General Plan Symbols

- Plan Revision Number
- 1 — Detail Number on Sheet; X-000 — Sheet Number Where Detail is Placed
- 1 — Keynote Symbol
- Continuation Symbol
- Point Where New Connects To Existing
- Room / 1 — Room Name / Number
- Area Being Demolished
- Area Not In Contract

Abbreviations

Ø	ROUND	LPG	LIQUEFIED PETROLEUM GAS
ABV	ABOVE	LVR	LOUVER
AC	AIR CONDITIONING	LWT	LEAVING WATER TEMPERATURE
AD	AREA DRAIN	M/A	MIXED AIR
ADD	ADDENDUM	MAX	MAXIMUM
AFF	ABOVE FINISHED FLOOR	MBH	ONE THOUSAND BTU PER HOUR
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	MCF	ONE THOUSAND CUBIC FEET
ALT	ALTERNATE	MD	MOTORIZED DAMPER
AP	ACCESS PANEL	MECH	MECHANICAL
ARCH	ARCHITECT/ARCHITECTURAL	MFR	MANUFACTURER
BFF	BELOW FINISHED FLOOR	MIN	MINIMUM
BLW	BELOW	MISC	MISCELLANEOUS
BTU	BRITISH THERMAL UNITS	MTR	MOTOR
BTUH	BRITISH THERMAL UNITS PER HOUR	MU/A	MAKE-UP/AIR
CAP	CAPACITY	NC	NOISE CRITERIA
CB	CATCH BASIN	NC	NORMALLY CLOSED
CFM	CUBIC FEET PER MINUTE	NIC	NOT IN CONTRACT
CLG	CEILING	NO	NUMBER
CO	CLEAN OUT	NO	NORMALLY OPEN
CW	COLD WATER	NTS	NOT TO SCALE
D	DEGREE	O	OXYGEN
DB	DRY BULB	O/A	OUTSIDE AIR
DIA	DIAMETER	ORD	OVERFLOW ROOF DRAIN
DN	DOWN	PD	PRESSURE DROP
DW	DISTILLED WATER	PIV	POST INDICATOR VALVE
EA	EACH	PLBG	PLUMBING
EAT	ENTERING AIR TEMPERATURE	PRESS	PRESSURE
ELEC	ELECTRICAL	PRV	PRESSURE REDUCING VALVE
EQUIP	EQUIPMENT	PSI	POUNDS PER SQUARE INCH
EWC	ELECTRIC WATER COOLER	PSIG	POUNDS PER SQUARE INCH GAUGE
EWT	ENTERING WATER TEMPERATURE	PWR	POWER
E/A	EXHAUST AIR	R	DUCT RISER
EXIST	EXISTING	R/A	RETURN AIR
F	DEGREES FAHRENHEIT	RCP	RADIANT CEILING PANEL
FCO	FLOOR CLEAN OUT	RD	ROOF DRAIN
FD	FLOOR DRAIN	REC	RECESSED
	FIRE DAMPER	RED	REDUCER
FDC	FIRE DEPARTMENT CONNECTION	RH	RELATIVE HUMIDITY
FL	FLOOR	RL/A	RELIEF AIR
FO	FUEL OIL	RM	ROOM
FOV	FUEL OIL VENT	RPM	REVOLUTIONS PER MINUTE
FOR	FUEL OIL RETURN	RW	RAIN WATER
FOS	FUEL OIL SUPPLY	SF	SQUARE FOOT
FPM	FEET PER MINUTE	S/A	SUPPLY AIR
FR	FIRE RATED	SAN	SANITARY
FS	FLOOR SINK	SF	SQUARE FOOT
FT	FOOT/FEET	SD	SMOKE DAMPER
FTR	FIN TUBE RADIATION	SM	SURFACE MOUNT
GAL	GALLON	SP	STANDPIPE
GF	GAS-FIRED	SP	STATIC PRESSURE
GC	GENERAL CONTRACTOR	STM	STEAM
GPM	GALLONS PER MINUTE	T	THERMOSTAT
GW	GREASE WASTE	TD	TEMPERATURE DROP
HB	HOSE BIB	TDR	TRENCH DRAIN
HP	HORSE POWER	TEMP	TEMPERATURE
HTG	HEATING	TYP	TYPICAL
HTR	HEATER	UG	UNDERGROUND
HW	HOT WATER	VAC	VACUUM
HYD	HYDRANT	V	VENT
ID	INDIRECT	VAV	VARIABLE AIR VOLUME
IN	INCH	VENT	VENTILATION
INV	INVERT	VTR	VENT THROUGH ROOF
LB	POUND	W	WASTE
LB/HR	POUNDS PER HOUR	WCO	WALL CLEAN OUT
LAT	LEAVING AIR TEMPERATURE	WH	WALL HYDRANT
LP	LOW PRESSURE		

Equipment Abbreviations

AC	AIR CONDITIONING UNIT	ET	EXPANSION TANK
ACCU	AIR COOLING CONDENSING UNIT	EWH	ELECTRIC WATER HEATER
AHU	AIR HANDLING UNIT	FCU	FAN COIL UNIT
AS	AIR SEPARATOR	FP	FIRE PUMP
B	BOILER	GI	GREASE INTERCEPTOR
CH	CHILLER	GRV	GRAVITY ROOF VENTILATOR
CT	COOLING TOWER	HWP	HEATING WATER PUMP
CUH	CABINET UNIT HEATER	HRU	HEAT RECOVERY UNIT
CHWP	CHILLED WATER PUMP	PRV	POWER ROOF VENTILATOR
DBP	DOMESTIC WATER BOOSTER PUMP	RE	RETURN/EXHAUST FAN
DC	DUCT MOUNTED COIL	RTU	ROOFTOP UNIT
DCP	DOMESTIC WATER CIRCULATING PUMP	SP	SUMP PUMP
EF	EXHAUST FAN	UH	UNIT HEATER
EDC	ELECTRIC DUCT COIL	WH	WATER HEATER

* NOTE *

ALL OF GENERAL NOTES ON THIS SHEET ARE TO BE APPLIED TO ALL OTHER DRAWINGS IN THIS SET. THE SYMBOL AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.

HVAC Symbols

- 24"x12" — Sq. Duct Size (Width x Height)
- 24"/12" — Oval Duct Size (Width / Height)
- 18"Ø — Round Duct Size (Diameter)
- (E) — Existing Duct To Remain
- Duct To Be Demolished
- S/A — Supply Air
- V/A — Ventilation Air
- O/A — Outdoor Air
- R/A — Return Air
- T/A — Transfer Air
- L/A — Building Relief Air
- E/A — General Exhaust Air
- KED — Kitchen Exhaust Air
- LH — Laboratory Hood
- ETS — Env. Tobbacco Smoke
- FLUE — Flue Gas Vent
- C/A — Combustion Air
- Rect. Supply Duct Rise / Drop
- Round Supply Duct Rise / Drop
- Rect. Return Duct Rise / Drop
- Round Return Duct Rise / Drop
- Rect. Exhaust Duct Rise / Drop
- Round Exhaust Duct Rise / Drop

Grille, Register, Diffusers

Square Ceiling Diffuser — CD3 | 500; 10"Ø/24x24; 29 | H6/9/17
- Type (See Schedule)
- Airflow
- Neck Size / Module Size
- Catalog Throw Performance
- Throw Pattern
- Max NC Rating

Round Ceiling Diffuser — CD11 | 100; 6"Ø; TYP. X 4
- Airflow
- Neck Size
- Type Count for Space

Sidewall Supply Grille — SG1 | 500; 18"x10"; AFF:9'-0"
- Airflow
- Nominal Duct Size
- Mounting Elevation (Centerline)

Linear Diffuser — LD8 | 200; 8"Ø/2s/4'-0"L
- Airflow
- Neck Size/ Slot(s)/ Active Length

Sidewall Return Grille — RG1 | 800; 16"x16"; AFF:9'-0"
- Airflow
- Nominal Duct Size
- Mounting Elevation (Centerline)

Ceiling Return — RG2 | 500; 18"x10"/24x24; 2S
- Airflow
- Neck Size / Module Size
- Max NC Rating

Mechanical Equipment

- RTU-1 — Unit Identity
- 10.0 ton — Nominal Cooling Capacity
- RTU-1 — Unit Identity
- 180000 Btu/h — Heating Capacity
- 180 CFH — Gas Supply Input Rate
- ET-1 — Unit Identity
- 379 lb — Operating Weight
- EF-XX — Unit Identity
- 500 CFM — Design Airflow Rate
- VAV 1-2 — Unit Identity
- 3.7 GPM — Design Water Flow
- AC-1 — Unit Identity
- AFF:7'-0" — Bottom of Equipment Height
- (E)AHU-2 — Existing to Remain Equipment
- (R)AHU-3 — Existing Relocated Equipment
- Equipment By Others (Refer To Other Disciplines)

Damper Types

- (B) — Manual Damper
- (M) — Motorized Damper
- (D) — Backdraft Damper
- (S) — Smoke Damper
- Fire Damper
- (D)(S) — Comb. Fire/ Smoke Damper

Mechanical Piping Symbols

- 2" — Nominal Pipe Size
- Above Ground Piping
- Below Ground Piping
- 1/8" / 12" SLOPE — Pipe Slope (When Applicable)
- (E) — Existing Pipe To Remain
- Pipe To Be Demolished
- CHWR — Chilled-Water Return
- CHWS — Chilled-Water Supply
- CD — Condensate Drain
- CWR — Condenser-Water Return
- CWS — Condenser-Water Supply
- GWR — Geothermal-Water Return
- GWS — Geothermal-Water Supply
- HWR — Hot-Water Return
- HWS — Hot-Water Supply
- LP — Natural Gas
- GAS — Liquid Propane
- RL — Refrigerant Liquid
- RS — Refrigerant Gas
- RD — Refrigerant Discharge
- STM — Steam Supply
- CDR — Steam Condensate Return
- Pipe Rise / Drop

Valve Types

- 2" SHUTOFF — Ball Valve
- 2" BAL — Balancing Valve
- 2" BFV — Butterfly Valve
- 2" CHECK — Check Valve
- 2" CHECK — Alternate Check Valve
- 3" CIRC — Circuit Setter
- 2" GATE — Gate Valve
- 2" GLOBE — Globe Valve
- 2" LOCK — Locked Shield Valve
- 2" PRV — Pressure Reducing Valve
- 2" QUICK — Quick Opening Valve
- 2" STRAIN — Fluid Strainer
- 2" M-CNTRL — Elec. Control Valve
- 4" 3-WAY CNTRL — 3-Way Elec. Valve
- 1" GAS-CNTRL — Emergency Gas Shutoff
- 1" PLUG — Plug Valve
- 1" GAS COCK — Gas Shutoff Cock
- 1" REG — Gas Regulator

Mechanical Devices

- (F) — Fan Controller
- (TS) — Temperature Sensor
- (TH) — Temp/ Humidity Sensor
- (TC) — Temp/ CO2 Sensor
- (T) — Thermostat
- (H) — Humidistat
- (HS) — Humidity Sensor
- CO2 — Carbon Dioxide Detector
- CO — Carbon Monoxide Detector
- H2 — Hydrogen Gas Detector
- HZG — Hazardous Gas Detector
- NO2 — Nitrogen Dioxide Detector
- O2 — Oxygen Gas Detector

MOD — U.N.O. Opposite blade modulating damper with spring returns as required (0-10 volt control operation) typical. Match damper size to duct size. Provide control transformers as necessary for operation. Coordinate work with electrical contractor.

M2D — U.N.O. Opposite blade low leakage two stage damper (Greenheck VCD-40) with spring return as required typical. Match damper size to duct size. Provide control transformers as necessary for operation. Coordinate work with electrical contractor.

CO2 — CO2 sensor with measuring 0-2000 PPM CO2 range. PPM range for output shall be adjustable in order to allow for damper close to open modulation based on different PPM range. Verify CO2 sensor control signal with electrical contractor. CO2 sensors and controls provided shall allow OA flow rate control as shown in plans.

PROJECT REQUIREMENTS

A	Remove all unused piping, ductwork and accessories.
B	The mechanical contractor shall be responsible for field verifying, prior to final bid, all existing conditions for plumbing and mechanical systems within tenant space and within close proximity of tenant space.
C	The mechanical contractor shall perform service and repair on the existing equipment and its accessories as follows: clean all coils, replace the filters and belts, inspect, repair, or replace the economizers, drives and fan bearings, motors, control components, valves and any other item necessary for a complete and proper operating system. This contractor shall also visit the site, prior to final bidding, and verify all existing site conditions. Provide all material and components as needed to bring the units to full compliance of the landlord's criteria and local authority having jurisdiction.
D	Where floor drains occur within the limits of construction, prevent construction debris from entering drain body by sealing drain opening prior to start of work. Unseal drains at completion of construction.
E	Coordinate installation of piping, ductwork, conduit, lights, cable tray, structure, and equipment to prevent conflicts.
F	The contractor shall be familiar with all the conditions both existing and those illustrated by these documents as well as those which can be reasonably anticipated including, but not limited to architectural, electrical, ventilation, plumbing, and other systems involved on this project.
G	Final product shall be a complete and functioning system, and shall conform to all requirements of applicable federal, state, and local codes, including but not limited to the international building code and international mechanical code.
H	Locate equipment requiring access 2'-0" maximum above ceiling.
I	All work shall be done in accordance with the current edition of all applicable codes, including the 2019 California Building Code, California Code of Regulations, title 24, and local codes as applied by the authority having jurisdiction.
J	All roof mounted equipment shall be a minimum 10'-0" from edge of roof.
K	Locate ductwork, piping and mechanical equipment away from the space above electrical panels. Transformers and other electrical equipment.
L	Penetrations of rated assemblies shall be fire stopped. Fire stopping shall be an approved material as prescribed in CSFM Standard 43-1 and shall be U.L. listed.
M	Provide sleeves and/or openings to run pipes and ducts through foundations, floors, walls, and roof.
N	Maintain clear access to service equipment and other accessories requiring service, visual inspection or hand operation. Where indicated or required, provide access panels of the type selected to suit materials in which installed.
O	Adjust piping and ductwork sizes to properly connect to mechanical equipment.
P	Refer to HVAC series drawings for gas and A.C. condensate drain piping.
Q	Pipe sizes shown shall be continued in the direction of flow until another size is shown.
R	For details, equipment connections, and pipe sizes not shown on the segments, refer to details, schedules, and specifications.
S	Install all equipment in accordance with the respective manufacturer's written installation instructions, at a level of quality and workmanship consistent with the specifications.
T	Locations of piping, ductwork and equipment as indicated on the drawing, are approximate and subject to minor adjustments in the field. Work shall be coordinated with all other trades to avoid interference in the field.
U	Installed exposed piping and ductwork as high as practical in rooms without ceilings.
V	The contractor's work schedule shall be submitted to and approved by the owner.
W	Prior to starting work, submit shop drawings for all mechanical equipment, plumbing fixtures, and diffusers.
X	Contractor shall obtain and pay for all necessary permit and shall arrange for all inspections as required.
Y	Provide one year warranty for all workmanship and materials after the date of final acceptance.

MECHANICAL GENERAL NOTES

1	All works shall meet the 2021 International Mechanical Code, 2021 International Building Code, 2021 International Plumbing Code, 2017 NFPA 70; National Electrical Code and 2018 International Energy Conservation Code.
2	Refer to HVAC drawings for thermostat, humidity and temperature sensor locations.
3	Condensate drains shall be supplied for all cooling equipment. Contractor shall ensure proper installation and drainage as required by Federal, State, and Local Codes.
4	All supply, return, and exhaust ductwork shall be rated for pressure class of 2" W.G. unless noted otherwise.
5	Coordinate the exact location of all ceiling diffusers, registers, and grilles with new and existing lighting.
6	Provide diffusers and registers with 4-way blow pattern unless otherwise noted.
7	This contractor shall be required to replace filters on HVAC equipment after all dust producing construction has been completed and prior to the final punch.
8	Install, support, and brace all HVAC ductwork and accessories per "HVAC duct construction standards" by Smacna, Ansi/Smacna 006-2006.
9	Maintain minimum separation between outside air intakes or other openings into the building and other elements as required and as follows:
10	Plumbing vents and exhaust outlets: 10'-0" separation.
11	Environmental air outlets and domestic dryer vents: 3'-0" separation
12	Insulate all supply and return air ductwork as required by the energy code.
13	Unless noted otherwise, contractor to furnish materials and labor for hook-up of mechanical systems to equipment furnished by owner or others. Verify the exact location of the hook-up prior to the installation of systems connected to equipment being supplied by others.
14	Unless noted otherwise all rigid ductwork (round and rectangular) shall be constructed of galvanized sheet metal. Sheet metal gauge shall be in accordance with Smacna guidelines and shall follow good construction practices. All joints and seams shall be made airtight with sealant where required.
15	All piping and pipe connections to be sealed and inspected for leaks prior to project finish.
16	Contractor shall perform commissioning of HVAC systems and its operation.

FIRESTOPPING

1	All penetrations through fire rated walls associated with the installation shall be sleeved and fire-stopped using a UL approved method. UL approved method shall meet or exceed fire rating of structure being penetrated. Reference architectural, mechanical and electrical drawings for penetration details.
2	All opening through fire rated walls, floors, and/or roofs for ductwork, piping, conduit, etc., shall be fire sealed with a calcium silicate, silicone "RVT" foam, "3M" fire rated sealants, hilti firestop systems, or approved equal to maintain the intended fire rating and associated UL rating as recommended by the architect and/or sealant manufacturer.
3	All fire stopping sealants shall be Thixotropic so as not to slump or sag and shall be trowel able. Fire stopping sealants shall be intumescent and shall be free of asbestos, halogens, and volatile solvents.
4	Fire stopping materials shall be classified in the underwritters laboratories (UL) IRE resistance directory.

CUTTING, PATCHING AND DRILLING

1	Neatly saw cut all rectangular openings.
2	Neatly saw cut floors and patch floor to match existing, including floor covering.
3	Do not cut any structural components without architect's written approval, including. But not limited to roof joists, columns, floor joists, beams, girders, structural floor slabs, rebar, etc.
4	Patch, and finish to match adjacent areas that have been cut, damaged or modified as a result of the installation of the mechanical systems, firestop all penetrations of fire rated construction. The mechanical contractor shall provide information regarding openings in walls, floors, etc.
5	The mechanical contractor shall coordinate work with the general contractor prior to construction. The mechanical contractor shall provide information regarding openings in walls, floors, etc.
6	All openings required for this branch of work shall be accomplished in time to be incorporated in, and be compatible with, the construction program; otherwise this contractor shall be responsible and pay for all changes made necessary for his failure to do so. Pipe holes in floors and walls shall be core drilled if not sleeved during construction.

MECHANICAL DRAWING INDEX

ABBREVIATIONS, SYMBOLS & NOTES

RIDDLE FARM - WTP HVAC

WORCESTER COUNTY, MARYLAND

RAUCH inc.
Engineering | Survey | Architecture | Environmental
Main Office: 106 N Harrison St - Easton, MD 21601
Web: www.rauch-inc.com | Email: design@raucheng.com
Phone: 410 770 8081 | Fax: 410 770 3867

Professional Certification.
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 11024
Expiration Date: July 24, 2028

8-03-2026

REVISIONS

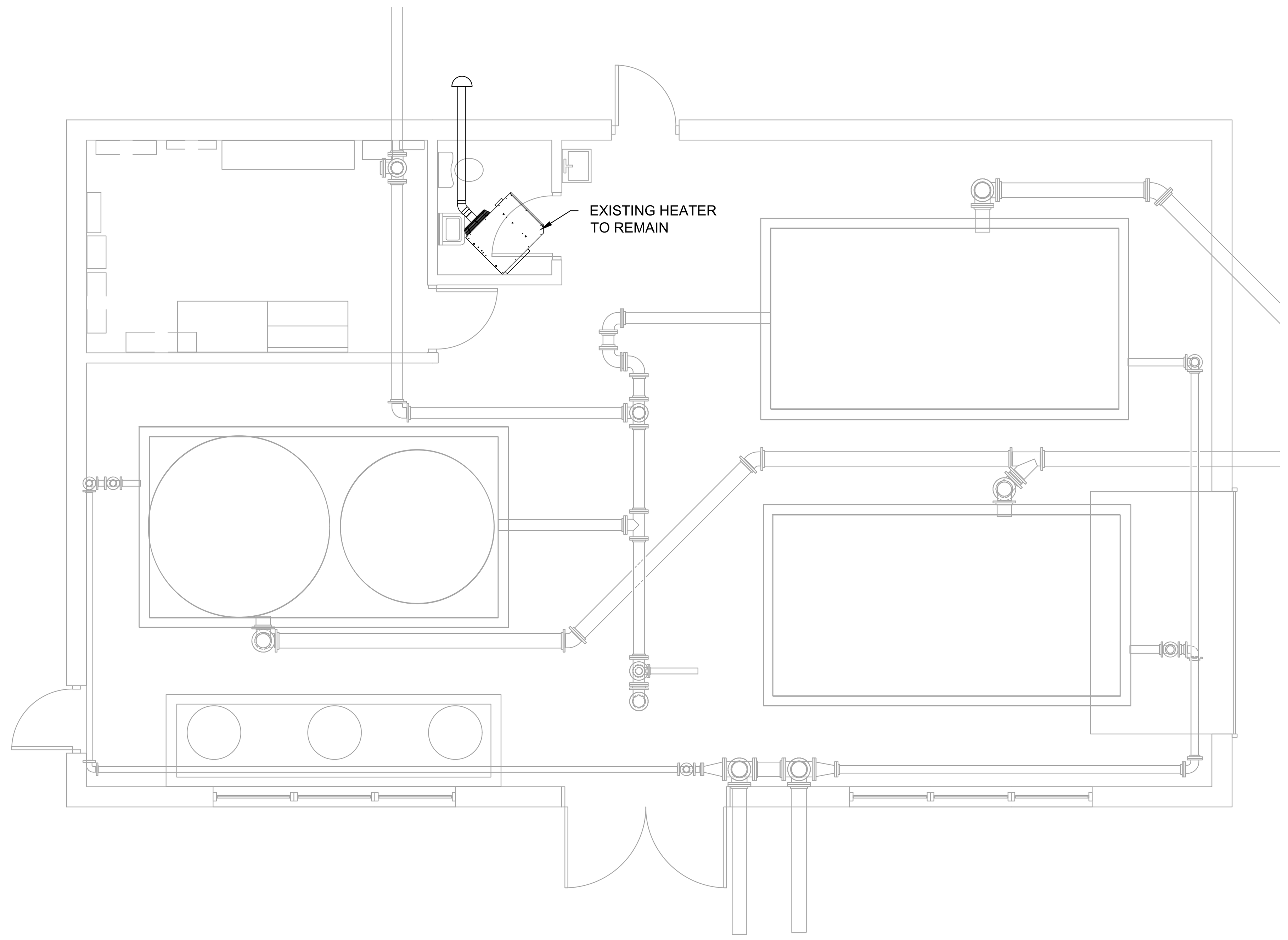
REV. #	DATE	DESCRIPTION

MISS UTILITY OF DELMARVA — IT'S THE RESPONSIBLE THING TO DO! — 811

DATE	8/3/2026
SCALE:	AS SHOWN
DRAWN BY:	EEY
DESIGNED BY:	HJH
APPROVED BY:	

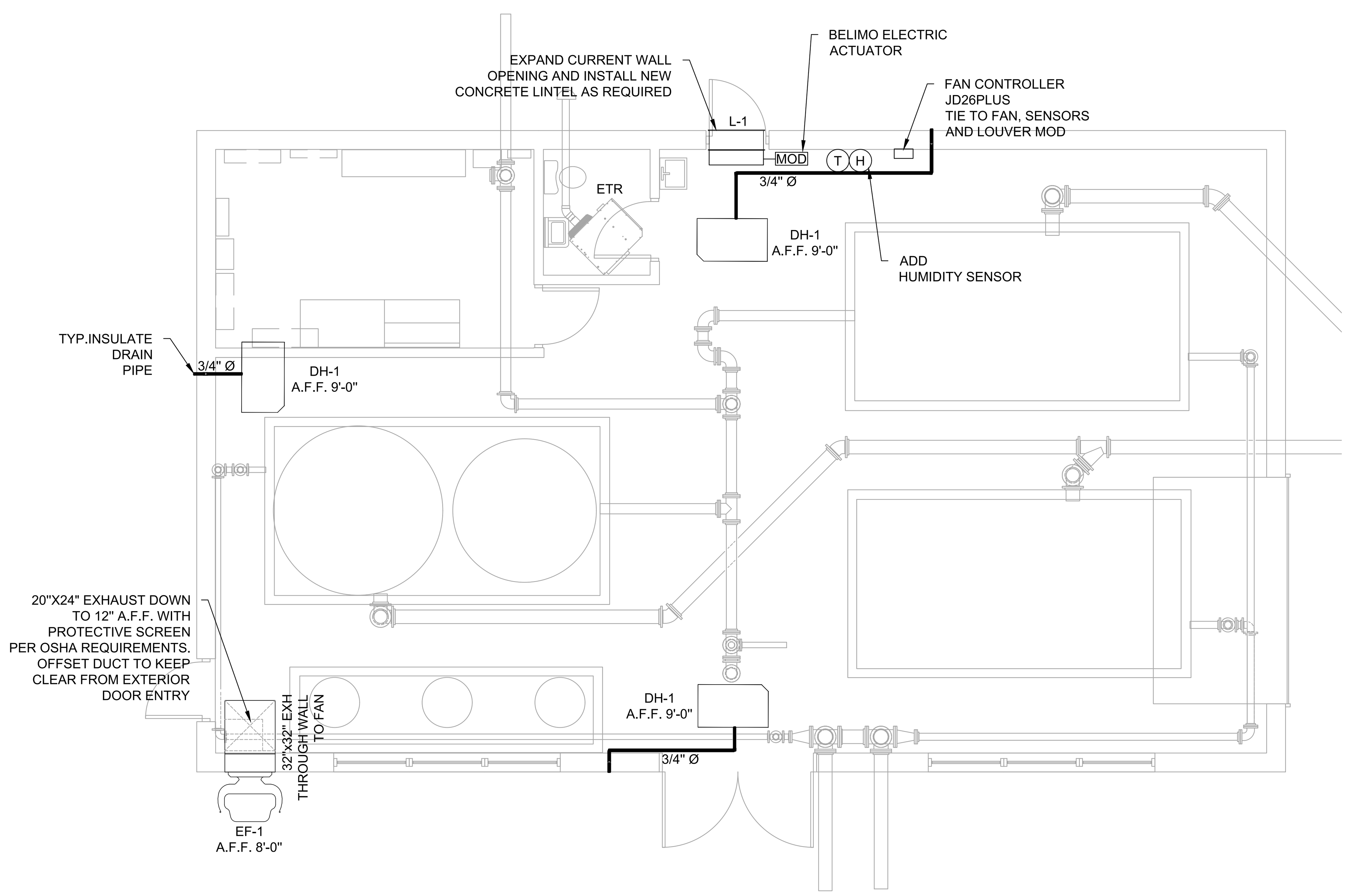
SHEET NO.: M-001

Z:\RIDDLE FARM WTP\DEPARTMENTS\MEP\MODELS - DRAWINGS\M-100.DWG



1 EXISTING MECHANICAL LAYOUT

3/16" = 1'-0"



2 PROPOSED MECHANICAL LAYOUT

3/16" = 1'-0"

MECHANICAL LAYOUT

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DRAWN BY:	EEY
DESIGNED BY:	HJH
APPROVED BY:	

SHEET NO.: M-100

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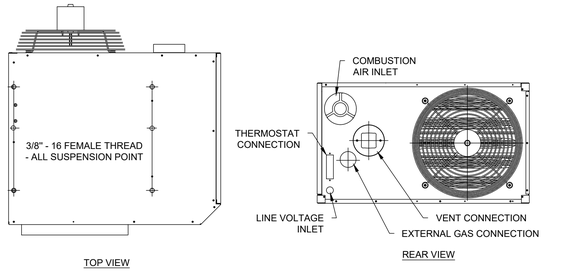
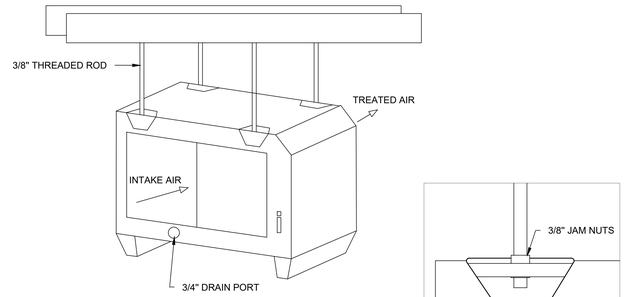


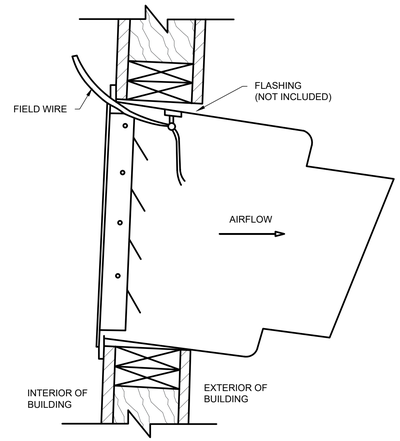
1 UNIT HEATER DETAIL

NTS



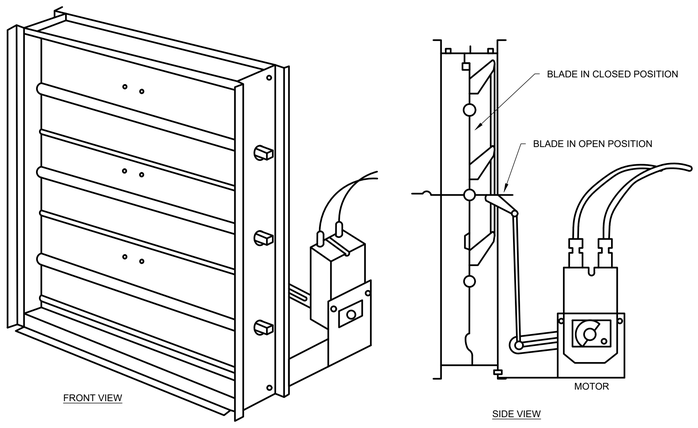
2 DEHUMIDIFIER DETAIL (QUEST 506)

NTS



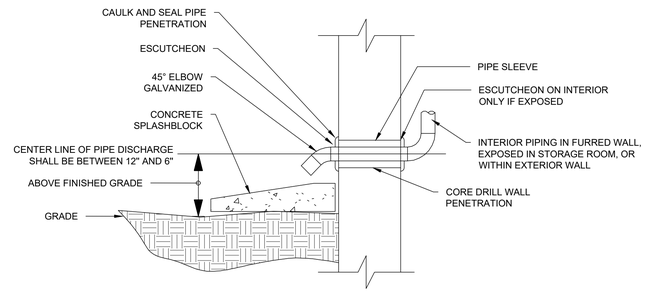
3 POLY EXHAUST FAN DETAIL

NTS



4 LOUVER W/ MOTORIZED DAMPER DETAIL

NTS



NOTE:
1. PAINT EXTERIOR GALVANIZED 45° ELBOW TO MATCH BUILDING EXTERIOR WALL COLOR.

5 A/C CONDENSATE DRAIN DISCHARGE DETAIL

NTS

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MECHANICAL DETAILS

RIDDLE FARM - WTP HVAC

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STATE OF MARYLAND · HENRY J. HENDRICKS · 11024 · PROFESSIONAL ENGINEER

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MISS UTILITY OF DELMARVA — DIG SAFE BEFORE YOU DIG — 811

DATE	8/3/2026
SCALE:	AS SHOWN
DRAWN BY:	EEY
DESIGNED BY:	HJH
APPROVED BY:	

SHEET NO.:
M-400

EXHAUST FAN SCHEDULE																
TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	ELECTRICAL DATA			DISCHARGE VELOCITY	WEIGHT (LBS)	SONES	NOTES
										WATTS	PHASE	VOLTAGE				
EF-1	1	VFP24PC3	J & D MANUFACTURING	5626	0.15	1720	IP66	1/2	-	373	3	480	-	93	-	FAN CONTROLLER (JD26 PLUS - J&D MANUFACTURING).

VENTILATION NOTES:

- THE CFM SHOWN ABOVE IS THE MAXIMUM FAN CAPACITY. THE FAN WILL BE CONTROLLED TO REDUCE THE FAN CFM TO 2170 CFM CONTINUOUS WHEN THE SPACE IS UNOCCUPIED AND 4340 CFM WHEN THE DOOR CONTACT SWITCH IS MADE. THIS WILL ACHIEVE ENOUGH AIR CHANGES TO SATISFY CODE REQUIREMENTS FOR THE CHEMICAL STORAGE WITHIN THE SPACE.

AIR HANDLING UNIT SCHEDULE											
TAG	QTY	BASIS OF DESIGN		DESCRIPTION	CAPACITY (PINTS/DAY)	FLOWRATE (CFM)	WEIGHT (LBS)	ELECTRICAL DATA				NOTES
		MANUFACTURER	MODEL NUMBER					VOLTAGE	WATTAGE	MCA (AMPS)	MOCP (AMPS)	
DH-1	3	QUEST	QUEST 746	HIGH CAPACITY DEHUMIDIFIER SERIES	730	1650	300	480	7200	15	15	ONBOARD DIGITAL CONTROLS W/ LOW VOLTAGE TERMINAL BLOCK

LOUVER / VENT SCHEDULE									
TAG	QTY	BASIS OF DESIGN		MAX. CFM	ESP	FREE AREA VELOCITY	WEIGHT (LBS)	DESCRIPTION	OR EQUAL YES OR NO
		MANUFACTURER	MODEL OR SERIES						
L-1	1	GREENHECK	ESD-635-36x40	5000	0.12	880	39	36 x 40DRAINABLE BLADE LOUVER W/ CONTROL DAMPER (VCD-43 - GREENHECK) & FAN CONTROLLER (JD26 PLUS - J&D MANUFACTURING).	NO

VENTILATION SCHEDULES

Project Name	Riddle Farm WTP
Date	7/30/2026
Unit Tag	

Supply Air 2169
Outdoor Air 220

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q			
Room #	Description	Area (sqft) (Az)	Area Outdoor Air Rate (Ra)	Area Outdoor Air (RaAz)	Occupancy Load (People/1000 sqft)	Occupancy (C X F)/1000 (Pz)	Occupant Outdoor Air Rate (Rp)	Occupant Outdoor Air (RpAz)	Breathing Zone Outdoor Air (Vbz = RpPz + RaAz)	Zone Air Distribution Effectiveness (Ez)	Zone Outdoor Air (Voz = Vbz/Ez)	Ceiling Height	Air Change Required	Supply Air Design (Vpz)	Outdoor Air Fraction (Zp = Voz/Vpz)	Exhaust Air Design	Code References	Min Air Change (ASHRAE Only)	Min Outdoor Air Change (ASHRAE Only)
	TANK SPACE	1549	0.06	93	10	16	5	80	173	0.8	217	14	6	2169	0.10		Tank space with ceiling		
Totals		1549		93		16		80	173		217			2169		0			

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MECHANICAL SCHEDULES

RIDDLE FARM - WTP HVAC

WORCESTER COUNTY, MARYLAND

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Phone: 410 770 9081 | Fax: 410 770 3667

8-03-2026

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 11024
Expiration Date: July 24, 2028

REVISIONS		
REV. #	DATE	DESCRIPTION

DATE:	8/3/2026
SCALE:	AS SHOWN
DRAWN BY:	EEY
DESIGNED BY:	HJH
APPROVED BY:	

SHEET NO.: **M-500**

Electrical Abbreviations

1P	1 Pole (2P, 3P, 4P, ETC.)
A, Amp	Ampere
AC	Above Counter
ACLG	Above Ceiling
ADO	Automatic Door Opener
AF	Amp Frame
AFF	Above Finished Floor
AFG	Above Finished Grade
AFI	Arc Fault Circuit Interrupter
AHU	Air Handling Unit
AL	Aluminum
ALT	Alternate
AMP	Ampere
AMPL	Amplifier
ANNUN	Annunciator
APPROX	Approximately
AQ-STAT	Aquastat
ARCH	Architect, Architectural
AS	Amp Switch
AT	Amp Trip
ATS	Automatic Transfer Switch
AUTO	Automatic
AUX	Auxiliary
AV	Audio Visual
AWG	American Wire Gauge
BATT	Battery
BD	Board
BLDG	Building
BMS	Building Management System
C	Conduit
CAB	Cabinet
CAT	Catalog
CATV	Cable Television
CB	Circuit Breaker
CCTV	Closed Circuit Television
CKT	Circuit
CLG	Ceiling
COMB	Combination
CMPR	Compressor
CONN	Connection
CONST	Construction
CONT	Continuation Or Continuous
CONTR	Contractor
CONV	Convector
CP	Circulating Pump
CRT	Cathode-Ray Tube
CT	Current Transformer
CTR	Center
CU	Copper
DCP	Domestic Water Circulating Pump
DEPT	Department
DET	Detail
DIA	Diameter
DISC	Disconnect
DIST	Distribution
DN	Down
DPR	Damper
DS	Safety Disconnect Switch
DT	Double Throw
DWG	Drawing
EC	Electrical Contractor
ELEC	Electric, Electrical
ELEV	Elevator
ELU	Emergency Lighting Unit
EM	Emergency
EMS	Energy Management System
EMT	Electrical Metallic Tubing
EP	Electric Pneumatic
EQUIP	Equipment
EWC	Electric Water Cooler
EXIST	Existing
EXH	Exhaust
EXP	Explosion Proof
FA	Fire Alarm
FABP	Fire Alarm Booster Power Supply Panel
FACP	Fire Alarm Control Panel
FCU	Fan Coil Unit
FIXT	Fixture
FLR	Floor
FLUOR	Fluorescent
FU	Fuse
FUDS	Fused Safety Disconnect Switch
GA	Gauge
GAL	Gallon
GALV	Galvanized
GC	General Contractor
GEN	Generator
GFI	Ground Fault Circuit Interrupter
GFP	Ground Fault Protector
GND	Ground
GRS	Galvanized Rigid Steel (Conduit)
GYP BD	Gypsum Board
HOA	Hands-Off-Automatic Switch
HORIZ	Horizontal
HP	Horsepower
HPF	High Power Factor
HT	Height
HTG	Heating
HTR	Heater
HV	High Voltage
HVAC	Heating, Ventilating And Air Conditioning
IC	Interrupting Capacity
IG	Isolated Ground
IMC	Intermediate Metal Conduit
INCAND	Incandescent
IR	Infrared
IW	Interlock With
J-BOX	Junction Box
KV	Kilovolt
KVA	Kilovolt-Ampere
KVAR	Kilovolt-Ampere Reactive
KW	Kilowatt
KWH	Kilowatt Hour
LOC	Locate Or Location
LT	Light
LTG	Lighting
LTNG	Lightning
LV	Low Voltage
MAX	Maximum
MAG.S	Magnetic Starter
M/C	Momentary Contact
MC	Mechanical Contractor
MCB	Main Circuit Breaker
MCC	Motor Control Center
MDC	Main Distribution Center
MDP	Main Distribution Panel
MFR	Manufacturer
MFS	Main Fused Disconnect Switch
MH	Manhole
MIC	Microphone
MIN	Minimum
MISC	Miscellaneous
MLO	Main Lugs Only
MMS	Manual Motor Starter
MOA	Multioutlet Assembly
MSP	Motor Starter Panelboard
MSBD	Main Switchboard
MSS	Motor Starter Switch
MT	Mount
MT C	Empty Conduit
MTS	Manual Transfer Switch
MTR	Motor, Motorized
N.C.	Normally Closed
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NFDS	Non-Fused Safety Disconnect Switch
NIC	Not In Contract
NL	Night Light
N.O.	Normally Open
NPF	Normal Power Factor
NTS	Not To Scale
OC	On Center
OH	Overhead
OL	Overloads
PA	Public Address
PB	Pull Box Or Pushbutton
PE	Pneumatic Electric
PED	Pedestal
PF	Power Factor
PH	Phase
PIV	Post Indicating Valve
PNL	Panel
PP	Power Pole
PR	Pair
PRI	Primary
PROJ	Projection
PRV	Power Roof Ventilator
PT	Potential Transformer
PVC	Polyvinyl Chloride (Conduit)
PWR	Power
QUAN	Quantity
RCPT	Receptacle
REQD	Required
RM	Room
RSC	Rigid Steel Conduit
RTU	Roof Top Unit
SC	Surface Conduit
SEC	Secondary
SHT	Sheet
SIM	Similar
SLD	Single-Line Diagram
S/N	Solid Neutral
SPEC	Specification
SPKR	Speaker
SP	Spare
SPP	Single-Point Power
SR	Surface Raceway
SS	Stainless Steel
SSW	Selector Switch
S/S	Stop/Start Pushbuttons
STA	Station
STD	Standard
SURF	Surface Mounted
SW	Switch
SWBD	Switchboard
SYM	Symmetrical
SYS	System
TEL	Telephone
TERM	Terminal
TL	Twist Lock
TR	Tamper Resistant
T-STAT	Thermostat
TTC	Telephone Terminal Cabinet
TV	Television
TVTC	Television Terminal Cabinet
TYP	Typical
UC	Under Counter
UE	Underground Electrical
UG	Underground
UH	Unit Heater
UT	Underground Telephone
UTIL	Utility
UV	Ultraviolet
V	Volt
VA	Volt-Amperes
VDT	Video Display Terminal
VERT	Vertical
VFD	Variable Frequency Drive
VOL	Volume
W	Watt
W/	With
WG	Wire Guard
WH	Water Heater
W/O	Without
WP	Weatherproof
XFMR	Transformer
XFR	Transfer

∠	Angle
@	At
▲	Delta
'	Feet
"	Inches
#	Number
Ø	Phase
C	Center Line
P	Plate

Electrical Symbol Legend

Lighting Symbols

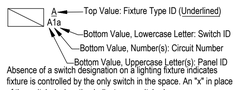
- Lighting Fixtures, Typical, Rectangular (Diagonal line indicates lensed. Outer dots indicate suspended.)
- Lighting Fixtures, Typical, Round (Various Symbols) (Diagonal line indicates lensed. Chevron indicates wall wash)
- Wall-mounted fixtures, Typical (Various Symbols)
- Strip Fixture
- Directional Light, Track Light, Flood Light
- Linear Light, Tape Light
- Emergency Lighting Unit, Ceiling-Mounted, Integral Battery
- Emergency Lighting Unit, Ceiling-Mounted, Remote Battery
- Emergency Lighting Unit, Wall-Mounted, Integral Battery
- Emergency Lighting Unit, Wall-Mounted, Remote Battery
- Exit Light, Ceiling-Mounted. Shading and arrows indicate faces and directional chevrons
- Exit Light, Wall-Mounted. Shading and arrows indicate faces and directional chevrons.
- Exit/ELU Combo
- Pole/Area Lights
- Post-Top Area Light
- Bollard Light
- Diagonal hatch indicates light on a critical circuit.
- Solid hatch indicates light on an emergency or life safety circuit.
- Single-Pole Switch
- Two-Pole Switch
- Three-Pole Switch

Switch Modifiers:

3: 3-Way	OS: Occupancy Sensor
4: 4-Way	VS: Vacancy Sensor
K: Keyed	AC: Above-Counter
D: Dimming	LV: Low-Voltage
T: Timer	M: Motor-Rated

- Lighting Contactor
- LC — Lighting Control Panel
- OS — Occupancy Sensor
- DL — Daylight Harvesting Sensor
- F — Ceiling Fan Controller

Lighting Tags



Absence of a switch designation on a lighting fixture indicates fixture is controlled by the only switch in the space. An "x" in place of the switch designation indicates unswitched.

S^a / OS^a / DL^a — Switch ID indicated by a lowercase letter. Switch IDs are unique per space. A switch with an ID "a" controls all devices within the space in which is located tagged with "a". A switch without a tagged ID controls all lighting fixtures within a space. ID tags may be used on control devices other than switched, such as occupancy sensors or contactors.

Grounding and Lightning Protection Symbols

- Ground Rod
- Ground Rod with Test Well
- Static Ground Receptacle
- Lightning Protection Air Terminal
- Lightning Protection Conductor Splice

Power Symbols

(Wall, Ceiling, Floor)

- Simplex Receptacle
- Duplex Receptacle
- Quadruplex Receptacle
- Special Receptacle, Type as Indicated

Receptacle Modifiers:
##: Height AFF OC
AC: Above Counter
GFI: Ground-Fault Circuit Interrupter
WP: Weatherproof In-Use Cover

- Half shading indicates split (typically switched)
- Outside shading indicates emergency circuit
- Center shading indicates isolated ground
- Single-Pole Switch
- Two-Pole Switch
- Three-Pole Switch

Switch Modifiers:
K: Keyed
T: Timer
AC: Above-Counter
M: Motor-Rated

- Multioutlet Assembly
- Filled squares indicate 120V outlet. Open squares indicate with USB
- Cord Reel, Device Varies
- Drop Cord, Device Varies
- Junction Box
- F1 — Floor Box, see schedule for type
- Emergency Power Off
- DO — Door Opener Push Plate
- M — Power Meter
- Safety Switch, Fused
- Safety Switch, Unfused
- Motor Starter
- Combination Starter/Disconnect
- Contactor

Power Device and Equipment Tags

C1a — Electrical DeviceTags: Uppercase letter(s) indicates Panel ID and circuit number. Lowercase letter indicates designation of controlling switch (where applicable).

XX-1 — Equipment Tags: Equipment ID is indicated by an underline tag adjacent to the equipment. See the equipment connection schedule for description, electrical requirements, and panel and circuit number. Symbols/graphic appearance of equipment varies.

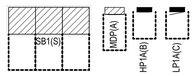
Wiring

Solid, arced lines connecting equipment, devices, or fixtures indicate unswitched power circuiting. Wires are only intended to indicate to what circuit devices are connected. Actual connections, circuit routing, installation, junction boxes, etc. shall be field-determined by the contractor.

Dashed, arced lines connecting equipment, devices, or fixtures indicate switched power.

Home run to branch circuit panelboard. The equipment name and circuit number(s) are indicated, separated by a hyphen. Homeruns are only intended to indicate panel and circuit number. Actual homerun location shall be field-determined by the contractor.

Power Distribution Equipment



Hatched fill indicates distribution panel or switchboard. Solid fill indicates branch panel or load center. Dashed box indicates code-required clearance (width and depth). Door indicates front of recessed panel.

Panelboards are assigned abbreviated indicator (or Panel ID) for use with circuit numbers. Panel ID is listed within the panel schedule and in the panel abbreviation schedule.

Equipment is tagged with Panel Name and with Panel ID in parentheses. Panel ID is intended as a design documentation aid only. Do not include Panel ID in field-applied circuit directories or labels.

Devices and fixtures are tagged with Panel ID and circuit number. For example, a device tagged with "A1" indicates the device is circuited to panel designated "A", circuit number 1. The panel schedule circuit number contains both the panel abbreviation and the circuit number.

T1 — Transformer: Typically transformer names begin with or contain the letter "T". See Single-Line Diagram for description and requirements.

Telecom Symbols

(Wall, Ceiling, Floor)

- Data Outlet
- Telephone Outlet
- Data/Telephone Outlet

Outlet Modifiers:
##: Height AFF OC
AC: Above Counter

- Wireless Access Point
- TV Outlet

Nurse Call Symbols

- Nurse Call Corridor Light. Number of lights as indicated
- Nurse Call Device. B: Code Blue; D: Duty Station; E: Emergency; P: Patient Call; S: Staff
- XXXX — Nurse Call Control Unit. NCAP: Nurse Call Annunciator Panel; NCHS: Nurse Call Host Controller; NCPA: Nurse Call Power Supply; NCTC: Nurse Call Terminal Cabinet; NCUPS: Uninterruptable Power Supply

Security Symbols

- Security Camera. PTZ: Pan/Tilt/Zoom
- CR — Card Reader
- CK — Card Reader with Keypad
- CC — Closed Circuit TV Outlet
- DC — Door Contact
- ES — Electric Strike
- IC — Intercom
- ML — Magnetic Lock
- RX — Request to Exit Button
- REX — Request to Exit Sensor
- MD — Motion Detector
- XXX — Security Control Unit. SCP: Security Control Panel; SPS: Security Power Supply Unit

Construction Phasing

(Typical All Symbols and Equipment)

- Existing to Remain
- Existing to Be Demolished
- New
- Existing to Be Demolished

Miscellaneous

- Area Not in Contract
- # — Keynote. Callout: Top Value: Detail Number on Sheet; Bottom Value: Sheet Number on Sheet
- Room 1 — Room Name and Number

Fire Alarm Symbols

- F — Manual Pull Station
- F — Horn, Wall
- F — Horn, Ceiling
- Strobe, Wall, Candela as indicated
- Strobe, Ceiling, Candela as indicated
- Horn/Strobe, Wall, Candela as indicated
- Horn/Strobe, Ceiling, Candela as indicated
- Remote Indicator w/ Test Switch, Wall
- Remote Indicate w/ Test Switch, Ceiling
- Smoke Detector
- Heat Detector
- Carbon Monoxide Detector
- Beam Detector T: Transmitter R: Receiver
- Combination Detector (Up to Three)
- Duct Smoke Detector
- Smoke Damper
- DH — Door Holder
- DCL — Door Closer
- Fire Service Phone
- XXX — Addressible Module. AIM: Addressible Input Module; AOM: Addressible Output Control Module; AIO: Addressible Input/Output Module
- XXXX — Fire Alarm Control Unit. EVAC: Voice Evacuation Control Panel; FAA: Fire Alarm Annunciator; FACP: Fire Alarm Control Panel; FATC: Fire Alarm Terminal Cabinet; NACP: Notification Appliance Circuit Panel; FAMN: Fire Alarm Mass Notification Control Panel
- XX — Supervisory or Interface Device. PIV: Post Indicator Valve Supervisory; PS: Pressure Switch; R: Non-Addressible Relay; VS: Valve Supervisory Switch; WF: Water Flow Switch

Site Lighting

LC CONTRACTOR — Square D company class 8903LXG1200-VO2-C-R6, (12) pole 30 amp mechanically held contactor w/ 120V coil, hoa switch with 2 wire interface, Nema 1 enclosure. Wire for photo eye "ON" and "OFF"

ELECTRICAL GENERAL NOTES

1	All work shall meet the 2021 international building code, 2017 NFPA 70, National Electrical Code and 2018 International Energy Conservation Code.
2	Low voltage cables or conductors operating at less than 50 volts shall be in metal raceway where installed within walls or inaccessible spaces. Low voltage cables may be run in cable tray where noted. Low voltage cables may be run in cable support hooks above accessible ceilings where noted. Low voltage cable shall be plenum rated in plenum spaces.
3	Conductors operating at 50 volts or greater shall be in raceway. Raceway within the structure above the floor slab shall be metal. Raceway below the floor slab and underground raceway outside the structure shall be PVC.
4	Low voltage cables or conductors operating at less than 50 volts shall be in metal raceway. Low voltage cables may be run in cable tray where noted. Low voltage cable shall be plenum rated in plenum spaces.
5	Coordinate locations of devices with architectural elevations and details. Architectural elevations and details take precedence over locations shown on electrical drawings.
6	Provide cable or conduit and wire as required to achieve circuiting shown. Size conductors per NEC ampacity and wire fill criteria. Provide dedicated neutral and ground conductors for circuiting, unless noted otherwise. Increase branch circuit and/or feeder conductors including equipment grounding conductors proportionally for no more than 3% voltage drop on branch circuits and 2% on feeders per energy code.
7	It is the responsibility of this contractor to coordinate installation of electrical systems and those requiring electrical connections to maintain NEC required clearances, included but not limited to areas above accessible ceilings.
8	Coordinate with other trades for proper installation of equipment. Consult the drawings of other trades or crafts to avoid conflicts with equipment, etc. Conflicts shall be resolved prior to rough-in and at no additional cost to the owner.
9	Leave the site clean and ready for occupancy. Remove dirt, debris, empty cartons, tools, conduit and wire scraps, and miscellaneous spare equipment and materials used in this division of the work during construction. Components shall be free of dust, grit, and foreign materials and left as new before final acceptance of work.
10	The symbols and abbreviations shown on this sheet may or may not be used in this set of drawings.
11	Perform work to comply with the standard practices for good workmanship published by National Electrical Contractors Association (NECA). Comply with the latest enforced edition of the National Electrical Code (NEC), local codes, amendments, and ordinances.
12	Field coordinate final mechanical and equipment locations along with connection requirements and control wiring prior to rough-in. Adjust corresponding circuit breaker ratings and branch circuiting accordingly.
13	Electrical work shall be performed under the supervision of a licensed master electrician. Procure permits and licenses and pay fees associated with this work.
14	Materials furnished for this project shall be new, commercial grade, free of defects, and listed by a nationally recognized testing laboratory unless noted otherwise.
15	Provide complete operation & maintenance manual including approved submittal drawings, warranty information for product supplied, and manufactures operation and maintenance instructions.
16	The contractor is responsible for making final wiring terminations to pre-installed receptacles in office furniture. Contractor is responsible for wiring and installing voice/data devices in office furniture. Coordinate placement of devices with furniture lay-out
17	Security system to be provided under separate contract. It is responsibility of this contractor to provide conduit provisions, back boxes, rough-ins, sleeves and power to head end equipment for exact requirements prior to start of work.
18	Conduit and wire shall not be installed below floor slab unless indicated on plan by dashed conduit.
19	Contractor shall be responsible for wiring electrical items shown on drawings except for items listed in note "R" below.
20	TV outlets, volume controls, nurse call dome lights, nurse call devices, telephone outlets, data outlets, and fire alarm devices shall consist of a black box with conduit stubbed above the accessible ceiling, see stub up detail. Verify size of back box required with device to be installed. Locate back boxes 6" from adjacent power receptacle intended for computer use.
21	Furnish and install conduit from back boxes for the following devices into the accessible ceiling space in the corridor, unless noted otherwise: 1/2"C TV outlets 1/2"C Volume controls 1/2"C Door security devices (card readers, door strikes, etc..) 1/2"C Nurse call dome lights 3/4"C Nurse call devices 3/4"C Telephone outlets 3/4"C Information outlets 3/4"C Fire alarm devices
22	Electrical contractor shall verify and coordinate conduit runs, circuiting and wiring as required to provide complete electrical installations. All the wiring to be UL approved.
23	Electrical contractor shall provide correct amperage for all equipment indicated on the plan.
24	All work must comply with local codes and ordinances.
25	Where outlets are shown back to back, install on studs and insulate between.
26	All counter plugs shall be GFCI protected.
27	Power for special lighting elements in cabinetry to be coordinated with designer, electrician and cabinet maker.
28	Bathroom receptacle outlets shall be supplied by at least one 20 amp branch circuit, such circuits shall have no other outlets.
29	Any base building work letter, tenant specifications, or architectural general conditions shall govern all products and the execution of work.
30	Electrical plans are diagrammatic only; refer to architectural drawings for exact locations, dimensions, and method of mounting for lighting fixtures, fire alarm devices, ceiling devices, receptacles, switches, exit signs, telephone, and data outlets.
31	Electrical contractor shall refer to mechanical, plumbing, and other discipline drawings for location of plumbing, and other discipline equipment, electrical contractor shall coordinate and verify voltage/phase indicated on electrical drawings with plumbing, and other discipline equipment to be provided prior to installing electrical service. Should a discrepancy be noted between equipment to be supplied and what is indicated on the drawings, contractor shall obtain written directions from engineer before proceeding with work.
32	A dedicated circuit is required for dishwasher, disposal and microwave if built in.
33	At least 2-20 amp dedicated small appliance circuits for the outlets serving the countertops are required at kitchen.
34	Bathroom exhaust fans shall be energy star compliant and be ducted to terminate outside the building, unless functioning as a component of a whole house ventilation system.
35	Light fixtures to be centered on ceilings unless noted otherwise.
36	Recessed fixtures in insulated ceiling: fixture recessed into insulated ceiling shall be approved for zero-clearance insulation cover (IC) by UL or other testing/rating laboratories recognized by the International Conference of Building Officials, and shall include a label certifying air tight (AT) or similar designation to show air leakage less than 2.0 cfm at 75 pascals (or 1.57 lbs./ sq. ft.) when tested in accordance with ASTM E283, and shall be sealed with a gasket or caulk between the housing and the ceiling.
37	Where switches are shown adjacent to each other they shall be engaged and covered by a single switch plate.
38	Electrical contractor shall coordinate with mechanical, plumbing, fire protection, and other discipline contractors on any required control circuits including "line" and "low" voltage power requirements. The electrical contractor will be responsible for providing any necessary "line" or "low" voltage wiring and conduit not provided under the other discipline scope
39	All existing lighting to remain.

RACEWAYS AND CONDUCTORS

1	Telephone, data, and control cables installed in the return air plenum rated or installed conduit.
2	Cables and conduits on this project shall be neatly routed parallel and perpendicular to building lines. Cables that are bundled together for support shall not exceed ten (10) in quantity in any one location. Multiple bundles neatly installed and separated by physical space shall be used where cable quantities exceed ten (10).
3	Raceways shall be provided with expansion fittings at building expansion joints and other areas where necessary to compensate for thermal expansion and contraction. Furnish and install 0-Z/Gedney type "EX" or "TX" expansion fittings with bonding jumper where conduits cross building expansion joints.

DISTRIBUTION EQUIPMENT AND OVERCURRENT PROTECTION

4	The contractor shall be responsible for correctly phasing and balancing the circuits in the panelboards, provide circuits with dedicated neutral conductors as indicated on the drawings. Provide circuits with shared neutral conductors as indicated on the drawings. Neutral conductors shall not be combined/shared where not indicated on the drawings. Where neutral conductors are indicated to be shared the phase conductors shall be on opposite phases. Provide junction boxes as required for the quantity of wires, connectors and devices contained therein where combining homeruns.

WIRING DEVICES

1	Duplex receptacles shall be similar to pass and seymour #CR20 series and light switches shall be similar to pass and seymour #20AC1 series, confirm device color with architect.
2	Unless noted otherwise all switches and/or receptacles shown in the same location shall be installed in multiple gang boxes mounted under a common coverplate.
3	All duplex receptacles on dedicated circuits shall be NEMA 5-20R.
4	The highest operable part of the electrical and communication outlets shall be placed within the reach as required in the american with disabilities (ADA). These requirements do not apply where the use of the special equipment dictates otherwise or where electrical and communication outlets are not normally indicated for use by building occupants.
5	Floor outlets (boxes, poke thrus, etc.) shall be listed for installation in particular floor type devices shall meet UL requirements for scrub water, dirt, and debris exclusion tests.

ELECTRICAL DRAWING INDEX

ABBREVIATIONS, SYMBOLS & NOTES

RIDDLE FARM - WTP HVAC

WORCESTER COUNTY, MARYLAND

RAUCH inc.
Engineering | Survey | Architecture | Environmental
Main Office: 106 N Harrison St - Easton, MD 21601
Web: www.rauch-inc.com | Email: design@raucheng.com
Phone: 410 770 8081 | Fax: 410 770 3867

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 11024
Expiration Date: July 24, 2028

8-03-26

REVISIONS

REV. #	DATE	DESCRIPTION

MISS UTILITY OF DELMARVA 1-800-282-8555

811

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DESIGNED BY:	HJH
APPROVED BY:	

SHEET NO.: E-000

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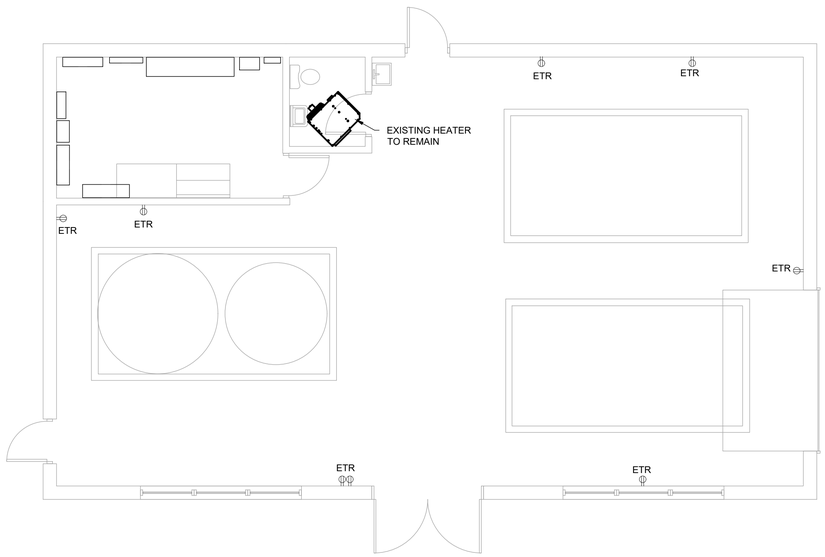
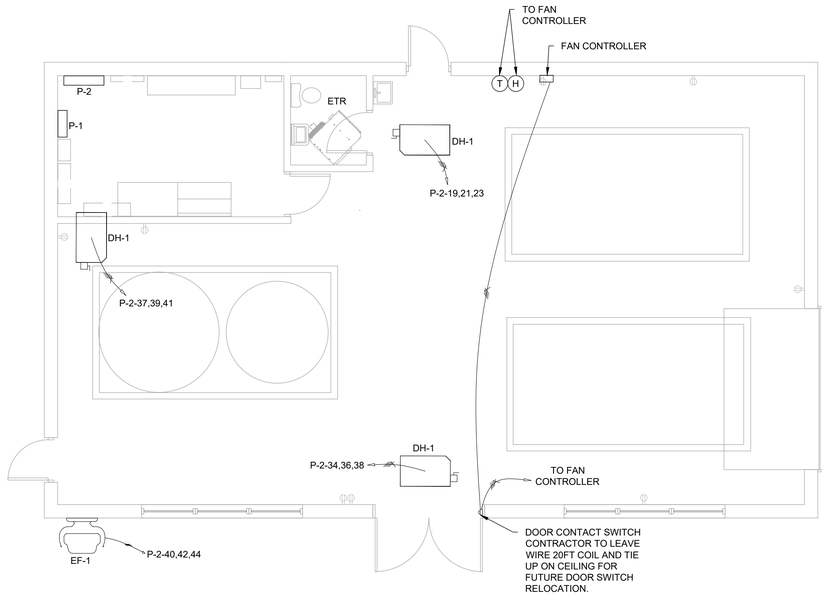


1 EXISTING POWER LAYOUT

3/16" = 1'-0"



2 PROPOSED POWER LAYOUT

3/16" = 1'-0"

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RIDDLE FARM - WTP HVAC

WORCESTER COUNTY, MARYLAND

POWER LAYOUT

RAUCH inc
Engineering | Survey | Architecture | Environmental
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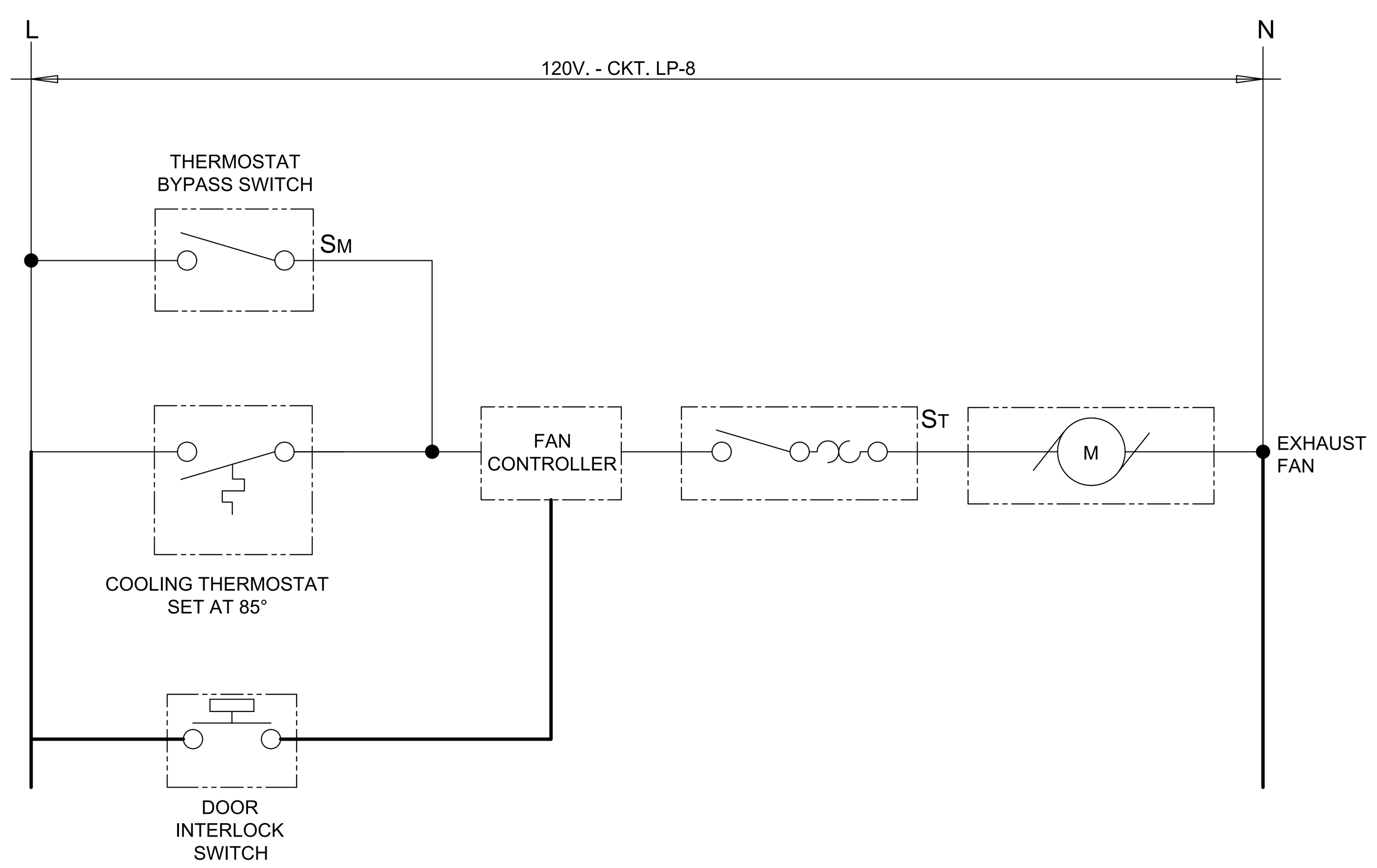
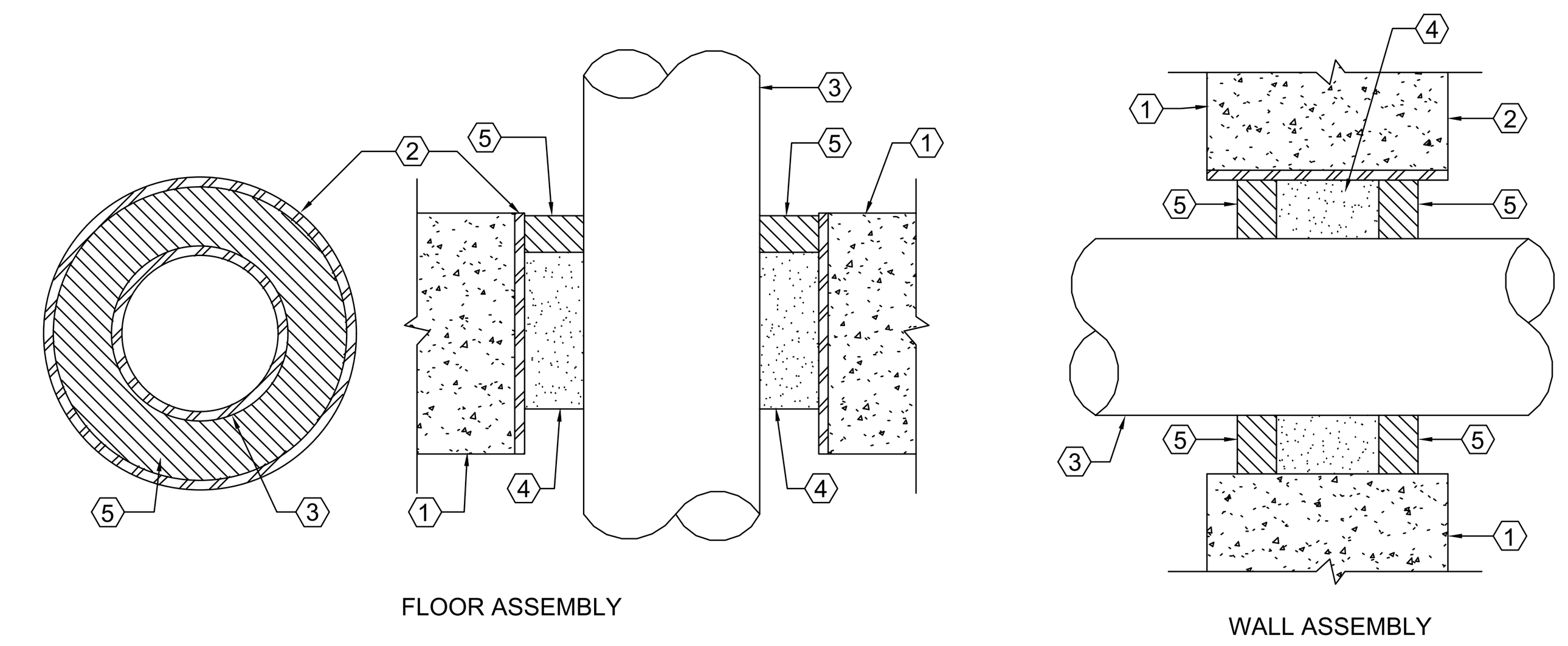


1 THERMOSTAT EXHAUST DETAIL

NTS



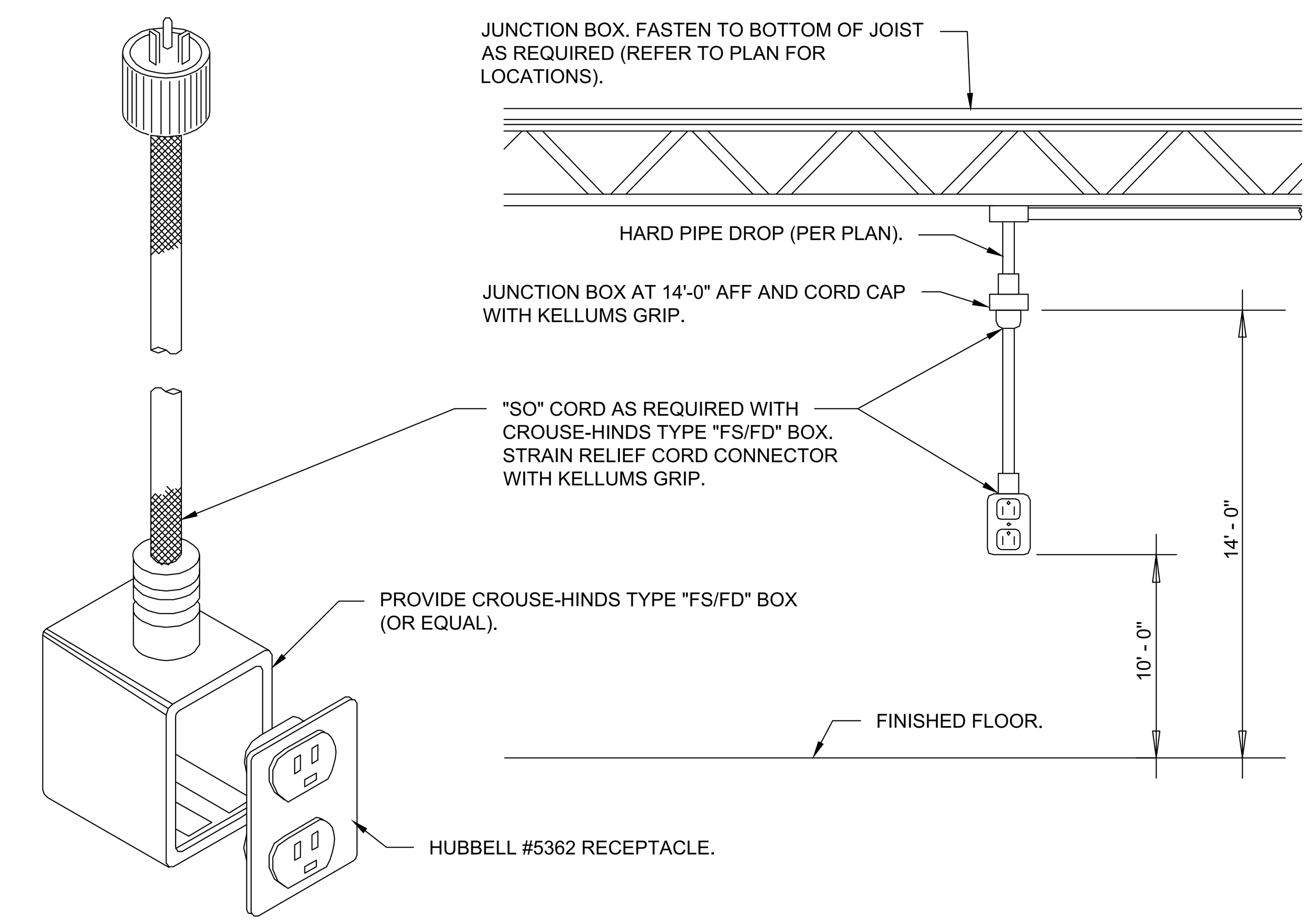
CODED NOTES:

1. FLOOR OR WALL ASSEMBLY MINIMUM 5" THICK NORMAL WEIGHT CONCRETE FLOOR OR WALL OR MINIMUM 7-5/8" THICK MASORY WALL HAVING A MINIMUM 2 HOUR FIRE RESISTIVE RATING WITH A NOMINAL 6" DIAMETER OPENING.
2. STEEL PIPE SLEEVE (OPTIONAL) NOMINAL 6" DIAMETER SCHEDULE 40 OR HEAVIER STEEL PIPE SLEEVE. (2 TRADE SIZES LARGER THAN CONDUIT).
3. STEEL OR EMT CONDUIT NOMINAL 4" DIAMETER RIGID CONDUIT CENTERED IN THE THROUGH OPENING.
4. FORMING MATERIAL MINERAL WOOL, MINIMUM DENSITY OF 4.4 PCF FIRMLY PACKED WITHIN THE OPENING TO A NOMINAL THICKNESS OF 3" FOR FLOORS. FOR WALLS, THE MINERAL WOOL SHALL BE CENTERED IN THE OPENING.
5. FILL, VOID OR CAVITY MATERIAL* - FILL MATERIAL THAT IS TROWELED INTO THE OPENING TO A MINIMUM THICKNESS OF 1/2" INSTALLED ON BOTH SURFACES OF THE OPENING.

NOTE:
BEARING THE "UL 1429" CLASSIFICATION MARKING

2 FIRE STOP DETAIL WALL OR FLOOR

NTS



3 CORD CROP RECEPTACLE DETAIL

NTS

ELECTRICAL DETAILS

RIDDLE FARM - WTP HVAC

WORCESTER COUNTY , MARYLAND

RAUCH inc.
Engineering | Survey | Architecture | Environmental
Main Office: 106 N Harrison St - Easton, MD 21601
Web: www.rauch-inc.com | Email: design@raucheng com
Phone: 410 770 9081 | Fax: 410 770 3667

STATE OF MARYLAND ROBERT D. RAUCH 11024 PROFESSIONAL ENGINEER

8-03-26

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 11024
Expiration Date: July 24, 2028

REVISIONS

REV. #	DATE	DESCRIPTION

MISS UTILITY OF DELMARVA — 811

DATE:	8/3/2026
SCALE:	AS SHOWN
DRAWN BY:	EEY
DESIGNED BY:	HJH
APPROVED BY:	

SHEET NO.: **E-400**

Z:\RIDDLE FARM WTP\+DEPARTMENTS\MEP\MODELS - DRAWINGS\E-100.DWG

PANEL P-1

VOLTAGE (L-N):	120	ENCLOSURE TYPE:	----
VOLTAGE (L-L):	208	MOUNTING:	SURFACE
PHASES, WIRES:	3 ϕ 4 W	AIC RATING (A):	100
MINIMUM BUS CAPACITY (A):	100 A	NOTES:	----
MAIN O.C. DEVICE (A):	100 A		

CKT NO	DESCRIPTION	TRIP AMPS	POLE	PHASE LOADS (VA)						POLE	TRIIP AMPS	DESCRIPTION	CKT NO
				A		B		C					
1,3	HOT WATER HEATER	20	2	0	0					1	20	FLDC MOTOR #1	2
1,3	HOT WATER HEATER	20	2			0	0			1	20	TURBIDITY #1	4
5	SCADA PANEL	20	1					0	0	1	20	TURBIDITY #3	6
7	FLDC MOTOR #2	20	1	0	0					1	20	FLDC MOTOR #3	8
9	CHART REC.	20	1			0	0			1	20	SMOKE DETECTORS	10
11	#1 VALVE POWER	20	1					0	0	1	20	PH ANALYZER	12
13	#2 VALVE POWER	20	1	0	0					1	20	CHLORINE ANALYZER	14
15	#3 VALVE POWER	20	1			0	0			1	20	TURBIDITY #2	16
17	FILTER PANEL	20	1					0	0	1	20	CAUSTIC MIXER	18
19	DEHUMIDIFIER #1	20	1	0	0					1	20	FLOYMER MIXER	20
21,23	OUTSIDE MINISPLIT	20	2			0	0			1	20	HYRO CLORIDE MIXER	22
21,23	OUTSIDE MINISPLIT	20	2					0	0	2	20	HEAT BATHROOM	24,26
25	DEHUMIDIFIER #2	20	1	0	0					2	20	HEAT BATHROOM	24,26
27	A/C	20	1			0	0			1	20	BLDG. RECS.	28
29	GARAGE DOOR	20	1					0	0	1	20	BLDG. RECS.	30
31,35,37	MAIN	20	3	0	----					----	----	----	----
31,35,37	MAIN	20	3			0	----			----	----	----	----
31,35,37	MAIN	20	3					0					
				CONNECTED LOAD PHASE TOTALS (VA)									
				----		----		----					

	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
TOTAL:	0.0		0.0
LOAD (AMPS):	0.0		0.0

DEMAND LOAD	0.0 KVA
SPARE CAPACITY	36.0 KVA
SPARE CAPACITY	100.0 AMPS
SPARE CAPACITY	100 %
PHASE BALANCE	
A TO B	---- %
B TO C	---- %
C TO A	---- %

PANEL P-2

VOLTAGE (L-N):	277	ENCLOSURE TYPE:	----
VOLTAGE (L-L):	480	MOUNTING:	SURFACE
PHASES, WIRES:	3 ϕ 4 W	AIC RATING (A):	200
MINIMUM BUS CAPACITY (A):	200 A	NOTES:	----
MAIN O.C. DEVICE (A):	200 A		

CKT NO	DESCRIPTION	TRIP AMPS	POLE	PHASE LOADS (VA)						POLE	TRIIP AMPS	DESCRIPTION	CKT NO
				A		B		C					
1,3,5	TRANSFORMER	20	3	0	0					3	20	WATER TOWER HEAT	2,4,6
1,3,5	TRANSFORMER	20	3			0	0			3	20	WATER TOWER HEAT	2,4,6
1,3,5	TRANSFORMER	20	3					0	0	3	20	WATER TOWER HEAT	2,4,6
7,9,11	GENERATOR BLOCK HEATER	20	3	0	0					3	20	----	8,10,12
7,9,11	GENERATOR BLOCK HEATER	20	3			0	0			3	20	----	8,10,12
7,9,11	GENERATOR BLOCK HEATER	20	3					0	0	3	20	----	8,10,12
13,15,17	----	20	3	0	0					3	20	----	14,16,18
13,15,17	----	20	3			0	0			3	20	----	14,16,18
13,15,17	----	20	3					0	0	3	20	----	14,16,18
19,21,23	DHU-1	20	3	2400	0					3	20	----	20,22,24
19,21,23	DHU-1	20	3			2400	0			3	20	----	20,22,24
19,21,23	DHU-1	20	3					2400	0	3	20	----	20,22,24
25,27,29	----	20	3	0	0					1	20	ELECTRIC ROOM LIGHTS	26
25,27,29	----	20	3			0	0			1	20	TANK ROOM LIGHTS	28
25,27,29	----	20	3					0	0	1	20	OUTSIDE LIGHTS	30
31	LIGHTS TANK ROOM	20	1	0	0					1	20	TANK ROOM LIGHTS	32
33,35	HEAT TRACE-BACKWASH TANK	20	2			0	2400			3	20	DHU-1	34,36,38
33,35	HEAT TRACE-BACKWASH TANK	20	2					0	2400	3	20	DHU-1	34,36,38
37,39,41	DHU-1	20	3	2400	2400					3	20	DHU-1	34,36,38
37,39,41	DHU-1	20	3			2400	477			3	20	EF-1	40,42,44
37,39,41	DHU-1	20	3					2400	477	3	20	EF-1	40,42,44
----	----	----	----	----	477					3	20	EF-1	40,42,44
				CONNECTED LOAD PHASE TOTALS (VA)									
				7677		7677		7677					

	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
Equipment	21.6	1.00	21.6
TOTAL:	21.6		21.6
LOAD (AMPS):	26.0		26.0

DEMAND LOAD	21.6 KVA
SPARE CAPACITY	144.7 KVA
SPARE CAPACITY	174.0 AMPS
SPARE CAPACITY	87 %
PHASE BALANCE	
A TO B	100 %
B TO C	100 %
C TO A	100 %

ELECTRICAL SCHEDULES

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WORCESTER COUNTY, MARYLAND

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MISS UTILITY OF DELMARVA
811

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SCALE:	AS SHOWN
DRAWN BY:	EEY
DESIGNED BY:	HJH
APPROVED BY:	

SHEET NO.: E-500