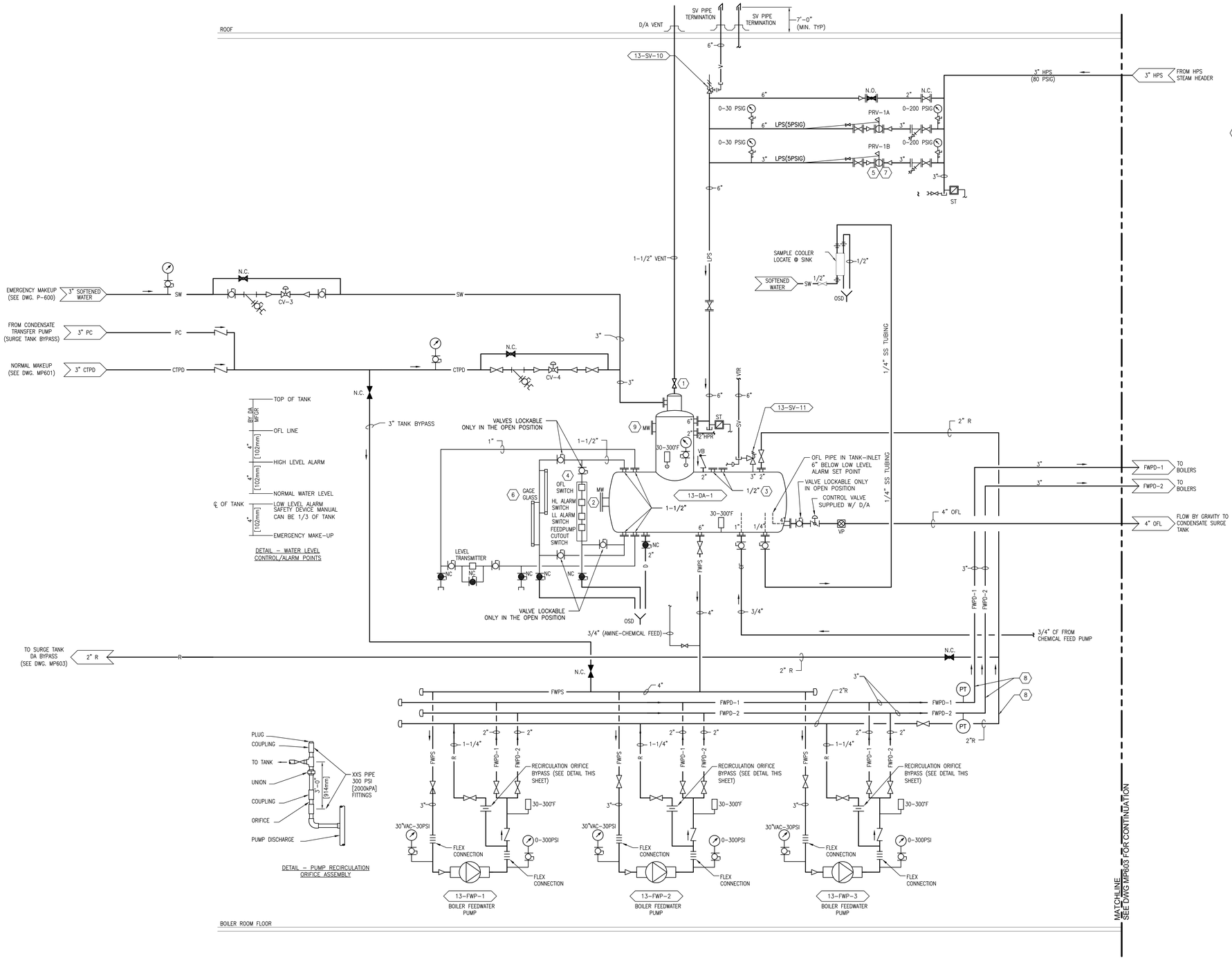

GENERAL SHEET NOTES:

1. REFER TO DRAWING M-001 FOR MECHANICAL ABBREVIATIONS, NOTES & SYMBOLS.
2. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, DIMENSIONS, ETC. AT THE JOB SITE.
3. CONTRACTOR SHALL ATTACH PERMANENT TAGS ON ALL EQUIPMENT AND VALVES, AND CLEARLY LABEL ALL PIPING SYSTEMS. REFER TO PROJECT SPECIFICATIONS FOR DETAILS.
4. REFERENCE ALL OTHER DRAWINGS IN THIS PACKAGE FOR COORDINATION, AND SPECIFICALLY REFER TO THE FOLLOWING FOR CONTINUATION, AS NEEDED:
   - MP601 STEAM GENERATION SYSTEM FLOW DIAGRAM – BOILERS
   - MP603 STEAM GENERATION SYSTEM FLOW DIAGRAM – CONDENSATE TANK
   - MP604 STEAM GENERATION NATURAL GAS AND No. 2 FUEL OIL FLOW DIAGRAM

SHEET KEYNOTES:

1. HOLE DRILLED IN VALVE WEDGE FOR DEAERATOR VENTING.
2. CONDUCTIVITY PROBE TYPE, SETPOINT BELOW 2/3 OF TANK HEIGHT AND AT LEAST 4" BELOW OVERFLOW ACTIVATION POINT.
3. 3/4" SULFITE AND CAUSTIC INJECTION PORT.
4. WARRICK PROBE CONTROL SYSTEM.
5. MAINTAIN A STEADY PRESSURE IN THE DEAERATOR TANK BY SETTING PRV TO MAINTAIN DESIRED PRESSURE IN THE TANK. PRESSURE IS USED TO MAINTAIN TEMPERATURE. TEMPERATURE SHALL NOT BE USED TO REGULATE PRESSURE.
6. SIGHT GLASS MUST COVER THE FULL DIAMETER OF THE TANK.
7. REFER TO STEAM PRESSURE REDUCING VALVE (DETAIL 7) ON DRAWING M-503.
8. ALL FEEDWATER PIPING BETWEEN THE FEEDWATER PUMPS AND THE BOILERS TO BE ALL WELDED CONSTRUCTION.
9. REFER TO SPECIFICATION SECTION 235011-2.2 FOR MANWAY REQUIREMENTS.

1 STEAM GENERATION SYSTEM FLOW DIAGRAM – DEAERATOR

SCALE: NTS

PRINTS OF THIS DRAWING SHALL NOT BE USED FOR ANY PURPOSE WHATSOEVER WITHOUT THE SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER.

NO.	DESCRIPTION	DATE

CONSULTANTS

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MABBETT & ASSOCIATES, INC.
105 CENTRAL STREET, STONEHAM, MA 02180
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ENGINEER OF RECORD

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MR PROJECT NO: 0499-0121

MILLER-REMICK LLC
PROFESSIONAL ENGINEER

ANTHONY D. PACORO LICENSED 26413 KANSAS PROFESSIONAL ENGINEER
9.3.2021

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title MECHANICAL STEAM GENERATION FLOW DIAGRAM - DEAERATOR	**Phase** 100% BID SET	**Project Title** INSTALL NEW BOILERS IN BUILDING 13	**Project Number** 589A7-18-302
			Building Number 13
Approved: Project Director	FULLY SPRINKLERED	**Location** ROBERT J. DOLE VA MEDICAL CENTER WICHITA, KANSAS	**Drawing Number** MP602
		Issue Date 2021-09-03 / **Checked** MH / **Drawn** GDS	

VA FORM 08-6231

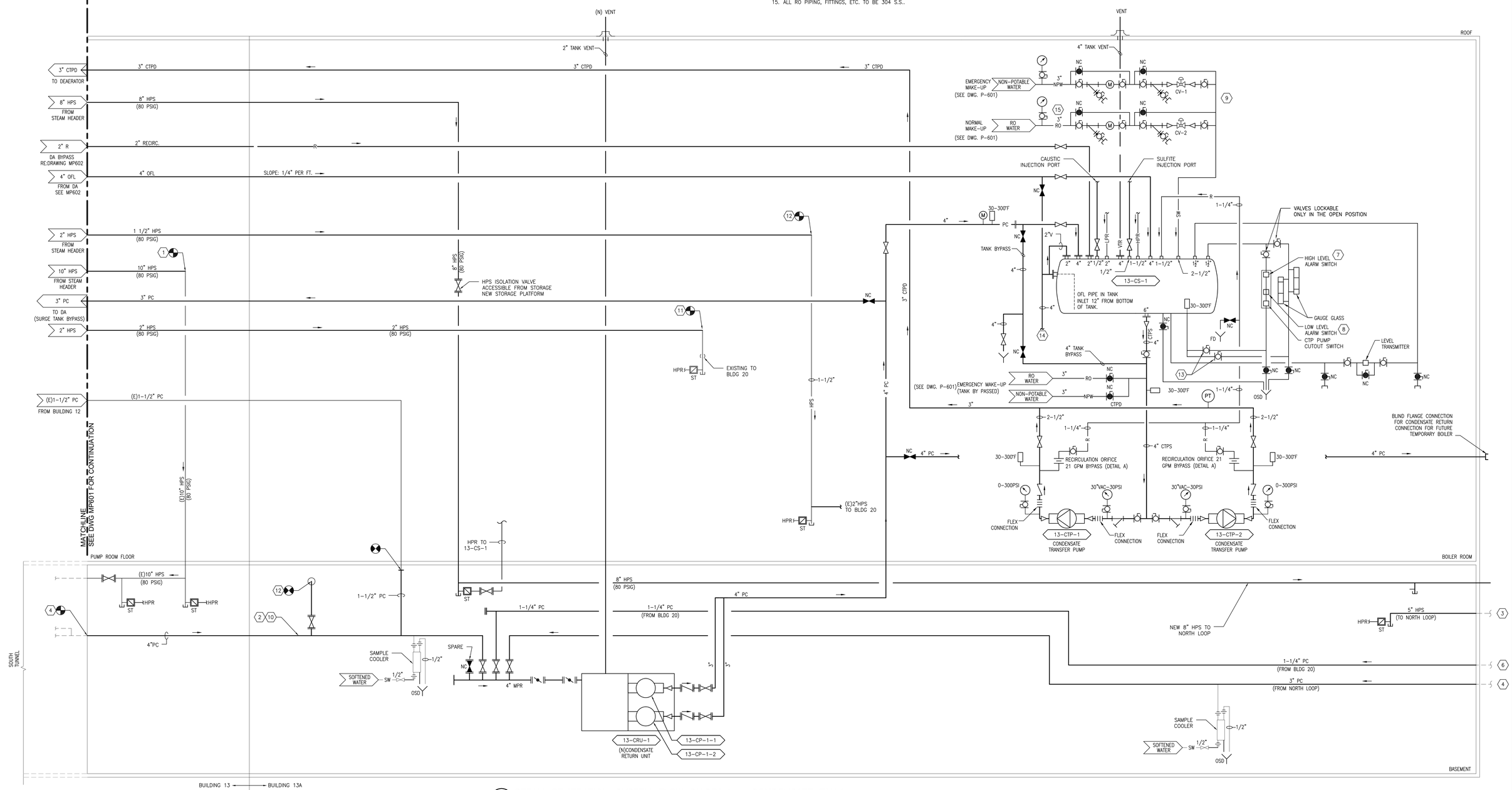
P:\0499_DVA\0499-0121 Wichita Boilers\4_Drawings\1_Cad\1_Current Submittal Phase\7_Mechanical\MP601-602-603.dwg 9-13-21 07:19:13 AM getroh

SHEET KEYNOTES:

1. CONNECT TO EXISTING 10" HPS FEEDING SOUTH LOOP.
2. EXTEND EXISTING 4" CR TO NEW CONDENSATE PUMP 13-CRU-1.
3. CONNECT NEW 5" HPS FEEDING NORTH LOOP TO EXISTING 5" HPS IN NEW STEAM MANHOLE. REFER TO MS101 SITE PLAN FOR LOCATION.
4. CONNECT TO EXISTING 3" PC FROM NORTH LOOP IN NEW STEAM MANHOLE. REFER TO MS101 SITE PLAN FOR LOCATION.
5. CONNECT TO 1-1/2" PC FROM BUILDING 12
6. CONNECT TO 1-1/2" PC FROM BUILDING 20.
7. PROBE TYPE, SETPOINT BELOW 2/3 OF TANK HEIGHT, AT LEAST 4" BELOW OVERFLOW ACTIVATION POINT.
8. PROBE, FLOAT OR DIFFERENTIAL PRESSURE TYPE, SETPOINT ABOVE 1/3 OF TANK HEIGHT
9. REFER TO DETAIL 6 ON DRAWING M-503.
10. EXTEND EXISTING CONDENSATE PIPING TO NEW CONDENSATE RETURN UNITS IN NEW PUMP ROOM. DISCONNECT AND REMOVE EXISTING CONDENSATE PUMPS/RECEIVERS ONCE NEW BOILER ADDITION AND EQUIPMENT ARE OPERATIONAL.
11. 2" HPS TO WEST SIDE OF EXISTING BOILER PLAN CONNECT TO EXISTING FEED TO BLDG. 20. REFER TO PLANS FOR LOCATION.
12. EXISTING CONDENSATE RETURN FROM BUILDING 20. EXTEND EXISTING FROM WHERE IT EXITS EXISTING TRENCH IN EXISTING BOILER PLANT LOWER LEVEL AND CONNECT TO EXTENDED CONDENSATE RETURN. SIZE TO MATCH EXISTING. REFER TO DRAWING MP101.02.
13. VALVE (LOOP) LOCKABLE ONLY IN THE OPEN POSITION.
14. CONNECT OVERFLOW DRAIN INTO BOILER BLOWDOWN PIPING. REFER TO DRAWING MP601 FOR CONTINUATION.
15. ALL RO PIPING, FITTINGS, ETC. TO BE 304 S.S..

GENERAL SHEET NOTES:

1. REFER TO DRAWING M-001 FOR MECHANICAL ABBREVIATIONS, NOTES & SYMBOLS.
2. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, DIMENSIONS, ETC. AT THE JOB SITE.
3. CONTRACTOR SHALL ATTACH PERMANENT TAGS ON ALL EQUIPMENT AND VALVES, AND CLEARLY LABEL ALL PIPING SYSTEMS. REFER TO PROJECT SPECIFICATIONS FOR DETAILS.
4. REFERENCE ALL OTHER DRAWINGS IN THIS PACKAGE FOR COORDINATION, AND SPECIFICALLY REFER TO THE FOLLOWING FOR CONTINUATION, AS NEEDED:
   - MP601 STEAM GENERATION SYSTEM FLOW DIAGRAM – BOILERS
   - MP602 STEAM GENERATION SYSTEM FLOW DIAGRAM – DEAERATOR
   - MP604 STEAM GENERATION NATURAL GAS AND No. 2 FUEL OIL FLOW DIAGRAM



1 STEAM GENERATION SYSTEM FLOW DIAGRAM – CONDENSATE TANK
SCALE: NTS

NO.	DESCRIPTION	DATE

CONSULTANTS

HAZARDOUS MATERIALS MABBETT & ASSOCIATES, INC. 105 CENTRAL STREET, STONEHAM, MA 02180 PHONE: (781)275-6050	**FIRE SUPPRESSION** KOFFEL ASSOCIATES 8815 CENTRE PARK DRIVE, SUITE 200, COLUMBIA, MD 21045 PHONE: (410)750-2246
CIVIL / STRUCTURAL PROFESSIONAL ENGINEERING CONSULTANTS, P.A. 303 SOUTH TOPEKA, WICHITA, KS 67202 PHONE: (316)262-2691	**ELECTRONIC SECURITY** MAGNA ENGINEERS 861 CORPORATE DRIVE, SUITE 210, LEXINGTON, KY 40503 PHONE: (859)309-2990
ARCHITECTURAL OCULUS INC. 1 SOUTH MEMORIAL DRIVE, SUITE 1500, SAINT LOUIS, MO 63102 PHONE: (314)367-6100	**PHYSICAL SECURITY** FORCE PROTECT 3210 GULF BLVD, UNIT 304, BELLEAIR BEACH, FL 33786 PHONE: (502)836-4232

ENGINEER OF RECORD

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MR PROJECT NO: 0499-0121

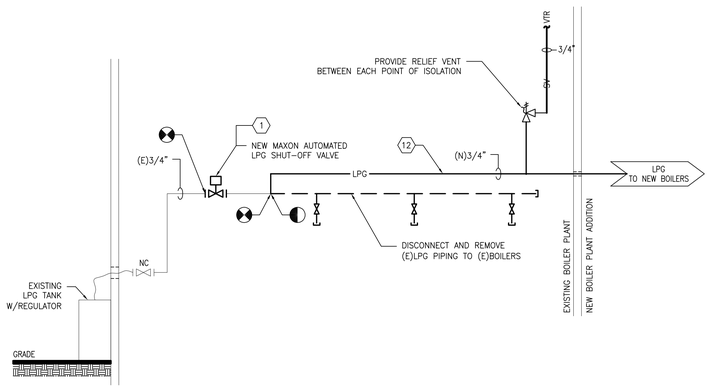
MILLER-REMICK LLC
PROFESSIONAL ENGINEER
ANTHONY D. PACARO LICENSED 26413 KANSAS PROFESSIONAL ENGINEER
9.3.2021

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

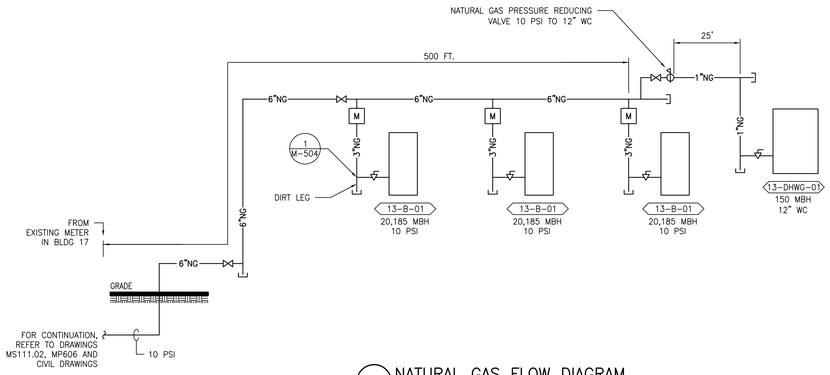
Drawing Title MECHANICAL STEAM GENERATION FLOW DIAGRAM - CONDENSATE TANK	**Phase** 100% BID SET	**Project Title** INSTALL NEW BOILERS IN BUILDING 13	**Project Number** 589A7-18-302
Approved: Project Director	FULLY SPRINKLERED	**Location** ROBERT J. DOLE VA MEDICAL CENTER WICHITA, KANSAS	**Building Number** 13
		Issue Date 2021-09-03 / **Checked** MH / **Drawn** GDS	**Drawing Number** MP603

VA FORM 08-6231

P:\0499_DVA\0499-0121 Wichita Boilers\4_Drawings\1_Cad\1_Current Submittal Phase\7_Mechanical\MP601-602-603.dwg 9-13-21 07:20:13 AM gstroh



2 LPG – NEW PIPE CONNECTION DIAGRAM
SCALE: NTS



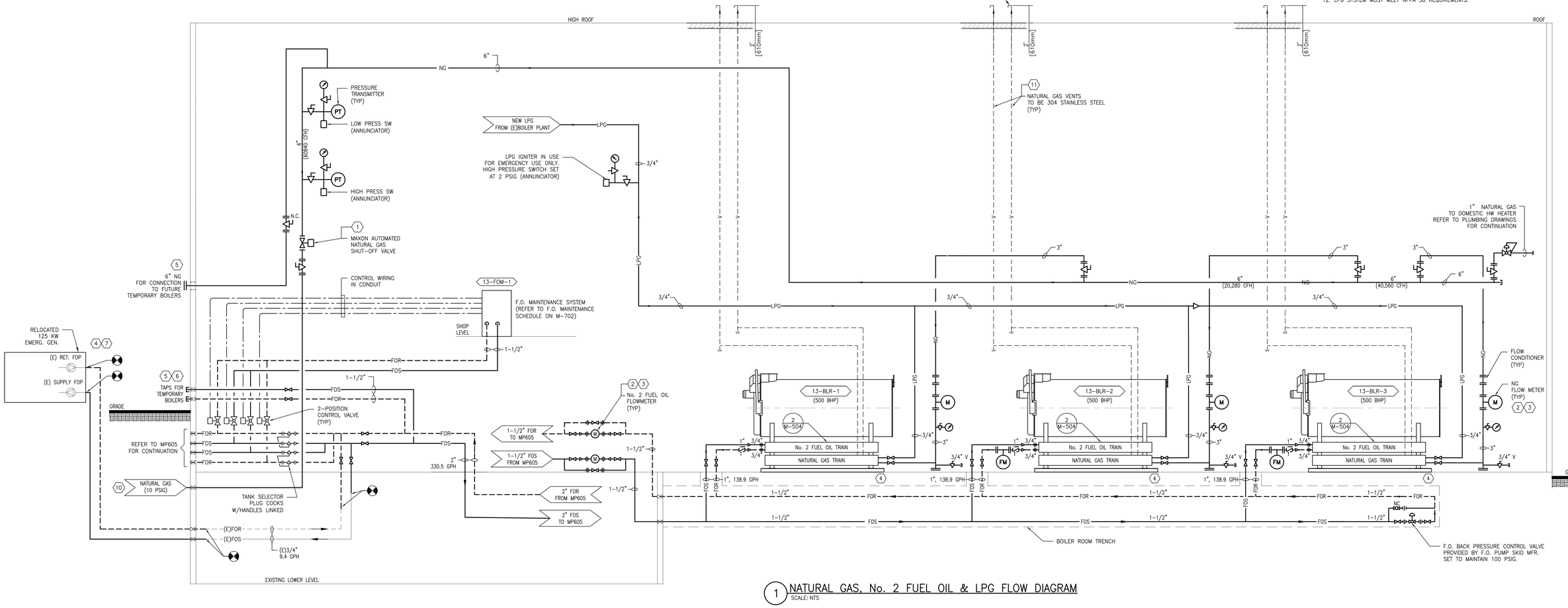
3 NATURAL GAS FLOW DIAGRAM
SCALE: N.T.S.

GENERAL SHEET NOTES:

1. REFER TO DRAWING M-001 FOR MECHANICAL ABBREVIATIONS, NOTES & SYMBOLS.
2. PIPING SHOWN IS DIAGRAMMATIC. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, DIMENSIONS, ETC. AT THE JOB SITE. REFER TO PLANS & SECTIONS FOR ROUTING DETAILS.
3. CONTRACTOR SHALL ATTACH PERMANENT TAGS ON ALL EQUIPMENT AND VALVES, AND CLEARLY LABEL ALL PIPING SYSTEMS. REFER TO PROJECT SPECIFICATIONS FOR DETAILS.
4. REFERENCE ALL OTHER DRAWINGS IN THIS PACKAGE FOR COORDINATION, AND SPECIFICALLY REFER TO THE FOLLOWING FOR CONTINUATION, AS NEEDED:
   – MP601, MP602, MP603 & MP605.

SHEET KEYNOTES:

1. CONTRACTOR SHALL PROVIDE NEW MAXON AUTOMATED SHUT-OFF VALVES, AS INDICATED ON THIS DRAWING:
   - 1.1. NEW 3/4" MAXON VALVE MODEL 075SMM11-AA11-BA&1A0 MANUAL RESET LPG SHUT-OFF VALVE.
   - 1.2. NEW 2" MAXON MODEL 020025300-B2D-BB6611AA20 NO. 2 FUEL OIL SHUT-OFF VALVE.
   - 1.3. NEW 6" MAXON VALVE MODEL 600SMM11-BA-BA&2AO NORMALLY CLOSED FLANGED AUTOMATIC NATURAL GAS SOLENOID VALVE, 115V
   - 1.4. MAXON VALVES TO BE CONNECTED TO THE E-STOP SYSTEM. E-STOP MUST CLOSE VALVE AND DE-ENERGIZE THE FUEL OIL PUMPS. (SEE ELECTRICAL DRAWINGS FOR ELECTRICAL AND UPS REQUIREMENTS).
2. THE FOLLOWING FLOW METERS SHALL BE PROVIDED BY THE CONTROL CONTRACTOR:
   - 2.1. (3)-NATURAL GAS TO 500 HP BOILERS (10:1 TURNDOWN): ESTIMATED FLOW RANGE EACH 2,018.5 CFH TO 20,185 CFH @ 5 PSIG
   - 2.2. (3)-NO. 2 FUEL OIL TO 500 HP BOILERS (8:1 TURNDOWN): ESTIMATED FLOW RANGE EACH 13.89 TO 138.9 GPH.
3. INSTALL FLOW METERS IN ACCORDANCE WITH THE MFR. INSTALLATION REQUIREMENTS.
4. DESIGN PRESSURE AT ENTRANCE TO NATURAL GAS TRAIN IS 10.0 PSIG.
5. SET AT 20 PSIG.
6. CONNECTIONS FOR FUTURE TEMPORARY BOILER, MINIMUM 3 FT. ABOVE FINISH GRADE.
7. REFER TO DRAWING MP605 FOR FUEL-OIL PIPING DETAILS IN THIS AREA.
8. CONTRACTOR SHALL REMOVE THE EXISTING FUEL-OIL FROM UNDERGROUND STORAGE TANKS (ONE AT A TIME), CLEAN THE TANK AND REFILL WITH FRESH FUEL OIL. CONTRACTOR IS RESPONSIBLE FOR RECYCLING/DISPOSAL OF THE OLD FUEL OIL.
9. COORDINATE GAS VENT TERMINATION LOCATIONS WITH OUTSIDE AIR INTAKES. VENTS MUST BE MINIMUM 10 FT. FROM ANY AIR INTAKES. VENTS MUST MEET ALL VA REQUIREMENTS. EXTEND VENTS 2'-0" ABOVE ROOF WITH GOOSENECK.
10. NEW 6" UNDERGROUND NATURAL GAS MAIN. REFER TO DRAWING MS101 & CIVIL DRAWINGS FOR CONTINUATION.
11. REFER TO DETAIL 2/M-504 FOR NATURAL GAS AND FUEL OIL TRAIN DETAILS.
12. LPG SYSTEM MUST MEET NFPA 58 REQUIREMENTS.



1 NATURAL GAS, No. 2 FUEL OIL & LPG FLOW DIAGRAM
SCALE: NTS

PRINTS OF THIS DRAWING SHALL NOT BE USED FOR ANY PURPOSE WHATSOEVER WITHOUT THE SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER.

NO.	DESCRIPTION	DATE

CONSULTANTS

HAZARDOUS MATERIALS
MABBETT & ASSOCIATES, INC.
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ENGINEER OF RECORD

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MR PROJECT NO: 0499-0121

MILLER-REMICK LLC
PROFESSIONAL ENGINEER
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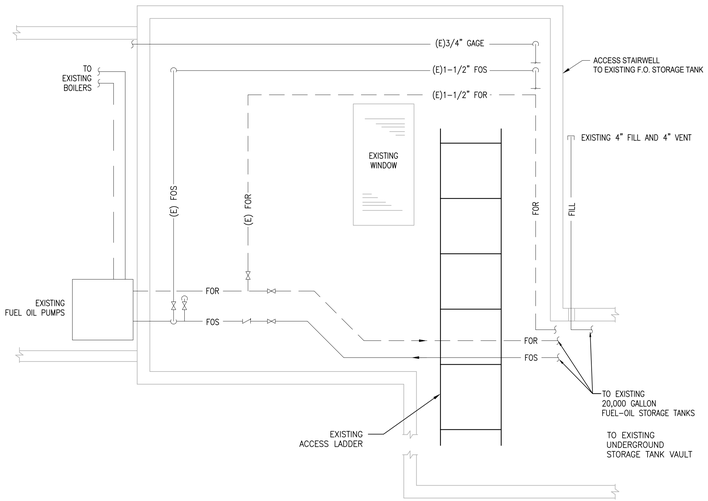
26413
KANSAS
PROFESSIONAL ENGINEER
9.3.2021

Office of Construction and Facilities Management

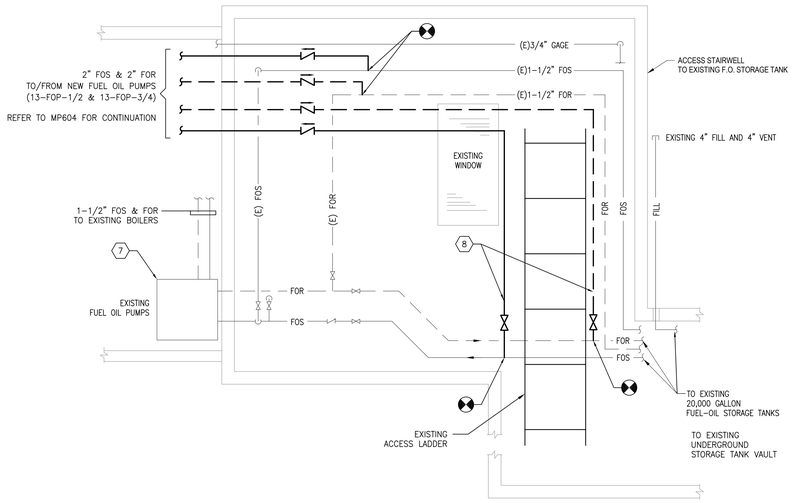
VA U.S. Department of Veterans Affairs

Drawing Title	MECHANICAL STEAM GENERATION NATURAL GAS AND NO. 2 FUEL OIL FLOW DIAGRAM BOILERS
Phase	100% BID SET
Approved: Project Director	FULLY SPRINKLERED
Project Title	INSTALL NEW BOILERS IN BUILDING 13
Location	ROBERT J. DOLE VA MEDICAL CENTER WICHITA, KANSAS
Issue Date	2021-09-03
Checked	MH
Drawn	GDS
Project Number	589A7-18-302
Building Number	13
Drawing Number	MP604

VA FORM 08-6231



2 NO. 2 FUEL OIL FLOW DIAGRAM – EXISTING CONDITIONS
SCALE: NTS



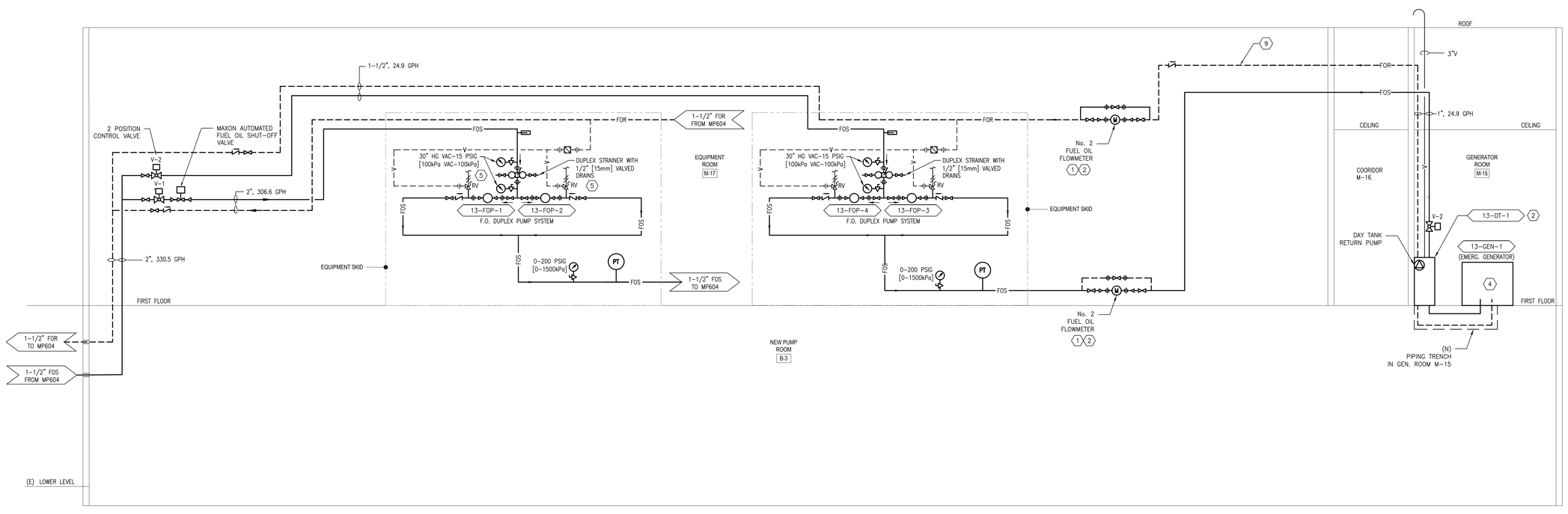
3 NO. 2 FUEL OIL FLOW DIAGRAM – PHASE 2 NEW WORK
SCALE: NTS

GENERAL SHEET NOTES:

1. REFER TO DRAWING M-001 FOR MECHANICAL ABBREVIATIONS, NOTES & SYMBOLS.
2. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, DIMENSIONS, ETC. AT THE JOB SITE.
3. CONTRACTOR SHALL ATTACH PERMANENT TAGS ON ALL EQUIPMENT AND VALVES, AND CLEARLY LABEL ALL PIPING SYSTEMS. REFER TO PROJECT SPECIFICATIONS FOR DETAILS.
4. REFERENCE ALL OTHER DRAWINGS IN THIS PACKAGE FOR COORDINATION, AND SPECIFICALLY REFER TO THE FOLLOWING FOR CONTINUATION, AS NEEDED:
   – MP601, MP602, MP603 & MP-604.

⬡ SHEET KEYNOTES:

1. INSTALL FLOW METERS IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION REQUIREMENTS.
2. DAY TANK (13-DT-1): PREFERRED MFG MODEL DT-100 OR EQUAL. 100 GALLON FUEL OIL DAY TANK WITH SECONDARY CONTAINMENT, UL 142 LISTED. DAY TANK SHALL INCLUDE RETURN PUMP P-1. DAY TANK SHALL BE FACTORY PRE-PIPED AND WIRED SO THAT ONLY ONE POWER FEED IS REQUIRED. PACKAGE SHALL INCLUDE: (2) 3" EMERGENCY VENTS, (1)2" NORMAL VENT, 3/4" FUEL OIL SUPPLY, 3/4" FUEL OIL RETURN, HIGH AND LOW LEVEL ALARMS, CRITICAL HIGH LEVEL ALARM TO ENERGIZE RETURN PUMP P-3, 1 FLOAT SWITCHES TO OPEN SOLENOD CONTROL VALVE V-3, PUMP CONTROL, CHECK VALVE FOR RETURN PUMP, LEAK DETECTION FOR CONTAINMENT TANK, TEMPERATURE SENSOR TO ENERGIZE RETURN PUMP P-3 ON HIGH FUEL OIL TEMPERATURE IN DAY TANK. P-1 SHALL BE SIZED FOR 38 GPM, 1/2" HP, 115V, 60HZ, ODP MOTOR. INCLUDE TWO 3/4", NPT SOLENOID VALVE, TWO FUEL STRAINERS, TWO 3/4" MANUAL SHUT-OFF VALVES, THREE 3/4" CHECK VALVES. PROVIDE PLC BASED PUMP CONTROLLER WITH TOUCH SCREEN AND MODBUS OR BACNET COMMUNICATION.
3. REFER TO ELECTRICAL DRAWINGS ES101, 13-ED101.01 & 13-EP101.01 FOR GENERATOR RELOCATION SCOPE DETAILS.
4. REFER TO ELECTRICAL DRAWING 13-EP402.02 FOR ADDITIONAL GENERATOR DETAILS.
5. EXISTING FUEL OIL PIPING TO EXISTING GENERATOR LOCATION TO BE DISCONNECTED AND REMOVED TO INSIDE BUILDING WALL. CAP PIPES.
6. NEW 2" FOS & 2" FOR TO NEW FUEL-OIL PUMP SKIDS. REFER TO DRAWINGS MP111.02, MP121.02 & MP604.
7. ONCE NEW FUEL OIL PUMPS, PIPING AND CONTROLS ARE OPERATIONAL, DISCONNECT AND REMOVE EXISTING FUEL-OIL PUMPS. COORDINATE WITH VA COR.
8. COORDINATE ROUTING OF NEW PIPING WITH EXISTING CONDITIONS. DO NOT BLOCK EGRESS PATH AND ACCESS TO EQUIPMENT, VALVES, ETC.
9. ALL UNDERGROUND OR ABOVE FLOOR FUEL OIL PIPING TO BE DOUBLE CONTAINMENT PIPE. SLOPE UNDERGROUND PIPING TOWARDS BLDG. 13 WALL AND PROVIDE LEAK DETECTION SUMP AT TERMINATION OF DOUBLE CONTAINMENT PIPING WITHIN BLDG. 13.



1 NO. 2 FUEL OIL FLOW DIAGRAM – EMERGENECY GENERATORS
SCALE: NTS

NO.	DESCRIPTION	DATE

CONSULTANTS

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MABBETT & ASSOCIATES, INC.
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MR PROJECT NO: 0499-0121

MILLER-REMICK LLC
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ANTHONY D. PACANO
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26413
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4/5/2021

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title
MECHANICAL STEAM GENERATION
NO. 2 FUEL OIL FLOW DIAGRAMS
EMERGENCY GENERATORS

Approved: Project Director

Phase
100% BID SET

FULLY SPRINKLERED

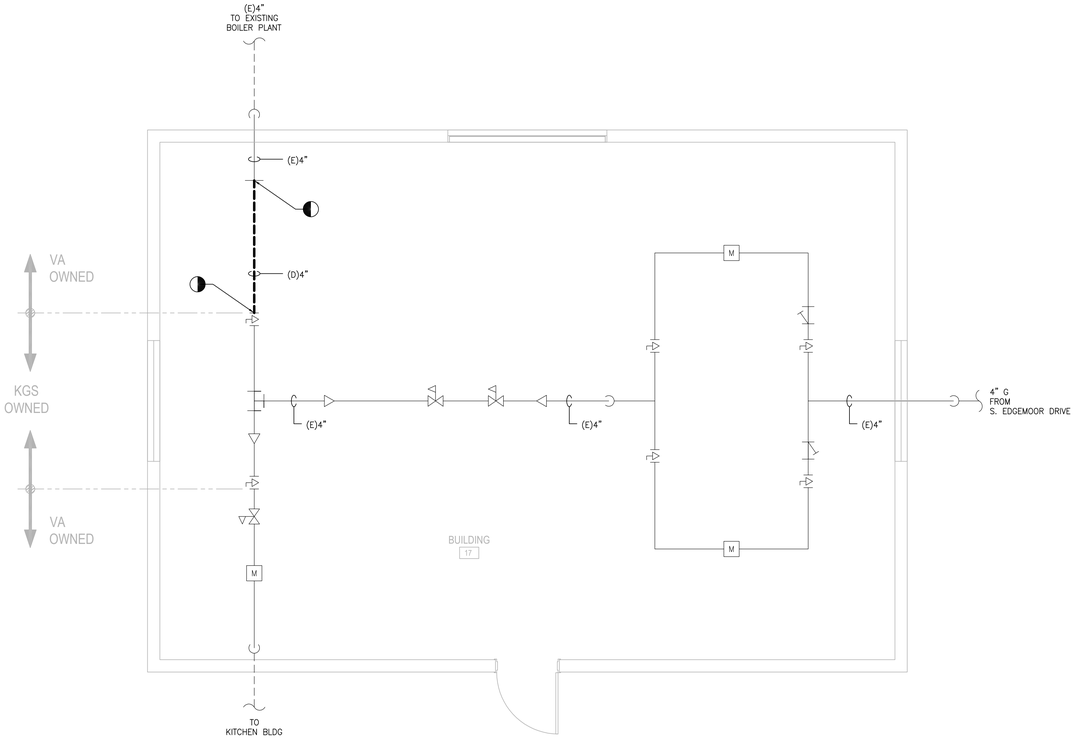
Project Title
INSTALL NEW BOILERS IN BUILDING 13

Location ROBERT J. DOLE VA MEDICAL CENTER WICHITA, KANSAS

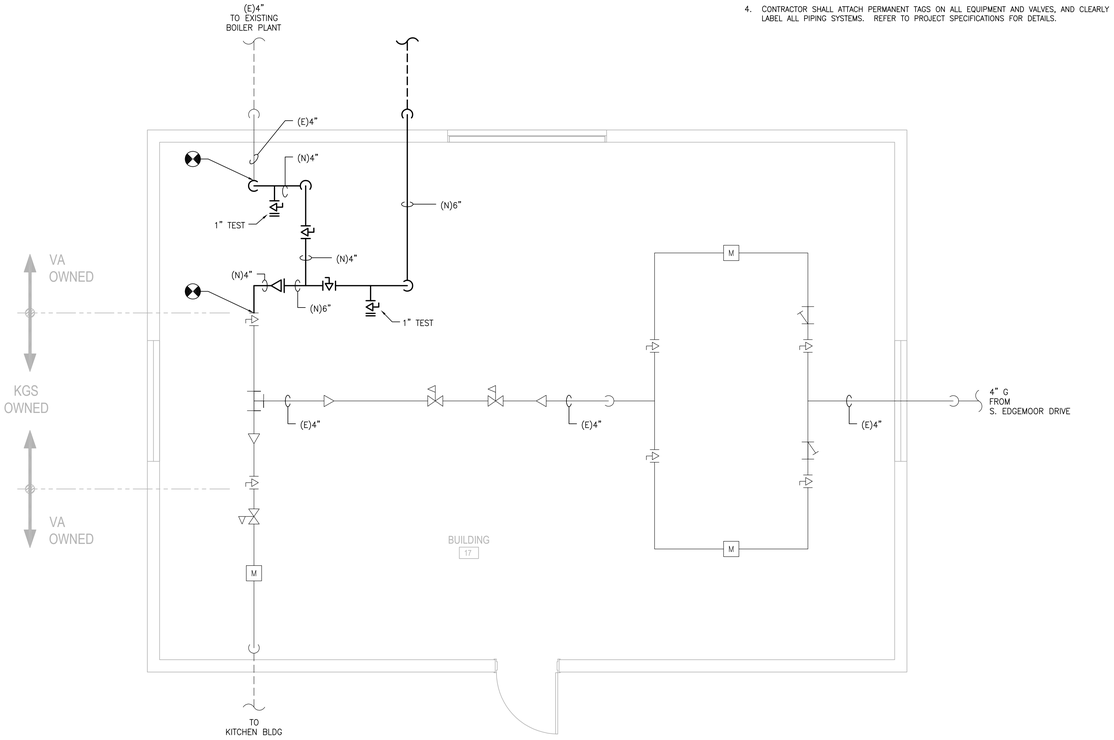
Issue Date 2021-09-03
Checked MH
Drawn GDS

Project Number 589A7-18-302
Building Number 13
Drawing Number MP605

VA FORM 08-6231



1 DEMOLITION DIAGRAM – BUILDING 17 GAS SERVICE MODIFICATIONS
SCALE: NTS



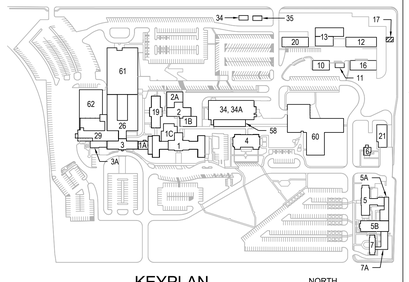
2 NEW WORK DIAGRAM – BUILDING 17 GAS SERVICE MODIFICATIONS
SCALE: NTS

GENERAL SHEET NOTES:

1. REFER TO DRAWING M-001 FOR ABBREVIATIONS, NOTES AND SYMBOLS.
2. THIS DRAWING IS TO BE USED IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS IN THIS PACKAGE.
3. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, DIMENSIONS, ETC. AT THE JOB SITE.
4. CONTRACTOR SHALL ATTACH PERMANENT TAGS ON ALL EQUIPMENT AND VALVES, AND CLEARLY LABEL ALL PIPING SYSTEMS. REFER TO PROJECT SPECIFICATIONS FOR DETAILS.

NEW GAS LINE AND KGS SERVICE MODIFICATIONS SEQUENCE:

1. THE EXISTING 4" GAS MAIN FROM BUILDING 17 WILL FEED THE EXISTING BOILERS AT THE CURRENT 5 PSIG PRESSURE THROUGHOUT PHASES 1 AND 2.
2. DURING PHASE 1 THE EXISTING BOILER PLANT WILL FIRE OIL WHILE THE EXISTING 4" GAS MAIN IS REROUTED FROM THE FOOTPRINT OF THE NEW ADDITION OVER TO THE EAST SIDE OF THE EXISTING BUILDING. WHEN THE REROUTE IS COMPLETE THE PLANT WILL TRANSITION BACK TO GAS.
3. THE NEW BOILER PLANT WILL THEN BE CONSTRUCTED, AND THE NEW 6" GAS LINE BETWEEN BUILDING 17 AND THE NEW BOILER PLANT ADDITION WILL BE INSTALLED AND PRESSURE TESTED.
4. THE NEW BOILER PLANT WILL THEN BE TESTED AND COMMISSIONED WITH 5 PSIG GAS FROM THE NEW 6" MAIN. DURING THIS TIME, THE EXISTING BOILER PLANT WILL CONTINUE TO SUPPLY STEAM TO THE STATION USING 5 PSIG GAS FROM THE EXISTING 4" MAIN.
5. VACO CAN THEN PERFORM ANY DESIRED TESTING ON THE NEW PLANT (USING 5 PSIG GAS AND / OR OIL) WITHIN THE LIMITS OF THE STEAM DUMP / EXHAUST SILENCER (APPROX. 500 BHP).
6. WHEN THE COMMISSIONING OF THE NEW PLANT IS COMPLETE AND THE VA ACCEPTS THE NEW PLANT, THE CAMPUS STEAM LOAD WILL BE TRANSITIONED OFF OF THE EXISTING BOILER PLANT AND ONTO THE NEW BOILER PLANT.
7. DECOMMISSIONING AND DEMOLITION OF THE EXISTING BOILER PLANT WILL NOT COMMENCE UNTIL THE VA IS CONFIDENT IN THE NEW BOILER PLANT.
8. WHEN THE VA IS READY, THE EXISTING BOILER PLANT WILL BE DECOMMISSIONED AND THE EXISTING 4" GAS MAIN FROM BUILDING 17 WILL BE DISCONNECTED FROM THE KGS METER TRAIN IN BUILDING 17.
9. KGS WILL THEN BE ASKED TO REPLACE THE MONITOR REGULATOR AND ADJUST THE PRIMARY REGULATOR TO DELIVER 10 PSIG. THE NEW BOILER PLANT WILL BE FIRED ON OIL WHILE THESE UPDATES ARE PERFORMED.
10. AFTER THE GAS PRESSURE HAS BEEN INCREASED TO 10 PSIG, THE PLANT WILL BE TRANSITIONED BACK TO GAS, AND VACO WILL BE ABLE TO PERFORM THE PLANT TESTING OF TWO (2) BOILERS AT 100% FIRE (WITH 10 PSIG GAS AND / OR OIL) USING THE CAMPUS STEAM LOAD AND THE STEAM DUMP.



KEYPLAN

NORTH

PRINTS OF THIS DRAWING SHALL NOT BE USED FOR ANY PURPOSE WHATSOEVER WITHOUT THE SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER.

NO.	DESCRIPTION	DATE

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title MECHANICAL GAS SERVICE MODIFICATION BUILDING 17	**Phase** 100% BID SET	**Project Title** INSTALL NEW BOILERS IN BUILDING 13	**Project Number** 589A7-18-302
Approved: Project Director	FULLY SPRINKLERED	**Location** ROBERT J. DOLE VA MEDICAL CENTER WICHITA, KANSAS	**Building Number** 17
		Issue Date 2021-09-03 / **Checked** MH / **Drawn** ARF	**Drawing Number** MP606

VA FORM 08-6231

FOUR-PASS WET-BACK FIRE TUBE STEAM BOILER SCHEDULE, PACKAGED TYPE, SHOP ASSEMBLED

MARK	LOCATION	MAX CAPACITY	BOILER	OPERATING PRESS	HEATING SURFACE (FIRESIDE)	MIN CONT FIRING RATE	NATURAL GAS		# 2 OIL		FIRST CUTOUT SETTINGS	SECOND CUTOUT SETTINGS	FIRST RELIEF VALVE SETTINGS	SECONDARY RELIEF VALVE SETTINGS	FAN MOTOR				OIL PUMP	BOILER SHIPPING WEIGHT	BOILER NORMAL OPERATING WEIGHT	FLOODED BOILER WEIGHT	BASIS OF DESIGN	REMARKS
							INPUT	OUTPUT	INPUT	OUTPUT					POWER	PHASE	VOLT	RPM	POWER					
		LBS/HR	HP	PSIG	SQ FT	LBS/HR	CFH (1000 BTU)	MBH	GPH (140,000 BTU/GAL)	MBH	PSIG	PSIG	PSIG	PSIG	HP				HP	LBS	LBS	LBS		
13-B-1	BOILER ROOM BLDG 13	17,250	500	88	2,556	1,725	20,280	17,230	139	17,230	100	110	120	130	25	3	460	3600	1	41,700	67,900	74,145	JOHNSTON PFTA500-4 WITH FABER DUAL FUEL BURNERS (NATURAL GAS 10:1 TURN-DOWN AND #2 FUEL OIL WITH 8:1 TURN-DOWN) AND ALLEN BRADLEY PLC CONTROLS.	EMISSION LEVEL 30 PPM w/ NATURAL GAS
13-B-2	BOILER ROOM BLDG 13	17,250	500	88	2,556	1,725	20,280	17,230	139	17,230	100	110	120	130	25	3	460	3600	1	41,700	67,900	74,145	JOHNSTON PFTA500-4 WITH FABER DUAL FUEL BURNERS (NATURAL GAS 10:1 TURN-DOWN AND #2 FUEL OIL WITH 8:1 TURN-DOWN) AND ALLEN BRADLEY PLC CONTROLS.	EMISSION LEVEL 30 PPM w/ NATURAL GAS
13-B-3	BOILER ROOM BLDG 13	17,250	500	88	2,556	1,725	20,280	17,230	139	17,230	100	110	120	130	25	3	460	3600	1	41,700	67,900	74,145	JOHNSTON PFTA500-4 WITH FABER DUAL FUEL BURNERS (NATURAL GAS 10:1 TURN-DOWN AND #2 FUEL OIL WITH 8:1 TURN-DOWN) AND ALLEN BRADLEY PLC CONTROLS.	EMISSION LEVEL 30 PPM w/ NATURAL GAS

NOTES:

1. STEAM QUALITY IS 99% MINIMUM.
2. DESIGN PRESSURE IS 200 PSIG [1378 kPa] MINIMUM.
3. BURNER MUST BE DESIGNED FOR 10:1 TURNDOWN AND NOT MODIFIED TO REACH 10:1 TURNDOWN. NO PROTOTYPE BURNERS ARE PERMITTED, THE MODEL OF BURNER MUST BE CURRENTLY IN USE AT LEAST FIVE OTHER VA BOILER PLANTS.
4. FEEDWATER TEMPERATURE IS 212 °F [100 °C] MINIMUM, AND 228 °F [109 °C] NORMAL.
5. THE FUEL TO BE FIRED SHALL BE NATURAL GAS OR # 2 FUEL OIL.
6. STEAM NOZZLE MOMENTS = 3000 FT -LBS (MAX).
7. ALTITUDE IS 1321 FT. [402.6 M] ABOVE SEA LEVEL.
8. HEATING VALUE USED FOR NATURAL GAS: 1000 BTU/CU. FT.
9. HEATING VALUE FOR NO. 2 FUEL OIL USED: 140,000 BTU/U.S. GALLON.
10. ASME SPOOL PIPING TO BE PROVIDED BY BOILER MANUFACTURER.
11. STEAM METERS TO BE PROVIDED BY CONTROLS CONTRACTOR.
12. NATURAL GAS FLOW METERS TO BE PROVIDED CONTROLS CONTRACTOR.
13. FUEL OIL FLOW METERS TO BE PROVIDED CONTROLS CONTRACTOR.
14. BOILER FEEDWATER FLOW METERS TO BE PROVIDED CONTROLS CONTRACTOR.
15. BOILER EMISSION LEVEL: 30 PPM NATURAL GAS.
16. THE NATURAL GAS PRESSURE AT THE ENTRANCE TO THE BOILER GAS TRAIN, APPROXIMATELY 10 PSIG.

PRESSURIZED TRAY TYPE FEED WATER DEAERATOR SKID SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	TYPE	MAWP	MINIUM SYSTEM VOLUME	FEEDWATER MAKEUP (DESIGN)		REQUIRED STEAM FLOW @ 5 PSIG	STAND HEIGHT	OVERALL HEIGHT (MAXIMUM)	OVERALL LENGTH	OVERALL WIDTH	BASIS OF DESIGN	REMARKS
				PSIG	GAL	LB/HR	GPM	LB/HR	FT	FT	FT	FT		
13-DA-1	BOILER ROOM	BOILER FEEDWATER DEAERATOR	PRESSURIZED TRAY TYPE	50	1,300	17,500	44	3,107	9	15.2	11	6.7	INDUSTRIAL STEAM 10ST5	SUPPLIED WITH INDUSTRIAL STEAM DEAERATOR CONTROL. CONTROL PANEL SHALL BE FACTORY PRE-WIRED AND SKID-MOUNTED.

NOTES:

1. SEE REFERENCE DRAWING MP602 & SPECIFICATION SECTION 23 50 11.

STEAM PRESSURE REDUCING VALVE SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	SIZE	QUANTITY	REQUIRED CAPACITY	MAXIMUM CAPACITY OF VALVE	PRESSURE		BASIS OF DESIGN	REMARKS
							IN	OUT		
			IN.		LBS/HR	LBS/HR	PSIG	PSIG		
13-PRV-1A	BOILER ROOM	DEARERATOR	1-1/2	1	2071	3040	80	5	LESLIE GPKP	2/3 PRV SUPPLIED WITH DEAERATOR
13-PRV-1B	BOILER ROOM	DEARERATOR	1	1	1035	1550	80	5	LESLIE GPKP	1/3 PRV SUPPLIED WITH DEAERATOR
13-PRV-2	BOILER ROOM	UNIT HEATERS	1	1	875	1550	80	30	LESLIE GPKP	PROVIDED BY CONTRACTOR

CONDENSATE STORAGE TANK

MARK	LOCATION	SYSTEM AND/OR SERVICE	MINUTES OF STORAGE (MINIMUM)	MAWP	MINIMUM TANK VOLUME	MAKEUP RAW WATER 40 DEG. F		FEEDWATER OUT 227 DEG. F (OPERATING)		STAND HEIGHT	OVERALL HEIGHT (MAXIMUM)	OVERALL LENGTH	OVERALL WIDTH	BASIS OF DESIGN	REMARKS
				PSIG	GAL	LB/HR	GPM	LB/HR	GPM	FT	FT	FT	FT		
13-CS-1	PUMP ROOM	CONDENSATE RETURN	20	50	1,400	17,250	90	12,000	74	5.5	12.33	11.33	7.33	INDUSTRIAL STEAM	20 MINUTES OF TANK STORAGE IS REQUIRED - NO EXCEPTIONS SUPPLIED WITH INDUSTRIAL STEAM PUMP CONTROL. CONTROL PANEL SHALL BE REMOTE / WALL MOUNTED.

NOTES:

1. SEE REFERENCE DRAWING MP603 & SPECIFICATION SECTION 23 50 11.

BOILER FLUE GAS ECONOMIZER SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	MIN HEAT EXCHANGED	TEST PRESSURE	DESIGN PRESSURE	MAXIMUM TEMPERATURE	DESIGN TEMPERATURE	WATER FLOW	MAX PRESS DROP WATER SIDE @ 100%	MAX. PRESS DROP GAS SIDE WC @100%	BASIS OF DESIGN	REMARKS
			MBH	PSIG	PSIG	DEG. F	DEG. F	GPM	PSIG	IN		
13-FHX-1	BOILER ROOM	FEEDWATER 13-B-1	363	450	300	750	650	34.5	<1	0.47	CAIN INDUSTRIES MODEL RTR	ASME STAMP SEC VIII; DIV 1 (UM). 2" THICK FACTORY INSULATION
13-FHX-2	BOILER ROOM	FEEDWATER 13-B-2	363	450	300	750	650	34.5	<1	0.47	CAIN INDUSTRIES MODEL RTR	ASME STAMP SEC VIII; DIV 1 (UM). 2" THICK FACTORY INSULATION
13-FHX-3	BOILER ROOM	FEEDWATER 13-B-3	363	450	300	750	650	34.5	<1	0.47	CAIN INDUSTRIES MODEL RTR	ASME STAMP SEC VIII; DIV 1 (UM). 2" THICK FACTORY INSULATION

NOTES:

1. BOILER FEEDWATER INLET TEMPERATURE APPROXIMATED AT 228 °F [108 °C] AND LEAVING 249 °F [120 °C] @ 100% LOAD CAPACITY (115-122 PSIG BOILER OPERATING PRESSURE).
2. WEIGHT (DRY): 1351 LBS / WEIGHT (WET): 1440 LBS.
3. SURFACE AREA 530 SQUARE FEET.
4. 316L SS TUBE W/STAINLESS STEEL FIN.
5. SAFETY RELIEF VALVE WITH STAINLESS STEEL SEATS.

SAFETY RELIEF VALVE SCHEDULE

MARK	AREA LOCATION OR EQUIPMENT SERVED	SYSTEM AND/OR SERVICE	STEAM TEMP @ PRESSURE SETTING	MINIMUM CAPACITY	SET PRESSURE	BASIS OF DESIGN	REMARKS
			°F	LBS/HR	PSIG		
13-SV-1	13-BLR-1	STEAM BOILER	350	13,800	120	KUNKLE 6252ALJ 2-1/2" X 4"	SEE NOTE 1
13-SV-2	13-BLR-1	STEAM BOILER	356	17,250	130	KUNKLE 6252ALJ 2-1/2" X 4"	SEE NOTE 1
13-SV-3	13-BLR-2	STEAM BOILER	350	13,800	120	KUNKLE 6252ALJ 2-1/2" X 4"	SEE NOTE 1
13-SV-4	13-BLR-2	STEAM BOILER	356	17,250	130	KUNKLE 6252ALJ 2-1/2" X 4"	SEE NOTE 1
13-SV-5	13-BLR-3	STEAM BOILER	350	13,800	120	KUNKLE 6252ALJ 2-1/2" X 4"	SEE NOTE 1
13-SV-6	13-BLR-3	STEAM BOILER	356	17,250	130	KUNKLE 6252ALJ 2-1/2" X 4"	SEE NOTE 1
13-SV-10	13-DA-1	13-PRV-1A, 13-PRV-1B	250	3,100	15	KUNKLE 6252ALJ 2-1/2" X 4"	SEE NOTE 1
13-SV-11	13-DA-1	DEAERATOR	239	2,500	10	KUNKLE 6252ALJ 2-1/2" X 4"	SEE NOTE 1
13-SV-12	13-PRV-2	LPS UNIT HEATERS	267	1,550	25	KUNKLE 6252 FJN 2" X 2-1/2"	

NOTES:
1. VALVE TO BE SIZED AND SELECTED BY THE EQUIPMENT MANUFACTURER.

NO.	DESCRIPTION	DATE

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL SCHEDULES	Phase: 100% BID SET	Project Title: INSTALL NEW BOILERS IN BUILDING 13	Project Number: 589A7-18-302
Approved: Project Director	FULLY SPRINKLERED	Location: ROBERT J. DOLE VA MEDICAL CENTER WICHITA, KANSAS	Building Number: 13
		Issue Date: 2021-09-03 / Checked: MH / Drawn: GDS	Drawing Number: M-701

VA FORM 08-6231

STEAM TRAP SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	CAPACITY AT MIN DIFF	MIN DIFF PRESS	MIN INLET	TRAP TYPE	TRAP SIZE	BASIS OF DESIGN (OR APPROVED EQUAL)	REMARKS
			LBS/HR	PSI	PSI		IN		
13-ST-1	BOILER PLANT	HEADER DRIP-HPS	4140	6.5	80	BUCKET	3/4"	ARMSTRONG MODEL 813	NOTE 1
13-ST-2	BOILER PLANT	HEADER DRIP-HPS	4140	6.5	80	BUCKET	3/4"	ARMSTRONG MODEL 813	NOTE 1
13-ST-3	BOILER PLANT	ASME SPOOL	4140	6.5	80	BUCKET	3/4"	ARMSTRONG MODEL 813	NOTE 1
13-ST-4	BOILER PLANT	ASME SPOOL	4140	6.5	80	BUCKET	3/4"	ARMSTRONG MODEL 813	NOTE 1
13-ST-5	BOILER PLANT	ASME SPOOL	4140	6.5	80	BUCKET	3/4"	ARMSTRONG MODEL 813	NOTE 1
13-ST-6	BOILER PLANT	PRV DRIP (DA)-LPS	3107	0.29	5	F&T	3/4"	ARMSTRONG MODEL A	NOTE 1
13-ST-7	BOILER PLANT	UNIT HEATERS	100	2.8	15	F&T	3/4"	ARMSTRONG MODEL A	NOTE 1
13-ST-8	BOILER PLANT	UNIT HEATERS	45	2.8	15	F&T	3/4"	ARMSTRONG MODEL A	NOTE 1
13-ST-9	BOILER PLANT	UNIT HEATERS	15	2.8	15	F&T	3/4"	ARMSTRONG MODEL A	NOTE 1
13-ST-10	BOILER PLANT	PRV DRIP DA-HPS	3107	6.5	80	BUCKET	3/4"	ARMSTRONG MODEL 813	NOTE 1
13-ST-11	BOILER PLANT	BLOW OFF PIPING-HPS	4140	6.5	80	BUCKET	3/4"	ARMSTRONG MODEL 813	NOTE 1
13-ST-12	BOILER PLANT	BLOW OFF PIPING-HPS	4140	6.5	80	BUCKET	3/4"	ARMSTRONG MODEL 813	NOTE 1
13-ST-13	BOILER PLANT	FLASH STEAM DRIP LEG	4140	6.5	80	F&T	3/4"	ARMSTRONG MODEL A	NOTE 1

NOTES:
1. CONTRACTOR SHALL PROVIDE TRAP REPLACEMENT KIT WITH EACH STEAM TRAP.

STEAM TEST SILENCER SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	FLOW RATE	PRESSURE	WEIGHT	INLET PIPE SIZE	OUTLET PIPE SIZE	DISTANCE FROM EXIT	ACCOUSTICAL CALCULATIONS										BASIS OF DESIGN	REMARKS:
			(LB/HR)	(PSIG)	(LB)	(IN.)	(IN.)	(FT.)	DBA	31.5	63	125	250	500	1K	2K	4K	8K		
13-STS-1	BOILER ROOM	STEAM	34,500	125	458	8	22	3	_	_	_	_	_	_	_	_	_	_	MAXIM SILENCERS MODEL 22" VT2-22	SEE NOTES BELOW
								UNSILENCED NOISE, db	141	113	113	113	119	125	131	137	134	131	22" DIA. X 87" LG (APPROX) ESTIMATED WEIGHT: 480 LBS	
								INSERTION LOSS	_	8	14	21	31	42	51	53	49	43		
								SUB TOTAL	92	105	99	92	88	83	80	84	85	88		
								SELF NOISE	92	94	92	91	89	88	86	85	83	82		
								SILENCED NOISE, db	95	105	100	94	92	89	87	87	87	89		

NOTES:
1. CONFIGURED FOR HORIZONTAL FLOW AND MOUNT.
2. SPECIAL INLET DIFUSER FOR USE WITH CONTROL VALVE CV-1 (DWG. MP601)
3. SADDLE TYPE SUPPORTS.
4. 8"-150 PSIG RAISED FACE FLANGED INLET.
5. ENCLOSED OUTLET WITH 118"-150 PSIG RAISED FACE FLANGED OUTLET.
6. 14 GA. CARBON STEEL BODY.
7. 1" CONDENSATE DRAIN @ OUTLET & INLET.
8. HIGH TEMPERATURE PRIMER.
9. INSTALL NOISE REDUCING CONTROL VALVE UPSTREAM OF SILENCER. SEE DRAWING MP601.
10. SIZED FOR TESTING CAPACITY (2 BOILERS AT 100%). NORMAL OPERATING LOAD IS 17,250 LB/HR.

DUPLEX CONDENSATE RETURN UNIT SCHEDULE

MARK	PUMP TAG NO.	LOCATION	SYSTEM AND/OR SERVICE	TYPE UNIT	FLOW (EACH PUMP)	DISCHARGE PRESSURE	TEMPERATURE	MIN RECEIVER SIZE	MOTOR				BASIS OF DESIGN
									NOMINAL POWER EACH	PHASE	VOLT	RPM	
					GPM	PSIG	°F	GAL	HP				
13-CRU-1	13-CP-1-1 & 13-CP-1-2	PUMP ROOM	STEAM CONDENSATE	ELECTRIC	90	30	200	260	3	3	460	3450	SPIRAX SARCO VNS-603

NOTES:

1. PROVIDE (1) 260 GALLON CYLINDRICAL CAST IRON RECEIVER (36" DIA. x 60" LONG), 2) VNS-603 SERIES PUMP & MOTOR ASSEMBLY COMPLETE 3 HP - 3500 RPM - 460/3/60 - ODP - CAPABLE OF 90 GPM @ 30 PSIG - 2' NPSH (1) MECHANICAL ALTERNATOR ASSEMBLY, - NEMA 4 (1) GAUGE GLASS ASSEMBLY WITH AUTOMATIC SHUTOFF (1) THERMOMETER - 3.5" DIAL - 20-220F (1) CONTROL PANEL NEMA 4X TYPE 700 CONSISTING OF: (1) (24"x 24") ENCLOSURE (1) UL LISTED AND INSPECTED CONTROL PANEL (2) DISCONNECT W/ COVER INTER LOCKS (2) FUSE BLOCK W/ FUSES (2) "0" I.E.C. MOTOR STARTER (2) "0" OVERLOAD RELAY (2) HAND - OFF - AUTO (1) 460/110V CONTROL CIRCUIT TRANSFORMER (2) PILOT LIGHT - RED - PUMP RUN (2) PILOT LIGHT - GREEN - PUMP POWER ONE (1) TERMINAL STRIP (1) GROUND LUG. 2 FLOAT SWITCHES, MAGNESIUM CORROSION INHIBITOR.

2. INSTALL PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS.

BLOWDOWN TANK WITH AFTERCOOLER SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	QUANTITY	DIMENSIONS (LENGTH)	BO INLET	DA OVERFLOW	DRAIN	VENT	CW INLET	DIMENSIONS (DIAMETER)	BASIS OF DESIGN
				IN						IN	
13-BDT-1	LOWER LEVEL PUMP ROOM	BOILER BLOWDOWN & DA OVERFLOW	1	36" DIA X 96" HEIGHT	2"-150#	4"-150#	6"-150#	6"-150#	3"	36	PENN SEPARATOR, CO. MODEL BDT 36-96

NOTES:
1. PRESSURE RATING: 250 PSIG.
2. TEMPERATURE RATING: 450° F.
3. SUPPLIED WITH SELF ACTUATING REGULATOR.
4. SUPPLIED WITH (4) LEGS.
5. ASME RATED.
6. PROVIDE WITH PRESSURE GAUGE WITH SYPHON, SIGHT GLASS, INDUSTRIAL THERMOMETER AND 12" x 16" MANWAY.
7. APPROXIMATE WEIGHT: 2200 LBS
8. TANK TO BE INSTALLED PRIOR TO MAIN LEVEL FLOOR ABOVE IS INSTALLED.

FUEL OIL PUMP SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	CAPACITY GPM	DISCHARGE PRESS	OIL GRADE	OIL TEMP	VISCOSITY RANGE (SSU)	SUCTION LIFT	MOTOR			BASIS OF DESIGN	REMARKS
			GPH	PSIG		°F		IN HG	HP	PHASE	VOLT		
13-FOP-1	BOILER PLANT	BOILERS	556	110-120	2	50	45	14	1.5	3	460	PREFFERRED-MFG MODEL 204	PROVIDE 13-FOP-1 AND 13-FOP-2 AND ACCESSORIES IN A FACTORY PRE-PIPED AND PRE-WIRED PACKAGE
13-FOP-2	BOILER PLANT	BOILERS	556	110-120	2	50	45	14	1.5	3	460		
13-FOP-3	BOILER PLANT	EMERGENCY GENERATORS	150	50	2	50	45	14	1/2	3	460	PREFFERRED-MFG MODEL 104	PROVIDE 13-FOP-3 AND 13-FOP-4 AND ACCESSORIES IN A FACTORY PRE-PIPED AND PRE-WIRED PACKAGE
13-FOP-4	BOILER PLANT	EMERGENCY GENERATORS	150	50	2	50	45	14	1/2	3	460		

NOTES:
1. PROVIDE BACK PRESSURE RECIRCULATING VALVE
2. PROVIDE DUPLEX STRAINER (60 MESH BASKET)
3. PROVIDE ISOLATION VALVE AND CHECK VALVES.
4. PROVIDE COMPOUND PRESSURE GAUGES
5. PROVIDE RELIEF VLAVES
6. PROVIDE DISCHARGE PRESSURE TRANSMITTER
7. PROVIDE CONTAINMENT BASIN
8. PROVIDE CONTROL PANEL

FUEL OIL MAINTENANCE SYSTEM SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	CAPACITY GPM	OIL GRADE	OIL TEMP	MOTOR			BASIS OF DESIGN	REMARKS
			GPM		°F	HP	PHASE	VOLT		
13-FOM-1	BOILER PLANT	FUEL OIL TANKS	20	2	50	0.75	1	115	PREFERRED MFG PF-505	PROVIDE 13-FOM-1 AND ACCESSORIES IN A FACTORY PRE-PIPED AND PRE-WIRED PACKAGE.

NOTES:
1. PROVIDE BACK PRESSURE RECIRCULATING VALVE.
2. PROVIDE DUPLEX STRAINER (60 MESH BASKET)
3. PROVIDE ISOLATION VALVE AND CHECK VALVES.
4. PROVIDE COMPOUND PRESSURE GAUGES
5. PROVIDE RELIEF VLAVES
6. PROVIDE DISCHARGE PRESSURE TRANSMITTER
7. PROVIDE CONTAINMENT BASIN
8. PROVIDE CONTROL PANEL
9. PROVIDE MULTI-TANK CONTROLLER OPERATION AND VALVING. MULTI-TANK CROSSFEED CAPACITY.

NO.	DESCRIPTION	DATE

CONSULTANTS

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MR PROJECT NO: 0499-0121

MILLER-REMICK LLC
PROFESSIONAL ENGINEER
ANTHONY D. PACARO
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KANSAS
PROFESSIONAL ENGINEER
9.3.2021

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	MECHANICAL SCHEDULES
Phase	100% BID SET
Project Title	INSTALL NEW BOILERS IN BUILDING 13
Project Number	589A7-18-302
Building Number	13
Approved: Project Director	
	FULLY SPRINKLERED
Location	ROBERT J. DOLE VA MEDICAL CENTER WICHITA, KANSAS
Drawing Number	M-702
Issue Date	2021-09-03
Checked	MH
Drawn	GDS

VA FORM 08-6231

SINGLE PACKAGED DX AIR CONDITIONER SCHEDULE (ROOFTOP)

MARK	LOCATION	AREA AND/OR BLDG SERVED	TYPE	EFFICIENCY	TOTAL SUPPLY AIR FLOW	MIN. OUTSIDE AIR FLOW	EXT STATIC PRESS.	COOLING CAPACITY								AIR FILTER MERV RATING	ELECTRICAL DATA					BASIS OF DESIGN OR APPROVED EQUAL	REMARKS
								MIN TOTAL CAP.	MIN SENS CAP.	MIN EER	EAT		OSA DESIGN TEMP Db	OSA DESIGN TEMP Wb	COMP Kw		FAN	UNIT POWER CONNECTION					
											Db	Wb					HP	CONTROL	MCA	MOP	VOLT		
				EER	CFM	CFM	IN	MBH	MBH		°F	°F	°F	°F										
13-RTU-1	LOW ROOF	ELECTRICAL M-13 & TRANSFORMER ROOM M-14	PACKAGED ROOFTOP COOLING ONLY	12.8	2000	0	1	60.9	45.7	12.9	80	67	100	74	3.7	11	1.0	MULTISPEED DIRECT DRIVE	12.0	15.0	460/3/60	TRANE THC060F4R	SEE NOTES

NOTES:

1. PROVIDE WIND RATED EQUIPMENT CURB.
2. PROVIDE HAIL GUARD.
3. PROVIDE DUAL ZONE TEMPERATURE CONTROLLER. SEE FLOOR PLANS.
4. PROVIDE DUAL ENTHALPY ECONOMIZER WITH FAULT DETECTION. PROVIDE BARMOETRIC RELEIF.
5. PROVIDE DRAIN PAN WITH UL#508 APPROVED WATER DETECTION SENSOR FOR UNIT SHUTDOWN. WIRE CONTROL CIRCUIT THROUGH NC CONTACT.
6. PROVIDE UNIT MOUNTED NON-FUSED DISCONNECT SWITCH. PROVIDE THRU BASE ELECTRIC.
7. PROVIDE 120V POWERED CONVENIENCE RECEPTACLE (ALWAYS HOT) WITH CIRCUIT PROTECTION.
8. PROVIDE HINGED ACCESS DOORS.
9. PROVIDE BACNET INTERFACE. CONTROLS BY ATC.
10. PROVIDE RETURN AIR SMOKE DETECTOR WIRED TO SHUT DOWN UNIT WITH ACCESSORY REMOTE KEY OPERATED TEST STATION.

STEAM UNIT HEATER SCHEDULE

MARK	AREA SERVED	TYPE UNIT	AIR FLOW	EAT	MIN CAPACITY	STEAM			TRAP	MOTOR				BASIS OF DESIGN	REMARKS
						PRESS ENT VALVE	PRESS ENT COIL	FLOW		NOMINAL POWER	PHASE	VOLT	RPM		
			CFM	°F	BTUH	PSIG	PSIG	LBS/HR	LBS/HR	HP					
13-UH-1	BOILER ROOM M-18	VERTICAL	1665	40	95,000	15	15	100	100	1/15	1	120	1050	MODINE V/VN 95	1, 2
13-UH-2	BOILER ROOM M-18	VERTICAL	1665	40	95,000	15	15	100	100	1/15	1	120	1050	MODINE V/VN 95	1, 2
13-UH-3	BOILER ROOM M-18	VERTICAL	1665	40	95,000	15	15	100	100	1/15	1	120	1050	MODINE V/VN 95	1, 2
13-UH-4	BOILER ROOM M-18	VERTICAL	1665	40	95,000	15	15	100	100	1/15	1	120	1050	MODINE V/VN 95	1, 2
13-UH-5	BOILER ROOM M-18	VERTICAL	1665	40	95,000	15	15	100	100	1/15	1	120	1050	MODINE V/VN 95	1, 2
13-UH-6	BOILER ROOM M-18	VERTICAL	1665	40	95,000	15	15	100	100	1/15	1	120	1050	MODINE V/VN 95	1, 2
13-UH-7	EQUIPMENT ROOM M-17	HORIZONTAL	685	40	42,000	15	15	45	45	1/12	1	120	1000	MODINE HSB 63	2, 3
13-UH-8	GENERATOR RM M-15	HORIZONTAL	220	40	14,000	15	15	15	15	1/60	1	120	1000	MODINE HSB 18	2, 3
13-UH-9	TRANSFORMER ROOM M-14	HORIZONTAL	220	40	14,000	15	15	15	15	1/60	1	120	1000	MODINE HSB 18	2, 3
13-UH-10	EQUIPMENT ROOM B-19	VERTICAL	1665	40	95,000	15	15	100	100	1/15	1	120	1050	MODINE V/VN 95	1, 2
13-UH-11	EQUIPMENT ROOM B-19	VERTICAL	1665	40	95,000	15	15	100	100	1/15	1	120	1050	MODINE V/VN 95	1, 2
13-UH-12	EQUIPMENT ROOM B-19	VERTICAL	1665	40	95,000	15	15	100	100	1/15	1	120	1050	MODINE V/VN 95	1, 2
13-UH-13	EQUIPMENT ROOM B-19	VERTICAL	1665	40	95,000	15	15	100	100	1/15	1	120	1050	MODINE V/VN 95	1, 2

NOTES:
1. UNIT HEATER SHALL BE INSTALLED MAXIMUM OF 15 FT ABOVE FINISHED FLOOR. SUPPORT FROM THE STRUCTURE ABOVE.
2. UNIT HEATER SHALL BE PROVIDED WITH MANUFACTURER'S THERMOSTAT. THERMOSTAT SHALL BE INSTALLED 48" ABOVE FINISHED FLOOR.
3. UNIT HEATER SHALL BE INSTALLED MAXIMUM OF 8 FT ABOVE FINISHED FLOOR. SUPPORT FROM THE STRUCTURE ABOVE.
4. PROVDIE MOTORIZED CONTROL VALVE. SEE MECHANICAL DETAIL. CONTROLS BY ATC.

SPLIT DX AIR HANDLING UNIT SCHEDULE

MARK	LOCATION	AREA AND/OR BLDG SERVED	TYPE	TOTAL SUPPLY AIR	MIN OUTSIDE AIR	ESP	COOLING CAPACITY						ELECTRIC HEATING			ELECTRICAL DATA					WEIGHT	BASIS OF DESIGN OR APPROVED EQUAL	SEE NOTES
							MIN TOTAL	MIN SENS	EAT		LAT		MIN TOTAL	EAT	LAT	INDOOR FAN		MCA	MOP	VOLT			
									Db	Wb	Db	Wb		Db	Db	HP	CONTROL						
				CFM	CFM	IN	MBH	MBH	°F	°F	°F	°F	MBH	°F	°F						LB		
13-AC-1	SECURITY RM (WALL MOUNT)	M-10 SECURITY ROOM	HIGH WALL	425	0	N/A	12	9.7	80	67	55	54	N/A	N/A	N/A	SEE ACCU SCHEDULE					29	MITSUBISHI PKA-A18HA7	1, 3, 5
13-AC-1A	SECURITY RM (WALL MOUNT)	M-10 SECURITY ROOM	HIGH WALL	425	0	N/A	12	9.7	80	67	55	54	N/A	N/A	N/A	SEE ACCU SCHEDULE					29	MITSUBISHI PKA-A18HA7	1, 3, 5, 8
13-AC-2	IT ROOM (WALL MOUNT)	M-12 IT RM	HIGH WALL	425	0	N/A	18	12.2	80	67	55	54	N/A	N/A	N/A	SEE ACCU SCHEDULE					29	MITSUBISHI PKA-A18HA7	1, 3, 5
13-AC-2A	IT ROOM (WALL MOUNT)	M-12 IT RM	HIGH WALL	425	0	N/A	18	12.2	80	67	55	54	N/A	N/A	N/A	SEE ACCU SCHEDULE					29	MITSUBISHI PKA-A18HA7	1, 3, 5, 8
13-AC-3	CATWALK	M-8 CONTROL RM/ M-9 OFFICE	DUCTED AHU	740	200	0.6	24	16.3	80	67	55	54	26	48	90	SEE ACCU SCHEDULE					69	MITSUBISHI PEAD-A24AA7	2, 3, 4, 5, 6, 7
13-AC-4	ABOVE CLG	M-5 BREAK RM/ M-6 CONTRACTOR TD	DUCTED AHU	1275	550	0.6	42	31.9	80	67	55	54	45	48	90	SEE ACCU SCHEDULE					91	MITSUBISHI PEAD-A42AA7	2, 3, 4, 5, 6, 7
3-AC-1	3-102-3 SEC. EQ.	3-102-3 SEC. EQ.	HIGH WALL	920	0	N/A	36	25.2	80	67	55	54	22.4	60	85	SEE ACCU SCHEDULE					46	MITSUBISHI PKA-A36KA7	1, 3, 5
3-AC-1A	3-102-3 SEC. EQ.	3-102-3 SEC. EQ.	HIGH WALL	920	0	N/A	36	25.2	80	67	55	54	22.4	60	85	SEE ACCU SCHEDULE					46	MITSUBISHI PKA-A36KA7	1, 3, 5, 8

NOTES:

1. PROVIDE WITH INTEGRAL CONDENSATE PUMP.
2. PROVIDE DUCTED UNIT WITH FILTER RACK KIT AND 4" MERV-13 FILTERS.
3. PROVIDE DDC BACNET CONTROLS FOR INTERFACE WITH BMS. PROVIDE UNIT DISCONNECT.
4. PROVIDE DUCTED UNIT WITH DRAIN PAN WITH UL #508 APPROVED WATER DETECTION SENSOR FOR UNIT SHUTDOWN. WIRE CONTROL CIRCUIT THROUGH NC CONTACT.
5. PROVIDE WALL MOUNTED THERMOSTAT CONTROLLER.
6. PROVIDE 120V CONDENSATE PUMP BOD: LITTLE GIANT #VCL-14ULS. HARDWIRED ABOVE CEILING.
7. SUSPEND UNIT FROM STRUCTURE ABOVE WITH VIBRATION ISOLATION SUPPORT RODS.
8. STAND-BY UNIT.

FAN SCHEDULE

MARK	LOCATION	AREA AND/OR BLDG SERVED	AIR FLOW	TSP	FAN				MOTOR ELECTRICAL						BASIS OF DESIGN	WEIGHT	SEE NOTES
					TYPE	WHEEL	DRIVE	FAN RPM	NOMINAL		EFF.	PH	V	RPM			
									BHP	HP							
			CFM	IN												LBS	
13-EF-1	ROOF	BOILER ROOM M-18	10,000	0.25	TUBULAR UPBLAST	AXIAL	BELT	1198	1.51	2.0	PREMIUM	3	460	1725	GREENHECK TAUB-CA-30-20	352	1, 2, 3, 7
13-EF-2	ROOF	BOILER ROOM M-18	10,000	0.25	TUBULAR UPBLAST	AXIAL	BELT	1198	1.51	2.0	PREMIUM	3	460	1725	GREENHECK TAUB-CA-30-20	352	1, 2, 3, 7
13-EF-3	ROOF	EQUIPMENT ROOM M-19	6,700	0.25	TUBULAR UPBLAST	AXIAL	BELT	912	0.7	3/4	STANDARD	3	460	1725	GREENHECK TAUB-CA-30-7	334	1, 2, 3, 7
13-EF-4	ROOF	EQUIPMENT ROOM M-19	6,700	0.25	TUBULAR UPBLAST	AXIAL	BELT	912	0.7	3/4	STANDARD	3	460	1725	GREENHECK TAUB-CA-30-7	334	1, 2, 3, 7
13-EF-5	ROOF	NEW PUMP ROOM B-3	1,200	0.35	DOWNBLAST	CENTRIFUGAL	DIRECT	1725	0.24	1/4	STANDARD	1	115	1750	GREENHECK G-099-VG	80	3, 4, 5, 7
13-EF-6	ROOF	EQUIPMENT ROOM M-17	650	0.35	DOWNBLAST	CENTRIFUGAL	DIRECT	1725	0.18	1/4	STANDARD	1	115	1750	GREENHECK G-098-VG	84	3, 4, 5, 7
13-EF-7	ROOF	GENERATOR ROOM M-15	1,200	0.35	DOWNBLAST	CENTRIFUGAL	DIRECT	1725	0.24	1/4	STANDARD	1	115	1750	GREENHECK G-099-VG	80	3, 4, 5, 7
13-SF-1	ROOF	BOILER ROOM M-18	10,000	0.35	HOODED INTAKE	BI-CENTRIFUGAL	BELT	1184	4.38	5.0	PREMIUM	3	460	1725	GREENHECK TCBRS-1-24-50	920	2, 6, 7, 8
13-SF-2	ROOF	BOILER ROOM M-18	10,000	0.35	HOODED INTAKE	BI-CENTRIFUGAL	BELT	1184	4.38	5.0	PREMIUM	3	460	1725	GREENHECK TCBRS-1-22-30	920	2, 6, 7, 8
13-SF-3	ROOF	EQUIPMENT ROOM M-19	6,700	0.35	HOODED INTAKE	BI-CENTRIFUGAL	BELT	1287	2.4	3.0	PREMIUM	3	460	1725	GREENHECK TCBRS-1-22-30	659	2, 6, 7, 8
13-SF-4	ROOF	EQUIPMENT ROOM M-19	6,700	0.35	HOODED INTAKE	BI-CENTRIFUGAL	BELT	1287	2.4	3.0	PREMIUM	3	460	1725	GREENHECK TCBRS-1-22-30	659	2, 6, 7, 8

NOTES:
1. PROVIDE STEEL MOTORIZED LOW-LEAKAGE BUTTERFLY DISCHARGE DAMPER WITH 24V ACTUATOR. CONTROLS BY ATC.
2. PROVIDE TEFC MOTOR OUT OF AIRSTREAM IN WEATHERPROOF ENCLOSURE. PROVIDE NEMA-4X DISCONNECT. PROVIDE VARIABLE FREQUENCY DRIVE. COORDINATE WITH EC FOR REQUIREMENTS.
3. PROVIDE FAN WITH 18" HIGH PREFABRICATED GALVANIZED STEEL ROOF CURB.
4. PROVIDE NEMA-1 TOGGLE DISCONNECT SWITCH AND UNIT MOUNTED SPEED CONTROLLER FOR BALANCING.
5. PROVIDE FAN WITH TWO POSITION OPPOSED BLADE MOTORIZED DAMPER WITH 24V ACTUATOR. CONTROLS BY ATC. PROVIDE BIRD SCREEN.
6. INTERLOCK SUPPLY FAN OPERATION WITH ASSOCATED UPBLAST EXHAUST FAN IN SAME ROOM.
7. PROVIDE AMCA SPARK RESITANNT TYPE "B" CONSTRUCTION.
8. PROVIDE WIND RATED EQUIPMENT CURB MIN 12" HIGH.

GRAVITY INTAKE HOOD SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	TYPE	APPLICATION	THROAT SIZE	THROAT DIMENSION	AIR FLOW	APD	DAMPER TYPE	NOTES	BASIS OF DESIGN (OR APPROVED EQUAL)
					SQ. FT.	W x L / DIA. IN	CFM	IN			
13-GRV-1	HIGH ROOF	BOILER COMBUSTION AIR	INTAKE	NON-DUCTED	36	48x108	17,090	0.053	NONE	1, 3	GREENHECK FGI
13-GRV-2	HIGH ROOF	BOILER COMBUSTION AIR	INTAKE	NON-DUCTED	36	48x108	17,090	0.053	NONE	1, 3	GREENHECK FGI
13-GRV-3	HIGH ROOF	BOILER COMBUSTION AIR	INTAKE	NON-DUCTED	36	48x108	17,090	0.053	NONE	1, 3	GREENHECK FGI
13-GRV-4	LOW ROOF	GENERATOR ROOM M-15	INTAKE	DUCTED	28	48x84	20,500	0.15	MOTORIZED LOW-LEAKAGE, TWO-POSITION	1, 3, 4	GREENHECK FGI
13-GRV-5	LOW ROOF	13-ERV-1	INTAKE	DUCTED	0.37	8x8	175	0.05	MOTORIZED LOW-LEAKAGE, TWO-POSITION	1, 2	GREENHECK GRSI-12
13-GRV-6	LOW ROOF	13-ERV-1	RELIEF	DUCTED	0.37	8x8	175	0.04	MOTORIZED LOW-LEAKAGE, TWO-POSITION	1, 2	GREENHECK GRSR
13-GRV-7	EXISTING PLANT ROOF	13-ERV-2	INTAKE	DUCTED	0.82	12x12	550	0.08	MOTORIZED LOW-LEAKAGE, TWO-POSITION	1, 2	GREENHECK GRSI-12
13-GRV-8	EXISTING PLANT ROOF	13-ERV-2	RELIEF	DUCTED	0.82	12x12	500	0.08	MOTORIZED LOW-LEAKAGE, TWO-POSITION	1, 3	GREENHECK GRSR

NOTES:

1. PROVIDE WITH 18" HIGH PREFABRICATED GALVANIZED STEEL ROOF CURB AND BIRD SCREEN.
2. INTERLOCK DAMPER OPERATION WITH ASSOCIATED ERV UNIT. PROVIDE 24V DAMPER ACTUATOR. CONTROLS BY ATC.
3. ALUMINUM CONSTRUCTION FOR GRAVITY VENTILATOR HOOD PANELS AND BASE.
4. PROVIDE 24V DAMPER ACTUATOR. CONTROLS BY ATC.

AIR COOLED CONDENSING UNIT SCHEDULE

MARK	LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	SEER	COP 47°F	NOMINAL COOLING CAPACITY	REFRIG. TYPE	OA TEMP	# COMP	OUTDOOR FAN		ELECTRICAL			BASIS OF DESIGN OR APPROVED EQUAL	WEIGHT	REMARKS
										DRIVE	AIR FLOW CFM	MCA	MOP	VOLT			
						MBH		°F								LB	
13-ACCU-1	LOW ROOF	SECURITY ROOM	13-AC-1	20.8	N/A	12	R-410A	100.1	1	DC INVERTER	1590	11	28	208/1/60	MITSUBISHI PUY-A12NKA7	92	1, 2, 3, 4, 6
13-ACCU-1A	LOW ROOF	SECURITY ROOM	13-AC-1A	20.8	N/A	12	R-410A	100.1	1	DC INVERTER	1590	11	28	208/1/60	MITSUBISHI PUY-A12NKA7	92	1, 2, 3, 4, 6, 7
13-ACCU-2	LOW ROOF	IT RM	13-AC-2	18.5	N/A	18	R-410A	100.1	1	DC INVERTER	1590	11	28	208/1/60	MITSUBISHI PUY-A18NKA7	99	1, 2, 3, 4, 6
13-ACCU-2A	LOW ROOF	IT RM	13-AC-2A	18.5	N/A	18	R-410A	100.1	1	DC INVERTER	1590	11	28	208/1/60	MITSUBISHI PUY-A18NKA7	99	1, 2, 3, 4, 6, 7
13-ACCU-3	LOW ROOF	CONTROL RM/ OFFICE	13-AC-3	19.6	4.35	24	R-410A	100.1	1	DC INVERTER	1940	19	26	208/1/60	MITSUBISHI PUZ-A24NHA7	153	1, 2, 3, 4, 6
13-ACCU-4	LOW ROOF	BREAK RM/ CONTRACTOR TD	13-AC-4	14	4	42	R-410A	100.1	1	DC INVERTER	3880	25	31	208/1/60	MITSUBISHI PUZ-A42NHA7	214	1, 2, 3, 4, 6
3-ACCU-1	GRADE	SEC. EQ. 102-3	3-AC-1	18.8	4.52	36	R-410A	100.1	1	DC INVERTER	3880	25	31	208/1/60	MITSUBISHI PUZ-A36NKA7	214	1, 2, 3, 5, 6
3-ACCU-1A	GRADE	SEC. EQ. 102-3	3-AC-1A	18.8	4.52	36	R-410A	100.1	1	DC INVERTER	3880	25	31	208/1/60	MITSUBISHI PUZ-A36NKA7	214	1, 2, 3, 5, 6, 7

NOTES

1. PROVIDE UNIT MOUNTED DISCONNECT, EXPANSION VALVE KIT, FIELD INSTALLED WIND BAFFLE KIT, & HAIL GUARDS.
2. PROVIDE CRANK CASE HEATER, COMPRESSOR HARD START KIT, & LOW AMBIENT CUT-OFF SWITCH FROM THE UNIT.
3. PROVIDE FREEZESTAT WITH REFRIGERANT LINE KIT FROM UNIT MANUFACTURER WITH INSULATION ON BOTH LINES.
4. PROVIDE AND SECURE UNIT ON MINIMUM 18" HIGH WIND RATED MOUNTING RAILS.
5. PROVIDE 6" CONCRETE EQUIPMENT PAD ON GRADE. COORDINATE WITH STRUCTURAL ENGINEER.
6. PROVIDE DDC BACNET CONTROLS FOR INTERFACE WITH BMS.
7. STAND-BY UNIT

NO.	DESCRIPTION	DATE

CONSULTANTS

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MILLER-REMICK LLC
PROFESSIONAL ENGINEER

ANTHONY D. PACANO LICENSED 26113 KANSAS PROFESSIONAL ENGINEER
9.3.2021

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	MECHANICAL SCHEDULES
Phase	100% BID SET
Approved: Project Director	
	FULLY SPRINKLERED
Project Title	INSTALL NEW BOILERS IN BUILDING 13
Location	ROBERT J. DOLE VA MEDICAL CENTER WICHITA, KANSAS
Issue Date	2021-09-03
Checked	MH
Drawn	GDS
Project Number	589A7-18-302
Building Number	13
Drawing Number	M-703

VA FORM 08-6231

PUMP SCHEDULE

MARK	LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	TYPE	CIRCULATING FLUID								MIN % EFF	ELECTRICAL MOTOR					BASIS OF DESIGN	REMARKS
					FLUID	TOTAL FLOW	RECIRC. FLOW	MINIMUM PUMP HEAD	NPSH REQUIRED	NPSH AVAILABLE	TEMPERATURE	SP GR		NOMINAL POWER	PHASE	VOLT	MAX RPM	SPEED CONTROL		
						GPM	GPM	FT	FT	FT	°F			HP						
13-FWP-1	BOILER ROOM	BOILER PLANT	FEEDWATER	VERTICAL	WATER	54	12.5	340	7	23.0	227	0.96	67	10	3	480	3500	*VFD	GRUNDFOS CR10-12-K	SEE NOTES 1, 2, 4 & 5
13-FWP-2	BOILER ROOM	BOILER PLANT	FEEDWATER	VERTIICAL	WATER	54	12.5	340	7	23.0	227	0.96	67	10	3	480	3500	*VFD	GRUNDFOS CR10-12-K	SEE NOTES 1, 2, 4 & 5
13-FWP-3	BOILER ROOM	BOILER PLANT	FEEDWATER	VERTICAL	WATER	54	12.5	340	7	23.0	227	0.96	67	10	3	480	3500	*VFD	GRUNDFOS CR10-12-K	SEE NOTES 1, 2, 4 & 5
13-CTP-1	BOILER ROOM	BOILER PLANT	CONDENSATE TRANSFER	VERTICAL	WATER	136	21	114	10	17.5	180	0.97	70	10	3	480	3500	CONSTANT	GRUNDFOS CR32-2-1K	SEE NOTES 3, 4 & 5
13-CTP-2	BOILER ROOM	BOILER PLANT	CONDENSATE TRANSFER	VERTICAL	WATER	136	21	114	10	17.5	180	0.97	70	10	3	480	3500	CONSTANT	GRUNDFOS CR32-2-1K	SEE NOTES 3, 4 & 5

NOTES:
1. SUPPLY WITH GRUNDFOS BYPASS RECIRCULATION ORIFICE: 12.5 GPM (TEMPERATURE RANGE 211-250 DEGREES F).
2. SUPPLY WITH ALLEN-BRADLEY POWERFLEX 400 APPROVED EQUAL ADJUSTABLE FREQUENCY AC DRIVES.
3. SUPPLY WITH GRUNDFOS BYPASS RECIRCULATION ORIFICE: 21 GPM (TEMPERATURE RANGE 211-250 DEGREES F).
4. MOTOR ENCLOSURE TYPE TEFC.

LOUVERS

MARK	TYPE	SYSTEM AND/OR SERVICE	WIDTH	HEIGHT	AIRFLOW	AIRFLOW DIRECTION	FREE AREA (SQ.FT.)	FREE AREA (%)	FREE AREA VEL (FPM)	PRESSURE DROP (W.G)	BASIS OF DESIGN OR APPROVED EQUAL	REMARKS
			INCHES	INCHES								
13-L-1	EXHAUST LOUVER	GENERATOR RADIATOR EXHAUST	96	99	28,000	EXHAUST	33.01	50	848	0.13	RUSKIN BL520DD	1, 2, 3, 4, 5

NOTES:
1. INSTALL PER MANUFACTURERS RECOMMENDATIONS. PROVIDE 2-COAT 70% PVDF FINISH. COLOR BY ARCHITECT.
2. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ADDITIONAL DETAILS.
3. PROVIDE 24V MOTORIZED ACTUATOR BLAST RESISTANT DAMPER(S) WITH END SWITCHES. COORDINATE CONFIGURATION SIZE OF MULTIPLE SECTIONS PRIOR TO ORDERING.
4. INTERLOCK DAMPER(S) TO OPERATE FULLY OPEN WHEN GENERATOR IS ENERGIZED. CONTROLS BY ATC.
5. LOUVER TO BE BLAST RATED TO 12 PSI. PROVIDE BIRDSCREEN AND LINTELS.

AIR DEVICE SCHEDULE

MARK	TYPE	AIR FLOW MIN	AIR FLOW MAX	MAX APD	MOUNTING	PANEL FRAME SIZE	NECK SIZE	NC @ MAX AIRFLOW	BASIS OF DESIGN OR APPROVED EQUAL	NOTES
		CFM	CFM	IN WG		IN x IN	INCHES DIAMETER /SQUARE			
CD-1	PLAQUE FACE	50	125	0.04	LAY-IN	24x24	6	12	TITUS OMNI	1, 2
CD-2	PLAQUE FACE	130	220	0.04	LAY-IN	24x24	8	13	TITUS OMNI	1, 2
CD-3	PLAQUE FACE	50	125	0.04	SURFACE	12x12	6	13	TITUS OMNI	1, 2
CD-4	PLAQUE FACE	225	300	0.04	LAY-IN	24x24	10	13	TITUS OMNI	1, 2
SG-1	GRILLE	-	SEE PLANS	0.10	DUCT	NECK SIZE + 2"	SEE PLANS	30	TITUS 300FL	
SG-2	GRILLE	-	SEE PLANS	0.20	DUCT	NECK SIZE + 2"	SEE PLANS	30	TITUS 272FL	3
RG-1	PERFORATED FACE	130	220	0.13	LAY-IN	24x24	8x8	30	TITUS PAR-AA	
RG-2	PERFORATED FACE	345	500	0.13	LAY-IN	24x24	12x12	30	TITUS PAR-AA	
RG-3	PERFORATED FACE	655	940	0.13	LAY-IN	24x24	15x15	30	TITUS PAR-AA	
RG-4	GRILLE	-	SEE PLANS	0.08	DUCT	SEE PLANS	SEE PLANS	30	TITUS 350RL	
ER-1	PERFORATED FACE	50	125	0.06	LAY-IN	12x12	6x6	18	TITUS PAR-AA	
ER-2	PERFORATED FACE	50	125	0.06	SURFACE	12x12	6x6	18	TITUS PAR-AA	2
ER-3	PERFORATED FACE	130	220	0.13	LAY-IN	24x24	8x8	30	TITUS PAR-AA	

NOTES:
1. ALL SUPPLY DIFFUSERS TO BE 4-WAY THROW PATTERN WITH EQUALIZING GRID & R-6 FOIL BACK INSULATION.
2. PROVIDE PLASTER MOUNTING FRAME KIT FOR SURFACE MOUNTING IN DRYWALL CEILINGS.
3. PROVIDE OPTIONAL OPPOSED BLADE DAMPER FOR BALANCING.

AIR TO AIR ENERGY RECOVERY VENTILATOR SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	MODE	MIN SUPPLY AIR EFF % (ENTHALPY)	SUPPLY AIR						EXHAUST AIR									HEAT EXCHANGE MATERIAL	WEIGHT	BASIS OF DESIGN OR APPROVED EQUAL	REMARKS
					SUPPLY AIR FLOW	EXTERNAL APD	EAT Db	EAT Wb	LAT Db	LAT Wb	EXHAUST AIR FLOW	APD	EAT Db	EAT Wb	LAT Db	LAT Wb	ELECTRICAL DATA MOP	ELECTRICAL DATA PHASE	ELECTRICAL DATA VOLT				
					CFM	IN WC	°F	°F	°F	°F	CFM	IN	°F	°F	°F	°F					LBS		
13-ERV-1	M-8 CEILING	13-AC-3	COOLING	54%	200	0.25	100.1	73.7	86	64	150	0.2	75	63	88	73	15	1	208	CELLULOSE FIBER MEMBRANE	75	MITSUBISHI LOSSNAY LGH-F300RVX-E OR APPROVED EQUAL	SEE NOTES
			HEATING	66%	200	0.25	7.4	3.1	48	37	150	0.2	70	55	46	35							
13-ERV-2	M-6 MEZZANINE	13-AC-4	COOLING	54%	550	0.6	100.1	73.7	86	64	525	0.6	75	63	88	73	15	1	208	CELLULOSE FIBER MEMBRANE	123	MITSUBISHI LOSSNAY LGH-F600RVX-E OR APPROVED EQUAL	SEE NOTES
			HEATING	66%	550	0.6	7.4	3.1	48	37	525	0.6	70	55	46	35							

NOTES:
1. SUSPEND UNIT FROM STRUCTURE ABOVE WITH VIBRATION ISOLATION SUPPORT RODS.
2. PROVIDE MERV-8 FILTERS.
3. PROVIDE NEMA-1 TOGGLE DISCONNECT SWITCH.
4. PROVIDE EC FAN MOTORS.
5. PROVIDE DDC BACNET CONTROLS FOR INTERFACE WITH BMS. INTEGRATE OPERATION WITH WITH ASSOCIATED AC UNIT.

NO.	DESCRIPTION	DATE

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL SCHEDULES

Phase: 100% BID SET

Approved: Project Director

FULLY SPRINKLERED

Project Title: INSTALL NEW BOILERS IN BUILDING 13

Project Number: 589A7-18-302

Building Number: 13

Location: ROBERT J. DOLE VA MEDICAL CENTER WICHITA, KANSAS

Drawing Number: M-704

Issue Date	Checked	Drawn
2021-09-03	MH	GDS

VA FORM 08-6231

CONTROLS ABBREVIATIONS *(NOTE: NOT ALL ABBREVIATIONS OR SYMBOLS MAY APPEAR ON DRAWINGS)*

ACD	AUTOMATIC CONTROL DAMPER, MODULATING
ACV	AUTOMATIC CONTROL VALVE
AHU	AIR-HANDLING UNIT
AHUDAT	AIR HANDLING UNIT DISCHARGE AIR TEMPERATURE SENSOR
AHUHRCLAT	AIR HANDLING UNIT HEAT RECOVERY COIL LEAVING AIR TEMPERATURE SENSOR
AHUHRCV	AIR HANDLING UNIT HEAT RECOVERY COIL VALVE
ALM	ALARM
ATC	AUTOMATIC TEMPERATURE CONTROL
AVS	AIR VOLUME STATION
AS	AIR SEPARATOR
BAS	BUILDING AUTOMATION SYSTEM
BCV	BASEBOARD CONTROL VALVE
BDD	BACKDRAFT DAMPER
BIBO	BAG-IN BAG-OUT
BMS	BUILDING MANAGEMENT SYSTEM
BV	BYPASS VALVE
CCLAT	COOLING COIL LEAVING AIR TEMPERATURE SENSOR
CFDPS	CHARCOAL FILTER DIFFERENTIAL PRESSURE SWITCH
CHCLAT	CHILLED WATER COIL LEAVING AIR TEMPERATURE SENSOR
CHWRT	CHILLED WATER RETURN TEMPERATURE SENSOR
CHWST	CHILLED WATER SUPPLY TEMPERATURE SENSOR
CHWV	CHILLED WATER VALVE
CTBLHA	COOLING TOWER BASIN LEVEL HIGH ALARM
CTBLHS	COOLING TOWER BASIN LEVEL HIGH SWITCH
CTBLLA	COOLING TOWER BASIN LEVEL LOW ALARM
CTBLLS	COOLING TOWER BASIN LEVEL LOW SWITCH
CTBSV	COOLING TOWER BASIN STEAM VALVE
CTBT	COOLING TOWER BASIN TEMPERATURE SENSOR
CTBV	COOLING TOWER BYPASS VALVE
DAT	DISCHARGE AIR TEMPERATURE SENSOR
DATL	DISCHARGE AIR TEMPERATURE LIMITER
DDC	DIRECT DIGITAL CONTROL
DDCFP	DIRECT DIGITAL CONTROL FIELD PANEL
DP	DIFFERENTIAL PRESSURE SENSOR
DPS	DIFFERENTIAL PRESSURE SWITCH
DPV	DIFFERENTIAL PRESSURE BYPASS VALVE
DSP	DISCHARGE STATIC PRESSURE SENSOR
DWDI	DOUBLE WIDTH DOUBLE INLET
EAD	EXHAUST AIR DAMPER
ECC	EVIRONMENTAL CONTROL CENTER (BAS)
EHRCEAT	EXHAUST HEAT RECOVERY COIL ENTERING AIR TEMPERATURE SENSOR
EHRCLAT	EXHAUST HEAT RECOVERY COIL LEAVING AIR TEMPERATURE SENSOR
EHRCV	EXHAUST HEAT RECOVERY COIL VALVE
ES	END SWITCH
ESP	EXHAUST STATIC PRESSURE SENSOR
ET	EXPANSION TANK
FA	FAULT ALARM
FDPS	FILTER DIFFERENTIAL PRESSURE SWITCH
FID	FAN ISOLATION DAMPER
FMT	FLOW METER TRANSMITTER
FZ	FREEZESTAT
GAPC	GENESIS AIR PHOTOCATALYSIS COMPOUND (COMMERCIAL GRADE)
GFP	GLYGOL FILL PUMP
H	HUMIDITY SENSOR
HALM	HOOD ALARM
HEGA	HIGH EFFICIENCY GAS ABSORBER FILTER
HEPA	HIGH EFFICIENCY PARTICULATE AIR FILTER
HHL	HIGH HUMIDITY LIMIT SENSOR
HIV	HUMIDIFIER ISOLATION VALVE
HLH	HIGH/LOW HUMIDITY LIMIT SENSOR
HOA	HAND-OFF-AUTOMATIC SWITCH
HRCEAT	HEAT RECOVERY COIL ENTERING AIR TEMPERATURE SENSOR
HRCLAT	HEAT RECOVERY COIL LEAVING AIR TEMPERATURE SENSOR
HRLT	HEAT RECOVERY LOOP TEMPERATURE SENSOR
HRCV	HEAT RECOVERY COIL VALVE
HRGP	HEAT RECOVERY GLYCOL PUMP
HRL3WV	HEAT RECOVERY LOOP 3-WAY VALVE
HS	HAND SWITCH
HSPS	HIGH STATIC PRESSURE SWITCH
HSS	HOOD SASH SWITCH
HSTM	HUMIDIFICATION STEAM
HV	HUMIDIFIER VALVE
HWST	HOT WATER SUPPLY TEMPERATURE SENSOR
HWRT	HOT WATER RETURN TEMPERATURE SENSOR
HWV	HOT WATER VALVE
ICW	INDUSTRIAL COLD WATER
IFBD	INTEGRAL FACE & BYPASS DAMPER
IGV	INLET GUIDE VANES
LAT	LEAVING AIR TEMPERATURE SENSOR
LSPS	LOW STATIC PRESSURE SWITCH
LS	LIGHT SWITCH INTERFACE
MUWV	MAKEUP WATER VALVE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OAD	OUTSIDE AIR DAMPER
OADBT	OUTSIDE AIR DRY BULB TEMPERATURE SENSOR
OAWBT	OUTSIDE AIR WET BULB TEMPERATURE SENSOR
OAT	OUTSIDE AIR TEMPERATURE SENSOR
OWS	OPERATOR WORKSTATION
PCHWRT	PRIMARY CHILLED WATER RETURN TEMPERATURE SENSOR
PCHWST	PRIMARY CHILLED WATER SUPPLY TEMPERATURE SENSOR
PCP	POPULATED CATALYST PANEL (GAPC - PCP COMPOUND)
RAD	RETURN AIR DAMPER
RAT	RETURN AIR TEMPERATURE SENSOR
RCV	REHEAT CONTROL VALVE
RH	RELATIVE HUMIDITY
RI	RUN INDICATOR
RID	RETURN ISOLATION DAMPER
RT	ROOM TEMPERATURE SENSOR
SAV	SUPPLY AIR VALVE
SCHWRT	SECONDARY CHILLED WATER RETURN TEMPERATURE
SCHWST	SECONDARY CHILLED WATER SUPPLY TEMPERATURE
SCLAT	STEAM COIL LEAVING AIR TEMPERATURE SENSOR
SCV	STEAM COIL VALVE
SD	SMOKE DAMPER
SDET	SMOKE DETECTOR
SPS	STATIC PRESSURE SENSOR
SSID	SUPPLY SMOKE ISOLATION DAMPER
SSP	SUCTION STATIC PRESSURE SENSOR
SST	START-STOP
T	TEMPERATURE SENSOR
TCV	TEMPERATURE CONTROL VALVE
TT	TEMPERATURE TRANSMITTER
VFD	VARIABLE FREQUENCY DRIVE
VFDS	VARIABLE FREQUENCY DRIVE SPEED
VFDSO	VARIABLE FREQUENCY DRIVE SPEED OUTPUT
VS	VIBRATION SWITCH
WC	WATER COLUMN
WFS	WATER FLOW SWITCH
WS	WALL SWITCH
ZS	END SWITCH

CONTROLS SYMBOLS *(NOTE: NOT ALL ABBREVIATIONS OR SYMBOLS MAY APPEAR ON DRAWINGS)*

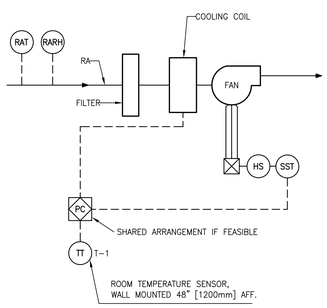
- CONTROL DEVICE PROVIDED BY ELECTRICAL OR PLUMBING CONTRACTOR BUT INTERFACED TO DDC SYSTEM BY ATC CONTRACTOR
- ATC CONTRACTOR INTERFACE TO MANUFACTURER'S HARDWARE
- AFMD — AIRFLOW MEASURING DEVICE
- AT CO2 — CARBON DIOXIDE TRANSMITTER
- AT CO — CARBON MONOXIDE TRANSMITTER
- AT OC — OCCUPANCY SENSOR
- ATC — ATC CONTRACTOR PROVIDE DDC POINT AND HARDWARE
- CT — CURRENT TRANSMITTER
- CTR — CURRENT TRANSFORMER
- COMM — BACNET COMMUNICATIONS
- DAT — DISCHARGE AIR TEMPERATURE SENSOR
- DPS — DIFFERENTIAL PRESSURE SWITCH
- DPSE — ROOM DIFFERENTIAL PRESSURE MONITOR
- DPT — DIFFERENTIAL PRESSURE TRANSMITTER
- EAV — EXHAUST AIR VALVE
- ECC — ENGINEERING CONTROL CENTER (BAS)
- EPT — ELECTRONIC TO PNEUMATIC TRANSDUCER
- FA — FAULT ALARM
- FC — FLOW CONTROLLER (SEE SEQUENCE OF OPERATION)
- FID — FAN ISOLATION DAMPER (NON UL LISTED)
- FS — FLOW SWITCH
- FSH — FLOW SWITCH HIGH
- FSL — FLOW SWITCH LOW
- FT — FLOW TRANSMITTER
- HC — HUMIDITY CONTROL
- HHL — HIGH HUMIDITY LIMIT SENSOR
- HS — HAND SWITCH (HAND-OFF-AUTO SWITCH) or HUMIDITY SWITCH
- HVAC — HVAC CONTROL PANEL
- ID — ISOLATION DAMPER
- KC — TIME CLOCK CONTROLLING EQUIPMENT ON A SCHEDULE
- KR — LOCAL RECORDING TIME CLOCK (RUNTIME)
- LC — LEVEL CONTROLLER
- LS — LIMIT SWITCH
- LSPS — LOW STATIC PRESSURE SWITCH
- LT — LEVEL TRANSMITTER
- M — ROOM HUMIDISTAT (MOISTURE)/TRANSMITTER (WALL MOUNTED)
- M — MOTOR ACTUATED DAMPER /OR VALVE
- MT — MOISTURE (HUMIDITY) TRANSMITTER
- OAD — OUTSIDE AIR DAMPER
- OAT — OUTSIDE AIR TEMPERATURE SENSOR
- PC — PRESSURE CONTROLLER (SEE SEQUENCE OF OPERATIONS)
- PC — PNEUMATIC CONTROLLER (SEE SEQUENCE OF OPERATIONS)
- PDS — PRESSURE DIFFERENTIAL SWITCH
- PDT — PRESSURE DIFFERENTIAL TRANSMITTER
- PSH — PRESSURE SWITCH HIGH
- PSL — PRESSURE SWITCH LOW
- PT — PRESSURE TRANSMITTER
- R — RELAY CONTACTOR
- SAV — SUPPLY AIR VALVE
- SC — SPEED CONTROLLER (SEE SEQUENCE OF OPERATION)
- SCV — STEAM COIL CONTROL VALVE
- SD — SMOKE DETECTOR
- SDET — SMOKE DETECTOR
- SPS — STATIC PRESSURE SENSOR
- SST — START-STOP
- SV — STEAM VALVE
- T — ROOM THERMOSTAT/TRANSMITTER - WALL MOUNTED
- TC — TEMPERATURE CONTROLLER (SEE SEQUENCE OF OPERATIONS)
- TSH — TEMPERATURE SWITCH HIGH
- TSL — TEMPERATURE SWITCH LOW (FREEZESTAT)
- TT — TEMPERATURE TRANSMITTER - AVERAGING TYPE
- TT — TEMPERATURE TRANSMITTER - SINGLE POINT
- TT — TEMPERATURE TRANSMITTER - EMERSION TYPE
- VFD — VARIABLE FREQUENCY DRIVE
- VFDSO — VARIABLE FREQUENCY DRIVE SPEED OUTPUT
- VS — VIBRATION SWITCH
- VSMC — VARIABLE SPEED MOTOR CONTROLLER
- ZC — VALVE OR DAMPER POSITION CONTROLLER
- ZS — END SWITCH
- MOTOR STARTER
- O — UNOCCUPIED MODE OVERRIDE PUSH BUTTON
- FAN OR PUMP — PIEZOMETER RING IF SHOWN
- OUTDOOR AIR TEMPERATURE SENSOR - COMBINATION HUMIDITY SENSOR IF SHOWN ON THE DRAWINGS. WITH SOLAR SHADING
- PNEUMATIC OPERATED DAMPER/OR VALVE
- TEMPERATURE SENSING ELEMENT FOR TRANSMITTING TEMPERATURE TO EMCS (PROVIDE 12 INCHES [200mm] MINIMUM LENGTH IN DUCT WHEN SPACE PERMITS.)
- A — SENSOR WITH AVERAGING ELEMENT TO TRANSMIT TEMPERATURE TO EMCS

GENERAL SHEET NOTES:

1. REFER TO DRAWING M-001 FOR ADDITIONAL ABBREVIATIONS, NOTES AND SYMBOLS.
2. THIS DRAWING IS TO BE USED IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS IN THIS PACKAGE.

CONTROLS GENERAL NOTES

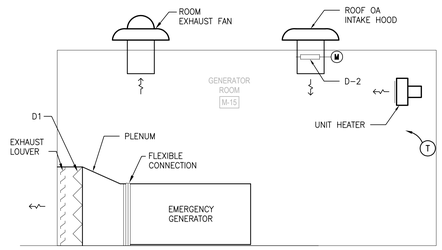
1. THE SEQUENCE OF OPERATIONS OUTLINED SHALL BE PERFORMED BY NEW CONTROL, STAND ALONE FIELD PANELS, COMPATIBLE WITH ALLEN-BRADLEY BASED PLC. NAMES FOR ALL POINTS AND VARIABLES SHALL BE COORDINATED WITH PROJECT ENGINEER PRIOR TO SHOP DRAWINGS AND PROGRAMMING
2. ALL FANS CONTROLLED BY THE BMS SHALL BE CAPABLE OF MANUAL OPERATION THROUGH HOA SWITCHES IN STARTERS. THE POSITIONS OF ALL CONTROL VALVES CONTROLLED BY THE BMS SHALL BE CAPABLE OF MANUAL POSITIONING VIA THE CONTROL CENTER TERMINAL OR BY LAPTOP COMPUTER PLUGGED IN TO THE DIRECT DIGITAL CONTROL FIELD CONTROL PANEL.
3. ALL VALVE AND DAMPER ACTUATORS SHALL BE ELECTRIC/ELECTRONIC.
4. FAIL POSITIONS ARE POSITIONS WHICH DEVICES WILL ASSUME WHEN DE-ENERGIZED:
   NO = NORMALLY OPEN
   NC = NORMALLY CLOSED
5. ALL SETPOINTS TO BE ADJUSTABLE.



ROOFTOP UNIT SEQUENCE OF OPERATION (COOLING ONLY):

1. ROOFTOP UNIT SHALL OPERATE ON A SCHEDULE AS SET BY THE DCC.
2. UNIT CONTROLLER TO MAINTAIN SPACE SET POINT AND FAN SHALL CYCLE W/TEMPERATURE.
3. ALARM IF SPACE TEMPERATURE IS OUTSIDE OF RANGES.

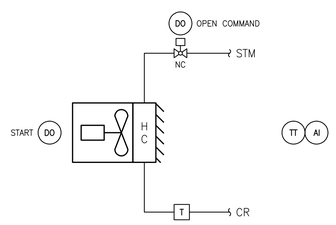
1 COOLING ONLY ROOFTOP UNIT CONTROLS
SCALE: NTS



NOTES:

1. EMERGENCY GENERATOR SHALL BE INTERLOCKED WITH D1 & D2. WHEN EMERGENCY GENERATOR IS ENERGIZED D1 & D2 SHALL OPEN. WHEN EMERGENCY GENERATOR IS DE-ENERGIZED, D1 & D2 SHALL CLOSE, PROVIDED ROOM EXHAUST FAN IS OFF.
2. ROOM EXHAUST FAN SHALL BE INTERLOCKED WITH D2 & ROOM THERMOSTAT. WHEN ROOM THERMOSTAT RISES ABOVE 85°F [29°C], ROOM EXHAUST FAN SHALL RUN AND D2 SHALL OPEN. WHEN ROOM THERMOSTAT DROPS BELOW 80°F [27 C], ROOM EXHAUST FAN SHALL STOP AND D2 SHALL CLOSE, PROVIDED EMERGENCY GENERATOR IS DE-ENERGIZED.
3. UNIT HEATER SHALL BE INTERLOCKED WITH ROOM THERMOSTAT SET AT 55°F [12.8°C]. ON A DROP IN ROOM TEMPERATURE BELOW 50°F [10°C], UNIT HEATER CONTROL VALVE SHALL BE OPEN AND ON A RISE IN ROOM TEMPERATURE ABOVE 65°F [18.3°C] VALVE SHALL CLOSE.

2 EMERGENCY GENERATOR ROOM CONTROLS
SCALE: NTS



3 STEAM UNIT HEATER CONTROLS DIAGRAM
SCALE: NTS

SEQUENCE OF OPERATION – STEAM UNIT HEATER CONTROLS

1. SYSTEM DESCRIPTION:
   a. STEAM UNIT HEATER SYSTEMS WILL CONSIST OF A FAN, STEAM COIL, AND A 2-POSITION STEAM CONTROL VALVE.
2. TEMPERATURE CONTROL:
   a. WHEN ROOM TEMPERATURE FALLS BELOW SETPOINT THE STEAM CONTROL VALVE SHALL BE COMMANDED OPEN, AND THE UNIT HEATER FAN SHALL BE COMMANDED TO START.
   b. WHEN ROOM TEMPERATURE RISES ABOVE THE SETPOINT PLUS DEADBAND FOR 5 MINUTES, THE FAN SHALL BE COMMANDED TO STOP, AND THE STEAM CONTROL VALVE SHALL BE COMMANDED TO STOP.
3. ALARMS:
   a. IF AT ANY TIME ROOM TEMPERATURE FALLS BELOW ALARM SETPOINT (40 DEG. F.) FOR 10 MINUTES, AN AUDIBLE AND VISUAL ROOM TEMPERATURE LOW ALARM SHALL BE GENERATED AT THE OWS.

PRINTS OF THIS DRAWING SHALL NOT BE USED FOR ANY PURPOSE WHATSOEVER WITHOUT THE SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER.

NO.	DESCRIPTION	DATE

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MR PROJECT NO: 0499-0121

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PROFESSIONAL ENGINEER
ANTHONY D. PACINO LICENSED 26113 KANSAS PROFESSIONAL ENGINEER
4-3-2021

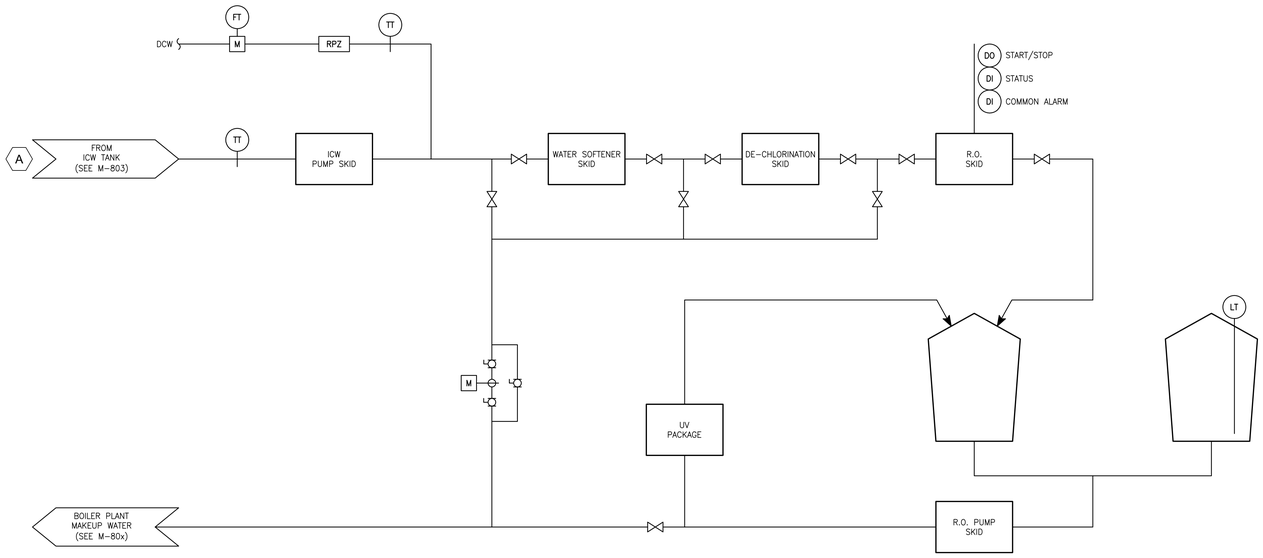
Office of Construction and Facilities Management

U.S. Department of Veterans Affairs

Drawing Title MECHANICAL CONTROLS	**Phase** 100% BID SET	**Project Title** INSTALL NEW BOILERS IN BUILDING 13	**Project Number** 589A7-18-302
Approved: Project Director	FULLY SPRINKLERED	**Location** ROBERT J. DOLE VA MEDICAL CENTER WICHITA, KANSAS	**Building Number** 13
		Issue Date 2021-09-03 / **Checked** MH / **Drawn** ARF	**Drawing Number** M-801

VA FORM 08-6231

P:\0499_DVA\0499-0121 Wichita Boilers\4_Drawings\1_Cad\1_Current Submittal Phase\7_Mechanical\M-801.dwg 9-02-21 02:48:32 PM gstroh



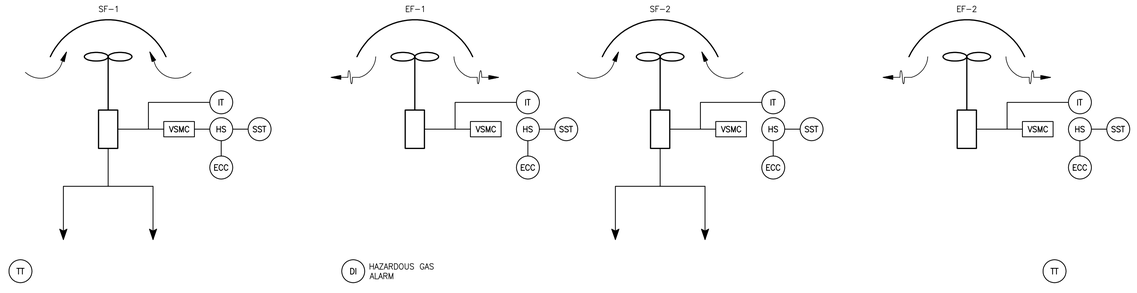
1 BOILER MAKEUP WATER SYSTEMS CONTROL AND MONITORING
SCALE: NTS

GENERAL SHEET NOTES:

1. REFER TO DRAWINGS M-001 AND M-801 FOR ABBREVIATIONS, NOTES AND SYMBOLS.
2. THIS DRAWING IS TO BE USED IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS IN THIS PACKAGE.

SEQUENCE OF OPERATION – BOILER MAKEUP WATER SYSTEMS CONTROL AND MONITORING

1. ICW PUMP SKID
   a. WHEN ICW PUMP SKID IS COMMANDED TO START THE LEAD PUMP WILL BE COMMANDED ON.
   b. PUMP COMMAND AND STATUS AS DETERMINED BY CURRENT SENSOR FOR EACH PUMP WILL BE DISPLAYED ON THE ICW CONTROL AND MONITORING PAGE AT THE OWS.
   c. IF THE LEAD PUMP STATUS DOES NOT EQUAL THE LEAD PUMP COMMAND THE LEAD ICW PUMP WILL BE DISABLED, THE LAG ICW PUMP WILL BECOME THE LEAD ICW PUMP, AND AN AUDIBLE AND VISUAL ALARM WILL BE GENERATED AT THE OWS.
   d. THE LEAD AND LAG PUMPS WILL BE ALTERNATED WEEKLY TO EQUALIZE RUN TIME.
2. WATER SOFTENER SKID
   a. THE TRIPLEX SOFTENER SKID WILL OPERATE INDEPENDENTLY USING MECHANICAL/TIME CLOCK BASED CONTROLS.
   b. ONLY ONE VESSEL IS PERMITTED TO BE IN A BACKWASH CYCLE AT ANY GIVEN TIME.
3. CARBON FILTER SKID
   a. THE DUAL TRIPLEX CARBON FILTER SKIDS WILL OPERATE INDEPENDENTLY USING MECHANICAL / TIME BASED CONTROLS.
   b. ONLY ONE VESSEL IS PERMITTED TO BE IN A BACKWASH CYCLE AT ANY GIVEN TIME.
4. RO WATER SKID
   a. WHEN COMMANDED TO START, THE RO SKID WILL OPERATE TO GENERATE RO WATER USING MANUFACTURER'S ON BOARD CONTROLS.
5. RO STORAGE TANK MONITORING AND CONTROL
   a. RO HIGH LEVEL ALARM
      (1) IF THE RO TANK LEVEL RISES TO THE RO HIGH LEVEL ALARM SETPOINT, AN RO HIGH LEVEL ALARM AUDIBLE AND VISUAL ALARM WILL BE GENERATED AT THE OWS.
   b. RO FILL
      (1) WHEN RO TANK LEVEL FALLS TO THE RO FILL START SETPOINT THE ICW PUMP SKID AND RO SKIDS ARE COMMANDED TO START.
      (2) WHEN RO TANK LEVEL RISES TO THE FILL STOP LEVEL SETPOINT, THE ICW PUMP SKID AND RO SKIDS ARE COMMANDED TO STOP.
   c. RO LOW LEVEL ALARM
      (1) IF THE RO TANK LEVEL FALLS TO THE RO LEVEL LOW ALARM SETPOINT, THE ICW PUMP SKID AND RO SKIDS ARE COMMANDED TO STOP, AND THE RO SYSTEM BYPASS VALVE IS COMMANDED OPEN.
6. RO PUMP SKID
   a. WHEN RO PUMP SKID IS COMMANDED TO START THE LEAD PUMP WILL BE COMMANDED ON.
   b. PUMP COMMAND AND STATUS AS DETERMINED BY CURRENT SENSOR FOR EACH PUMP WILL BE DISPLAYED ON THE ICW CONTROL AND MONITORING PAGE AT THE OWS.
   c. IF THE LEAD PUMP STATUS DOES NOT EQUAL THE LEAD PUMP COMMAND THE LEAD RO PUMP WILL BE DISABLED, THE LAG RO PUMP WILL BECOME THE LEAD ICW PUMP, AND AN AUDIBLE AND VISUAL ALARM WILL BE GENERATED AT THE OWS.
   d. THE LEAD AND LAG PUMPS WILL BE ALTERNATED WEEKLY TO EQUALIZE RUN TIME.



1 BOILER ROOM VENTILATION SYSTEM CONTROLS
SCALE: NTS

SEQUENCE OF OPERATION – BOILER ROOM VENTILATION SYSTEMS CONTROLS

1. SYSTEM DESCRIPTION:
   a. THE BOILER ROOM VENTILATION SYSTEM IS COMPRISED OF (2) ROOF MOUNTED SUPPLY FANS (13-SF-1 AND 13-SF-2) AND TWO ROOF MOUNTED EXHAUST FANS (13-EF-1 AND 13-EF-2).
   b. 13-SF-1 AND 13-EF-1 OPERATE TOGETHER AS A PAIR, AND 13-SF-2 AND 13-EF-2 OPERATE TOGETHER AS A PAIR.
   c. EACH FAN PAIR WILL OPERATE FROM A ROOM TEMPERATURE SENSOR MOUNTED ON A COLUMN 60" ABOVE CATWALK.
   d. ALL EQUIPMENT COMMAND, STATUS, SETPOINT, ETC. SHALL BE DISPLAYED ON A BOILER ROOM VENTILATION SYSTEM CONTROLS PAGE AT THE OWS.
2. TEMPERATURE CONTROL
   a. WHEN TEMPERATURE RISES ABOVE SETPOINT (85 DEG. F.) THE SUPPLY AND EXHAUST FAN PAIR SHALL BE COMMANDED TO START IN SLOW SPEED (50%).
   b. IF TEMPERATURE CONTINUES TO RISE, THE SUPPLY AND EXHAUST FAN PAIR SHALL BE DE-ENERGIZED AND COMMANDED TO START IN FAST SPEED (100%).
   c. IF TEMPERATURE FALLS BELOW SETPOINT, THE SUPPLY AND EXHAUST FAN PAIR WILL BE DE-ENERGIZED AND COMMANDED TO START IN SLOW SPEED (50%).
   d. IF TEMPERATURE CONTINUES TO FALL BELOW SETPOINT, THE SUPPLY AND EXHAUST FAN PAIR WILL BE COMMANDED TO STOP.
3. HAZARDOUS GAS PURGE
   a. IF AT ANY TIME THERE IS A HAZARDOUS GAS SYSTEM ALARM, BOTH SUPPLY AND EXHAUST FAN PAIRS SHALL BE COMMANDED TO START IN FAST SPEED (100%).
   b. WHEN THE HAZARDOUS GAS ALARM CLEARS BOTH EXHAUST FAN PAIRS SHALL BE COMMANDED TO RUN IN SLOW SPEED (50%) FOR A MINIMUM PERIOD OF TIME (30 MINUTES). IF AFTER THE TIME DELAY THE HAZARDOUS GAS ALARM REMAINS CLEAR, THE FAN PAIRS WILL REVERT TO TEMPERATURE CONTROL.
4. ALARMS:
   a. IF AT ANY TIME THE FAN STATUS DOES NOT EQUAL THE FAN COMMAND, THE FAN SHALL BE DISABLED, AND AN ALARM GENERATED AT THE OWS.

NO.	DESCRIPTION	DATE

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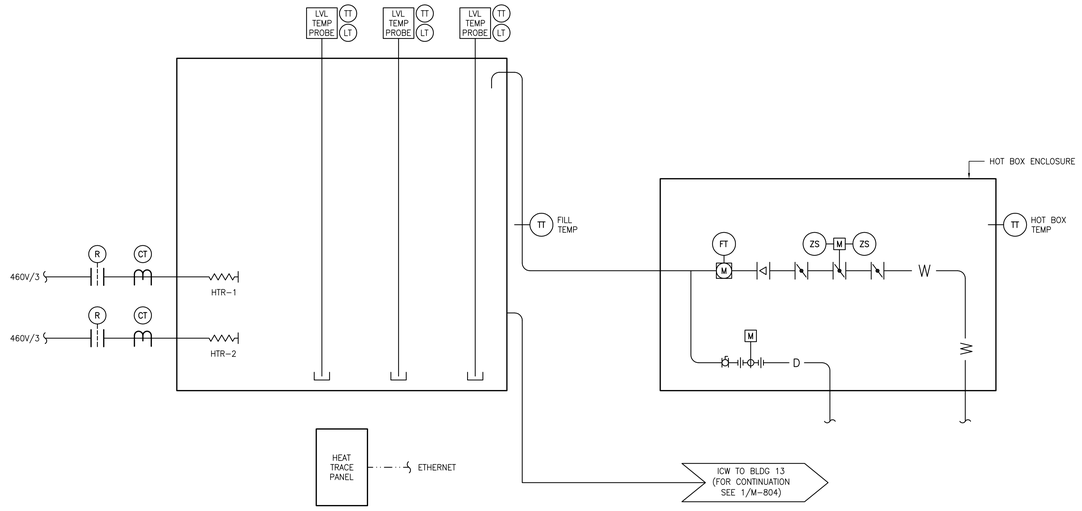
Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title MECHANICAL CONTROLS	**Phase** 100% BID SET	**Project Title** INSTALL NEW BOILERS IN BUILDING 13	**Project Number** 589A7-18-302
Approved: Project Director	FULLY SPRINKLERED	**Location** ROBERT J. DOLE VA MEDICAL CENTER WICHITA, KANSAS	**Building Number** 13
		Issue Date 2021-09-03 / **Checked** MH / **Drawn** ARF	**Drawing Number** M-802

VA FORM 08-6231



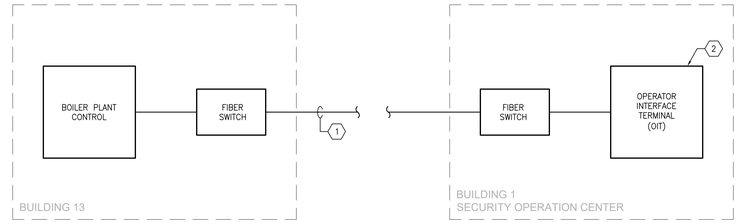
1 INDUSTRIAL COLD WATER STORAGE TANK CONTROL AND MONITORING
SCALE: NTS

SEQUENCE OF OPERATION – INDUSTRIAL COLD WATER TANK CONTROL AND MONITORING

1. ICW TANK LEVEL MONITORING
   a. THE EMS SHALL MONITOR THE WATER LEVEL IN THE INDUSTRIAL COLD WATER (ICW) TANK THROUGH THREE (3) LEVEL PROBES.
   b. THE AVERAGE OF THE THREE (3) LEVEL PROBES SHALL BE USED FOR TANK LEVEL CONTROL.
   c. IF THE READING FROM ANY ONE PROBE DIFFERS FROM THE AVERAGE OF THE OTHER TWO (2) PROBES BY MORE THAN 10%, THAT SENSOR SHALL BE CONSIDERED FAILED, AN ALARM SHALL BE GENERATED AT THE OPERATOR WORKSTATION (OWS), AND LEVEL CONTROL WILL BE BASED ON THE AVERAGE OF THE REMAINING TWO (2) PROBES.
   d. THE TANK LEVEL AND VOLUME SHALL BE CALCULATED AND DISPLAYED ON THE ICW CONTROL AND MONITORING GRAPHICS PAGE AT THE OWS IN TWO WAYS:
      i. TANK PERCENT FULL
      ii. TANK VOLUME (GALLONS)
   e. THE ICW TANK TIME TO EMPTY SHALL BE CALCULATED AND DISPLAYED ON THE ICW CONTROL AND MONITORING GRAPHICS PAGE. ICW TANK TIME TO EMPTY SHALL BE CALCULATED BY DIVIDING THE CURRENT ICW TANK VOLUME BY THE CURRENT ICW FLOW RATE ENTERING THE WATER SOFTENERS.
2. ICW TANK LEVEL CONTROL
   a. THE ICW TANK LEVEL MONITORING AND CONTROL SHALL OPERATE AROUND THE FOLLOWING LEVEL SETPOINTS:
      i. 16'–0" – OVERFLOW LEVEL ALARM
      ii. 15'–6" – HIGH LEVEL ALARM
      iii. 14'–6" – TANK MAX OPERATING LEVEL
      iv. 13'–6" – TANK MIN OPERATING LEVEL
      v. 12'–6" – LOW LEVEL ALARM
      vi. 7'–0" – LOW–LOW LEVEL ALARM
      vii. 3'–0" – CRITICAL LOW LEVEL ALARM
      viii. 0'–0" – TANK EMPTY ALARM
   b. DURING NORMAL PLANT OPERATION THE ICW TANK IS THE PRIMARY SOURCE FOR BOILER PLANT MAKEUP WATER.
   c. A FLOW METER SHALL BE INSTALLED IN THE TANK FILL LINE TO RECORD AND TREND (DAILY) THE QUANTITY OF WATER ADDED TO THE ICW TANK.
   d. WHEN TANK LEVEL FALLS TO THE TANK MIN OPERATING LEVEL SETPOINT THE FOLLOWING SHALL OCCUR:
      i. THE TANK FILL VALVE SHALL BE COMMANDED OPEN.
      ii. WHEN THE TANK FILL VALVE IS OPEN AS VERIFIED BY THE FILL VALVE OPEN POSITION END SWITCH, THE FILL VALVE OPEN STATUS INDICATOR SHALL BE ILLUMINATED ON THE ICW CONTROL AND MONITORING GRAPHICS PAGE AT THE OWS.
      iii. THE TANK FILLING STATUS INDICATOR SHALL BE ON AT THE ICW CONTROL AND MONITORING GRAPHICS PAGE AT THE OWS.
   e. WHEN TANK LEVEL REACHES THE TANK MAX OPERATING LEVEL SETPOINT THE FOLLOWING SHALL OCCUR:
      i. THE TANK FILL VALVE SHALL BE COMMANDED CLOSED.
      ii. WHEN THE TANK FILL VALVE IS CLOSED AS VERIFIED BY THE FILL VALVE CLOSED POSITION END SWITCH, THE FILL VALVE CLOSED STATUS INDICATOR SHALL BE ILLUMINATED ON THE ICW CONTROL AND MONITORING GRAPHICS PAGE AT THE OWS.
      iii. THE TANK FILLING STATUS INDICATOR SHALL BE OFF ON THE ICW CONTROL AND MONITORING GRAPHICS PAGE AT THE OWS.
   f. IF THE ICW TANK LEVEL RISES TO THE HIGH LEVEL ALARM SETPOINT, THE TANK HI LEVEL ALARM SHALL BE GENERATED (AUDIBLE AND VISUAL) AT THE OWS.
   g. IF THE ICW TANK LEVEL RISES TO THE OVERFLOW LEVEL ALARM SETPOINT, THE OVERFLOW ALARM SHALL BE GENERATED (AUDIBLE AND VISUAL) AT THE OWS.
   h. IF TANK LEVEL FALLS TO THE LOW LEVEL ALARM SETPOINT THE TANK LOW LEVEL ALARM SHALL BE GENERATED (AUDIBLE AND VISUAL) AT THE OWS.
   i. IF TANK LEVEL FALLS TO THE LOW–LOW LEVEL ALARM SETPOINT THE TANK LOW–LOW LEVEL ALARM SHALL BE GENERATED (AUDIBLE AND VISUAL) AT THE OWS.
   j. IF TANK LEVEL FALLS TO THE TANK EMPTY ALARM SETPOINT THE TANK EMPTY ALARM SHALL BE GENERATED (AUDIBLE AND VISUAL) AT THE OWS.
3. ICW TANK TEMPERATURE MONITORING
   a. THE EMS SHALL MONITOR THE WATER TEMPERATURE IN THE INDUSTRIAL COLD WATER (ICW) TANK THROUGH THREE (3) TEMPERATURE TRANSMITTERS (TT).
   b. THE TEMPERATURE AS MEASURED BY EACH OF THE THREE (3) TEMPERATURE TRANSMITTERS WILL BE DISPLAYED ON THE ICW CONTROL AND MONITORING GRAPHICS PAGE AT THE OWS IN DEGREES F.
   c. THE AVERAGE OF THE THREE (3) TEMPERATURE SENSORS SHALL BE USED FOR TANK TEMPERATURE CONTROL.
   d. IF THE READING FROM ANY ONE TEMPERATURE SENSOR DIFFERS FROM THE AVERAGE OF THE OTHER TWO (2) TEMPERATURE SENSORS BY MORE THAN 10%, THAT SENSOR SHALL BE CONSIDERED FAILED, AN ALARM SHALL BE GENERATED AT THE OPERATOR WORKSTATION (OWS), AND TEMPERATURE CONTROL WILL BE BASED ON THE AVERAGE OF THE REMAINING TWO (2) SENSORS.
   e. IF TANK TEMPERATURE FALLS BELOW THE TANK LOW TEMPERATURE ALARM SETPOINT, AND ALARM SHALL BE GENERATED AT THE OPERATOR WORKSTATION (OWS).
4. ICW TANK TEMPERATURE CONTROL
   a. THE ICW TANK TEMPERATURE MONITORING AND CONTROL SHALL OPERATE AROUND THE FOLLOWING LEVEL SETPOINTS:
      i. TANK MINIMUM TEMPERATURE SETPOINT: 40 DEG. F. (ADJ.)
      ii. TANK LOW TEMPERATURE ALARM SETPOINT: 35.0 DEG. F. (ADJ.)
   b. THE ICW TANK HEATERS ARE EACH SIZED FOR 120% OF THE CALCULATED TANK HEAT LOSS AT –10 DEG. F.
   c. IF TANK WATER TEMPERATURE FALLS BELOW TANK HEATER ON SETPOINT, THE LEAD TANK HEATER SHALL BE ENERGIZED. A CURRENT SWITCH SHALL MONITOR THE STATUS OF THE LEAD TANK HEATER.
   d. IF AT ANY TIME THE LEAD TANK HEATER STATUS DOES NOT EQUAL THE LEAD TANK HEATER COMMAND, THE LEAD TANK HEATER SHALL BE DISABLED, THE LAG HEATER SHALL BECOME THE LEAD TANK HEATER, AND A TANK HEATER FAILURE ALARM SHALL BE GENERATED (AUDIBLE AND VISUAL) AT THE OWS.
   e. IF THE TANK WATER TEMPERATURE FALLS BELOW THE TANK LOW TEMPERATURE ALARM SETPOINT: AN ALARM SHALL BE GENERATED AT THE OWS.
   f. THE LEAD AND LAG TANK HEATERS SHALL BE CHANGED WEEKLY TO EQUALIZE HEATER RUN TIME.
5. ICW HOT BOX TEMPERATURE CONTROL AND MONITORING
   a. THE HOT BOX SHALL BE FITTED WITH A 120V THERMOSTATICALLY CONTROLLED HEATER TO MAINTAIN AN INTERNAL TEMPERATURE OF 40 DEG. F.
   b. THE ICW HOT BOX TEMPERATURE SHALL BE DISPLAYED ON THE ICW CONTROL AND MONITORING GRAPHICS PAGE AT THE OWS.
   c. IF THE HOT BOX INTERNAL TEMPERATURE FALLS BELOW THE ICW HOT BOX TEMPERATURE ALARM SETPOINT, AN ALARM SHALL BE GENERATED (AUDIBLE AND VISUAL) AT THE OWS.
   i. ICW HOT BOX LOW TEMPERATURE ALARM SETPOINT: 35.0 DEG. F. (ADJ.)
6. ICW TANK FILL LINE TEMPERATURE MONITORING AND CONTROL
   a. THE ICW TANK FILL LINE TEMPERATURE MONITORING AND CONTROL SHALL OPERATE AROUND THE FOLLOWING SETPOINTS:
      i. ICW TANK FILL LNE MINIMUM TEMPERATURE SETPOINT: 40 DEG. F. (ADJ.)
      ii. ICW TANK FILL LINE LOW TEMPERATURE ALARM SETPOINT: 35.0 DEG. F. (ADJ.)
      iii. ICW TANK FILL LINE LOW TEMPERATURE DRAIN TIME SETPOINT: 5 MIN. (ADJ.)
   b. THE ICW TANK FILL LNE TEMPERATURE SHALL BE DISPLAYED ON THE ICW CONTROL AND MONITORING GRAPHICS PAGE AT THE OWS.
   c. THE ICW TANK FILL LNE TEMPERATURE SHALL BE MAINTAINED ABOVE THE ICW TANK FILL LNE MINIMUM TEMPERATURE SETPOINT BY THE ICW TANK FILL HEAT TRACE SYSTEM.
   d. THE TEMPERATURE OF THE WATER IN THE ICW TANK FILL LINE SHALL BE MONITORED IN THE RISER PIPE 48" ABOVE THE GROUND.
   e. IF THE TEMPERATURE IN THE ICW TANK FILL LINE FALLS BELOW THE ICW TANK FILL LINE TEMPERATURE ALARM SETPOINT, AND THE ICW TANK FILL LINE IS CLOSED, THE AUTOMATIC ICW TANK FILL LINE DRAIN VALVE SHALL BE COMMANDED OPEN TO DRAIN THE ICW TANK FILL LINE RISER. AFTER THE ICW TANK FILL LINE HAS BEEN DRAINED, THE ICW TANK FILL LINE LOW TEMPERATURE ALARM SHALL BE DISABLED UNTIL AFTER THE NEXT TANK FILL CYCLE HAS BEEN COMPLETED.
7. ICW TANK FILL HEAT TRACE SYSTEM
   a. THE ICW TANK FILL HEAT TRACE SYSTEM SHALL AUTOMATICALLY MAINTAIN THE ICW TANK FILL LNE TEMPERATURE ABOVE THE ICW TANK FILL LINE MINIMUM TEMPERATURE SETPOINT THROUGH THE HEAT TRACE SYSTEM DIGITAL CONTROLLER.
      i. ICW TANK FILL LNE MINIMUM TEMPERATURE SETPOINT: 40 DEG. F. (ADJ.)
   b. THE ICW TANK FILL LINE HEAT TRACE MONITORING AND CONTROL SYSTEM SHALL OPERATE AROUND THE FOLLOWING SETPOINTS:
      i. HEAT TRACE TEMPERATURE SETPOINT: 40 DEG. F (ADJ)
      ii. HEAT TRACE HIGH TEMPERATURE ALARM: 100 DEG. F. (ADJ.)
      iii. HEAT TRACE LOW CURRENT ALARM: 1.0 A. (ADJ.)
      iv. HEAT TRACE HIGH CURRENT ALARM: 50 A. (ADJ.)
   c. THE FOLLOWING AUDIBLE AND VISUAL ALARMS SHALL BE DISPLAYED ON THE ICW TANK CONTROL AND MONITORING GRAPHICS PAGE AT THE OWS.
      i. HEAT TRACE HIGH TEMPERATURE ALARM
      ii. HEAT TRACE LOW TEMPERATURE ALARM
      iii. HEAT TRACE HIGH CURRENT ALARM
      iv. HEAT TRACE LOW CURRENT ALARM

GENERAL SHEET NOTES:

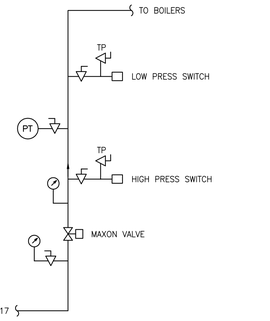
1. REFER TO DRAWINGS M–001 AND M–801 FOR ABBREVIATIONS, NOTES AND SYMBOLS.
2. THIS DRAWING IS TO BE USED IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS IN THIS PACKAGE.



2 SECURITY OPERATIONS CENTER MONITORING OF BOILER PLANT ALARMS DETAIL
SCALE: NTS

(#) KEYNOTES:

1. CONNECT TWO(2) FIBER SWITCHES USING TWO(2) STRANDS ON THE NEW 12–STRAND SINGLE MODE FIBER OPTIC CABLE INSTALLED UNDER THIS PROJECT. SEE THE EY–SERIES SHEETS FOR ROUTING AND ADDITIONAL DETAILS.
2. ALL BOILER PLANT ALARMS SHALL BE TRANSMITTED TO AN OPERATOR INTERFACE TERMINAL (OIT) AT THE BUILDING 1 SECURITY OPERATIONS CENTER. THE OIT SHALL HAVE ACKNOWLEDGE/SILENCE FUNCTIONALITY. ALARMS SHALL BE AUDIBLE AND VISUAL.



3 NATURAL GAS PRESSURE MONITORING DETAIL
SCALE: NTS

PRINTS OF THIS DRAWING SHALL NOT BE USED FOR ANY PURPOSE WHATSOEVER WITHOUT THE SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER.

NO.	DESCRIPTION	DATE

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL CONTROLS	Phase: 100% BID SET
Approved: Project Director	FULLY SPRINKLERED

Project Title: INSTALL NEW BOILERS IN BUILDING 13	Project Number: 589A7-18-302
	Building Number: 13
Location: ROBERT J. DOLE VA MEDICAL CENTER WICHITA, KANSAS	Drawing Number: M-803
Issue Date: 2021-09-03 / Checked: MH / Drawn: ARF	

VA FORM 08-6231

P:\0499_DVA\0499-0121 Wichita Boilers\4_Drawings\1_Cad\1_Current Submittal Phase\7_Mechanical\M-803.dwg 9-02-21 02:48:16 PM gstroh