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ADDENDUM NO. 1

PROJECT: Indiana School for the Deaf, Building 8 HVAC Renovation
DAPW PROJECT NO: 49026008-20-040
R&B PROJECT NO: 2148-02
DATE: 10/25/2022

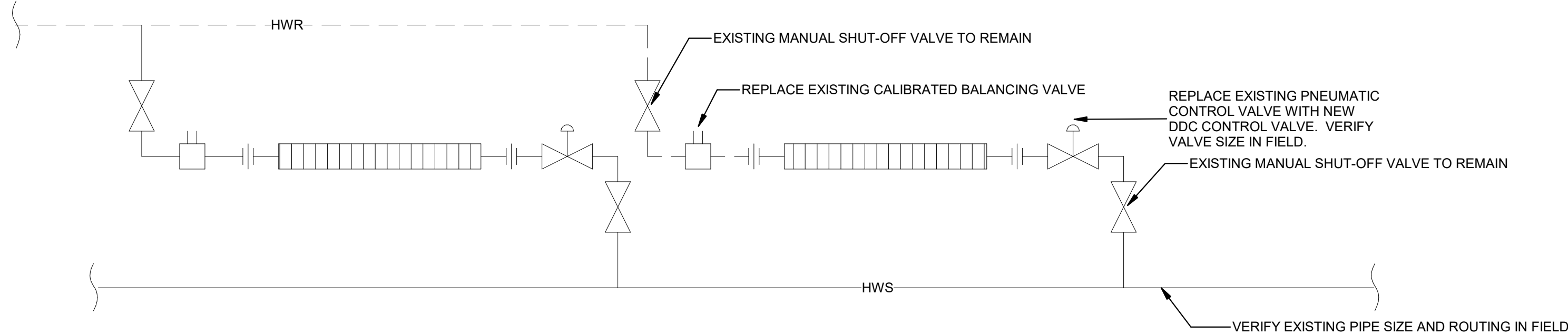
THIS ADDENDUM CONSISTS OF (1) 8 - 1/2" X 11" PAGE AND (2) 30" X 42" PAGES.

The following additions, revisions and modifications are hereby made part of the contract documents, which shall be amended accordingly. Acknowledge receipt of addenda on bid form. Failure of your acknowledgement of receipt of this addendum may result in rejection of your offer.

DRAWINGS

1. M502:
 - a. Removed an alternate callout on the heating plant schematic that is no longer in scope.
2. M601:
 - a. Corrected the Air Terminal Unit model number to VRRF.

SIGNED: Corey Lecher



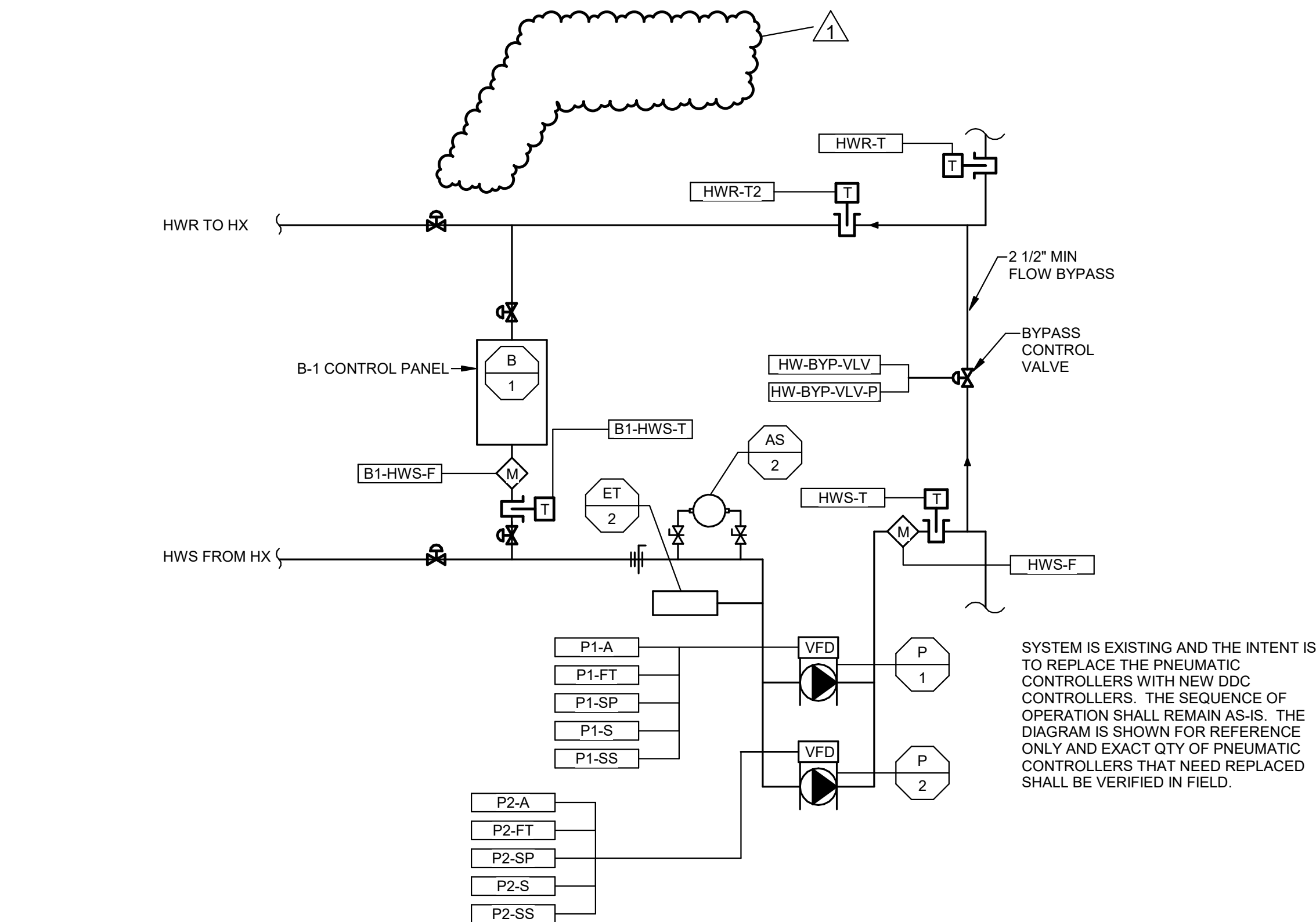
GENERAL NOTES:

1. PROVIDE A NEW CONTROL VALVE AND CALIBRATED BALANCING VALVE FOR EACH FINNED TUBE RADIATOR. SEE FLOORPLANS FOR LOCATIONS AND PROVIDE EACH WINDOW HAS ITS OWN FINNED TUBE RADIATOR AND CONTROLS.

FINNED TUBE RADIATOR SEQUENCE OF OPERATION:

1. SPACE VAV BOX TO BE IN ITS MINIMUM POSITION FOR AT LEAST 10 MINUTES BEFORE FINNED TUBE CONTROL VALVE SHALL BE ALLOWED TO OPEN.
2. UPON A CALL FOR HEAT IN THE ZONE, THE VAV BOX CONTROLLER SHALL BE COMMANDED TO ITS MINIMUM POSITION AND THE FINNED TUBE CONTROL VALVE SHALL OPEN 10% (ADJ.). IF AFTER 5 MINUTES THE SPACE TEMPERATURE SETPOINT CANNOT BE MET THE CONTROL VALVE SHALL MODULATE OPEN TO 20% (ADJ.). THIS SEQUENCE SHALL CONTINUE UNTIL SPACE TEMPERATURE SETPOINT IS SATISFIED. ONCE SATISFIED THE CONTROL VALVE SHALL MODULATE TO MAINTAIN SETPOINT TEMPERATURE.
3. IF THE CONTROL VALVE IS AT 10% (ADJ.) OPEN OR LESS FOR GREATER THAN 10 MINUTES (ADJ.) AND THERE IS NO CALL FOR HEATING IN THE ZONE, THE CONTROL VALVE SHALL CLOSE.
4. IF THE CONTROL VALVE IS 80% OPEN AND THERE IS STILL A CALL FOR HEAT THE SAT SHALL BE RESET UP. SEE AHU SEQUENCE OF OPERATION.

RADIATION PIPING CONTROLS DIAGRAM



HOT WATER SYSTEM POINTS LIST		INPUTS		OUTPUTS		ALARM		REPORTS		NOTES
CONTROL POINT TAG	SYSTEM POINT DESCRIPTION	DI	AI	DO	AO	HIGH/LOW LIMIT	SAFETY	MAINTENANCE	ABNORMAL ON/OFF OPEN/CLOSE	
B1-HWS-F	HOT WATER SUPPLY FLOW		•			•			•	•
B1-HWS-T	HOT WATER SUPPLY TEMPERATURE		•						•	•
HW-BYP-VLV	BYPASS VALVE			•						
HW-BYP-VLV-P	BYPASS VALVE POSITION				•					
HWR-T	HOT WATER RETURN TEMPERATURE BEFORE BYPASS		•			•			•	•
HWR-T2	HOT WATER RETURN TEMPERATURE AFTER BYPASS		•			•			•	•
HWS-F	HOT WATER SYSTEM SUPPLY FLOW		•			•			•	•
HWS-T	HOT WATER SUPPLY TEMPERATURE		•						•	•
P1-A	VFD ALARM	•					•	•	•	•
P1-FT	VFD FAULT	•					•	•	•	•
P1-S	STATUS	•					•	•	•	•
P1-SP	VFD SPEED				•		•	•	•	•
P1-SS	ENABLE/DISABLE			•			•	•	•	•
P2-A	VFD ALARM	•					•	•	•	•
P2-FT	VFD FAULT	•					•	•	•	•
P2-S	STATUS	•					•	•	•	•
P2-SP	VFD SPEED				•		•	•	•	•
P2-SS	ENABLE/DISABLE			•			•	•	•	•

HEATING PLANT BOILERS AND HOT WATER PUMPS (VARIABLE SPEED PRIMARY) - ALTERNATE

GENERAL

THE BOILER PLANT CONSISTS OF MULTIPLE HIGH-EFFICIENCY CONDENSING BOILERS, CONSTANT SPEED PRIMARY HOT WATER PUMPS, VARIABLE SPEED SECONDARY HOT WATER PUMPS, A BUFFER TANK, AND A MINIMUM FLOW BYPASS VALVE.

THE HOT WATER SUPPLY TEMPERATURE SETPOINT SHALL INITIALLY BE 130 DEG F AND SHALL CHANGE BASED ON THE FOLLOWING RESET SCHEDULE:

THE SETPOINT SHALL BE 130 DEG F AT AN OUTSIDE AIR DRY BULB REFERENCE TEMPERATURE OF 40 DEG F AND SHALL BE RESET TO 110 DEG F AT AN OUTSIDE AIR DRY BULB REFERENCE TEMPERATURE OF 60 DEG F. THE SETPOINT SHALL BE RESET LINEARLY WITH OUTSIDE AIR TEMPERATURE WHEN THE REFERENCE TEMPERATURE IS BETWEEN 40 AND 60 DEG F.

THE EMCS SHALL MONITOR THE HOT WATER SUPPLY TEMPERATURE INDEPENDENTLY OF THE BOILER CONTROL SYSTEM AND ANNUNCIATE AN ALARM IF THE HOT WATER SUPPLY TEMPERATURE VARIES FROM SETPOINT BY MORE THAN 5 DEG F (ADJ.) FOR MORE THAN 20 MINUTES (ADJ.).

PROVIDE A TEMPERATURE SENSOR TO MONITOR PRIMARY HOT WATER SUPPLY TEMPERATURE.

PROVIDE A TEMPERATURE SENSOR TO MONITOR PRIMARY HOT WATER RETURN TEMPERATURE.

PROVIDE A TEMPERATURE SENSOR TO MONITOR SECONDARY HOT WATER RETURN TEMPERATURE.

BOILER CONTROL

EACH BOILER SHALL BE FURNISHED WITH INTERNAL CONTROLS CAPABLE OF INDIVIDUAL COMBUSTION, FIRING RATE, AND TEMPERATURE CONTROLS, AS WELL AS SEQUENCING/STAGING OF MULTIPLE BOILERS. THE BOILER CONTROL SYSTEM SHALL HAVE A FULLY EDITABLE USER INTERFACE SET-UP VIA POINT AND CLICK ON A STANDARD WINDOWS SCREEN. IT SHALL NOT REQUIRE SPECIAL SOFTWARE TOOLS OR AN ENERGY MANAGEMENT CONTROL SYSTEM (EMCS) MANUFACTURER'S TECHNICIAN TO OPERATE.

THE LEAD/LAG DESIGNATIONS OF EACH BOILER SHALL BE ROTATED BY THE BOILER CONTROL PANEL TO MAINTAIN ROUGHLY EQUAL RUN TIMES ON EACH MACHINE. THE INTERVAL OF ROTATION SHALL BE USER SELECTABLE THRU THE EMCS, AND THE USER SHALL BE ABLE TO OVERRIDE THE DESIGNATION OF LEAD/LAG/STANDBY BOILER THRU THE EMCS.

THE ACTIVATION OF THE BOILER CONTROL PANEL SHALL BE PERFORMED BY THE EMCS. ONCE FLOW IS PROVEN THROUGH THE BOILER MANUFACTURER'S SUPPLIED FLOW SWITCH, THE EMCS SHALL ACTIVATE THE BOILER CONTROL PANELS. ONCE ENABLED, CONTROL OF EACH BOILER'S INTERNAL OPERATION SHALL BE ACCOMPLISHED LOCALLY BY THE BOILER CONTROL PANEL. BOILER CONTROL PANEL SHALL OPERATE AND STAGE BOILERS IN THE MOST EFFICIENT WAY POSSIBLE. THE ONLY REMOTE DISABLE SIGNAL FROM THE EMCS SHALL BE VIA OPERATOR'S MANUAL COMMAND.

THE EMCS SHALL MONITOR THE STATUS OF ALL BOILERS INDIVIDUALLY AND ANNUNCIATE AN ALARM UPON ANY BOILER FAILURE ALARM.

PRIMARY HOT WATER PUMP CONTROL

UPON A CALL FOR MECHANICAL HEATING, THE EMCS SHALL START THE LEAD PRIMARY HOT WATER PUMP. THE ENABLE SIGNAL SHALL BE WITHHELD FOR 1 MINUTE FROM BOILER ENABLE. ONCE MECHANICAL HEATING IS NO LONGER REQUIRED, THE EMCS SHALL DISABLE THE PRIMARY HOT WATER PUMP.

THE EMCS SHALL MONITOR THE STATUS OF THE PRIMARY HOT WATER PUMPS VIA INDEPENDANT CURRENT SENSORS FOR EACH PUMP. UPON FAILURE OF THE PRIMARY HOT WATER PUMP, THE BAS SHALL ANNUNCIATE AN ALARM AND AUTOMATICALLY DISABLE THE ASSOCIATED BOILER.

SECONDARY HOT WATER PUMP CONTROL (50% PUMPS)

UPON RECEIVING A START COMMAND FROM THE EMCS, THE SYSTEM SHALL START THE LEAD SECONDARY HOT WATER PUMP AND MODULATE THE SPEED OF THE LEAD PUMP TO MAINTAIN THE SYSTEM DIFFERENTIAL PRESSURE SETPOINT (ESTABLISHED AT THE TIME OF SYSTEM BALANCING) AS MEASURED BY EACH BUILDING'S ASSOCIATED DIFFERENTIAL PRESSURE TRANSMITTER.

WHEN THE LEAD OPERATING PUMP SPEED REACHES 90% OF FULL SPEED, THE EMCS SHALL START THE LAG PUMP. THE LEAD PUMP SHALL REMAIN UNDER THE CONTROL OF THE RESPECTIVE DIFFERENTIAL PRESSURE SIGNAL WHILE THE LAG PUMP SPEED RAMP'S UP. WHEN BOTH PUMPS ARE RUNNING AT THE SAME SPEED, THE EMCS SHALL PLACE BOTH PUMPS UNDER THE CONTROL OF THE DIFFERENTIAL PRESSURE SIGNAL. DURING MULTIPLE PUMP OPERATION, PUMP SPEED SHALL MODULATE IN UNISON UNTIL THE LOAD DROPS BELOW 40% OF THE COMBINED CAPACITY OF THE OPERATING PUMPS. ON A DECREASE IN LOAD BELOW 40% OF THE COMBINED CAPACITY OF THE OPERATING PUMPS, THE LEAD PUMP SHALL BE TAKEN OUT OF SERVICE AS FOLLOWS: WHILE THE LAG PUMP REMAINS UNDER THE CONTROL OF THE DIFFERENTIAL PRESSURE SIGNAL, THE SPEED OF THE LEAD PUMP SHALL BE RAMPED DOWN TO THE MINIMUM, AND THE PUMP SHALL STOP. THE LAG PUMP SHALL THEN BE DESIGNATED AS LEAD PUMP, EFFECTIVELY SWITCHING LEAD/LAG DESIGNATIONS TO MAINTAIN ROUGHLY EQUAL RUN TIMES.

THE EMCS SHALL TRACK AND LOG PUMP RUN TIME. THE PUMP WITH THE LOWEST NUMBER OF RUN HOURS SHALL BE DEFINED AS THE LEAD PUMP. THE PUMP WITH GREATEST NUMBER OF RUN HOURS SHALL BE DEFINED AS THE LAG PUMP. THE EMCS SHALL ALTERNATE DESIGNATION OF LEAD/LAG BASED ON AN OWNER DEFINED RUN TIME.

UPON FAILURE OF THE LEAD PUMP TO START, AN ALARM SHALL BE SENT TO THE OPERATOR'S WORKSTATION AND THE LAG PUMP SHALL START AND CONTINUE VARIABLE SPEED OPERATION.

UPON A VARIABLE FREQUENCY DRIVE ALARM, THE LEAD PUMP SHALL STOP. AN ALARM SHALL BE SENT TO THE OPERATOR'S WORKSTATION, AND THE LAG PUMP SHALL START AND CONTINUE OPERATION.

SECONDARY HOT WATER PUMP CONTROL (REDUNDANT PUMPS)

UPON RECEIVING A START COMMAND FROM THE EMCS, THE SYSTEM SHALL START THE LEAD SECONDARY HOT WATER PUMP AND MODULATE THE SPEED OF THE LEAD PUMP TO MAINTAIN THE SYSTEM DIFFERENTIAL PRESSURE SETPOINT (ESTABLISHED AT THE TIME OF SYSTEM BALANCING) AS MEASURED BY EACH BUILDING'S ASSOCIATED DIFFERENTIAL PRESSURE TRANSMITTER.

THE EMCS SHALL TRACK AND LOG PUMP RUN TIME. THE PUMP WITH THE LOWEST NUMBER OF RUN HOURS SHALL BE DEFINED AS THE LEAD PUMP. THE PUMP WITH GREATEST NUMBER OF RUN HOURS SHALL BE DEFINED AS THE LAG PUMP. THE EMCS SHALL ALTERNATE DESIGNATION OF LEAD/LAG BASED ON AN OWNER DEFINED RUN TIME.

UPON FAILURE OF THE LEAD PUMP TO START, AN ALARM SHALL BE SENT TO THE OPERATOR'S WORKSTATION AND THE LAG PUMP SHALL START AND CONTINUE VARIABLE SPEED OPERATION.

UPON A VARIABLE FREQUENCY DRIVE ALARM, THE LEAD PUMP SHALL STOP. AN ALARM SHALL BE SENT TO THE OPERATOR'S WORKSTATION, AND THE LAG PUMP SHALL START AND CONTINUE OPERATION.

HOT WATER DIFFERENTIAL PRESSURE TRANSMITTER

THE EMCS SHALL CONTINUOUSLY SCAN AND COMPARE THE DIFFERENTIAL PRESSURE TRANSMITTER INPUTS TO SETPOINT AND CONTROL TO THE LEAST SATISFIED BUILDING.

IN THE EVENT OF A SYSTEM DIFFERENTIAL PRESSURE FAILURE DUE TO A PUMP OR VFD FAULT, THE EMCS SHALL AUTOMATICALLY START THE NEXT VARIABLE SPEED PUMP/VFD SET IN SEQUENCE AND CONTINUE VARIABLE SPEED OPERATION.

SYSTEM MONITORING

IN THE EVENT OF THE FAILURE OF A BUILDING SENSOR/TRANSMITTER, ITS PROCESS VARIABLE SIGNAL SHALL BE REMOVED FROM THE SCAN/COMPARE PROGRAM AND AN ALARM SHALL BE ANNUNCIATED AT THE EMCS.

THE BUILDING NUMBER CORRESPONDING TO THE FAILED SENSOR/TRANSMITTER SHALL BE DISPLAYED ON THE OPERATOR INTERFACE OF THE EMCS.

IN THE EVENT OF FAILURE TO RECEIVE ALL BUILDING PROCESS VARIABLE SIGNALS, ALL OPERATING VFDS AT THE TIME OF THE FAILURE SHALL MAINTAIN THEIR CURRENT SPEED AT TIME OF SENSOR FAILURE. RESET SHALL BE AUTOMATIC UPON CORRECTION OF THE BUILDING FAILURE.

PUMP OR VFD FAULT SHALL BE CONTINUOUSLY SCROLLED THROUGH THE DISPLAY ON THE OPERATOR INTERFACE OF THE EMCS UNTIL THE FAULT HAS BEEN CORRECTED AND THE CONTROLLER HAS BEEN MANUALLY RESET.

BOILER MINIMUM FLOW BY-PASS VALVE CONTROL

FOLLOWING THE CONFIRMED START OF THE LEAD BOILER AND WHENEVER SYSTEM IS ENABLED, THE EMCS SHALL MODULATE THE BOILER MINIMUM FLOW BY-PASS VALVE TO MAINTAIN MINIMUM REQUIRED FLOW THROUGH ANY OPERATING BOILERS AS SPECIFIED BY THE BOILER MANUFACTURER. SINGLE BOILER MINIMUM FLOW RATE SHALL BE AS NOTED IN BOILER SCHEDULE.

THE FLOW THROUGH EACH BOILER SHALL BE CONTINUOUSLY MEASURED BY THE EACH BOILER'S RESPECTIVE FLOW METER.

THE BOILER MINIMUM FLOW BY-PASS VALVE SHALL BE MODULATED TO THE FULLY OPEN POSITION WHEN THE SYSTEM IS SHUTDOWN. THIS SHALL BE DONE TO PREVENT WATER HAMMER WHEN A PUMP IS STARTED AND TO ALLOW FOR MINIMUM FLOW IN THE EVENT THE BOILER CALLS FOR PUMP OPERATION.

BOILER ROOM CARBON MONOXIDE SENSING

PROVIDE SPACE CARBON MONOXIDE SENSOR TO MONITOR CO LEVELS AND PROVIDE LOCAL AND REMOVE ALARMS PER SPECIFICATION SECTION 230900 - HVAC INSTRUMENTATION AND CONTROL.

DATE	DESCRIPTION
10/23/22	ADDENDUM #1

DESIGNED BY:	TMM
CHECKED BY:	TMM
REV PROJ. NO.:	2148-02
ISSUE DATE:	09/29/2022
DRAWING TITLE:	

AIR HANDLING UNIT SCHEDULE (1)

NOTES...

- REFERENCE SPECIFIC EQUIPMENT COMPONENT FOR ELECTRICAL DATA WHEN MULTIPLE POWER CONNECTIONS ARE REQUIRED.
- SOUND POWER LEVEL RATINGS SHOWN IN DECIBELS, REFER TO 10(-12) WATTS CALCULATED PER AMCA STANDARD 301.
- PROVIDE WITH INVERTER-READY OR INVERTER-DUTY MOTOR FOR VARIABLE SPEED OPERATION.
- PROVIDE UNIT WITH SINGLE POINT ELECTRICAL CONNECTION.
- ELECTRICAL CONTRACTOR TO PROVIDE VFD'S AND NON-FUSED DISCONNECT SWITCHES.
- UNIT TO BE MOUNTED ON EQUIPMENT RAIL OF SUFFICIENT HEIGHT TO ALLOW FULL SIZE CONDENSATE TRAP FROM UNIT.
- PROVIDE PRICING UNDER DORM AHU ALTERNATE.
- UNIT SPLITS SHALL BE SIZED TO ALLOW TO FIT THRU A STANDARD 36" SINGLE DOOR. IF SECTIONS ARE TOO LARGE TO FIT THRU DOOR THEN WALL LOUVER AND DUCTWORK TO BE REMOVED AND REINSTALLED TO MATCH EXISTING AT NO CHANGE IN...
- PROVIDE PRICING UNDER GYM AHU ALTERNATE.
- PROVIDE HYGROMATIK DDS MODEL DIRECT STEAM INJECTION HUMIDIFIER. ABSORPTION DISTANCE TO BE NO GREATER THAN 36", VERIFY DUCT SIZE WITH EXISTING CONDITIONS.
- PROVIDE PRICING UNDER COMMONS AHU ALTERNATE.

MARK		#	MFR.	MODEL	TYPE	LOCATION	MIN. OA (CFM)	MAX SIZE (LxWxH)	MAX OPERATING WEIGHT (LBS)	TOTAL AIRFLOW (CFM)	STATIC PRESSURE		SUPPLY FAN				NOTES
ID											TSP (IN WC)	ESP (IN WC)	DRIVE	MAX WHEEL SIZE (IN)	MAX FAN SPEED (RPM)	MIN. FAN EFF. (%)	
AHU 1	1	YORK	XTI-60x90	SPLIT DX	ROOF	5050	10'10x7'9x5'0	4200	10650	3.51	2.5	BELT	20	1777	75.59	2.3, 4.5, 6.7, 8, 10	
AHU 2	2	YORK	XTI-60x90	SPLIT DX	ROOF	5500	10'10x7'9x5'0	4200	11600	3.6	2.5	BELT	20	1856	74.25	2.3, 4.5, 6.7, 8, 10	
AHU 4	4	YORK	XTI-54x90	HTG ONLY	ROOF	5050	8'8x7'9x4'6	3200	10000	1.65	1.0	BELT	20	1438	64.17	2.3, 4.5, 6.8, 9	
AHU 5	5	YORK	XTI-54x90	HTG ONLY	ROOF	5050	8'8x7'9x4'6	3200	10000	1.65	1.0	BELT	20	1438	64.17	2.3, 4.5, 6.8, 9	
AHU 6	6	YORK	XTI-69x93	SPLIT DX	ROOF	5000	11'4x7'9x5'10	5100	13600	3.74	2.5	BELT	25	1316	80.05	2.3, 4.5, 6.8, 10, 11	
AHU 7	7	YORK	XTI-57x90	SPLIT DX	ROOF	4800	10'9x7'4x4'6	4200	9800	3.3	2.5	BELT	20	1681	76.91	2.3, 4.5, 6.7, 8, 10	
AHU 8	8	YORK	XTI-60x90	SPLIT DX	ROOF	6200	10'10x7'9x5'0	4500	11500	3.75	2.5	BELT	22	1523	78.55	2.3, 4.5, 6.7, 8, 10	
AHU 9	9	YORK	XTI-54x90	SPLIT DX	ROOF	4000	10'4x7'9x4'6	4100	8550	3.3	2.5	BELT	20	1681	76.91	2.3, 4.5, 6.7, 8, 10	

AIR HANDLING UNIT SCHEDULE (2)

NOTES:

MARK		HEATING HOT WATER COIL										
ID	#	CAPACITY (MBH)	MAX FACE VELC. (FPM)	EAT (°F)	LAT (°F)	WATER FLOW (GPM)	EWI (°F)	LWT (°F)	ROWS	MAX PD		
										AIR (IN WC)	WATER (FT)	
AHU 1	1	345	395	42	70	22	180	147	1	0.03	1.9	
AHU 2	2	356	428	42	70	22	180	146.8	1	0.03	1.9	
AHU 4	4	1238	410	-5	95	25	180	130.9	3	0.22	4.6	
AHU 5	5	1238	410	-5	95	25	180	130.9	3	0.22	4.6	
AHU 6	6	406	421	48	70	27	180	149.1	1	0.03	2.6	
AHU 7	7	326	381	42	72.4	22	180	149.6	1	0.02	2.0	
AHU 8	8	355	424	42	70	22	180	146.9	1	0.03	1.9	
AHU 9	9	290	350	42	72.9	18	180	146.9	1	0.02	1.4	

AIR HANDLING UNIT SCHEDULE (3)

NOTES:

MARK		DIRECT EXPANSION COIL									
ID	#	CAPACITY (MBH)		MAX FACE VELC. (FPM)	EAT		LAT (DB / WB °F)	REFRIGERANT TYPE	# OF CIRCUITS	MAX PD AIR (IN WC)	CONDENSING UNIT ID #
		SENS.	TOTAL		DB (°F)	WB (°F)					
AHU 1	1	346	415	84.48	68.62	53.2 / 52.6	R-410A	20	0.65	CU-1	
AHU 2	2	373	546	450	84.48	68.62	53.3 / 52.7	R-410A	20	0.68	CU-2
AHU 4	4	-	-	-	-	-	-	-	-	-	-
AHU 5	5	-	-	-	-	-	-	-	-	-	-
AHU 6	6	428	615	426	82.35	67.21	51.9 / 51.5	R-410A	19	0.81	CU-6
AHU 7	7	312	458	390	84.80	68.83	53.9 / 53.1	R-410A	16	0.50	CU-7
AHU 8	8	383	567	446	84.5	68.6	52.2 / 51.8	R-410A	20	0.85	CU-8
AHU 9	9	259	411	353	84.36	68.54	55.0 / 54.1	R-410A	20	0.42	CU-9

AIR HANDLING UNIT SCHEDULE (4)

NOTE...

MARK		FILTERS		MAX SOUND POWER RATING (DISCHARGE / INLET / RADIATED)										ELECTRICAL DATA			
ID	#	PRE		OCTAVE BAND (HZ)										FULL LOAD AMPS	HP	VOLTS	PHASE
		TYPE	DESIGN SPD (IN WC)	63	125	250	500	1000	2000	4000	8000						
AHU 1	1	MERV 8	0.2	92	90	89	88	88	87	85	85	24.3	20	480	3		
AHU 2	2	MERV 8	0.2	92	92	91	90	90	88	85	85	24.3	20	480	3		
AHU 4	4	MERV 8	0.2	88	87	86	85	85	81	78	78	12.5	10	480	3		
AHU 5	5	MERV 8	0.2	88	87	86	85	85	81	78	78	12.5	10	480	3		
AHU 6	6	MERV 8	0.2	96	95	94	93	93	91	86	86	24.3	20	480	3		
AHU 7	7	MERV 8	0.2	93	92	91	90	90	89	86	85	17.7	15	480	3		
AHU 8	8	MERV 8	0.2	93	92	91	90	90	88	85	85	24.3	20	480	3		
AHU 9	9	MERV 8	0.2	91	90	89	89	88	87	84	83	17.7	15	480	3		

FAN SCHEDULE

NOTES:

- SOUND POWER LEVEL RATINGS SHOWN IN DECIBELS, REFERRED TO 10(-12) WATTS CALCULATED PER AMCA STANDARD 301.
- PROVIDE WITH INVERTER-READY OR INVERTER-DUTY MOTOR FOR VARIABLE SPEED OPERATION. PROVIDE WITH WALL SLEEVE AND ROOF EQUIPMENT SUPPORTS.
- FUSED DISCONNECT SWITCH TO BE PROVIDED AND INSTALLED BY MANUFACTURER.
- VFD TO PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
- PROVIDE AS COMMONS AHU ALTERNATE.
- PROVIDE AS PART OF AHU ALTERNATE.

MARK		ID	#	MFR.	MODEL	TYPE	LOCATION	SERVICE	DRIVE	AIRFLOW (CFM)	ESP (IN WC)	MAX FAN SPEED (RPM)	MOTOR SPEED (RPM)	MIN STATIC EFF (%)	DESIGN DRIVE LOSS (%)	MIN FAN EFF. GRADE	MAX SOUND POWER RATING (INLET / OUTLET)								ELECTRICAL DATA				NOTES							
																	OCTAVE								MAX WEIGHT (LBS)											
																										AMPS	HP	VOLTS		PHASE						
WRF	1	GREENHECK	SBE-3H42-30	SIDEWALL BELT DRIVE	PENTHOUSE SIDEWALL	PENTHOUSE	BELT	11,600	0.5	656	1725	43	4.0	65	90	88	250	500	1000	2000	4000	8000	550	4.8	3	480	3	1, 2, 3, 4, 6								
WRF	2	GREENHECK	SBE-3H42-30	SIDEWALL BELT DRIVE	PENTHOUSE SIDEWALL	PENTHOUSE	BELT	11,600	0.5	656	1725	43	4.0	65	90	88	88	85	81	77	72	69	550	4.8	3	480	3	1, 2, 3, 4, 6								
WRF	6	GREENHECK	SBE-3H42-30	SIDEWALL BELT DRIVE	PENTHOUSE SIDEWALL	PENTHOUSE	BELT	11,600	0.5	656	1725	41	4.0	65	90	88	88	85	81	77	72	69	550	4.8	3	480	3	1, 2, 3, 4, 5								
WRF	7	GREENHECK	SBE-3H42-30	SIDEWALL BELT DRIVE	PENTHOUSE SIDEWALL	PENTHOUSE	BELT	11,600	0.5	656	1725	43	4.0	65	90	88	88	85	81	77	72	69	550	4.8	3	480	3	1, 2, 3, 4, 6								
WRF	8	GREENHECK	SBE-3H42-30	SIDEWALL BELT DRIVE	PENTHOUSE SIDEWALL	PENTHOUSE	BELT	11,600	0.5	656	1725	43	4.0	65	90	88	88	85	81	77	72	69	550	4.8	3	480	3	1, 2, 3, 4, 6								
WRF	9	GREENHECK	SBE-3H42-30	SIDEWALL BELT DRIVE	PENTHOUSE SIDEWALL	PENTHOUSE	BELT	8,550	0.5	656	1725	41	4.2	65	90	88	88	85	81	77	72	69	550	4.8	3	480	3	1, 2, 3, 4, 6								

AIR TERMINAL UNIT SCHEDULE

NOTES:

- MAX TOTAL PRESSURE DROP SHALL INCLUDE BOX (WHERE APPLICABLE).
- NOT USED.
- ACCESSIBILITY IS REQUIRED FOR EACH VTY BOX. DUCTWORK SHALL BE ADDED AND/OR ORIENTATION CHANGED TO ACCOMMODATE FIELD CONDITIONS.
- ATU WITH A VCWC ID HAVE EXISTING HOT WATER COILS. THE EXISTING CONTROL VALVES SHALL BE REPLACED WITH NEW INCLUDING DDC ACTUATORS.

MARK		#	MFR.	MODEL	ROUND DUCT INLET SIZE (IN)	OUTLET DUCT SIZE (IN)	AIRFLOW RANGE (MAX/MIN CFM)	MAX APD (IN WC)	NC	NOTES
ID										
VCCC	08		TRANE	VRRF	8	8	700 / 490	0.67	32	1, 3
VCCC	12		TRANE	VRRF	8	8	1000 / 710	0.46	29	1, 3
VCCC	20		TRANE	VRRF	10	10	1600 / 1010	0.52	28	1, 3
VCCC	30		TRANE	VRRF	10x18	10x18	2400 / 1610	0.24	26	1, 3
VCWC	12		TRANE	VRRF	10	10	1000 / 710	0.55	29	1, 3, 4
VCWC	30		TRANE	VRRF	10x18	10x18	2400 / 1610	0.51	28	1, 3, 4
VTCC	04		TRANE	VRRF	6	6	200 / 100	0.11	18	1, 3
VTCC	05		TRANE	VRRF	6	6	350 / 210	0.31	29	1, 3
VTCC	08		TRANE	VRRF	8	8	700 / 560	0.4	33	1, 3

HUMIDIFIER SCHEDULE

UNIT NUMBER	LOCATION	HUMIDIFIER CONFIGURATION	TOTAL AIRFLOW (CFM)	MIN. OA (CFM)	DESIGN DBWB (DEG F)	HUMIDIFICATION STEAM (LBS/HR)	SOURCE STEAM (PSI)	DUCT WIDTH (IN)	DUCT HEIGHT (IN)	ABSORPTION DISTANCE-MAX (IN)	BASIS OF DESIGN	NOTES
AHU-1	Roof	HORIZ. DUCT	10650	5050	70/55.6	127	2	93	60	36	HygroMatik DDS	1,2,3,4,5
AHU-2	Roof	HORIZ. DUCT	11600	5500	70/55.6	139	2	93	60	36	HygroMatik DDS	1,2,3,4,5
AHU-6	Roof	HORIZ. DUCT	13600	5000	70/55.6	126	2	93	70	36	HygroMatik DDS	1,2,3,4,6
AHU-7	Roof	HORIZ. DUCT	9800	4800	70/55.6	121	2	93	54	36	HygroMatik DDS	1,2,3,4,5
AHU-8	Roof	HORIZ. DUCT	11500	6200	70/55.6	156	2	93	60	36	HygroMatik DDS	1,2,3,4,5
AHU-9	Roof	HORIZ. DUCT	8550	4000	70/55.6	101	2	93	54	36	HygroMatik DDS	1,2,3,4,5
NOTES:												
1. INSTALL HUMIDIFIER DISTRIBUTORS IN AIR DUCT. SEAL AROUND DISTRIBUTOR AIR TIGHT. VERIFY EXACT DIMENSIONS.												
2. HUMIDIFIER MODULATING ELECTRIC ACTUATOR TO ACCEPT 0-10 VDC CONTROL SIGNAL FROM BAS SYSTEM.												
3. PROVIDE WALL MOUNTED MODULATING CONTROL, DUCT MOUNTED HI-LIMIT HUMIDISTAT AND AIR PROVING SWITCH.												
4. PROVIDE STAINLESS STEEL DRAIN PAN UNDER HUMIDIFIER DISTRIBUTORS.												
5. PROVIDE AS DORM AHU ALTERNATE.												
6. PROVIDE AS COMMONS AHU ALTERNATE.												

PUMP SCHEDULE

NOTES:

- ELECTRICAL CONTRACTOR TO PROVIDE MOTOR STARTER AND DISCONNECT SWITCH.
- PROVIDE AS PART OF AIR