

PLUMBING AND PIPING HANGER MATRIX BY PIPE MATERIAL

Pipe Material: Steel Pipe				Conditions: Mild Temperature Systems
Schedule 40 / 80 / Standard: Threaded, Butt-welded, Socket Welded, Grooved				
Pipe Size	Hanger Type	Rod Diameter	Hanger Spacing	
0.1/2" - 2"	Clevis	3/8	10 Feet O.C.	
2.1/2" - 4"	Clevis	1/2	10 Feet O.C.	
6"	Clevis	5/8	10 Feet O.C.	
6" - 30"	Clevis	3/4	10 Feet O.C.	
12" - 14"	Clevis	7/8	10 Feet O.C.	
18" - 24"	Clevis	1	10 Feet O.C.	

Pipe Material: Steel Pipe				Conditions: High Temperature Systems
Schedule 40 / 80 / Standard: Threaded, Butt-welded, Socket Welded, Grooved				
Pipe Size	Hanger Type	Rod Diameter	Hanger Spacing	
0.1/2" - 2"	Clevis	3/8	10 Feet O.C.	
2.1/2" - 4"	Clevis	1/2	10 Feet O.C.	
6"	Roller-Clevis	5/8	10 Feet O.C.	
6" - 30"	Roller-Clevis	3/4	10 Feet O.C.	
12" - 14"	Roller-Clevis	7/8	10 Feet O.C.	
18" - 24"	Roller-Clevis	1	10 Feet O.C.	

Pipe Material: Cast Iron				Conditions: All Systems
No-Hub				
Pipe Size	Hanger Type	Rod Diameter	Hanger Spacing	
2"	Clevis	3/8	8 Feet O.C. (12" from Couplings)	
4"	Clevis	1/2	8 Feet O.C. (12" from Couplings)	
6"	Clevis	5/8	8 Feet O.C. (12" from Couplings)	
8"	Clevis	3/4	8 Feet O.C. (12" from Couplings)	
12" - 14"	Clevis	7/8	8 Feet O.C. (12" from Couplings)	
18" - 24"	Clevis	1	8 Feet O.C. (12" from Couplings)	

Pipe Material: ABS/PVC/CPVC				Conditions: All Systems
Solvent Weld, Threaded				
Pipe Size	Hanger Type	Rod Diameter	Hanger Spacing	
1.1/2" - 2"	Clevis or Loop	3/8	4 Feet O.C.	
3.1/2" - 6"	Clevis	1/2	4 Feet O.C.	
8" - 10"	Clevis	5/8	4 Feet O.C.	

Pipe Material: Copper				Conditions: All Systems
Pressed, Soldered, Grooved				
Pipe Size	Hanger Type	Rod Diameter	Hanger Spacing	
0.1/2" - 0.5/4"	Clevis or Loop	3/8	8 Feet O.C.	
1" - 1.1/4"	Clevis or Loop	3/8	8 Feet O.C.	
1.1/2" - 2"	Clevis or Loop	3/8	10 Feet O.C.	
2.1/2" - 3"	Clevis	1/2	10 Feet O.C.	
4" - 6"	Clevis	1/2	10 Feet O.C.	
8"	Clevis	5/8	10 Feet O.C.	
10"	Clevis	3/4	10 Feet O.C.	

P-H-MAT

TABLE 305.4 PIPING SUPPORT SPACING*

PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (feet)	MAXIMUM VERTICAL SPACING (feet)
ABS pipe	4	10 ^c
Aluminum pipe and tubing	10	15
Cast-iron pipe ^b	5	15
Copper or copper-alloy pipe	12	10
Copper or copper-alloy tubing	8	10
CPVC pipe or tubing, 1 inch and smaller	3	10 ^c
CPVC pipe or tubing, 1 1/4 inches and larger	4	10 ^c
Lead pipe	Continuous	4
PB pipe or tubing	2 2/3 (32 inches)	4
PE-RT 1 inch and smaller	2 2/3 (32 inches)	10 ^c
PE-RT 1 1/4 inches and larger	4	10 ^c
PEX tubing 1 inch and smaller	2 2/3 (32 inches)	10 ^c
PEX tubing 1 1/4 inches and larger	4	10 ^c
Polypropylene (PP) pipe or tubing, 1 inch and smaller	2 2/3 (32 inches)	10 ^c
Polypropylene (PP) pipe or tubing, 1 1/4 inches and larger	4	10 ^c
PVC pipe	4	10 ^c
Steel tubing	8	10
Steel pipe	12	15

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.
 a. See Section 301.18.
 b. The maximum horizontal spacing of cast-iron pipe hangers shall be increased to 10 feet where 10-foot lengths of pipe are installed.
 c. Mid-story end.

Commercial Building
 REPLACEMENT OF PIPING IN CONDITION SPACE. MEET 2018 WSEC TABLE C403.10.3 footnote a.

STANDARD INSERT METHODS NEW AND EXISTING CONDITIONS

H-4-02

MINIMUM PIPE INSULATION

FLUID DESIGN OPERATING TEMP °F	INSULATION CONDUCTIVITY		NOMINAL PIPE DIAMETER (INCH)				
	CONDUCTIVITY RANGE	MEAN TEMP RATING °F	1 TO <1 ^a	1-1/2 TO <4	4 TO <8	8 TO ≥8	
HEATING SYSTEMS ¹ (STEAM, CONDENSATE, HYDRONIC HOT WATER)							
>350	0.32-0.34	250	4.5	5.0	5.0	5.0	5.0
251-350	0.29-0.32	200	3.0	4.0	4.5	4.5	4.5
201-250	0.27-0.30	150	2.5	2.5	2.5	3.0	3.0
141-200	0.25-0.29	125	1.5	1.5	2.0	2.0	2.0
105-140	0.21-0.28	100	1.0	1.0	1.5	1.5	1.5
DOMESTIC HOT WATER ³ , DOMESTIC HOT WATER RECIRCULATION ³							
NA	0.21-0.28	100	0.5, 0.75 ⁵	1.0, 1.25 ⁵	1.5, 2.0 ⁵	2.0	2.0
DOMESTIC COLD WATER ³ AND HORIZ RAIN LEADERS TO VERTICAL RAIN LEADER (TO PREVENT CONDENSATION ONLY)							
NA	0.21-0.27	75	0.5	0.5	0.5	0.5	0.5
COOLING SYSTEMS ² (CHILLED WATER, BRINE AND REFRIGERANT, WATERSIDE ECONOMIZER SYSTEMS ²)							
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0
<40	0.20-0.26	75	0.5	1.0	1.0	1.0	1.5
UNLINED STORAGE TANKS							
	ALL SIZES	R-12.5 ⁴	-	-	-	-	-

NOTES:
 1. NOT REQUIRED FOR STRAINERS, CONTROL VALVES & BALANCING VALVES ASSOCIATED WITH PIPING 1" OR LESS IN DIA. TYPICAL CONDENSER WATER PIPE IN NON-ECONOMIZER SYSTEMS IS NOT INSULATED.
 2. SEE R403 FOR RESIDENTIAL INSTALLATIONS.
 3. FOR PIPING SMALLER THAN 1-1/2 INCH AND LOCATED IN PARTITIONS WITHIN CONDITIONED SPACES, REDUCTION OF INSULATION THICKNESSES BY 1 INCH SHALL BE PERMITTED, BUT NOT TO A THICKNESS OF LESS THAN 1 INCH.
 4. DOMESTIC HOT WATER PIPE INSULATION SHALL HAVE A MINIMUM WALL THICKNESS OF NOT LESS THAN THE DIAMETER OF THE PIPE FOR PIPE UP TO 2 INCHES IN DIAMETER. INSULATION WALL THICKNESS SHALL NOT BE LESS THAN 2 INCHES FOR A PIPE OF 2 INCHES OR MORE IN DIAMETER. NOTE THAT THIS IS PER UPC SECTION 609.11.2. IN JURISDICTIONS THAT REQUIRE DOMESTIC HOT WATER PIPING TO BE INSULATED PER THE ENERGY CODE, USE THE 105-140 ROW FROM HEATING SYSTEMS ABOVE.
 5. SEATTLE ONLY: UNFIRED TANKS USED TO STORE WATER AT TEMPERATURES ABOVE 130°F SHALL INCLUDE A MINIMUM OF R-2 ADDITIONAL INSULATION FOR EVERY 10°F INCREASE IN STORED WATER TEMPERATURE OVER 130°F.
 6. SEATTLE ONLY: FOR HEATED WATER CIRCULATION SYSTEMS, BOTH SUPPLY AND RETURN PIPE INSULATION SHALL BE AT MINIMUM 1 INCH THICKER THAN ROW 105-140 FROM HEATING SYSTEMS, ABOVE, EXCEPT WHERE PIPING IS CENTERED WITHIN A FRAMING CAVITY 4" DEEPER THAN THE PIPE THAT IS COMPLETELY FILLED WITH BATT OR BLOW IN INSULATION.

PRMH20221277

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EVAPORATOR LINES

SOUTH HILL BUSINESS & TECHNOLOGY CENTER
 1111 39TH AVE. SE
 PUYALLUP, WA 98374



ISSUE FOR PERMIT

Revisions

No.	Date	By	Description
	08/17/22	JMH	ISSUE FOR PERMIT

Design Team

Design	JMH
Drawn	FVP
Checked	DTN
Pre-Construction Number	14-22-22334
Construction Number	
Issue Date	08/17/22

CONSTRUCTION STANDARDS - HVAC

MP0.01

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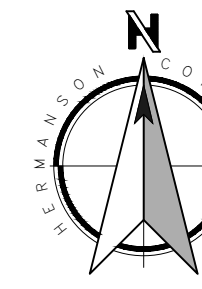
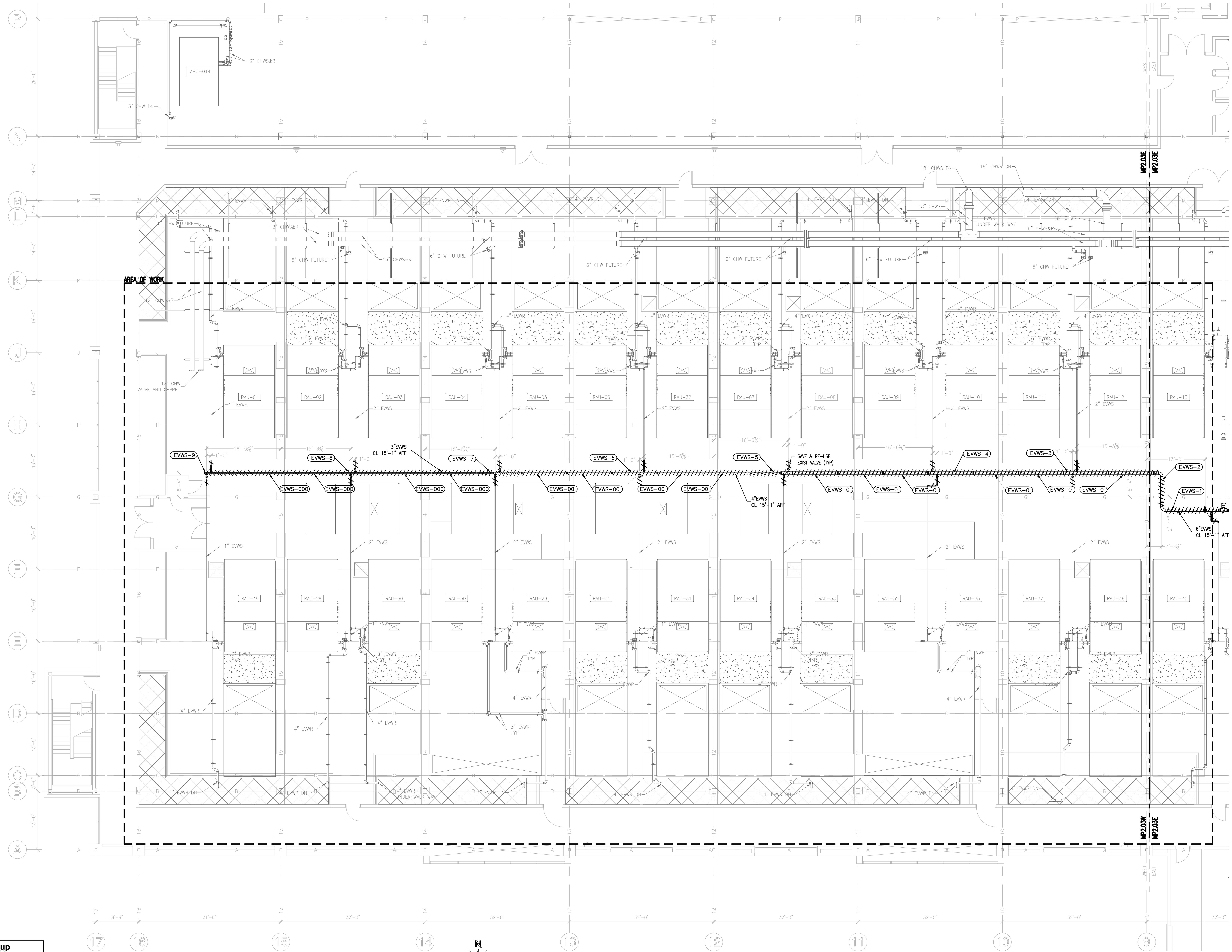
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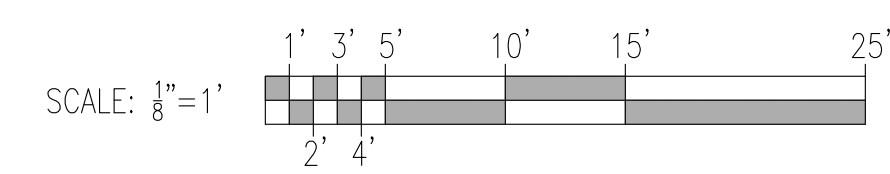
PARTIAL 3RD FLOOR
PIPING DEMO PLAN
- HVAC

MP2.03WD



PARTIAL 3RD FLOOR PIPING DEMO PLAN - HVAC
SCALE: 1/8" = 1'-0"

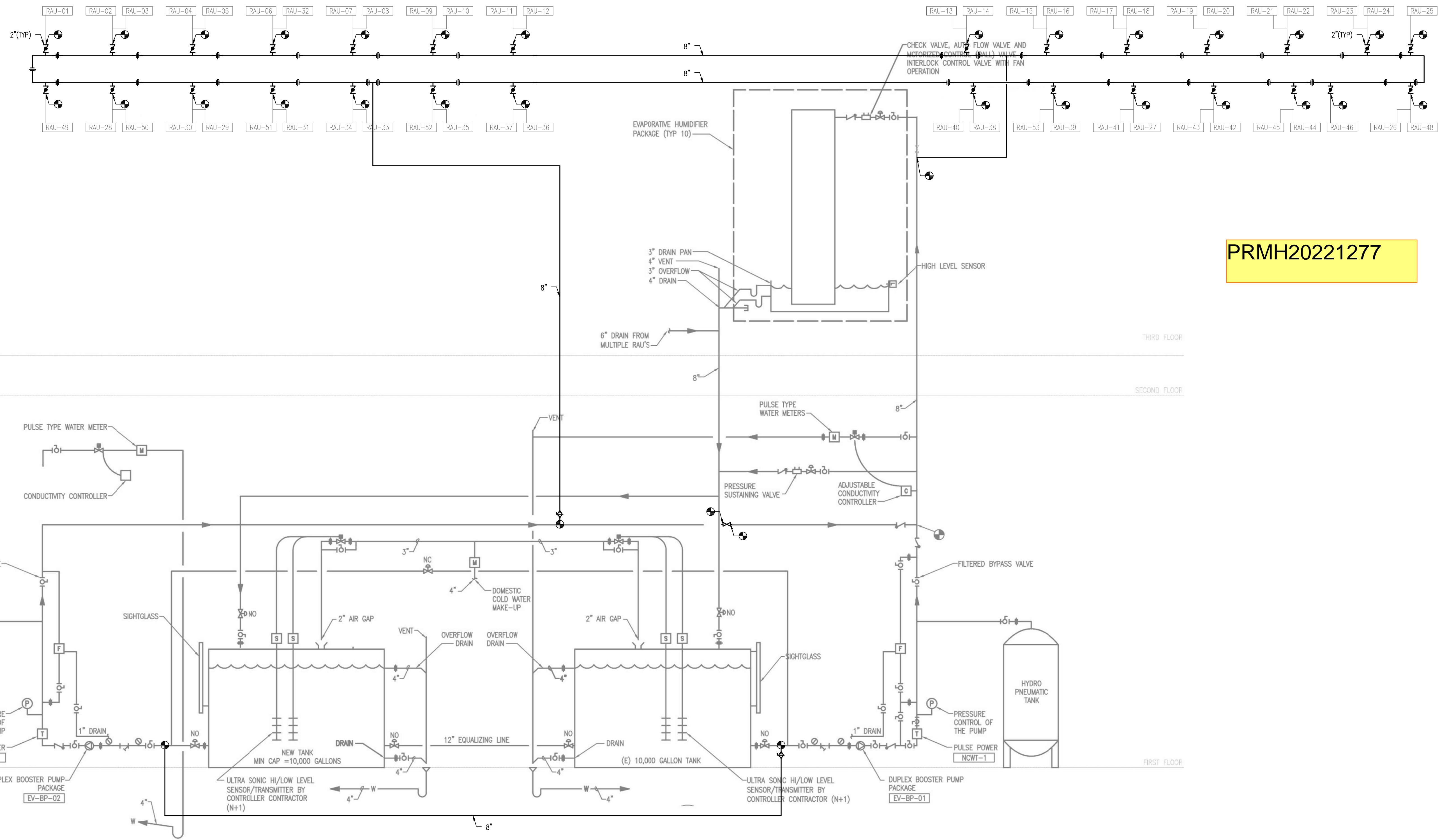
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NOTE: POWER FEEDING NEW PUMP SKID SHOULD COME FROM A SEPARATE ELECTRICAL PANEL THAN THE PANEL FEEDING THE PRIMARY PUMP SKID.

Separate electrical permit is required with Washington State Department of Labor & Industries. <http://www.wa.gov/doing-permits/electrical-permits.aspx> and inspections or Licensing information: Call 1-800-647-0982

EVAPORATIVE PIPING DIAGRAM - HVAC

SCALE: NONE

EVAPORATOR LINES

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1111 39TH AVE. SE
PUYALLUP, WA 98374



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Revisions

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08/03/22	JMH	JMH	PERMIT REVISION
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Design Team

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Pre-Construction Number	14-22-22334
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EVAPORATIVE PIPING DIAGRAM - HVAC

SHEET ADDED TO SET

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MP6.01

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