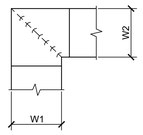
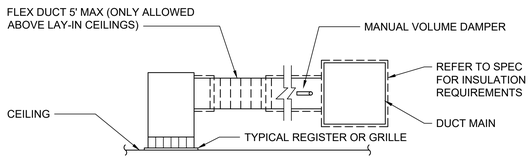
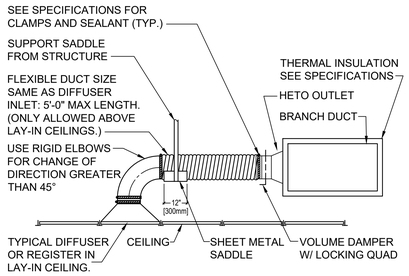


NOTE:

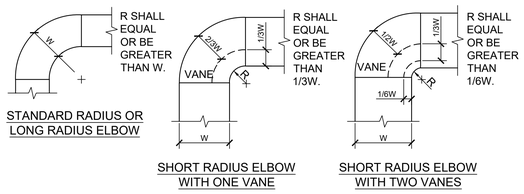
1. ALL VANE ELBOWS SHALL BE CONSTRUCTED AND INSTALLED AS DETAILED BY SMACNA.
2. WHEN W1 DOES NOT EQUAL W2, VANE SHALL BE SINGLE THICKNESS VANE TYPE REGARDLESS OF W DIMENSION.
3. ALL SINGLE THICKNESS VANES SHALL HAVE A 2" [50mm] RADIUS, 1 1/2" [40mm] MAXIMUM SPACE BETWEEN VANES AND A 3/4" [20mm] TRAILING EDGE.
4. WHEN W EQUALS W2 AND W1 IS GREATER THAN 20" [500mm] VANES SHALL BE DOUBLE VANE TYPE.

1 DUCTWORK SQUARE VANE ELBOWS DETAIL
SCALE: N.T.S.





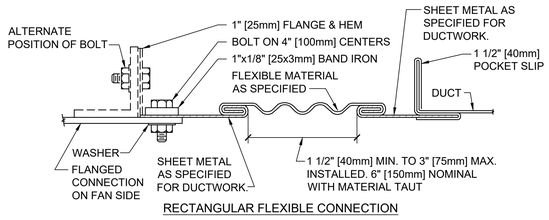
4 GRILLE, REGISTER, AND DIFFUSER DETAIL
SCALE: N.T.S.



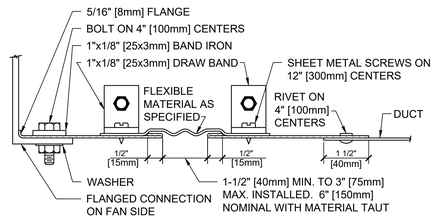
NOTE:

1. THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.
2. ALL STANDARD RADIUS ELBOWS CAN BE SUBSTITUTED WITH SHORT RADIUS ELBOWS. ALL SHORT RADIUS ELBOWS SHALL HAVE VANES. VANES SHALL BE CONSTRUCTED, SUPPORTED AND FASTENED AS RECOMMENDED BY SMACNA.

2 DUCTWORK RADIUS ELBOWS DETAIL
SCALE: N.T.S.

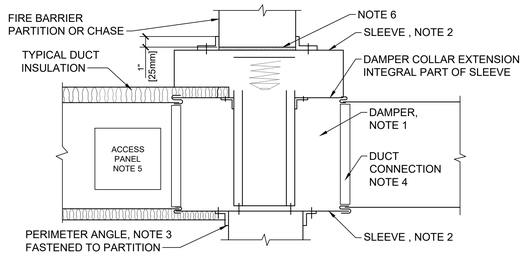


RECTANGULAR FLEXIBLE CONNECTION



ROUND FLEXIBLE CONNECTION

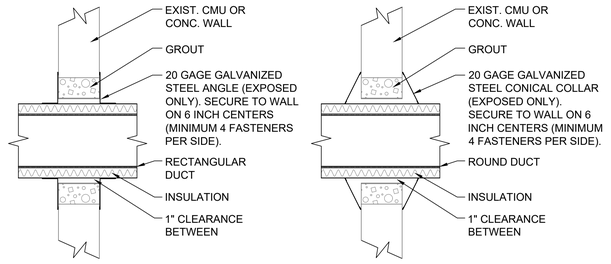
5 FLEXIBLE DUCT CONNECTIONS
SCALE: N.T.S.



NOTE:

1. A VERTICAL DAMPER IS SHOWN. HORIZONTAL DAMPER INSTALLATION, IS SIMILAR. FOLLOW DAMPER MANUFACTURER'S INSTRUCTIONS, INCLUDING FASTENER OPTIONS AND GAGES FOR SLEEVE AND PERIMETER ANGLES. FIRE DAMPERS MUST BE INSTALLED IN THE PARTITION OR FLOOR AND NOT OUTSIDE THE PENETRATION.
2. GALVANIZED SLEEVE: GAGE NOT LESS THAN CONNECTING DUCT. FASTEN SLEEVE TO DAMPER FRAME AND TO PERIMETER ANGLES.
3. PERIMETER ANGELS: GALVANIZED STEEL, NOT LESS THAN 1 1/2"x1 1/2" [40x40mm], 14 GAGE, TO PROVIDE 1" [25mm] MINIMUM OVERLAP OF OPENING ON ALL 4 SIDES.
4. BREAKAWAY DUCT CONNECTION: CONTRACTOR'S OPTION OF TYPES SHOWN IN SMACNA. ACCESS PANELS: SIZE AND LOCATION TO PERMIT SERVICING THE FUSIBLE LINK OR LINKS.
5. BUILD ACCESS DOOR ACCORDING TO LATEST SMACNA GUIDELINES. INSTALL IN AN ACCESSIBLE LOCATION AND PROVIDE WEDGE TYPE LATCHES. HINGES ON DOOR SHALL HAVE NON-CORROSIVE PINS.
6. PROVIDE 1/4" TO 1/2" [6 TO 15mm] CLEARANCE ON HEIGHT AND WIDTH.

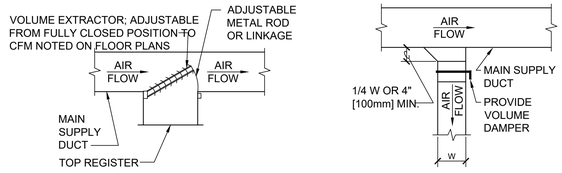
8 SECTION THRU FIRE DAMPER INSTALLATION
SCALE: N.T.S.



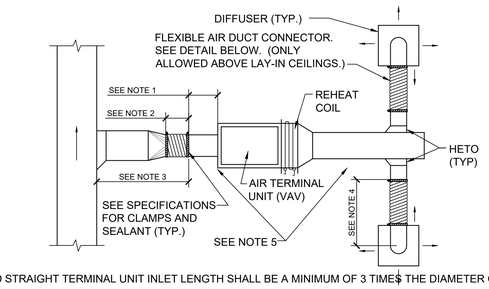
RECTANGULAR DUCT PENETRATION

ROUND DUCT PENETRATION

7 DUCT PENETRATION THROUGH WALL DETAIL
SCALE: N.T.S.



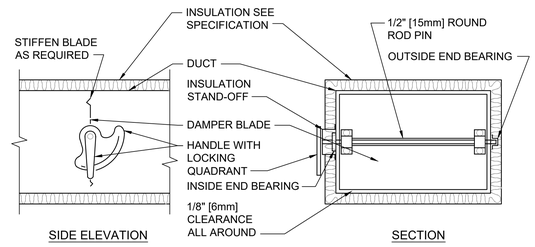
3 SUPPLY DUCT TAKE-OFF DETAIL
SCALE: N.T.S.



NOTE:

1. RIGID STRAIGHT TERMINAL UNIT INLET LENGTH SHALL BE A MINIMUM OF 3 TIMES THE DIAMETER OF INLET.
2. A FLEXIBLE AIR DUCT CONNECTOR IS NOT MANDATORY FOR INLET TO THIS BOX, BUT ALLOWED TO ACCOMMODATE MINOR OFFSETS. MAXIMUM LENGTH 3'-0" [900mm].
3. A BRANCH DUCT SERVING AN INDIVIDUAL BOX MAY BE THE SAME SIZE AS THE BOX INLET, PROVIDED THE EQUIVALENT LENGTH OF THE BRANCH DUCT, AS SHOWN, DOES NOT EXCEED 10 FEET (3 METERS). FOR LONGER LENGTHS, INCREASE THE DUCT SIZE AND PROVIDE A DUCT TRANSITION TO MAINTAIN THE DUCT STATIC PRESSURE DROP AT OR BELOW 0.2"/100' [1.64Pa/m].
4. FLEXIBLE AIR DUCT CONNECTORS, WHEN USED FROM TERMINAL UNIT SUPPLY AIR DUCT TO DIFFUSER, SHALL NOT EXCEED 5'-0" [1500mm]. USE RIGID ELBOWS FOR CHANGE OF DIRECTION GREATER THAN 45°.
5. COMPONENT ARRANGEMENT MAY VARY BY MANUFACTURER. PROVIDE INSULATION W/VAPOR BARRIER FOR CONNECTING DUCT SECTIONS.

6 DUCT CONNECTIONS - AIR TERMINAL UNITS
SCALE: N.T.S.



NOTE:

1. DELETE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.
2. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS.

9 VOLUME DAMPER DETAIL
SCALE: N.T.S.

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

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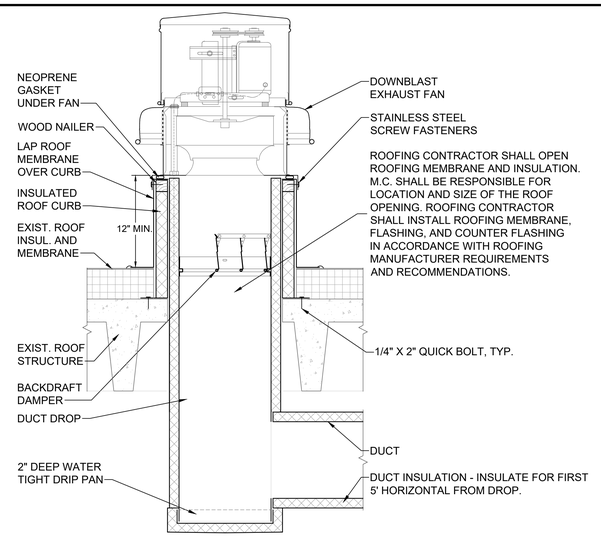
16.2330.A08

Drawing Title	Mechanical Details Building 5 - Dry Side 1
Approved: Project Director	Omaha VA Medical Center
Project Title	Design/Construct Sterile Processing Service- Omaha VA Medical Center
Location	4101 Woolworth Ave #4109 Omaha, NE 68105
Date	11 / 23 / 2020
Checked	MK
Drawn	JB
Project Number	16.2330.A08
Building Number	25
Drawing Number	M 5.00
Dwg.	124 of 193

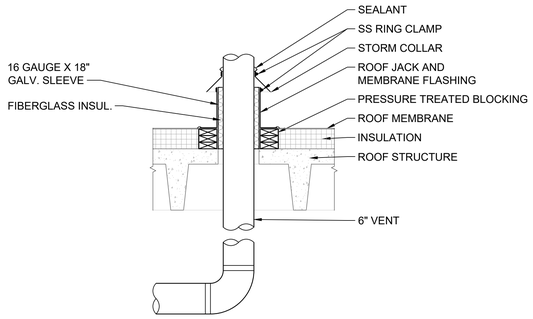
Office of Construction and Facilities Management

Department of Veterans Affairs

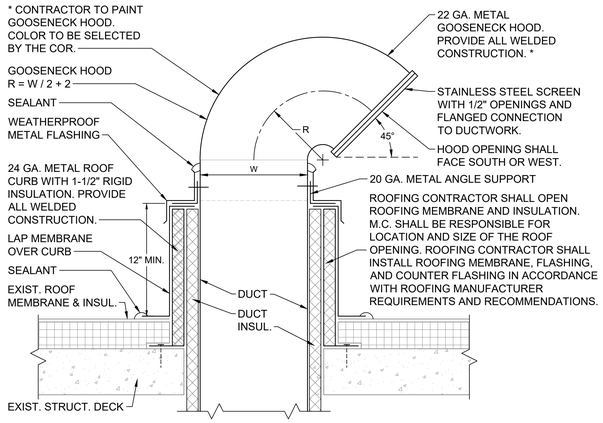
VA FORM 08-6231



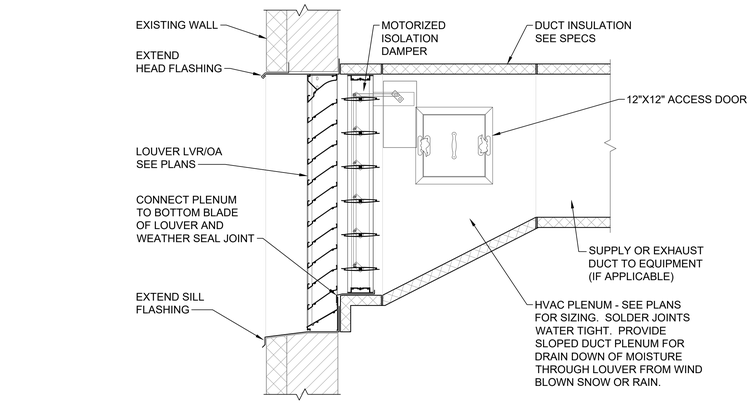
1 DOWNBLAST ROOF FAN DETAIL
SCALE: N.T.S.



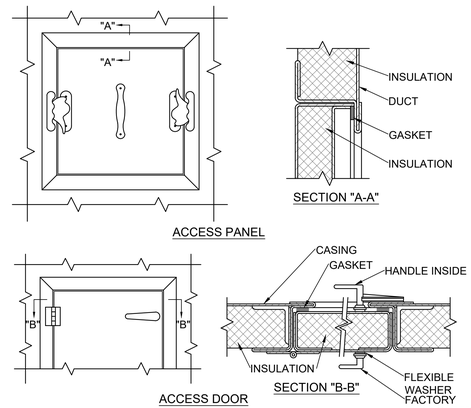
4 VENT THRU ROOF DETAIL
SCALE: N.T.S.



2 GOOSENECK HOOD DETAIL
SCALE: N.T.S.

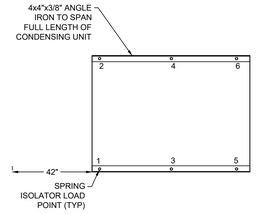


3 LOUVER DETAIL
SCALE: N.T.S.



NOTES:
1. LATCHES SHALL BE OF THE WEDGE TYPE TO CLOSE DOORS TIGHTLY.
2. HINGES ON THE ACCESS DOORS SHALL HAVE NON-CORROSIVE PINS.
3. SEE SMACNA 2005, FIGURE 9-15

5 ACCESS PANEL AND DOOR DETAIL
SCALE: N.T.S.



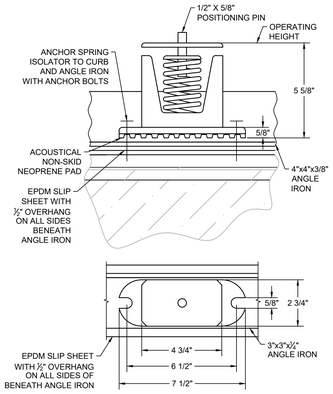
STEEL RAILS TO BE INSTALLED ACROSS THE 2X8 HORIZONTAL CURB MEMBERS

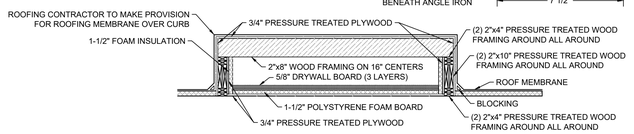
WEIGHTS AND LOAD POINTS (BASIS OF DESIGN UNIT)
OPERATING: 6600 lb

LOAD POINTS 1 : 1100 lb
LOAD POINTS 2 : 1100 lb
LOAD POINTS 3 : 1100 lb
LOAD POINTS 4 : 1100 lb
LOAD POINTS 5 : 1100 lb
LOAD POINTS 6 : 1100 lb

*ALL WEIGHTS ARE APPROXIMATE

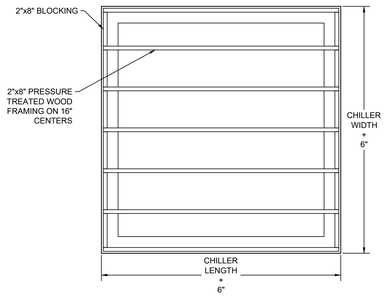
NOTES:
1. OPERATING WEIGHT INCLUDES REFRIGERANT, OIL AND WATER.
2. THE ACTUAL WEIGHT IS SHOWN ON THE NAMEPLATE. WEIGHT SHOWN REPRESENT TYPICAL OPERATING WEIGHT FOR THE UNIT SELECTED.
3. ISOLATOR SPRING SHOWN AT THE RIGHT TO BE AT ALL LOAD POINTS.





NOTE: INSTALLED BY CONTRACTOR ON THIS PROJECT COORDINATING WITH ROOFING CONTRACTOR. ROOFING MATERIALS AND FLASHINGS PROVIDED BY ROOFING CONTRACTOR. ALL OTHER MATERIALS PROVIDED BY MECHANICAL CONTRACTOR ON THIS PROJECT.

CONTRACTOR TO USE 12-16 PENNY MINIMUM NAILS, 8" OC. SHEATHING TO BE SECURED TO EVERY WOOD MEMBER WITH TWO NAILS MINIMUM.



6 ROOF CURB DETAIL
SCALE: N.T.S.

MECHANICAL SPECIALTY SCHEDULE

SPECIALTY TAG	DESCRIPTION	MANUFACTURER & MODEL #	INSTALL CONNECTIONS: THRD	SOLD	UNION	C/W	H/W	REMARKS	HYPERLINK	
SOV-1	HYDRONIC BALL VALVE	WATTS G4000				2"-10"			SPEC	INSTAL
SOV-2	DOMESTIC WATER BALL VALVE	WATTS LFB6000				¼"-4"			SPEC	
GV-1	HYDRONIC GATE VALVE	WATTS 405-NRS-RW				2"-10"			SPEC	
STT-1	STEM TYPE THERMOMETER	DWYER SERIES IT						1		
TT-1	THERMOMETER THERMOWELL	DWYER SERIES IT-W								
PG-1	HYDRONIC PRESSURE GAUGE	LFDPG1-2 0-160 1/4				½"		2	SPEC	
T&P-1	TEMPERATURE AND PRESSURE RELIEF	WATTS LF40				¾"-1½"			SPEC	
AAV-1	AUTOMATIC AIR VENT	WATTS FV-4M1 1				1"		2	SPEC	
PRV-1	PRESSURE REDUCING VALVE	WATTS LF25AUB-Z3				½"-2"			SPEC	INSTAL
BFP-1	RPP BACKFLOW PREVENTER	ZURN 375XL				½"-2"			SPEC	
EXT-1	EXPANSION TANK	AMTROL AX-15V				¾"			SPEC	

NOTES:
1. PROVIDE ALL STT-1 WITH TT-1.
2. PROVIDE WITH TEE AND INLET SHUT OFF VALVE.

PLUMBING SPECIALTY MAY BE CALLED OUT ON PLANS AS TAGGED, SPECIFICALLY CALLED FOR IN NOTES/DETAILS, OR NOT AT ALL. IF REFERENCE TO ANY OF THE ABOVE SPECIALTY IS NOT SPECIFICALLY CALLED OUT, THIS SCHEDULE ALSO PROVIDES BASIS OF SPECIFICATION FOR SUPPLY BY THE CONTRACTOR.

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

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REGISTERED PROFESSIONAL ENGINEER — REG. NO. 13179 — MATTHEW R. KOSCAK — SOUTH DAKOTA — 11-22-2023

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16.2330.A08

Drawing Title: Mechanical Details Building 5 - Dry Side 2

Approved: Project Director: Omaha VA Medical Center

Project Title: Design/Construct Sterile Processing Service- Omaha VA Medical Center

Location: 4101 Woolworth Ave #4109 Omaha, NE 68105

Date: 11 / 23 / 2020 | Checked: MK | Drawn: JB

Project Number: 16.2330.A08

Building Number: 25

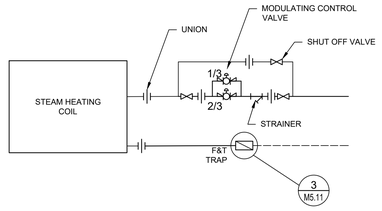
Drawing Number: M 5.01

Dwg. 125 of 193

Office of Construction and Facilities Management

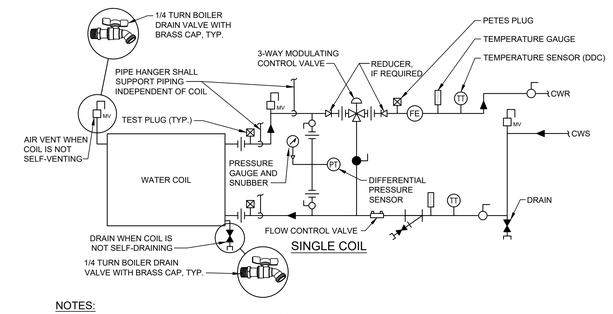
Department of Veterans Affairs

VA FORM 08-6231



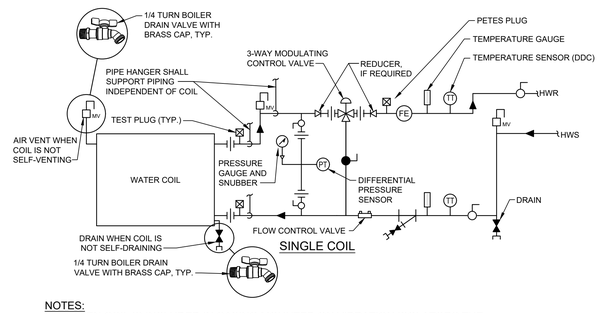
NOTE TO CONTRACTOR: SIZE EACH MODULATING CONTROL VALVE FOR 1/3 2/3 CAPACITY AND STAGE TO WORK BASED ON DISCHARGE AIR TEMP.

1 AHU STEAM HEATING COILS - PIPING CONNECTIONS
SCALE: N.T.S.



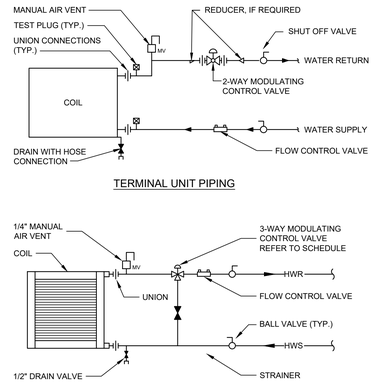
NOTES:
1. WHEN COIL IS INCLUDED IN CASING MOUNTED ON VIBRATION ISOLATORS THE FIRST 2 HANGERS FOR EACH PIPE SHALL BE SPRING & NEOPRENE TYPE. TYPE "H" FOR 100mm [4"]Ø PIPE & SMALLER. TYPE "H-P" FOR 125mm [5"]Ø PIPE & LARGER.
2. PIPING SHALL BE INSTALLED IN SUCH MANNER THAT IT WILL NOT BLOCK THE SWING OR USE OF ACCESS DOORS OR PANELS; NEITHER SHALL IT BLOCK THE SERVICING OF FILTERS, VALES, OR EQUIPMENT.

2 AHU CHILLED WATER COILS - PIPING CONNECTIONS
SCALE: N.T.S.

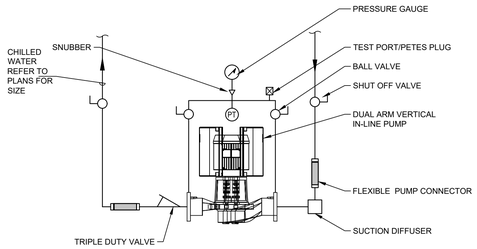


NOTES:
1. WHEN COIL IS INCLUDED IN CASING MOUNTED ON VIBRATION ISOLATORS THE FIRST 2 HANGERS FOR EACH PIPE SHALL BE SPRING & NEOPRENE TYPE. TYPE "H" FOR 100mm [4"]Ø PIPE & SMALLER. TYPE "H-P" FOR 125mm [5"]Ø PIPE & LARGER.
2. PIPING SHALL BE INSTALLED IN SUCH MANNER THAT IT WILL NOT BLOCK THE SWING OR USE OF ACCESS DOORS OR PANELS; NEITHER SHALL IT BLOCK THE SERVICING OF FILTERS, VALES, OR EQUIPMENT.

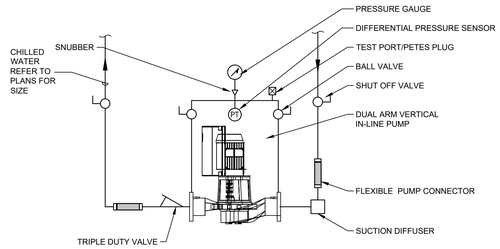
3 AHU HEATING WATER COILS - PIPING CONNECTIONS
SCALE: N.T.S.



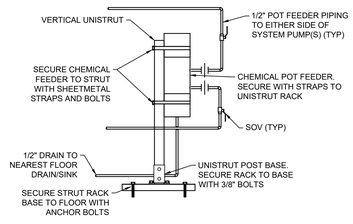
4 AIR TERMINAL UNIT REHEAT COIL - PIPING CONNECTIONS
SCALE: N.T.S.



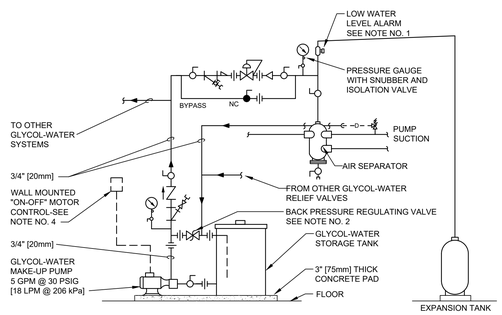
5 DUAL INLINE PUMP DETAIL
SCALE: N.T.S.



6 INLINE PUMP DETAIL
SCALE: N.T.S.

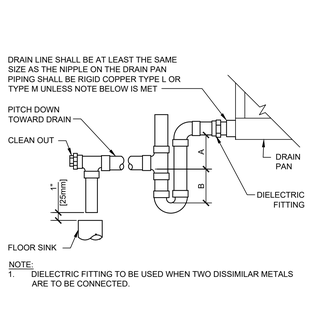


7 CHEMICAL FEEDER
SCALE: N.T.S.



NOTES:
1. PROVIDE LOW WATER LEVEL ALARM. PROVIDE A LOW WATER LEVEL AT ECC. RELIEF VALVE DRAIN SHALL RETURN TO TANK AS SHOWN ON THIS DETAIL.
2. SET REGULATING VALVE TO MAINTAIN MAKE-UP PRESSURE AT 15 PSIG [103 kPa] ABOVE HIGHEST SYSTEM PRV SETTING.
3. MAKE-UP PIPING SYSTEM DOES NOT REQUIRE INSULATION.
4. OPERATE PUMP MANUALLY AS REQUIRED TO FILL.

8 GLYCOL MAKE-UP SYSTEM (PIPING AND CONTROLS)
SCALE: N.T.S.



NOTE:
1. DIELECTRIC FITTING TO BE USED WHEN TWO DISSIMILAR METALS ARE TO BE CONNECTED.

UNIT TYPE	A	B
DRAW THRU	2" [50mm] PLUS X	X
BLOW THRU	1" [25mm] MINIMUM	2X

WHERE X = STATIC PRESSURE IN PAN

9 AIR HANDLING UNIT DRAIN TRAP DETAIL
SCALE: N.T.S.

CONSTRUCTION DOCUMENTS

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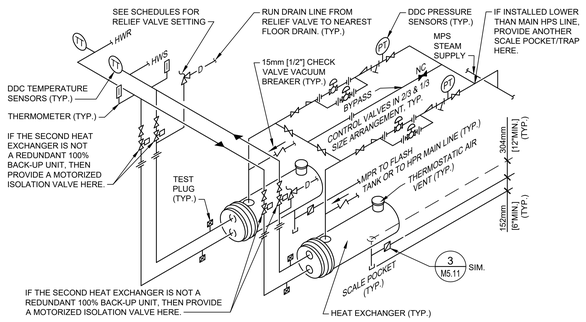
16.2330.A08

Drawing Title	Mechanical Details Building 5 - Wet Side 1
Approved: Project Director	Omaha VA Medical Center
Project Title	Design/Construct Sterile Processing Service- Omaha VA Medical Center
Location	4101 Woolworth Ave #4109 Omaha, NE 68105
Date	11 / 23 / 2020
Checked	MK
Drawn	JB
Project Number	16.2330.A08
Building Number	25
Drawing Number	M 5.10
Dwg.	126 of 193

Office of Construction and Facilities Management

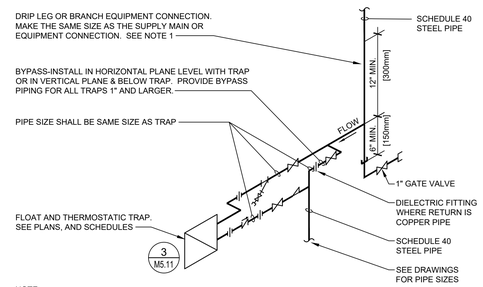
Department of Veterans Affairs

VA FORM 08-6231



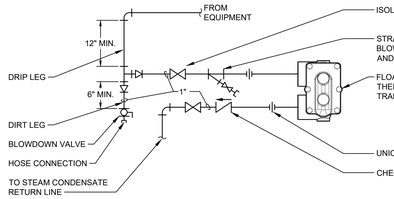
NOTES:
1. THE ABOVE DETAIL SHOWS REQUIRED PIPING FOR TWO HEAT EXCHANGERS IN PARALLEL. INDICATE IF 100% REDUNDANT OR NOT.
2. PROVIDE SADDLE SUPPORTS AND LEGS OR HANGERS FOR HEAT EXCHANGER. MOUNTING HEIGHT SHALL BE ADJUSTED TO FACILITATE GRAVITY RETURN OF STEAM CONDENSATE.
3. MAKE THE BYPASS THE SAME SIZE AS THE CONNECTIONS TO THE CONTROL VALVES.
4. CONTROL VALVES SHALL BE IN A 1/3 AND 2/3 SIZE ARRANGEMENT.

1 HEAT EXCHANGER - STEAM TO HOT WATER
SCALE: N.T.S.

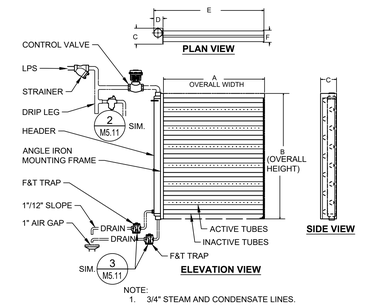


NOTE:
1. ALL DRIP POINTS ON STEAM MAINS SHALL BE PROVIDED WITH A 12" MINIMUM HIGH DRIP LEG FROM BOTTOM OF STEAM MAIN TO TRAP INLET. DRIP LEG SHALL HAVE 6" SCALE POCKET BELOW TRAP INLET.

2 END OF MAIN DRIP ASSEMBLY DETAIL
SCALE: N.T.S.

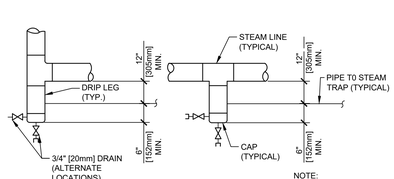


3 F&T TRAP ASSEMBLY DETAIL
SCALE: N.T.S.



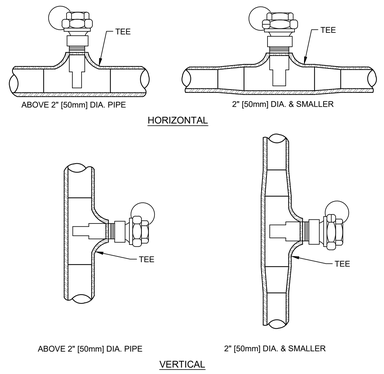
NOTE:
1. 3/4" STEAM AND CONDENSATE LINES.

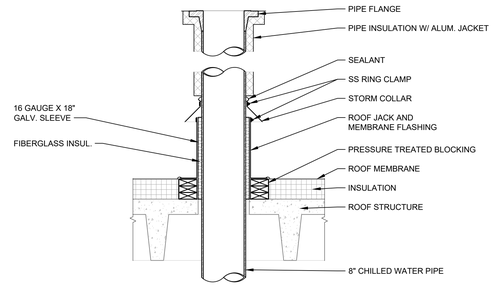
4 STEAM HUMIDIFIER DETAIL
SCALE: N.T.S.

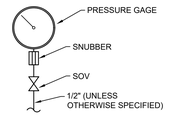


STEAM LINE DRIP POCKET

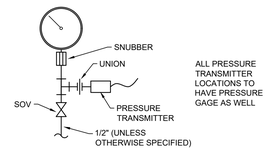
NOTE:
DRIP POCKET PIPE SIZE SAME AS STEAM MAIN UNLESS OTHERWISE NOTED.





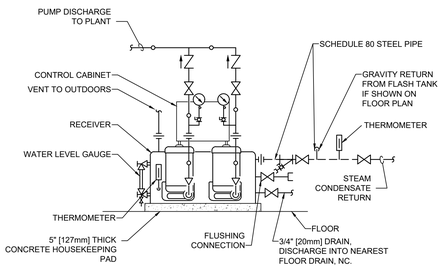


PRESSURE GAGE

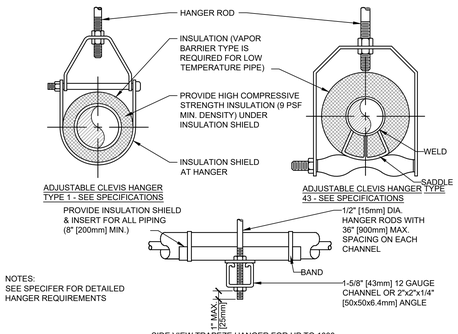


PRESSURE GAGE W/ TRANSMITTER

5 AIR HANDLING UNIT DRAIN TRAP DETAIL
SCALE: N.T.S.



6 PETES PLUG DETAILS
SCALE: N.T.S.



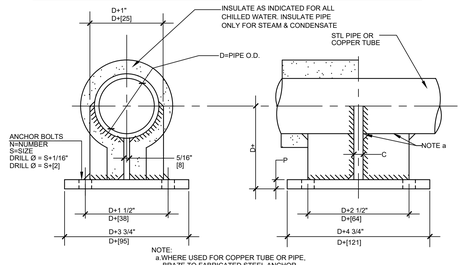
NOTES:
SEE SPECIFER FOR DETAILED HANGER REQUIREMENTS

SIDE VIEW TRAPEZE HANGER FOR UP TO 1000 LB. [453KG] UNIFORM LOAD

MAXIMUM PIPE/TUBING SUPPORT SPACING																			
NOM. SIZE	IN. [mm]	THRU 3/4 THRU [20]	1 [25]	1 1/4 [32]	1 1/2 [40]	2 [50]	2 1/2 [65]	3 [75]	4 [100]	5 [125]	6 [150]	8 [200]	10 [250]	12 [300]	14 [350]	16 [400]	18 [450]	20 [500]	24 [600]
PIPE	FT. [mm]	7 [2100]	7 [2100]	7 [2100]	9 [2700]	10 [3000]	11 [3400]	12 [3700]	14 [4100]	16 [4900]	17 [5200]	19 [5800]	22 [6700]	23 [7000]	25 [7600]	27 [8200]	28 [8500]	30 [9100]	32 [9600]
TUBING	FT. [mm]	5 FT [1500]	6 [1800]	7 [2100]	8 [2400]	8 [2400]	9 [2700]	10 [3000]	12 [3700]	13 [4000]	14 [4100]	16 [4900]	-	-	-	-	-	-	-
NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.																			

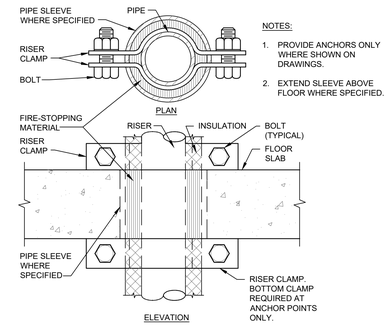
7 ROOF PIPE PENETRATION DETAIL
SCALE: N.T.S.

PIPE ANCHOR SCHEDULE										
D		P		C		N		S		BOLT PATTERN
IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	
4"	102	5/8"	16	3/4"	19	4"	102	3/4"	19	
3"	76	1/2"	13	1/2"	13	4"	102	5/8"	16	
2½"	64	3/8"	10	3/8"	10	4"	102	5/8"	16	
2"	51	3/8"	10	3/8"	10	4"	102	5/8"	16	
1½"	38	3/8"	10	1/4"	6	4"	102	1/2"	13	



NOTE:
a. WHERE USED FOR COPPER TUBE OR PIPE, BRAZE TO FABRICATED STEEL ANCHOR

8 PRESSURE GAGE DETAIL
SCALE: N.T.S.



NOTES:
1. PROVIDE ANCHORS ONLY WHERE SHOWN ON DRAWINGS.
2. EXTEND SLEEVE ABOVE FLOOR WHERE SPECIFIED.

12 SUPPORT/ANCHOR FOR PIPE RISERS DETAIL
SCALE: N.T.S.

9 CONDENSATE PUMP PIPING CONNECTIONS
SCALE: N.T.S.

10 PIPE HANGERS DETAIL
SCALE: N.T.S.

11 SMALL PIPE ANCHOR DETAIL (1-1/2" TO 4")
SCALE: N.T.S.

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

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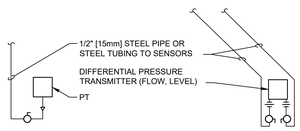
16.2330.A08

Drawing Title	Mechanical Details Building 5 - Wet Side 2
Approved: Project Director	Omaha VA Medical Center
Project Title	Design/Construct Sterile Processing Service- Omaha VA Medical Center
Location	4101 Woolworth Ave #4109 Omaha, NE 68105
Date	11 / 23 / 2020
Checked	MK
Drawn	JB
Project Number	16.2330.A08
Building Number	25
Drawing Number	M 5.11
Dwg.	127 of 193

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

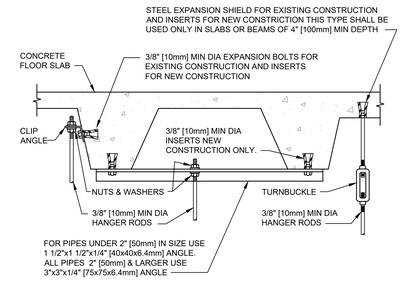


ELEVATION

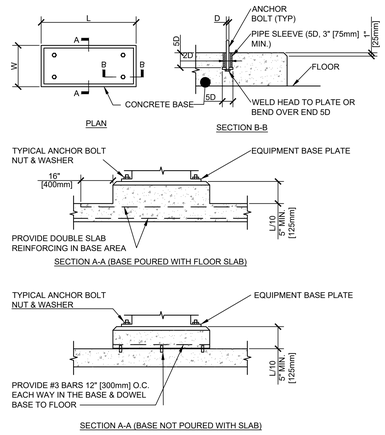
NOTES:

1. INSTALLATION OF SENSORS AND TRANSMITTERS SHALL CONFORM TO RECOMMENDATIONS OF MANUFACTURERS OF TRANSMITTERS.
2. SEE GAGE DETAIL 8/0-M5.11.

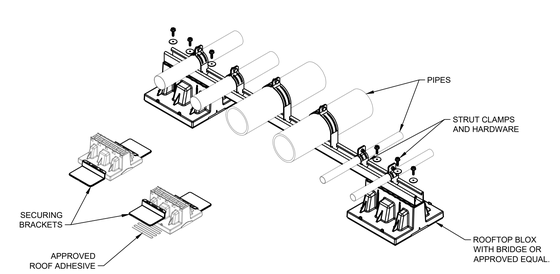
1 PRESSURE TRANSMITTER INSTALLATION
SCALE: N.T.S.



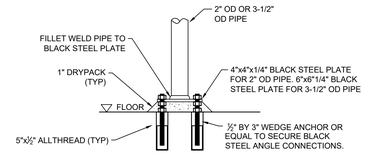
2 SECURING HANGER RODS IN CONCRETE
SCALE: N.T.S.



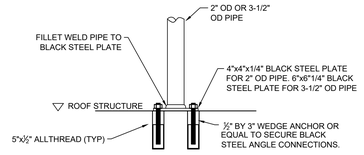
3 CONCRETE EQUIPMENT BASE DETAIL
SCALE: N.T.S.



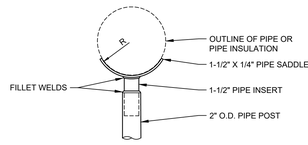
4 ROOF-TOP PIPE SUPPORT ASSEMBLY
SCALE: N.T.S.



DRY PACK AT WELDED PIPE STAND BASE FOR INTERIOR USE DETAIL
SCALE: N.T.S.

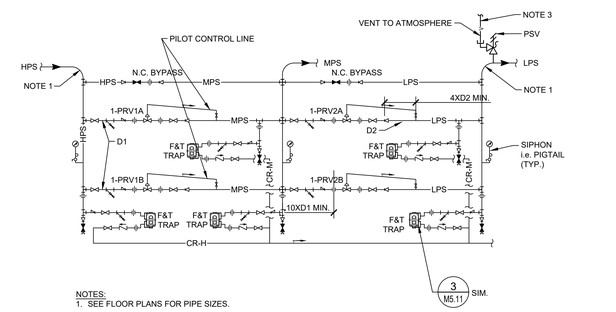


6 WELDED PIPE STAND BASE FOR ROOF DETAIL
SCALE: N.T.S.



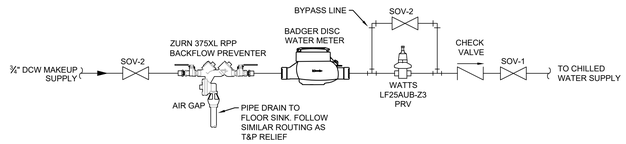
NOTE:
R = 1/2 X PIPE OR PIPE INSUL. O.D.

7 WELDED PIPE STAND SADDLE DETAIL
SCALE: N.T.S.

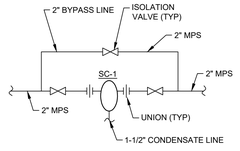


NOTES:
1. SEE FLOOR PLANS FOR PIPE SIZES.
2. SEE EQUIPMENT SCHEDULES FOR VALVE DATA AND PIPE SIZES D1 AND D2. INSTALL VALVES AS RECOMMENDED BY MANUFACTURER.
3. MAKE BYPASS VALVE DISCHARGE PIPE THE SAME SIZE AS D2 FOR THE LARGEST PRV.
4. PROVIDE NECESSARY UNIONS FOR THE REMOVAL OF VALVE WITH SCREWED CONNECTIONS.
5. SLOPE PILOT CONTROL LINE FROM PRESSURE REDUCING VALVE TO DOWN STREAM STEAM PIPING. MIMIMUM SLOPE SHALL BE 25'/100', 25mm/300mm [1"/12"]

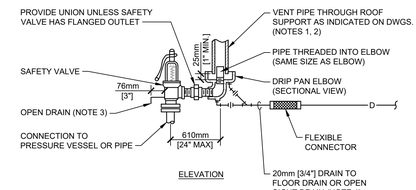
STEAM PRESSURE REDUCING STATION DOUBLE VALVE (1/3 AND 2/3)
8 SCALE: N.T.S.



12 HYDRONIC WATER MAKE-UP FROM DCW LINE
SCALE: N.T.S.



13 STEAM CYCLONE PIPING DETAIL
SCALE: N.T.S.

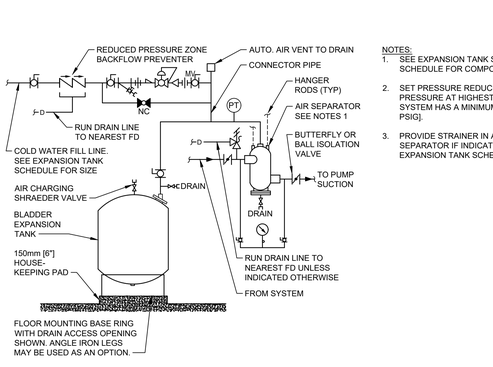


ELEVATION

NOTES:

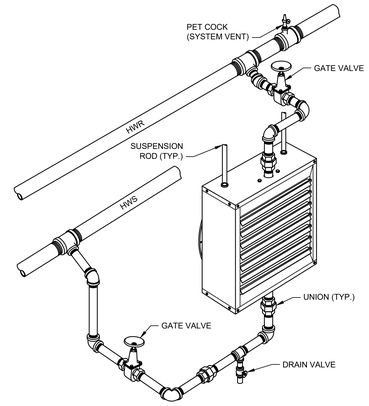
1. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, SIZE THE VENT PIPE SO THAT STEAM IS NOT BLOWN OUT AT THE VENT PIPE ENTRANCE. UTILIZE THE CALCULATION METHOD CONTAINED IN ANSI B31.1. POWER PIPING CODE, APPENDIX II. THE VENT PIPE SHOULD GO VERTICAL THRU THE ROOF WITH NO TURNS OR ANGLES. WHERE REQUIRED THERE SHALL BE NO MORE THEN A TOTAL OR 180 DEGREES IN DIRECTIONAL CHANGES MADE WITH 45 DEG. ELBOWS.
2. VENT PIPE SHALL TERMINATE 1829mm [6'] MIN. ABOVE FINISHED ROOF.
3. DISCHARGE OF DRAIN SHALL BE DIRECTED AWAY FROM PLATFORMS OR OTHER AREAS WHERE PERSONNEL MAY OCCUPY.
4. DO NOT CONNECT ANY OTHER DRAIN TO THE DRIP PAN ELBOW DRAIN PIPE.
5. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

9 STEAM SAFETY VALVE
SCALE: N.T.S.



NOTES:
1. SEE EXPANSION TANK SYSTEM SCHEDULE FOR COMPONENT SIZES.
2. SET PRESSURE REDUCING VALVE SO PRESSURE AT HIGHEST POINT IN SYSTEM HAS A MINIMUM OF 28kPa [4 PSIG].
3. PROVIDE STRAINER IN AIR SEPARATOR IF INDICATED IN EXPANSION TANK SCHEDULE.

FLOOR MOUNTED EXPANSION TANK - PIPING CONNECTIONS
10 SCALE: N.T.S.



11 SUSPENDED HOT WATER UNIT HEATER DETAIL
SCALE: N.T.S.

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

CONSULTANTS:

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16.2330.A08

Drawing Title	Mechanical Details Building 5 - Wet Side 3
Approved: Project Director	Omaha VA Medical Center
Project Title	Design/Construct Sterile Processing Service- Omaha VA Medical Center
Location	4101 Woolworth Ave #4109 Omaha, NE 68105
Date	11 / 23 / 2020
Checked	MK
Drawn	JB
Project Number	16.2330.A08
Building Number	25
Drawing Number	M 5.12
Dwg.	128 of 193

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

AIR HANDLING UNIT SCHEDULE

TAG	BASIS OF DESIGN			SUPPLY FAN							RETURN FAN							ELECTRICAL				CHILLED WATER COIL											HOT WATER COIL								HUMIDIFIER							DIMENSIONS		NOTES
	MFGR	MODEL	OA (CFM)	TYPE	QTY	TOTAL AIRFLOW (CFM)	TOTAL POWER (HP)	RPM	ESP (IN)	VFD	TYPE	QTY	TOTAL AIRFLOW (CFM)	TOTAL POWER (HP)	RPM	ESP (IN)	VFD	VOLT	FLA	MCA	MOP	CAP (MBH)	EAT DB (F)	EAT WB (F)	LAT DB (F)	LAT WB (F)	EWT (F)	LWT (F)	FLOW (GPM)	WATER PRESS DROP (FT)	AIR PRESS DROP (IN)	PPG	CAP (MBH)	PPG %	EAT DB (F)	LAT DB (F)	FLOW (GPM)	WATER PRESS DROP (FT)	AIR PRESS DROP (IN)	PPG	STEAM RATE (LB/HR)	STEAM PRESS (PSI)	EDB (F)	ERH %	LRH %	PRE-FILTER 1	PRE-FILTER 2	FINAL FILTER	LXWXH (IN)	WEIGHT (LBS)	
AHU-1	TRANE	CSAA017	8,225	PLENUM	1	8,225	15	1800	3.0	YES	-	-	-	-	-	-	-	460/60/3	18.5	23.2	40	600	93	76	55.0	54.9	45	55	130.0	19.6	1.25	30%	669	30	-10	65	50.0	2.3	0.15	30%	197	10	-10	30	30	MERV 7	MERV 11	MERV 14	205/72/53	3,582	1,2
AHU-2	TRANE	CSAA010	816	PLENUM	1	4,500	7.5	2166	3.0	YES	PLENUM	1	4,500	3	1817	2.0	YES	460/60/3	14	17.0	35	106	78	62	55.0	53.89	45	55	22.7	3.3	0.33	30%	122	30	40	65	10	0.3	0.08	30%	66.0	10	55	15	30	MERV 7	-	MERV 11	190/62/42	2,245	1,2

NOTES: 1. PROVIDE ON 6" CONCRETE PAD
2. PROVIDE WITH VFD, FREEZE PROTECTION, DISCONNECT

LOUVERS SCHEDULE

EQUIP TAG	MFGR	MODEL NUMBER	TYPE	SERVICE	CFM	SP (IN)	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	FREE AREA (SF)	NOTES
L-1	GREENHECK	EDJ-601	EXTRUDED DRAINABLE BLADE	INTAKE	12,725	0.20	64	48	6	14.8	1
L-2	GREENHECK	EDJ-601	EXTRUDED DRAINABLE BLADE	EXHAUST	4,500	0.10	28	48	6	8.5	1
L-3	GREENHECK	EDJ-601	EXTRUDED DRAINABLE BLADE	EXHAUST	8,225	0.24	28	48	6	8.5	1
L-4	GREENHECK	EDJ-601	EXTRUDED DRAINABLE BLADE	EXHAUST	800	0.40	24	12	6	0.5	
L-5	GREENHECK	EDJ-601	EXTRUDED DRAINABLE BLADE	EXHAUST	6,000	0.33	24	48	6	4.1	

NOTES: 1. PROVIDE WITH MOTORIZED DAMPER.

GRILLES REGISTERS AND DIFFUSERS SCHEDULE

EQUIP TAG	MFGR	MODEL NUMBER	BORDER	PANEL SIZE	NECK SIZE	MAX CFM	THROW	NC	SP	NOTES
S-1	KRUEGER	1400	LAY-IN	24/24	6"	110	9	-	0.037	1
S-2	KRUEGER	1400	LAY-IN	24/24	8"	220	12	11	0.029	1
S-3	KRUEGER	1400	LAY-IN	24/24	10"	350	15	17	0.070	1
S-4	KRUEGER	51400	SURFACE	24/24	6"	110	9	-	0.037	2,3
S-5	KRUEGER	51400	SURFACE	24/24	8"	220	12	11	0.029	2,3
S-6	KRUEGER	51400	SURFACE	24/24	10"	350	15	17	0.070	2,3
S-7	KRUEGER	580	SURFACE	8/8	6/6	100	14	-	0.050	2,3,4
S-8	KRUEGER	580	SURFACE	10/10	8/8	200	19	18	0.050	2,3,4
R-1	KRUEGER	EG10	LAY-IN	24/12	22/10	1000	-	20	0.050	2,3,4
R-2	KRUEGER	EG10	LAY-IN	24/24	22/22	2000	-	20	0.050	2,3,4
E-1	KRUEGER	S580	SURFACE	12/8	10/6	100	-	18	0.035	2,3,5
E-2	KRUEGER	S580	SURFACE	14/10	12/8	300	-	18	0.028	2,3,5
E-3	KRUEGER	S580	SURFACE	20/12	18/10	600	-	18	0.035	2,3,5
E-4	KRUEGER	S580	SURFACE	24/24	22/22	1400	-	20	0.035	2,3,5
E-5	KRUEGER	S580	SURFACE	32/32	30/30	2500	-	25	0.028	2,3,5

NOTES: 1. STEEL CONSTRUCTION.
2. ALUMINUM CONSTRUCTION.
3. PROVIDE OBD.
4. DOUBLE DEFLECTION 22.5 DEGREE DEFLECTION.
5. SINGLE DEFLECTION 35 DEGREE DEFLECTION.

EXISTING CONDENSING UNITS

TAG	MANUFACTURER	MODEL NUMBER
(E)CU-1	AIRSTACK	ASP10X2A1A1-R410A

EXISTING AIR HANDLING UNIT SCHEDULE

TAG	MFGR	MODEL
(E)RTU-1	AAON	RN-020-3-0-EA09-EJN
(E)AHU-1	TRANE	TSCB006U0F00000000CC00A360 2

EXHAUST FAN SCHEDULE

EQUIP TAG	MFGR	TYPE	MODEL NUMBER	EXHAUST (CFM)	SP (IN)	HP	FAN RPM	VOLTAGE (V/PH,HZ)	SOUND (SONES)	L/W/H (IN)	WEIGHT (LBS)	NOTES
EF-1	GREENHECK	INLINE	BSQ-300HP	8,225	2	7 1/2	1,044	460/3/60	26	38/46/64	623	1
EF-2	GREENHECK	WALL MOUNTED	CUBE-101HP-4	350	1	1/4	1,744	208/3/60	8.9	25/29	81	1

NOTES: 1. PROVIDE DISCONNECT.

HEAT EXCHANGERS

EQUIP TAG	MFGR	MODEL	CIRCULATING FLUID					MODULATING CONTROL V (LBS/HR)	STEAM PRESSURE	DIAMETER/ LENGTH	NOTES
			FLUID	GPM	TEMP IN (°F)	TEMP OUT (°F)	PRESSURE DROP				
HX-3	TACO	E6206S	30% PPG	23	160	180	0.11	230.5	30 PSI	7"/40"	1
HX-4	TACO	E6206S	30% PPG	23	160	180	0.11	230.5	30 PSI	7"/40"	1

NOTES: 1. MANUFACTURER IS FOR BASIS OF DESIGN ONLY. OTHER MANUFACTURERS ARE ALLOWED.

UNIT HEATER

EQUIP TAG	MFGR	MODEL	MBH	GPM	EWT	LWT	PPG%	WPD	CFM	FAN HP	VOLTAGE (V/PH/HZ)	NOTES
UH-1	TRANE	S-A48	34.8	3.5	180	160	35	0.12	750	1/20	110/1/60	
UH-2	TRANE	S-A48	34.8	3.5	180	160	35	0.12	750	1/20	110/1/61	
UH-3	TRANE	S-A48	34.8	3.5	180	160	35	0.12	750	1/20	110/1/62	
UH-4	TRANE	S-A48	34.8	3.5	180	160	35	0.12	750	1/20	110/1/63	

NOTES:

HEAT EXCHANGERS

EQUIP TAG	MFGR	FLUID	GPM	MBH	PPG VELOCITY (FT/SEC)	TEMP IN (°F)	TEMP OUT (°F)	PRESSURE DROP (FT)	FINS/FOOT	ELEMENT LENGTH (FT)	ROWS	TUBE DIAMETER (IN)	HEIGHT	ALUMINUM FINS	NOTES
FT-1	TACO	30% PPG	0.5	2.35	3	160	180	0.11	34	3	2	0.75	14	3.25"X2.75"	1

NOTES: 1. MANUFACTURER IS FOR BASIS OF DESIGN ONLY. OTHER MANUFACTURERS ARE ALLOWED.

COMPUTER ROOM CONDENSING UNITS

TAG	MANUFACTURER	MODEL NUMBER	NOMINAL CAPCITY (MBH)	NUMBER OF FANS	OA DESIGN TEMP (F)	VOLTAGE (V/PH/HZ)	FLA	WSA	OPD	L/W/H (INCH)	WEIGHT (LBS)	NOTES
CU-1	LIEBERT	DCDF616-Y	246	6	105	208/3/60	23.6	24.8	30	132/88/44	1,380	1,2
CU-2	LIEBERT	DCDF616-Y	246	6	105	208/3/60	23.6	24.8	30	132/88/44	1,380	1,2

NOTES: 1. PROVIDE WITH FAN SPEED CONTROL, DISCONNECT SWITCH, ALLUMINUM FINS/COPPER COIL FOR DUAL REFRIGERANT CIRCUITS, ALUMINUM EXTERIOR PANELS, 18" ALUMINUM LEGS.
2. CONDENSING UNITS ARE DEIGNED TO WORK WITH EXISTING LIEBERT SYSTEMS INDOORS. CONDENSING UNIT MUST BE COMPATABLE WITH EXISTING SYSTEMS. REFER TO PLANSHEETS FOR INSTRUCTIONS TO CONTRACTOR FOR COMPATABILITY VALIDATION.

STEAM CYCLONE SCHEDULE

EQUIP TAG	MANUFACTURER	MODEL NUMBER	SIZE	STEAM FLOW RATE (LBS/HR)	NOTES
SC-1	TLV	DC3S FLANGED	3"	3,465	1,2

NOTES: 1. PROVIDE WITH INTERNAL TRAP.
2. MANUFACTURER IS BASIS OF DESIGN. OTHER MANUFACTURERS ALLOWED.

AIR TERMINAL UNIT SCHEDULE

EQUIP TAG	MFGR	MODEL	INLET DIAMETER (INCHES)	COOLING MAX (CFM)	COOLING MIN (CFM)	SP DROP (INH2O)	CAPACITY (MBH)	HEATING MIN (CFM)	HEATING MAX (CFM)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	PPG %	WATER FLOW (GPM)	HEAD LOSS (FT)	PPG CONTENT (%)	NOTES
VAV-5	TITUS	DESV	8	695	209	0.25	22.6	347.5	695	55	85	180	150	30	2.0	<0.5	30	1,2
VAV-6	TITUS	DESV	10	910	273	0.25	29.6	455	910	55	85	180	150	30	0.5	<0.5	30	1,2
VAV-7	TITUS	DESV	8	565	170	0.25	18.4	282.5	565	55	85	180	150	30	0.5	<0.5	30	1,2
VAV-8	TITUS	DESV	8	570	171	0.25	18.6	285	570	55	85	180	150	30	0.5	<0.5	30	1,2
VAV-9	TITUS	DESV	8	620	186	0.25	20.2	310	620	55	85	180	150	30	0.5	<0.5	30	1,2
VAV-20	TITUS	DESV	6	370	111	0.25	6.00	185	370	55	85	180	150	30	0.5	<0.5	30	1,2,3
VAV-21	TITUS	DESV	4	155	47	0.25	3.6	77.5	155	55	85	180	150	30	0.3	<0.5	30	1,2,3
VAV-22	TITUS	DESV	4	165	50	0.25	3.6	82.5	165	55	85	180	150	30	0.3	<0.5	30	1,2,3
VAV-23	TITUS	DESV	10	700	210	0.25	11.4	350	700	55	85	180	150	30	0.5	<0.5	30	1,2,3
VAV-24	TITUS	DESV	10	910	273	0.25	29.6	455	910	55	85	180	150	30	0.5	<0.5	30	1,2,4

NOTES: 1. MANUFACTURER SHOWN FOR BASIS OF DESIGN ONLY. OTHER MANUFACTURES WILL BE ALLOWED.
2. FACTORY CONTROLS, WATER CONTROL VALVE, DISCHARGE AIR SENSOR, AND 120V/24V TRANSFORMER.
3. DEDUCT ALTERNATE3 DELETE THIS VAV FROM PROJECT.
4. DEDUCT ALTERNATE 3 ADD THIS VAV TO PROJECT.

VENTURI VALVES

EQUIP TAG	MFGR	SIZE (IN)	CONTROL TYPE	TYPE	SYSTEM	DESIGN CFM	APD (IN WG)	COIL TYPE	EAT (F)	LAT (F)	ENTERING FLUID TEMP (F)	LEAVING FLUID TEMP (F)	FLUID FLOW (GPM)	COIL CAPACITY (MBH)	FLUID PRESSURE DROP (FT)	MAX APD (IN WG)	NOTES
VV-1S	ANTEC	108	VV	HORIZONTAL	SUPPLY	110	0.3	ALUMINUM	55	85	180	150	0.50	3.6			2,3
VV-1E	ANTEC	108	CV	HORIZONTAL	EXHAUST	115	0.3	ALUMINUM	-	-	-	-					2,3
VV-2S	ANTEC	112	VV	HORIZONTAL	SUPPLY	105	0.3	ALUMINUM	55	85	180	150	0.50	3.4			2,3
VV-2E	ANTEC	112	CV	HORIZONTAL	EXHAUST	110	0.3	ALUMINUM	-	-	-	-					2,3
VV-3S	ANTEC	112	CV	HORIZONTAL	SUPPLY	555	0.3	ALUMINUM	55	85	180	150	1.50	18.1			2,3
VV-3E	ANTEC	110	CV	HORIZONTAL	EXHAUST	610	0.3	ALUMINUM	-	-	-	-					2,3
VV-4S	ANTEC	212	CV	HORIZONTAL	SUPPLY	200	0.3	ALUMINUM	55	85	180	150	0.50	6.5			2,3
VV-4E	ANTEC	212	CV	HORIZONTAL	EXHAUST	180	0.3	ALUMINUM	-	-	-	-					2,3
VV-10S	ANTEC	108	VV	HORIZONTAL	SUPPLY	390	0.3	ALUMINUM	55	85	180	150	1.00	12.7			2,3
VV-10E	ANTEC	108	CV	HORIZONTAL	EXHAUST	410	0.3	ALUMINUM	-	-	-	-					2,3
VV-11S	ANTEC	108	VV	HORIZONTAL	SUPPLY	360	0.3	ALUMINUM	55	85	180	150	1.00	11.7			2,3
VV-11E	ANTEC	108	CV	HORIZONTAL	EXHAUST	405	0.3	ALUMINUM	-	-	-	-					2,3
VV-12S	ANTEC	108	VV	HORIZONTAL	SUPPLY	215	0.3	ALUMINUM	55	85	180	150	0.50	7.0			2,3
VV-12E	ANTEC	108	CV	HORIZONTAL	EXHAUST	205	0.3	ALUMINUM	-	-	-	-					2,3
VV-13S	ANTEC	112	CV	HORIZONTAL	SUPPLY	2160	0.3	ALUMINUM	55	85	180	150	5.00	70.3			2,3
VV-13E	ANTEC	112	CV	HORIZONTAL	EXHAUST	2430	0.3	ALUMINUM	-	-	-	-					2,3
VV-14S	ANTEC	108	CV	HORIZONTAL	SUPPLY	385	0.3	COPPER	55	85	180	150	1.00	12.5			1,2,3
VV-14E	ANTEC	108	CV	HORIZONTAL	EXHAUST	385	0.3	COPPER	-	-	-	-					1,2,3
VV-15S	ANTEC	108	CV	HORIZONTAL	SUPPLY	850	0.3	ALUMINUM	55	85	180	150	2.00	27.7			2,3
VV-15E	ANTEC	108	CV	HORIZONTAL	EXHAUST	775	0.3	ALUMINUM	-	-	-	-					2,3
VV-16S	ANTEC	108	CV	HORIZONTAL	SUPPLY	595	0.3	ALUMINUM	55	85	180	150	1.50	19.4			2,3
VV-16E	ANTEC	108	CV	HORIZONTAL	EXHAUST	540	0.3	ALUMINUM	-	-	-	-					2,3
VV-17S	ANTEC	212	CV	HORIZONTAL	SUPPLY	2330	0.3	ALUMINUM	55	85	180	150	7.50	75.8			2,3
VV-17E	ANTEC	214	CV	HORIZONTAL	EXHAUST	2220	0.3	ALUMINUM	-	-	-	-					2,3
VV-18S	ANTEC	108	CV	HORIZONTAL	SUPPLY	110	0.3	ALUMINUM	55	85	180	150	0.50	3.6			2,3
VV-18E	ANTEC	108	VV	HORIZONTAL	EXHAUST	105	0.3	ALUMINUM	-	-	-	-					2,3
VV-19S	ANTEC	108	VV	HORIZONTAL	SUPPLY	80	0.3	ALUMINUM	55	85	180	150	0.25	2.6			2,3
VV-19E	ANTEC	108	CV	HORIZONTAL	EXHAUST	90	0.3	ALUMINUM	-	-	-	-					2,3
VV-24S	ANTEC	108															
VV-24E	ANTEC	108															

NOTES: 1. PROVIDE VENTURI VALVES WITH PHENOLIC COATED VALVE BODY AND INTERNALS. PHENOLIC COATED VALVES SHALL BE INSTALLED WITH BAND CLAMPS.
2. PROVIDE WITH ROOM PRESSURE MONITORS AND CONTROLS OR OTHER APPROVED VV CONTROL SYSTEM INCLUDING SINGLE TOUCHSCREEN MULTIVARIABLE MONITOR WITH BACNET CONTROLS. INSTALL ONE FRONT END ON THE BAS AND ONE FRONT END ON ONE COMPUTER IN PHARMACY. SEE COR FOR WHICH COMPUTER.
3. MANUFACTURER TO PROVIDE TRANSITIONS FROM VALVE BODY TO HW COIL.

POT FEEDER SCHEDULE

EQUIP TAG	MFGR	MODEL	TYPE	SYSTEM	TANK VOLUME (GAL)	HEIGHT (IN)	DIAMETER (IN)	NOTES
PF-1	GTP	DB2/QC-VPDB	DOME BOTTOM FEEDER	HOT WATER	2	27	6	1,2
PF-2	GTP	DB2/QC-VPDB	DOME BOTTOM FEEDER	CHILLED WATER	2	27	6	1,2

NOTES: 1. PROVIDE WITH QUICK CONNECT WITH VALVE PACKAGE
2. BASIS OF DESIGN. OTHER MANUFACTURERS ALLOWED.

CONDENSATE PUMPS

EQUIP TAG	BASIS OF DESIGN			SYSTEM	CIRCULATING FLUID				MOTOR		NOTES
	MFGR	TYPE	MODEL		FLUID	GPM	PUMP FT HEAD	TEMP (° F)	NOM. HP	VOLT/ PHASE	
CP-1	SKIDMORE	DUPLEX	VCS-151 1/2	CONDENSATE	WATER	22.5	34.5	180	1/2	208/3	1,2

NOTES 1. MANFACTURER IS BASIS OF DESIGN, OTHER MANUFACTURERS WILL BE ALLOWED.
2. PROVIDE 3551 NEMA 1 CONTROL PANEL AND 45 GALLON RECEIVER.

EXPANSION TANKS

EQUIP TAG	MFGR	MODEL	TYPE	TANK VOLUME (GAL)	TANK ACCEPT (GAL)	HEIGHT (IN)	DIAMETER (IN)	WEIGHT (LBS)	NOTES
ET-1	TACO	CX30-125	BLADDER	8	5	23	14	105	1
ET-2	TACO	CBX42-125	BLADDER	11	5	28	14	210	1

NOTES: 1. MANUFACTURER SHOWN IS BASIS OF DESIGN, OTHER MANUFACTURERS WILL BE ALLOWED

AIR SEPARATOR SCHEDULE

EQUIP TAG	MFGR	MODEL	SYSTEM	CONNECTION SIZE (IN)	FLOW (GPM)	HEIGHT (IN)	DIAMETER (IN)	NOTES
AS-1	TACO	49025A-125	HOT WATER	2-1/2	73	17	10	
AS-2	TACO	4904A-125	CHILLED WATER	4	204	26	12	
NOTES:								

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

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REGISTERED PROFESSIONAL ENGINEER — REG. NO. 13179 — MATTHEW R. KOSCAK — SOUTH DAKOTA — 11-23-2020

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16.2330.A08

Drawing Title	MECHAINCAL SCHEDULES (PID)
Approved: Project Director	Omaha VA Medical Center
Project Title	Design/Construct Sterile Processing Service- Omaha VA Medical Center
Location	4101 Woolworth Ave #4109 Omaha, NE 68105
Date	11 / 23 / 2020
Checked	MK
Drawn	JB
Project Number	16.2330.A08
Building Number	25
Drawing Number	M 6.01
Dwg.	129 of 193

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

WATER COOLED CHILLER SCHEDULE

EQUIP TAG	MFGR	MODEL NUMBER	COMPRESSOR TYPE	TONNAGE	REFRIGERANT TYPE	CONDENSER TYPE	EVAPORATOR TYPE	EER	EFFICIENCY 100% LOAD (KW/TON)	IPLV.IP (KW/TON)	NPLV (KW/TON)	CHILLED EWT	CHILLED LWT	EVAPORATOR EWT	EVAPORATOR LWT	PPG %	CONDENSER FLUID FLOW RATE (GPM)	EVAPORATOR FLOW RATE (GPM)	CONDENSER FLUID PRESSURE DROP	EVAPORATOR PRESSURE DROP	NUMBER OF COMPRESSOR	COMPRESSOR POWER (KW)	SINGLE POINT POWER MCA	SINGLE POINT POWER MOP	V/PH/HZ	L/W/H (INCHES)	WEIGHT (LBS)	NOTES
CHR-1	TRANE	TACW075AT3042	MAGNETIC BEARING	70	R134A	SHELL AND TUBE	FLOODED	18.39	0.6528	0.3606	0.3896	55	45	85	95	30	176.5	215.6	18.4 FT H2O	8.1 FT H2O	1	67.8	84.8	150	460/3/60	94/45/79	4,100	1,2,3
CHR-1	TRANE	TACW075AT3042	MAGNETIC BEARING	70	R134A	SHELL AND TUBE	FLOODED	18.39	0.6528	0.3606	0.3896	55	45	85	95	30	176.5	215.6	18.4 FT H2O	8.1 FT H2O	1	67.8	84.8	150	460/3/60	94/45/79	4,100	1,2,3
NOTES:	1. PROVIDE VIBRATION CURB, SINGLE POINT ELECTRICAL CONNECTION AND INTEGRAL DISCONNECT, VFD, BACNET INTERFACE.																											
	2. FACTORY START-UP INCLUDED. PROVIDE 5 YEAR WARRANTY.																											
	3. MANUFACTURER IS BASIS OF DESIGN ONLY. OTHER MANUFACTURERS ALLOWED. ALT DEDUCT #3, REMOVE FROM PROJECT.																											

COOLING TOWER SCHEDULE

TAG	MFGR	MODEL NUMBER	NOMINAL CAPACITY	DIMENSIONS L x W x H (INCHES)	DESIGN FLOW (GPM)	EWT/LWT (F)	DESIGN WET BULB (°F)	FLUID WATER P.D. (PSI.)	FAN (HP)	FAN TYPE	AIRFLOW (CFM)	PUMP	FLUID	SPRAY WATER VOLUME (GPM)	ELECTRICAL VOLTS/PH	BASIN HEATER (KW)	SHIPPING WEIGHT (LBS)	OPERATIONAL WEIGHT (LBS)	NOTES
CT-01	BAC	FXV-0812A-20D-J	982.5 MBH	13-6"x8'-6"x12'-7"	216	94.5/85	80	4	7.5	ULTRA LOW SOUND FAN	17,770	5 HP	PROP GLYCOL 30%	719	460/3	12	12,183	15,412	1,2,3,4,5,6,7,8,9,10,11,12, 13,14,15
CT-02	BAC	FXV-0812A-20D-J	982.5 MBH	13-6"x8'-6"x12'-7"	216	94.5/85	80	4	7.5	ULTRA LOW SOUND FAN	17,770	5 HP	PROP GLYCOL 30%	719	460/3	12	12,183	15,412	1,2,3,4,5,6,7,8,9,10,11,12, 13,14,15
NOTES:	1. PROVIDE VIBRATION CURB, MECHANICAL VIBRATION CUTOFF, CTI CERTIFIED THERMAL PERFORMANCE, WELDED 304 STAINLESS STEEL CONSTRUCTION IN BASIN WATER CONTACTED AREAS, GALVANIZED STEEL FULL CIRCUIT COIL, HEATER CONTROL PANEL WITH CONTACTOR DISCONNECT AND CIRCUIT BREAKER, ELECTRIC EMERSION HEATERS SIZED TO MAINTAIN +40 DEGREE F WATER AT 0 DEGREES F AMBIENT WITH ELECTRICALSTAINLESS STEEL BASIN HEATER ELEMENTS, EXTENDED BEARING LUBRICATION LINES, ELECTRIC WATER LEVEL CONTROL PACKAGE WITH HIGH AND LOW ALARMS, VFD, BACNET INTERFACE, EXTERNAL PLATFORM WITH SAFETY GATE AND LADDER WITH SAFETY CAGE LOCATED ON LOUVER FACE OF UNIT, ACCESS DOOR PLATFORM WITH ALUMINUM SAFETY GATE, 4' LADDER AND CAGE EXTENSIONS FOR EACH LADDER, INTERNAL WALKWAY AND LADDER, SPRAY PUMP.																	
	2. FACTORY START-UP INCLUDED. PROVIDE 5 YEAR WARRANTY.																	
	3. MANUFACTURER IS BASIS OF DESIGN ONLY. OTHER MANUFACTURERS ALLOWED. ALT DEDUCT #3, REMOVE FROM PROJECT.																	

CIRCULATING PUMPS

BASIS OF DESIGN				SYSTEM	CIRCULATING FLUID				% EFF.	MOTOR		NOTES
EQUIP TAG	MFGR	TYPE	MODEL		FLUID	GPM	PUMP FT HEAD	TEMP (° F)		NOM. HP	VOLT/PHASE	
HWP-1	GRUNDFOS	VERTICAL INLINE CLOSED COUPLED	TPE3 D 65-80 3	HEATING	30% PPG	65	15	180	58.1	0.75	208/3	1,2
CHWP-1	GRUNDFOS	VERTICAL INLINE	TPE3 50-200	CHILLED	30% PPG	130	40	55	65.9	2	208/3	1,2,3
CHWP-2	GRUNDFOS	VERTICAL INLINE	TPE3 50-200	CHILLED	30% PPG	130	40	55	65.9	2	208/3	1,2,3
CHWP-3	GRUNDFOS	VERTICAL INLINE	NBSE 015-070-5.04	CHILLED	30% PPG	177	85	45	92.4	7.5	460/3	1,2,4
CHWP-4	GRUNDFOS	VERTICAL INLINE	NBSE 015-070-5.04	CHILLED	30% PPG	177	85	45	92.4	7.5	460/3	1,2,4
CTP-1	GRUNDFOS	VERTICAL INLINE	TPE3 80-180	CONDENSER	WATER	216	40	95	71.8	3	208/3	1,2,3
CTP-2	GRUNDFOS	VERTICAL INLINE	TPE3 80-180	CONDENSER	WATER	216	40	95	71.8	3	208/3	1,2,3
NOTES	1. MANFACTURER IS BASIS OF DESIGN, OTHER MANUFACTURERS WILL BE ALLOWED.											
	2. PROVIDE WITH INTEGRAL VFD, SUCTION DIFFUSER, AND TRIPLE DUTY VALVE.											
	3. DEDUCT #3, REMOVE THIS PUMP FROM PROJECT.											
	3. DEDUCT #3, ADD THIS PUMP TO PROJECT.											

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

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16.2330.A08

Drawing Title: MECHANICAL SCHEDULES 2 (PID)

Approved: Project Director: Omaha VA Medical Center

Project Title: Design/Construct Sterile Processing Service- Omaha VA Medical Center

Location: 4101 Woolworth Ave #4109 Omaha, NE 68105

Date: 11 / 23 / 2020 | Checked: MK | Drawn: JB

Project Number: 16.2330.A08

Building Number: 25

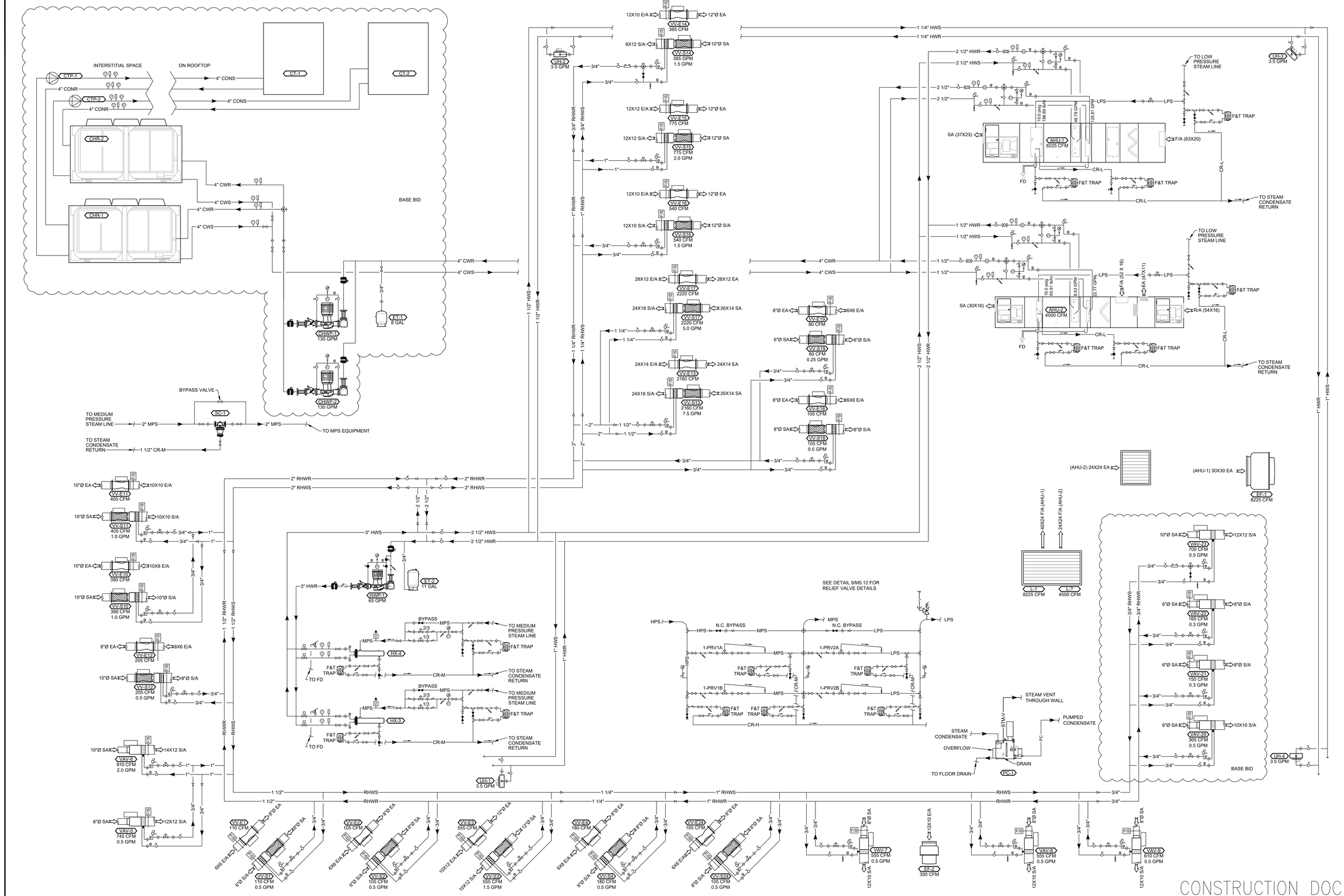
Drawing Number: M 6.01A

Dwg. 130 of 193

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231



CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

CONSULTANTS:

TERRASITE DESIGN
1635 DEADWOOD AVENUE
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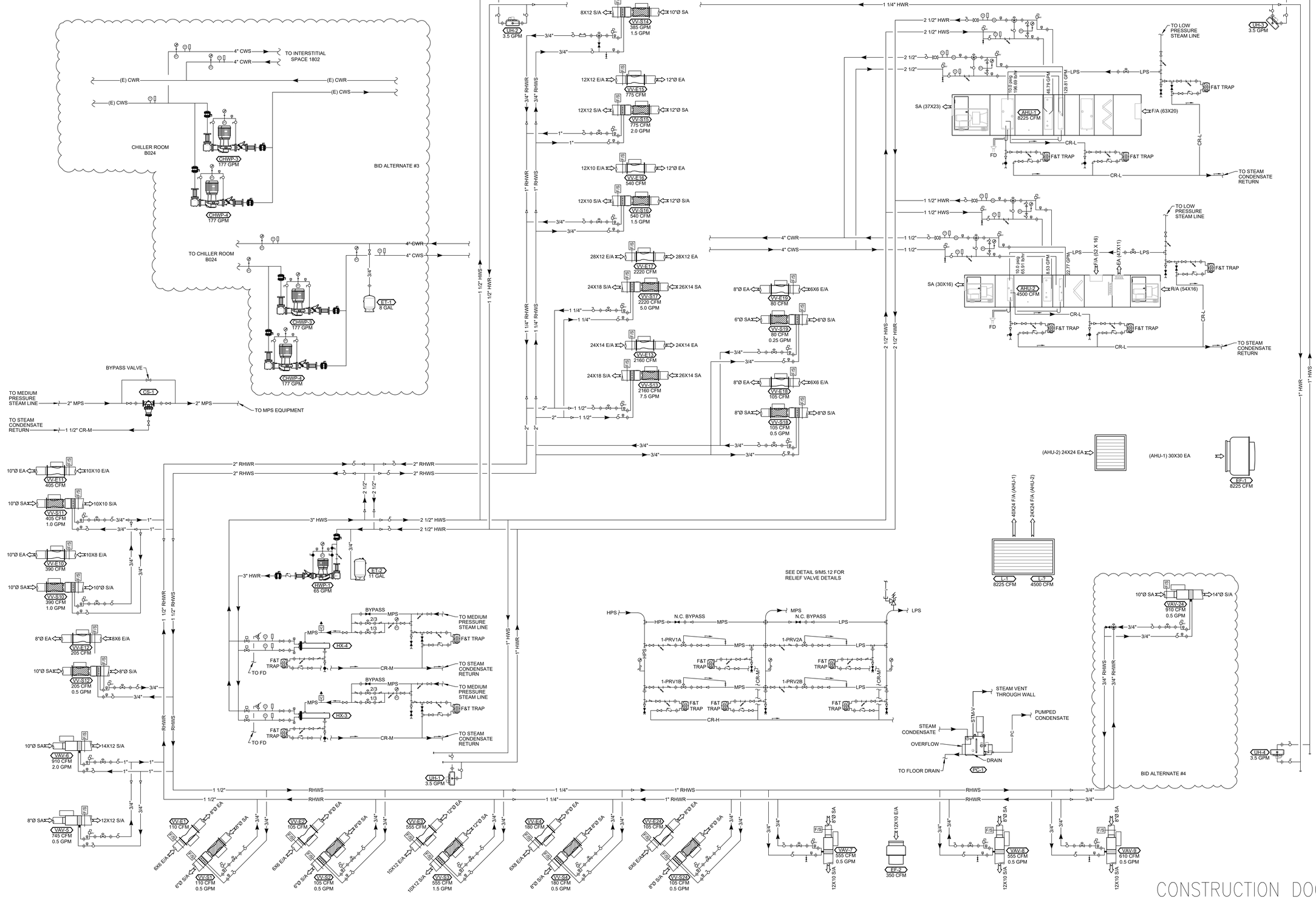
16.2330.A08

Drawing Title	Piping and Instrumentation Diagram (PID)
Approved: Project Director	Omaha VA Medical Center
Project Title	Design/Construct Sterile Processing Service- Omaha VA Medical Center
Location	4101 Woolworth Ave #4109 Omaha, NE 68105
Date	11 / 23 / 2020
Checked	MK
Drawn	JB
Project Number	16.2330.A08
Building Number	25
Drawing Number	M 6.02
Dwg.	131 of 193

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231



CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

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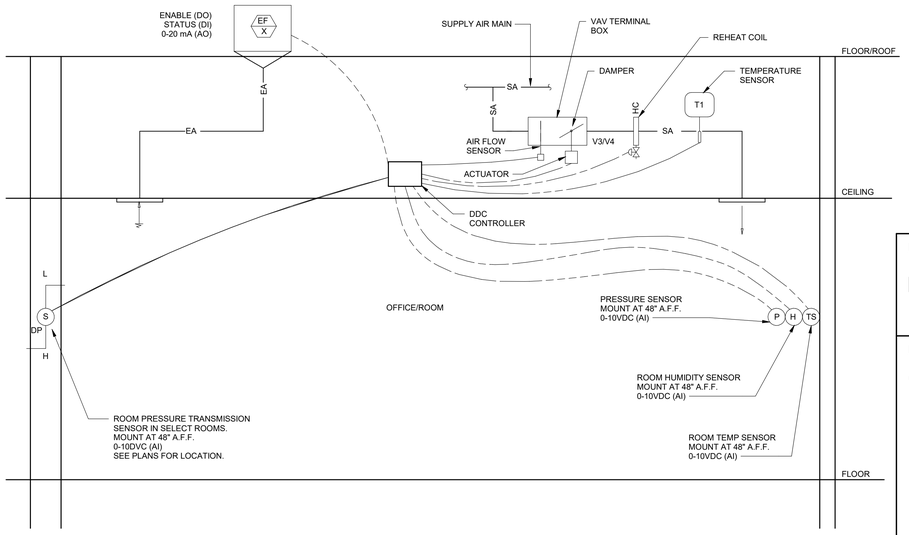
16.2330.A08

Drawing Title	Piping and Instrumentation Diagram (PID) Deduct Alternate #3 AND #4
Approved: Project Director	Omaha VA Medical Center
Project Title	Design/Construct Sterile Processing Service- Omaha VA Medical Center
Location	4101 Woolworth Ave #4109 Omaha, NE 68105
Date	11 / 23 / 2020
Checked	MK
Drawn	JB
Project Number	16.2330.A08
Building Number	25
Drawing Number	M 6.02.1
Dwg.	132 of 193

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231



SPD PROCESSING AREAS:
ROOM TEMPERATURE AND AIR FLOW TRACKING - CONTROL DIAGRAM

NO SCALE

PRESSURE LEGEND

H2O	ROOM NAME
1912	ROOM NUMBER
O	ROOM PRESSURIZATION

PRESSURIZATION SYMBOL

++	MOST POSITIVE
+	SLIGHTLY POSITIVE
O	NEUTRAL
-	SLIGHTLY NEGATIVE
- -	MOST NEGATIVE

SPD PROCESSING AREAS:
ROOM TEMPERATURE AND AIRFLOW TRACKING - CONTROL SEQUENCE

THE NEW AIR HANDLING SYSTEM PROVIDES SUPPLY AIR TO THE SPACES AND THE DEDICATED EXHAUST FAN DRAWS EXHAUST AIR FROM THE SPACES. THESE TWO SYSTEMS TOGETHER PROVIDE A "ONCE THROUGH" AIR FLOW PATTERN WITH NO EXHAUST AIR RECIRCULATED THROUGH THE SPACES. THE DESIGN INCLUDES A FAST ACTING VENTURI SUPPLY AIR VARIABLE AIR VOLUME (VAV) TERMINAL UNIT COMPLETE WITH HOT WATER REHEAT COIL AND A DEDICATED EXHAUST FAN ON A VFD. THESE TWO SYSTEMS SHALL OPERATE IN TANDUM TO PROVIDE ROOM TEMPERATURE CONTROL AND ROOM PRESSURE CONTROL.

THE TERMINAL UNIT WILL BE PROVIDED WITH AN AIR FLOW RATE SENSOR AND AN AIR FLOW DAMPER TO CONTROL THE FLOW RATE OF AIR AS DETERMINED BY THE DDC CONTROLLER. THE SUPPLY AIR VAV TERMINAL UNIT WILL REQUIRE A CONTROL VALVE FOR THE REHEAT COIL AND A DISCHARGE AIR TEMPERATURE SENSOR FOR MONITORING PURPOSES. ADDITIONALLY PROVIDE A ROOM TEMPERATURE SENSOR, A ROOM HUMIDITY SENSOR, A ROOM CARBON DIOXIDE SENSOR, AND A ROOM PRESSURE SENSOR OR PRESSURE TRANSMITTER. THE ROOM PRESSURE SENSOR SHALL REFERENCE ADJACENT SPACES AS SHOWN IN THE PRESSURE DIAGRAM PLAN. IN ORDER FOR THESE SPACES TO BE UNDER A NEGATIVE OR POSITIVE PRESSURE WITH REFERENCE TO THE ADJACENT SPACES, THESE SPACES MUST BE AIR TIGHT WITH CRACKS CAULKED AND DOORS WEATHER STRIPPED FOR ANY PRESSURE CONTROL TO BE EFFECTIVE.

POSITIVE PRESSURE CONTROL WILL BE REQUIRED IN CLEAN SUPPLY, PREP & STERILE, AND PREP & STERILE ANTE, REFER TO PLANS FOR FULL PRESSURE CONTROL SCHEMATIC. UNDER THIS CONTROL SEQUENCE THE SUPPLY AIR VAV TERMINAL UNIT SHALL DELIVER A CONSTANT FLOW OF SUPPLY AIR AS SHOWN ON THE AIR BALANCE SCHEDULE AND THE DDC CONTROLLER SHALL DECREASE THE FLOW OF EXHAUST AIR IN ORDER TO PROVIDE A POSITIVE PRESSURE IN THE SPACE AS MEASURED BY THE ROOM PRESSURE TRANSMITTER. THE AIR FLOW RATE OF THE SUPPLY VAV TERMINAL UNIT SHALL BE MAINTAINED CONSTANT AND THE DAMPER OPENED/CLOSED DEPENDING ON THE CHANGING PRESSURE IN THE MEDIUM PRESSURE SUPPLY DISTRIBUTION SYSTEM. THE VFD SPEED OF THE EXHAUST FAN SHALL VARY TO MAINTAIN THE ROOM PRESSURE AS THE DDC CONTROLLER MONITORS THE FAN STATUS.

NEGATIVE PRESSURE CONTROL WILL BE REQUIRED IN DECONTAMINATION, SCOPE STERILE, AND DECONTAMINATION ANTE, REFER TO PLANS FOR FULL PRESSURE CONTROL SCHEMATIC. UNDER THIS CONTROL SEQUENCE THE SUPPLY AIR VAV TERMINAL UNIT SHALL DELIVER A CONSTANT FLOW OF SUPPLY AIR AS SHOWN ON THE AIR BALANCE SCHEDULE AND THE DDC CONTROLLER SHALL INCREASE THE FLOW OF EXHAUST AIR IN ORDER TO PROVIDE A NEGATIVE PRESSURE IN THE SPACE AS MEASURED BY THE ROOM PRESSURE TRANSMITTER. THE AIR FLOW RATE OF THE SUPPLY VAV TERMINAL UNIT SHALL BE MAINTAINED CONSTANT AND THE DAMPER OPENED/CLOSED DEPENDING ON THE CHANGING PRESSURE IN THE MEDIUM PRESSURE SUPPLY DISTRIBUTION SYSTEM. THE FLOW RATE OF THE EXHAUST FAN SHALL VARY TO MAINTAIN THE ROOM PRESSURE AS THE DDC CONTROLLER MONITORS THE EXHAUST FAN STATUS.

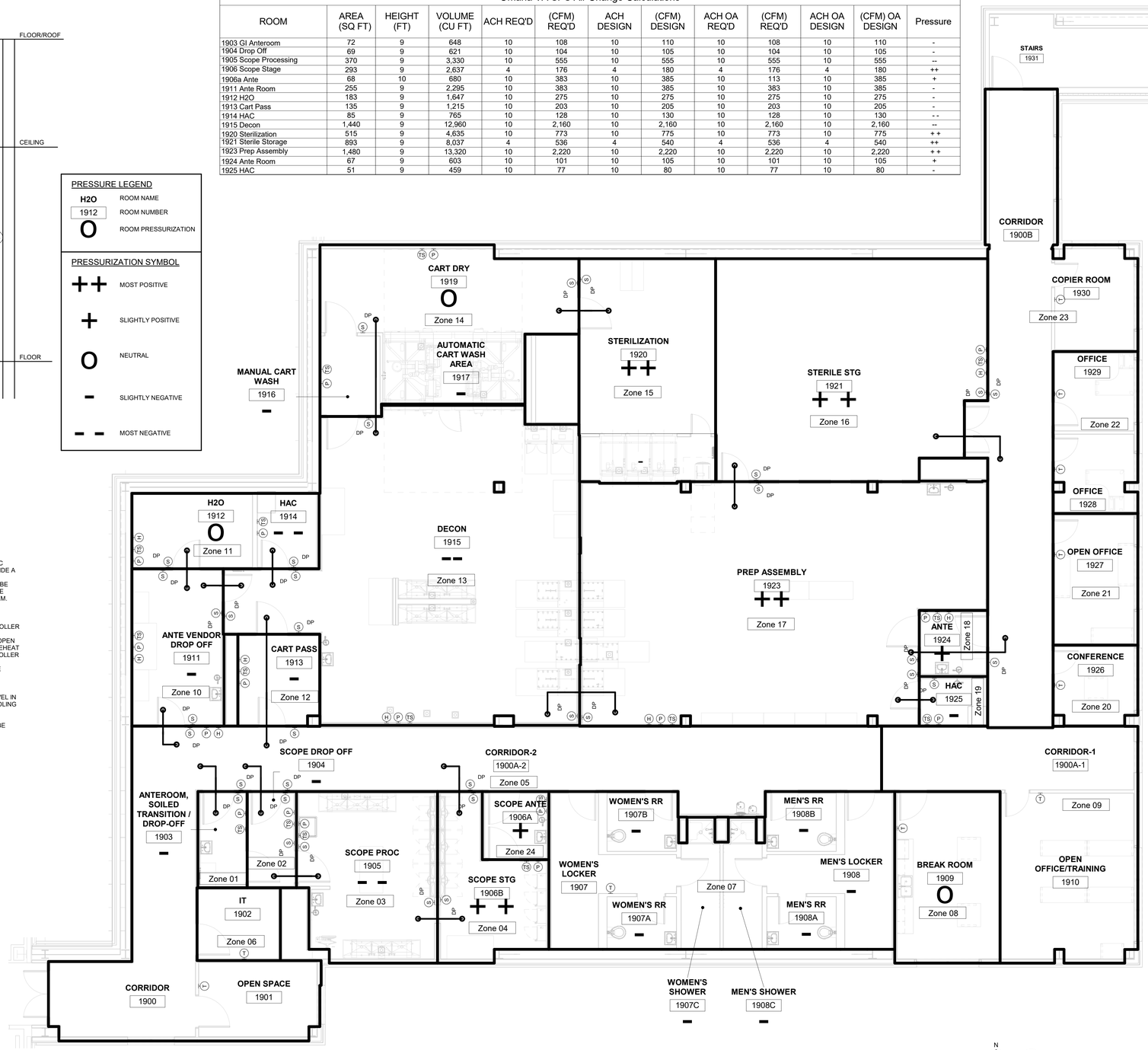
ROOM TEMPERATURE CONTROL SHALL BE ACCOMPLISHED BY THE DDC CONTROLLER MONITORING THE SPACE TEMPERATURE THROUGH THE ROOM TEMPERATURE SENSOR. AS THE SPACE TEMPERATURE DROPS THE DDC CONTROLLER SHALL OPEN THE HOT WATER REHEAT CONTROL VALVE SERVING THE VAV TERMINAL UNIT REHEAT COIL. UPON SATISFYING THE ROOM TEMPERATURE SETPOINT, THE DDC CONTROLLER SHALL CLOSE THE HOT WATER CONTROL VALVE WITH THE VAV TERMINAL UNIT DELIVERING A CONSTANT VOLUME OF 48 DEG F SUPPLY AIR TO THE SPACE. THE SPACE TEMPERATURES SHALL BE MAINTAINED BETWEEN 65 AND 75 DEG F (ADJUSTABLE) ON A CONTINUOUS BASIS (24/7).

THE ROOM HUMIDITY SENSORS SHALL BE USED TO MONITOR THE HUMIDITY LEVEL IN EACH SPACE FOR FEEDBACK TO THE DDC CONTROLLER SERVING THE AIR HANDLING UNIT.

THE ABOVE PRESSURE RELATIONSHIPS AND TEMPERATURE SETPOINTS MUST BE MAINTAINED CONTINUOUSLY FOR INFECTION CONTROL AND MAINTAINING THE PROPER AIR FLOW PATTERNS BETWEEN THE DIFFERENT SPACES.

Omaha VA SPS Air Change Calculations

ROOM	AREA (SQ FT)	HEIGHT (FT)	VOLUME (CU FT)	ACH REQ'D	(CFM) REQ'D	ACH DESIGN	(CFM) DESIGN	ACH OA REQ'D	(CFM) REQ'D	ACH OA DESIGN	(CFM) OA DESIGN	Pressure
1903 GI Anteroom	72	9	648	10	108	10	110	10	108	10	110	-
1904 Drop Off	69	9	621	10	104	10	105	10	104	10	105	-
1905 Scope Processing	370	9	3,330	10	555	10	555	10	555	10	555	--
1906 Scope Stage	293	9	2,637	4	176	4	180	4	176	4	180	++
1906a Ante	68	10	680	10	383	10	385	10	113	10	385	+
1911 Ante Room	255	9	2,295	10	383	10	385	10	383	10	385	-
1912 H2O	183	9	1,647	10	275	10	275	10	275	10	275	-
1913 Cart Pass	135	9	1,215	10	203	10	205	10	203	10	205	-
1914 HAC	85	9	765	10	128	10	130	10	128	10	130	- -
1915 Decon	1,440	9	12,960	10	2,160	10	2,160	10	2,160	10	2,160	--
1920 Sterilization	515	9	4,635	10	773	10	775	10	773	10	775	+ +
1921 Sterile Storage	893	9	8,037	4	536	4	540	4	536	4	540	++
1923 Prep Assembly	1,480	9	13,320	10	2,220	10	2,220	10	2,220	10	2,220	+ +
1924 Ante Room	67	9	603	10	101	10	105	10	101	10	105	+
1925 HAC	51	9	459	10	77	10	80	10	77	10	80	-



1 / M 6.03 HVAC Level 3 Pressure and Flows
NOT TO SCALE

PLAN NORTH

TRUE NORTH

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

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16.2330.A08

Drawing Title	ZONE/ROOM PRESSURE AND FLOWS DIAGRAM
Approved: Project Director	Omaha VA Medical Center
Project Title	VA NWIHCS OMC CAMPUS - AE Construct Sterile Processing Service
Location	4101 Woolworth Ave #4199 Omaha, Ne 68105
Date	11 / 23 / 2020
Checked	RD
Drawn	MK
Project Number	16.2330.A08
Building Number	25
Drawing Number	M 6.03
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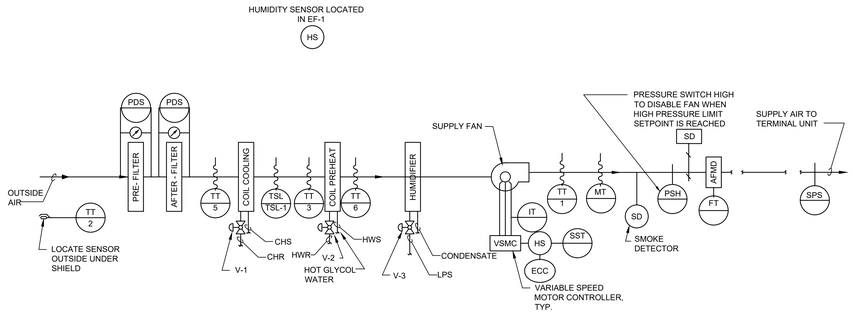


CONTROLS SYMBOLS

T	ROOM THERMOSTAT/TRANSMITTER - WALL MOUNT	HS	HAND SWITCH (HAND-OFF-AUTO SWITCH)	AT OC	OCCUPANCY SENSOR
M	ROOM HUMIDISTAT (MOISTURE)/TRANSMITTER - WALL MOUNT	ZC	VALVE OR DAMPER POSITION CONTROLLER	LTCP	LOCAL TEMPERATURE CONTROL PANEL
TT	TEMPERATURE TRANSMITTER	KR	LOCAL RECORDING TIME CLOCK (RUNTIME)	HVAC	HVAC CONTROL PANEL
TT	TEMPERATURE TRANSMITTER, AVERAGING ELEMENT	TSL	TEMPERATURE SWITCH, LOW (FREEZESTAT)	VSMC	VARIABLE SPEED MOTOR CONTROLLER
MT	MOISTURE (HUMIDITY) TRANSMITTER	TSH	TEMPERATURE SWITCH, HIGH (TEMP. CUTOUT)	TC	TEMPERATURE CONTROLLER. SEE SEQUENCE OF OPERATION
PT	PRESSURE TRANSMITTER	LC	LEVEL CONTROLLER	PC	PRESSURE CONTROLLER. SEE SEQUENCE OF OPERATION
SPS	STATIC PRESSURE SENSOR	LT	LEVEL TRANSMITTER	SC	SPEED CONTROLLER. SEE SEQUENCE OF OPERATION
FT	FLOW TRANSMITTER	PSH	PRESSURE SWITCH HIGH	SD	SMOKE DETECTOR
IT	CURRENT TRANSMITTER	PSL	PRESSURE SWITCH LOW	FC	FLOW CONTROLLER. SEE SEQUENCE OF OPERATION
CT	CONDUCTIVITY TRANSMITTER	EPT	ELECTRONIC TO PNEUMATIC TRANSDUCER	FSH	FLOW SWITCH HIGH
PDT	PRESSURE DIFFERENTIAL TRANSMITTER	AT CO2	CARBON DIOXIDE TRANSMITTER	FSL	FLOW SWITCH LOW
PDS	PRESSURE DIFFERENTIAL SENSOR	AT CO	CARBON MONOXIDE TRANSMITTER	KC	TIME CLOCK CONTROLLING EQUIPMENT ON A SCHEDULE
FS	FROST SENSOR	SST	START/STOP	AFMD	AIR FLOW MEASURING DEVICE
HHL	HIGH HUMIDITY LIMIT SENSOR	RAH	RETURN AIR HUMIDITY TRANSMITTER		DIRECT DIGITAL CONTROLLER
MAT	MIXED AIR TEMPERATURE TRANSMITTER	AFS	AIR FLOW SWITCH	SD	SMOKE DAMPER
ECC	ENERGY CONTROL CENTER (INEGRATE CONTROL POINT ON REMOTE GRAPHICS WORKSTATION)	BAS	BUILDING AUTOMATION SYSTEM		

1. GENERAL

1.1 UNIT IS NORMALLY STARTED AND STOPPED REMOTELY AT THE ECC. H-O-A SWITCH SHALL BE KEPT IN THE "AUTO" POSITION. "HAND" AND "OFF" POSITIONS SHALL BE USED ONLY FOR MAINTENANCE. WHEN THE UNIT IS "OFF"

2. TEMPERATURE CONTROL

2.1 SUPPLY AIR TEMPERATURE, SENSED BY TT-1, SHALL BE MAINTAINED AT SETPOINT OF 68 DEGREES F (ADJ) VIA DIGITAL CONTROL PANEL BY MODULATING V-1 OR V-2 IN SEQUENCE.

3. AIR FLOW CONTROL

3.1 THE SUPPLY AIR FLOW SHALL BE CONTROLLED BY THE DIGITAL CONTROL PANEL MODULATING THE SUPPLY FAN VARIABLE SPEED MOTOR CONTROLLER TO MAINTAIN 3.0" [25mm] OF DUCT STATIC PRESSURE (FIELD ADJUSTABLE), SENSED BY SPS-1. RESET STATIC PRESSURE BASED ON ACTUAL BUILDING LOAD BY POLLING ALL ATU

3.2 THE DIGITAL CONTROL PANEL, USING TOTAL SUPPLY AIR AND RETURN AIR FLOW SIGNALS, SHALL RESET THE RETURN AIR FAN VSMC TO MAINTAIN A CONSTANT AIR FLOW DIFFERENCE BETWEEN THE SUPPLY AIR AND THE RETURN AIR EQUAL TO MINIMUM OUTSIDE AIR.

3.3 USING HIGH PRESSURE SENSOR SPS-2 LOCATED AT THE SUPPLY FAN DISCHARGE, SHALL PREVENT THE SUPPLY FAN FROM DEVELOPING OVER 4" [75mm] OF STATIC PRESSURE (FIELD ADJUSTABLE). IF STATIC PRESSURE AT SPS-2 DOES EXCEED 4" [75mm] THE SUPPLY AIR FAN SHALL STOP. SPS-2 SHALL BE HARDWIRED TO THE SUPPLY FAN VSMC AND UNIT SHALL BE SHUTDOWN IN HAND,AUTO OR BYPASS MODE. SPS-2 WILL REQUIRE MANUAL RESET AT THE DEVICE.

4. HUMIDITY CONTROL

4.1 WHEN THE DIGITAL CONTROL PANEL IS NOT CALLING FOR HUMIDITY, SENSED BY EXHAUST AIR HUMIDITY H-1, 2-WAY MODULATING CONTROL VALVE V-3 SHALL REMAIN CLOSED. WHEN THE DIGITAL CONTROL PANEL IS CALLING FOR HUMIDITY, V-3 SHALL REMAIN OPEN.

4.2 RETURN AIR HUMIDITY SHALL BE MAINTAINED AT SETPOINT OF 35% RH (ADJ) VIA DIGITAL CONTROL PANEL BY MODULATING CONTROL VALVE V-3 TO MAINTAIN THE DESIRED HUMIDITY. THE DCP SHALL OVERRIDE THIS CONTROL TO MAINTAIN HUMIDITY OF 80% AS SENSED BY H-2. DCP SHALL CLOSE VALVE V-3 WHENEVER THE SUPPLY FAN IS OFF. VALVE V-3 SHALL BE INTERLOCKED WITH A TEMPERATURE SWITCH TO KEEP THE HUMIDIFIER OFF UNTIL CONDENSATE TEMPERATURE APPROACHES STEAM TEMPERATURE.

5. FREEZE PROTECTION

5.1 IF THE AIR TEMPERATURE AS SENSED BY TT-3 FALLS BELOW 45°F [7°C], AN ALARM SIGNAL SHALL INDICATE AT THE DCP AND ECC. IF THIS TEMPERATURE FALLS BELOW 40°F [4.4°C], AS SENSED BY THE TSL THE SUPPLY AND RETURN FANS SHALL SHUT DOWN AND A CRITICAL ALARM SHALL INDICATE AT THE DIGITAL CONTROL PANEL AND ECC. TSL SHALL BE HARDWIRED TO THE SUPPLY FAN UFD AND UNIT SHALL BE SHUTDOWN IN HAND,AUTO OR BYPASS MODE. TSL WILL REQUIRE MANUAL RESET AT THE DEVICE.

6. AUTOMATIC SHUTDOWN/RESTART

6.1 WHEN SMOKE IS DETECTED BY DUCT SMOKE DETECTOR, SD, THE SUPPLY AND RETURN FANS SHALL SHUT "OFF" AND AN ALARM SIGNAL SHALL BE TRANSMITTED TO THE FIRE ALARM SYSTEM. ALL SMOKE DAMPERS IN THE SUPPLY AND RETURN DUCTS SHALL CLOSE.

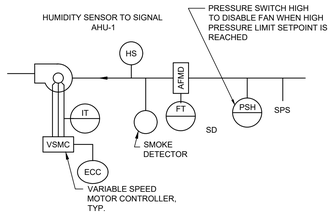
6.2 EXHAUST FANS SERVING AREA OF THE SUPPLY FAN SHALL CONTINUE TO RUN. SUPPLY AND RETURN FANS SHALL RESTART AND SMOKE DAMPERS SHALL OPEN WHEN FIRE ALARM CIRCUIT IS RESET.

7. EMERGENCY CONSTANT SPEED OPERATION

7.1 UPON FAILURE OF THE VSMC, THE SUPPLY AND RETURN FANS SHALL BE STARTED/STOPPED MANUALLY AT THE DIGITAL CONTROL PANEL OR THE ECC THROUGH THE BY-PASS STARTER. FANS SHALL THEN BE OPERATED AT CONSTANT SPEED.

SYSTEM: AHU-1

SYSTEM COMPONENT:	POINT ID	ABBREVIATION	REMARKS
EXHAUST AIR HUMIDITY	AI-2	RAH	
PRE-HEAT TEMPERATURE	AI-5	PHT	
COOILING COIL TEMPERATURE	AI-6	CCT	
DISCHARGE AIR TEMPERATURE	AI-7	DAT	
DISCHARGE STATIC PRESSURE	AI-8	DASP	
DISCHARGE AIR HUMIDITY	AI-9	DAH	
SUPPLY AIR FLOW (CFM)	AI-10	SAF	
OUTSIDE AIR TEMPERATURE	AI-11	OAT	
SUPPLY FAN STATUS	BI-3	SF-STS	
STATIC PRESSURE HIGH LIMIT	BI-5	SPS-2	
HUMIDITY HIGH LIMIT	BI-6	HHL	
SUPPLY FAN VSMC ALARM	BI-7	SF-ALA	
SUPPLY FAN VSMC	AO-2	SF-SPD	FULL COMMUNICATION
PRE-HEAT VALVE V-2	AO-8	PHT-V1	
COILING VALVE V-1	AO-9	CLG-V1	
SUPPLY FAN START/STOP	BO-2	SF-SST	
STEAM VALVE V-3	BO-3	HUM-ISO-V3	



1. GENERAL

1.1 UNIT IS NORMALLY STARTED AND STOPPED REMOTELY AT THE ECC. H-O-A SWITCH SHALL BE KEPT IN THE "AUTO" POSITION. "HAND" AND "OFF" POSITIONS SHALL BE USED ONLY FOR MAINTENANCE. WHEN THE UNIT IS "OFF"

2. AIR FLOW CONTROL

2.1 THE EXHAUST AIR FLOW SHALL BE CONTROLLED BY THE DIGITAL CONTROL PANEL MODULATING THE EXHAUST FAN VARIABLE SPEED MOTOR CONTROLLER TO MAINTAIN 3.0" [25mm] OF DUCT STATIC PRESSURE (FIELD ADJUSTABLE), SENSED BY SPS-1.

2.2 THE DIGITAL CONTROL PANEL, USING TOTAL EXHAUST AIR FLOW SIGNALS,

2.3 USING HIGH PRESSURE SENSOR SPS-2 LOCATED AT THE EXHAUST FAN INTAKE, SHALL PREVENT THE SUPPLY FAN FROM DEVELOPING OVER 4" [75mm] OF STATIC PRESSURE (FIELD ADJUSTABLE). IF STATIC PRESSURE AT SPS-2 DOES EXCEED 4" [75mm] THE SUPPLY AIR FAN SHALL STOP. SPS-2 SHALL BE HARDWIRED TO THE SUPPLY FAN VSMC AND UNIT SHALL BE SHUTDOWN IN HAND,AUTO OR BYPASS MODE. SPS-2 WILL REQUIRE MANUAL RESET AT THE DEVICE.

SYSTEM: EF-1

SYSTEM COMPONENT:	POINT ID	ABBREVIATION	REMARKS
EXHAUST AIR HUMIDITY	AI-2	RAH	
EXHAUST AIR FLOW (CFM)	AI-10	SAF	
EXHAUST FAN STATUS	BI-3	SF-STS	
STATIC PRESSURE HIGH LIMIT	BI-5	SPS-2	
SUPPLY FAN VSMC ALARM	BI-7	SF-ALA	
SUPPLY FAN VSMC	AO-2	SF-SPD	FULL COMMUNICATION
EXHAUST FAN START/STOP	BO-2	SF-SST	

CONSTRUCTION DOCUMENTS

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Revisions:	Date

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16.2330.A08

Drawing Title: Control Diagrams AHU-1 and EF-1

Approved: Project Director: Omaha VA Medical Center

Project Title: Design/Construct Sterile Processing Service- Omaha VA Medical Center

Location: 4101 Woolworth Ave #4109 Omaha, NE 68105

Date: 11 / 23 / 2020 | Checked: MK | Drawn: JB

Project Number: 16.2330.A08

Building Number: 25

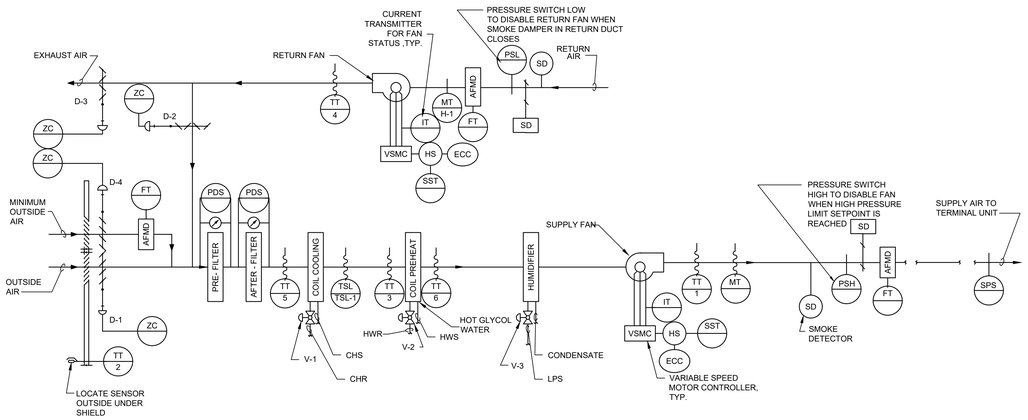
Drawing Number: M 6.04

Dwg. 134 of 193

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231



CONTROLS SYMBOLS

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TT	TEMPERATURE TRANSMITTER, AVERAGING ELEMENT	TSL	TEMPERATURE SWITCH, LOW (FREEZESTAT)	VSMC	VARIABLE SPEED MOTOR CONTROLLER
MT	MOISTURE (HUMIDITY) TRANSMITTER	TSH	TEMPERATURE SWITCH, HIGH (TEMP. CUTOUT)	TC	TEMPERATURE CONTROLLER. SEE SEQUENCE OF OPERATION
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ECC	ENERGY CONTROL CENTER (INEGRATE CONTROL POINT ON REMOTE GRAPHICS WORKSTATION)	BAS	BUILDING AUTOMATION SYSTEM		

1. GENERAL

1.1 UNIT IS NORMALLY STARTED AND STOPPED REMOTELY AT THE ECC. H-O-A SWITCH SHALL BE KEPT IN THE "AUTO" POSITION. "HAND" AND "OFF" POSITIONS SHALL BE USED ONLY FOR MAINTENANCE. WHEN THE UNIT IS "OFF" D-1, D-3, SHALL BE FULLY CLOSED. WHEN THE UNIT IS "ON" D-1, SD-1 AND SD-2 SHALL BE FULLY OPEN. D-2 AND D-3 SHALL MODULATE IN ACCORDANCE WITH THE FOLLOWING SEQUENCE:

2. TEMPERATURE CONTROL

2.1 SUPPLY AIR TEMPERATURE, SENSED BY TT-1, SHALL BE MAINTAINED AT SETPOINT VIA DIGITAL CONTROL PANEL BY MODULATING V-1 OR D-2 AND D-3 OR V-2 IN SEQUENCE.

2.2 WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS ABOVE 75°F (ADJ) [23.8°C], THE DIGITAL CONTROL PANEL SHALL PREVENT THE MODULATION OF D-2 AND D-3 AND SHALL ASSUME THE MINIMUM OUTSIDE AIR POSITION (D-2 FULLY OPENED AND D-3 FULLY CLOSED). THE DIGITAL CONTROL PANEL SHALL MODULATE V-1 TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.

2.3 WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS BETWEEN 65°F [18.3°C] AND THE SUPPLY AIR TEMPERATURE SENSED BY TT-1, DAMPER D-2 SHALL FULLY CLOSE AND D1 AND D3 SHALL BE FULLY OPEN (MAXIMUM OUTSIDE AIR POSITION). THE DIGITAL CONTROL PANEL SHALL MODULATE V-1 TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.

2.4 WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS BELOW THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1, DAMPERS D1, D-2 AND D-3 SHALL MODULATE TO MAINTAIN THE SCHEDULED SUPPLY AIR TEMPERATURE. IF D-2 IS OPEN AND D-3 IS CLOSED TO MINIMUM OUTSIDE AIR, V-2 SHALL MODULATE OPEN TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.

3. AIR FLOW CONTROL

3.1 THE SUPPLY AIR FLOW SHALL BE CONTROLLED BY THE DIGITAL CONTROL PANEL MODULATING THE SUPPLY FAN VARIABLE SPEED MOTOR CONTROLLER TO MAINTAIN 3.0" [25mm] OF DUCT STATIC PRESSURE (FIELD ADJUSTABLE), SENSED BY SPS-1. RESET STATIC PRESSURE BASED ON ACTUAL BUILDING LOAD BY POLLING ALL ATU

3.2 THE DIGITAL CONTROL PANEL, USING TOTAL SUPPLY AIR AND RETURN AIR FLOW SIGNALS, SHALL RESET THE RETURN AIR FAN VSMC TO MAINTAIN A CONSTANT AIR FLOW DIFFERENCE BETWEEN THE SUPPLY AIR AND THE RETURN AIR EQUAL TO MINIMUM OUTSIDE AIR.

3.3 USING HIGH PRESSURE SENSOR SPS-2 LOCATED AT THE SUPPLY FAN DISCHARGE, SHALL PREVENT THE SUPPLY FAN FROM DEVELOPING OVER 4" [75mm] OF STATIC PRESSURE (FIELD ADJUSTABLE). IF STATIC PRESSURE AT SPS-2 DOES EXCEED 4" [75mm] THE SUPPLY AIR FAN SHALL STOP. SPS-2 SHALL BE HARDWIRED TO THE SUPPLY FAN VSMC AND UNIT SHALL BE SHUTDOWN IN HAND,AUTO OR BYPASS MODE. SPS-2 WILL REQUIRE MANUAL RESET AT THE DEVICE.

4. HUMIDITY CONTROL

4.1 WHEN THE DIGITAL CONTROL PANEL IS NOT CALLING FOR HUMIDITY, SENSED BY RETURN AIR HUMIDITY H-1, 2-WAY "ON-OFF" CONTROL VALVE V-3 SHALL REMAIN CLOSED. WHEN THE DIGITAL CONTROL PANEL IS CALLING FOR HUMIDITY, V-3 SHALL REMAIN OPEN.

4.2 RETURN AIR HUMIDITY SHALL BE MAINTAINED AT SETPOINT OF 35% RH (ADJ) VIA DIGITAL CONTROL PANEL BY MODULATING CONTROL VALVE V-3 TO MAINTAIN THE DESIRED HUMIDITY. THE DCP SHALL OVERRIDE THIS CONTROL TO MAINTAIN HUMIDITY OF 80% AS SENSED BY H-2. DCP SHALL CLOSE VALVE V-3 WHENEVER THE SUPPLY FAN IS OFF. VALVE V-3 SHALL BE INTERLOCKED WITH A TEMPERATURE SWITCH TO KEEP THE HUMIDIFIER OFF UNTIL CONDENSATE TEMPERATURE APPROACHES STEAM TEMPERATURE.

5. FREEZE PROTECTION

5.1 IF THE AIR TEMPERATURE AS SENSED BY TT-3 FALLS BELOW 45°F [7°C], AN ALARM SIGNAL SHALL INDICATE AT THE DCP AND ECC. IF THIS TEMPERATURE FALLS BELOW 40°F [4.4°C], AS SENSED BY THE TSL THE SUPPLY AND RETURN FANS SHALL SHUT DOWN AND A CRITICAL ALARM SHALL INDICATE AT THE DIGITAL CONTROL PANEL AND ECC. TSL SHALL BE HARDWIRED TO THE SUPPLY FAN UFD AND UNIT SHALL BE SHUTDOWN IN HAND,AUTO OR BYPASS MODE. TSL WILL REQUIRE MANUAL RESET AT THE DEVICE.

6. AUTOMATIC SHUTDOWN/RESTART

6.1 WHEN SMOKE IS DETECTED BY DUCT SMOKE DETECTOR, SD, THE SUPPLY AND RETURN FANS SHALL SHUT "OFF" AND AN ALARM SIGNAL SHALL BE TRANSMITTED TO THE FIRE ALARM SYSTEM. ALL SMOKE DAMPERS IN THE SUPPLY AND RETURN DUCTS SHALL CLOSE.

6.2 EXHAUST FANS SERVING AREA OF THE SUPPLY FAN SHALL CONTINUE TO RUN. SUPPLY AND RETURN FANS SHALL RESTART AND SMOKE DAMPERS SHALL OPEN WHEN FIRE ALARM CIRCUIT IS RESET.

7. EMERGENCY CONSTANT SPEED OPERATION

7.1 UPON FAILURE OF THE VSMC, THE SUPPLY AND RETURN FANS SHALL BE STARTED/STOPPED MANUALLY AT THE DIGITAL CONTROL PANEL OR THE ECC THROUGH THE BY-PASS STARTER. FANS SHALL THEN BE OPERATED AT CONSTANT SPEED.

POINT LEGEND | SYSTEM OUTPUTS: BINARY, ANA-LOG | SYSTEM INPUTS: BINARY, ANALOG | SYSTEM SOFTWARE/CONTROL: ALARM PROCESSING, APPLICATION/FUNCTION | PAGE:

SYSTEM: AHU-2

SYSTEM COMPONENT:	POINT ID	ABBREVIATION	REMARKS
RETURN AIR TEMPERATURE	AI-1	RAT	
RETURN AIR HUMIDITY	AI-2	RAH	
RETURN AIR FLOW (CFM)	AI-3	RAF	
MIXED AIR TEMPERATURE	AI-4	MAT	
PRE-HEAT TEMPERATURE	AI-5	PHT	
COOILING COIL TEMPERATURE	AI-6	CCT	
DISCHARGE AIR TEMPERATURE	AI-7	DAT	
DISCHARGE STATIC PRESSURE	AI-8	DASP	
DISCHARGE AIR HUMIDITY	AI-9	DAH	
SUPPLY AIR FLOW (CFM)	AI-10	SAF	
OUTSIDE AIR TEMPERATURE	AI-11	OAT	
RETURN LOW PRESSURE	BI-1	RLP	
RETURN FAN STATUS	BI-2	RF-STS	
SUPPLY FAN STATUS	BI-3	SF-STS	
MIXED AIR LOW LIMIT	BI-4	TSL-1	
STATIC PRESSURE HIGH LIMIT	BI-5	SPS-2	
HUMIDITY HIGH LIMIT	BI-6	HHL	
SUPPLY FAN VSMC ALARM	BI-7	SF-ALA	
RETURN FAN VSMC ALARM	BI-8	RF-ALA	
RETURN FAN VSMC	AO-1	RF-SPD	FULL COMMUNICATION
SUPPLY FAN VSMC	AO-2	SF-SPD	FULL COMMUNICATION
OUTSIDE AIR DAMPER	AO-3	OAD	
RETURN AIR DAMPER	AO-4	RAD	
EXHAUST AIR DAMPER	AO-5	EAD	
MINIMUM OUTSIDE AIR DAMPER	AO-7	MIN-OAD	
PRE-HEAT VALVE V-2	AO-8	PHT-V1	
COILING VALVE V-1	AO-9	CLG-V1	
RETURN FAN START/STOP	BO-1	RF-SST	
SUPPLY FAN START/STOP	BO-2	SF-SST	
STEAM VALVE V-3	BO-3	HUM-ISO-V3	

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

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16.2330.A08

Drawing Title: Control Diagrams AHU-2

Approved: Project Director: Omaha VA Medical Center

Project Title: Design/Construct Sterile Processing Service- Omaha VA Medical Center

Location: 4101 Woolworth Ave #4109 Omaha, NE 68105

Date: 11 / 23 / 2020 | Checked: MK | Drawn: JB

Project Number: 16.2330.A08

Building Number: 25

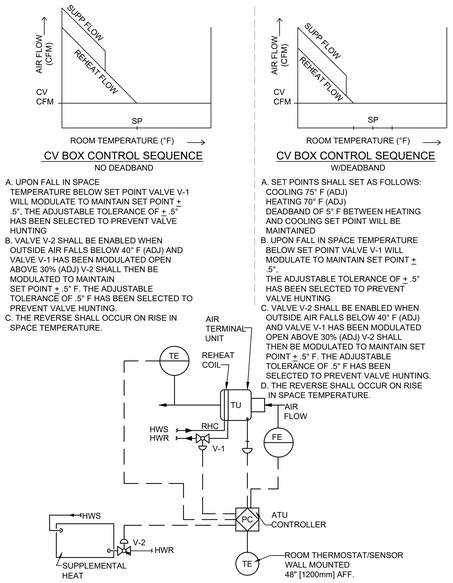
Drawing Number: M 6.05

Dwg. 135 of 193

Office of Construction and Facilities Management

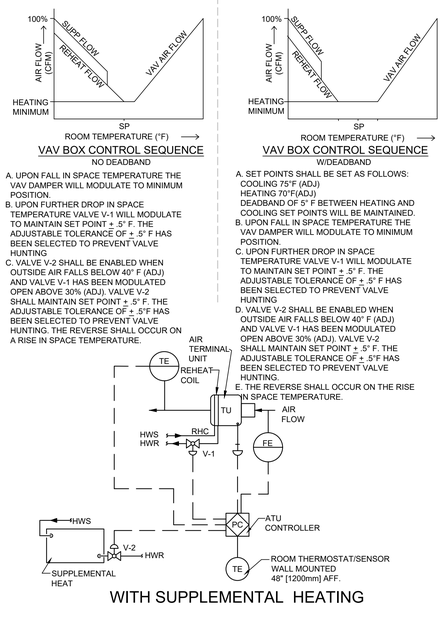
Department of Veterans Affairs

VA FORM 08-6231



1 CONSTANT VOLUME AIR TERMINAL UNIT CONTROL DIAGRAM

NTS



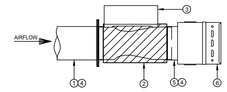
2 VARIABLE VOLUME AIR TERMINAL UNIT CONTROL DIAGRAM

NTS

SLIP CONNECTION

SUPPLY AIR CONTROL VALVE

SCALE: NONE



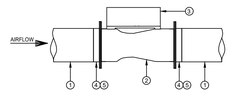
KEY NOTES

1. ROUND SHEET METAL BRANCH DUCT, SAME NOMINAL SIZE AS AIR CONTROL VALVE INLET SIZE, UNLESS NOTED OTHERWISE.
2. SUPPLY AIR CONTROL VALVE WITH EXTERNAL INSULATION TO PREVENT SWEATING.
3. CONTROL ENCLOSURE TO BE MOUNTED ON TOP, SIDES OR BOTTOM OF VALVES WHERE APPLICABLE TO PROVIDE BEST ACCESSIBILITY POSSIBLE. CONTRACTOR TO SHOW EXACT POSITION ON COORDINATION DRAWINGS.
4. EVENLY SPACED SIX (6) SHEET METAL SCREWS PER A SLIP CONNECTION TO CONNECT VALVE TO DUCT WORK.
5. TRANSITION WITH ACCESS DOORS PROVIDED BY HOT WATER REHEAT COIL MANUFACTURER.
6. HOT WATER REHEAT COIL. REFER TO REHEAT COIL PIPING DETAIL.

FLANGE CONNECTION

SUPPLY / EXHAUST AIR CONTROL VALVE

SCALE: NONE



KEY NOTES

1. ROUND SHEET METAL BRANCH DUCT, SAME NOMINAL SIZE AS AIR CONTROL VALVE INLET SIZE, UNLESS NOTED OTHERWISE.
2. FLANGE ENDS AIR CONTROL VALVE WITH COATING FOR CHEMICAL APPLICATIONS. WHERE REQUIRED. REFER TO EXHAUST AIR VALVE SCHEDULE FOR VALVE COATING DETAILS.
3. CONTROL ENCLOSURE TO BE MOUNTED ON TOP, SIDES OR BOTTOM OF VALVES WHERE APPLICABLE TO PROVIDE BEST ACCESSIBILITY POSSIBLE. CONTRACTOR TO SHOW EXACT POSITION ON COORDINATION DRAWINGS.
4. COMPANION FLANGE TO BE CONTINUOUSLY WELD TO THE DUCTWORK FOR ZERO LEAKAGE.
5. BOLT, LOCK WASHER & NUT. ALL FLANGE HOLES FASTENED TO REDUCE AIRFLOW LEAKAGE. GASKET BETWEEN FLANGES IS RECOMMENDED.

3 VENTURI VALVE CONTROL DIAGRAM

NTS

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

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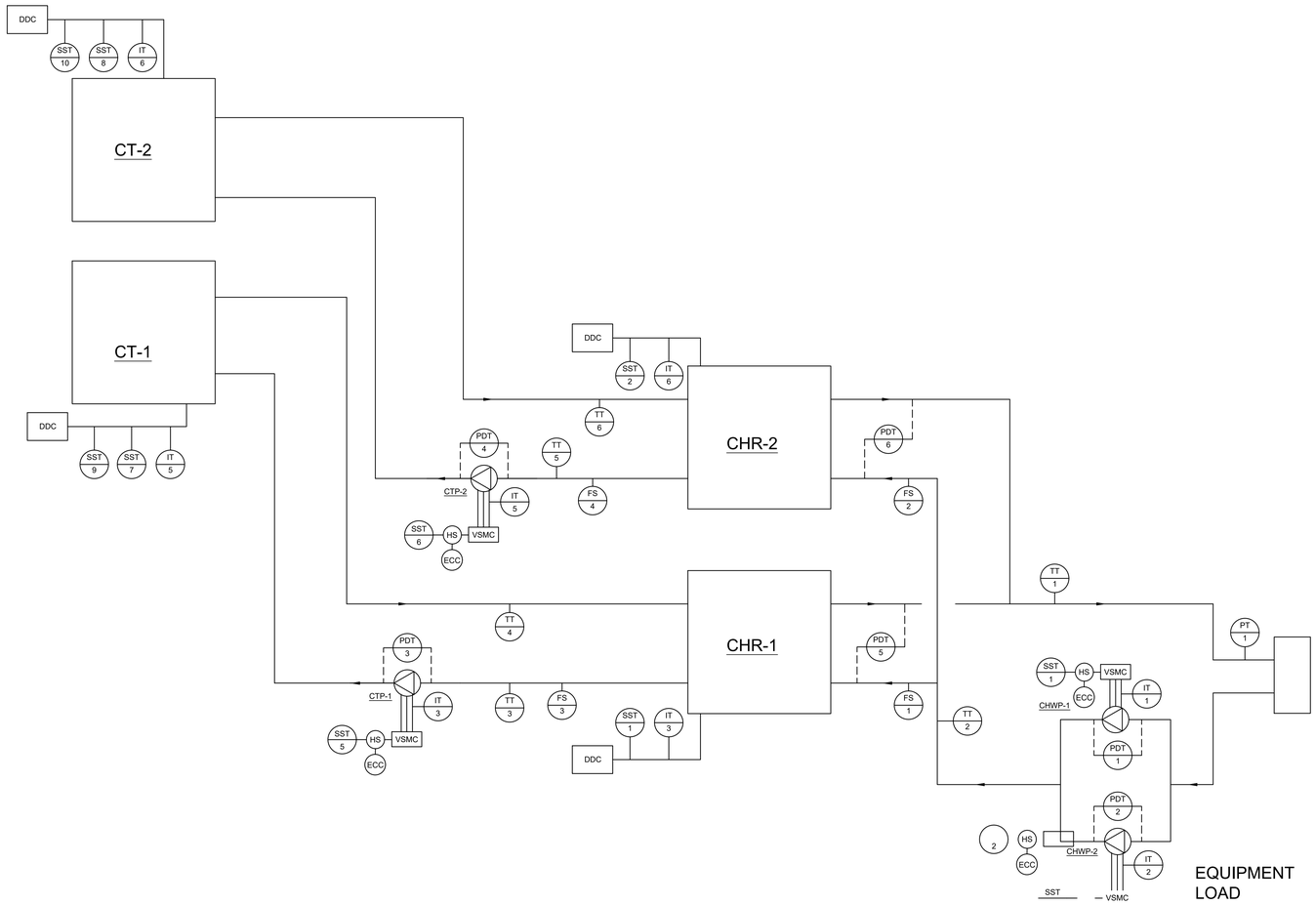
16.2330.A08

Drawing Title	Control Diagrams VAV's and VV's
Approved: Project Director	Omaha VA Medical Center
Project Title	Design/Construct Sterile Processing Service- Omaha VA Medical Center
Location	4101 Woolworth Ave #4109 Omaha, NE 68105
Date	11 / 23 / 2020
Checked	MK
Drawn	JB
Project Number	16.2330.A08
Building Number	25
Drawing Number	M 6.06
Dwg.	136 of 193

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

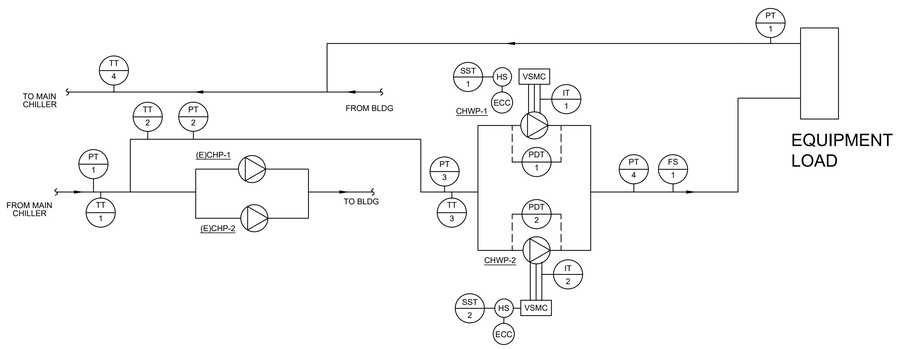


EQUIPMENT LOAD

SYSTEM: CHR-1. CHR-2 / SYSTEM COMPONENT:	POINT ID	ABBREVIATION	REMARKS
CHWP-1 VSMC ALARM	BI-1	CHWP-1-ALM	
CHWP-2 VSMC ALARM	BI-2	CHWP-2-ALM	
CHWP-1 VSMC STATUS	BI-3	IT-1	
CHWP-2 VSMC STATUS	BI-4	IT-2	
CHR-1 ALARM	BI-15	CHR-1-ALM	
CHR-1 STATUS	BI-16	IT-3	
CHIR-2 ALARM	BI-5	CHR-1-ALM	
CHR-2 STATUS	BI-6	IT-4	
CHWP-1 SPEED	AI-1	CHWP-1-SPD	
CHWP-2 SPEED	AI-2	CHWP-2-SPD	
CHR-1 FLOW	AI-3	FS-1	
CHR-2 FLOW	AI-4	FS-2	
CHILLER SUPPLY PRESSURE	AI-5	PT-1	
CHILLER SUPPLY TEMPERATURE	AI-6	TT-1	
CHILLER RETURN TEMPERATURE	AI-7	TT-2	
CHWP-1 START/STOP	BO-1	SST-1	
CHWP-2 START/STOP	BO-2	SST-2	
CHR-1 ENABLE	BO-5	SST-3	
CHR-2 ENABLE	BO-6	SST-4	
CHWP-1 SPEED CONTROL	AI-8	CHWP-1-S-CM	
CHWP-2 SPEED CONTROL	AI-9	CHWP-2-S-CM	
CTP-1 VSMC ALARM	BI-7	CTP-1-ALM	
CTP-2 VSMC ALARM	BI-8	CTP-2-ALM	
CTP-1 VSMC STATUS	BI-9	CTP-1-STS	
CTP-2 VSMC STATUS	BI-10	CTP-2-STS	
CT-1 ALARM	BI-11	CT-1-ALM	
CT-1 STATUS	BI-12	IT-5	
CT-2 ALARM	BI-13	CT-2-ALM	
CT-2 STATUS	BI-14	IT-6	
CTP-1 SPEED	AI-10	CT-1-SPD	
CTP-2 SPEED	AI-12	CT-2-SPD	
CT-1 FLOW	AI-13	FS-3	
CT-2 FLOW	AI14	FS-4	
CT-1 SUPPLY TEMPERATURE	AI-15	TT-3	
CT-1 RETURN TEMPERATURE	AI-16	TT-4	
CT-2 SUPPLY TEMPERATURE	AI-17	TT-5	
CT-2 RETURN TEMPERATURE	AI-18	TT-6	
CTP-1 START/STOP	BO-7	SST-5	
CTP-2 START/STOP	BO-8	SST-6	
CT-1 ENABLE	BO-9	SST-7	
CT-2 ENABLE	BO-10	SST-8	
CTP-1 SPEED CONTROL	AI-19	CT-1-S-CM	
CTP-2 SPEED CONTROL	AI-20	CT-2-S-CM	
CTP-1 SPRAY PUMP	BO-7	SST-9	
CTP-2 SPRAY PUMP	BO-8	SST-10	

ALL POINTS TO INTEGRATE BACK TO EXISTING BAS

BASE BID



EQUIPMENT LOAD

SYSTEM: CHR-1. CHR-2 / SYSTEM COMPONENT:	POINT ID	ABBREVIATION	REMARKS
CHWP-3 VSMC ALARM	BI-1	CHWP-3-ALM	
CHWP-4 VSMC ALARM	BI-2	CHWP-4-ALM	
CHWP-3 VSMC STATUS	BI-3	IT-1	
CHWP-4 VSMC STATUS	BI-4	IT-2	
CHWP-1 SPEED	AI-1	CHWP-1-SPD	
CHWP-2 SPEED	AI-2	CHWP-2-SPD	
WATER FLOW	AI-3	FS-1	
SUPPLY PRESSURE	AI-5	PT-1	
MAIN CHILLER SUPPLY TEMPERATURE	AI-6	TT-1	
NEW CHILLER SUPPLY TEMPERATURE 1	AI-6	TT-2	
NEW CHILLER SUPPLY TEMPERATURE 2	AI-7	TT-3	
CHILLER RETURN TEMPERATURE	AI-8	TT-4	
CHWP-1 START/STOP	BO-1	SST-1	
CHWP-2 START/STOP	BO-2	SST-1	
CHWP-1 SPEED CONTROL	AI-8	CHWP-1-S-CM	
CHWP-2 SPEED CONTROL	AI-9	CHWP-2-S-CM	

BID ALTERNATE #3

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

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16.2330.A08

Drawing Title: Control Diagrams Chilled Water Systems

Approved: Project Director: Omaha VA Medical Center

Project Title: Design/Construct Sterile Processing Service- Omaha VA Medical Center

Location: 4101 Woolworth Ave #4109 Omaha, NE 68105

Date: 11 / 23 / 2020 | Checked: MK | Drawn: JB

Project Number: 16.2330.A08

Building Number: 25

Drawing Number: M 6.07

Dwg. 137 of 193

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

COOLING OPERATIONAL SEQUENCE (SUMMARY)

BASE BID:

WATER-COOLED CHILLERS: CHILLERS (CHR-1, CHR-2) ARE TO BE OPERATED INDEPENDANTLY AND SEPARATE OF EACH OTHER. DURING OPERATION OF CHR-1, CHR-2 IS DISABLED, AND VICE VERSA.
THE WATER COOLED CHILLERS WILL BE AUTOMATICALLY STAGED BY BAS. TARGET DISCHARGE CHILLED WATER TEMPERATURE SETPOINT IS 45 DEGREES F.

THE COOLING TOWERS (TAGGED CT-1 AND CT-2) ARE ALSO TO BE ENABLED BY BAS (COOLING TOWER ENABLE RELAY FROM CHILLER(S)) AUTOMATICALLY, BUT CHR-1 IS PIPED TO CT-1 VIA PUMP CTP-1 AND WILL ONLY WORK WITH THAT EQUIPMENT, AND CHR-2 IS ONLY PIPED TO CT-2 VIA PUMP CTP-2. ANY CHANGEOVER FROM CHR-1 AND CHR-2 MUST INCLUDE CHANGEOVERS WITH THE APPROPRIATE EQUIPMENT. THE CHILLED WATER SYSTEMS ARE 100% REDUNDANT.

LOW AMBIENT TEMPERATURE/LOWER BUILDING LOAD CONDITIONS-CHILLER 5-CC1 TO REMAIN OPERATIONAL UNTIL OUTSIDE AIR TEMPERATURE (OAT) DROPS TO 55 DEGREES F (DRY BULB). WHEN OAT DROPS BELOW 55 DEGREES F THE STAGED COOLING TOWER SHALL DISABLE SPRAY PUMP AND ALLOW COOLING TOWER FANS TO OPERATE UP TO 90% OF MAXIMUM SPEED FOR COOLING TOWER ECONOMIZER MODE. WHEN OAT MATCHES 39 DEGREES F (ADJUSTABLE) THE BASIN WATER FILL VALVE WILL NOT BE ABLE TO FILL THE BASIN UNTIL OPERATION STAFF ENABLES BASIN FILL VALVE VIA BAS INTERFACE AND THE BASIN ELECTRIC HEATERS SHALL MAINTAIN BASIN WATER TEMPERATURE OF 40 DEGREES F. MINIMUM COOLING TOWER WATER TEMPERATURE ENTERING CHILLERS TO BE 58 DEGREES (55 DEGREES PER MFR REQUIREMENTS).

COOLING SEQUENCE OF OPERATION:

1. THE CHILLED WATER "SYSTEM" WILL BE INITATED AS FOLLOWS:
   a. ENABLE PUMP TAGGED CHWP-1 (LEAD). ALLOW VFD TO RAMP SPEED TO FLOW SETPOINT THROUGH 20 SECONDS.
      i. THE CHILLED WATER LOOP TO BE PROVEN IN MOTION VIA SYSTEM FLOW SWITCH. IF FLOW IS NOT PROVEN WITHIN 60 SECONDS (MANUAL RESET VIA BAS):
         1. ALARM BAS AND OPERATION STAFF OF LEAD PUMP FAILURE.
         2. SYSTEM TO CHANGE CHILLERS, TOWERS AND PUMPS. RESTART SEQUENCE FOR NEW CHILLER.
   b. ALLOW PUMP CHWP-2 TO REMAIN IDLE (LAG). ALTERNATE LEAD/LAG PUMPS AFTER 240 HOURS OF INDIVIDUAL PUMP OPERATION.
   c. PUMP ENABLE SHALL BE FROM ANY OF THE FOLLOWING INSTANCES/ACTIONS:
      i. AIR HANDLING UNIT DEMAND THAT IS NOT IN ECONOMIZER MODE AND REQUIRING COOLING.
      ii. AIR HANDLING UNIT DEMAND THAT IS IN ECONOMIZER MODE, BUT NOT ABLE TO SATISFY DEMAND.
      iii. BAS GRAPHIC ENABLE BUTTON OR OVERRIDE FOR OPERATION STAFF USE.
      iv. OUTDOOR AIR TEMPERATURE THAT IS GREATER THAN 35 DEGREES F DB (ADJUSTABLE).
   d. PUMPS CHWP-1 AND CHWP-2 SHALL BE SPEED CONTROLLED VIA VFD DEMAND FROM BAS TO MINIMALLY PROVE SYSTEM FLOW SWITCH PLUS 5% HZ ON VFD, AND SPEED/SLOW PUMP TO REDUCE LOOP DELTA T TO MATCH SETPOINT.
2. CHILLER SEQUENCE:
   a FLOW SWITCH TO PROVE FLOW TO ASSOCIATED WATER-COOLED CHILLER PATHWAY.
      i. IN THE EVENT THAT FLOW IS NOT PROVEN WITHIN 120 SECONDS, ALARM OPERATIONS STAFF VIA BAS (MANUAL RESET VIA BAS).
   b. ENABLE WATER-COOLED CHILLER CHR-1 AUTOMATICALLY FROM BAS. OPEN NORMALLY CLOSED CONTROL VALVES.
   c. ENABLE ASSOCIATED CTP PUMP. PUMP TO ALLOW VFD TO RAMP SPEED TO FLOW SETPOINT THROUGH 20 SECONDS.
      i. THE CONDENSER WATER LOOP TO BE PROVEN IN MOTION VIA SYSTEM FLOW SWITCH. IF FLOW IS NOT PROVEN WITHIN 60 SECONDS (MANUAL RESET VIA BAS):
         1. ALARM BAS AND OPERATION STAFF OF PUMP FAILURE.
         2. SYSTEM TO CHANGE CHILLERS, TOWERS AND PUMPS. RESTART SEQUENCE FOR NEW CHILLER.
   d. BAS TO ENABLE VFD FOR ASSOCIATED COOLING TOWER FAN.
   e. ALLOW ENABLED COOLING TOWER FAN TO START AT 30% SPEED MINIMUM FOR 2 MINUTES. BAS TO OBSERVE LEAVING TEMPERATURE SENSOR. ALLOW COOLING TOWER FAN TO MODULATE UP TO 80% SPEED (LINEAR FUNCTION) WITHOUT SPRAY PUMP ACTIVATED.
   TEMPERATURE IS WITHIN SATISFACTORY RANGE (5-10 DEGREES), AND GREATER THAN 58 DEGREES, ALLOW SPRAY PUMP TO NOT OPERATE.
      i. IF CONDENSER WATER APPROACH TEMPERATURE IS OUT OF RANGE, BAS TO ENABLE SPRAY PUMP FOR ASSOCIATED COOLING TOWER, WHILE MODULATING (LINEAR FUNCTION) FAN OPERATION TO CREATE APPROACH RANGE LISTED ABOVE.
      ii. IF APPROACH RANGE IS NOT SATISFIED AFTER 10 MINUTES OF OPERATION, ALLOW TOWER FAN TO MODULATE TO 100%, AND ALARM OPERATION PERSONNEL VIA BAS.

BID ALTERNATE #3:

CHILLED WATER SYSTEM SHALL UTILIZE EXISTING CUILDING CHILLED WATER SYSTEM. CHILLED WATER SHALL BE PUMPED THROUGH THE NEW CHILLED WATER SYSTEM VIA CHWP-3 AND CHWP-4.

COOLING SEQUENCE OF OPERATION:

1. THE CHILLED WATER "SYSTEM" WILL BE INITATED AS FOLLOWS:
   a. ENABLE PUMP TAGGED CHWP-3 (LEAD). ALLOW VFD TO RAMP SPEED TO FLOW SETPOINT THROUGH 20 SECONDS.
      i. THE CHILLED WATER LOOP TO BE PROVEN IN MOTION VIA SYSTEM FLOW SWITCH. IF FLOW IS NOT PROVEN WITHIN 60 SECONDS (MANUAL RESET VIA BAS):
         1. ALARM BAS AND OPERATION STAFF OF LEAD PUMP FAILURE.
         2. ENABLE PUMP TAGGED 5-P2. IF PUMP 5-P2 PROVES FLOW, ALLOW NEXT OPERATION IN SEQUENCE. ALARM BAS IF FLOW IS NOT PROVEN FOR THIS PUMP.
   b. ALLOW PUMP CHWP-4 TO REMAIN IDLE (LAG). ALTERNATE LEAD/LAG PUMPS AFTER 240 HOURS OF INDIVIDUAL PUMP OPERATION.
   c. PUMP ENABLE SHALL BE FROM ANY OF THE FOLLOWING INSTANCES/ACTIONS:
      i. AIR HANDLING UNIT DEMAND THAT IS NOT IN ECONOMIZER MODE AND REQUIRING COOLING.
      ii. AIR HANDLING UNIT DEMAND THAT IS IN ECONOMIZER MODE, BUT NOT ABLE TO SATISFY DEMAND.
      iii. BAS GRAPHIC ENABLE BUTTON OR OVERRIDE FOR OPERATION STAFF USE.
      iv. OUTDOOR AIR TEMPERATURE THAT IS GREATER THAN 35 DEGREES F DB (ADJUSTABLE).
   d. PUMPS CHWP-3 AND CHWP-4 SHALL BE SPEED CONTROLLED VIA VFD DEMAND FROM BAS TO MINIMALLY PROVE SYSTEM FLOW SWITCH PLUS 5%HZ ON VFD, AND SPEED/SLOW PUMP TO REDUCE LOOP DELTA T TO MATCH SETPOINT.

ALL TEMPERATURES SETPOINTS AND REFERENCES (EXCEPT FOR APPROACH) FOR PROGRAMMING PURPOSES ARE ADJUSTABLE AND AVAILABLE IN THE GRAPHICS OF THE BAS FOR OPERATIONS STAFF TO OBSERVE AND ADJUST.

ALL POINTS ASSOCIATED WITH THE SEQUENCE REFERENCES, AS WELL AS SHOWN ON THIS PLAN (CONTROL COMPONENTS WITH TAGS), AS WELL AS OTHER COMPONENTS REQUIRED BY SPECIFICATION, ARE TO BE VIEWABLE FOR OPERATION STAFF VIA THE BAS.

TRENDING TO BE SETUP BY THE CONTROL CONTRACTOR TO ALLOW UP TO 12 CONSECUTIVE MONTHS OF HISTORY FOR ALL POINTS REFERENCED IN THE SEQUENCE (BOTH DIGITAL AND ANALOG) FOR HISTORICAL, TROUBLESHOOTING, AND COMMISSIONING PURPOSES.

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

CONSULTANTS:

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16.2330.A08

Drawing Title: Mechanical Controls Chilled Water Sequence of Operations

Approved: Project Director: Omaha VA Medical Center

Project Title: Design/Construct Sterile Processing Service- Omaha VA Medical Center

Location: 4101 Woolworth Ave #4109 Omaha, NE 68105

Date: 11 / 23 / 2020 | Checked: MK | Drawn: JB

Project Number: 16.2330.A08

Building Number: 25

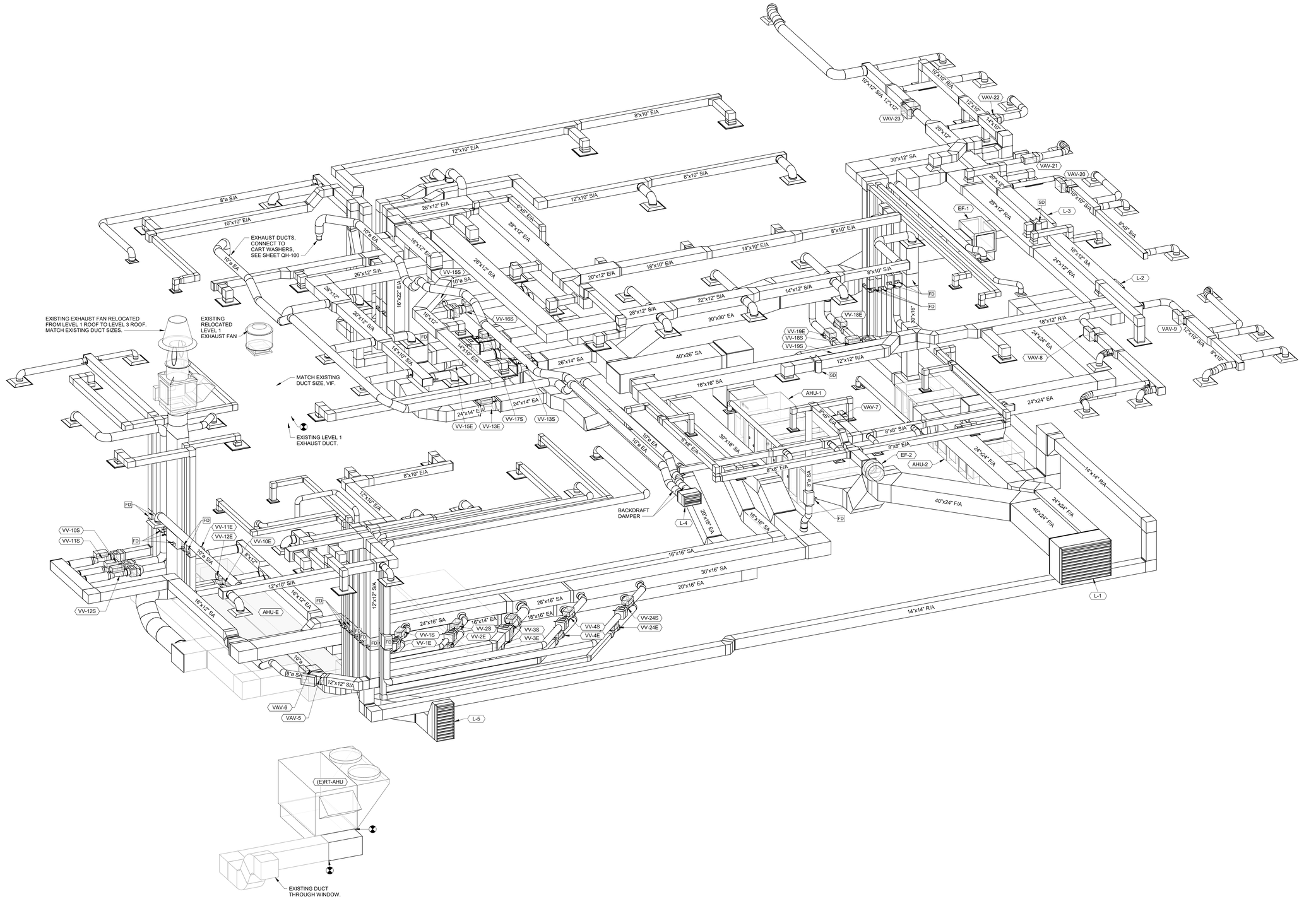
Drawing Number: M 6.08

Dwg. 138 of 193

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231



1 M 7.01 Duct Iso
NOT TO SCALE

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

CONSULTANTS:

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16.2330.A08

Drawing Title: DUCTWORK ISOMETRIC VIEWS

Approved: Project Director: Omaha VA Medical Center

Project Title: VA NWIHCS OMC CAMPUS - AE Construct Sterile Processing Service

Location: 4101 Woolworth Ave #4199 Omaha, Ne 68105

Date: 11 / 23 / 2020 | Checked: RD | Drawn: JB

Project Number: 16.2330.A08

Building Number: 25

Drawing Number: M 7.01

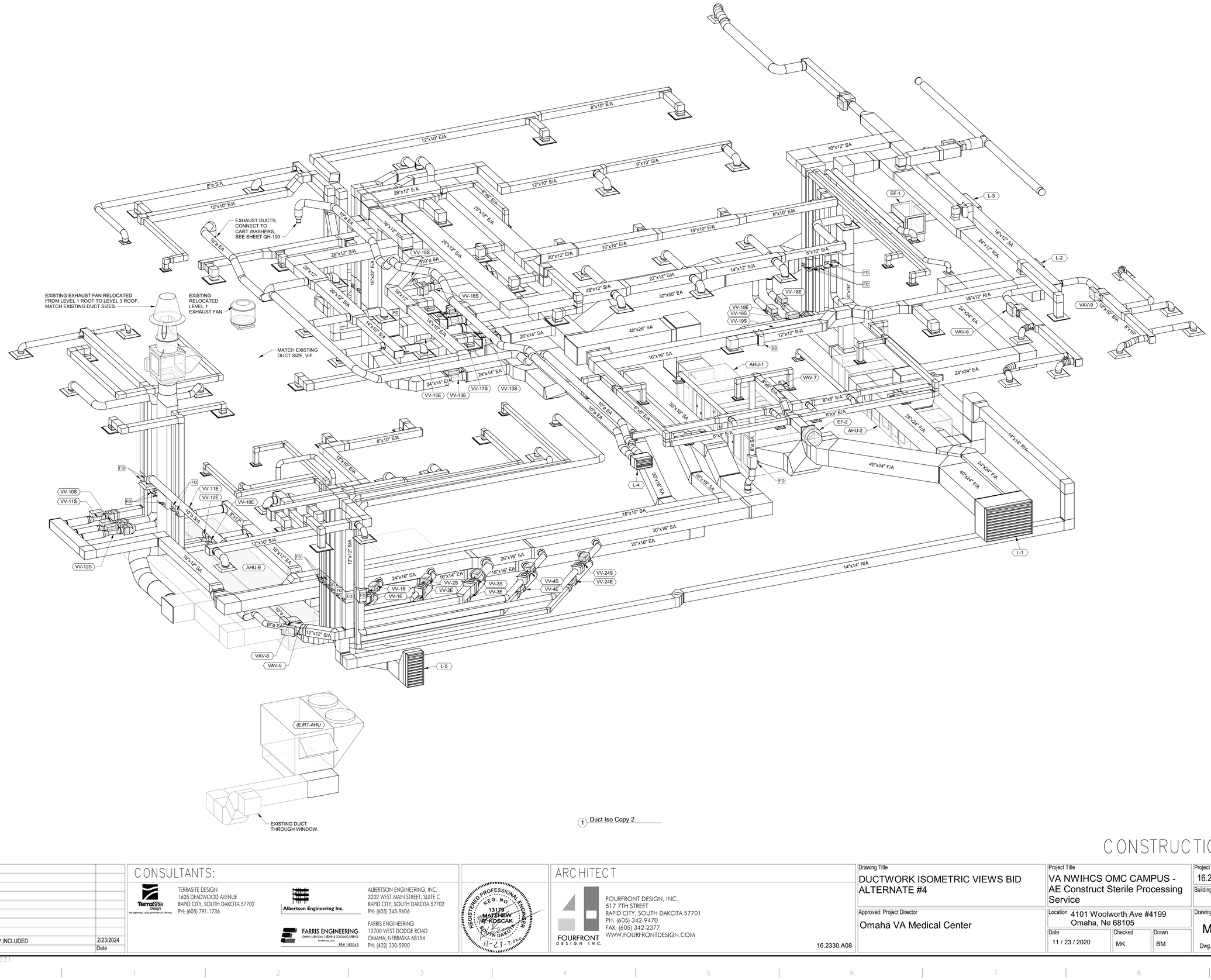
Dwg. 139 of 193

Office of Construction and Facilities Management

Department of Veterans Affairs

2/23/2024 10:17:47 AM

VA FORM 08-6231



1 Duct Iso Copy 2

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

CONSULTANTS:

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Civil Engineering | Landscape Architecture | Planning

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16.2330.A08

Drawing Title
DUCTWORK ISOMETRIC VIEWS BID ALTERNATE #4

Approved: Project Director
Omaha VA Medical Center

Project Title
VA NWIHCS OMC CAMPUS - AE Construct Sterile Processing Service

Location
4101 Woolworth Ave #4199
Omaha, Ne 68105

Date: 11 / 23 / 2020
Checked: MK
Drawn: BM

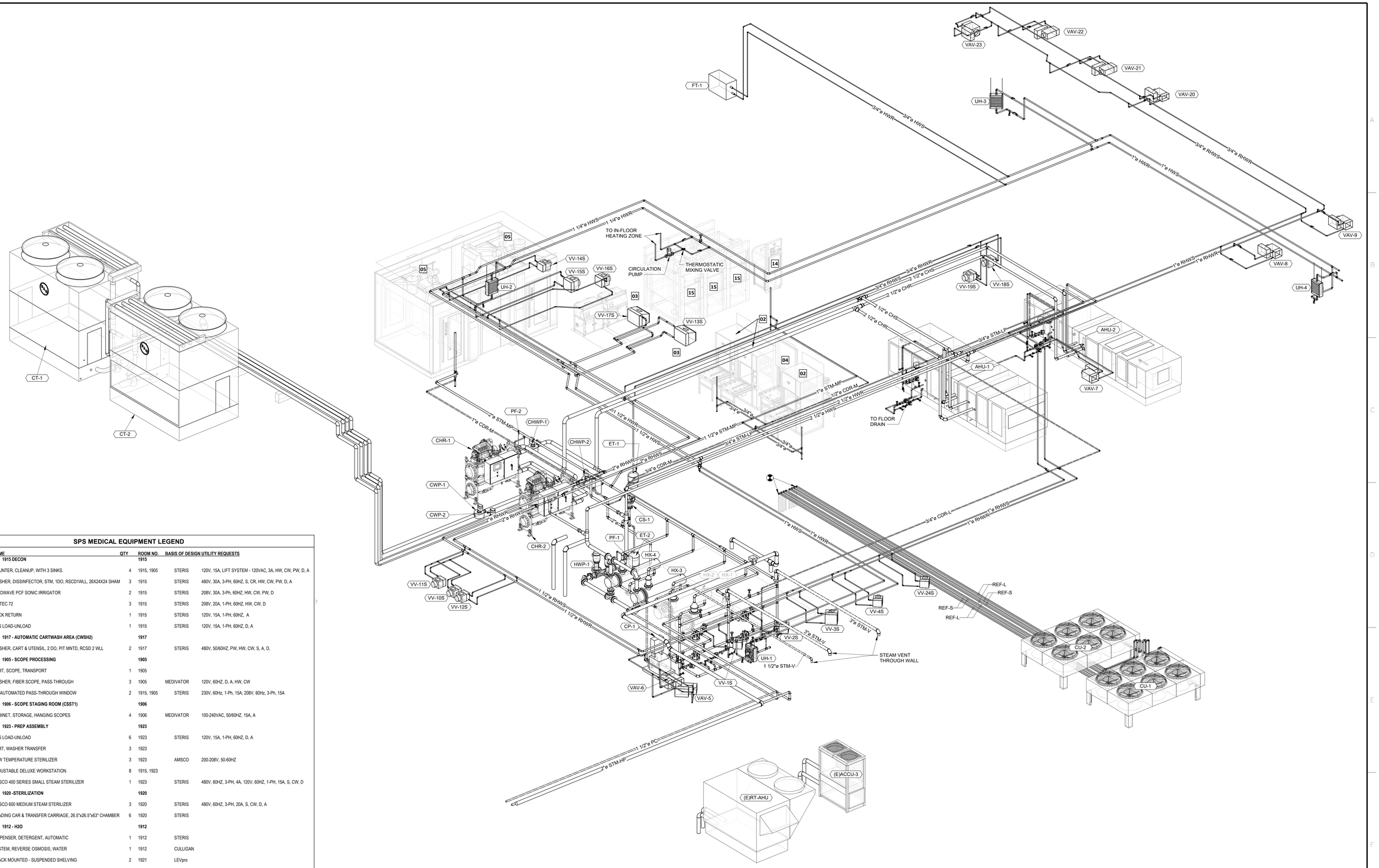
Project Number: 16.2330.A08
Building Number: 25
Drawing Number: M 7.01.1
Dwg. 140 of 193

Office of Construction and Facilities Management

Department of Veterans Affairs

2/23/2024 10:17:50 AM

VA FORM 08-6231



SPS MEDICAL EQUIPMENT LEGEND

TAG	JSN	NAME	QTY	ROOM NO.	BASIS OF DESIGN	UTILITY REQUESTS
		1915 DECON		**1915**		
01	A1195	COUNTER, CLEANUP, WITH 3 SINKS.	4	1915, 1905	STERIS	120V, 15A, LIFT SYSTEM - 120VAC, 3A, HW, CW, PW, D, A
02	S0940	WASHER, DISSINFECTOR, STM, 1DO, RSCD1WLL, 26X24X24 SHAM	3	1915	STERIS	480V, 30A, 3-PH, 60HZ, S, CR, HW, CW, PW, D, A
03	-	INNOWAVE PCF SONIC IRRIGATOR	2	1915	STERIS	208V, 30A, 3-Ph, 60HZ, HW, CW, PW, D
3A		TRITEC 72	3	1915	STERIS	208V, 20A, 1-PH, 60HZ, HW, CW, D
04	F2410	RACK RETURN	1	1915	STERIS	120V, 15A, 1-PH, 60HZ, A
4A		SCS LOAD-UNLOAD	1	1915	STERIS	120V, 15A, 1-PH, 60HZ, D, A
		1917 - AUTOMATIC CARTWASH AREA (CWSH2)		**1917**		
05	S3185	WASHER, CART & UTENSIL, 2 DO, PIT MNTD, RCSD 2 WLL	2	1917	STERIS	480V, 50/60HZ, PW, HW, CW, S, A, D,
		1905 - SCOPE PROCESSING		**1905**		
06	F0540	CART, SCOPE, TRANSPORT	1	1905		
07	S2627	WASHER, FIBER SCOPE, PASS-THROUGH	3	1905	MEDIVATOR	120V, 60HZ, D, A, HW, CW
08	S1905	40" AUTOMATED PASS-THROUGH WINDOW	2	1915, 1905	STERIS	230V, 60Hz, 1-Ph, 15A; 208V, 60Hz, 3-Ph, 15A
		1906 - SCOPE STAGING ROOM (CSST1)		**1906**		
09	M3160	CABINET, STORAGE, HANGING SCOPES	4	1906	MEDIVATOR	100-240VAC, 50/60HZ, 15A, A
		1923 - PREP ASSEMBLY		**1923**		
10	S0047	SCS LOAD-UNLOAD	6	1923	STERIS	120V, 15A, 1-PH, 60HZ, D, A
11	S0048	CART, WASHER TRANSFER	3	1923		
12	-	LOW TEMPERATURE STERILIZER	3	1923	AMSCO	200-208V, 50-60HZ
13	S9610	ADJUSTABLE DELUXE WORKSTATION	8	1915, 1923		
14	-	AMSCO 400 SERIES SMALL STEAM STERILIZER	1	1923	STERIS	480V, 60HZ, 3-PH, 4A, 120V, 60HZ, 1-PH, 15A, S, CW, D
		1920 -STERILIZATION		**1920**		
15	-	AMSCO 600 MEDIUM STEAM STERILIZER	3	1920	STERIS	480V, 60HZ, 3-PH, 20A, S, CW, D, A
16	S0495	LOADING CAR & TRANSFER CARRIAGE, 26.5"x26.5"x63" CHAMBER	6	1920	STERIS	
		1912 - H2O		**1912**		
17	K2020	DISPENSER, DETERGENT, AUTOMATIC	1	1912	STERIS	
18	M4871	SYSTEM, REVERSE OSMOSIS, WATER	1	1912	CULLIGAN	
19	-	TRACK MOUNTED - SUSPENDED SHELVING	2	1921	LEVpro	

NOTE: SEE SHEET QH-101 FOR MORE SPS MEDICAL EQUIPMENT DETAILS.

1 M-Pipe Iso

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

CONSULTANTS:

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16.2330.A08

Drawing Title	MECHANICAL PIPING ISOMETRIC VIEWS
Approved: Project Director	Omaha VA Medical Center
Project Title	VA NWIHCS OMC CAMPUS - AE Construct Sterile Processing Service
Location	4101 Woolworth Ave #4199 Omaha, Ne 68105
Date	11 / 23 / 2020
Checked	RD
Drawn	JB
Project Number	16.2330.A08
Building Number	25
Drawing Number	M 7.02
Dwg.	141 of 193

Office of Construction and Facilities Management

Department of Veterans Affairs

2/23/2024 10:18:00 AM

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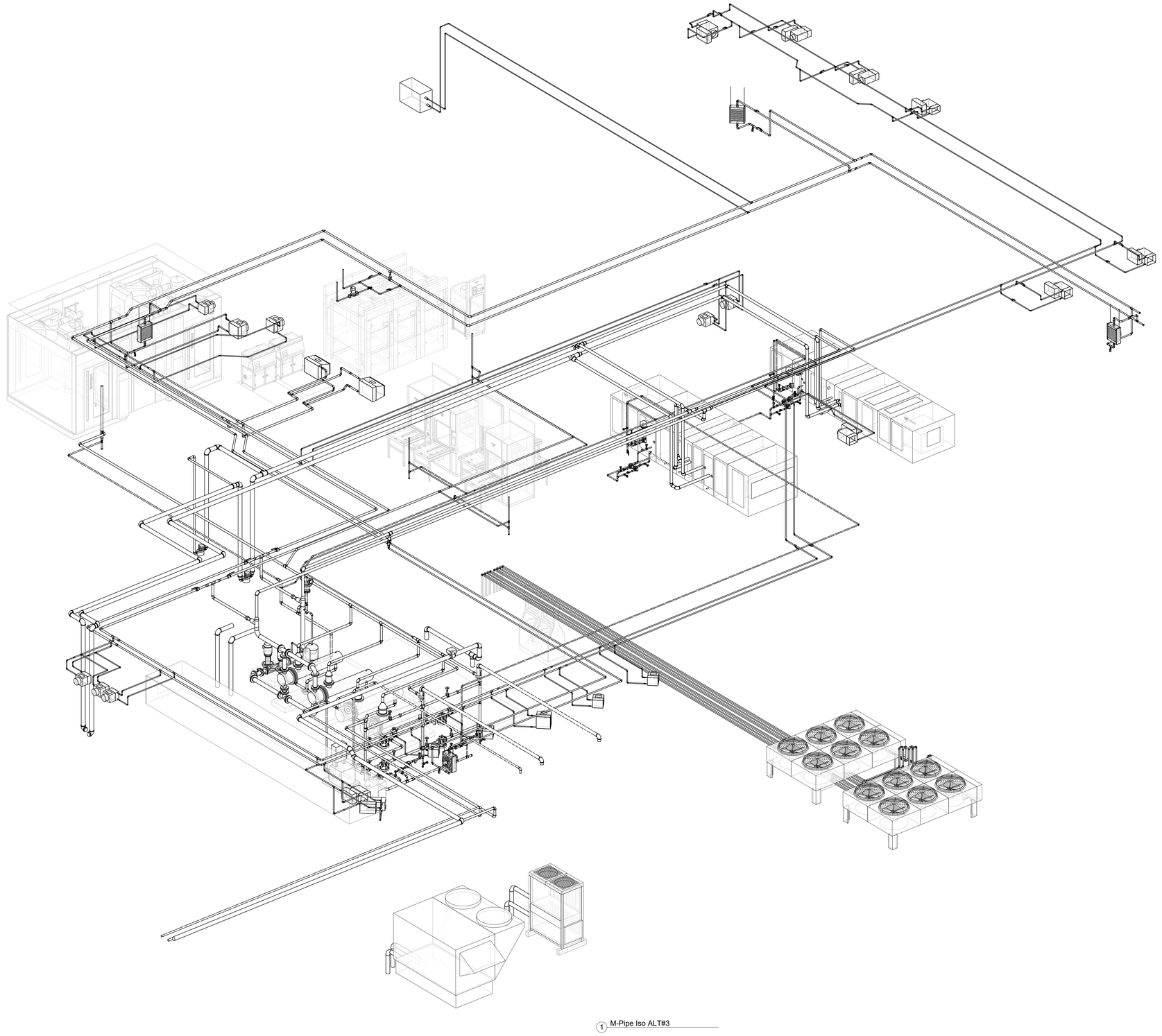

SPS MEDICAL EQUIPMENT LEGEND

TAG	JSN	NAME	QTY	ROOM NO.	BASIS OF DESIGN	UTILITY REQUESTS
		1915 DECON		**1915**		
01	A1195	COUNTER, CLEANUP, WITH 3 SINKS.	4	1915, 1905	STERIS	120V, 15A, LIFT SYSTEM - 120VAC, 3A, HW, CW, PW, D, A
02	S0940	WASHER, DISSINFECTOR, STM, 1DO, RSCD1WLL, 26X24X24 SHAM	3	1915	STERIS	480V, 30A, 3-PH, 60HZ, S, CR, HW, CW, PW, D, A
03	-	INNOWAVE PCF SONIC IRRIGATOR	2	1915	STERIS	208V, 30A, 3-Ph, 60HZ, HW, CW, PW, D
3A		TRITEC 72	3	1915	STERIS	208V, 20A, 1-PH, 60HZ, HW, CW, D
04	F2410	RACK RETURN	1	1915	STERIS	120V, 15A, 1-PH, 60HZ, A
4A		SCS LOAD-UNLOAD	1	1915	STERIS	120V, 15A, 1-PH, 60HZ, D, A
		1917 - AUTOMATIC CARTWASH AREA (CWSH2)		**1917**		
05	S3185	WASHER, CART & UTENSIL, 2 DO, PIT MNTD, RCSD 2 WLL	2	1917	STERIS	480V, 50/60HZ, PW, HW, CW, S, A, D,
		1905 - SCOPE PROCESSING		**1905**		
06	F0540	CART, SCOPE, TRANSPORT	1	1905		
07	S2627	WASHER, FIBER SCOPE, PASS-THROUGH	3	1905	MEDIVATOR	120V, 60HZ, D, A, HW, CW
08	S1905	40" AUTOMATED PASS-THROUGH WINDOW	2	1915, 1905	STERIS	230V, 60Hz, 1-Ph, 15A; 208V, 60Hz, 3-Ph, 15A
		1906 - SCOPE STAGING ROOM (CSST1)		**1906**		
09	M3160	CABINET, STORAGE, HANGING SCOPES	4	1906	MEDIVATOR	100-240VAC, 50/60HZ, 15A, A
		1923 - PREP ASSEMBLY		**1923**		
10	S0047	SCS LOAD-UNLOAD	6	1923	STERIS	120V, 15A, 1-PH, 60HZ, D, A
11	S0048	CART, WASHER TRANSFER	3	1923		
12	-	LOW TEMPERATURE STERILIZER	3	1923	AMSCO	200-208V, 50-60HZ
13	S9610	ADJUSTABLE DELUXE WORKSTATION	8	1915, 1923		
14	-	AMSCO 400 SERIES SMALL STEAM STERILIZER	1	1923	STERIS	480V, 60HZ, 3-PH, 4A, 120V, 60HZ, 1-PH, 15A, S, CW, D
		1920 -STERILIZATION		**1920**		
15	-	AMSCO 600 MEDIUM STEAM STERILIZER	3	1920	STERIS	480V, 60HZ, 3-PH, 20A, S, CW, D, A
16	S0495	LOADING CAR & TRANSFER CARRIAGE, 26.5"x26.5"x63" CHAMBER	6	1920	STERIS	
		1912 - H2O		**1912**		
17	K2020	DISPENSER, DETERGENT, AUTOMATIC	1	1912	STERIS	
18	M4871	SYSTEM, REVERSE OSMOSIS, WATER	1	1912	CULLIGAN	
19	-	TRACK MOUNTED - SUSPENDED SHELVING	2	1921	LEVpro	

NOTE: SEE SHEET QH-101 FOR MORE SPS MEDICAL EQUIPMENT DETAILS.

1 M-Pipe Iso ALT#3

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

CONSULTANTS:

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11-23-2020

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16.2330.A08

Drawing Title	MECHANICAL PIPING ISOMETRIC VIEWS-ALTERNATE BID#3
Approved: Project Director	Omaha VA Medical Center
Project Title	VA NWIHCS OMC CAMPUS - AE Construct Sterile Processing Service
Location	4101 Woolworth Ave #4199 Omaha, Ne 68105
Date	11 / 23 / 2020
Checked	Checker
Drawn	Author
Project Number	16.2330.A08
Building Number	25
Drawing Number	M 7.02.1
Dwg.	142 of 193

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Department of Veterans Affairs

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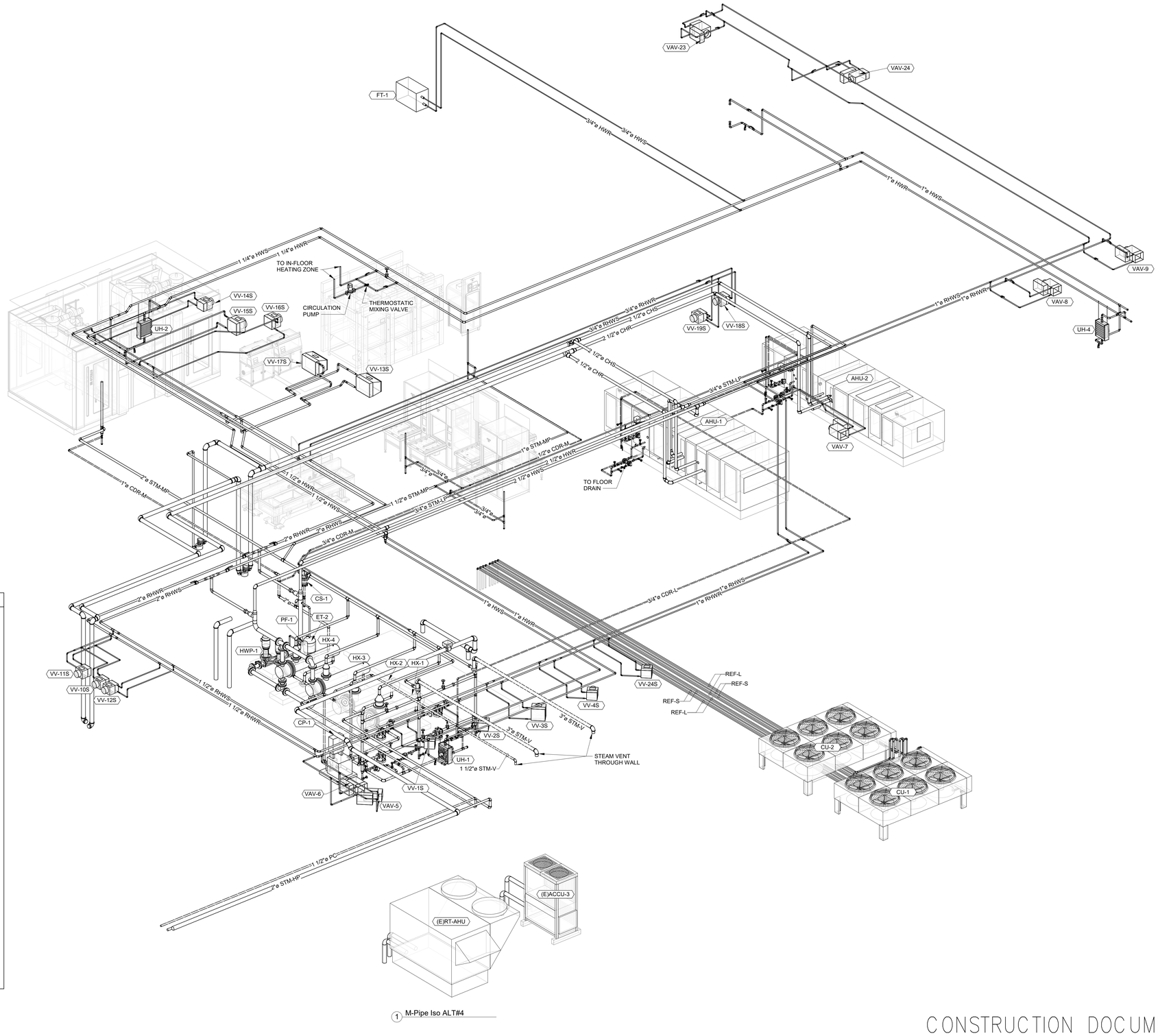

1 M-Pipe Iso ALT#4

SPS MEDICAL EQUIPMENT LEGEND

TAG	JSN	NAME	QTY	ROOM NO.	BASIS OF DESIGN	UTILITY REQUESTS
		1915 DECON		**1915**		
01	A1195	COUNTER, CLEANUP, WITH 3 SINKS.	4	1915, 1905	STERIS	120V, 15A, LIFT SYSTEM - 120VAC, 3A, HW, CW, PW, D, A
02	S0940	WASHER, DISSINFECTOR, STM, 1DO, RSCD1WLL, 26X24X24 SHAM	3	1915	STERIS	480V, 30A, 3-PH, 60HZ, S, CR, HW, CW, PW, D, A
03	-	INNOWAVE PCF SONIC IRRIGATOR	2	1915	STERIS	208V, 30A, 3-Ph, 60HZ, HW, CW, PW, D
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4A		SCS LOAD-UNLOAD	1	1915	STERIS	120V, 15A, 1-PH, 60HZ, D, A
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08	S1905	40" AUTOMATED PASS-THROUGH WINDOW	2	1915, 1905	STERIS	230V, 60Hz, 1-Ph, 15A; 208V, 60Hz, 3-Ph, 15A
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		1923 - PREP ASSEMBLY		**1923**		
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12	-	LOW TEMPERATURE STERILIZER	3	1923	AMSCO	200-208V, 50-60HZ
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		1920 -STERILIZATION		**1920**		
15	-	AMSCO 600 MEDIUM STEAM STERILIZER	3	1920	STERIS	480V, 60HZ, 3-PH, 20A, S, CW, D, A
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18	M4871	SYSTEM, REVERSE OSMOSIS, WATER	1	1912	CULLIGAN	
19	-	TRACK MOUNTED - SUSPENDED SHELVING	2	1921	LEVpro	

NOTE: SEE SHEET QH-101 FOR MORE SPS MEDICAL EQUIPMENT DETAILS.

CONSTRUCTION DOCUMENTS

COMPLIANCY REVIEW INCLUDED	2/23/2024
Revisions:	Date

CONSULTANTS:

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REGISTERED PROFESSIONAL ENGINEER — REG. NO. 13170 — MATTHEW R. KOSCAK — SOUTH DAKOTA — 11-23-25

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16.2330.A08

Drawing Title: MECHANICAL PIPING ISOMETRIC VEIWS-ALTERNATE BID#4

Approved: Project Director: Omaha VA Medical Center

Project Title: VA NWIHCS OMC CAMPUS - AE Construct Sterile Processing Service

Location: 4101 Woolworth Ave #4199 Omaha, Ne 68105

Date: 11 / 23 / 2020 | Checked: Checker | Drawn: Author

Project Number: 16.2330.A08

Building Number: 25

Drawing Number: M 7.02.2

Dwg. 143 of 193

Office of Construction and Facilities Management

Department of Veterans Affairs

2/23/2024 10:16:15 AM

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