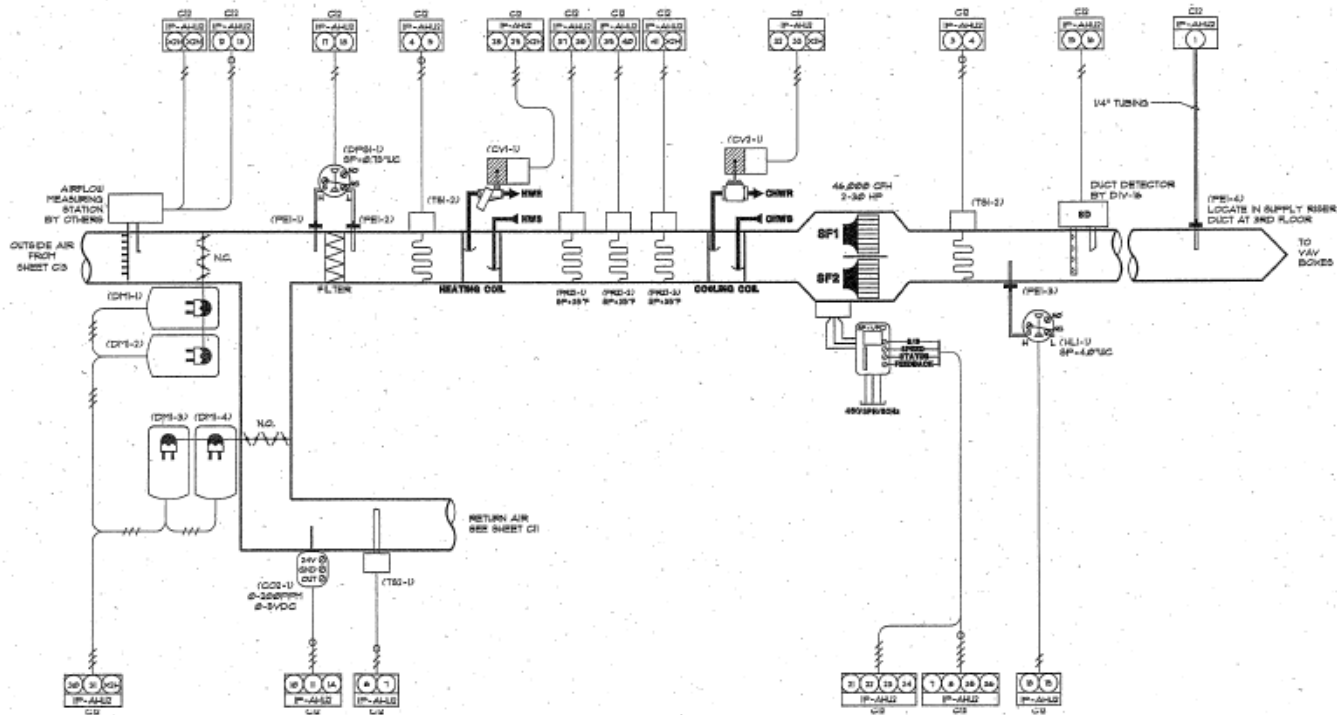


FLOOR PLAN
SERVES: BASEMENT WHITE STAG BUILDING



VAV AIR HANDLING UNIT (AHU-2):

1. OCCUPIED MODE:

- 1.1. Supply Fan run continuously during "OCCUPIED MODE", "STOP" Fans on Fire/Smoke Alarm, Low Discharge Air Temp (Freeze), or High Duct Static.
- 1.2. Supply Fan Variable Frequency Drive varies Fan Speed to maintain Supply Duct Static Pressure Set-point. Initial Set-point to be 1.0"WC. This set-point is then adjusted using a Proportional and integral control strategy, such that the zone damper which is being given the greatest open command to be commanding 90% "OPEN". In this way, the fans will only be providing the static pressure required to provide air for the "neediest" zone.
- 1.3. Stop all Fans when Duct Static Pressure exceeds 4.0"wc and Alarm Operators Workstation. Reset Fans via command from Operators Workstation.
- 1.4. Relief Damper is "OPEN", if the status doesn't prove, Relief fan is "DISABLED"
- 1.5. Start Relief Fan when average Space Static Pressure exceeds 0.05"WC (adjustable), or the Highest Space Static reaches 0.07"WC (adjustable). Modulate Relief fan speed to maintain the average Space Static of 0.05"WC (adjustable). Relief Fan is commanded to "STOP" if all zones fall below 0.045"WC (adjustable).
- 1.6. Space Static Pressures are maintained individually by modulating zone relief dampers to maintain Set-point of 0.05"WC.
- 1.7. If Mixed Air Temperature drops below 36°F. (adjustable) for a period of 5 minutes, "CLOSE" Outside Air Damper, Alarm Operators Workstation. If condition exists for an additional 5 minutes, "STOP" Fans and generate an additional Alarm.
- 1.8. Return to "NORMAL OPERATION" when Mixed Air Temperature rises above 38°F (adjustable).
- 1.9. Supply Air Temperature is reset between 55°F. and 62°F. (adjustable) based upon damper position of AHU's associated VAV boxes. If "NO" boxes are being commanded "OPEN" more than 90% (adjustable), reset Temperature down by 0.5°F. Reset Temperature upward if "ANY" box is more than 90% "OPEN". Reset Temperature every 5 minutes (adjustable).
- 1.10. Supply Air Temperature is maintained by staging Economizer Cooling, Chill Water Cooling, and Hot Water Heating, as follows:
 - 1.10.1. If OA Temp is 2 degrees or more (adjustable) below Return Air Temp, Outside Air Damper and Return Air Damper are operated in opposition as a first stage cooling (Economizer Mode). If OA Temp rises to the Return Air Temp, Economizer Mode is disabled, and the Outside Air and Return Air Dampers are modulated to provide minimum outside air.
 - 1.10.2. A minimum position for the Outside Air Damper is determined as the greater of two calculations; either to maintain the required flow of fresh air as measured at the Outside Air Flow station, determined by the air balancer, or to maintain a Return Air CO2 reading below the set-point, 850 PPM (adjustable).
 - 1.10.3. Modulate Chilled Water Valve to maintain Set-point in all cases for which Economizer Cooling is insufficient.
 - 1.10.4. If Discharge Air Temperature drops below Set-point 55°F. (adjustable) modulate Hot Water Coil Valve to maintain Discharge Air Set-point.
- 1.11. If CO2 concentration exceeds 1000 PPM, Alarm Operators Workstation.
- 1.12. If CO2 concentration exceeds 1500 PPM, or drops below 200 PPM, Alarm Operators Workstation and Disable CO2 Control. Operator has the ability to Manually Enable or Disable CO2 Control.

2. WARMUP MODE:

- 2.1. Supply Fan "STARTS" based on Optimized Start Time.
- 2.2. Modulate Heating Water Valve to maintain 85°F. Supply air Temperature.
- 2.3. "CLOSE" Reheat Valves, modulate damper to maintain Space Temperature Set-point using Reverse-acting Control.
- 2.4. Outside Air Dampers "CLOSED".
- 2.5. Supply Fan Speed modulates to maintain Supply Duct Static Pressure Set-point.
- 2.6. Terminate Warmup Mode when the Average Zone Space Temperature reaches Set-point or Occupancy Schedule becomes occupied.

3. COOLDOWN MODE:

- 3.1. Start Fans in Cooldown Mode based on Average Zone Space Temperature above Cooldown Set-point (adjustable).
- 3.2. Supply Fan Speed modulates to maintain Supply Duct Static Pressure Set-point.
- 3.3. If Outside Air Temperature is less than Return Air, enable Economizer, also Enable Chilled Water System.
- 3.4. Modulate Chilled Water Valve to maintain 55°F (adjustable) Supply Air Temperature Set-point.
- 3.5. Terminate Cooldown Mode when the Average Zone Space Temperature reaches Cooldown Set-point (adjustable), or when System enters Occupied Mode.

4. NIGHT LOW LIMIT MODE:

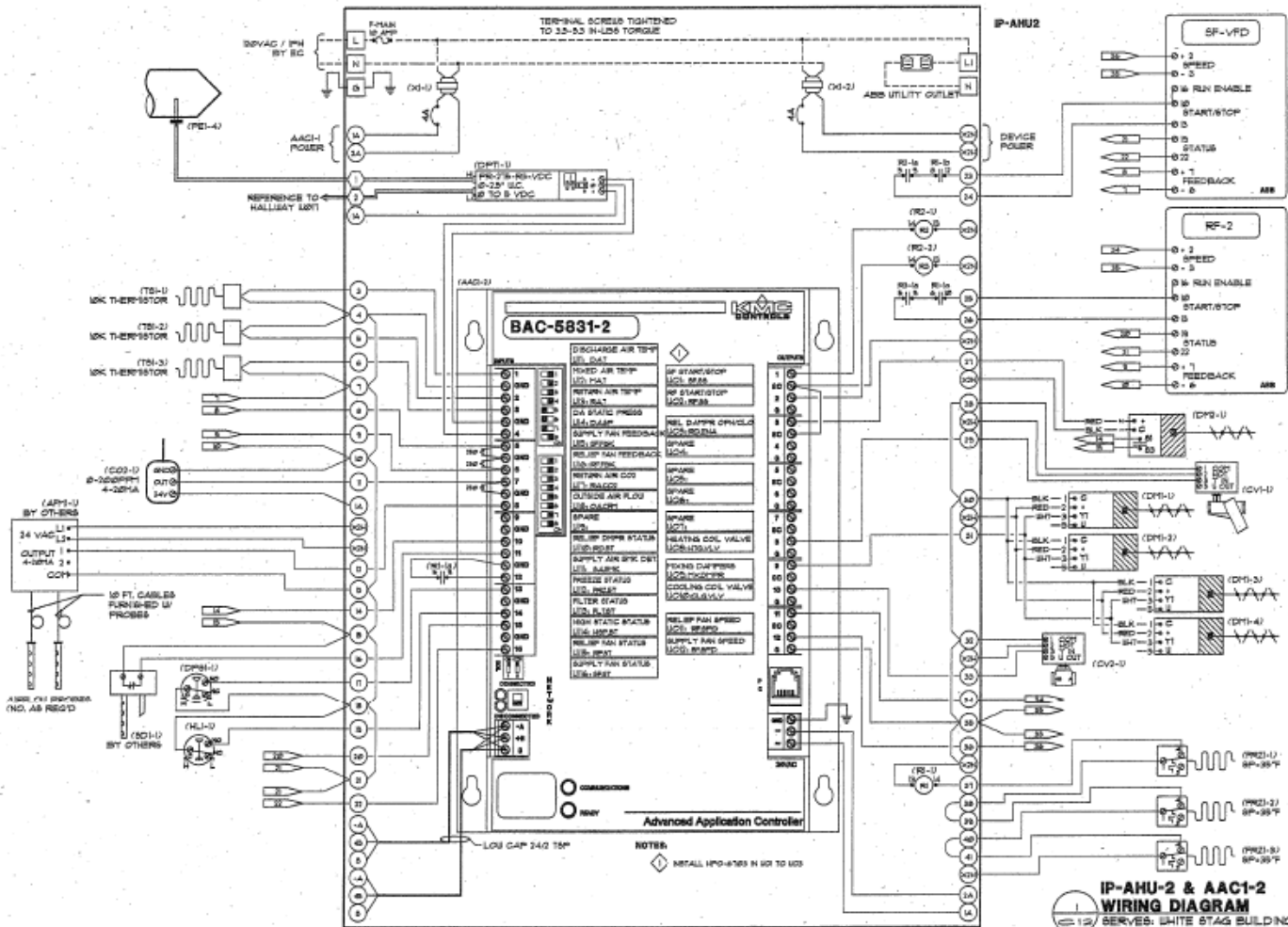
- 4.1. Supply Fan "STARTS" when average Zone Space Temperature drops below Night Low Limit Set-point, 58°F. (adjustable).
- 4.2. Supply Fan Speed modulates to maintain Supply Duct Static Pressure Set-point.
- 4.3. Enable Heating Water System in Occupied Mode.
- 4.4. Modulate Heating Water Valve to maintain 85°F. (adjustable) Supply Air Temperature.
- 4.5. "CLOSE" Reheat Valves, modulate damper to maintain Space Temperature Set-point using Reverse-acting Control.
- 4.6. Outside Air Dampers "CLOSED".
- 4.7. Terminate Night Low Limit Mode when the Average Zone Space Temperature reaches Night Low Limit Set-point plus 5°F (adjustable).

5. UNOCCUPIED MODE:

- 5.1. Supply and Relief Fans "OFF", Outside Air Dampers "CLOSED", Relief Dampers "CLOSED", HW and CHW Valves "CLOSED"

6. SAFETIES

- 6.1. Supply and Relief fans are interlocked to "STOP" on activation of Freeze Status Alarm, Smoke Detection Alarm, or Fire Alarm System Activation.
- 6.2. A Dirty Filter alarm will inform Operator of poor air flow.
- 6.3. Relief Fan will not be permitted to run unless Relief damper open detected by mechanical "End Switch".



IP-AHU-2 & AAC-1
WIRING DIAGRAM
 SERVES: WHITE STAG BUILDING

VALVE SCHEDULE

TAG	LOCATION	REV	QTY	SIZE	TYPE	PIPING DETAILS	VALVE ASSOCIATION		DEL. P W / ACTUAL CV	REMARKS	
							FLOW	TRAFFIC			
AHU-8 CHW	WHITE STAG BUILDING	1	1	4"	3-WAY	"A"	850DC-18024-MP-P1001	252.3		PROPORTIONAL	
AHU-8 CHW	WHITE STAG BUILDING	1	1	1 1/2"	2-WAY	"A"	PICTV-15-02-18024-MP-P1019	90.0	2.6VDC	PROPORTIONAL	
TU-4.1W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.9	2.6VDC	PROPORTIONAL	
TU-1.5W	WHITE STAG BUILDING	1	1	1/2"	3-WAY	"C"	R309+18024-SR	1.6	0.72 0.80	4.00	PROPORTIONAL
TU-1.6W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.8	6.0VDC	PROPORTIONAL	
TU-1.7W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	1.9	6.0VDC	PROPORTIONAL	
TU-1.8W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.8	6.0VDC	PROPORTIONAL	
TU-1.9W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.8	6.0VDC	PROPORTIONAL	
TU-2.10W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.8	6.0VDC	PROPORTIONAL	
TU-2.11W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.8	6.0VDC	PROPORTIONAL	
TU-2.5W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.8	6.0VDC	PROPORTIONAL	
TU-2.7W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	1.8	6.0VDC	PROPORTIONAL	
TU-2.8W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	1.3	6.0VDC	PROPORTIONAL	
TU-2.9W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	R309+18024-SR	0.5		3.00	PROPORTIONAL
TU-2.10W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.5	6.0VDC	PROPORTIONAL	
TU-2.11W	WHITE STAG BUILDING	1	1	1/2"	3-WAY	"C"	R309+18024-SR	1.4	0.83 0.80	3.00	PROPORTIONAL
TU-2.12W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	1.0	7.8VDC	PROPORTIONAL	
TU-2.5W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.5	6.0VDC	PROPORTIONAL	
TU-2.7W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	1.4		3.00	PROPORTIONAL
TU-2.8W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	R309+18024-SR	1.0	0.83 0.80	4.70	PROPORTIONAL
TU-2.9W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	2.0	6.0VDC	PROPORTIONAL	
TU-3.10W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	2.0	6.0VDC	PROPORTIONAL	
TU-3.11W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	1.5	6.0VDC	PROPORTIONAL	
TU-3.12W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	1.5	6.0VDC	PROPORTIONAL	
TU-4.2W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	1.5	7.2VDC	PROPORTIONAL	
TU-4.3W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.8	6.0VDC	PROPORTIONAL	
TU-4.4W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.8	6.0VDC	PROPORTIONAL	
TU-4.5W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.8	6.0VDC	PROPORTIONAL	
TU-4.6W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.8	6.0VDC	PROPORTIONAL	
TU-4.7W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	R309+18024-SR	1.5	0.58 0.60	3.54	PROPORTIONAL
TU-4.8W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	R310+18024-SR	2.0	0.58 1.00	3.70	PROPORTIONAL
TU-5.1W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	R310+18024-SR	1.0	0.50 1.00	3.00	PROPORTIONAL
TU-5.2W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	1.0	7.6VDC	PROPORTIONAL	
TU-5.3W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	1.0	7.6VDC	PROPORTIONAL	
TU-5.4W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	1.0	7.6VDC	PROPORTIONAL	
TU-5.5W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	1.0	7.6VDC	PROPORTIONAL	
TU-5.6W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.8	6.0VDC	PROPORTIONAL	
TU-5.7W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	1.8	6.0VDC	PROPORTIONAL	
TU-5.8W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.8	6.0VDC	PROPORTIONAL	
TU-5.9W	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	1.8	6.0VDC	PROPORTIONAL	
UR-1	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	R309+18024-SR	1.1	0.49 0.50	1.50	PROPORTIONAL
UR-2	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.8	6.0VDC	PROPORTIONAL	
UR-3	WHITE STAG BUILDING	1	1	1/2"	2-WAY	"A"	PICTV-15-00-18024-MP-P1019	0.8	6.0VDC	PROPORTIONAL	
CV-1	RAINWATER HARVEST	1	1	2 1/2"	2-WAY	"B"	R309+18024-SR	0.8	6.0VDC	PROPORTIONAL	
CV-1	RAINWATER HARVEST	1	1	2 1/2"	2-WAY	"B"	R309+18024-SR				LINE SIZE 2-POSITION

TOTAL GPM: 72.6
3-WAY GPM: 10.8



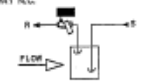
WHITE STAG BUILDING VALVE SCHEDULE

3-WAYS 9/42 TUS
PROJECT TOTALS 23 WAYS 14/63 TUS = 22% BYPASS

123.9 TOTAL PROJECT GPM
29.0 TOTAL PROJECT 3-WAY GPM
23% BYPASS GPM

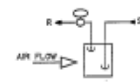
'A'

FOR 2-WAY N.C. PICTV



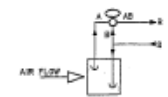
'B'

FOR 2-WAY N.C.



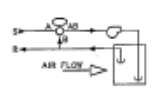
'C'

FOR 3-WAY BALL VALVE MIXING APPLICATIONS



'D'

FOR 3-WAY MIXING APPLICATIONS WITH CRG. PUMP



Mounting:
The valve can be mounted in any position, except when below horizontal.

