


ABBREVIATIONS	LEGEND	GENERAL NOTES
---------------	--------	---------------

Diagram illustrating the components of a diffuser symbol:

- DIFFUSER TYPE** (REFER TO DIFFUSER SCHEDULE)
- NECK SIZE** (REFER TO PLANS)
- AIR QUANTITY IN CUBIC FEET PER MINUTE** (REFER TO PLANS)



Tx. Registration #9102



ALAN R. CORLEY
91739
LICENSED PROFESSIONAL ENGINEER
10/07/2025

PROJECT #: 05194.09

SHEET #:

M-001



Δ	REVISIONS
---	-----------



**JPS ARLINGTON SURGERY
OR HVAC REPLACEMENT PROJECT
4400 NEW YORK AVE.
ARLINGTON, TX 76018**

PROJECT #: 05194.09

SHEET TITLE:
MECHANICAL PIPING
DEMO FLOOR PLAN

SHEET #:
M-011

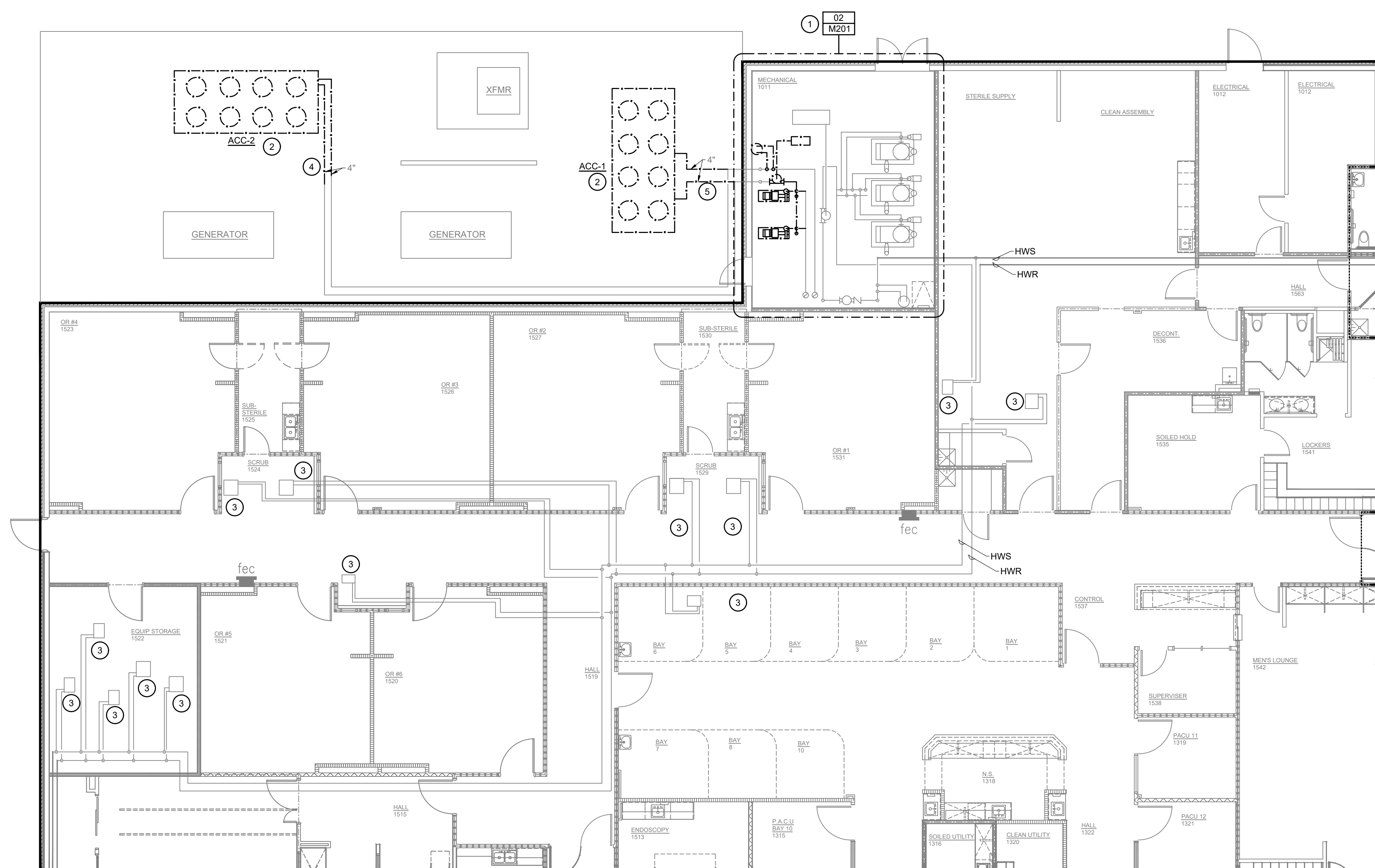
LEGEND	
	EXISTING
	DEMO
	NEW

GENERAL MECHANICAL DEMOLITION NOTES

1. NO MECHANICAL EQUIPMENT SHALL BE REMOVED OR DEACTIVATED PRIOR TO THE REPLACEMENT EQUIPMENT ARRIVING ON SITE.
2. VERIFY MECHANICAL EQUIPMENT, DUCTWORK, PIPING AND CONTROLS EXACT LOCATION PRIOR TO DEMOLITION.
3. MECHANICAL EQUIPMENT DEMOLITION SHALL INCLUDE STRUCTURAL SUPPORT DEMOLITION AND PREPARATION FOR INSTALLATION OF NEW SUPPORT AND EQUIPMENT.

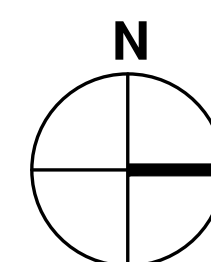
NOTES BY SYMBOL

- 1 SEE ENLARGED PLAN FOR WORK IN THIS AREA.
- 2 REMOVE EXISTING CHILLER, CONTROLS, ASSOCIATED PIPING TO POINT INDICATED, AND ACCESSORIES FOR REPLACEMENT UNDER NEW WORK.
- 3 EXISTING TERMINAL UNIT TO REMAIN.
- 4 EXISTING CHS/R SHALL BE TEMPORARILY CAPPED AT THIS LOCATION FOR FUTURE CONNECTION.
- 5 EXISTING CHILLER PIPING SHALL BE REMOVED BACK TO MAIN AND CAPPED WATER TIGHT.



MECHANICAL PIPING DEMO FLOOR PLAN

SCALE: 1/8" = 1'-0"

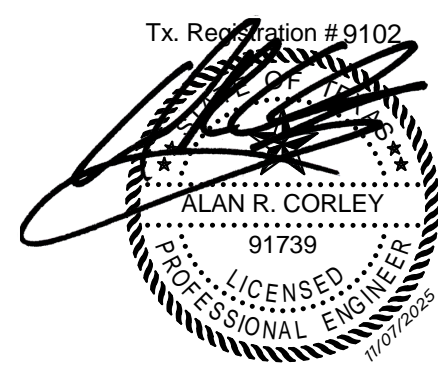


- GENERAL PHASING PLAN*:

1. CLEAN AND FLUSH EXISTING PIPING SYSTEM PRIOR TO COMMENCEMENT OF WORK. INSPECT EXISTING PIPING CONDITION AND SUITABILITY FOR REUSE. REPORT TO OWNER FOR ANY ISSUES WITH EXISTING PIPING SYSTEM.
 2. WHILE RUNNING ON ACC-2 AND THE EXISTING PUMPS, REPLACE ACC-1.
 3. ONCE THE NEW CHILLER IS INSTALLED, RUN NEW CHILLER WITH EXISTING PUMPS AND REPLACE ACC-2. INSTALL NEW PUMP PACKAGE AND BUFFER TANK.
 4. REMOVE EXISTING PUMPS, EXPANSION TANK, AIR SEPARATOR AND RECONFIGURE PIPING IN MECHANICAL ROOM AS REQUIRED TO ACCOMMODATE NEW CONFIGURATION. CLEAN AND FLUSH PIPING SYSTEM PRIOR TO SWITCHING OVER TO NEW PUMPING SKID.
 5. SWITCH OVER TO NEW PUMPING SKID AT THE CHILLER YARD.
 6. REPLACE AHU OF THE OWNERS CHOOSING WHILE THE OTHER AHU IS IN OPERATION.
 7. REPLACE THE OTHER AHU ONCE THE PREVIOUSLY REPLACED AHU IS FULLY FUNCTIONAL AND BALANCE.
- * CONTRACTOR SHALL PROVIDE A DETAILED PHASING PLAN TO THE OWNER PRIOR TO COMMENCEMENT OF WORK FOR OWNERS APPROVAL. PHASING PLAN SHALL BE DEVELOPED TO MINIMIZE DOWNTIME OF THE OPERATING ROOMS AND ANY DOWNTIME SHALL BE SCHEDULED AND APPROVED BY OWNER.



○	ISSUES	
1		
2		
3		
4		
5		
△	REVISIONS	



**JPS ARLINGTON SURGERY
OR HVAC REPLACEMENT PROJECT
4400 NEW YORK AVE.
ARLINGTON, TX 76018**

PROJECT #: 05194.09

SHEET TITLE:
MECHANICAL DEMO
ROOF PLAN

SHEET #:

M-021

LEGEND	
	EXISTING
	DEMO
	NEW

GENERAL MECHANICAL DEMOLITION NOTES

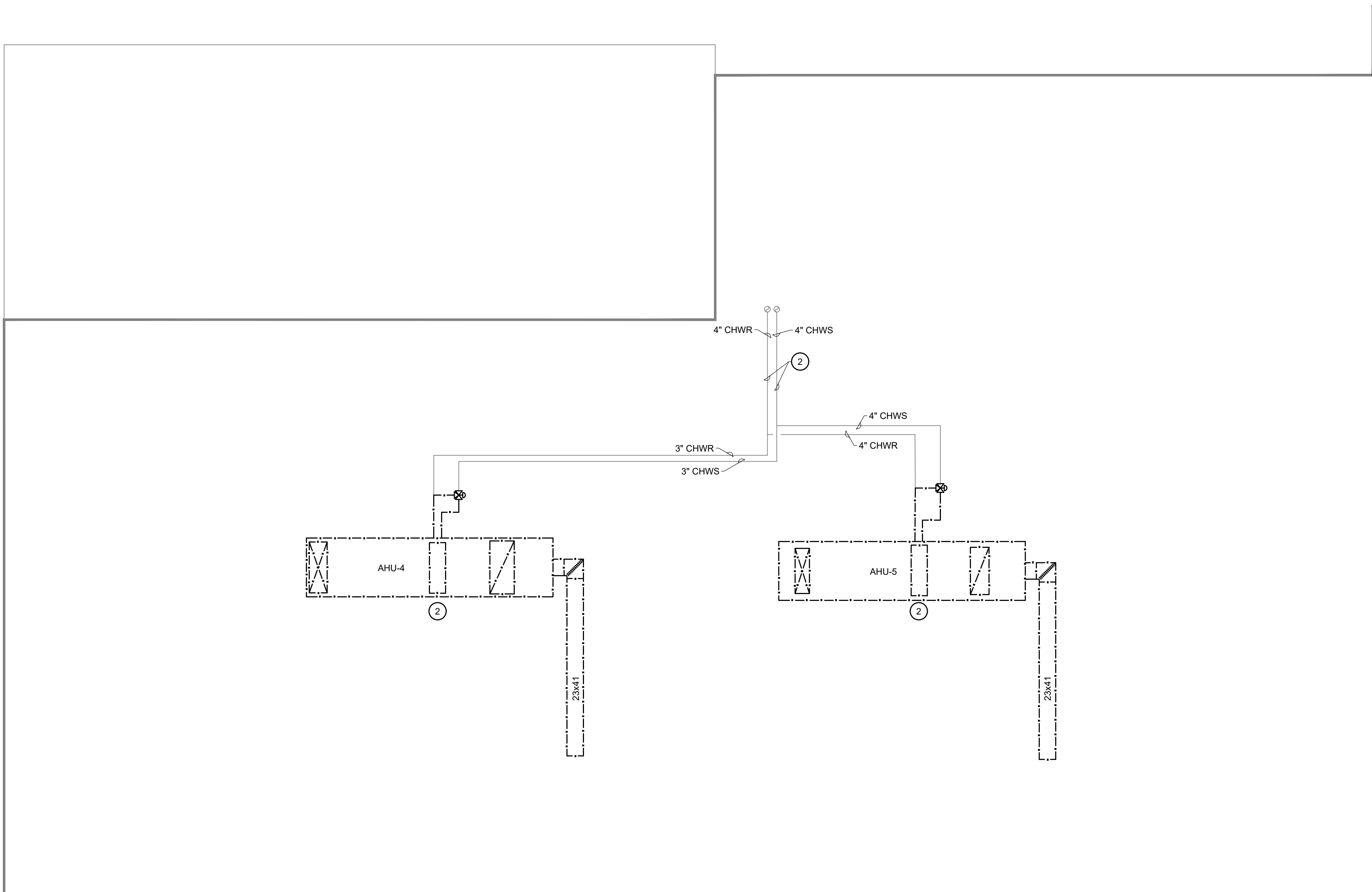
1. NO MECHANICAL EQUIPMENT SHALL BE REMOVED OR DEACTIVATED PRIOR TO THE REPLACEMENT EQUIPMENT ARRIVING ON SITE.
2. VERIFY MECHANICAL EQUIPMENT, DUCTWORK, PIPING AND CONTROLS EXACT LOCATION PRIOR TO DEMOLITION.
3. MECHANICAL EQUIPMENT DEMOLITION SHALL INCLUDE STRUCTURAL SUPPORT DEMOLITION AND PREPARATION FOR INSTALLATION OF NEW SUPPORT AND EQUIPMENT.

NOTES BY SYMBOL

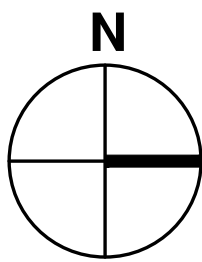
- ① REMOVE ALL CHILLED WATER PIPING TO POINT INDICATED INCLUDING ALL SUPPORTS, VALVES, ACCESSORIES, AND CONTROLS.
- ② REMOVE EXISTING AHU AND PREPARE CURB, ELECTRICAL, AND DUCTWORK FOR CONNECTION UNDER NEW WORK.
- ③ EXISTING PIPING PENETRATION THRU ROOF TO REMAIN.

GENERAL PHASING PLAN*:

1. CLEAN AND FLUSH EXISTING PIPING SYSTEM PRIOR TO COMMENCEMENT OF WORK. INSPECT EXISTING PIPING CONDITION AND SUITABILITY FOR REUSE. REPORT TO OWNER FOR ANY ISSUES WITH EXISTING PIPING SYSTEM.
 2. WHILE RUNNING ON ACC-2 AND THE EXISTING PUMPS, REPLACE ACC-1.
 3. ONCE THE NEW CHILLER IS INSTALLED, RUN NEW CHILLER WITH EXISTING PUMPS AND REPLACE ACC-2. INSTALL NEW PUMP PACKAGE AND BUFFER TANK.
 4. REMOVE EXISTING PUMPS, EXPANSION TANK, AIR SEPARATOR AND RECONFIGURE PIPING IN MECHANICAL ROOM AS REQUIRED TO ACCOMMODATE NEW CONFIGURATION. CLEAN AND FLUSH PIPING SYSTEM PRIOR TO SWITCHING OVER TO NEW PUMPING SKID.
 5. SWITCH OVER TO NEW PUMPING SKID AT THE CHILLER YARD.
 6. REPLACE AHU OF THE OWNERS CHOOSING WHILE THE OTHER AHU IS IN OPERATION.
 7. REPLACE THE OTHER AHU ONCE THE PREVIOUSLY REPLACED AHU IS FULLY FUNCTIONAL AND BALANCED.
- * CONTRACTOR SHALL PROVIDE A DETAILED PHASING PLAN TO THE OWNER PRIOR TO COMMENCEMENT OF WORK FOR OWNERS APPROVAL. PHASING PLAN SHALL BE DEVELOPED TO MINIMIZE DOWNTIME OF THE OPERATING ROOMS AND ANY DOWNTIME SHALL BE SCHEDULED AND APPROVED BY OWNER.



02 MECHANICAL DEMO ROOF PLAN
SCALE: 1/8" = 1'-0"



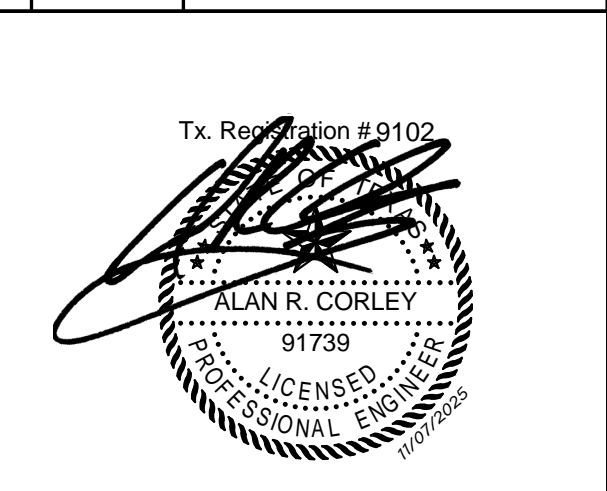
LEGEND	
	EXISTING
	DEMO
	NEW

- GENERAL MECHANICAL NOTES
1. FINAL LOCATIONS OF ALL AIR DEVICES SHALL BE COORDINATED WITH ARCHITECTURAL CEILING FINISHES.
 2. ALL DUCT SIZE NOTES REFER TO CLEAR INSIDE DIMENSION OF DUCT.
 3. PROVIDE VOLUME DAMPERS FOR ALL SUPPLY, RETURN, AND EXHAUST BRANCH DUCTS TO BALANCE SYSTEM.
 4. CONTRACTOR TO REBALANCE ALL EXISTING DIFFUSERS, REGISTERS, AND GRILLES SERVED BY AHU 4 AND 5.

- NOTES BY SYMBOL
- ① SEE ENLARGED PLAN FOR WORK IN THIS AREA.
- ② REBALANCE SUPPLY AND RETURN TO CFM SPECIFIED IN IN DASHED OUTLINED AREA.



ISSUES	
1	
2	
3	
4	
5	
REVISIONS	

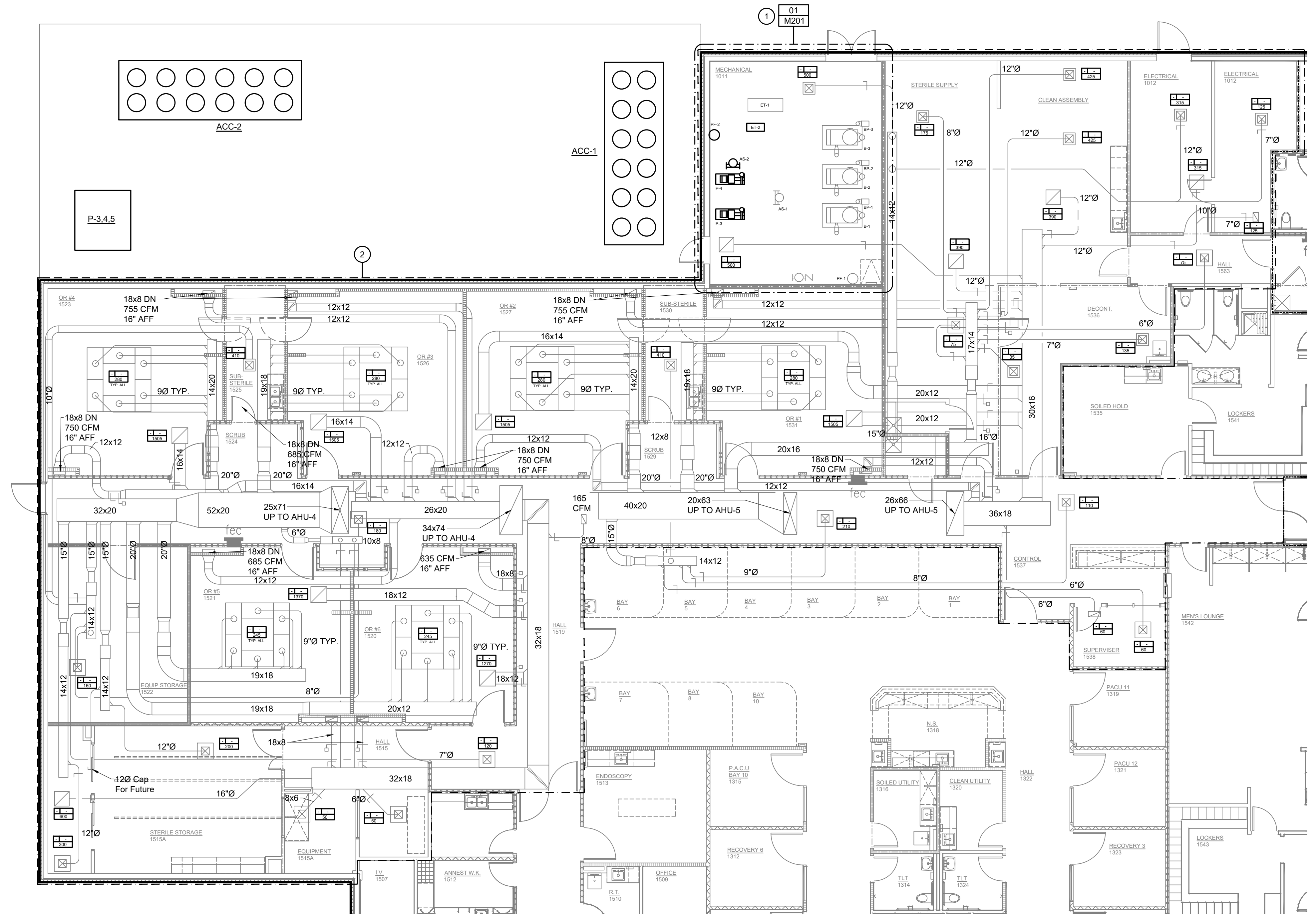


**JPS ARLINGTON SURGERY
OR HVAC REPLACEMENT PROJECT
4400 NEW YORK AVE.
ARLINGTON, TX 76018**

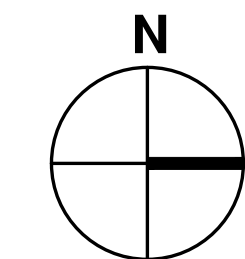
PROJECT #: 05194.09

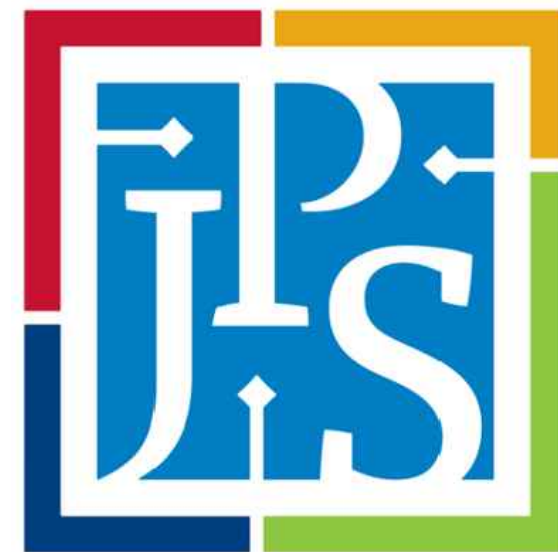
SHEET TITLE:
MECHANICAL FLOOR PLAN

SHEET #:
M-112

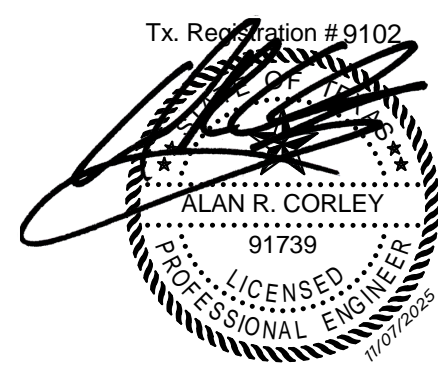


01 MECHANICAL FLOOR PLAN
SCALE: 1/8" = 1'-0"





ISSUES	
1	
2	
3	
4	
5	
REVISIONS	



**JPS ARLINGTON SURGERY
OR HVAC REPLACEMENT PROJECT
4400 NEW YORK AVE.
ARLINGTON, TX 76018**

PROJECT #: 05194.09

SHEET TITLE:
MECHANICAL ROOF
PLAN

SHEET #:

M-121

LEGEND	
	EXISTING
	DEMO
	NEW

GENERAL MECHANICAL NOTES

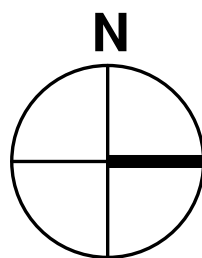
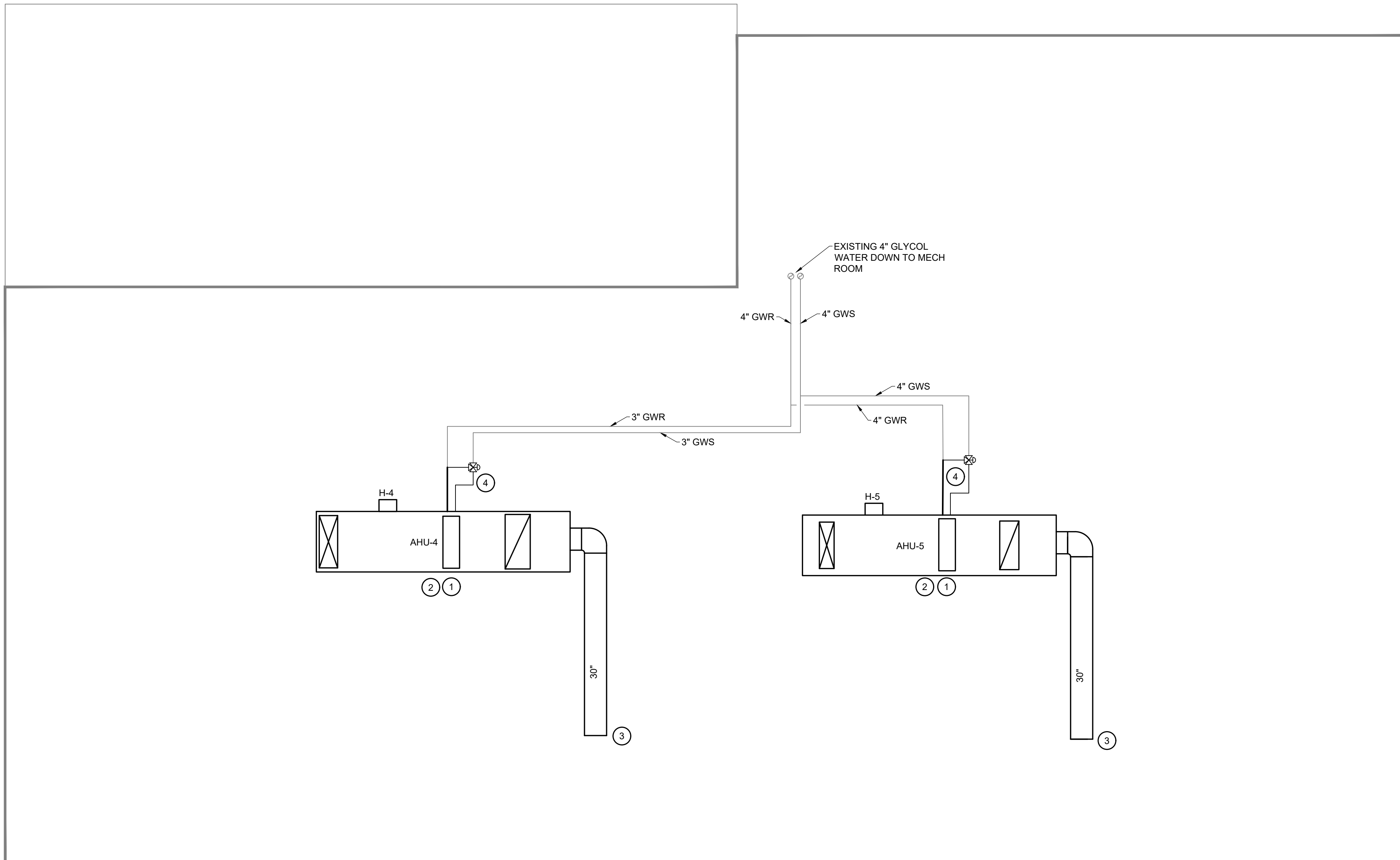
1. FINAL LOCATIONS OF ALL AIR DEVICES SHALL BE COORDINATED WITH ARCHITECTURAL CEILING FINISHES.
2. ALL DUCT SIZE NOTES REFER TO CLEAR INSIDE DIMENSION OF DUCT.
3. PROVIDE VOLUME DAMPERS FOR ALL SUPPLY, RETURN, AND EXHAUST BRANCH DUCTS TO BALANCE SYSTEM.

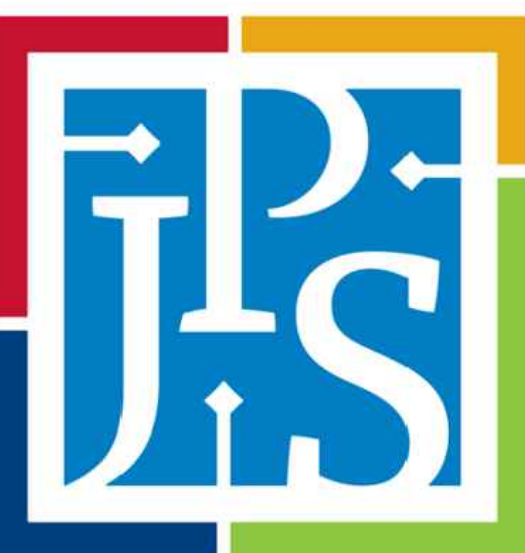
NOTES BY SYMBOL

- ① INSTALL NEW AHU. ADJUST EXISTING ROOF CURB AS REQUIRED. REBALANCE AIR AND WATER FLOW TO NEW AHU.
- ② ADJUST/EXTEND EXISTING CONDENSATE DRAIN AS NECESSARY.
- ③ PROVIDE WITH 45 DEGREE UNDERCUT, FULL PERIMETER ANGLE, AND WIRE MESH COVER.
- ④ CONNECT NEW CHS/R TO EXISTING AND CONNECT TO UNIT PER MANUFACTURERS RECOMMENDATIONS. PROVIDE NEW 3-WAY CONTROL VALVE.


GENERAL PHASING PLAN*:

1. CLEAN AND FLUSH EXISTING PIPING SYSTEM PRIOR TO COMMENCEMENT OF WORK. INSPECT EXISTING PIPING CONDITION AND SUITABILITY FOR REUSE. REPORT TO OWNER FOR ANY ISSUES WITH EXISTING PIPING SYSTEM.
 2. WHILE RUNNING ON ACC-2 AND THE EXISTING PUMP, REPLACE ACC-1.
 3. ONCE THE NEW CHILLER IS INSTALLED, RUN NEW CHILLER WITH EXISTING PUMPS AND REPLACE ACC-2. INSTALL NEW PUMP PACKAGE AND BUFFER TANK.
 4. REMOVE EXISTING PUMPS, EXPANSION TANK, AIR SEPARATOR AND RECONFIGURE PIPING IN MECHANICAL ROOM AS REQUIRED TO ACCOMMODATE NEW CONFIGURATION. CLEAN AND FLUSH PIPING SYSTEM PRIOR TO SWITCHING OVER TO NEW PUMPING SKID.
 5. SWITCH OVER TO NEW PUMPING SKID AT THE CHILLER YARD.
 6. REPLACE AHU OF THE OWNERS CHOOSING WHILE THE OTHER AHU IS IN OPERATION.
 7. REPLACE THE OTHER AHU ONCE THE PREVIOUSLY REPLACED AHU IS FULLY FUNCTIONAL AND BALANCED.
- * CONTRACTOR SHALL PROVIDE A DETAILED PHASING PLAN TO THE OWNER PRIOR TO COMMENCEMENT OF WORK FOR OWNERS APPROVAL. PHASING PLAN SHALL BE DEVELOPED TO MINIMIZE DOWNTIME OF THE OPERATING ROOMS AND ANY DOWNTIME SHALL BE SCHEDULED AND APPROVED BY OWNER.





Tx. Registration #9102



ALAN R. CORLEY
91739
LICENSED PROFESSIONAL ENGINEER
11/01/2025

PROJECT #: 05194.09

SHEET #:

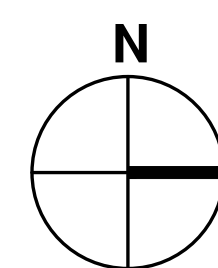
M-201

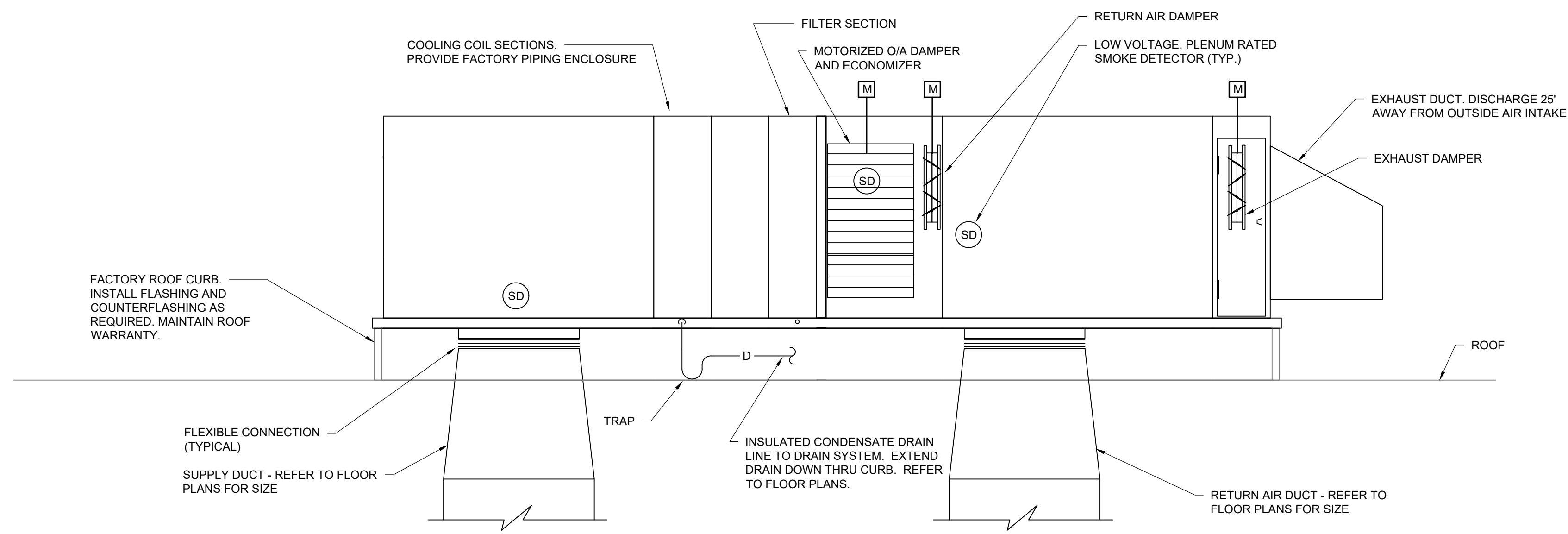
GENERAL MECHANICAL DEMOLITION NOTES

1. NO MECHANICAL EQUIPMENT SHALL BE REMOVED OR DEACTIVATED PRIOR TO THE REPLACEMENT EQUIPMENT ARRIVING ON SITE.
2. VERIFY MECHANICAL EQUIPMENT, DUCTWORK, PIPING AND CONTROLS EXACT LOCATION PRIOR TO DEMOLITION.
3. MECHANICAL EQUIPMENT DEMOLITION SHALL INCLUDE STRUCTURAL SUPPORT DEMOLITION AND PREPARATION FOR INSTALLATION OF NEW SUPPORT AND EQUIPMENT.

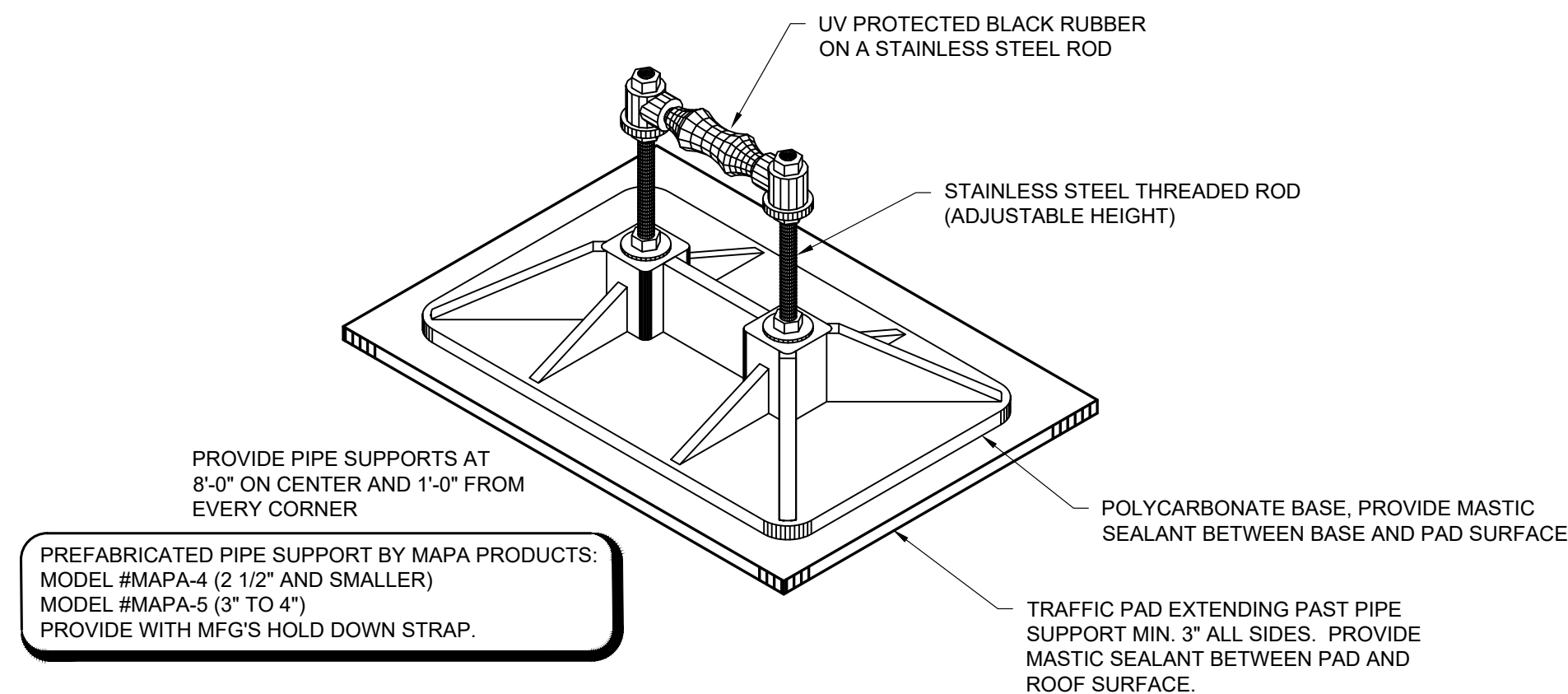
NOTES BY SYMBOL

①	EXISTING HEATING WATER BOILER TO REMAIN.
②	EXISTING HEATING WATER EXPANSION TANK TO REMAIN.
③	EXISTING HEATING WATER AIR SEPARATOR TO REMAIN.
④	REMOVE EXISTING CHILLED WATER PUMP AND ASSOCIATED PIPING/ APPURTENANCES FOR REPLACEMENT UNDER NEW WORK.
⑤	REMOVE EXISTING CHILLED WATER EXPANSION TANK AND ASSOCIATED PIPING AND APPURTENANCES .
⑥	REMOVE EXISTING CHILLED WATER AIR SEPARATOR AND ASSOCIATED PIPING AND APPURTENANCES.
⑦	EXISTING CHILLED WATER PIPING, CONTROLS, VALVES, AND ACCESSORIES SHALL REMAIN EXCEPT WHERE NOTED TO BE REMOVED.
⑧	REMOVE PORTION OF CHILLED WATER RETURN AND TEMPORARILY CAP FOR RECONNECTION. REFER TO 01/M-201 FOR NEW PIPING CONNECTIONS.
⑨	REROUTE EXISTING CHR AS INDICTED.

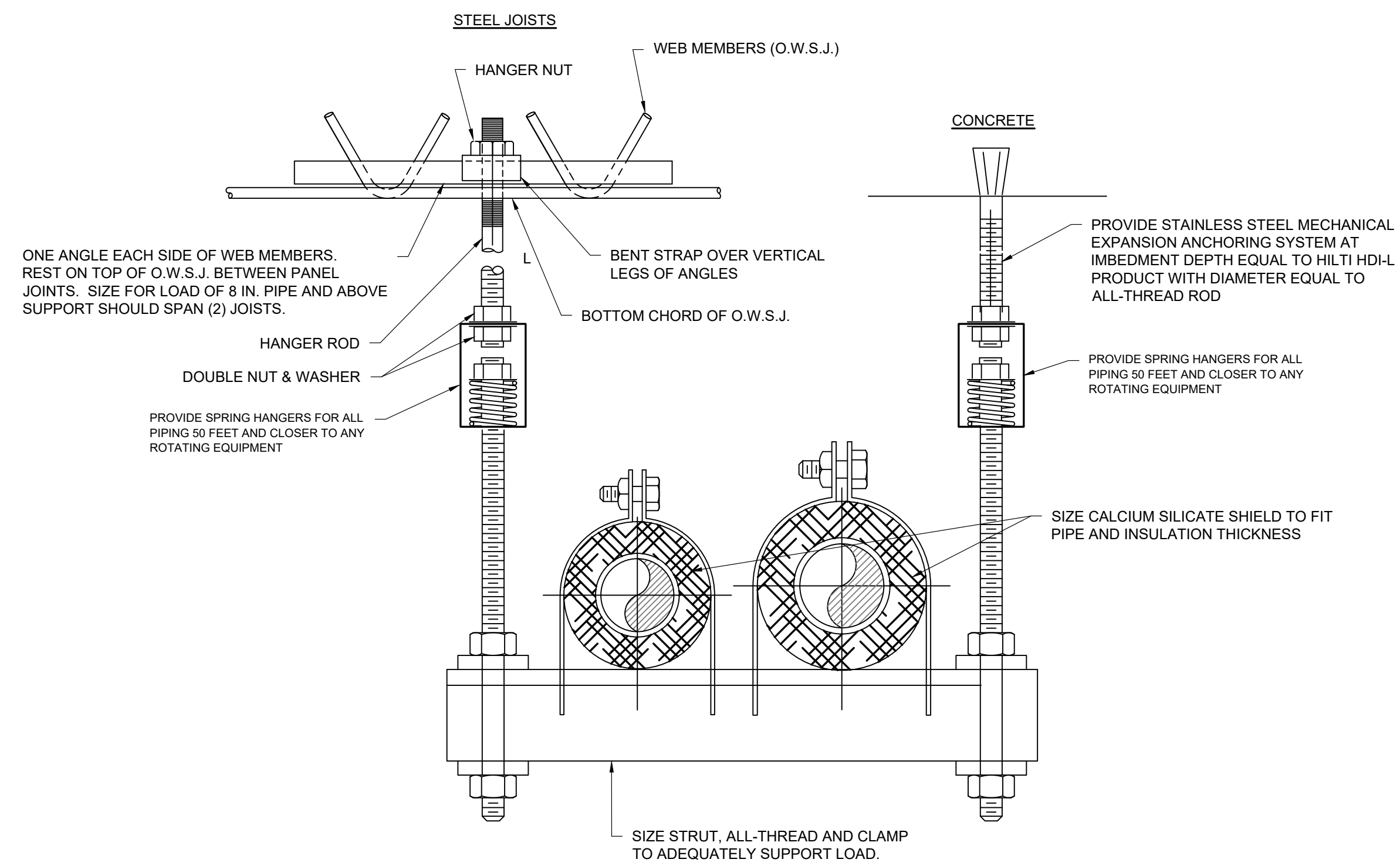




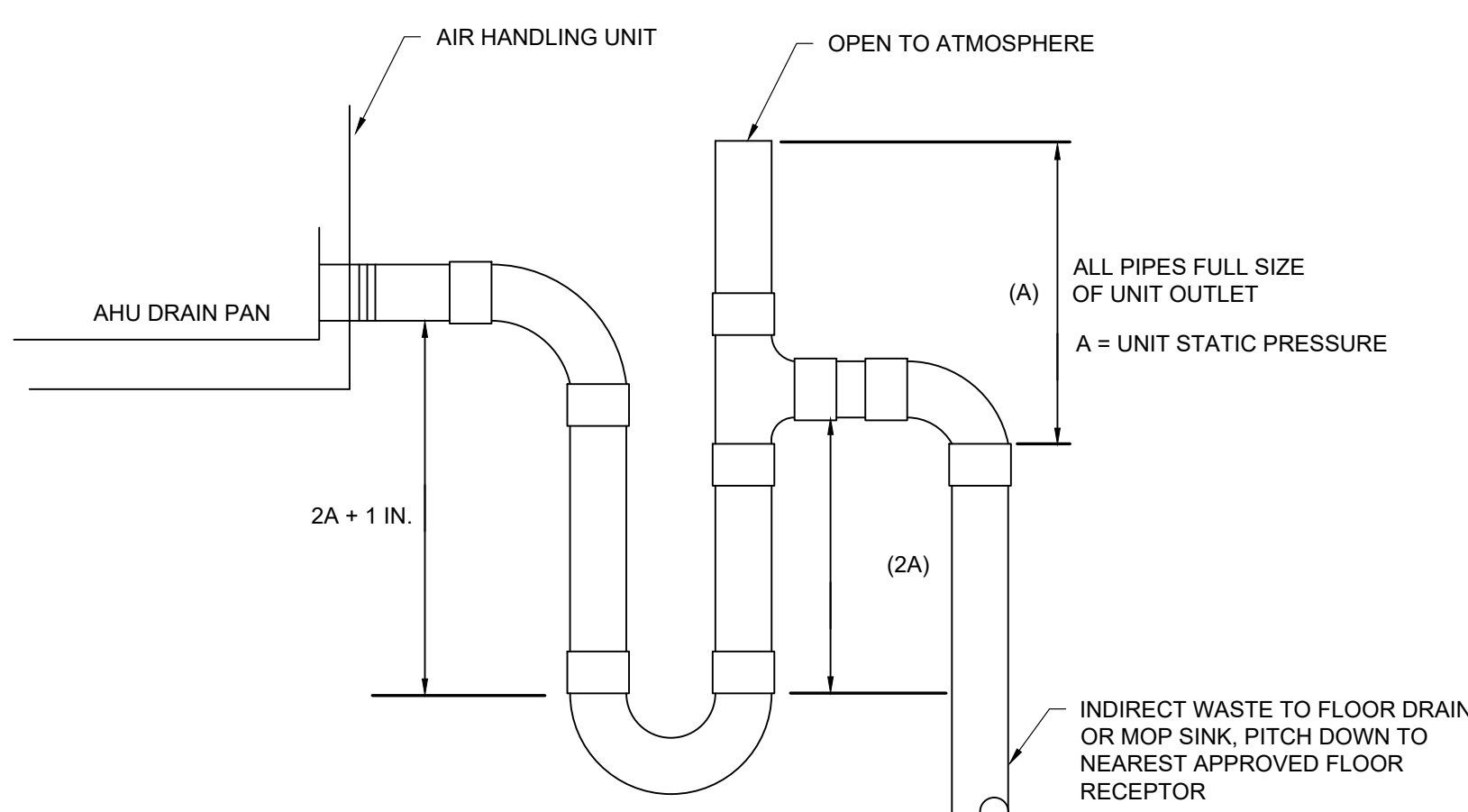
08 OUTDOOR HORIZONTAL UNIT DETAIL
SCALE: NONE



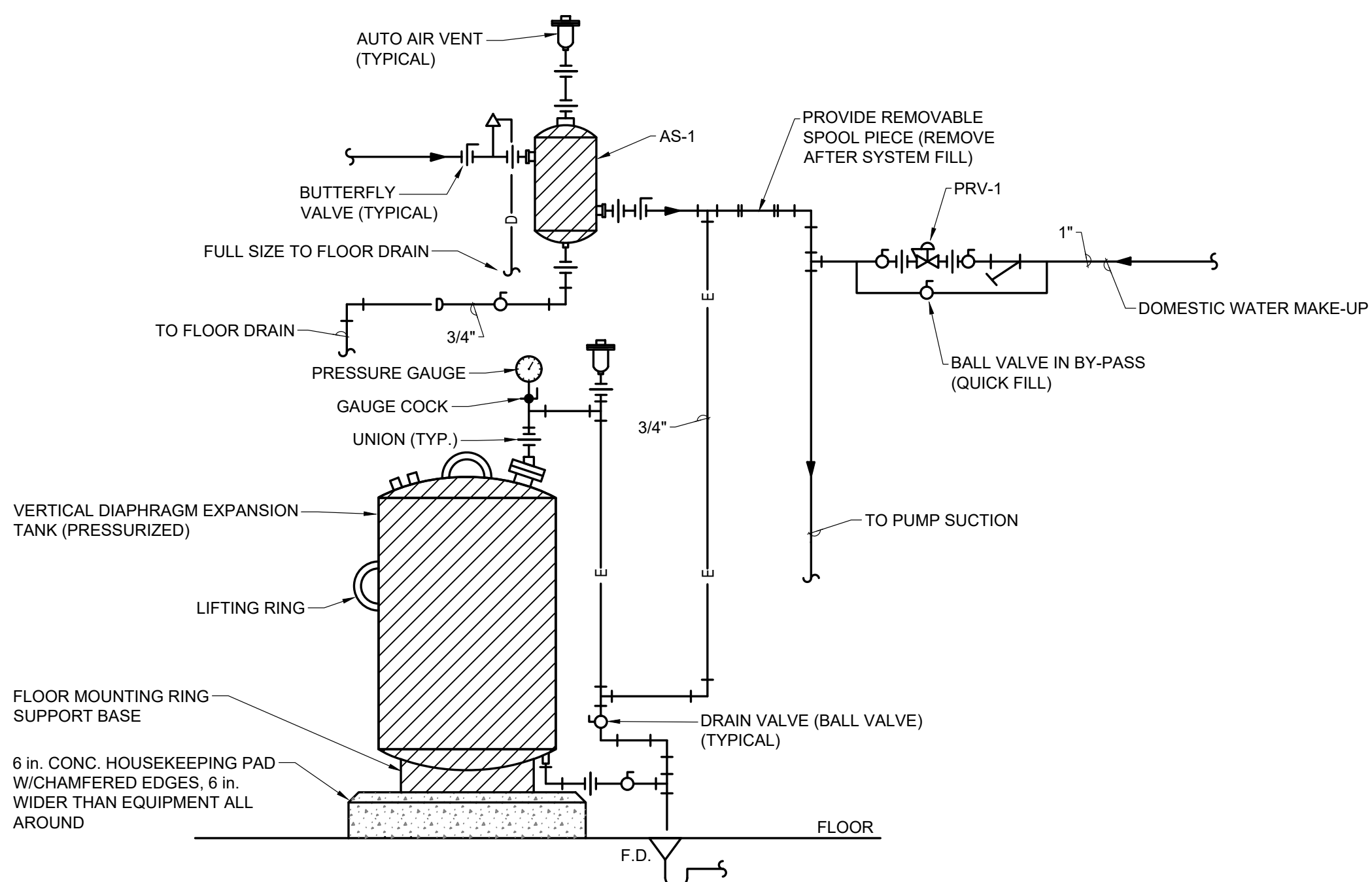
07 ROOF PIPE SUPPORT DETAIL
SCALE: NONE



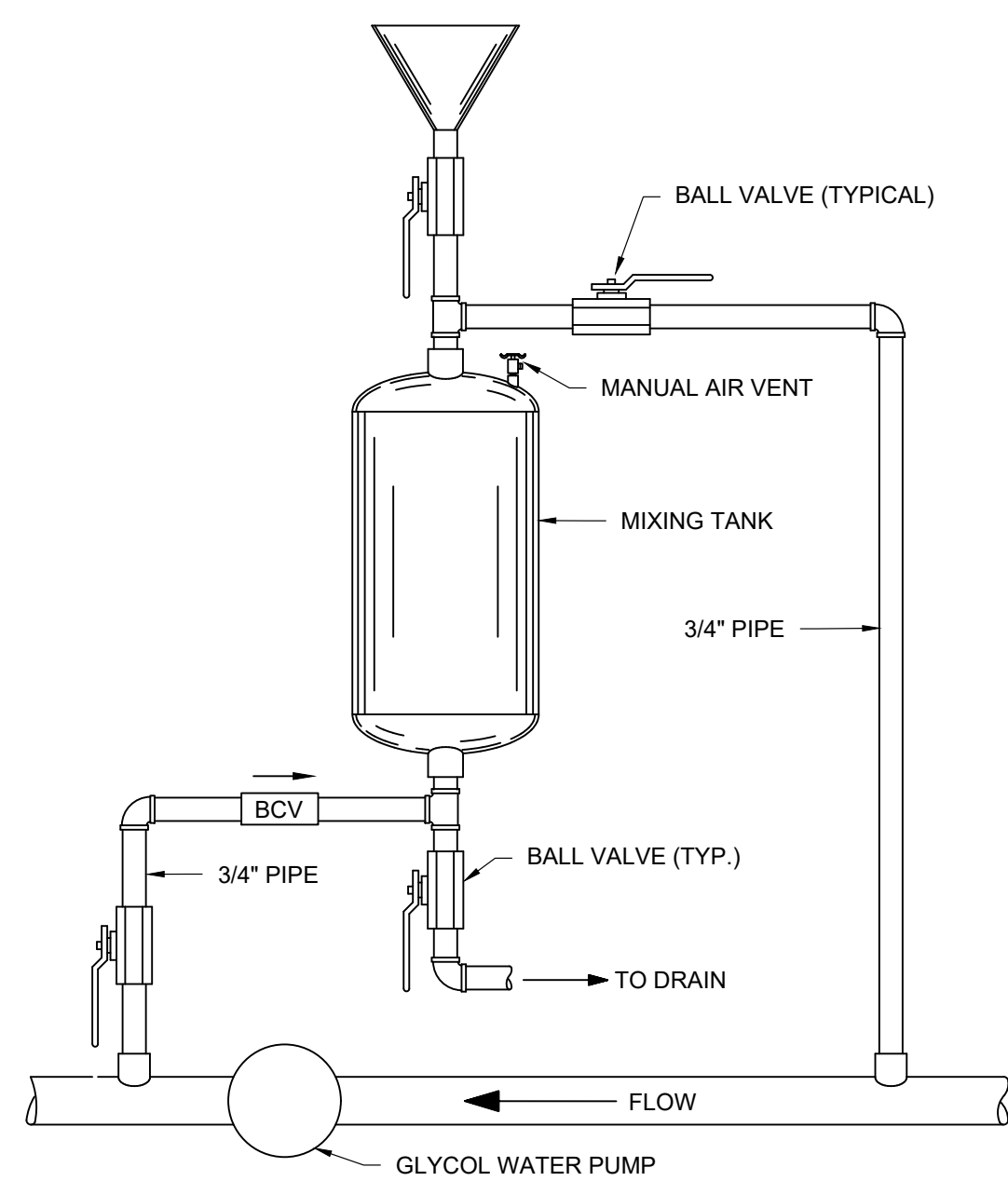
06 STRUT TYPE INSULATED PIPE SUPPORT DETAIL
SCALE: NONE



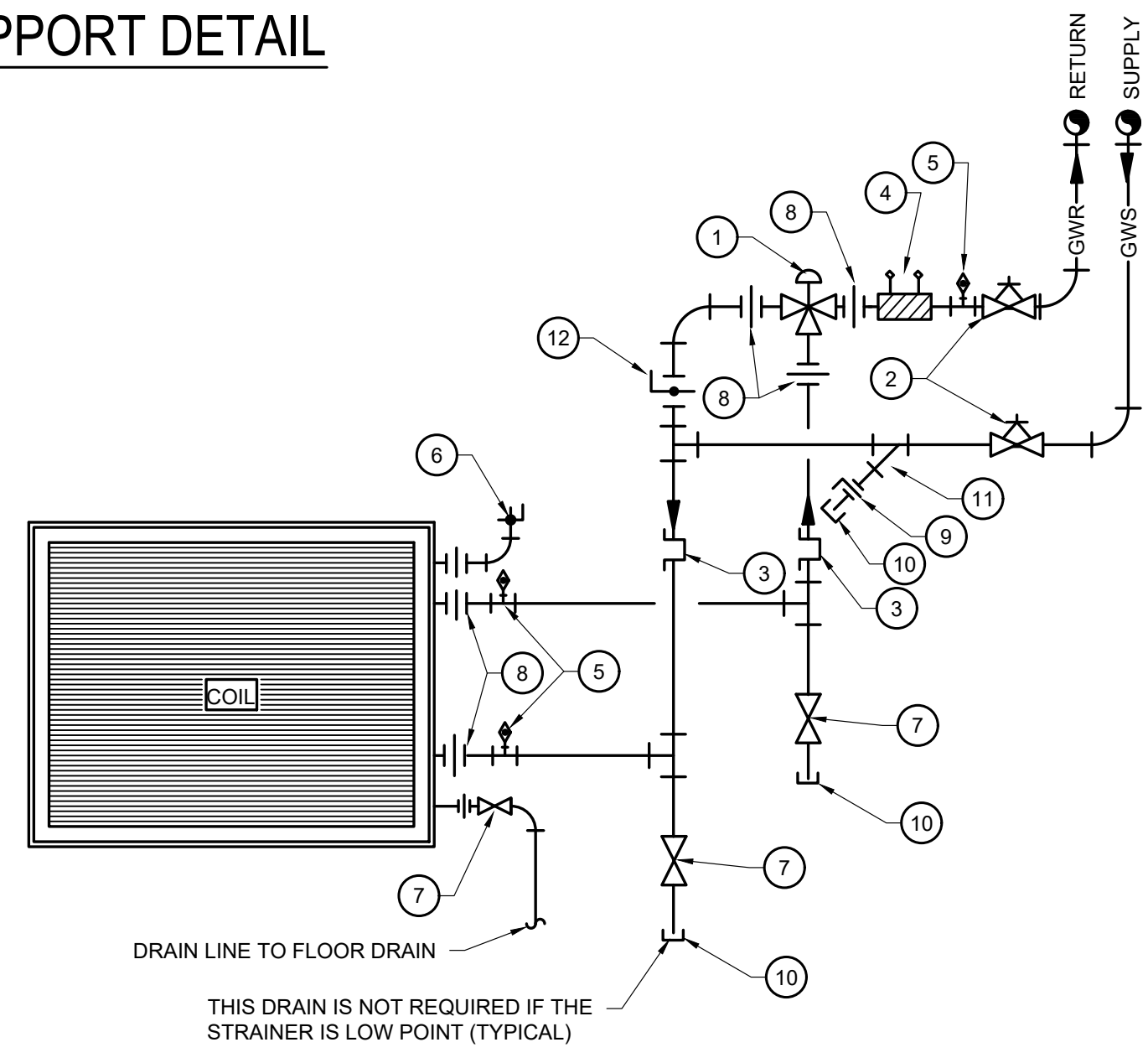
05 CONDENSATE DRAIN DETAIL
SCALE: NONE



04 EXPANSION TANK PIPING CONNECTION DETAIL
SCALE: NONE

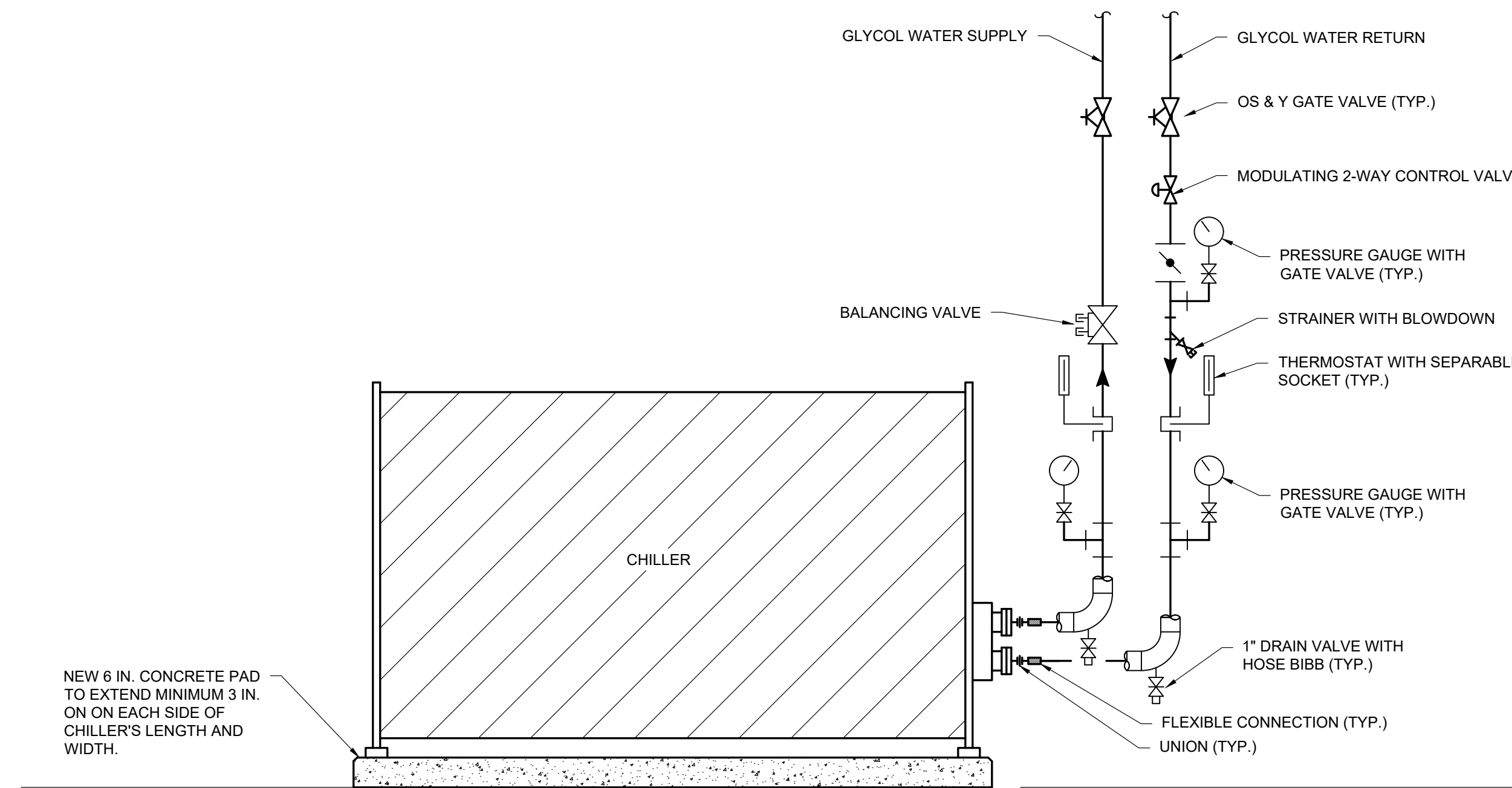


03 CHEMICAL FEEDER DETAIL
SCALE: NONE

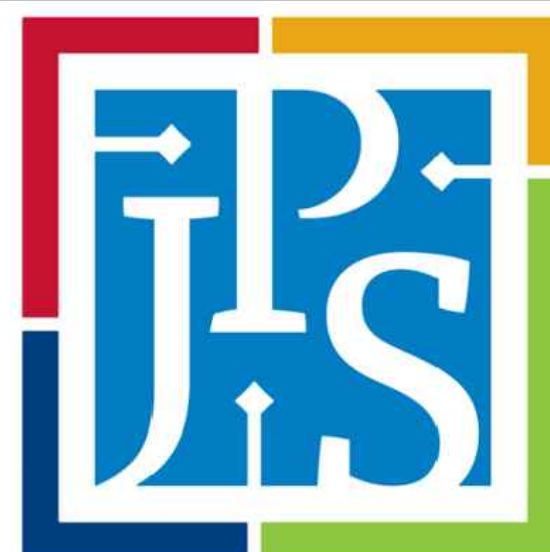


02 GLYCOL WATER COIL WITH 3-WAY VALVE - AHU
SCALE: NONE

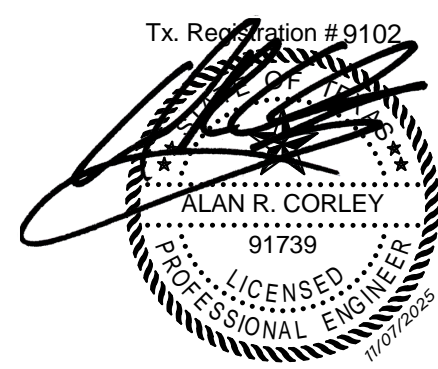
- DETAIL NOTES BY SYMBOL:**
- 1 MODULATING 3-WAY WATER CONTROL VALVE
 - 2 ISOLATION VALVE
 - 3 THERMOMETER WELL
 - 4 PRESSURE INDEPENDENT FLOW CONTROL VALVE
 - 5 PETE'S PLUG
 - 6 MANUAL AIR VENT [NEEDLE VALVE W/PLUG (CAP)] (IF COIL IS NON-AUTO VENTING TYPE)
 - 7 3/4" DRAIN VALVE WHOSE ADAPTER & CAP (IF COIL IS NON-AUTO DRAIN TYPE)
 - 8 UNION
 - 9 BALL VALVE WITH HOSE ADAPTER & CAP
 - 10 REMOVABLE CAP
 - 11 1/2" STRAINER
 - 12 ISOLATION VALVE W/MEMORY STOP (BALANCE)
- GENERAL NOTES:**
- 1. REFER TO PLANS FOR LOCATIONS OF 3-WAY VALVES.
 - 2. ALL COILS SHALL BE PIPED WITH WATER FLOW COUNTER TO AIR FLOW.
 - 3. PIPE COILS WITH PROVISIONS FOR COIL AND FILTER REMOVAL & ACCESS.
 - 4. PIPE DRAINS TO FLOOR DRAINS WHEN IN MECHANICAL ROOMS.
 - 5. PROVIDE FOR AIR VENTS IN ALL HIGH POINTS OF PIPING AND DRAINS IN ALL LOW POINTS.
 - 6. COIL DRAIN TO BE AT LOW POINT OF PIPING SYSTEM.
 - 7. PIPE CONTROL VALVES AND OTHER VALVES WITH STEMS IN THE VERTICAL AND POINT UP.



01 AIR-COOLED CHILLER DETAIL
SCALE: NONE



ISSUES	
1	
2	
3	
4	
5	
REVISIONS	



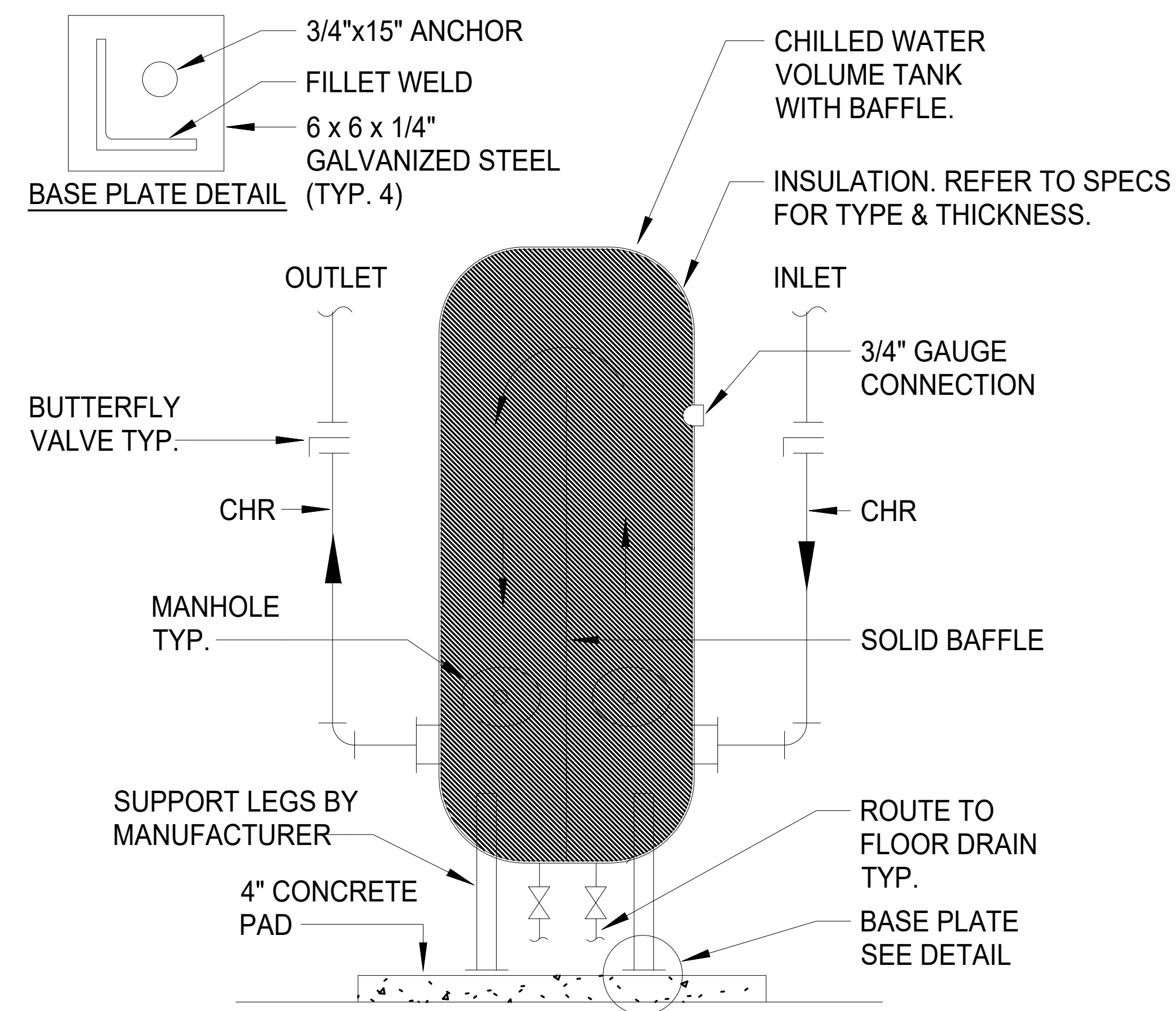
**JPS ARLINGTON SURGERY
OR HVAC REPLACEMENT PROJECT**

**4400 NEW YORK AVE.
ARLINGTON, TX 76018**

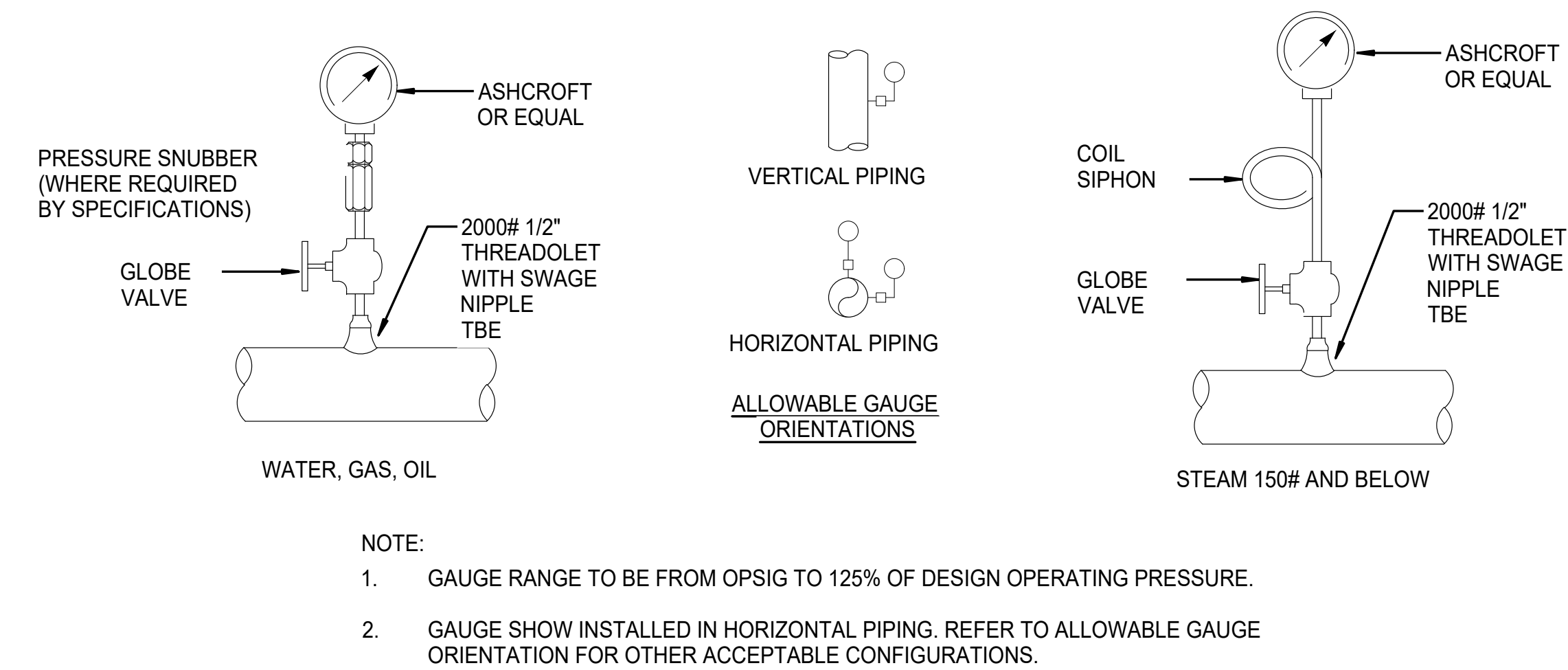
PROJECT #: 05194.09

SHEET TITLE:
MECHANICAL
DETAILS

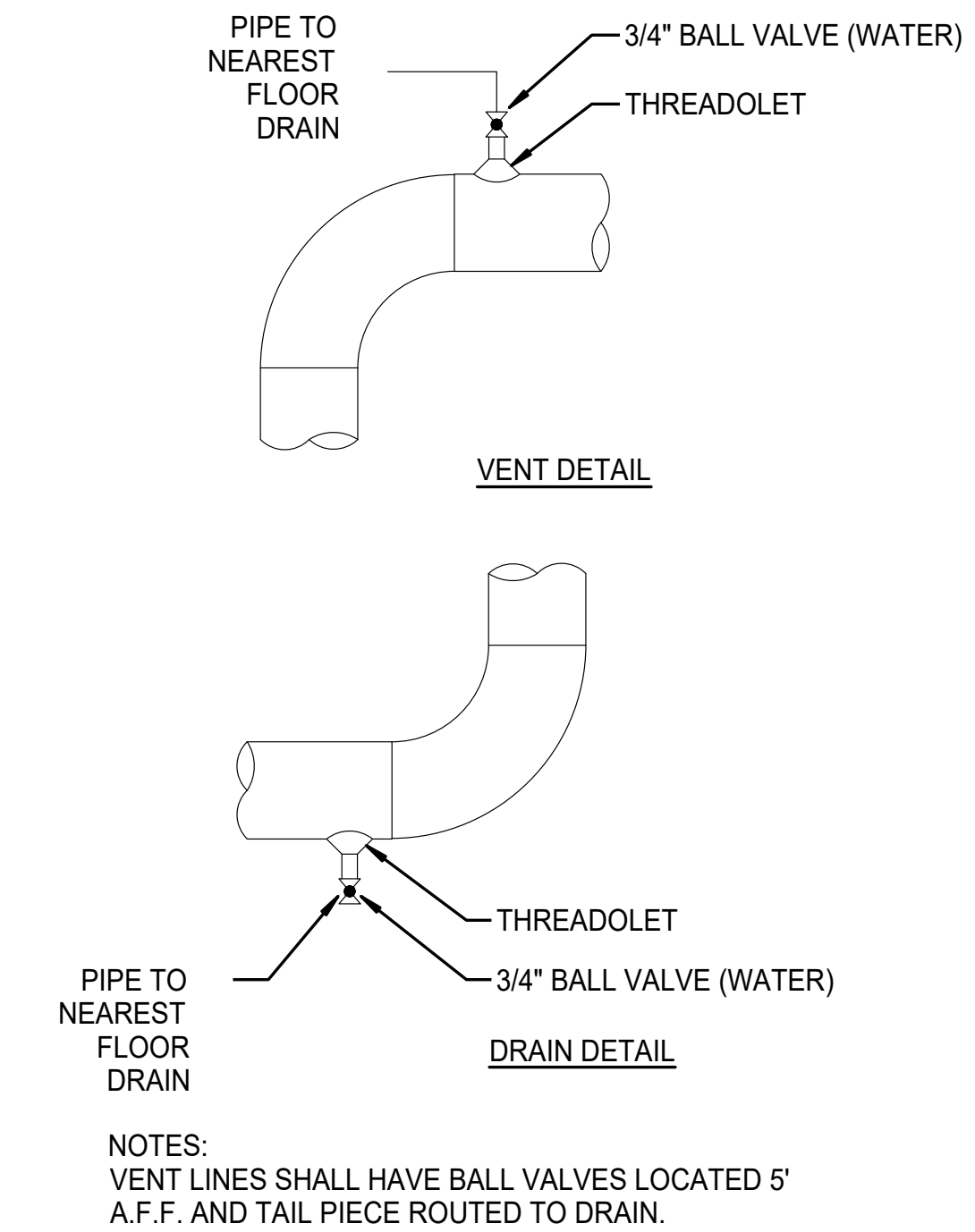
SHEET #:
M-301



06 CHILLED WATER BUFFER TANK DETAIL
SCALE: NONE

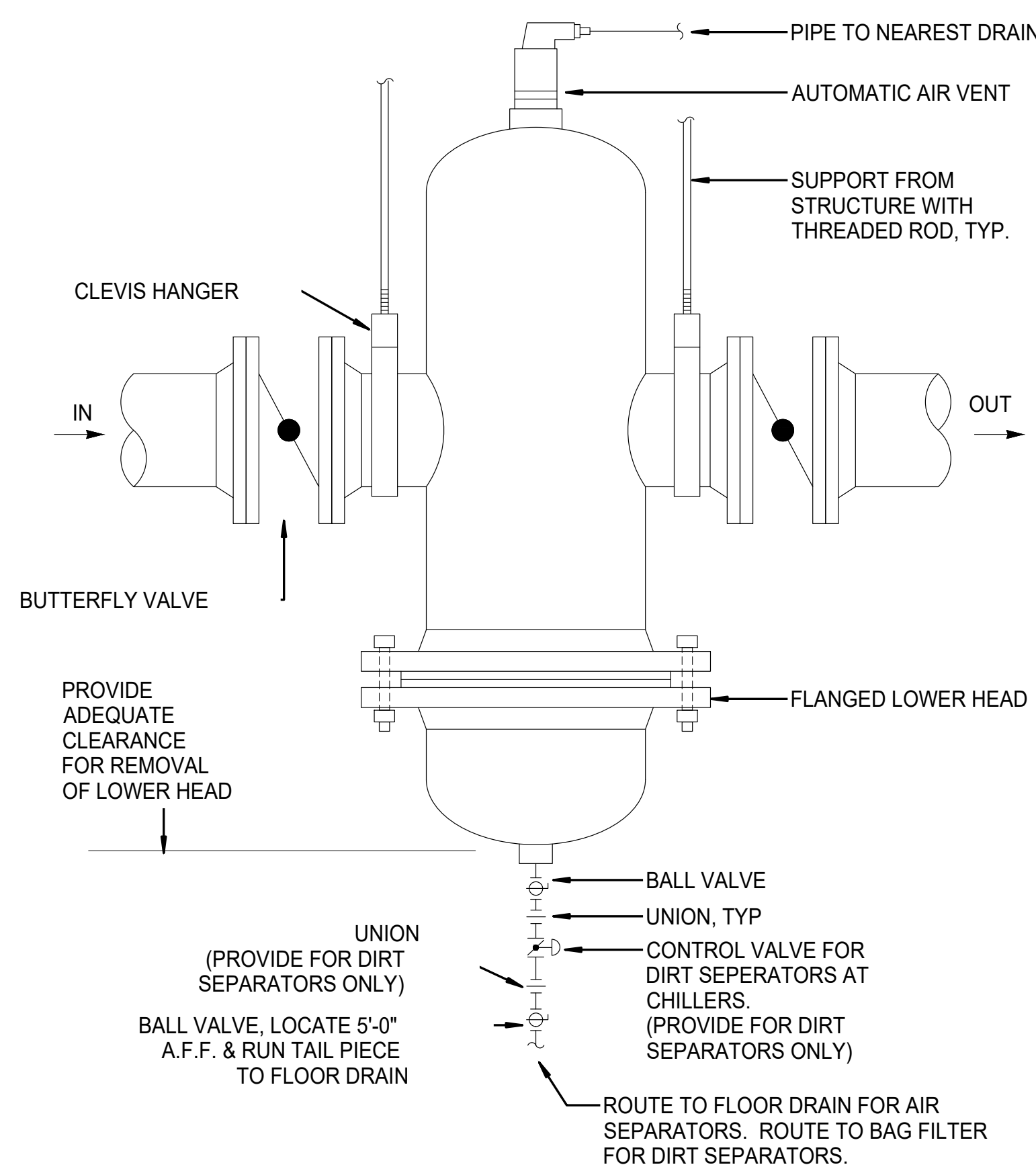


05 PRESSURE GAUGE DETAIL
SCALE: NONE

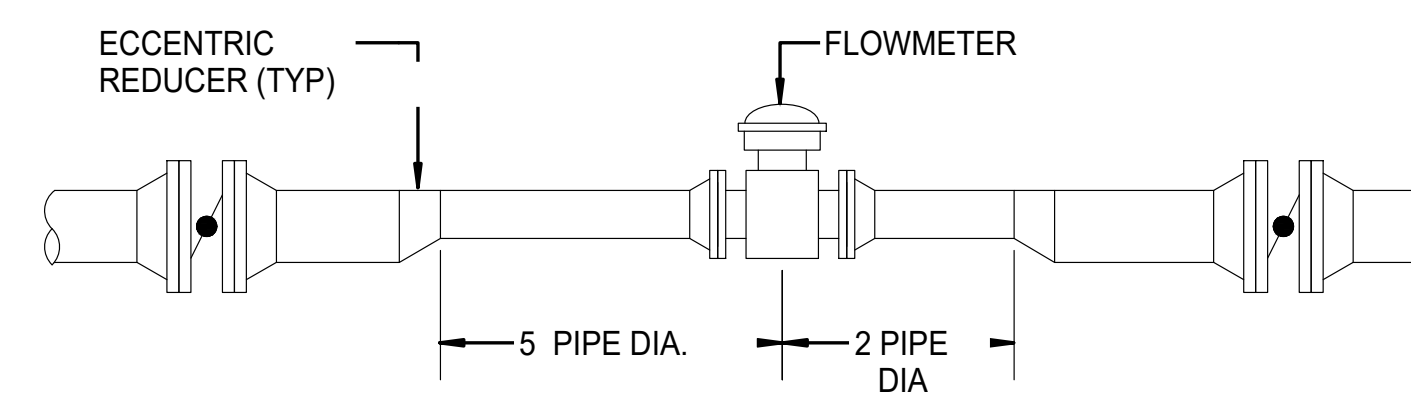


04 DRAIN & VENT DETAIL
SCALE: NONE

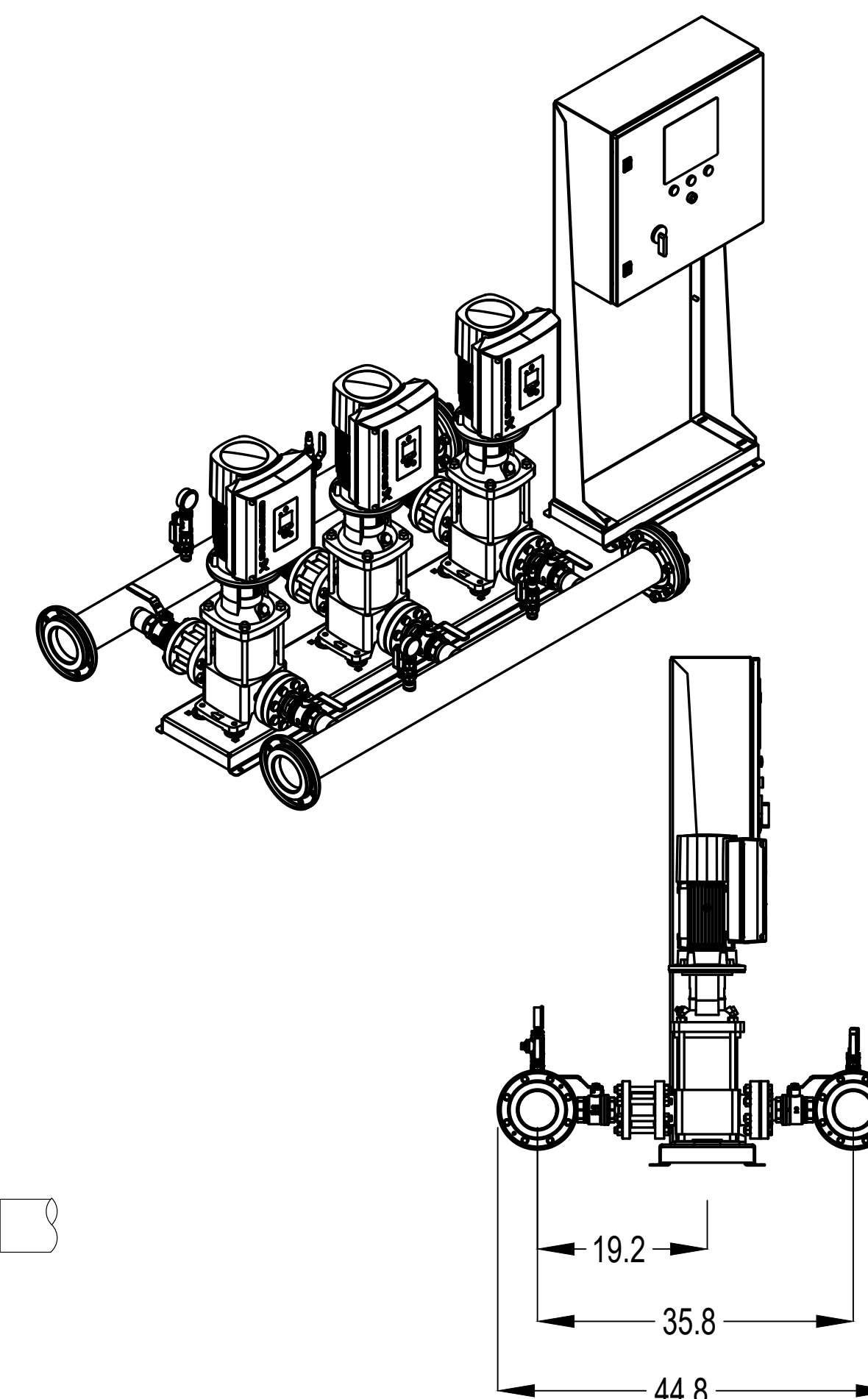
1. Manifolds 4" Class 150 AISI 316SS Schedule 10s ASTM A312 or
 2. Base/Frame AISI 304SS
 3. Standard system layout: panel right facing suction
 4. Full port ball valve ASTM
 5. UL Type 3R/12 rated electrical panel
- Note: panel size will vary with options



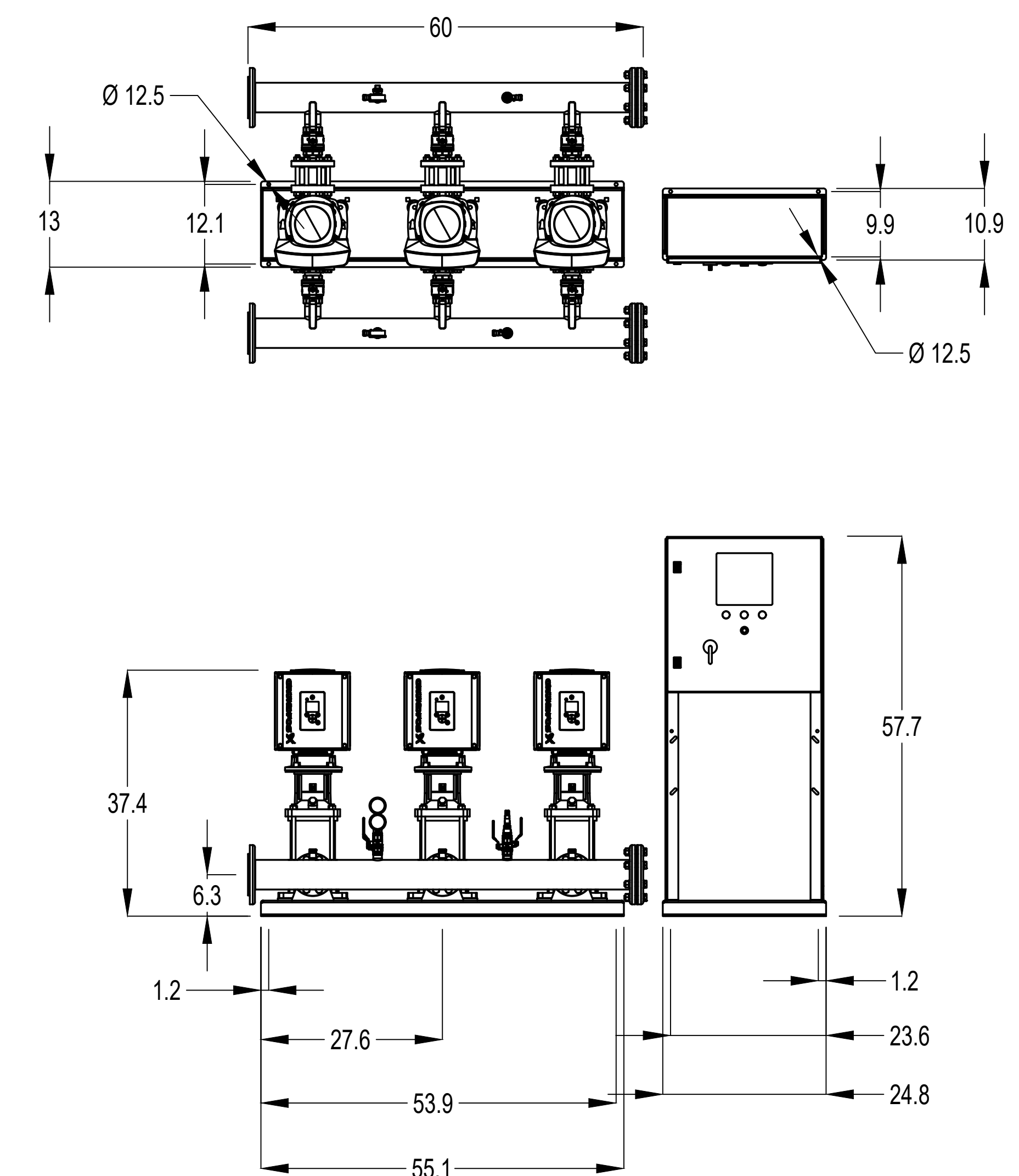
03 AIR/DIRT SEPARATOR DETAIL
SCALE: NONE



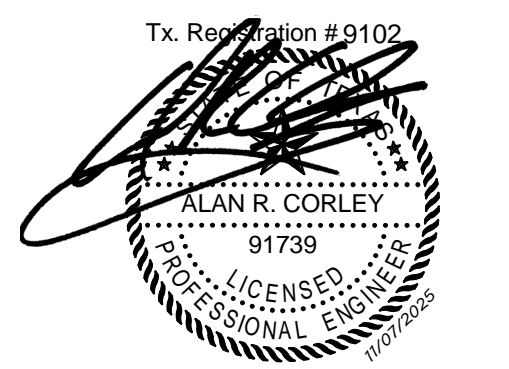
02 FLOW METER DETAIL
SCALE: NONE



01 PUMPING SKID DETAIL
SCALE: NONE



ISSUES
1
2
3
4
5
REVISIONS
1
2
3
4
5



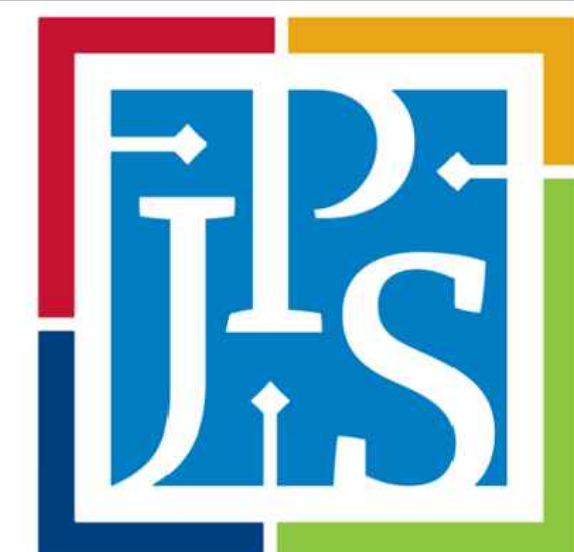
**JPS ARLINGTON SURGERY
OR HVAC REPLACEMENT PROJECT
4400 NEW YORK AVE.
ARLINGTON, TX 76018**

PROJECT #: 05194.09

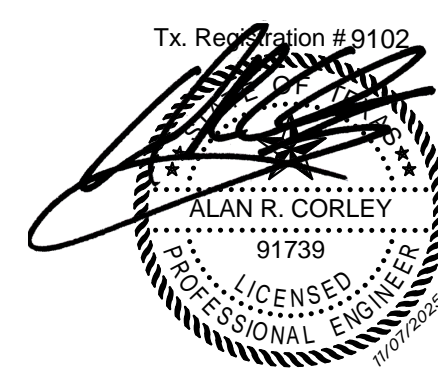
SHEET TITLE:
MECHANICAL
DETAILS

SHEET #:

M-302



ISSUES	
1	
2	
3	
4	
5	
REVISIONS	

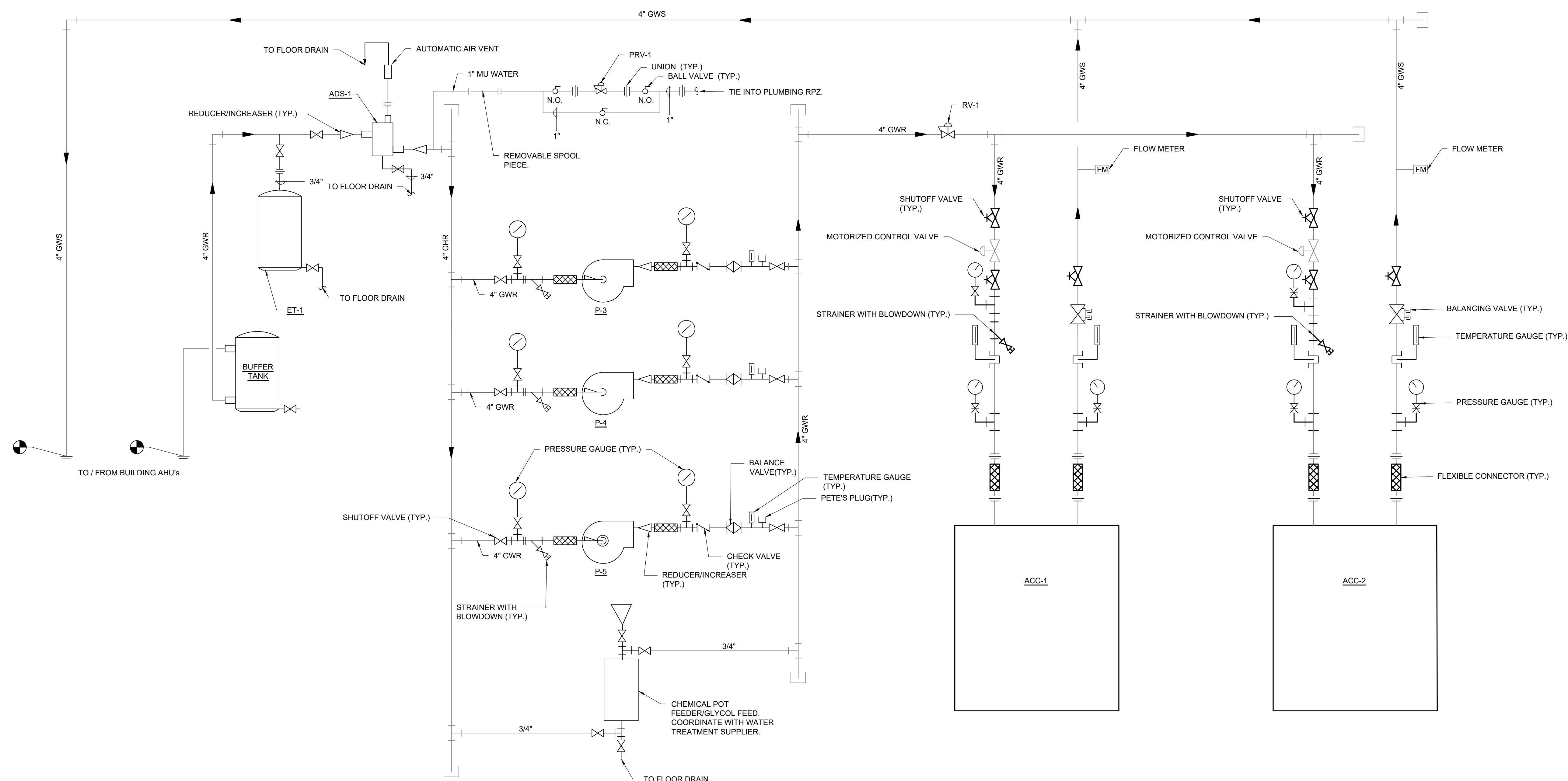


**JPS ARLINGTON SURGERY
OR HVAC REPLACEMENT PROJECT
4400 NEW YORK AVE.
ARLINGTON, TX 76018**

PROJECT #: 05194.09

SHEET TITLE:
MECHANICAL
DETAILS

SHEET #:
M-303



01 GLYCOL WATER PIPING FLOW DIAGRAM
SCALE: NONE

AIR-COOLED CHILLER SCHEDULE		
DESIGNATION	ACC-1	ACC-2
TYPE/REFRIGERANT	R-513A	R-513A
NOMINAL CAPACITY (TONS)	170	170
REFRIGERATION CAPACITY (TONS)	92.6	92.6
30% GLYCOL WATER FLOW (GPM)	237.7	237.7
30% GLYCOL WATER TEMP. IN (°F)	42.0	42.0
30% GLYCOL WATER TEMP. OUT (°F)	32.0	32.0
IPLV	16.83	16.83
EVAPORATOR		
MINIMUM GLYCOL WATER FLOW (GPM)	187	187
MAX. ALLOWABLE FOULING FACTOR (HR · SQ.FT. · °F / BTU)	0.000100	0.000100
WATER PD (FT H2O)	10.4	10.4
CONDENSER FAN(S)		
EDB CONDENSER AIR TEMPERATURE (°F)	115	115
NUMBER OF CONDENSER FAN	12	12
FAN POWER (KW)	10.69	10.69
COMPRESSOR		
COMPRESSOR TYPE	SCREW	SCREW
NUMBER OF COMPRESSORS	2	2
COMPRESSOR RLA EA (AMPS)	136	136
COMPRESSOR STARTER	VFD	VFD
UNIT ELECTRICAL DATA		
VOLTAGE/PHASE/HERTZ	460 / 3 / 60	460 / 3 / 60
UNIT POWER (KW)	179.0	179.0
MCA (AMPS)	321	321
MOCP (AMPS)	450	450
SHORT CIRCUIT CURRENT RATING (AMPS)	65,000	65,000
REFRIGERANT CHARGE		
NUMBER OF CIRCUITS	2	2
REFRIGERANT CHARGE PER CIRCUIT (LBS)	111.1 / 99.0	111.1 / 99.0
PHYSICAL DATA:		
DIMENSIONS L x W x H (INCH)	274 x 87 x 98	274 x 87 x 98
OPERATING WEIGHT (LBS)	10,200	10,200
MANUFACTURER	TRANE	TRANE
MODEL NUMBER	RTAF-170EU	RTAF-170EU
NOTES:		
1. PROVIDE CHILLER WITH STRUCTURAL HOUSEKEEPING PAD MINIMUM 6 INCH THICK AND MINIMUM 3 INCH LARGER THAN MOUNTED EQUIPMENT ON ALL SIDES.		
2. PROVIDE WIDE AMBIENT OPERATION RANGE (0-125 DEG).		
3. PROVIDE AN AHRI CERTIFIED FACTORY PERFORMANCE AND SOUND TEST AT DESIGN CONDITIONS.		
4. PROVIDE FACTORY INSTALLED PROOF-OF-FLOW (FLOW SWITCH).		
5. PROVIDE FACTORY INSTALLED STRAINER WITH BLOW-DOWN.		
6. PROVIDE FACTORY INSTALLED EVAPORATOR HEATER FOR FREEZE PROTECTION. 120V CIRCUIT REQUIRED.		
7. MANUFACTURER SHALL PROVIDE FACTORY START-UP OF THE UNIT.		
8. PROVIDE FACTORY MOUNTED, LOUVERED, GUARD PANELS.		
9. COMPLIANT WITH ASHRAE 90.1-2019.		
10. CHILLER EQUIPPED WITH ISOLATION VALVES TO STORE ENTIRE REFRIGERANT CHARGE IN CONDENSER OR PROVIDE RSR FOR ENTIRE REFRIGERANT CHARGE.		
11. CHILLER SHALL BE A HIGH EFFICIENCY.		
12. PROVIDE WITH SINGLE POINT OF ELECTRICAL POWER CONNECTION.		
13. DISCONNECT PROVIDED BY ELECTRICAL CONTRACTOR.		
14. COOLING MEDIUM IS 30% GLYCOL AND 70% WATER.		
15. CONTRACTOR SHALL PROVIDE A PLENUM RATED CURB. CONTRACTOR TO VERIFY REQUIREMENTS OF CURB AND UNIT ATTACHMENT PRIOR TO BIDDING. NEW UNITS HAVE A LARGER FOOTPRINT THAN THE EXISTING UNITS.		
16. CONTRACTOR TO PROVIDE PRE-MANUFACTURED STAIRS TO ACCESS THE VESTIBULE. FIELD VERIFY THE EXACT REQUIREMENTS.		

PUMP SKID SCHEDULE		
DESIGNATION	CWP-4, 5,6	
SERVICE	30% GLYCOL CHW	
TYPE	VERTICAL MULTI-STAGE	
QUANTITY OF PUMPS	2 ACTIVE + 1 STANDBY	
GPM	237.7	
HEAD (FT)	100.0	
FULL LOAD EFFICIENCY, %	67.26	
RPM	3600	
MANIFOLD SIZE (IN)	4	
IMPELLER SIZE (IN)	FULL SIZE	
MAXIMUM PRESSURE (PSI)	67.55	
WEIGHT (LBS)	850	
HP	(3) 7.5	
VOLTAGE/HZ/PHASE	460 / 60 / 3	
DRIVE	DIRECT	
MANUFACTURER	GRUNDFOS	
PUMP MODEL	DELTA HCU CRE 20-3	
NOTES:		
1. PROVIDE A PRE-MANUFACTURED (BY PUMP MANUFACTURER) ENCLOSURE FOR PUMPING SKID, EXPANSION TANK, AID SEPARATOR, GLYCOL FILL STATION, AND CHEMICAL SHOT FEEDER. ENCLOSURE SHALL BE PRE-PIPED AND READY FOR CONNECT ON THE EXTERIOR OF THE ENCLOSURE, INCLUDING MAKEUP WATER.		
2. INSULATE ALL PIPING AND EQUIPMENT PER SPECIFICATIONS.		
3. PROVIDE 6" CONCRETE HOUSEKEEPING PAD FOR THE ENCLOSURE TO SIT ON. PROVIDE 6" EXTRA ON EACH SIDE OF ENCLOSURE.		
4. COOLING MEDIUM IS 30% GLYCOL AND 70% WATER.		
5. CONTRACTOR TO INSULATE ENCLOSURE WALLS. MIN. R-16.		
6. ENCLOSURE SHALL BE PROVIDED BY THE MANUFACTURER WITH A 2-TON PACKAGED AHU FOR HEATING AND COOLING.		

HYDRONIC RELIEF VALVE SCHEDULE	
DESIGNATION	RV-1
SERVES	GLYCOL WATER SYSTEM
LOCATION	PUMP HOUSE
SET PRESSURE (PSI)	105
CAPACITY (MBH)	2,070
INLET/OUTLET SIZE (IN)	3/4" / 3/4"
MANUFACTURER	WATTS
MODEL	LF
NOTES:	

GENERAL NOTE: ALL REFERENCES TO GLYCOL REFER TO PROPYLENE GLYCOL.

BUFFER TANK SCHEDULE

DESIGNATION	BT-1
SERVICE	GLYCOL WATER SYSTEM
TYPE	VERTICAL
TANK VOLUME (GAL.)	250
CONNECTION SIZE	4"
SHELL MATERIAL	CARBON STEEL
MAX. PRESSURE (PSIG)	125
MAX. TEMPERATURE (DEG. F)	450
ASME SECTION VIII. DIV. I	YES
FLOODED WEIGHT (LBS)	760
MANUFACTURER	WESSELS
SERIES	CBT-250
NOTES:	
1. ASME CERTIFIED.	
2. TANK SHALL BE PRIMER PAINTED.	
3. SYSTEM CONNECTIONS MATERIAL - FORGED STEEL.	
4. CONTRACTOR TO PROVIDE HOUSEKEEPING PAD FOR TANK.	
5. COOLING MEDIUM IS 30% GLYCOL AND 70% WATER.	

AIR/DIRT SEPARATOR SCHEDULE	
DESIGNATION	ADS-1
SERVICE	GLYCOL WATER SYSTEM
TOTAL SYSTEM FLOW (GPM)	237.7
SHELL MATERIAL	CARBON STEEL
MAX. PRESSURE (PSIG)	175
MAX. TEMP. (DEG. F)	375
PRESSURE DROP (FT H2O)	4
ASME SECTION VIII. DIV. I	YES
CONNECTION SIZE (INCH)	4
WEIGHT (LBS)	250
MANUFACTURER	GRUNDFOS
SERIES	GBHR
MODEL NO.	GBHR-040-W
NOTES:	
1. REFER TO SPECIFICATIONS & DETAILS FOR ADDITIONAL REQUIREMENTS.	
2. ASME CERTIFIED.	
3. PROVIDE WITH REMOVABLE HEAD.	
4. COOLING MEDIUM IS 30% GLYCOL AND 70% WATER.	

EXPANSION TANK SCHEDULE	
DESIGNATION	ET-1
SERVICE	GLYCOL WATER SYSTEM
TYPE	REMOVABLE BLADDER
TANK VOLUME (GAL.)	23
ACCEPTANCE VOLUME (GAL.)	23
SHELL MATERIAL	CARBON STEEL
MAX. PRESSURE (PSIG)	150
MAX. TEMPERATURE (DEG. F)	240
ASME SECTION VIII. DIV. I	YES
FLOODED WEIGHT (LBS)	135
MANUFACTURER	GRUNDFOS
SERIES	GNLA-85
NOTES:	
1. FULL ACCEPTANCE BLADDER TYPE.	
2. ASME CERTIFIED.	
3. DIAPHRAGM MATERIAL - HEAVY DUTY BUTYL RUBBER.	
4. SYSTEM CONNECTIONS MATERIAL - FORGED STEEL.	
5. COOLING MEDIUM IS 30% GLYCOL AND 70% WATER.	

HYDRONIC PRESSURE REDUCING VALVE SCHEDULE

DESIGNATION	PRV-1
SERVES	GLYCOL WATER SYSTEM
LOCATION	MECHANICAL ROOM
SET PRESSURE (PSI)	15.8
SIZE (IN)	1"
MANUFACTURER	WATTS
MODEL	LFU5B
NOTES:	

AIR HANDLING UNIT SCHEDULE

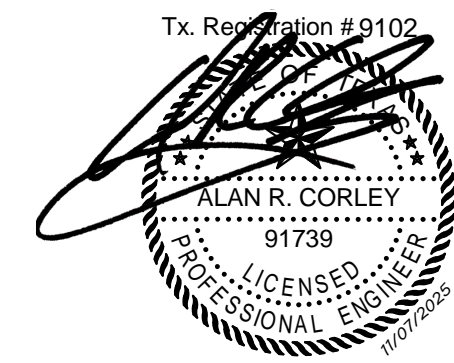
DESIGNATION	AHU-04	AHU-05
DESCRIPTION	CUSTOM ROOF MOUNTED VAV W/ VESTIBULE	CUSTOM ROOF MOUNTED VAV W/ VESTIBULE
AREA SERVED	OPERATING ROOMS	OPERATING ROOMS
LOCATION	ROOF	ROOF
TYPE	WATER COOLED	WATER COOLED
TOTAL CFM	10,000	7,000
DESIGN O/A CFM	2,000	1,400
SUPPLY FAN		
TYPE	PLENUM FAN ARRAY W/ VFD PER FAN	PLENUM FAN ARRAY W/ VFD PER FAN
ESP (IN. WG)	3.0	3.0
TSP (IN. WG)	6.85	5.67
FAN RPM	4,404	3,978
TOTAL BHP	16.52	9.80
FAN QTY	4 (N-1)	4 (N-1)
DRIVE	DIRECT	DIRECT
EXHAUST FAN		
TYPE	PLENUM FAN ARRAY W/ VFD PER FAN	PLENUM FAN ARRAY W/ VFD PER FAN
ESP (IN. WG)	1.5	1.5
TSP (IN. WG)	2.04	1.76
FAN RPM	1,669	3,096
TOTAL BHP	4.94	4.19
FAN QTY	4 (N-1)	4 (N-1)
DRIVE	DIRECT	DIRECT
COOLING COIL		
COIL CFM	10,000	7,000
TOTAL CAPACITY (MBH)	652.517	457.973
SENS. CAPACITY (MBH)	400.662	280.714
MAX. FACE VELOC. (FPM)	516	336
ROWS/PPF	8 / 12	6 / 12
EAT DBWB (°F)	80.0	80.0
LAT DBWB (°F)	67.0	67.0
AIR PD (IN. WG)	1.12	0.46
EWI (°F)	32.0	32.0
MIN. LWT (°F)	42.0	42.0
GPM	136.61	95.63
WATER PD (FT H2O)	12.36	12.78
FILTERS		
PREFILTER MEDIA	2" - MERV-A13 PLEATED	2" - MERV-A13 PLEATED
EFFICIENCY	90%	90%
MID-LIFE DIRTY (IN.)	0.895	0.895
FINAL FILTER MEDIA (AFTER SUPPLY FAN)	15"-MERV-A15 BAG	15"-MERV-A15 BAG
EFFICIENCY	95%	95%
MID-LIFE DIRTY (IN.)	0.95	0.95
MAX. VEL. (FPM)	350	350
ELECTRICAL		
UNIT VOLTS/HERTZ/PHASE	480 / 60 / 3	480 / 60 / 3
SUPPLY FAN ARRAY CIRCUIT		
FLA (PER VFD W/ VFD PER FAN)	4.8	4.8
MAX FUSE SIZE	--	--
RETURN FAN ARRAY CIRCUIT		
FLA / MOCP	50.14 / 50.0	38.94 / 40.0
MAX FUSE SIZE	--	--
DIMENSIONS LxWxH (IN.)	394 x 141 x 88	394 x 141 x 88
WEIGHT (LBS)	19,500	19,000
MANUFACTURER	CLIMATE CRAFT	CLIMATE CRAFT
MODEL	CAH78X66E	CAH78X66E
NOTES:		
1. PROVIDE WITH VFD PER FAN. VFD PROVIDED BY MANUFACTURER.		
2. CONTRACTOR TO PROVIDE 3-WAY CHILLED WATER VALVES.		
3. CONTRACTOR TO PROVIDE 3 SMOKE DETECTORS PER UNIT.		
4. PROVIDE WITH FULL ENTHALPY ECONOMIZER.		
5. CONTRACTOR TO PROVIDE DDC CONTROLS TO INTERFACE WITH BMS.		
6. MANUFACTURER TO PROVIDE A CHANNEL BLENDER IN THE MIXING BOX.		
7. PROVIDE A 6" WIDE SERVICE VESTIBULE THE ENTIRE LENGTH OF THE UNIT.		
8. MANUFACTURER TO PROVIDE UNISTRUT IN VESTIBULE TO SUPPORT HUMIDIFIER GENERATOR.		
9. PROVIDE UNIT WITH A HUMIDIFIER SECTION DOWNSTREAM OF FINAL FILTERS.		
10. COOLING MEDIUM IS 30% GLYCOL AND 70% WATER.		
11. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.		



511 E John Carpenter Fwy
Suite 250
Irving, TX 75062
Bandt-Engineers.com
Registration No. 9102



1	ISSUES
2	
3	
4	
5	REVISIONS
6	
7	
8	
9	



JPS ARLINGTON SURGERY
OR HVAC REPLACEMENT PROJECT
4400 NEW YORK AVE.
ARLINGTON, TX 76018

PROJECT #: 05194.09

SHEET TITLE:

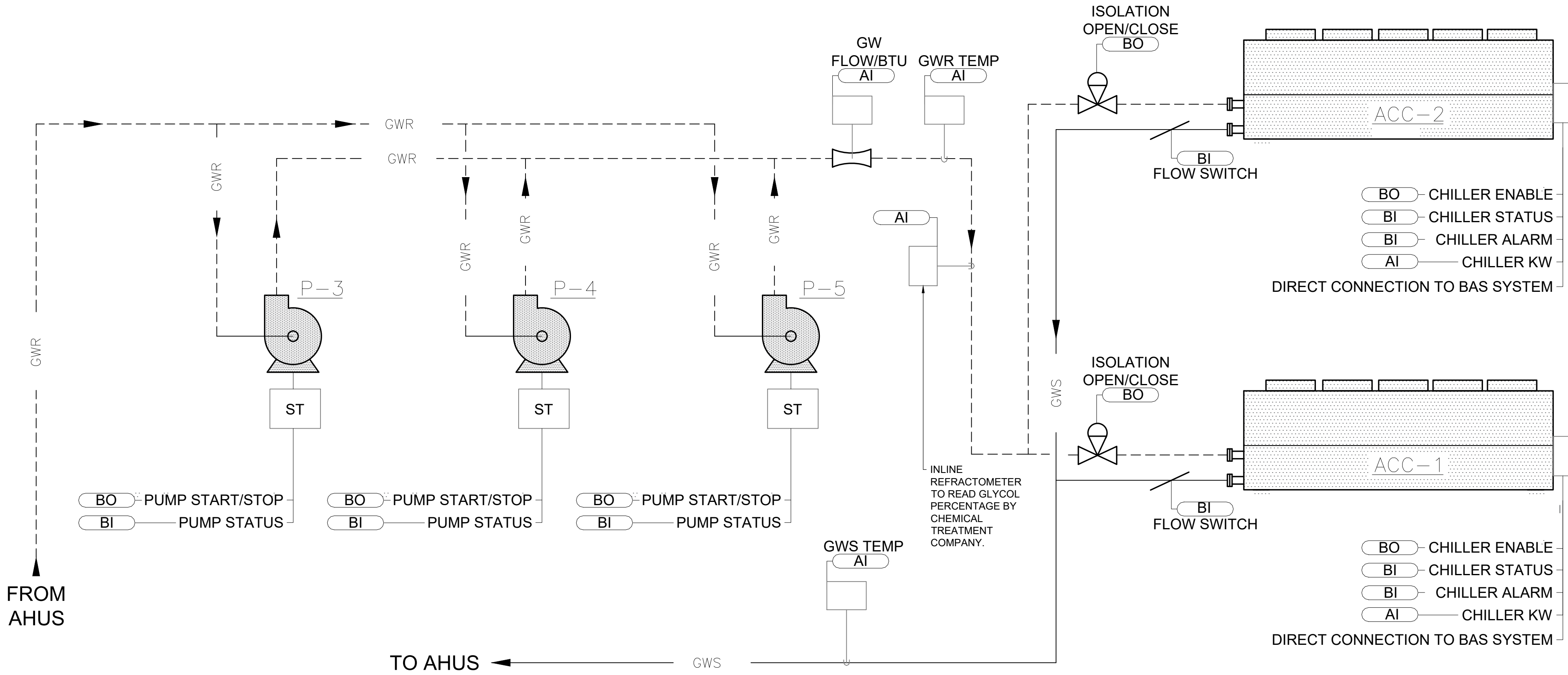
MECHANICAL
SCHEDULES

SHEET #:

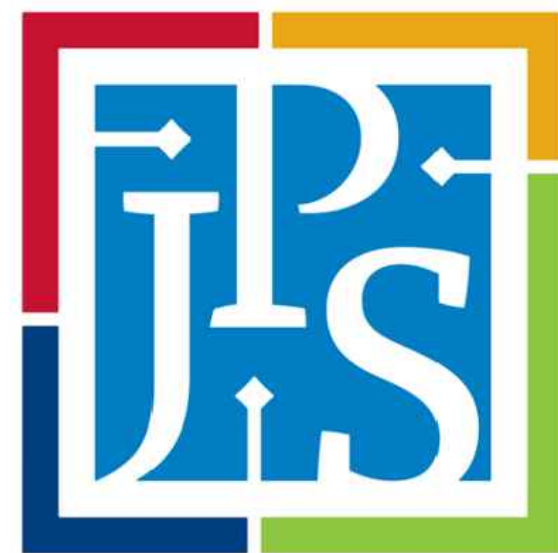
M-401

SEQUENCE OF OPERATION	
GLYCOL WATER SYSTEM	
A. New chilled water system includes two chillers, chilled water pumping skid (3 pumps), pump controller, and system controls. Existing chilled water system controls shall be upgraded, in order to perform sequence of operation as described below. New controls shall be BacNet compatible and be able of integrating into existing Building Automation System (BAS) and into future campus-wide Johnson control sys.	H. Alarm setpoints - Alarm signal shall be sent to BAS and chiller(s) shall be de-energized if one of the following conditions occur: 1. Chiller internal safeties are activated. 2. Chiller is commanded ON, but status is OFF. 3. Chiller is commanded OFF, but status is ON. 4. Chiller supply water temperature is greater than 36 deg. F (adj.). 5. Chiller supply water temperature is less than 28 deg. F (adj.). 6. Chilled water return temperature is greater than 50 deg. F (adj.). 7. Chilled water pump is commanded ON, but status is OFF. 8. Chilled water pump is commanded OFF, but status is ON. 9. Water flow through chiller is less than chiller minimum flow of 825 gpm. Confirm with chiller manufacturer. 10. If a chiller is operating and there is no flow as indicated by its associated flow switch.
B. Chiller(s) shall be controlled and monitored by a factory-provided stand-alone chiller control panel compatible with campus-wide building automation system (BAS). Existing chilled water system control software residing on Central Computer Workstation Central Plant shall be upgraded as required by this sequence of operation. All chiller control points listed in the control sequence shall be able to be remotely monitored and adjusted at the BAS workstation. Chillers and pumps are designed to be one run, one standby at all times.	I. Failure positions - When BAS component or power failure occurs: 1. Pumps shall remain at the last commanded state. 2. Chiller shall remain at the last commanded state. 3. Valves shall remain at the last commanded position.
C. System Off - When the system is off: 1. The chilled water and condenser water pumps shall be off. 2. The chillers shall be disabled. 3. The chillers' isolation valves shall be closed. 4. All control loops shall be disabled.	K. Indicate the following on the operator's workstation display terminal: 1. DDC system graphic. 2. DDC system status, ON/OFF. 3. Low-level cooling-lower sump alarm. 4. Outdoor temperature. 5. Condenser water pump(s) ON/OFF status (enabled or disabled). 6. Condenser water pump(s) ON/OFF indication (operating or not operating). 7. Condenser water flow indication. 8. Chilled water pump(s) ON/OFF status (enabled or disabled). 9. Chilled water pump(s) ON/OFF indication (operating or not operating). 10. Cooling tower fan(s) ON/OFF indication (operating or not operating). 11. Chilled water flow indication. 12. Refrigeration machine ON/OFF indication (operating or not operating). 13. Chilled water supply temperature. 14. Chilled water return temperature. 15. Chilled water temperature control-point adjustment. 16. Chiller(s) ON/OFF status (enabled or disabled). 17. Chiller(s) ON/OFF indication (operating or not operating). 18. Chiller "failure-to-start" indication. 19. Chiller(s) power input (instantaneous). 20. Chilled water pressure drop through chiller. 21. Chilled water flow through chiller. 22. Chiller condenser water supply and return temperature. 23. Chiller chilled water supply and return temperature. 24. System capacity in tons.
D. Initiation of System Start-Up - The system shall be started: 1. By an operator manually entered command at the BAS. 2. Automatically by the BAS based on time schedule or demand by any of the air-handling units.	
E. System Operation - When system start-up has been initiated, the following sequences shall be implemented: 1. The BAS shall send an enable signal to the lead chiller. 2. Upon receiving the enable signal the chiller shall enable the chiller isolation valves. 3. The isolation valves shall be controlled to 100% open. 4. When the isolation valves are confirmed to be 100% open, the control system shall start the lead primary chilled water pump. 5. Once water flow has been proven through the lead chiller then the chiller shall start under controls of its factory unit controller.	
F. Sequencing: 1. Chiller sequencing: a. Chillers and corresponding primary chilled water pumps shall be alternated as lead and lag chillers and pumps to evenly distribute run time. b. The lead chiller shall load up to 100% to maintain chilled water supply temperature set point. c. Monitor flow rate through the chiller(s) with water flow meter in the chilled water circuit. De-energize chiller and chilled water pumps when water flow rate through evaporator(s) is less than minimum scheduled value. Return to a single chiller operation when both chillers are at a minimum evaporator flow rate. d. Upon sensing a chiller failure the control system shall shut down the failed chiller immediately close isolation valves and initiate the start of the next chiller in the rotation sequence. e. The control system shall control individual chiller setpoints to maintain the system supply water temperature at setpoint. 2. Chilled water pump sequencing: a. Primary chilled water pumps P-3 and P-4 shall be alternated as lead and lag pumps to evenly distribute run time.	
F. Setpoints - The chilled water setpoints for the system shall be determined as follows: 1. The chilled water supply temperature setpoint shall be set initially at 32 deg. F. (operator adjustable) with temperature differential of 10 deg. F (adj.).	
G. Initiation of System Shutdown - System shutdown shall be initiated: 1. By operator entered manual command. 2. Automatically by the BAS based on a time schedule basis. 3. Local emergency power shut off switch is activated. If the emergency plant shutdown button is activated, provide for an orderly shutdown of all equipment within the Central Plant. Coordinate shutdown sequence of chillers with the chiller manufacturer.	

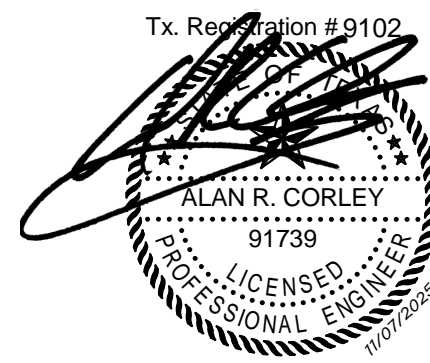
GLYCOL WATER SYSTEM POINT LIST									
POINT DESCRIPTION	POINT TYPE					ALARMS			NOTES
	GRAPHIC	HARDWARE INPUT	HARDWARE OUTPUT	SOFTWARE POINTS	HARDWARE INTERLOCK	HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY	
OUTDOOR AIR TEMPERATURE	X	AI							
OUTDOOR AIR RELATIVE HUMIDITY	X	AI							
CHILLER START / STOP	X		BO						
CHILLER STATUS	X	BI							
CHILLER RUNTIME	X								CALCULATED VALUE
GLYCOL WATER SUPPLY TEMPERATURE	X	AI							
GLYCOL WATER RETURN TEMPERATURE	X	AI							
GLYCOL WATER SUPPLY TEMP. SETPOINT	X			AO					
GLYCOL PERCENTAGE	X	AI							
GLYCOL WATER FLOW RATE	X	AI	BO						CHILLER ISOLATION VALVE OPEN/CLOSE ALL POINTS & ALARMS
PUMPING SKID	X			X					
PRIMARY GP START / STOP	X		BO						
PRIMARY GP STATUS	X	BI						X	PUMP FAILURE
GLYCOL FEED STATION	X	AI						X	
COMMON GLYCOL WATER SUPPLY TEMPERATURE	X	AI						X	
COMMON GLYCOL WATER RETURN TEMPERATURE	X	AI				X			



01 GLYCOL WATER SYSTEM CONTROL SCHEMATIC
SCALE: NONE



ISSUES	
1	
2	
3	
4	
5	
REVISIONS	



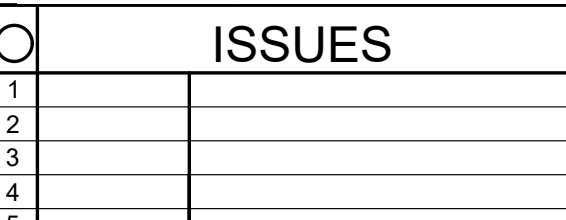
**JPS ARLINGTON SURGERY
OR HVAC REPLACEMENT PROJECT**
4400 NEW YORK AVE.
ARLINGTON, TX 76018

PROJECT #: 05194.09

SHEET TITLE:
MECHANICAL
CONTROL
DIAGRAM

SHEET #:

M-501



**JPS ARLINGTON SURGERY
OR HVAC REPLACEMENT PROJECT
4400 NEW YORK AVE.
ARLINGTON, TX 76018**

SHEET TITLE:
MECHANICAL
CONTROL
DIAGRAM

SHEET #:

1. WHEN SMOKE IS DETECTED IN A SINGLE OPERATING ROOM, THE AIR-HANDLING UNIT SUPPLY FANS SHALL RAMP TO 100% SPEED, THE AHU RETURN FAN (IF PRESENT) SHALL BE DE-ENERGIZED, THE VAV TERMINAL UNIT DAMPERS SHALL OPEN TO 100%, THE AHU OUTSIDE AIR AND AHU EXHAUST AIR FANS SHALL CLOSE, THE OR SMOKE PURGE EXHAUST FANS SHALL CLOSE, THE OR ROOM SMOKE PURGE EXHAUST FAN WHERE THE SMOKE WAS DETECTED SHALL START AND RAMP TO 100%, ALARM SHALL SOUND AT OPERATOR WORKSTATION.
2. WHEN SMOKE IS DETECTED IN THE SUPPLY AIR STREAM, THE AIR-HANDLING UNIT SUPPLY AND RETURN (IF PRESENT) FANS SHALL BE DE-ENERGIZED, THE VAV TERMINAL UNIT DAMPER SHALL CLOSE, THE AHU EXHAUST AIR DAMPER SHALL CLOSE, THE AHU RETURN AIR AND AHU OUTSIDE AIR DAMPERS SHALL CLOSE, THE OR SMOKE PURGE EXHAUST FANS SHALL START AND RAMP TO 100%, ALARM SHALL SOUND AT OPERATOR WORKSTATION.

2. WHEN SMOKE IS DETECTED IN THE SUPPLY AIR STREAM, THE AIR-HANDLING UNIT SUPPLY AND RETURN (IF PRESENT) FANS SHALL BE DE-ENERGIZED, THE VAV TERMINAL UNIT DAMPER SHALL CLOSE, THE AHU EXHAUST AIR DAMPER SHALL CLOSE, THE AHU RETURN AIR AND AHU OUTSIDE DAMPERS SHALL CLOSE, THE OR SMOKE PURGE EXHAUST FANS SHALL START AND RAMP TO 10 ALARM SHALL SOUND AT OPERATOR WORKSTATION.

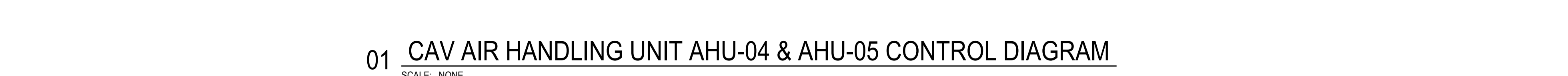
3. WHEN SMOKE IS DETECTED IN THE RETURN AIR STREAM, THE AIR-HANDLING UNIT SUPPLY FANS SHALL RAMP TO 100% SPEED, THE AHU RETURN FAN (IF PRESENT) SHALL BE DE-ENERGIZED, THE VAV TERMINAL UNIT DAMPERS SHALL OPEN TO 100%, THE AHU OUTSIDE AIR AND AHU EXHAUST AIR DAMPER SHALL OPEN, THE AHU INTAKE RETURN AIR DAMPER SHALL CLOSE, THE OR SMOKE PURGE EXHAUST FANS SHALL START AND RAMP TO 100%. ALARM SHALL SOUND AT OPERATOR

4. WHEN SMOKE IS DETECTED IN THE OUTSIDE AIR AND THE SUPPLY AND/OR RETURN AIR, THE AIR-HANDLING UNIT SUPPLY AND RETURN (IF PRESENT) FANS SHALL BE DE-ENERGIZED, THE VAV TERMINAL UNIT DAMPER SHALL CLOSE, THE AHU EXHAUST AIR DAMPER SHALL CLOSE, THE AHU RETURN AIR AND AHU OUTSIDE AIR DAMPERS SHALL CLOSE, THE OR SMOKE PURGE EXHAUST FANS SHALL START AND RAMP TO 100% ALARM SHALL SOUND AT OPERATOR WORKSTATION.

5. WHEN SMOKE IS DETECTED IN THE OUTSIDE AIR STREAM, THE AIR-HANDLING UNIT SUPPLY FANS, RETURN FANS (IF PRESENT), AND VAV TERMINAL UNIT SHALL CONTINUE NORMAL OPERATION, THE AHU OUTSIDE AIR AND AHU EXHAUST AIR DAMPERS SHALL CLOSE, THE AHU RETURN AIR DAMPER SHALL OPEN 100%, THE OR SMOKE PURGE EXHAUST FAN SHALL REMAIN OFF. ALARM SHALL SOUND AT OPERATOR WORKSTATION.

1. THE ELECTRIC STEAM GENERATORS SHALL HAVE PACKAGED CONTROLS. EACH GENERATOR SHALL BE CONTROLLED BY A DEDICATED HUMIDISTAT MOUNTED IN HAND-UPENDING UNIT. THE BMS SHALL PROVIDE AN ALARM TO THE OPERATOR WHEN THE STEAM GENERATOR HUMIDITY SET POINT IS VIOLATED.
2. SPACE HUMIDITY SET-POINT (38% RH, ADJUSTABLE) SHALL BE CONTROLLED BY HUMIDISTAT (AVERAGED) MOUNTED AS INDICATED ON THE DRAWINGS. THROUGH THE BMS BY RESETTING THE HUMIDISTATS, MOUNTED AS INDICATED ON THE DRAWINGS, THE OPERATOR SHALL GUARANTEE AIR FLOW THROUGH THE AIR FLOW STATIONS THRU TO ENABLING THE HUMIDITY CONTROLS.
3. THE BMS SHALL INITIATE HUMIDISTAT TO CLOSE THE EXHAUST VALVE ONCE HUMIDITY SET POINT 90% RH (ADJUSTABLE).
4. THE BMS SHALL MONITOR ALL UNIT ALARM POINTS THRU THE UNIT CONTROL PANEL AND INITIATE THE SPECIFIC ALARM MESSAGE ON THE OPERATOR DISPLAY.
5. THE OPERATOR SHALL INITIATE THE UNIT CONTROL PANEL AND INITIATE THE UNIT CONTROL PANEL AND INITIATE THE OPERATOR STATUS DISPLAY. INDICATE AT MINIMUM THE FOLLOWING ON OPERATOR WORKDISPATION DISPLAY:

- 5.A. DDC SYSTEM GRAPHIC.
- 5.B. DDC SYSTEM ON-OFF INDICATION.
- 5.C. STEAM PRESSURE MONITORING.
- 5.D. ANY ALARMS.



SCALE: NONE