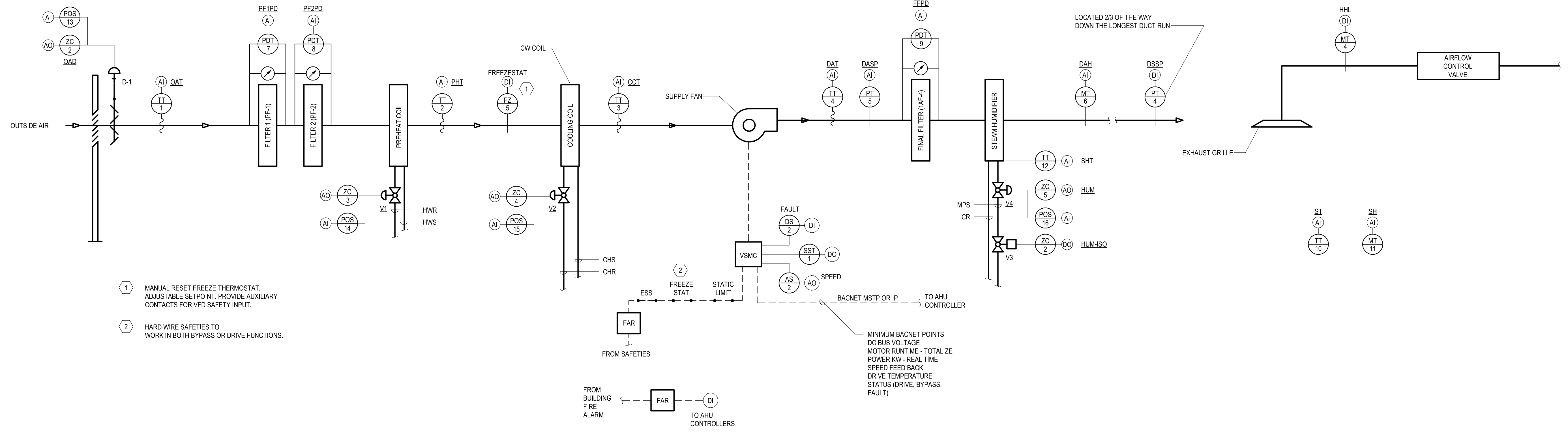


# CONTROLS SYMBOLS

- ANALOG SIGNAL INPUT OR OUTPUT (0-10V / 4-20 MA ONLY)
- DIGITAL SIGNAL (PULSE) (SWITCH, RELAY, ETC.)
- FLOW TRANSMITTER
- FREEZE/STAT
- CURRENT TRANSMITTER (STATUS)
- HUMIDITY SENSOR
- OCCUPANCY SENSOR
- POSITION SENSOR
- PRESSURE TRANSMITTER
- START/STOP (ENABLE)
- TEMPERATURE SENSOR
- DAMPER/VALVE ACTUATOR (0-10V / 4-20 MA ONLY)
- HAND SWITCH
- CONNECTION TO ECC/BAS
- FIRE ALARM RELAY CONTROLLED BY FIRE SYSTEM N.C.
- PRESSURE DIFFERENTIAL TRANSMITTER



- 1 MANUAL RESET FREEZE THERMOSTAT, ADJUSTABLE SETPOINT. PROVIDE AUXILIARY CONTACTS FOR VFD SAFETY INPUT.
- 2 HARD WIRE SAFETIES TO WORK IN BOTH BYPASS OR DRIVE FUNCTIONS.

### GENERAL BUILDING AUTOMATION SYSTEM NOTES

1. ALL NEW BUILDING AUTOMATION CONTROLS SHALL BE BY ALERTON.
2. IN ADDITION TO THE BUILDING AUTOMATION POINTS SHOWN ON THIS SHEET ALERTON SHALL PICK UP ANY ADDITIONAL INTERLOCK POINTS PROVIDED TO THE EXISTING AHU CONTROLLER.
3. ALERTON SHALL PROVIDE GRAPHICS FOR ALL AHU SYSTEMS INDICATING ALL POINT VALUES AND SETPOINTS.
4. ALL POINTS SHALL BE COMMUNICATED BACK TO THE ALERTON CENTRAL CAMPUS OWS.

### SEQUENCES OF OPERATIONS - 1-AHU-LOG

1. GENERAL
  - 1.1 UNIT IS NORMALLY STARTED AND STOPPED REMOTELY AT THE CENTRAL BAS OWS. H-Q-A SWITCH SHALL BE KEPT IN THE "AUTO" POSITION. "HAND" AND "OFF" POSITIONS SHALL BE USED ONLY FOR MAINTENANCE. WHEN THE UNIT IS "OFF" D-1 SHALL BE FULLY CLOSED. WHEN THE UNIT IS "ON" D-1 SHALL BE FULLY OPEN.
2. TEMPERATURE CONTROL
  - 2.1 SPACE TEMPERATURE, SENSED BY SPACE AIR TEMPERATURE SENSOR, SHALL BE MAINTAINED AT SETPOINT VIA DIGITAL CONTROL PANEL BY MODULATING V-1A AND V-1B OR V-3 IN SEQUENCE.
  - 2.2 DURING MECHANICAL COOLING OPERATION, THE COOLING COIL CHILLED WATER VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE TEMPERATURE SETPOINT (SATSP), NOMINALLY 55°F DB (ADJ.), AS MEASURED BY THE SUPPLY AIR TEMPERATURE (DAT) SENSOR. THE COOLING SATSP SHALL BE RESET UPWARD TO 60°F DB OR LESS (ADJ.) BASED ON ZONE COOLING DEMAND FEEDBACK TO MAINTAIN THE ZONE WITH THE GREATEST COOLING REQUIREMENT. IF ZONE COOLING DEMAND INCREASES, THE SATSP SHALL BE RESET DOWNWARD TO 55°F DB OR GREATER (ADJ.).
  - 2.3 DURING HEATING OPERATION, THE HEATING COIL STEAM VALVES SHALL MODULATE TO MAINTAIN A SPACE TEMPERATURE SETPOINT, (DAT), WHICH CAN BE RESET FROM THE OWS.
- UNOCCUPIED MODE:
  - 2.4 WHEN DISABLED BY THE BUILDING AUTOMATION SYSTEM, THE SUPPLY FAN VFD SHALL RAMP THE SUPPLY FAN SPEED DOWN TO STOP, THE COOLING COIL CHILLED WATER VALVE, HEATING COIL STEAM VALVE, HUMIDIFIER VALVE AND OUTDOOR AIR DAMPER SHALL EACH CLOSE.

### 3. STEAM HUMIDIFIER CONTROL

- UNOCCUPIED MODE:
- 3.1 EXHAUST AIR HUMIDITY SHALL BE MONITORED. ON A CALL FOR HUMIDIFICATION, HUMIDIFIER VALVE V-4 SHALL MODULATE TO MAINTAIN THE EXHAUST AIR HUMIDITY SET POINT TO 30% (ADJUSTABLE). PRIOR TO ACTIVATION OF V-4, THE ON/OFF CONTROL VALVE V-3 SHALL BE ENABLED THROUGH ECC AND JACKET TEMPERATURE SENSED BY TSH SHALL BE WARM ENOUGH TO PREVENT CONDENSATION. THE HIGH LIMIT HUMIDITY SENSOR, LOCATED IN THE SUPPLY AIR DUCT 300MM (10 FEET) AWAY FROM THE HUMIDIFIER SHALL DISABLE THE HUMIDIFIER AND GIVE AN ALARM SIGNAL TO THE ECC. IF THE SUPPLY AIR HUMIDITY EXCEEDS 90% RH (ADJUSTABLE), THE DASP SHALL PROVE AIRFLOW BEFORE HUMIDITY CONTROLS ARE ACTIVATED.
- OCCUPIED MODE:
- 4.1 THE SUPPLY AIR FLOW SHALL BE CONTROLLED BY THE DIGITAL CONTROL PANEL MODULATING THE SUPPLY FAN VARIABLE SPEED MOTOR CONTROLLER TO MAINTAIN DUCT STATIC PRESSURE. SETPOINT.
  - 5.1 IF THE AIR TEMPERATURE AS SENSED BY TT-3 FALLS BELOW 45°F, AN ALARM SIGNAL SHALL INDICATE AT THE DOP AND ECC. IF THIS TEMPERATURE FALLS BELOW 40°F, AS SENSED BY FZ-1, THE SUPPLY FAN SHALL SHUT DOWN. THE OUTSIDE AIR DAMPER SHALL CLOSE, THE STEAM VALVE (V-1A) SHALL OPEN AND A CRITICAL ALARM SIGNAL INDICATE AT THE DIGITAL CONTROL PANEL AND BAS OWS.
  - 6.1 FAN SHALL SHUT DOWN FROM A SIGNAL FROM THE BUILDING FIRE ALARM SYSTEM.

JOB: BUILDING:	19022 VA FAYETTEVILLE LOGISTICS		POINT LEGEND	SYSTEM OUTPUTS		SYSTEM INPUTS		SYSTEM SOFTWARE/CONTROL		PAGE:
				BINARY	ANA- LOG	BINARY	ANALOG	ALARM PROCESSING	APPLICATION/FUNCTION	
SYSTEM: VAV AIR HANDLER										
SYSTEM COMPONENT:										
OUTSIDE AIR TEMPERATURE	AI-1	OAT								
PRE-HEAT TEMPERATURE	AI-2	PHT								
COOLING COIL TEMPERATURE	AI-3	CCT								
DISCHARGE AIR TEMPERATURE	AI-4	DAT								
DISCHARGE STATIC PRESSURE	AI-5	DASP								
DISCHARGE AIR HUMIDITY	AI-6	DAH								
PREFILTER 1 STATIC PRESSURE	AI-7	PF1PD								
PREFILTER 2 STATIC PRESSURE	AI-8	PF2PD								
FINAL FILTER STATIC PRESSURE	AI-9	FFPD								
SPACE TEMPERATURE	AI-10	ST								
SPACE HUMIDITY	AI-11	SH								
HUMIDIFIER JACKET TEMPERATURE	AI-12	SHT								
OUTSIDE AIR DAMPER POSITION	AI-13	OADP								
PREHEAT COIL VALVE POSITION	AI-14	PHTP-V1								
COOLING COIL VALVE POSITION	AI-15	CLGP-V2								
STEAM HUMIDIFIER VALVE POSITION	AI-16	HUMP-V4								
	AI-17									
SUPPLY FAN STATUS	BI-1	SF-ST5								
STATIC PRESSURE HIGH LIMIT	BI-2	DSSP								
SUPPLY FAN VSMC ALARM	BI-3	SF-ALA								
HUMIDITY HIGH LIMIT	BI-4	HHL								
FREEZE/STAT	BI-5	FZ								
	BI-6									
SUPPLY FAN VSMC	AO-1	SF-SPD								
OUTSIDE AIR DAMPER	AO-2	OAD								FULL COMMUNICATION
PRE-HEAT VALVE V-1	AO-3	PHT-V1								
COOLING VALVE V-2	AO-4	CLG-V2								
STEAM HUMIDIFIER VALVE V-4	AO-5	HUM-V4								
	AO-6									
SUPPLY FAN START/STOP	BO-1	SF-SST								
STEAM ISOLATION VALVE V-3	BO-2	HUM-ISO-V3								
NOTE:	BO-3									

Revision Number	Revisions:	Date:

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(B-1)

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VETERANS HEALTH CARE SYSTEM  
OF THE OZARKS

VA U.S. Department  
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