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POINTS LIST					
SYSTEM/POINT	DO	DI	AO	AI	COMMENTS
HEATING VALVE					
MIXING DAMPERS					
RETURN FAN ON/OFF	●				
SUPPLY FAN ON/OFF	●				
MIXED AIR TEMPERATURE NO. 1				●	
MIXED AIR TEMPERATURE NO. 2				●	
RETURN AIR TEMPERATURE				●	
(E)ZONE SPACE TEMPERATURES				●	
AHU SUPPLY AIR TEMPERATURE				●	
PRE-FILTER DIRTY ALARM		●			
LOW TEMPERATURE DETECTION THERMOSTAT		●			
RETURN FAN PROOF		●			
SUPPLY FAN PROOF		●			
SUPPLY SMOKE DETECTOR		●			
SUPPLY FAN VFD			●		
RETURN FAN VFD			●		
RETURN AIR RELATIVE HUMIDITY			●		
(E)ZONE SUPPLY AIR VOLUME				●	
SUPPLY FAN VFD ALARM		●			
RETURN FAN VFD ALARM		●			
RETURN FAN VFD			●		
SUPPLY FAN VFD			●		
(E)SUPPLY AIR STATIC PRESSURE				●	
HI STATIC PRESSURE CUTOUT		●			
DX COOLING STAGES 1-4	●				
(E) BUILDING STATIC PRESSURE				●	
OUTSIDE AIRFLOW				●	
(E)SMOKE DAMPERS	●				
OUTSIDE AIR TEMPERATURE				●	
OUTSIDE AIR RELATIVE HUMIDITY				●	

HVAC-1 (HVAC-2 SIMILAR)

EXISTING CONTROLS ARE DELTA DDC CONTROLS BY IBCONTROLS. NEW CONTROLS SHALL BE DELTA DDC CONTROLS BY IBCONTROLS. ALL CONTROLS SHALL BE NEW EXCEPT WHERE OTHERWISE STATED. IBCONTROLS SHALL IDENTIFY POTENTIAL COST SAVINGS OPPORTUNITIES BY RE-USING EXISTING CONTROLS COMPONENTS WHERE APPROPRIATE.

THE VARIABLE AIR VOLUME AIR HANDLING UNIT CONSISTS OF A MIXED AIR SECTION WITH OUTDOOR AIR, EXHAUST AIR AND RETURN AIR DAMPERS, PRE-FILTER, PROPANE HEATING SECTION, DX COOLING COIL, SUPPLY AND RETURN FANS WITH VARIABLE FREQUENCY DRIVES. THE ZONE CONTROL INCLUDES VAV TERMINALS, SOME WITH HYDRONIC REHEAT COILS AND FINNED TUBE RADIATION. THE SYSTEM SHALL BE DDC CONTROLLED USING ELECTRIC ACTUATION.

OCCUPIED
 OCCUPIED MODE IS BASED ON A 7-DAY PROGRAMMABLE TIME CLOCK, AND ON A MANUAL OVERRIDE DURING OFF HOURS.

THE SUPPLY FAN AND RETURN FAN WILL BE ENERGIZED AND RUN CONTINUOUSLY. THE OUTSIDE DAMPER WILL OPEN TO MINIMUM OPEN POSITION. THE PROPANE CONTROL VALVE WILL BE IN ITS NORMAL OPERATING POSITION.

SUPPLY TEMPERATURE CONTROL
 WHEN THE OUTSIDE AIR ENTHALPY IS BELOW THE ECONOMIZER CHANGEOVER VALUE, THE HEATING VALVE, COOLING COIL AND MIXED AIR DAMPERS MODULATE IN SEQUENCE WITHOUT OVERLAP TO MAINTAIN THE SUPPLY AIR TEMPERATURE SET POINT OF 55F (ADJ.) WITH A LOW LIMIT OF 48F (ADJ.) AT THE DISCHARGE AIR SENSOR. THE MIXING DAMPERS RAMP OPEN SLOWLY TO MINIMIZE OVERTHOOTING.
 WHEN THE OUTSIDE AIR ENTHALPY TEMPERATURE IS ABOVE THE ECONOMIZER CHANGEOVER VALUE, THE MIXING DAMPERS ARE PLACED IN THE MINIMUM OUTDOOR AIR POSITION. THE HEATING VALVE AND COOLING COIL MODULATE IN SEQUENCE WITHOUT OVERLAP TO MAINTAIN THE SUPPLY AIR TEMPERATURE SET POINT OF 55F (ADJ.) WITH A LOW LIMIT OF 48F (ADJ.) AT THE DISCHARGE AIR SENSOR.

CONDENSING UNIT: STAGE THE FOUR COMPRESSORS TO MEET DEMAND. CYCLE CONDENSER FANS TO MAINTAIN MAXIMUM HOT-GAS PRESSURE. OPERATE HOT GAS BYPASS TO MAINTAIN SUCTION PRESSURE.

SUPPLY DUCT AND BUILDING PRESSURIZATION CONTROL
 THE SUPPLY FAN VARIABLE FREQUENCY DRIVE MODULATES TO MAINTAIN A CONSTANT DUCT STATIC PRESSURE OF 1.5 INCHES (ADJ.) OF WATER AS SENSED AT LEAST TWO-THIRDS OF THE WAY DOWNSTREAM OF THE SUPPLY FAN IN THE LONGEST OR MOST CRITICAL DUCT. THE RETURN FAN VARIABLE FREQUENCY DRIVE MODULATES BY TRACKING THE SUPPLY FAN VFD TO MAINTAIN A POSITIVE BUILDING PRESSURE DIFFERENTIAL. THE SUPPLY FAN TO RETURN FAN DIFFERENTIAL SET POINT IS 0X IF THE OA DAMPER IS CLOSED. UPON INITIAL STARTUP OF THE AIR HANDLING SYSTEM, THE SUPPLY AND RETURN FAN SPEED SLOWLY RAMP TO THE DESIRED STATIC PRESSURE SET POINT. UPON ANY UNEXPECTED SHUTDOWN OF THE AIR HANDLING SYSTEM, THE SUPPLY AND RETURN FAN VARIABLE FREQUENCY DRIVES ARE STOPPED AND THE SPEED SIGNAL SHALL GO TO ZERO SPEED.

UNOCCUPIED
 OUTSIDE AIR DAMPER SHALL BE CLOSED. ALLOW "DRIFT" OF +/- 3 DEG F (ADJ) FROM UNOCCUPIED HEATING AND COOLING SETPOINTS. THE SUPPLY FAN WILL BE DE-ENERGIZED. THE HEATING CONTROL VALVE WILL GO TO ITS NORMAL POSITION. UPON A CALL FOR HEATING OR COOLING, SUPPLY AND RETURN FANS SHALL ENERGIZE, AND HEATING AND COOLING SEQUENCES SHALL BE AS FOR OCCUPIED MODE ABOVE. FAN SPEED WILL MAINTAIN 30% MINIMUM FOR 5 MINUTES (ADJ.) AFTER SETPOINT HAS BEEN SATISFIED. AFTER THE TIMED PERIOD, FAN SHALL BE DE-ENERGIZED WITHIN DEADBAND.

SAFETY
 DISCHARGE HIGH STATIC CUTOUT, SMOKE DETECTOR IN THE SUPPLY AIR STREAM, AND SUPPLY AND RETURN FAN VFD FAULT ALARMS DE-ENERGIZE THE SUPPLY AND RETURN FANS UPON ACTIVATION. ALL OTHER DAMPERS AND VALVES POSITION TO THEIR NORMAL POSITION AFTER THE FANS ARE DE-ENERGIZED.

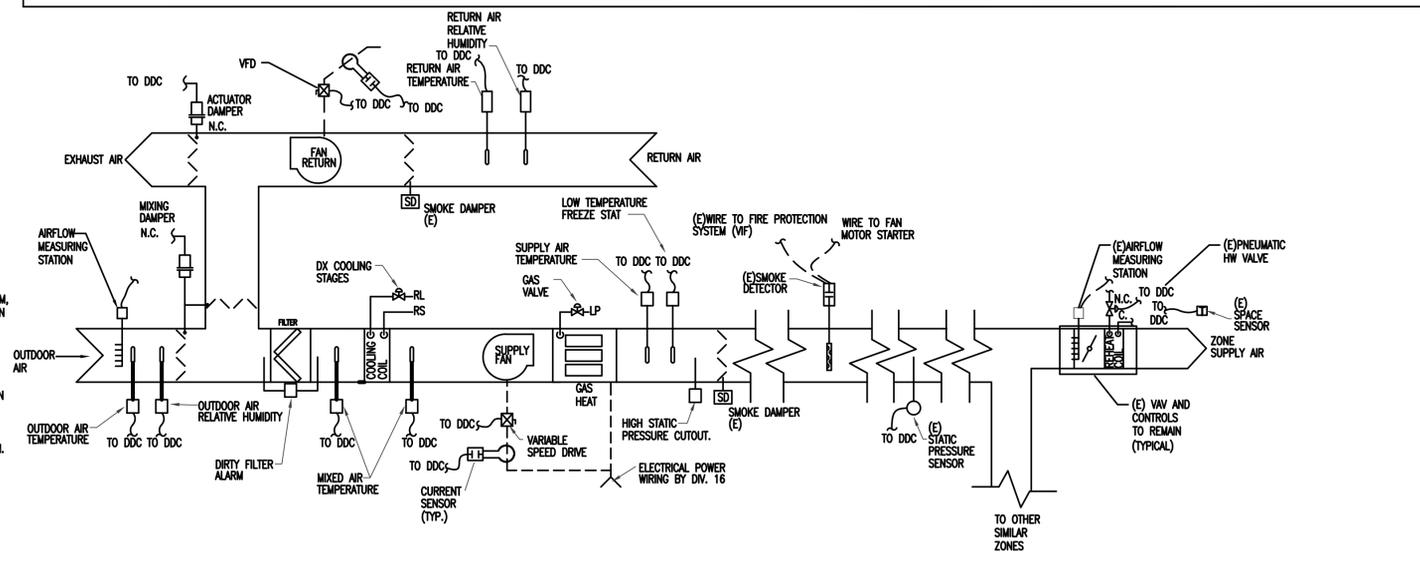
A LOW TEMPERATURE DETECTOR IN THE DISCHARGE OF THE HEATING COIL DE-ENERGIZES THE COOLING STAGES IN SEQUENCE WHEN SUPPLY AIR TEMPERATURE BELOW 48 DEGREES F ARE SENSED, REGARDLESS OF ZONE TEMPERATURE STATUS. WHEN SUPPLY AIR TEMPERATURE BELOW 38 DEGREES F ARE SENSED, THE SUPPLY AND RETURN FANS ARE DE-ENERGIZED AND THE OUTSIDE AIR DAMPER IS CLOSED. ALL OTHER DAMPERS AND VALVES POSITION TO THEIR NORMAL POSITION AFTER THE FANS ARE DE-ENERGIZED.

HEATING STAGES SHALL BE DISABLED WHEN DISCHARGE TEMPERATURE EXCEEDS 120 DEG F (ADJ), REGARDLESS OF ZONE TEMPERATURE STATUS.

CURRENT SENSORS ARE INSTALLED ON THE LOAD SIDE OF THE SUPPLY AND RETURN FAN VFDs. THE DDC SYSTEM USES THE SENSORS TO CONFIRM THE FANS ARE IN THE DESIRED STATE (I.E. ON OR OFF) AND GENERATES AN ALARM IF STATUS DEVIATES FROM DDC START/STOP CONTROL. THE DDC SYSTEM GENERATES A VFD TROUBLE ALARM INDEPENDENT FROM THE FAN STATUS.

TAG	PACKAGED ROOFTOP AIR HANDLING UNIT WITH PROPANE HEAT																								REMARKS / ACCESSORIES	BASED ON MFR/MODEL		
	SUPPLY FAN DATA			RETURN FAN DATA			COOLING DATA					CONDENSER DATA				GAS HEAT				ELECTRICAL								
	CFM	HP	ESP	OA CFM	CFM	HP	ESP	EDB DEG F	EWB DEG F	LDB DEG F	NOM. TONS	Total MBH	SEER	AMB DEG F	IEER	COMP QTY	FAN QTY	INPUT MBH	OUTPUT MBH	EAT DEG F	LAT DEG F	V	PH	HZ			MCA	MOCP
HVAC-1	17000	15	1.3	-	17000	5	0.5	79	66	53.8	60	653	10.0	95	12.7	4	6	625	500	47	74	460	3	60	137.2	150	SEE NOTES	DAIKIN RPS062
HVAC-2	13500	15	1.2	-	13500	1.5	0.4	79	66	57.2	36	396	10.0	95	12.4	4	4	500	400	48	75	460	3	60	93.4	110	SEE NOTES	DAIKIN RPS035D

- NOTES: 1. R410A REFRIGERANT
 2. MERV 8 FILTERS



CONTROLS SCHEMATIC FOR HVAC-1 (HVAC-2 SIMILAR)

NO SCALE CS-03

ISSUED FOR BID	CMP	CMP	14.06.30
Issued	By	Appd.	YYMM.DD

File Name: 198801289-HV-601.dwg



Client/Project
 YORK COUNTY
 COMMUNITY COLLEGE
 MAINE BGS PROJECT # 2410
 C WING HVAC UNITS
 Wells, Maine

Title
 HVAC SCHEDULES AND
 CONTROL DIAGRAMS

Project No. 198801289	Scale AS NOTED
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