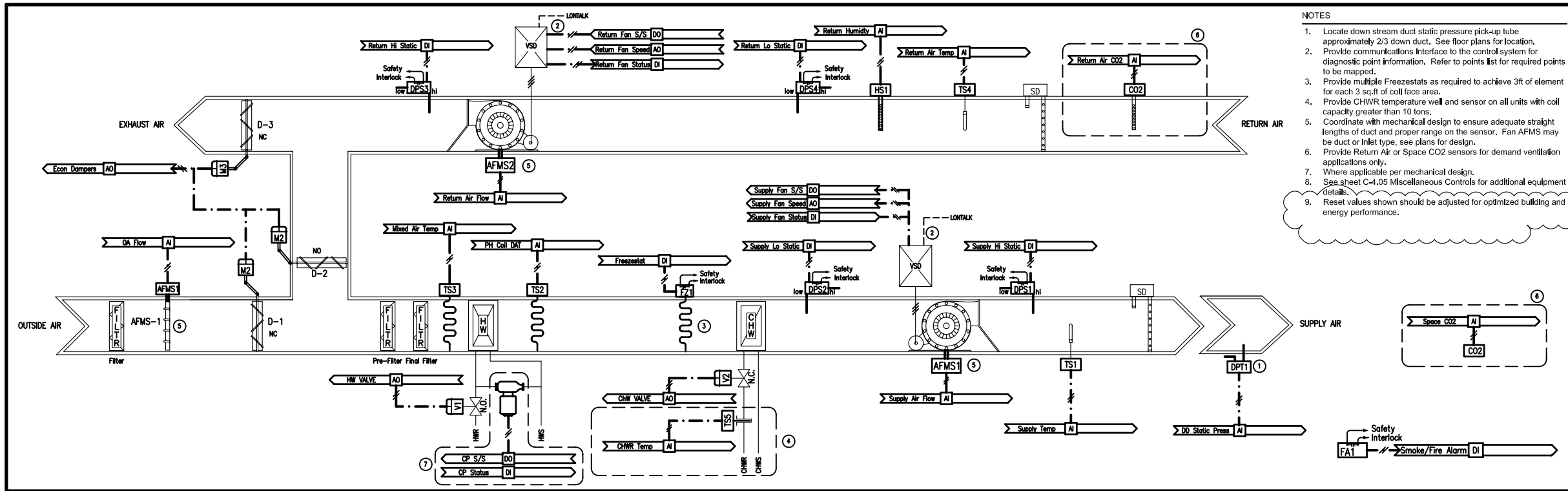
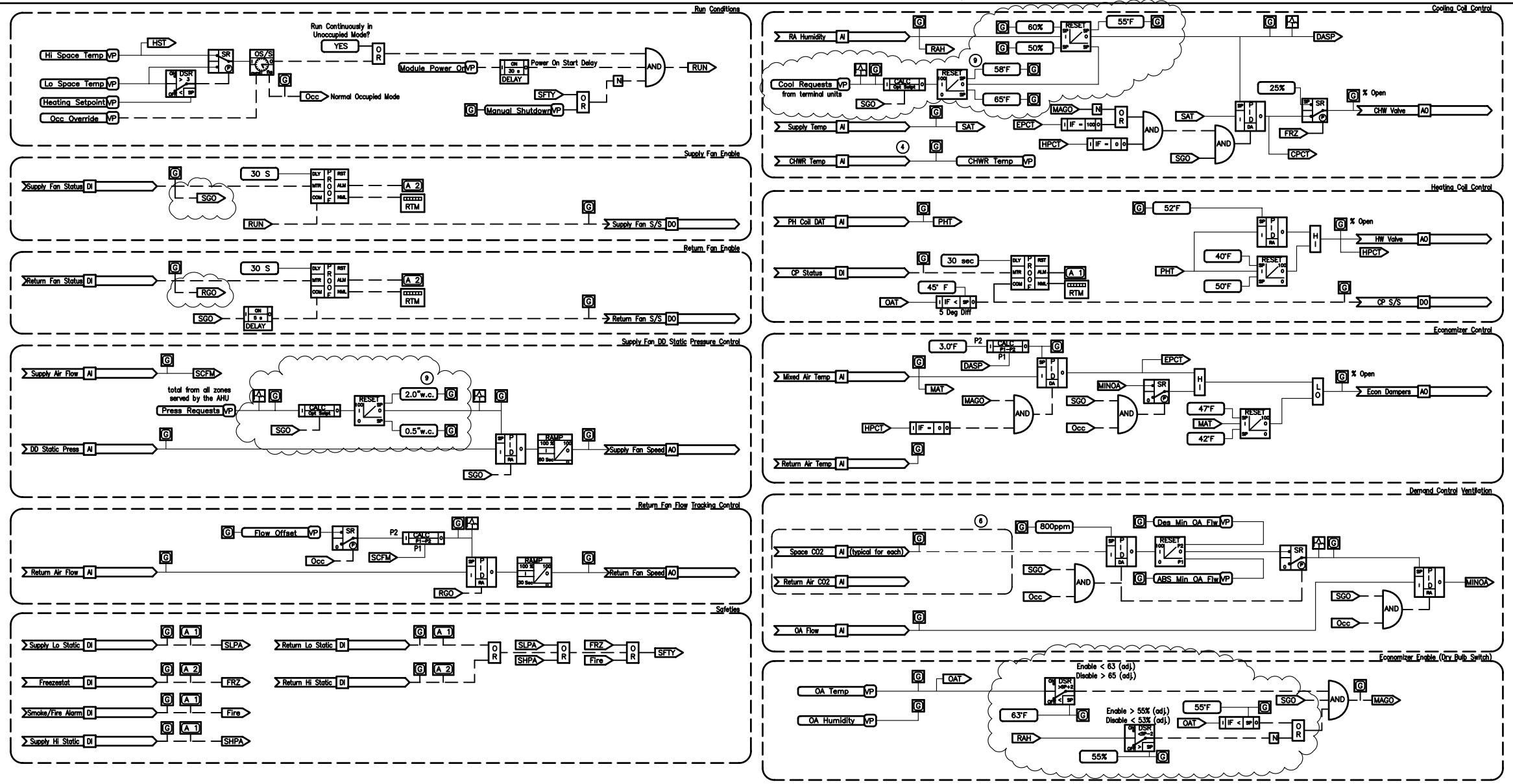


NOTES

1. Locate down stream duct static pressure pick-up tube approximately 2/3 down duct. See floor plans for location.
2. Provide communications interface to the control system for diagnostic point information. Refer to points list for required points to be mapped.
3. Provide multiple Freezestats as required to achieve 3ft of element for each 3 sq.ft of coil face area.
4. Provide CHWR temperature well and sensor on all units with coil capacity greater than 10 tons.
5. Coordinate with mechanical design to ensure adequate straight lengths of duct and proper range on the sensor. Fan AFMS may be duct or inlet type, see plans for design.
6. Provide Return Air or Space CO2 sensors for demand ventilation applications only.
7. Where applicable per mechanical design.
8. See sheet C-4.05 Miscellaneous Controls for additional equipment details.
9. Reset values shown should be adjusted for optimized building and energy performance.

SINGLE DUCT VAV AH WITH PREHEAT, CHW COIL & RETURN FAN W/UNIT EXHAUST AT MIN OA FLOW



Software Logic Diagram

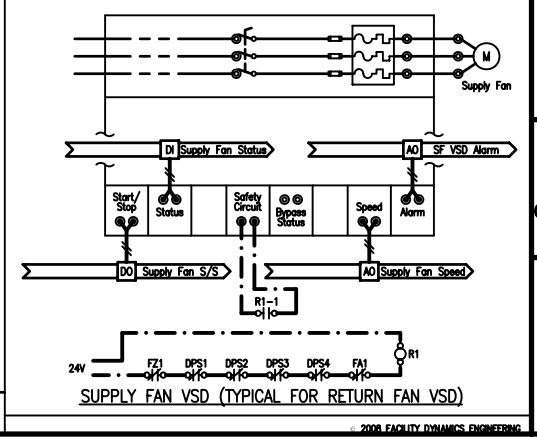
POINTS LIST

ADDRESS	POINT DESCRIPTOR	POINT TYPE DI	AI	DO	AO	VP	REMARKS
	Supply Fan S/S			•			
	Supply Fan Status	•					
	SF VSD Alarm					•	Interface Point
	Supply Fan Speed				•		
	Return Fan S/S			•			
	Return Fan Status	•					
	RF VSD Alarm					•	Interface Point
	Return Fan Speed				•		
	DD Static Press		•				See Note 1
	Supply Temp		•				
	PH Coil DAT		•				
	Freezestat	•					
	Mixed Air Temp		•				
	Return Air Temp		•				
	Return Air Humidity		•				
	Return Air CO2		•				
	Space CO2		•				See Note 6
	CHW Valve				•		See Note 6
	CHWR Temp		•				
	HW Valve				•		See Note 4
	Economizer				•		
	OA Flow		•				
	Supply Hi Static	•					
	Supply Lo Static	•					
	Return Hi Static	•					
	Return Lo Static	•					
	Supply Air Flow		•				
	Return Air Flow		•				
	Smoke/Fire Alarm	•					
	Circ Pump S/S			•			See Note 7
	Circ Pump Status	•					See Note 7
	VFD Alarm/Fault					•	Interface Pt. (Typ. ea VFD)
	VFD Fault Code					•	Interface Pt. (Typ. ea VFD)
	VFD Spd Feedback					•	Interface Pt. (Typ. ea VFD)
	VFD KW					•	Interface Pt. (Typ. ea VFD)
	VFD In Bypass					•	Interface Pt. (Typ. ea VFD)

LOGIC VARIABLES

BINARY	ANALOG	DESCRIPTION
Occ		ON WHEN OCCUPIED MODE ACTIVE
RUN		ON WHEN UNIT COMMANDED TO START
SGO		ON WHEN SUPPLY FAN ENERGIZED AND STATUS PROVEN
RGO		ON WHEN RETURN FAN ENERGIZED AND STATUS PROVEN
MAGO		ON WHEN OA CONDITIONS ALLOW ECONOMIZER CONTROL
SHPA		ON WHEN THE SUPPLY HI PRESSURE ALARM IS ACTIVE
SLPA		ON WHEN THE SUPPLY LO PRESSURE ALARM IS ACTIVE
FRZ		ON WHEN FREEZESTAT IS IN ALARM
Fire		ON WHEN FIRE ALARM IS ACTIVE
SFTY		ON WHEN UNIT SHUTDOWN ALARM IS ON
	HST	VARIABLE CALCULATED VALUE OF HIGHEST SPACE TEMPERATURE
	SCFM	VARIABLE VALUE OF SUPPLY AIR FLOW (CFM)
	OAT	VARIABLE VALUE OF OUTSIDE AIR TEMPERATURE
	SAT	VARIABLE VALUE OF SUPPLY AIR TEMPERATURE
	PHT	VARIABLE VALUE OF PREHEAT AIR TEMPERATURE
	MAT	VARIABLE VALUE OF MIXED AIR TEMPERATURE
	MINOA	VARIABLE VALUE OF MIN OA DAMPER POSITION (BASED ON OA FLOW PID OUT)
	DASP	VARIABLE CALCULATED VALUE OF DISCHARGE TEMPERATURE SETPOINT
	CPCT	VARIABLE CALCULATED VALUE OF CHW VALVE POSITION
	HPCT	VARIABLE CALCULATED VALUE OF HW VALVE POSITION
	EPCT	VARIABLE CALCULATED VALUE OF ECONOMIZER PID OUTPUT
	OAFLW	VARIABLE VALUE OF OUTSIDE AIR FLOW (CFM)
	RHP	VARIABLE CALCULATED VALUE OF CHW VALVE POSITION FOR DEHUMIDIFICATION
	OAFSP	VARIABLE CALCULATED VALUE OF OA FLOW SETPOINT

ELECTRIC LADDER DIAGRAMS



SUPPLY FAN VSD (TYPICAL FOR RETURN FAN VSD)

REVISIONS

NO.	DESCRIPTION	DATE

THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

The University of North Carolina
Chapel Hill, North Carolina

Standard Control Drawings

Eng	RR
Drawn	BMV
Chkd	---
Appd	---
Issued	6/15/2012
Job No.	-----
Scale	N/A
Proj Code	

REV. 6

SINGLE DUCT VAV AH WITH PREHEAT, CHW COIL & RETURN FAN

00 OF 00
SHEET NUMBER

C1.01a
DWG NUMBER