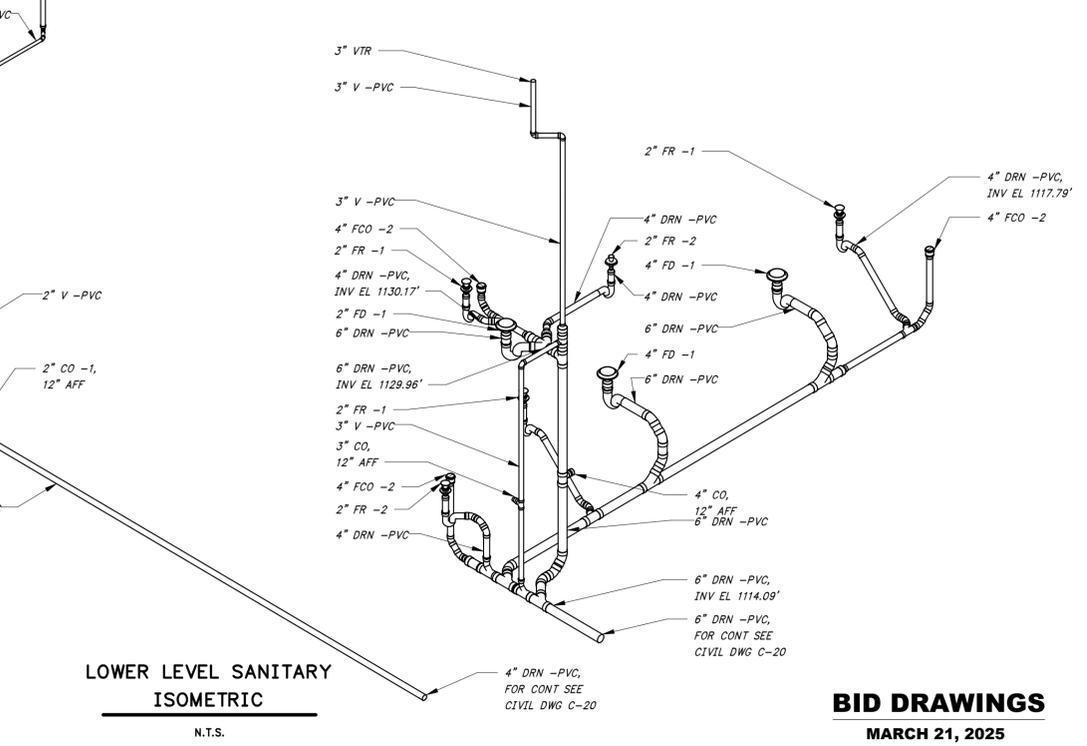
DETAIL - K
N.T.S.



LOWER LEVEL SANITARY ISOMETRIC
N.T.S.



UPPER AND OPERATING LEVEL SANITARY ISOMETRIC
N.T.S.

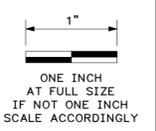


LOWER LEVEL SANITARY ISOMETRIC
N.T.S.

BID DRAWINGS
MARCH 21, 2025

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-HW ELEC BLDG-PR.rvt 2/12/2025 11:02:12 AM / CP / HVAC

- GENERAL SHEET NOTES**
- SEE DRAWING H-1 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
- SHEET KEYNOTES**
- CONDENSATE WATER DIRECTED ON THE ROOF.
 - PROVIDE MATCHING 4-WAY ADJUSTABLE DIFFUSER AT THE OUTLET AS AN ACCESSORY MOUNT, NOT LESS THAN 14'-6" AFF.



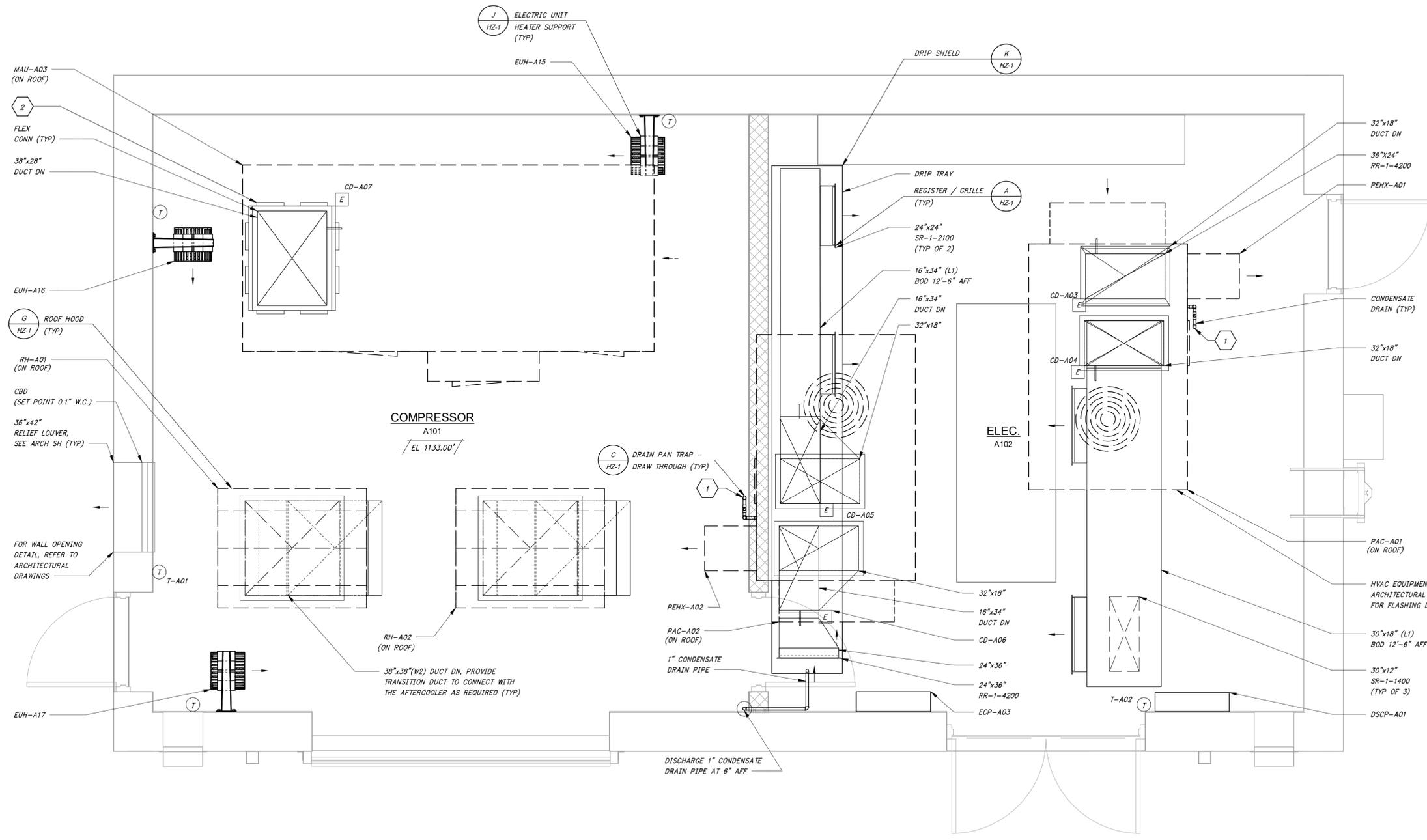
DATE	REVISION



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BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
 BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
HVAC
INFLUENT ELECTRICAL BUILDING FLOOR PLAN
 CITY OF BENTONVILLE, ARKANSAS

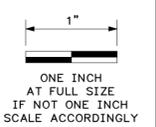
DATE: MARCH 2025
 SCALE: 1/2" = 1'-0"
 DESIGNED BY: AK
 DRAWN BY: CP
 HWI NO.: 2021037
 FILENAME: H-HW ELEC
 SHEET NO. **HA-9**



INFLUENT ELECTRICAL BUILDING
 DETAIL **M**
 1/2" = 1'-0"

BID DRAWINGS
 MARCH 21, 2025

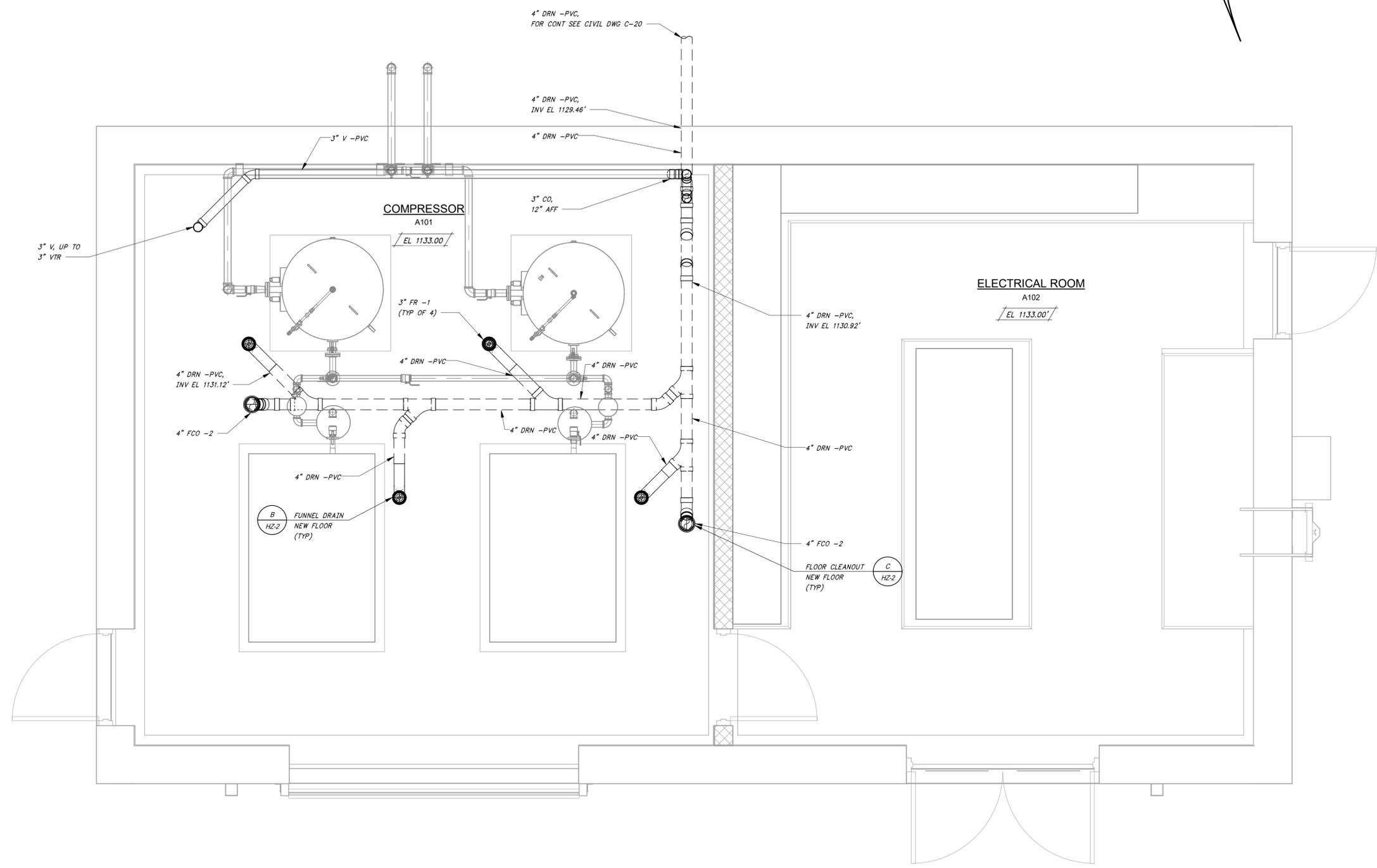
GENERAL SHEET NOTES
1. SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.



DATE	REVISION



HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH



INFLUENT ELECTRICAL BUILDING
 DETAIL
 1/2" = 1'-0"



BID DRAWINGS
 MARCH 21, 2025

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

CITY OF BENTONVILLE, ARKANSAS
 BENTONVILLE WATER RESOURCE RECOVERY
 FACILITY IMPROVEMENTS
 PLUMBING
 INFLUENT ELECTRICAL BUILDING
 FLOOR PLAN
 CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025
 SCALE: 1/2" = 1'-0"
 DESIGNED BY: SAM
 DRAWN BY: AJP
 HWEI NO.: 2021037
 FILENAME: H-HW ELEC

SHEET NO.
HA-10

GENERAL SHEET NOTES

1. SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

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

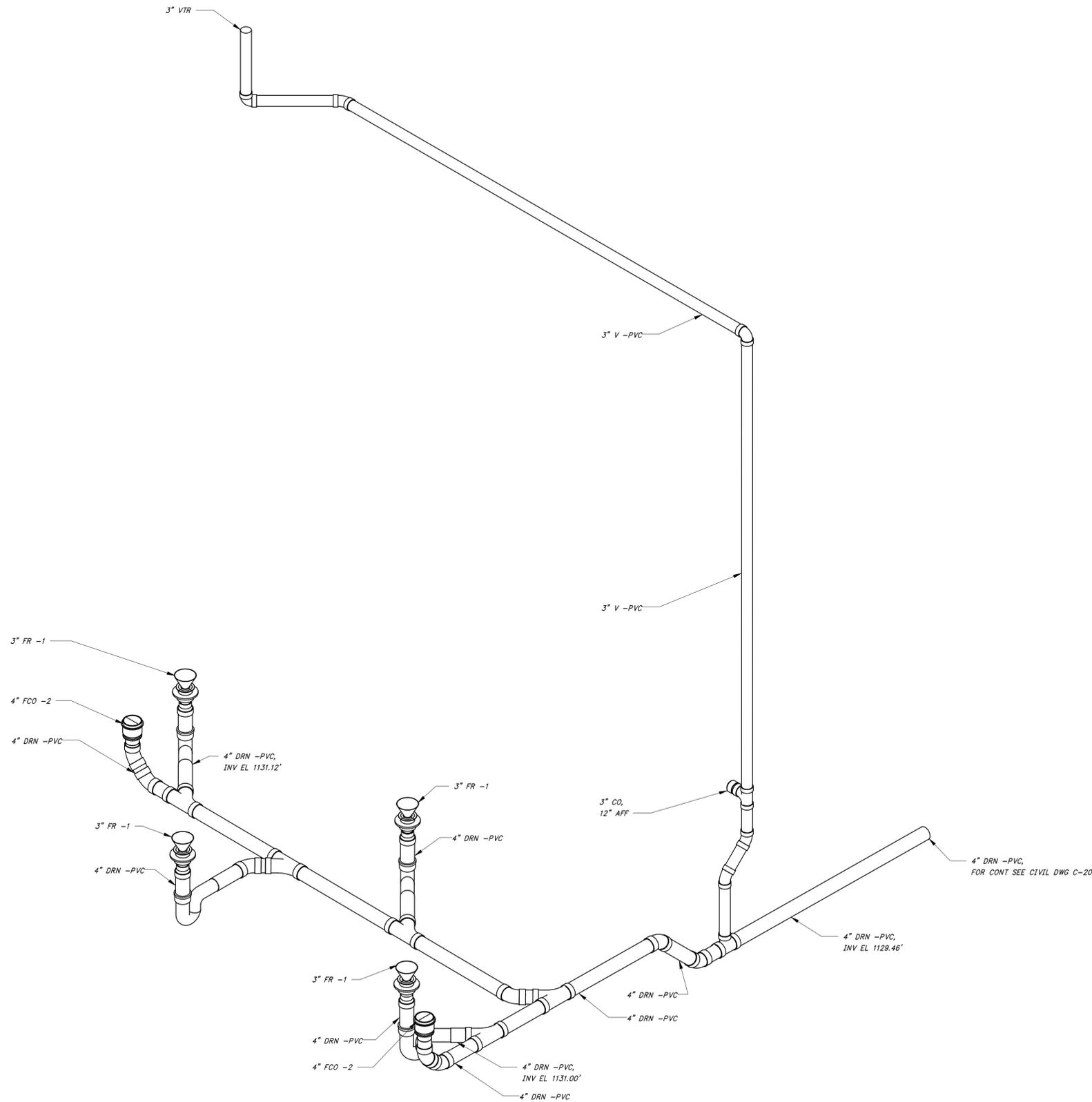
Table with columns for REVISION and DATE. Includes project name and engineer information.



CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
PLUMBING
INFLUENT ELECTRICAL BUILDING
ISOMETRIC
CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025
SCALE: AS SHOWN
DESIGNED BY: SAM
DRAWN BY: AJP
HWEI NO.: 2021037
FILENAME: H-HW ELEC

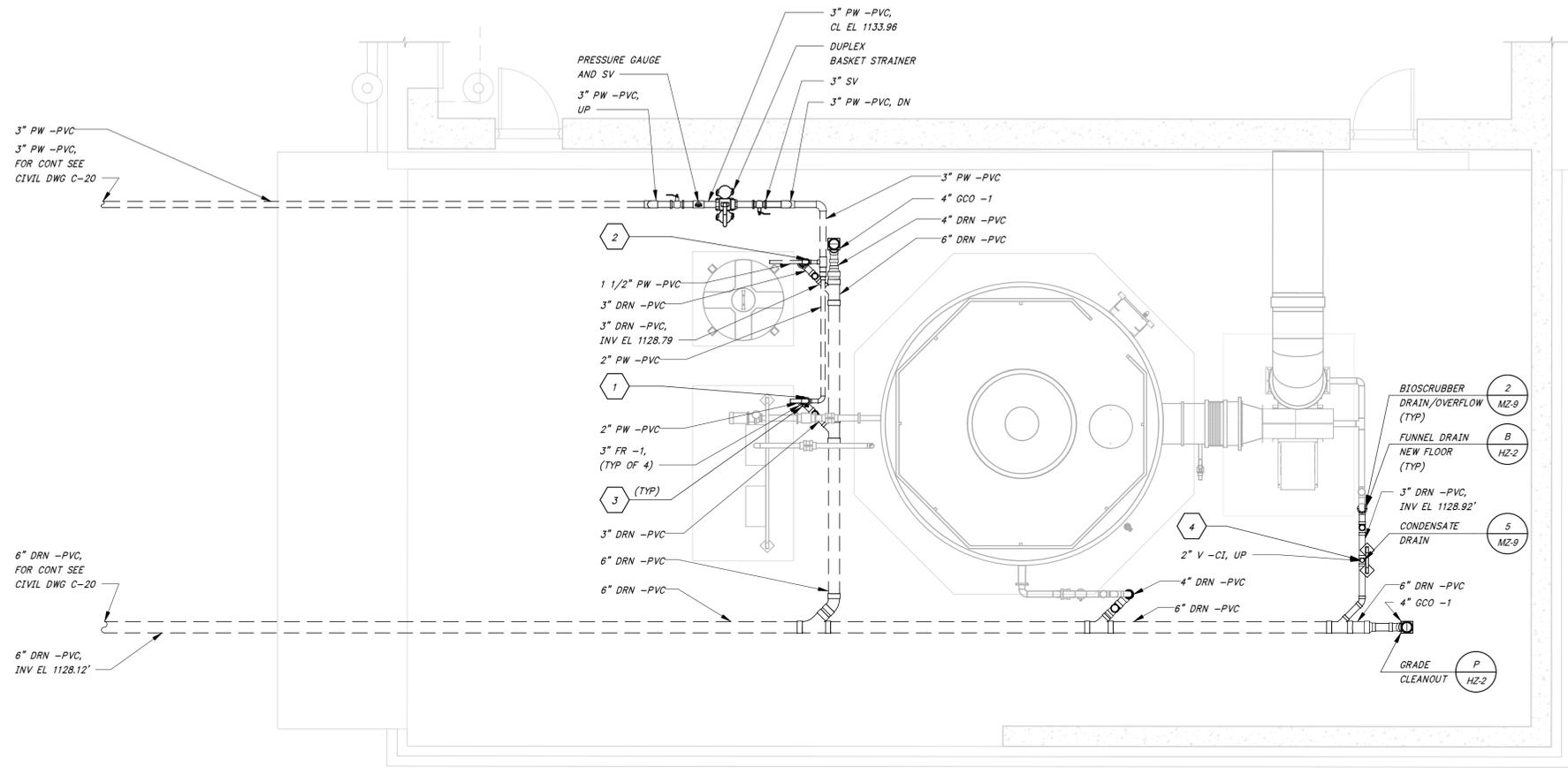
SHEET NO.
HA-11



SANITARY RISER DIAGRAM

N.T.S.

BID DRAWINGS
MARCH 21, 2025



ODOR CONTROL

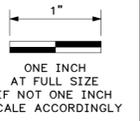
DETAIL 0
1/4" = 1'-0"

GENERAL SHEET NOTES

- SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
- HEAT TRACE AND INSULATE EXPOSED PIPING.

SHEET KEYNOTES

- 2" PW-CPVC, FOR WATER CONTROL PANEL SV IN DROP.
- 1 1/2" PW-CPVC, FOR NUTRIENT TANK, SV IN DROP.
- PROVIDE AN INSULATED AND JACKETED BOX AROUND THE RECEPTOR. PROVIDE INSULATION ON THE BELOW GRADE PIPE TO FROST DEPTH.
- ALL EXPOSED VENT LINE MATERIALS SHALL BE PROVIDED WITH TRANSITION BETWEEN DISSIMILAR MATERIALS.



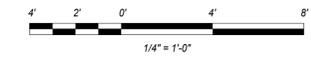
DATE	REVISION



HAWKINS WEIR ENGINEERS, INC.
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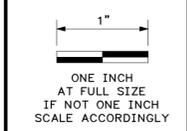
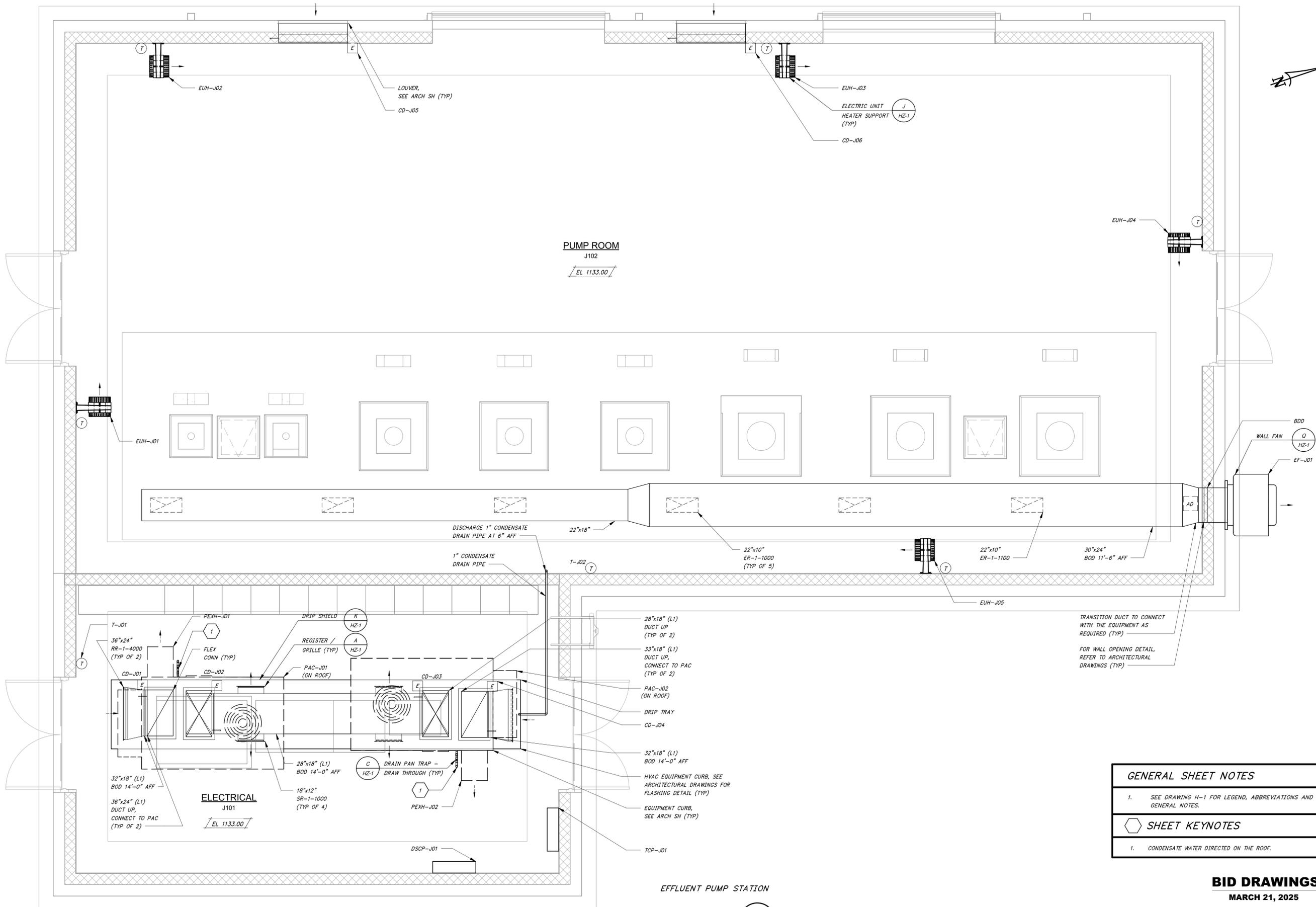
CITY OF BENTONVILLE, ARKANSAS
 BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
 PLUMBING
 ODOR CONTROL AREA
 PLAN
 CITY OF BENTONVILLE, ARKANSAS

BID DRAWINGS
MARCH 21, 2025



DATE: MARCH 2025
 SCALE: 1/4" = 1'-0"
 DESIGNED BY: SAM
 DRAWN BY: YBM
 HWEI NO.: 2021037
 FILENAME: H-ODOR CONT

SHEET NO. HA-12



DATE	
REVISION	

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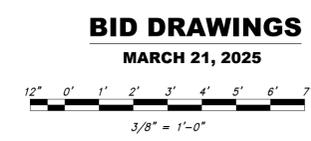
HAWKINS-WEIR ENGINEERS, INC.

BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
HVAC
EFFLUENT PUMP STATION
FLOOR PLAN
CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025
SCALE: 3/8" = 1'-0"
DESIGNED BY: AK
DRAWN BY: CP
HWEI NO.: 2021037
FILENAME: H-ELEC
SHEET NO. HJ-1

EFFLUENT PUMP STATION
DETAIL A
3/8" = 1'-0"



2/12/2025 10:05:25 PM / YBM / PLUMBING

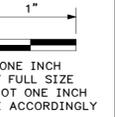
Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-ELEC BLDG-PR.rvt

GENERAL SHEET NOTES

1. SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

SHEET KEYNOTES

1. 3/4" SVW DN FOR SEAL WATER.



DATE	REVISION



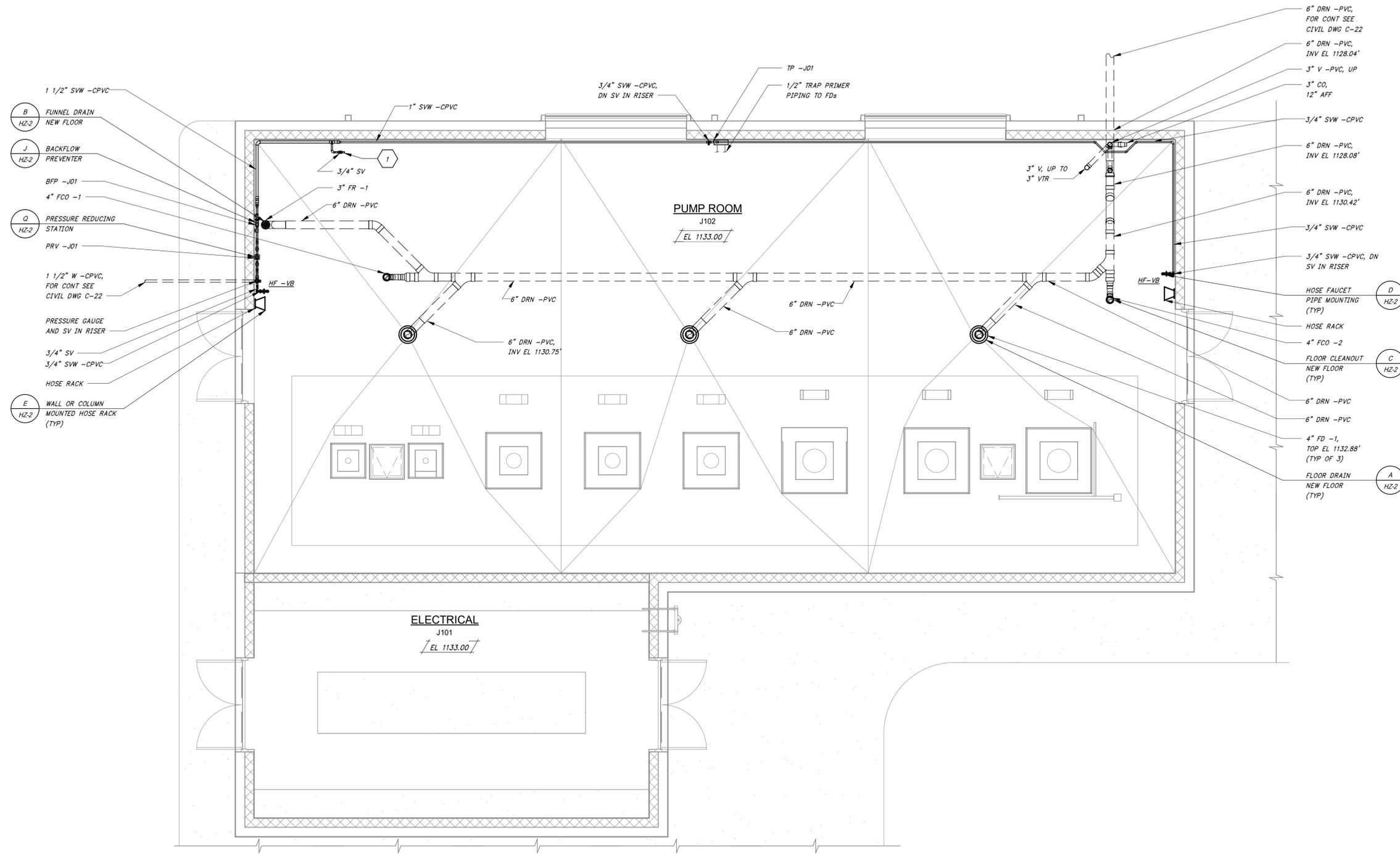
HAWKINS WEIR ENGINEERS, INC.

BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
 BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
PLUMBING
 EFFLUENT PUMP STATION FLOOR PLAN
 CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025
 SCALE: 1/4" = 1'-0"
 DESIGNED BY: SAM
 DRAWN BY: YBM
 HWEI NO.: 2021037
 FILENAME: H-ELEC

SHEET NO. HJ-2



EFFLUENT PUMP STATION

DETAIL B
1/4" = 1'-0"

BID DRAWINGS
 MARCH 21, 2025

1/4" = 1'-0"

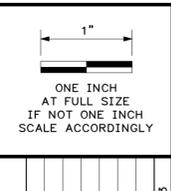
Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-OPS ADMIN LAB BLDG.rvt 2/12/2025 11:11:20 AM / CP / HVAC

GENERAL SHEET NOTES

1. SEE DRAWING H-1 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

SHEET KEYNOTES

1. CONDENSATE WATER DIRECTED ON THE ROOF

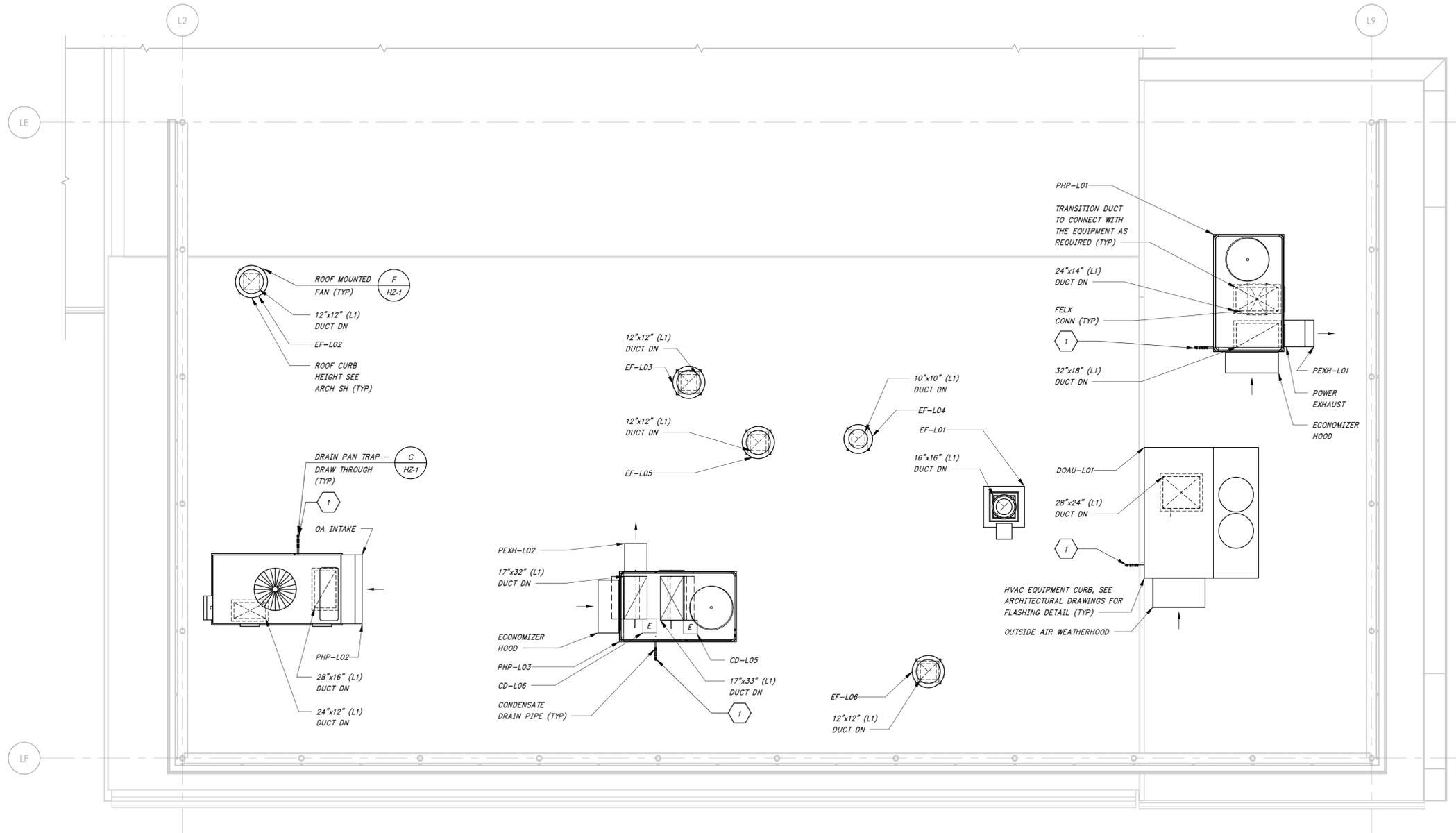


DATE	REVISION



HAWKINS WEIR ENGINEERS, INC.

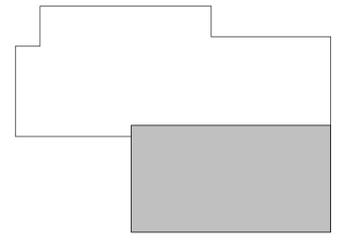
BLACK & VEATCH



ADMINISTRATION / LABORATORY BUILDING

DETAIL **B**

1/4" = 1'-0"

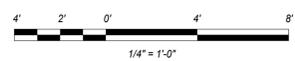


KEY PLAN

NTS

BID DRAWINGS

MARCH 24, 2025



CITY OF BENTONVILLE, ARKANSAS

BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

HVAC

ADMINISTRATION / LABORATORY BUILDING

ROOF PLAN

CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025

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

DESIGNED BY: AK

DRAWN BY: CP

HWEI NO.: 2021037

FILENAME: H-OPS ADMIN

SHEET NO.

HL-2

2/12/2025 11:12:04 AM / AJP / PLUMBING

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-OPS ADMIN LAB BLDG.rvt

- GENERAL SHEET NOTES**
- SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
 - CORE DRILL ALL FLOOR PENETRATIONS THROUGH EXISTING FLOOR SLAB FOR NEW PIPING, COORDINATE LOCATION WITH STRUCTURAL.
- SHEET KEYNOTES**
- 1/2" HW AND 1/2" W DN, TO FUME HOOD.
 - CONNECT SINK DRAIN TO EXISTING DRAIN LINE (FIELD VERIFY).
 - CONNECT FLOOR DRAIN TO EXISTING DRAIN LINE (FIELD VERIFY).
 - NEW DRAIN LINE SHALL CONNECT TO THE EXISTING LINE AT THIS POINT.

DATE	
REVISION	



HAWKINS WEIR ENGINEERS, INC.

BLACK & VEATCH

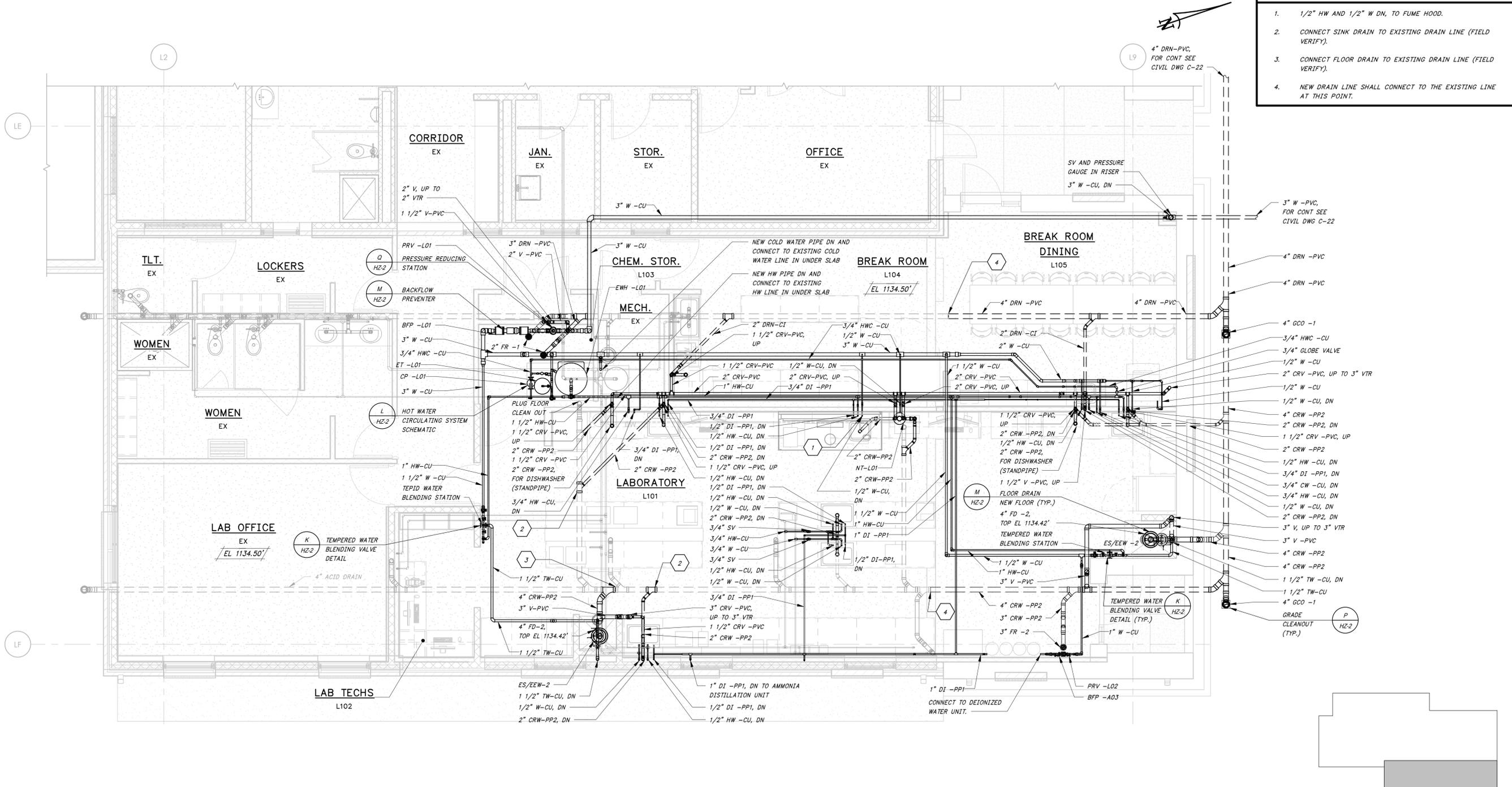
CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

PLUMBING
ADMINISTRATION / LABORATORY BUILDING
FLOOR PLAN

CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: SAM
DRAWN BY: AJP
HWEI NO.: 2021037
FILENAME: H-OPS ADMIN

SHEET NO.
HL-3



ADMINISTRATION / LABORATORY BUILDING
DETAIL

1/4" = 1'-0" C

KEY PLAN
NTS

BID DRAWINGS
MARCH 21, 2025

1/4" = 1'-0"

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-OPS ADMIN LAB BLDG.rvt 2/12/2025 11:12:33 AM / AJP / PLUMBING

GENERAL SHEET NOTES

- SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

SHEET KEYNOTES

- NEW WORK SHALL COMMENCE FROM THIS POINT DOWNSTREAM.

DATE	
REVISION	



HAWKINS WEIR ENGINEERS, INC.

BLACK & VEATCH

PLUMBING

ADMINISTRATION / LABORATORY BUILDING

ISOMETRICS

CITY OF BENTONVILLE, ARKANSAS

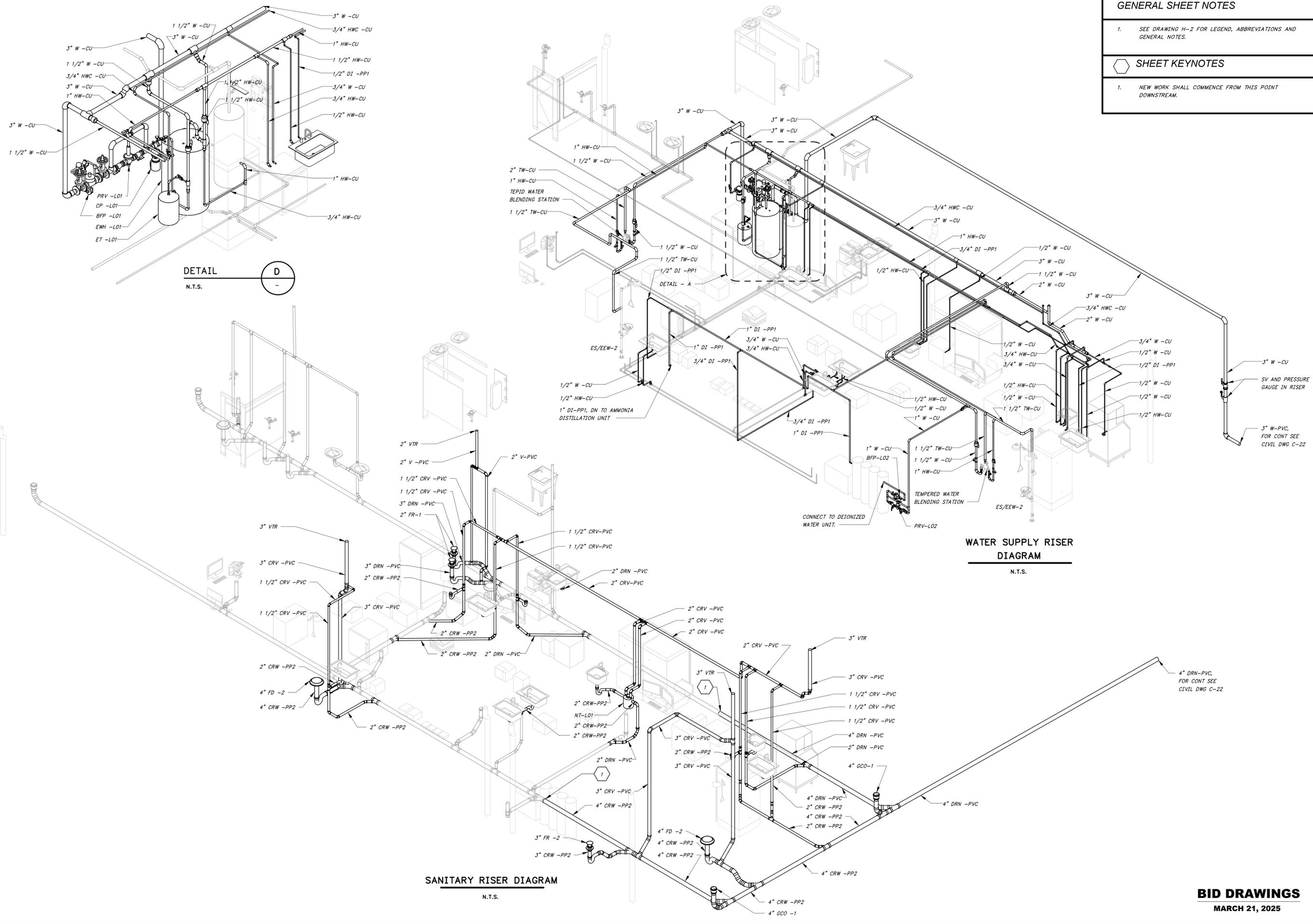
CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

PLUMBING
ADMINISTRATION / LABORATORY BUILDING
ISOMETRICS

CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025
SCALE: AS SHOWN
DESIGNED BY: SAM
DRAWN BY: AJP
HWEI NO.: 2021037
FILENAME:

SHEET NO.
HL-4



DETAIL D
N.T.S.

WATER SUPPLY RISER DIAGRAM
N.T.S.

SANITARY RISER DIAGRAM
N.T.S.

BID DRAWINGS
MARCH 21, 2025

2/12/2025 11:18:47 AM / AJP / PLUMBING

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-NEW MAINTENANCE BLDG.rvt

GENERAL SHEET NOTES

1. SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

SHEET KEYNOTES

- 1. PIPING SHOWN FOR CLARITY, INSTALL ON WALL.
- 2. CONTRACTOR TO RELOCATE EXISTING COMPRESSOR ALONG WITH CONNECTED INSTRUMENTATION, EQUIPMENT CONTROL PANEL, AND OTHER NECESSARY ACCESSORIES. CONTRACTOR SHALL FIELD TEST POWER WIRING AND CONTROL WIRING, AND IF DETERMINED DAMAGED SHALL REPLACE WHERE NECESSARY.
- 3. CONTRACTOR TO CONNECT NEW PIPE TO EXISTING COMPRESSOR AFTER MATCHING THE MATERIAL AND SIZE OF PIPE WITH THE CONNECTION ON COMPRESSOR RECEIVER.

ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

DATE	REVISION

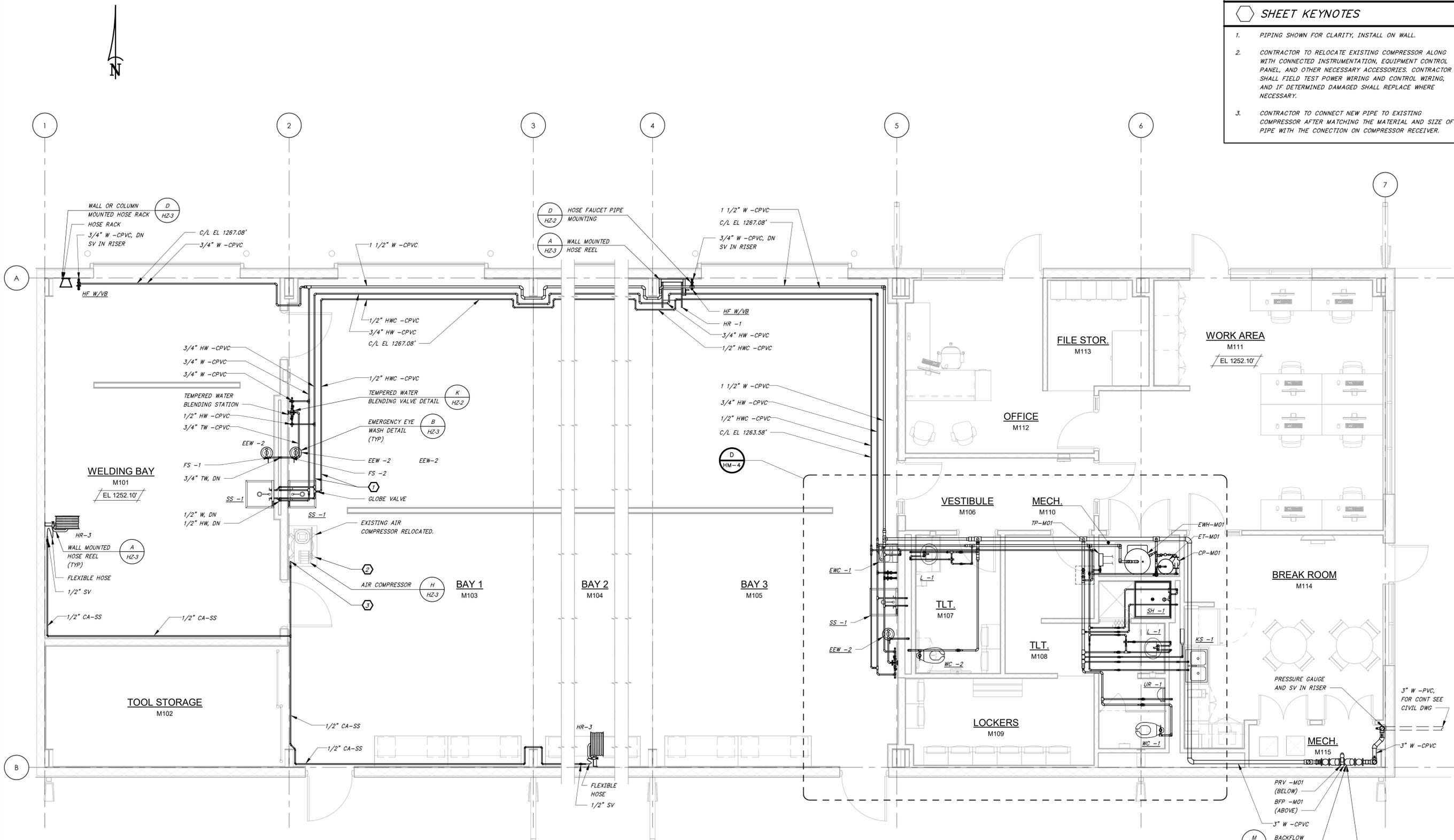


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CITY OF BENTONVILLE, ARKANSAS
 BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
 PLUMBING
 MAINTENANCE BUILDING
 WATER SUPPLY FLOOR PLAN
 CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025
 SCALE: 1/4" = 1'-0"
 DESIGNED BY: SAM
 DRAWN BY: AJP
 HWEI NO.: 2021037
 FILENAME: H-MAIN

SHEET NO. HM-2



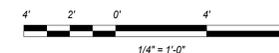
MAINTENANCE BUILDING - WATER SUPPLY
 DETAIL

1/4" = 1'-0"



- M BACKFLOW PREVENTER
- Q PRESSURE REDUCING STATION

BID DRAWINGS
 MARCH 21, 2025



Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-NEW MAINTENANCE BLDG.rvt 2/12/2025 11:19:32 AM / AJP / PLUMBING

GENERAL SHEET NOTES

- SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
- SEE STRUCTURAL DRAWINGS FOR FLOOR HIGH POINT AND TOP OF DRAIN ELEVATIONS.

1" = 1'-0"

ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

SHEET KEYNOTES

- CONTRACTOR TO RELOCATE EXISTING COMPRESSOR ALONG WITH CONNECTED INSTRUMENTATION, EQUIPMENT CONTROL PANEL, AND OTHER NECESSARY ACCESSORIES. CONTRACTOR SHALL FIELD TEST POWER WIRING AND CONTROL WIRING, AND IF DETERMINED DAMAGED SHALL REPLACE WHERE NECESSARY.
- CONTRACTOR TO CONNECT NEW PIPE TO EXISTING COMPRESSOR AFTER MATCHING THE MATERIAL AND SIZE OF PIPE WITH THE CONNECTION ON COMPRESSOR RECEIVER.

DATE	REVISION



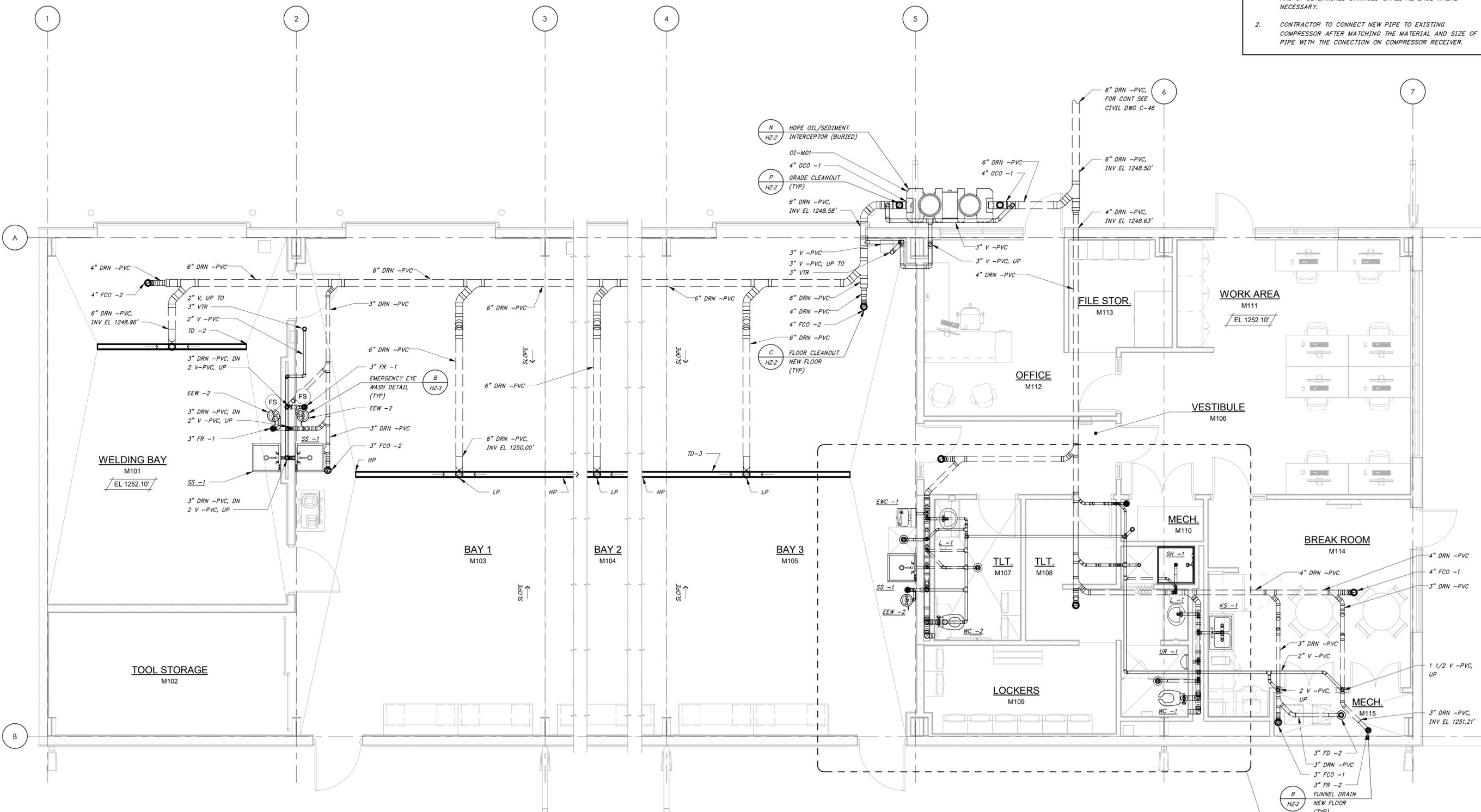
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BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
PLUMBING
MAINTENANCE BUILDING
SANITARY FLOOR PLAN
CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: SAM
DRAWN BY: AJP
HWEI NO.: 2021037
FILENAME: H-MAIN

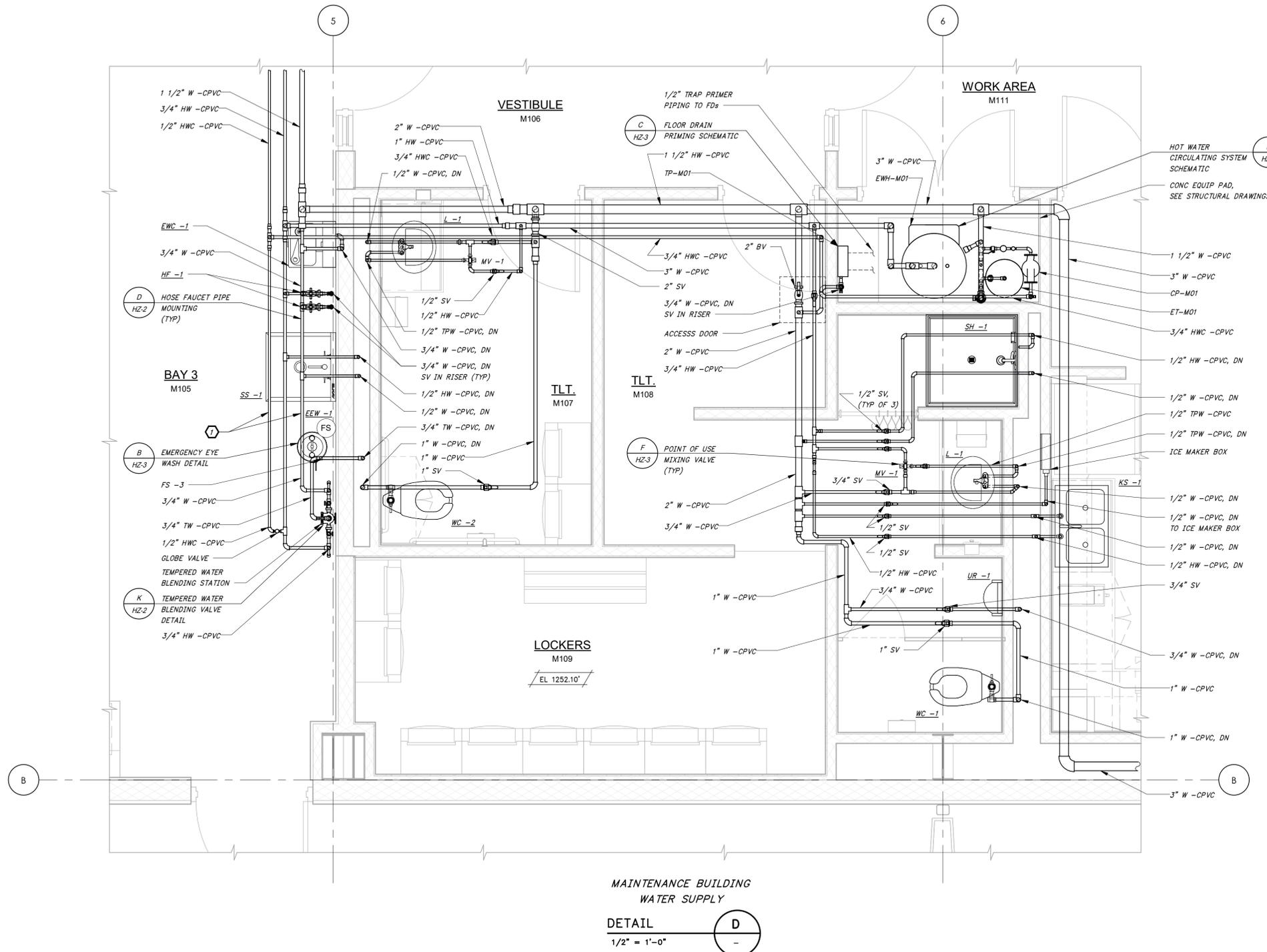
SHEET NO. **HM-3**



MAINTENANCE BUILDING - SANITARY
DETAIL
1/4" = 1'-0"

BID DRAWINGS
MARCH 21, 2025





**MAINTENANCE BUILDING
WATER SUPPLY**

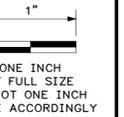
DETAIL **D**
1/2" = 1'-0"

GENERAL SHEET NOTES

1. SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

SHEET KEYNOTES

1. PIPING SHOWN FOR CLARITY, INSTALL ON WALL.



DATE	REVISION



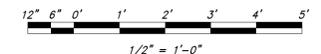
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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
PLUMBING
MAINTENANCE BUILDING
WATER SUPPLY ENLARGED PLAN
CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025
SCALE: 1/2" = 1'-0"
DESIGNED BY: SAM
DRAWN BY: AJP
HWEI NO.: 2021037
FILENAME: H-MAIN

SHEET NO.
HM-4

BID DRAWINGS
MARCH 21, 2025





GENERAL SHEET NOTES

1. SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

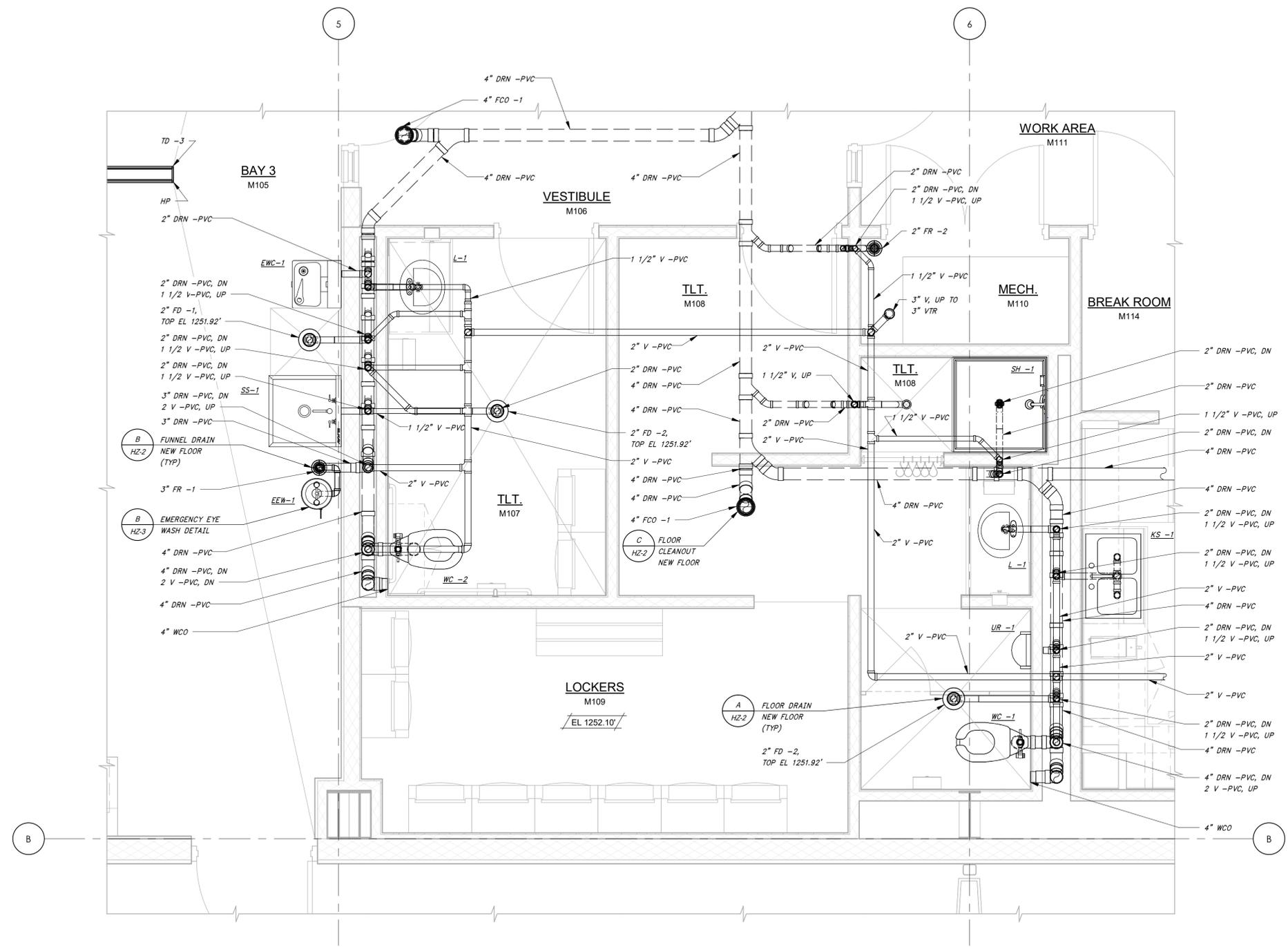
1" ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

DATE	REVISION



HAWKINS WEIR ENGINEERS, INC.

BLACK & VEATCH



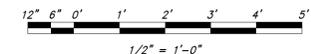
MAINTENANCE BUILDING SANITARY

DETAIL E
1/2" = 1'-0"

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
PLUMBING
MAINTENANCE BUILDING
SANITARY ENLARGED PLAN
CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025
SCALE: 1/2" = 1'-0"
DESIGNED BY: SAM
DRAWN BY: AJP
HWEI NO.: 2021037
FILENAME: H-MAIN

BID DRAWINGS
MARCH 21, 2025



SHEET NO.
HM-5

2/12/2025 11:21:01 AM / AJP / PLUMBING

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-NEW MAINTENANCE BLDG.rvt

GENERAL SHEET NOTES

1. SEE DRAWING H-2 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

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

DATE

REVISION

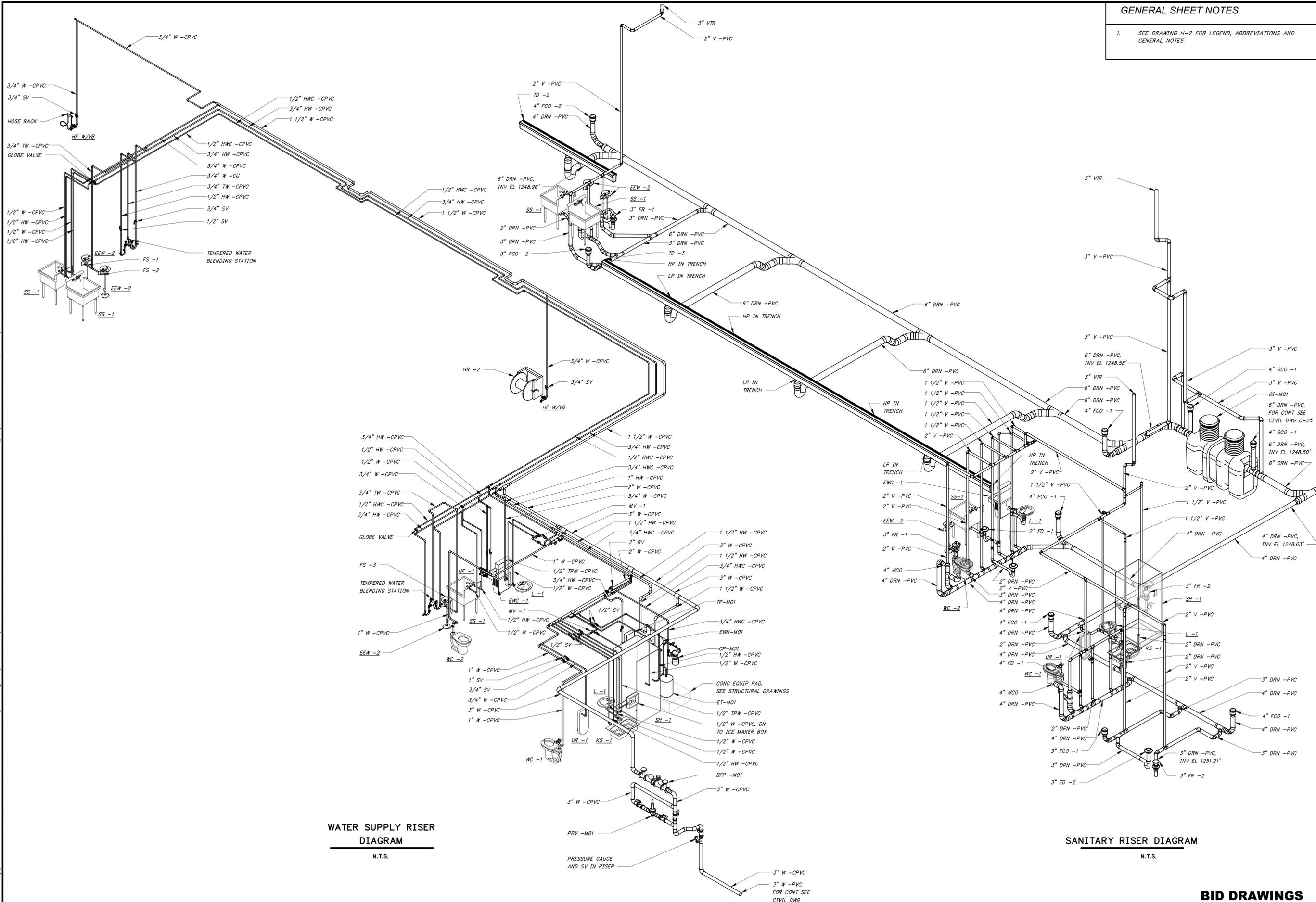


HAWKINS WEIR ENGINEERS, INC. BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS PLUMBING MAINTENANCE BUILDING ISOMETRICS CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025 SCALE: AS SHOWN DESIGNED BY: SAM DRAWN BY: AJP HWEL NO.: 2021037 FILENAME: H-MAIN

SHEET NO. HM-6



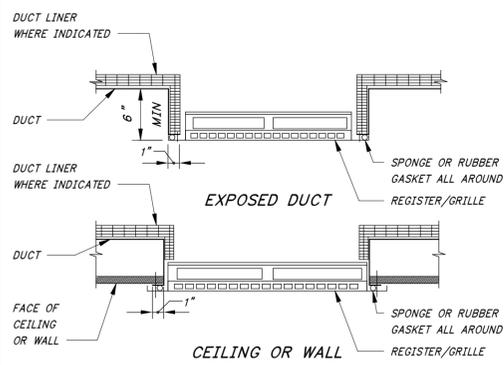
WATER SUPPLY RISER DIAGRAM N.T.S.

SANITARY RISER DIAGRAM N.T.S.

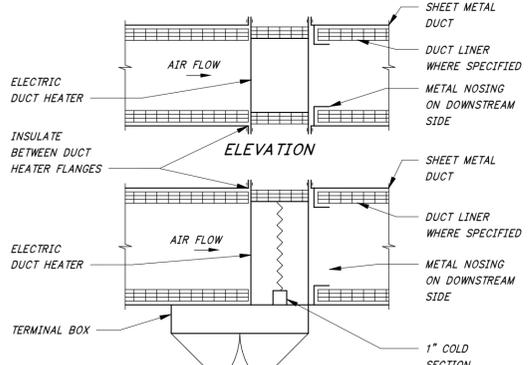
BID DRAWINGS MARCH 21, 2025

2/12/2025 10:28:54 AM / CP / HVAC

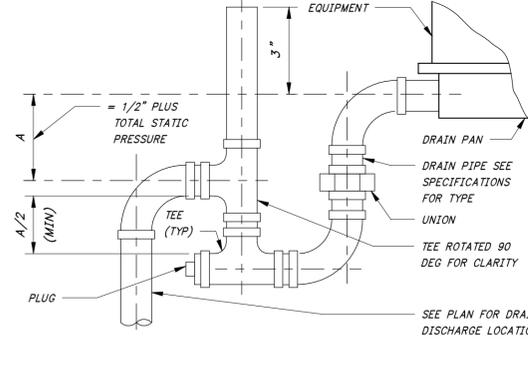
Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/H-GENERAL.rvt



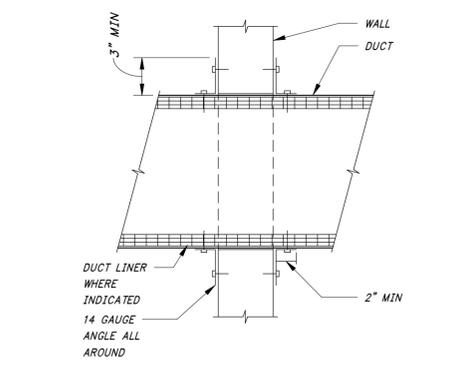
REGISTER / GRILLE
N.T.S. **A**



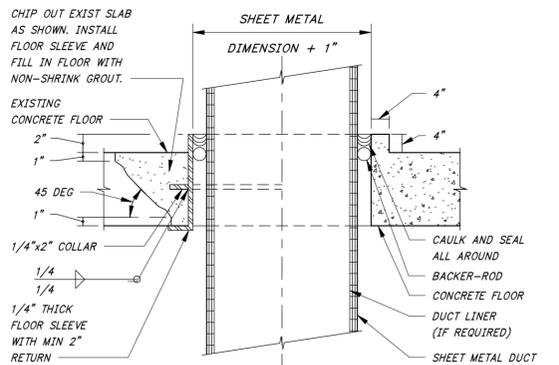
PLAN
ELECTRIC DUCT HEATER
N.T.S. **B**



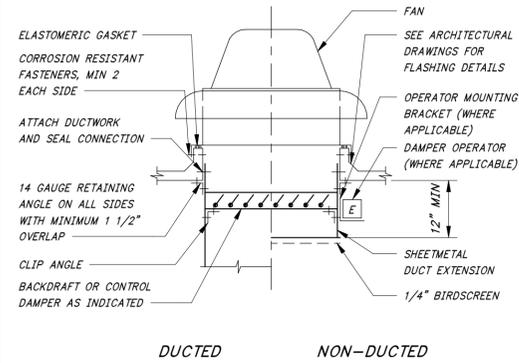
DRAIN PAN TRAP - DRAW THROUGH
N.T.S. **C**



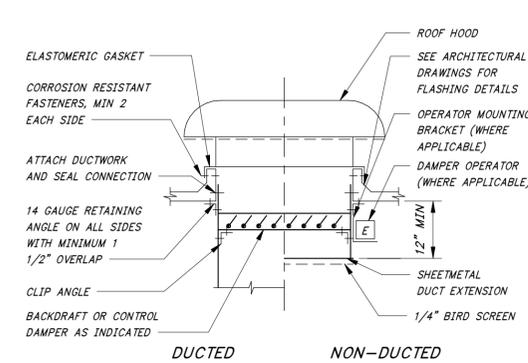
WALL PENETRATION - INTERIOR
N.T.S. **D**



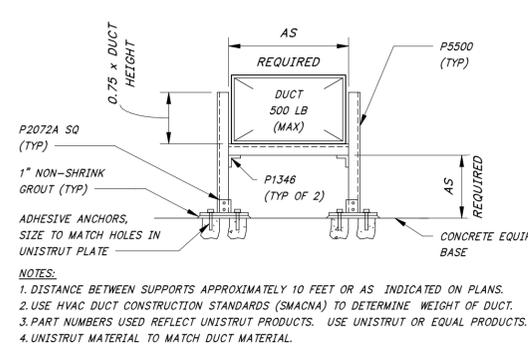
FLOOR PENETRATION
N.T.S. **E**



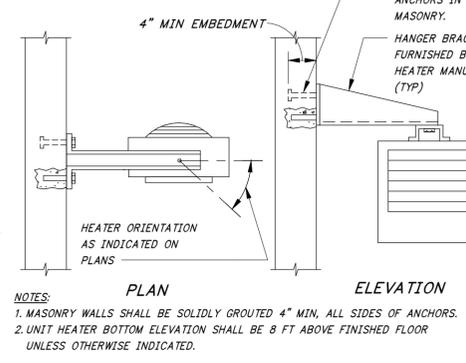
DUCTED **NON-DUCTED**
ROOF MOUNTED FAN
N.T.S. **F**



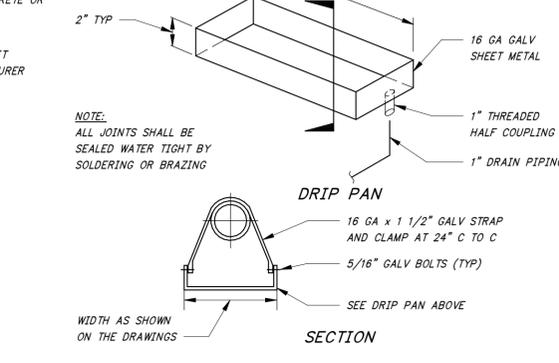
DUCTED **NON-DUCTED**
ROOF HOOD
N.T.S. **G**



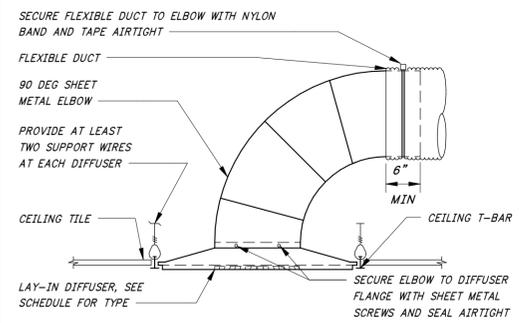
DUCT SUPPORT
N.T.S. **H**



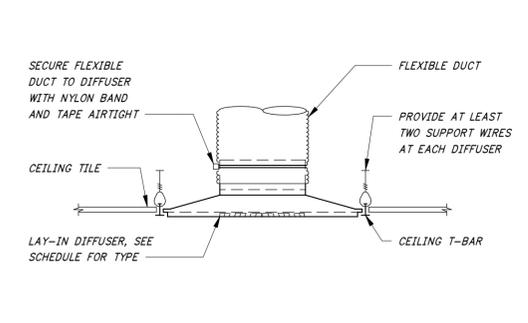
ELECTRIC UNIT HEATER SUPPORT
N.T.S. **J**



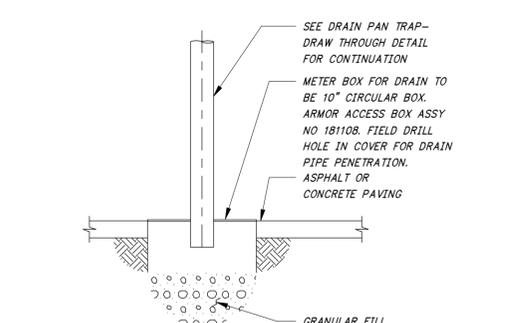
DRIP SHIELD
N.T.S. **K**



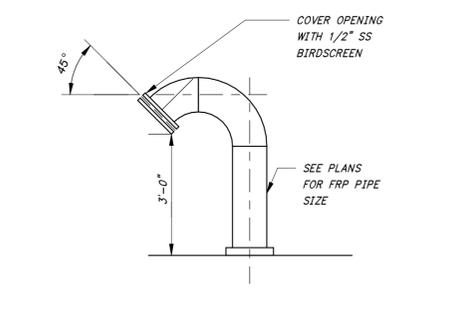
CEILING DIFFUSER - HORIZONTAL DUCT CONNECTION
N.T.S. **L**



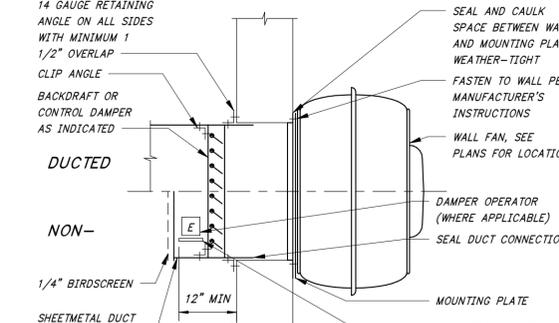
CEILING DIFFUSER - VERTICAL DUCT CONNECTION
N.T.S. **M**



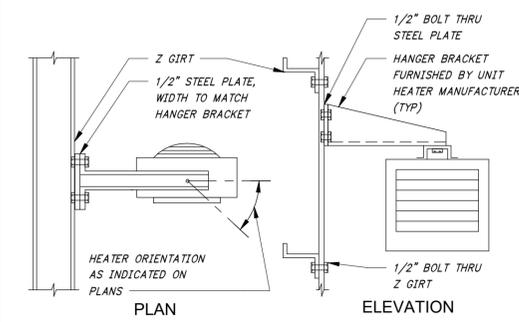
CONDENSATE DRAIN SUMP
N.T.S. **N**



GOOSENECK INTAKE/EXHAUST
N.T.S. **P**



WALL FAN
N.T.S. **Q**



PLAN **ELEVATION**
ELECTRIC UNIT HEATER SUPPORT
N.T.S. **R**

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

DATE	
REVISION	

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
HVAC DETAILS
CITY OF BENTONVILLE, ARKANSAS

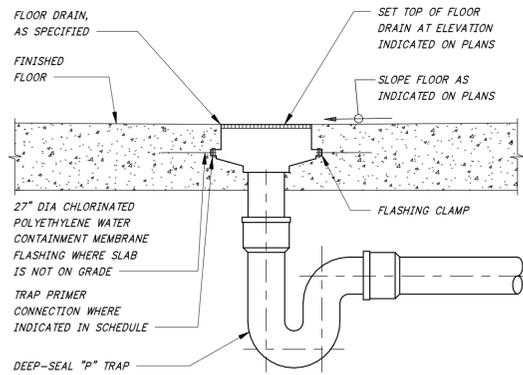
DATE:	MARCH 2025
SCALE:	AS SHOWN
DESIGNED BY:	AK
DRAWN BY:	CP
HWEI NO.:	2021037
FILENAME:	H-GENERAL

BID DRAWINGS
MARCH 21, 2025

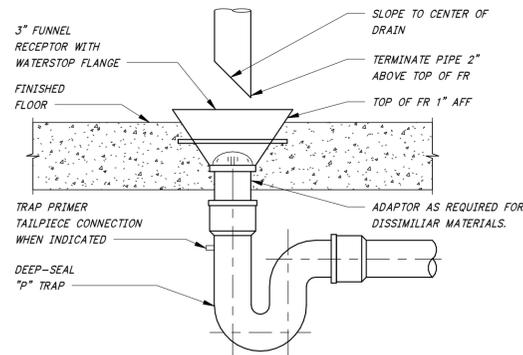
SHEET NO.
HZ-1

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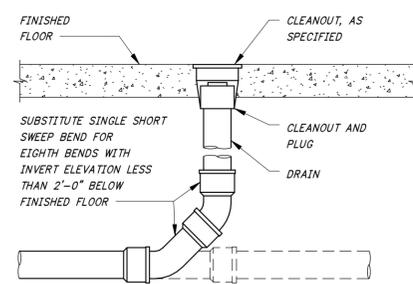
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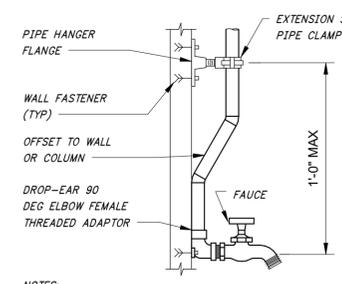
**FLOOR DRAIN
NEW FLOOR**
N.T.S. **A**



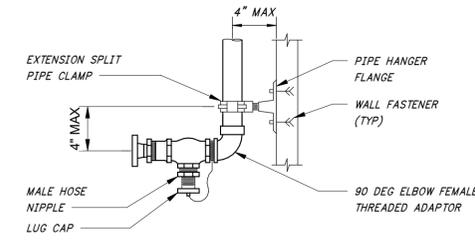
**FUNNEL DRAIN
NEW FLOOR**
N.T.S. **B**



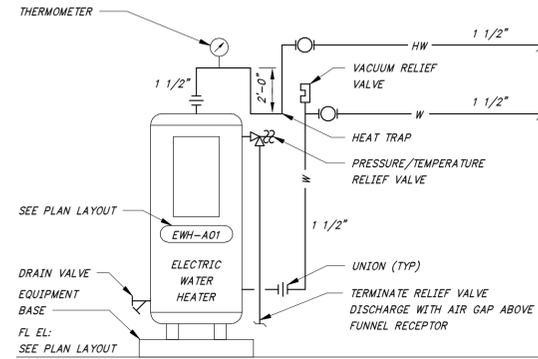
**FLOOR CLEANOUT
NEW FLOOR**
N.T.S. **C**



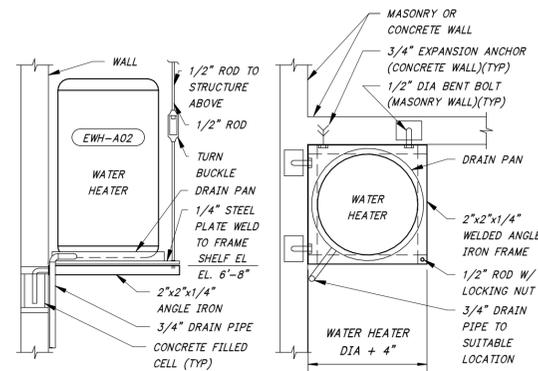
**HOSE FAUCET PIPE
MOUNTING**
N.T.S. **D**



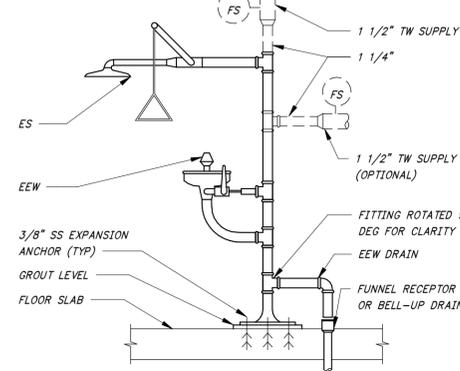
**HOSE VALVE PIPE
MOUNTING**
N.T.S. **E**



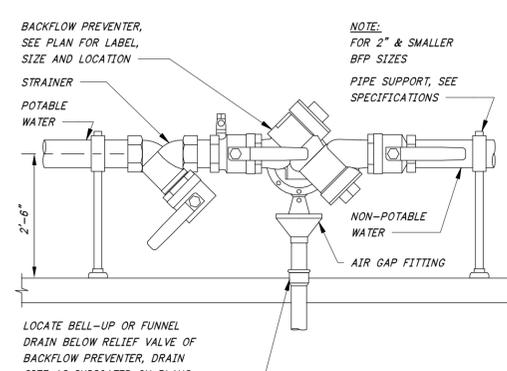
**ELECTRIC WATER
HEATER**
N.T.S. **F**



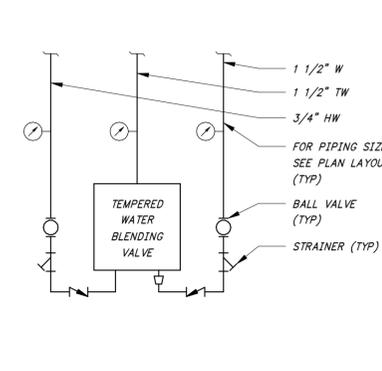
**WATER HEATER
SUPPORT**
N.T.S. **G**



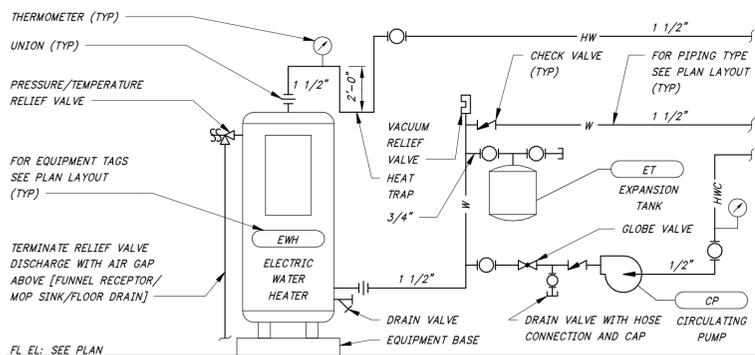
**EMERGENCY
SHOWER AND
EYE WASH**
N.T.S. **H**



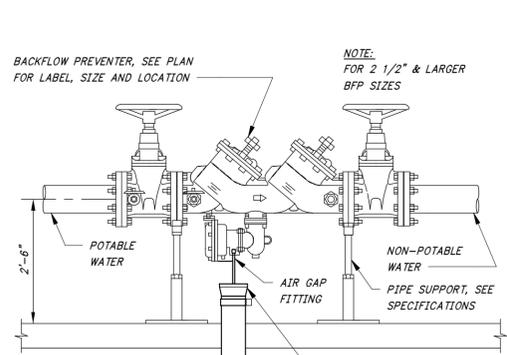
**BACKFLOW
PREVENTER**
N.T.S. **J**



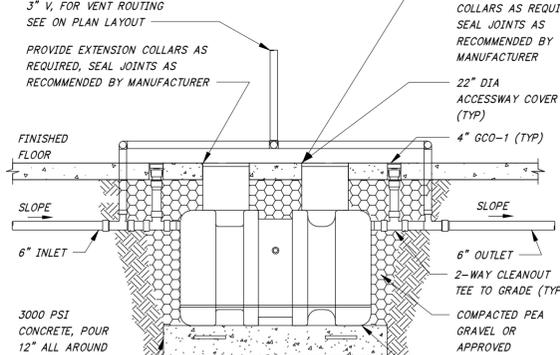
**TEMPERED WATER
BLENDING
VALVE DETAIL**
N.T.S. **K**



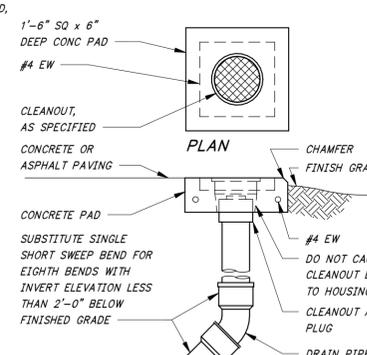
**HOT WATER
CIRCULATING SYSTEM
SCHEMATIC**
N.T.S. **L**



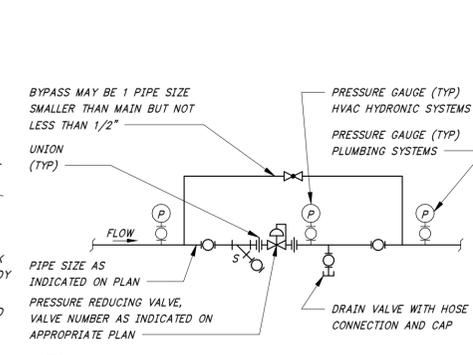
**BACKFLOW
PREVENTER**
N.T.S. **M**



**OIL/SEDIMENTARY
INTERCEPTOR
(BURIED)**
N.T.S. **N**



**GRADE
CLEANOUT**
N.T.S. **P**



**PRESSURE REDUCING
STATION**
N.T.S. **Q**

DATE	
REVISION	

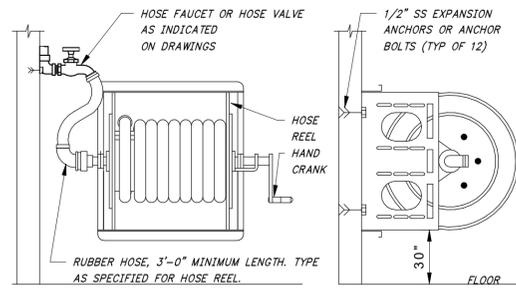


HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
PLUMBING DETAILS
CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025
SCALE: AS SHOWN
DESIGNED BY: SAM
DRAWN BY: AJP
HWEI NO.: 2021037
FILENAME: H-GENERAL
SHEET NO. HZ-2

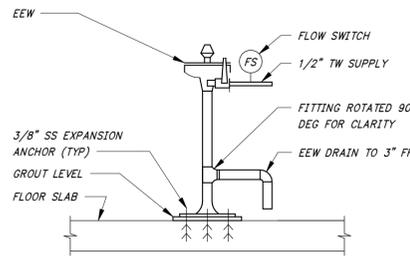
BID DRAWINGS
MARCH 21, 2025



NOTE:
THE EXACT ORIENTATION OF WATER SUPPLY PIPE AND HOSE VALVE SHOULD BE AS REQUIRED TO SUIT THE SPECIFIC INSTALLATION.

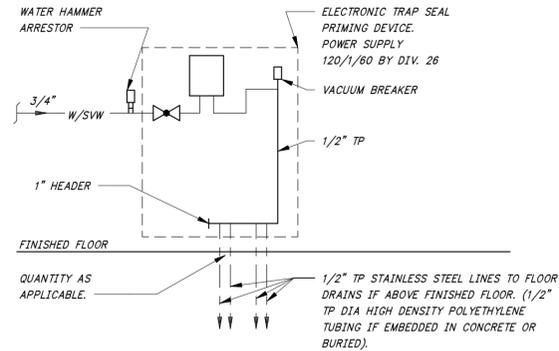
WALL MOUNTED HOSE REEL

N.T.S.



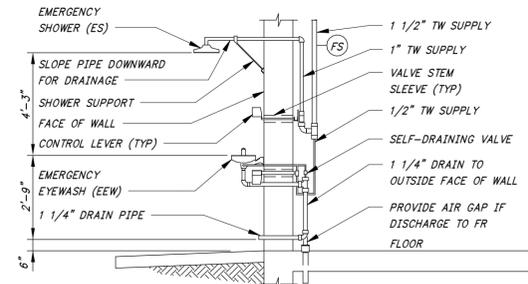
EMERGENCY EYE WASH DETAIL

N.T.S.



FLOOR DRAIN PRIMING SCHEMATIC

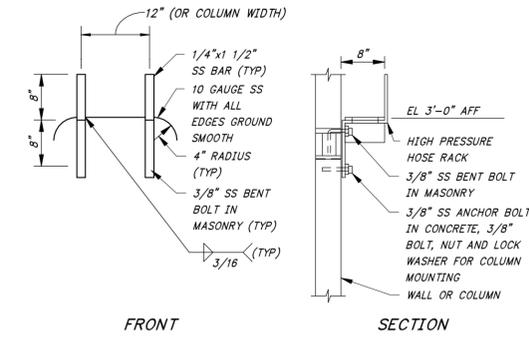
N.T.S.



NOTES:
1. ES CONTROL LEVER SHALL BE LOCATED 1'-0" TO THE RIGHT OF ES CENTERLINE, MAX OF 5'-6" ABOVE GRADE. EEW CONTROL LEVER AND WATER SUPPLY SUPPLY LINE SHALL BE LOCATED 4 3/4" TO THE RIGHT OF EEW CENTERLINE, EEW CONTROL LEVER CONTROL LEVER SHALL BE LOCATED 5 5/8" BELOW WATER SUPPLY LINE. SUPPLY PIPING SHALL NOT INTERFERE WITH CONTROL LEVER OPERATION.
2. ANNULAR SPACE IN VALVE STEM SLEEVES SHALL BE LOOSELY PACKED WITH OAKUM TO REDUCE AIR INFILTRATION, BUT SHALL NOT HINDER VALVE OPERATION.

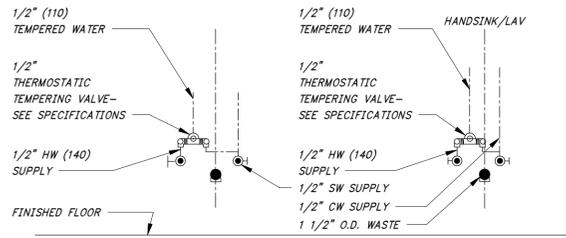
OUTDOOR EMERGENCY SHOWER AND EYE WASH

N.T.S.



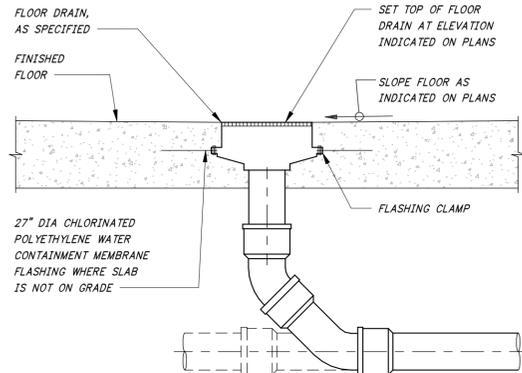
WALL OR COLUMN MOUNTED HOSE RACK

N.T.S.



POINT OF USE MIXING VALVE

N.T.S.



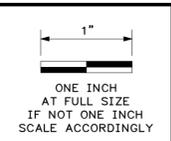
FLOOR DRAIN - NEW FLOOR NO P-TRAP

N.T.S.



AIR COMPRESSOR

N.T.S.



DATE	
REVISION	



HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
 BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
PLUMBING DETAILS
 CITY OF BENTONVILLE, ARKANSAS

DATE: MARCH 2025
 SCALE: AS SHOWN
 DESIGNED BY: SAM
 DRAWN BY: YBM
 HWEI NO.: 2021037
 FILENAME: H-GENERAL

SHEET NO.
HZ-3

BID DRAWINGS
 MARCH 21, 2025